



# Global Opinion Survey on Japan's GHG Emission Reduction Targets for 2020

Japan for Sustainability

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## **1. Introduction**

### **1-1. Background**

In preparation for the Copenhagen meeting (COP15) of the UN Framework Convention on Climate Change at the end of 2009, Japan's Prime Minister Yasuo Fukuda (at that time) announced a set of proposals for Japan - the so-called Fukuda Vision - on June 9, 2008, a month ahead of the Toyako Summit. He set out a long-term plan to reduce Japan's carbon emissions by 60 to 80 percent by 2050. Following to the long-term target, Japan is currently engaged in debate about the country's medium-term greenhouse gas emission (GHG) reduction targets for the period 2013 to 2020. After considering public opinion and various other views, Prime Minister Taro Aso will decide on the medium-term targets this June. While environmental NGOs are calling for major emission reductions, industry is making a strong appeal for targets that will not lead to big reductions. A large gap in their positions persists.

#### **(1) Global CO<sub>2</sub> emissions**

It is generally accepted internationally that under current projections, global CO<sub>2</sub> emissions will double by 2050, even though we should reduce them by half to avoid a climate catastrophe. The Intergovernmental Panel on Climate Change says that Annex I countries (industrialized countries) in the UNFCCC need to reduce emissions by 25% to 40% by 2020.

Industrialized countries account for 75% of historical CO<sub>2</sub> emissions, and developing countries for 25%. The ranking of current annual emissions switched in 2005: industrialized countries now emit just less than half, and developing countries just more than half. In 2050, developing countries are predicted to emit just over 60%, and industrialized countries just under 40%, of total emissions.

The United States accounts for 20% of global emissions, and other industrialized countries for the remaining 30%. The United States is not a party to the Kyoto Protocol, so the emissions from Annex I countries account for about 30% of global emissions.

#### **(2) Japan's CO<sub>2</sub> emissions**

Japan currently accounts for 4% of global emissions. Japan's target under the Kyoto Protocol is for a 6% reduction from the 1990 level, but in 2005 Japan had actually increased by 7.7%.

#### **(3) Medium-term target**

International negotiations have been continuing for some time, seeking consensus on an international framework to be established at the Climate Change Conference in Copenhagen (COP15) in late 2009

and start functioning in 2013. The European Union and United States have already announced their medium-term targets for 2020, with the former aiming for a 20% reduction from the 1990 level (or 14% from 2005), and the latter a 14% reduction from the 2005 level (no change from 1990).

#### (4) Six options for Japan's medium-term targets

Japan is considering two types of approaches to determine its emissions target for 2020. One looks at what reductions could be achieved if certain actions were taken. The other focuses on fairness among industrialized countries.

- Option 1: +4% from 1990 (-4% reduction from 2005)

This is a scenario to “continue current efforts” to improve efficiency by making continued progress with existing technologies and continue with current policies (targets for efficiency improvements that promote voluntary efforts, the “Top Runner” program, subsidies, and so on).

- Option 2: +1% to -5% from 1990 (-6% to -12% from 2005)

This approach seeks reduction efforts that are fair for all industrialized countries, by equally sharing the marginal abatement costs of GHG emission reductions, aiming at a 25% reduction from 1990 for these countries. Marginal abatement costs are the additional costs required for additional reductions; this approach considers previous efforts. Japan, for example, has already made considerable investments into energy efficiency improvements, so its marginal abatement cost is higher than in countries that have not done so. (By this approach, the US target will be -19% to -24% compared to 1990, and the EU will be - 23% to -27%).

- Option 3: -7% from 1990 (-14% from 2005)

Strengthen governmental policies to the greatest extent possible, by enhancing current policies to promote the installation of the most efficient equipment available, introducing new programs promoting the purchase of photovoltaic power as well as subsidies to promote the purchase of eco-cars, and strengthening regulations on energy efficiency housing (annual subsidies of 1.2 trillion yen).

- Option 4: -8% to -17% from 1990 (-13 to -23% from 2005)

Industrialized countries as a whole will seek a target of -25%, but in the interest of fairness among industrialized countries, the cost of emission reduction measures per unit of GDP will be considered. (In this case, the US target will be -7% to -18%, and the EU target -30% to -31%).

- Option 5: -15% from 1990 (-21% from 2005)

New equipment will all have to be highly efficient, and a certain percentage of existing equipment will also have to be replaced or improved.

- Option 6: -25% from 1990 (-30% from 2005)

To achieve a 25% reduction from 1990, all developed countries will have the same -25% target. For Japan to achieve this, almost all new and existing equipment will have to be highly efficient, and Japan will have to reduce its economic activity (production) by setting a price for carbon (carbon tax, emissions trading).

## **1-2. Survey Objectives**

Japan will set its own national medium-term targets in June 2009.

The main objectives for this survey are:

1. Provide information to the world about the issue of Japan's mid-term greenhouse gases (GHG) reduction targets and domestic debates for the targets and their points.
2. Ask people around the world for their opinions on which options Japan should take, and see how they would think.
3. Provide inputs for the debate in Japan by sharing the survey findings with the Prime Minister Aso and the national media.

## **1-3. Survey Method**

The survey conducted online from May 1 through May 16, 2009. Japan for Sustainability (JFS) opened a webpage for the survey on its website (<http://www.japanfs.org/en/pages/028987.html>) with an answer form (see Annex I).

JFS called for responses by e-mails to its subscribers to the weekly and monthly e-mail news, over 10,000 people in 191 countries. Also, JFS reached out networks in the world with people who would be interested in the issue through listservs and social network services. JFS also approached to the Internet news media in the world for the cooperation to spread the information about the survey through their media. [This survey is not a randomly sampled survey.]

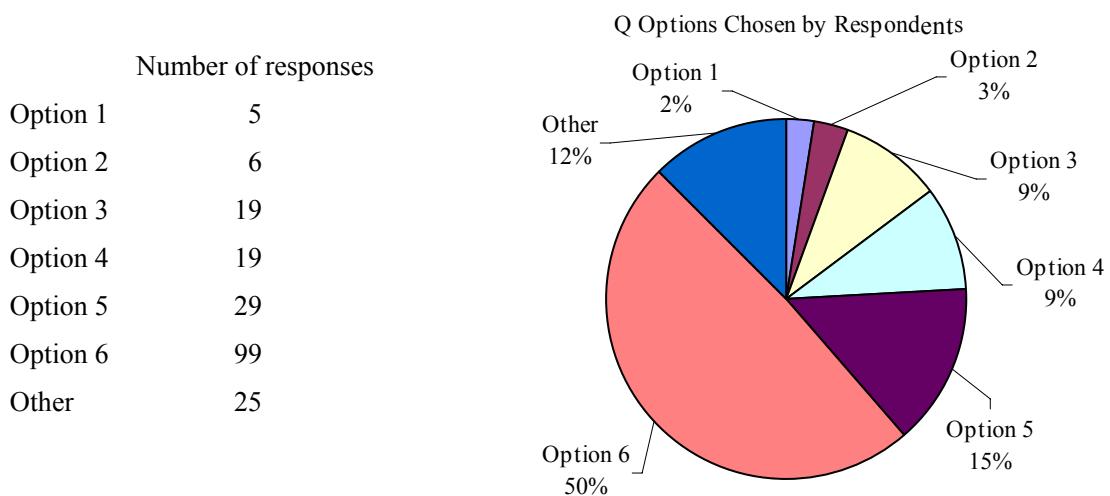
## 2. Survey Result

A total of 202 responses were received from 59 countries from May 1 to May 16, 2009. Half of respondents supported the sixth of six options (a 25% cut compared to 1990), representing the largest emissions reductions of all options being considered by the government. The breakdown was as follows:

|          | Emissions Compared to 1990 | Percent (number) of responses<br>(Total = 202) |
|----------|----------------------------|--|
| Option 1 | +4%                        | 2% (5)   |
| Option 2 | +1 to -5%                  | 3% (6)   |
| Option 3 | -7%                        | 9% (19)  |
| Option 4 | -8% to -17%                | 9% (19)  |
| Option 5 | -15%                       | 15% (29)                                       |
| Option 6 | -25%                       | 50% (99)                                       |
| Other    |                            | 12% (25)                                       |

Many respondents also wrote that “Japan should set even stricter targets” (26% of respondents), and “I hope Japan will show some leadership” (20%).

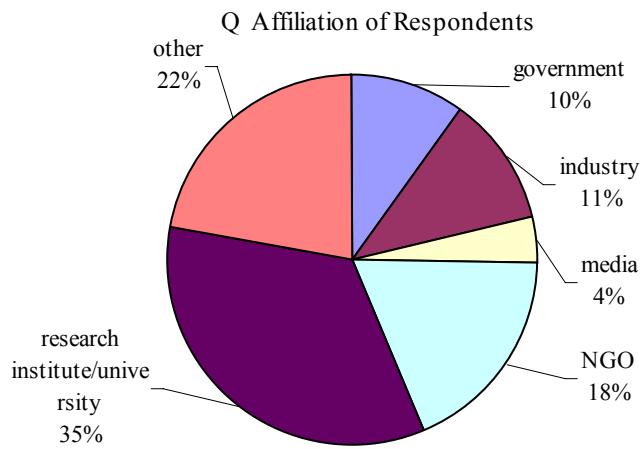
- Which options Japan should take



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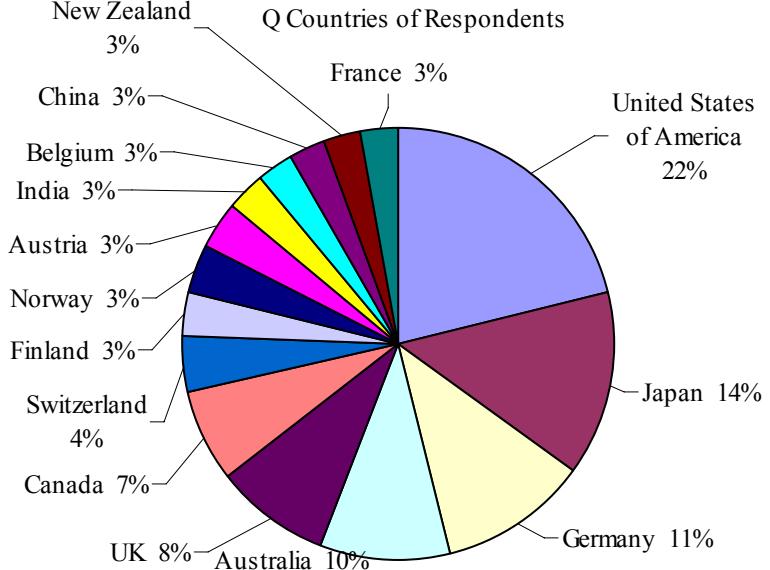
- Affiliation

|                               |    |
|-------------------------------|----|
| government                    | 20 |
| industry                      | 23 |
| media                         | 8  |
| NGO                           | 37 |
| other                         | 45 |
| research institute/university | 69 |



- Countries and numbers of Respondents (15 countries out of 59)

|             |    |
|-------------|----|
| U.S.A       | 30 |
| Japan       | 20 |
| Germany     | 16 |
| Australia   | 14 |
| U.K.        | 12 |
| Canada      | 10 |
| Switzerland | 6  |
| Finland     | 5  |
| Norway      | 5  |
| Austria     | 5  |
| India       | 4  |
| Belgium     | 4  |
| China       | 4  |
| New Zealand | 4  |
| France      | 4  |



- Summary of Comments from Respondents

| Comments  | Number (percent) of responses |
|---|-------------------------------|
| “Japan should set even stricter targets.”   | 51 (26.0%)                    |
| “I hope Japan will show some leadership.”   | 39 (19.9%)                    |
| “I expect that Japanese advanced technology will contribute to solutions.”                | 16 ( 8.2%)                    |
| “Japan should fulfill its responsibility as original host country of the Kyoto Protocol.” | 9 ( 4.6%)                     |
| “Feasibility of options deserves good consideration.”                                     | 9 ( 4.6%)                     |
| “The cost of emission reduction measures per unit of GDP should be considered.”           | 8 ( 4.1%)                     |

**Appendix I Survey Questions**

1. Your Country

2. Your Affiliation

3. Which option do you think Japan should select, at least for the medium-term target to 2020?  
(Choices: Options 1, 2, 3, 4, 5, 6, or other)

4. Please explain your rationale. (Write as much or as little as you wish.)

5. Please share any other comments about the medium-term targets, Japan's initiatives over all, or anything related. (Write as much or as little as you wish.)

## Appendix II Free Answers by Respondents

These are free answer to the survey question 3 & 4 from all the respondents sorted out by their chosen options. Specific names of individuals/organizations may be deleted for the protection of personal information.

### Free Answers to Option 1

"World economic flu[ct]uations are currently in t[u]rmoil and Japan should look for a way to survive rather than ways to distance itself from other nations."

"Comparatively Japan is in an enviable situation in the world due to it's past and current ability to walk a center line. Keep on going and shift slowly towards China and away from United States policy of world mil[i]tary domination."

"From a humanistic point of view, I think that Japan should concentrate in reducing pollution, toxic waste, nuclear waste, import of endangered animal and plant species, unnecessary packaging, unnecessary energy usage, etc, etc. MUCH MORE than running behind the wind trying to reduce the CO2 emissions. From a business point of view, I think that Japan is doing more than enough in CO2 reduction without losing its competitiveness, more will be detrimental to the economy. From a scientific point of view, I still hesitate to accept so easily the swindle of CO2 reduction to save the earth, while other subjects are much more important and far less commented in the media."

"Japan is one of leading countries in environmental protection and related problems. From the other hand, real industrial contribution into global warming is still under discussion among experts. Summarizing this with current economical situation I do not see reasons to change efforts and polices."

"NGOs provide us with a perfect tool to be informed about possible problems and concerns. But only expert community should determine real targets and actions at the governmental level. And this should be based on the research of environmental, economic, social and other essential factors."

### Free Answers to Option 2

"I chose option 2 for the reason that it's an improvement over Option 1. However, since I am not technically equipped as well as comprehensively informed on the capabilities of Japanese industry in general, my choice can be considered a wild guess.

Having said that, I think a balance has to be struck between doability/feasibility and striving for a higher threshold. In a manner of speaking, let's strive for perfection but settle for excellence."

"I wish to take this opportunity to commend JFS for its important advocacy for a cleaner and more efficient world through the global sharing of eco-friendly ideas and solutions that are presently being researched, studied and applied in Japan.

Compared with Japan, we in the Philippines are years away in terms of environmental advocacy but reading about your initiatives gives us hope that we too can be where you are. Besides, the other value to shared information is we can learn to avoid potential hazards to the environment that Japan has already learned lessons from.

In the Philippines, there are a number of ongoing initiatives at the government and nongovernment level and I believe such partnerships must be strengthened and encouraged through effective communication, especially among the youth. I remember an exhibit on the environment held in a major shopping mall here featuring funny but high-impact cartoons from several Asian countries.

Words are sometimes not enough to convey an idea and this is where cartoons can be very effective. If I'm not mistaken, I believe JFS was a major sponsor of that exhibit.

Perhaps another area of partnership is in industry itself. There are a number of Japanese companies doing business in the Philippines and it would be a good idea to come up with a report card showing the efforts of Japanese companies to help the local economy in the area of environmental sustainability.

Congratulations and more (eco-friendly) power to the JFS team!"

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### Appendix 2 Free Answers by Respondents (Option 2 and 3)

"Somehow the USA may be persuaded to accept restrictions; until they do, there is little point in others penalising themselves. The world may have to accept more than 2 deg warming, or of course make a wide agreement to deploy drastic measures such as a curtain of dust in near earth orbit."

"Japan already sets a fine example of responsible policy making. Effective measures to alleviate global warming now depend on international agreements. The marginal abatement cost calculation is a fair way to indicate where carbon taxes can be equitably applied"

"The target has to be challenging, yet also be realistic. We obviously could not continue at our current effort level; it has to be increased. But based on our past performance and what other countries (Europe and US) consider to be achievable for their countries, the Option 2 seems to be the most realistic yet challenging target."

"Since Japan accounts only 4% of global emissions and our marginal abatement cost is increasing, I think we should consider setting indirect targets, in addition to the Option 2 for ourselves, aiming to help developing countries reduce their emissions. It makes no sense to be spending more money within Japan for less result - we should take ROI into consideration when prioritizing Japanese effort. This is a global problem. Why limit our effort within Japan? I know we already do a lot for developing countries, but having a dual target (within Japan and Japan helping others) can be a very meaningful act."

"Japan should act locally while thinking globally. The cut of -6 perc. to -12 perc. will be gradual between now and the target period 2013-2020. The industries can retrofit to be more environment friendly."

"Japan will benefit at the end from the change in technology."

"Equal marginal abatement costs"

"It seems a reachable target for industrialized countries. A more difficult target could be discouraging."

"A stronger commitment from other industrialized countries such as USA and Australia is required, not only from Japan."

### Free Answers to Option 3

"Japan needs to fulfill its commitment to the Kyoto Protocol and put pressure on other Annex 1 countries (such as the US even though it didn't sign !!!) to fulfill their share of reductions.

It is possible to combine other environmental credits--such as water quality--to the carbon credit programs. If we can do this, perhaps we can find synergy to improve the situation in both. I also like incentives, if possible."

"I am concerned about the accountability of carbon trading. For example, Japanese power companies are getting carbon credits from Chinese coal mines (methane burning, etc.). Are we sure the trade is giving us the proper reductions?"

" Using most efficient Machin[e]ries available and saving cost.

Introducing new programs and photo volt[a]ic power.

Using Eco Cars to reduce co2 emission and subsidise the cost of these cars.

Energy efficient Housing to save co2 emission."

"Japan could invest in CDM projects in developing countries to get CER certificates. They could issue free CF Bulbs to all the house hold in the developing countries, this will save lot of electricity and generate CER Certificates for Japan. Japan could sell highly su[b]sidi[s]ed Ego Fr[i]endly cars to the World and reduce co2 e[m]ission. Cheap technology for Wind power Mills to produce electricity. Tech[n]ol[og]y for Solar power to developing countries."

"This is at least Japan should do to motivate some developing countries.

As a nation with strong technology capacity, Japan should also facilitate its technology transfer and international assistance efforts."

"Of the 6 policy options, the maximization of efficiency for new machinery -- option 3 -- seems most reasonable. It won't bankrupt Japan, and it'll send a clear message to the world of Japan's motivation to set an example of others to follow. Japan, renown the world over for technical and mechanical innovation is a natural leader here, a shining beacon for the possible and a bulwark against the seemingly unstoppable curse of global warming."

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### Appendix 2 Free Answers by Respondents (Option 3)

"While admirable compared to other countries, the fact that Japan's CO2 emissions in 2005 were 7.7% above 1990 levels is troubling. If environmentally conscious Japan is having trouble reducing its greenhouse gasses, how will China, Africa and other developing countries fare?"

"The current efforts needs to enhanced and made more realistic. Though Japan is on the way to achieve overall goals, but still it needs to increase and ch[a]n[e]llize its efforts towards more sustainable environment. I think the in the context of Japan we need to concentrate on efficiency of new equipment. This will help in enhancing of efforts and achieving the goals at faster speed."

"Japan need to consider both years in mind, the 1990 and 2005 and should try to make policies to satisfy the targets set for short, medium and long term. On specific problems of Japan in the field of reduction in the global emissions (currently accounts for 4-5% of gl[o]bal emissions), i have carried out research and i have strong conviction that Japan can achieve this goal of reduction through comprehensive and imaginative initiatives at the country level. We shall be in touch regarding this research. I can present the same at appropriate level."

"I think it's better to target something that is actually possible to reach. Option 6 is obviously what would be the best thing to do, but what are the chances it can be reached? It would take not only enormous government investment but also on the part of companies, that you can not really force. I don't think Japan can afford to put more pressure on his economy, already strongly hit by the financial crisis."

"I just visited Japan for the first time last month and I do think that by your situation you do sincere efforts to recycle, limit garbage and promote renewable energy. On the part of individuals, I think Japanese have a more sav[v]y menta[l]ity than the "Buy a lot and throw ever[yt]hing out" Canadian menta[l]ity of ab[u]ndance."

"Option 2 seems fair as it considers a country's previous efforts in GHG reductions, but since Japan has the technical capabilities and social awareness to do more, she should aim for the next higher reductions in Option 3."

"Japan's role is not only to reduce its own GHG emissions but to set a leadership example for the rest of Asia. Japan can use her soft power to share her experiences in energy efficiency and green initiatives with the other Asian countries."

"should go hand-in-hand with EU to make the next stage work! Agreeing on the same percentage would make things simplified.

Same for every country, making a higher commitment would enable a faster technological innovation, which in turn will lead the development of the economy and faster change to a low-carbon economy."

"This option/policy covers all the sectors from the sustainability point of view. As mentioned I believe that green economy is not possible without commitment from the host country which comes with the implementation of the stronger policies to curb GHG e[m]issions.

This option/policy also addresses the need for the installation of super efficient equipments in the new industries which will go a long way in he[l]ping the country to achieve its aim.

The automotive sector is also the one of the largest e[m]itter of the GH Gases so by promoting eco vehicle the e[m]is[s]ions can be curtailed.

The renewables are also the way ahead for sustainable development.

The energy guzzling buildings(commercial or housing) have also been i[n]cluded.

I feel that this policy/option is broader in sense and holds every sector accountable which is important for su[s]tainable development."

"The thing which is not mentioned above is that the e[x]isting industry should take energy efficiency measures and when the lifecycle of the present equipment is over it should be replaced with the best available energy efficient equipment.

I would also like to point out here is that rather than subsidising the Eco vehicles the manufacturers should be provided with the incentives in the form of research and development aid and tax cuts for providing these vehicles at low cost to the end customer. This model is better because by Subsidising the manufacturers may raise the cost of the vehicle seeing the aid coming from the government to avoid this we have to invest in the base of the chain."

"meet kyoto good luck"

"I think it's fair, and good for the planet. Thanks for giving us the opportunity to say what we think."

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### Appendix 2 Free Answers by Respondents (Option 3)

"Pr[o]mote the use the environmental friendly technology( transportation: hybrid[d] cars) and further encourage research in energy efficiency(new material in construction...) and technology, reinforce environmental policies"

"GHG emissions should be reduced imperatively to save our planet and future generation and avoid harmful consequences to humanity, the scientific recommendation for a reduction to 10%-15% of the 1990 level has to be taken in consideration in setting up real actions."

"Jud[g]ing from the emissions trend in recent 10 years, it seems very difficult to meet a more stringent target in Japan alone without purchasing emissions permit from foreign countries."

"Japan has an advantage of saving energy because the land where people live is limited. Transportation can be used more efficiently. Of course it is possible to use more public transporta[t]ion than cars.

Now many stores are open until mid-night or sometimes for 24 hours. If some of them are closed by 17:00 or so, we can save much energy.

Many people work late. On the other hand, many people can't find any jobs. If work-sharing is implemented effectively, more people can get a job and fewer people will work overtime. If people go home early, we don't need to use extra energy for lights, computers and so on.

The government should an initiative for these and people should take an action. If they realize that it will cost much less than the expense to solve the problems caused by global warming in the future, it will be possible."

"I am ashamed for the situation of Japan as a Japanese because the contribution to the prevention of global warming is quite limi[t]ed despite Kyoto protocol which has the name of Japanese city.

To solve the problems, each of us has to give up the perfect life in some ways. Now we need the prepar[a]tion, I think."

"It would be disappointing if Japan would quit the Kyoto Protocol - the noble attempt to develop legal, institutional and financial mechanisms for regulating climate."

"The extent of climate regulation that's affordable by 2020 shou[l]d be addressed through politics. Scientists told what is needed, let politicians assess the costs."

"Contribution of EFN - Environmentalists For Nuclear (not-for-profit international organization gathering over 9000 members and supporters in 60 countries) :

As Japan will not be respecting its Kyoto commitment by 2010, it should at least do so by 2020. Option 2 is a minimum to remain credible, or the whole Kyoto process will be abandoned and considered as a huge joke, a way for politicians to do nothing during 20 years. This process and any future energy targets for Japan will become simply ridiculous if Japan itself, the initiating country of the Kyoto agreement, is not able to respect its obligations even with 10 years of additional delay (up to 2020) ! Option 3 would be the best. Option 1 and 2 are not enough. However Options 4 and above are probably [un]realistic by 2020. Option [3] is both courageous, saves the honor of Japan and shows that Kyoto is in the end at least respected (even if it is with some delay).

Japan is ideally positioned (as my country France is) to be an example for the world with its nuclear program, Toyota as the leader of hybrid/electric vehicles, the Shinkansen train, high technology, and a historical culture of respecting nature.

The best option is to build more nuclear power plants producing clean electricity, promote better insulation, electric heating and heat pumps for home heating."

"Japan's initiative of organizing Kyoto 20 years ago was fantastic. But Japan not respecting the Kyoto agreement next year will be an immense deception. This should absolutely be corrected by 2020.

Developing solar and wind energy is unfortunately NOT a solution : it would be highly expensive with major damage to the beautiful Japanese landscape for a very minor contribution to Japan's global energy balance, and it produces energy when the wind blows or the sun shines, not when the energy is needed. It would be better to use the precious public money for a reliable energy source capable of replacing significant amounts of oil and gas : there is ONLY ONE SUCH SOLUTION : nuclear energy. It is clean, it is safe, it is available. NUCLEAR is THE main part of the solution (with energy conservation, eco-construction and heat pumps. Let's run for it !

The solution for Japan is the same as for other countries : more nuclear reactors operated safely, associated with energy conservation and some renewable energy.

Eco-construction (with electric heating or heat pumps) and promoting electric transportation (with electricity made cleanly from nuclear) is the solution."

"we are suffering from the global climate change related disasters-flood, drought, emerging and re-emerging

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### Appendix 2 Free Answers by Respondents (Option 3 and 4)

infectious diseases; and the future will be worse. And hence, GHG emission reduction is not negotiable. I personally request the international community to have the maximum GHG emission reduction policy. But as to Japan, I require the country to be the pi[one]er in this regard but balancing the economic impacts with the global contribution in the reduction; so as not to be beaten by the big pigs! .. option 3 will take the balance. First I like to pass my appreciation for such a public opinion. The initiatives are critical and at the high time. I request the Japan government, with the UN agencies, to take the lead in initiating and motivating of other states-with technical and technological support in mitigation of the climate change for the better world. THANKS”

“while visiting Japan, I was convinced that Japan can significantly contribute to CC anticipation with Technology Leadership. So government should push and give an incentive to industries which support this roadmap.”

“I think Japan already set high standard.. I hope it can be implemented well.”

#### Free Answers to Option 4

“GHG emission reduction targets must be negotiated and committed world-wide in order to be effective. Equal cost of measures per unit of GDP offers good chances to reach a consensus among nations, and option 4 (overlapping option 5) implies reasonably ambitious targets. More ambitious targets for 2050 are a must in order to stop the melting of glaciers in the Alps and to save Europe's water supply.”

“I think that citizens of all nations could learn from the Japanese communities capable of sharing global warming concerns and reaching consensus to the point of enabling authorities to impose measures and motivating economical actors to implement them. Also, increasing energetic self-sufficiency through renewable energy sources is of strategic importance.”

“Respons[i]bility with feasibility”

“Any reduction in net GHG (CO<sub>2</sub>equivalent) since 1990 is reasonable by the developed countries within itself. Because most people in all countries are moving towards more comfortable lifestyle. Therefore controlling emissions while keeping pace with improved lifestyle should be considered significant commitment. A modest to strong target is more desirable and can be met through public, industry and gover[nm]ental efforts.”

“I am yet to see any great/observable reduction in GHG emission from Japan even though some mitigation plans have been sketched out to comply with Kyoto Protocol and its a[m]endments. The question is “how much of sacrifice people/country are ready to make” to reduce GHG emission?”

“Fairness is an important issue to continue in international negoti[a]tions on CC.T here seems to a long way ahead. Without knowing specific information about Jap[a]n's position it might no be fair to write.”

“15% compared to 1990”

“450 ppm CO<sub>2</sub>e should be targeted Medium-term greenhouse gas emission reduction targets should be adopted at the Copenhagen meeting (COP15) of the UN Framework Convention on Climate Change at the end of 2009 at least at a level which was suggested by IPCC (25% to 40% by 2020).”

“Equal cost of measures per unit of GDP seams to be the fairest of all the options to achi[e]ve the goals per[e]sented above.”

“Go for the efficient solutions”

“It is imperative that the group of Annex I countries at least meet the minimum -25% target as set out in AR4. Given this constraint, however, it would be unfair to expect all Annex I countries to reduce emissions by the same amount given the various stages of energy efficiency and the marginal abatement costs of improvement. Therefore Option 4 offers scientific responsibility to the targets, whilst still being fair to individual countries, including Japan.”

“It is \*essential\* that the -25 to 40% target as outlined in AR4 is met by Annex I countries.

“AS mention here, I think a great step can be afford if the reducion of energie consumption is done. At first though, I think option 3 is relevant because new equipment will replace the old ones w[h]ich therefore will

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### Appendix 2 Free Answers by Respondents (Option 4)

lead benefit for environment. However, since japan account[s] for only 4% of [th]e ga[s] e[m]i[ss]ion, I think that should be fair to consider option 4.

Nevertheless, I think option 3 combined with 4 is the best realistic option (option 5 and 6 are unrealistic, not any gover[nmen]t would be ready to do so.)"

"medium term target project is inte[r]esting but I think this is not a solution.

Not any study considered the way of life of people. In many countries, the 'king' is the car. It means many infrastructures are done to make people able to use their car. Of course there are con[s]traints on the manufacturer to produce less consuming [gasoline], but still. In my opinion, what would help would be:

1) Increase the price of [gasoline] and diesel for non professional. People takes their car to drive for too short distances (1 - 2 km). I deduce from this that the [gasoline] is not expensive enough. I precise for non professional, because then the prices (for food for example) would increase

2) development of alternative means of transport to the car. For example cycling ways, busses, subway, etc... And make fees in city centers for the cars of non residents (example of London and trondheim (norway)).

3) More proximity services, that people do not have to move to do something. Local supermarket of re[a]sonable sizes, hea[l]ing and health care centers...

4) change equi[p]ments with more efficient machines

5) Carbon taxes on companies

6) Development of new forms of energy: solar and electri[c] (however I believe this is not the best options, because there is a need in lithium and silicium to produce such devices. In one end, no CO2 rejection, but other kind of po[ll]ution...), wind and hydr[au]lic (japan is an island, why to do not use the energy of the sea?)."

"With regard to the fact that Japan is most likely to be strongly affected by an increase of global average temperature by over 2 degree Celsius, Japan is very willing to support the aim of an overall reduction of GHG- Emissions by 25% - 45% in the Annex I countries by 2020. Any Japanese position that would lead to an outcome of under 25% global reduction would not be accepted in and outside of Japan.

I would therefore suggest a Japanese position that opts for a reduction between 8%and 17%, but would rather commit to 17% than to 8% as the cost measured in % of GDP are still relatively low if internal trading and CDM is allowed.

Although Japan is one of the economies with the highest energy efficiency, the average per capita emissions are still high above the global average. Japan should take the historical responsibility as a major emitter of CO2 and commit to a significant reduction. With regard to sustainable development, Japan, who has experienced the importance if industrial development as a major mean of increasing wealth and living standard, will confirm not just of the intergenerational aspect of sustainable development but as well to the international (north-south) aspect of it. They understand the need of developing countries to develop their industries and their refusal to binding caps.

A reduction between 8 and 17 percent only in Japan will not significantly decrease global CO2 emissions but nevertheless increases the overall pressure particularly on the US to reduce their emissions too, which would increase both the likelihood of the conclusion and the overall effectiveness of a post 2012 agreement.

Seen from a mere environmental economists point of view, such a high reduction in Japanese emissions does not make too much sense as the marginal costs of CO2 reduction are comparatively high in Japan. In order to balance this, I would suggest a relatively loose arrangement towards the possibility of reducing emissions abroad."

"From the environmental (and Ukrainian) point of view it would be fair if the cost of emission reduction measures will be based on GDP per capita, not on qual MACs."

"It is a go Appendix 2 Free Answers by Respondents (Option 4 and 5) should borrow this idea."

"I like this approach Option 4, which appears to normalize the e[m]issions by some kind of productivity or efficiency standard. However I realize that it is not possible to equate all productivity values into economic GDP terms. Perhaps a better metric can be derived that communicates ecological sustainability as an index and utilized as the benchmark reference alongside of GDP."

"I do think it is important to be aggressive in setting CO2 emission reduction goals if we are to arrive at 80 percent emissions reductions by 2050, or eventually at carbon-neutral in order to stabilize the climate. Options such as biochar or other carbon fixing should be on the table. National and possibly international Carbon pricing -- whether through taxes or cap and trade schemes -- will be needed in order to drive consumer and business decision making from other than a purely moral standpoint. This could also enable cost effective global progress by developing as well as industrialized countries if done internationally."

## Global Opinion Survey on Japan's GHG Emission Reduction Targets for 2020

### Appendix 2 Free Answers by Respondents (Option 4 and 5)

"There is growing worldwide popular consensus on the need for urgent action to reduce emissions, but politicians are paralyzed by the fears of large scale industrial enterprises. In this situation , there is a need for leadership and creativity. Options for industry include CDM and emissions trading, but until the cost of carbon emissions create serious costs, there will be little incentive for technological and process innovations. Japan, as the leading technology / research economy in Asia, has the potential to establish leadership for the most populous region of the world by setting strong standards and creating incentives for emission innovations. Short term costs will be more than compensated by long-term technological advantages in the rapidly-approaching post-carbon economy."

"Emissions need to be reduced by 25% to 40% by 2020 in order to keep temperature rise below 2 degrees Celsius. The volume of efforts which will be made for reducing emissions will be inversely proportional to the volume/size of damages which will be produced by global climate change. It is up to us to decide if we want to live easy now and leave highly probable catastrophic climatic events to future generations or if can make efforts now to leave a better environment to future generations.

"Japan should be ambitious in setting a target and serious in making efforts to reach this target. For the Kyoto Protocol, Japan demonstrated not to be a responsible nation (6% reduction target from the 1990 level, but in 2005 Japan had actually increased by 7.7%)."

"This aims for the right overall target and spreads the burden between nations in a fair way.

"The idea of a global survey is a master stroke. Hiiiya!"

"Sacrifices or efforts should at least be proportional to the impacts each society is having on the global environment."

"Being a highly technological society, Japan should have many ways of actions for attaining this target."

"Option 4: While I am sure that the US could do much more, I believe that we, as a nation, are becoming more aware of the harm that is being done to the world's environment. I hope that by seeing what other countries are doing to solve pollution, we will be forced into acting. This option seems to provide a very doable starting point for the US."

"I'm very disappointed in my country's lack of participation in the Kyoto Protocol. Option 4 gives the United States a lower level to achieve and may help motivate us to become more cognizant of our responsibilities regarding the reduction of industrial emissions."

### Free Answers to Option 5

"match actions with words"

"the initiatives seem to be expensive, but if it will really help in attaining the objectives, all countries should equally give their best!"

"I feel that countries should take responsibility for their actions when it comes to their impact on the global sphere; therefore, countries should act to protect the global environment as much as they create (according to GDP)."

"Because environmental damage is such an urgent, over-arching issue at this time, affecting a wide range of issues from poverty to economic success, I believe all countries, Japan included, need to take their targets seriously and be willing to denote the necessary resources in order to reach their proposed targets."

"Dear Sir,

I believe that accounting full cost of future impacts, the welfare of Japan is increased by reducing the replacement rate of most energy equipment. Option 4 is not viable because cost / GDP is analytically too weak as an indicator for policy."

"Climate policy should reflect each nation's natural resource endowments, security needs and its institutional strength. Japan's energy imports reductions are in the interest of society as a whole but this requires acting against economic interests of some groups in industry. Japan's institutions such as MITI could offer Japanese industry a 'new deal'.

"This is the minimum that Japan could do to protect the global climate. With so much financial and technological resources at its disposal, Japan should actually be a leader in this area but has given up its role

## Global Opinion Survey on Japan's GHG Emission Reduction Targets for 2020

### Appendix 2 Free Answers by Respondents (Option 5)

to Europe. When it agreed to 1990 as the base year for measuring emissions, equity concerns were as much important as today. It is true that Japan has achieved high levels of efficiency and spent so many resources before the Kyoto Protocol came into force. However, talking about fairness and equity after 18 years does not bode well for the global sustainability.”

“In my view Japan should commit to at least -20% by 2020 (1990 base year), -35 by 2030, and -50% by 2040 and -65% by 2050. This is still less than what IPCC recommends (-25 to 40%) but from the grounds of fairness, the above suggested figures are alright. It will also ensure to keep the global momentum on carbon emission reductions.”

“There is an environmental imperative that OECD countries make their best efforts to significantly reduce GHG and a GDP based metric for comparability is an excellent way to compare levels of effort.”

“Japan has the technical and institutional capability to achieve an aggressive mitigation target in collaboration with other Annex I countries and the aggregate costs of achieving such a target can be lowered significantly if Japan puts in place an emission trading system.”

“The GDP approach seems the most appropriate as it relates wealth to the efforts necessary to reduce emissions. Those that have gained the most pay appropriately.

However this may also be unfair to some countries whose wealth is based on non industrial activities and may force them to take on unreal targets. However its seems appropriate for Japan and the USA which are highly industrialised.”

“I think Japan must move beyond the status quo no matter what happens in order to show leadership.”

“It is in Japan's interests to be as energy independent as possible. By pushing industry (which has so far been reluctant to cut emissions or create efficiency voluntarily) to ensure renewable energy is a big part of Japan's future is best for the environment as well as strategically as an energy importer. Not only is it Japan's responsibility to set stringent targets as a developed country it would be foolish not to be a leader in the technological revolution associated with changed energy usage and efficiency that is taking place.”

“Japan's Kyoto reduction target is 6% below 1990 level. Japan's post kyoto target should be stronger than kyoto target and consider the IPCC 4th report's suggestion. The range of Option 4 is so wide. Therefore I choose option 5”

“Japan's high efficiency level is not the cause of conservative reaction to reduce the GHGs. Japan should be the leading co[u]ntry to reduce GHGs.”

“Micronesia advocates reduction as proposed by the IPCC...this is understood as our islands are small and stand to lose a lot from sea level rise, intense storms, coral bleaching and other effects of climate change. Having said this, I want to point out that everyone on this planet will be affected by climate change and everyone should try hardest to combat the emission of GHGs, for the sake of our home - Earth.

Option five seems like a reasonable activity that rich countries could undertake while being mindful of the implications to their economy and the welfare of their people. However, the reduction target might not be enough to abate the expected disasters from climate change. The costs of mitigation measures would certainly be higher if we don't start pooling our resources together to combat this threat”

“Japan, like other developed countries, will not be immune to effects of climate change. We are all in this together and must cooperate fully to combat the threat of climate change. To do otherwise would be a gross negligence of our duties and obligations to future generations.”

“Government regulation is essential to ensure (environmental) compliance and change in societal behavior on a mass scale. To address existing infrastructure and buildings, legislation and incentives for upgrading of equipment is also crucial.”

“Japan's Eco-city model should be national replicated with sets targets for all cities to participate.”

“Japan is a major trading power globally. So it should significant commitments as Europe and particularly the UK has.”

“Because option 5 or more will have the cost of getting rid of what we have now, and this disposal might negatively affect the enviro[nm]ent and affect all the efforts done. Therefore, while giving more time to think how to dispose what we already[y] have and replace it with new equipments, option 5 is best, I think.”

“Japan's target maybe used as an incentive for other countries to move on; that is why, Japan should take the lead in protecting the environment.”

## Global Opinion Survey on Japan's GHG Emission Reduction Targets for 2020

### Appendix 2 Free Answers by Respondents (Option 5)

"Japan is the 'home' of the Kyoto Protocol. If the country that proposed it is not prepared to go beyond the status quo, who will have the moral and political leadership. Second, the costs of doing nothing or the cost of doing not enough as outlined in the Stern Report should be the main guidance, more even than the IPCC."

"The key is to compare the targets with the cost of non-action instead of the cost to industry today. At a time of crisis it will be easier to push through new technologies and innovations."

"I think it is important both for EU and Japan to set ambitious goals for reductions."

"It is important to think new and innovative regarding energy production and consumption in the near future."

"This is the most interesting option for Japan in terms of climate competitiveness because it will enable Japanese companies to establish / maintain leadership in low-carbon technologies, goods and services."

"Excellent initiative by JFS to encourage international debate on national targets. Exactly what is needed. NGOs in other countries should follow your initiative, and Japanese policy-makers should be encouraged to pay attention to the feedback, since Japan is considered a climate leader by many people in Europe."

"Because it will affect great numbers of efficient equipment"

"actually, Japan should do some of the voluntary program that have done while new efficient equipment are built"

"Explanation of Option 4 seems reasonable; however, the target range is too wide (-8% to -17%). I, therefore chose Option 5.

Global warming is urgent issue; therefore, now is not the time to argue other's responsibility and largest common divisor. We have to make efforts as much as possible.

Industrialized countries have responsibility of current global warming while developing countries will have also responsibility in near future. To persuade developing countries to prevent worst scenario in near future, industrialized countries must take great action first.

It is obvious that CO2 reduction will lead economic sustainability according to Stern Review."

"To achieve aggressive target will bring economical and political superiority in global society. It is the time to show Japan's power by peaceful and constructive means.

I believe that we have much room to make efforts to reduce CO2 emission in our daily life and business life. Despite some movement such as warm and cool biz or team -6%, most place and most people don't care the environment and still seek comfortable or luxury things. Economic and political regulation have to be established to penalize activities with environmental burden, to promote environmental conscious activities.

Japanese policy such as 1,000 yen rule for high way use in holidays / Isahaya public works / Public work plan of Awase higata are terrible, shameful policy. Japanese politician must be aware of environmental problem which they are making."

"All countries will have same impact on GDP and result will be substantial."

"Japan has the possibilities to reduce the traffic emissions using new electric car technology, CCS developing in last years and promoting public transport, railway transport and nuclear power. On the same time it will be excellent occasion to change the Japanese invention in the industry: delivery just in time, which is the main reason for the transfer of good transport from railway on the roads in almost all industrialized countries."

"

"Japan's current efforts are insufficient as evidenced by the 2005 rise in Japan's contributory percentage of global emissions. Japan has an opportunity to be a global leader in all aspects of environmental policy, especially in terms of emissions. As a former resident of Japan I was continually heartbroken to witness myriad forms of pollution in the country home to the Kyoto Protocol. While the current global economic crisis has hit Japan particularly hard, tough measures are needed now to give Japan the best possible advantage in the future regarding preservation of its natural resources, efficient factories and machinery contained therein, especially as conventional energy prices are sure to rise, and provide necessary incentive to business and industry for a new wave of technological innovation and advancement. Japan does so many things right when it comes to public transportation, space maximization, and cutting-edge technology. There is absolutely no excuse for it to ignore a prime opportunity to once again be a global leader in what will surely be the most important and powerful trend - green efficiency and green industry."

"To be effective, a GHG reduction program must target the parameter that is relevant for climate. That is the

## Global Opinion Survey on Japan's GHG Emission Reduction Targets for 2020

### Appendix 2 Free Answers by Respondents (Option 5)

concentration of GHG. Not emissions per GDP, or emissions per capita, reductions compared to historic values.”

“All nations must be bold in their actions regarding climate protection. Compromises are essential in politics, but will fail if applied to scientific questions.”

“I want countries to aim high as the dangers are so great. New technologies have arrived- see Lanza tech, cleaning gases from factory chimneys and producing ethanol. This sort of things could be a win win solution for many industries, and the country could aim for even greater reductions of pollution.”

“We buy many vehicles from Japan and look to Japan for leadership in eco cars.”

“Europe agreed to decrease its reduction target from -20%(1990 level) to -30% if there is an international agreement. This goes well together with the numbers from option 4. However, you mention an actual measure in option 5 (replacement of old equipment) which is absolutely necessary to reach a low-Carbon stabilization scenario. Japan has a great instrument to improve energy efficiency standards - the Top Runner Programme, which is internationally envied by most energy efficiency promoters. If Japan would furthermore devise a new policy instrument to stimulate replacement of old, inefficient equipment (e.g., through subsidized gov't loans), it could greatly boost its energy efficiency while also stimulating its economy.”

“We absolutely have to reach the -25% reduction, else it will be so much more expensive and difficult to reach the necessary reductions afterwards to stabilize the climate within an acceptable temperature increase.”

“With the Japan Government Policy commitments, supported by people's [a]wareness and goodwill, coupled by NGOs action among the people, there are all possibilities that Japan is on the way of leading the World in emissions reduction. Take this noble duty so as to save our Planet Earth.”

“Ways and means should be sought by the international community to make United States, the biggest pol[I]uter in the World, redouble her efforts in e[m]issions reduction, to save our Planet Earth.”

“This is a pressing issue and option 5 sets st[r]ict but achievable guidelines. Good luck.”

“Just look what a region like Europe is doing”

“Why should Japan not be a kind of primus of the world and select the most advanced options? This could prevent the collapse of the whole system.”

“I recommend Option 5 as an achievable option that will still be difficult, but it will stretch Japan, and any other country that follow such a path in the right direction that will demand that Japan become more competitive and resilient. Option 6 may be too demanding, so the question is to find a tough challenge that is do-able. My underlying reasons are:

Fairness and competitiveness should not be separated. They can be achieved in parallel and may even reinforce one another. First, developing nations must leap over traditional development patterns that rely on carbon to much more sustainable trajectories. They need to take the Green Short-cut. Developed countries can reveal ways to attain such sustainable trajectories by demonstrating how development (NOT growth) can be achieved with vastly reduced resource use while maintaining elegant and comfortable livelihoods. If developed nations use their wealth to pioneer low resource intensity technologies AND invest in the alternative kinds of capital (human, social, built, natural) required to make the entire system work, then the path is clear for developing nations to follow. And they can do so in special partnerships with the developing world. The approach must be holistic. Without compliance by India, China and Brazil, the planet will be dragged into dangerous climate scenarios, so we absolutely must join them in a common cause. Second reason, green technology and the livelihood evolution needed to really make a sustainable society IS the future. Whoever masters such technologies will be a strong market player, with the world coming to buy one's products. Whichever society masters the elegant simplicity of sustainability, complete with the richness of culture and nature, will be resilient and in control of its own future. It will also attract the best and brightest from around the world, reinforcing its good initiatives with very intelligent follow-up development. There is no way to be more competitive and resilient in the long run than the green path, and we ought to enjoy the ride along the way.”

“Japan is world famous for elegance and functional simplicity in design - from tools, to clothes, to houses. This history of centuries of living and improving life in such a manner creates a potential that Japan can use in pioneering green futures. It is woven into the paradigms and mental models many people in Japan have, so it is a rich soil in which to grow green ways of living and doing.”

“THE REDUCTION OF GHG ACCORDING TO GDP

## Global Opinion Survey on Japan's GHG Emission Reduction Targets for 2020

### Appendix 2 Free Answers by Respondents (Option 5 and 6)

Medium term to initiative for reduction of GHG"

"IPCC targets over 1990 is -25%, the developed countries, where Japan belongs, will look for emission reductions of -25% this also takes into account of option 3 i.e. to increase the efficiency of new equipment and replace existing equipment. Option 6 was going to be good but for a big world economic power like Japan to reduce production could be bad for the world. So I would go for option 5."

"Climate change is an important issue, we can't wait anymore. Especially Annex I countries, but also developing countries, have to act now. Highly efficiency for new equipment and improvement/replacement of existing equipment is necessary to really reduce GHG emissions. This is needed not only from Japan, but also from the EU Countries, USA and other Annex I countries."

"Another important action: Change of the energy system from fossil to renewables."

### Free Answers to Option 6

"I do not believe that the notion that global warming and climate change (GW/CC) are caused by CO2 and other GHGs has yet been PROVEN. GW is occurring but there are other possible causes (e.g. changes in the state of the sun). HOWEVER fossil resources ARE slowly depleting and will eventually become unusable (even if some still remain in the ground). We need to change our lifestyles towards a reduced dependence on fossil energy resources before depletion makes it impossible to sustain the current lifestyle while the change to a new one has not yet begun (a socio-economic crash). IF then it is proven that it is CO2 and other GHGs that are the main cause of GW/CC, then we will have done ourselves a favour."

"IF the 'ultimate' issue is lifestyle change, then discussions about 'eco' this and 'top-runner' that are not useful because they suggest that we do not actually have to change our lifestyles. An example is cars: There is no such thing as an 'eco-car'. Cars themselves are not 'eco'. If we require a lifestyle change, it means that we have to (for example) decide to abolish private cars and improve public transport systems OR design lifestyles so that people can get to where they need to go on foot or by bicycle. It would also mean, for example, that we reduce the transport and processing of food to the minimum necessary. Locally grown food using 'organic' production methods, not processed or packaged beyond the minimum necessary would help to reduce our dependence on fossil energy resources and reduce CO2 emissions enormously. These are the kinds of things we have to start thinking about now and work on realizing over the next ten years to 2020. Thanks for the opportunity to express my opinion."

"As a scientist I understand the necessity to drastically reduce CO2e gasses, both in the short and long term, if we are to avoid the possibility of 'the 6th great extinction'. CO2e levels are already far too high (thanks to inaction by all countries, not only Japan) to allow for slow reductions. It's time to act, and with haste, if we wish to give our children a future."

"Japan is a "business first" country. I predict Aso-san will opt for the weakest target."

"the target of -25% compared to 1990 is a bottomline given the occurring risks and the tremendous cost of aftermaths. But other countries should have various targets (not uniform between A1 countries), with higher level in Europe (30-35%) and in the US (>40% because of their potential for increased efficiency)... as well as big developing economies."

"diplomatically, all the money put on the table by Japan (or pretended to be put on the table like the 10B\$ in forestry... definitely grants are not loans...) to support developing countries won't compensate ridiculously low and offending targets of emission reductions"

"Progress during the first limitation period has not been satisfactory across the world. Time is running out and hard options have become necessity. The 6th Option is applicable to all Annex countries."

"Non Annex countries may not be obliged to commit reduction. But they need to come on board to make serious efforts to reduce emission drastically at least in new ventures. Technological and financial support to these countries need to be liberally extended. With all seriousness, targets are likely to miss, hence aim for the best. Option 6 provides for around the world same efforts. Hence all countries would be equally affected in committing extra cost, reduction of economic activity, if any."

"Something has to be done in a meaningful and 30 % reduction isn't enough, it should be around 75 %."

"There is a great deal of talk and many many little projects but almost nothing major targets or tough enough laws that are being enforced. Action has to be taken now, there has been more than enough discussion."

## Global Opinion Survey on Japan's GHG Emission Reduction Targets for 2020

### Appendix 2 Free Answers by Respondents (Option 6)

"The IPCC range for all industrial country targets is -25-40% to have a fighting chance of staying below 2C. Japan's target should at least be within that range."

"New scientific findings are showing that climate change is moving faster and more dangerously than previously thought, even in the IPCC's AR4; hence actions by the most wealthy, high emitting nations to limit climate change must be much more ambitious than is reflected in the targets currently proposed or under discussion. Japan, as one of the world's major economy, has a responsibility and obligation to lead the fight against climate change, developing new technologies that will reduce emissions, lower expenditure on oil, gas and coal, create new jobs, and spur the global economy out of recession. Weak targets from Japan will create a domino effect as other developed countries, for example, my own, Australia, lower their level of ambition. Japan is a global leader in many areas; it must take this leadership into the field of climate change."

"I believe that the discussion around Japan's midterm targets has been detrimentally predominated by a focus on the costs of action against climate change. In fact, setting investments for greener technologies can create new industries, jobs and growth, which is exactly what we need in a time of global recession. Admittedly, there will be some extra costs, but ambitious action against climate change will not lead to crippling burdens on industry: the market is creative and adaptable, and can cope with a price on carbon. And many studies have shown, that the costs of climate change will be much higher than the costs of acting now against it."

"The climate crisis is critical and even the most stringent option presented in this survey is insufficient. Japan needs to lead by reducing quickly and transferring technologies to developing countries to allow them to follow suit."

"Norway aim at being carbon neutral by 2030. Japan should try the same."

"The level of CO<sub>2</sub> in atmosphere is now as high as it was 55 millions years ago when the earth was a tropical planet and the level of the seas was 80 meters higher than today (see Lester Brown – [Plan B]). Therefore it is not only urgent to stop CO<sub>2</sub> production but to think how to reduce CO<sub>2</sub> in at[o]mostphere. This won't be possible without stopping totally extraction of fossi[l] energy (fuel, natural gas and coal). This is a wor[ld]wide challenge and all countries, mainly the developed countries has to agree on it."

"It is a good initiative to invite every people every where in giving his/her opin[i]on on these objectives and discover how to do it. So your initiative is very good."

"Japan is the world's fourth largest emitter of carbon dioxide. If the world is going to reduce greenhouse gas emissions by 80 to 95 percent by 2050 and thereby avoid the worst impacts of climate change--including catastrophic drought, desertification, sea level rise, and species loss--serious emissions cuts must start now."

"Strong mid-term emissions cuts are necessary if the world is to avoid climate tipping points."

"I believe that setting stringent targets has the most potential to minimize climate change, the best long-term value (prevention vs. adaptation), and can encourage the type of technological innovation that Japan is known for."

"Other industrialized countries are moving to strong targets, even the United States. The science is clear that even a 40% reduction by 2020 only gives us about a 50% chance of avoiding dangerously accelerating climate change. We need strong targets. The youth generation will still be here in 2050, when emissions reductions should mostly be accomplished. What kind of world will you leave us?"

"There is limited time to begin reducing emissions to avoid accelerated climate change, climate refugees, and massive species extinctions. Strong targets, both medium- and long-term, are needed now. Help lead the world."

"We need to prevent dangerous climate change. With current temperature rise of 0.8 degree Celsius we already see the Arctic and Antarctic ice sheet melting. Current emissions pathway will lead our children and grandchildren to be faced with temperature rise of 4 degree Celsius or more. Deep emission reductions are needed, by all countries - developed and developing - but developed countries must lead the way as indicated by the IPCC AR4. Japan's reductions by 2020, as compared to 1990, must at least be in the 25-40% ran[g]e of IPCC AR4 (for staying around 2-2.4 degree Celsius)."

"Japan has taken the lead by having high energy efficien[c]y, it should now also take the lead in developing low-carbon pathways. It has the capacity to do. It can be a leading nation, both with regard to technology development as changing lifestyles."

## Global Opinion Survey on Japan's GHG Emission Reduction Targets for 2020

### Appendix 2 Free Answers by Respondents (Option 6)

"Japan has the means to achieve this target. It is really about time that Japan provide an example in leadership. If Japan announces this option as its target, China and India would not want to be left out. Japan will also stand to gain economically, in addition to its moral gains, by developing new technologies to be used at home and transferred abroad."

"Japan is perhaps in a better position than both the EU and the US, to achieve higher reductions than both by 2020. More energy/capita from nuclear power; excellent public transportation system with wider coverage than many countries, more disciplined population than most countries and unparalleled experience in technology adaptation(given its historical experience in adapting and recasting western technologies as it started its industrial revolutions before and after WWII."

"I think that the risk of catastrophic climate change is so serious and the needed response is so urgent that, even in our current economic climate, we need deep cuts on GHG emissions."

"Rather than looking around and gauging action based on the weak efforts of other countries, it would be nice to see Japan show leadership in making deep cuts. We need to 'think outside the box.'

"It is only correct if countries with high emissions will have to reduce high numbers of CO2 emissions (in absolute terms) by setting a 25% goal. This goal should be set on a 'per capita basis' as some countries with very few inhabitants could emit large numbers of CO2 but would still be realized as comparatively low emitting country in absolute numbers. A relative measurement is needed. Therefore a 25% goal for all countries without any exception is the only economic measure. Also, emissions trading should be employed everywhere as this is the (on today's basis) best way to internalize external costs!"

"A GDP-based goal is highly inefficient and unfair to my mind as countries which produce e.g. (as an extreme example) only wind power plants very successfully and is using only them would be charged with unjustly high costs as its GDP would rise tremendously by producing very environmental friendly things."

"All industrialised countries have to go ahead and make the biggest effort for reducing their emissions. The target of the IPCC of 25% reduction is supported by scientific data and if we want to avoid huge costs for adaptation and high costs (and lives) due to catastrophic climate change we should invest in mitigation now. The 25% should therefore count for all industrialised countries, including Japan, but also including Germany, the USA, and the many others."

"Increasing efficiency is good, avoiding emissions through changing life style and consumption is better."

"The science is clear, we know what has to be done. Even the -25% target isn't enough, we should be aiming for -40%. But considering the options that Japan has layed out, of course -25% is the minimum goal to reach for."

"The Swedish government has decided to lower emissions with 40% from 1990 levels in the sectors outside of the ETS (the parts that we as a EU Nation can control ourselves). The political opposition wants to go even further.

It is my hope that Japan will take [its] responsibility and join other industrialized nations like Sweden and do what is required and honorable towards the coming world generations."

"25% down from 1990 levels is a minimum to achieve the -50% to -60% goal by 2050. The first 25% reduction is the easy part!!!"

"Japan's lead in hybrid vehicles is to be congratulated (Yes, I have a Honda Civic Hybrid!!!!) and this lead should be pursued in preference to electric vehicles which are worse than useless in countries where most of the electricity is generated from fossil fuels."

"Even with a 25% reduction, Japan's per capita emissions in 2020 will still be above the 1990 world average."

"Even if Japan halves its emissions by 2020 (and the rest of the world matches its per capita emissions) global emissions in 2020 will be greater than they were in 1990."

"to avoid the 2 degree increase in temperature, substantial efforts should be made by developed countries. In this respect reduction target should be at least 25 % across the board. this option seems to be the safe side for the sake of preserving life on [the] earth."

"This is a very good initiative to share concerns and hope with other people.

We have only one living planet and we must be united to combat global change."

## Global Opinion Survey on Japan's GHG Emission Reduction Targets for 2020

### Appendix 2 Free Answers by Respondents (Option 6)

"We are facing a global emergency. All industrialised countries must take on strong and urgent emissions reduction targets. 2-degrees is too high anyway. It is critical that Japan plays a leading role."

"It is time for leadership. Japan can take the lead in the transformation to the low-carbon economy."  
"EU has said -30% if other actors join in. This is not mentioned in the text above."

"The industrialised country targets have to be consistent with IPPC range, or the whole effort could be a useless exercise. EU has already committed to delivering -30% compared to 1990 in the event of comparable efforts in other developed countries, and should commit to do more. The 25-40% collective reduction range for industrialised countries, combined with 15-30% reductions from baseline scenario for developing countries gives appr. 50:50 chance of maintaining warming to +2 degree Celsius. Meanwhile science on climate sensitivity is leading to conclusion that this might already constitute dangerous interference. Given the nonlinear response of nature, doing a some but not enough might well mean wasted efforts if significant feedback mechanisms are set in motion."

"The IPPC AR4 reduction ranges for industrialised countries and developing countries are not alternatives but need both to be realised. For this to be feasible industrialised countries must be prepared to finance large part of the 15-30% reductions necessary in developing world, IN ADDITION to domestic reduction targets. Exporting industrialised country targets further to developing countries is not fair or feasible."

"Our comparable effort study (PBL , the Netherlands), see www.pbl.nl/en (and climate-l mail), so similar reduction target of -20 % between -30% below 1990 levels"

"Our comparable effort study (PBL , the Netherlands), see www.pbl.nl/en (and climate-l mail), so similar reduction target of -20 % between -30% below 1990 levels"

"Rich nations must cut GHG emissions by 90% by 2030 in order to gain the chance of keeping the temperature rise below 2 degrees C above pre-industrial temperatures. In order to achieve this each rich nation must choose the highest aim. Japan will only gain from such a policy; it will only lose from any other."

"It is better to be a leader than a loser. The Japanese people can do it if they understand the alternative."

"A lot of potential reductions can be still obtained by upgrading infrastructure and production facilities in the energy generation sector. Further introduction of hybrids and electric cars increases the achievability of reductions in the transportation sector. Finally, Japan, in spite of great technological potential, has not introduced significant levels of renewables in its energy mix. These are all sources of reduction potential that your country's leadership has been unwilling to seriously contemplate."

"-25% relative to 1990 is an absolute minimum. 450 ppm is not sustainable in the long run. See Hansen et al. (2008).

Japan has promised to put a lot of money into technology transfers. Given that China is in its own back yard, it would be nice to see concrete developments in that direction."

"I cast my vote for the most stringent option in view of the seriousness of the impending climate crisis and the realization that stringent measures will have an immediate cost on output and prices but major long-term benefits for sustainable growth, jobs and R&D."

"It is high time Japan makes use of its tremendous R&D strength to lead international efforts to reduce GHG emissions."

"- IPCC calls for aggregate of -25-40% reductions of annex-1 countries till 2020 (base year 1990) in order to reach 2C target (see by many as threshold).

- Recent scientific findings show that impact of CC is even worse than predicted, therefore -25-40% may

"Japan should show global leadership

[T]he US & China have moved, Japan should follow

Ambitious targets by Japan will help other governments To undertake more Ambitious targets"

"NIES scenarios show how to cut Japan's 2050 CO2 emissions by 70% (vs 1990) at a cost equivalent to 0.1% of 2050 GDP. (Komiyama Hiroshi-sensei, President to [Tokyo University], agrees Japan can advantageously save about two-thirds of the energy now used.) That rate of improvement (3% a year compounded) is equivalent, if linear, to ~26% by 2020, so it is very close to Option 6. The NIES analysis is excellent but technically conservative because it does not yet include many modern efficiency opportunities, especially from integrative design. Japan also has more renewable energy opportunities than any other major industrial country.

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Moreover, Japan is rightly famous for being able, once a consensus has formed, to make big changes faster than any other country. Japan's unique skill at kaizen makes Japan the right country to lead the global leapfrog to advanced energy efficiency: after all, frogs do leap in Japan (furu ike ya / kawazu tobikomu / mizu no oto)! If Japan innovates, invests, and implements -- at home and in nearby countries -- to the full extent of the Japanese people's extraordinary abilities, we will all enjoy a richer, fairer, safer, and cooler world, and Japan will have fulfilled its highest historic purpose."

"Japan, having saved energy so inspiringly in the 1970s and early 1980s, then slowed down; the pace of saving energy per yen of GDP averaged only 0.7 per year from 1977 to 2004. The government's New National Energy Strategy calls for doubling that pace, and the National Institute of Environmental Studies' scenarios would speed it a little further, though nowhere near, say, the U.S. rate. But since 1990, household electricity use per person rose 45%; air conditioners cooling inefficient buildings continue to displace traditional architecture, attitudes, and customs; and in Japan over the past 30 years, the average person's total electricity use doubled, while in California it stayed flat (while per-capita real income rose 79%). The difference is that California had excellent appliance and building efficiency standards, and rewarded its electric companies for cutting your bill, not for selling you more electricity. As a result, the Japanese building stock is quite surprisingly inefficient, the average person uses more electricity in Japan than in California or New York, and that use is growing as fast as in Texas. Similarly, the average Japanese light-duty vehicle has become nearly as inefficient as its American counterpart. Japan has some of the world's most efficient factories, but also many of quite ordinary or mediocre efficiency. The biggest obstacle to doubling and tripling Japan's current energy efficiency is the attitude that since Japan is already the most energy-efficiency country (by some aggregate measures), little more can be done. Since when do Japan's great companies sit back and say, 'We're the best, so let's stop getting better'? Japan taught the world how to do much better than that. Japan's efficiency-and-renewables revolution is only just beginning."

"Japan has been a world leader in making more efficient use of fossil fuels. I own a Toyota Prius which is a prime example of what Japan can do about reducing greenhouse gas emissions. Japan has a long tradition of efficient use of everything, and it seems only right that Japan should be setting an example for the rest of the world in how to use fossil fuels in the most efficient manner possible. So it seems to me that it is only appropriate that Japan should set its reduction targets to be at least as high as the highest targets being proposed by other nations. A revolutionary new economic age is coming and it will be based on ever-reducing levels of fossil fuel consumption. Those nations that are in the lead of this economic revolution will not only do well in the 21st century, but will be helping the rest of the world avoid the catastrophe of climate change. I cannot imagine Japan not being one of those leading nations."

"I love my Prius! :)"

"Japan can lead other Asian countries, and targets across the board will strengthen every country's efforts. With Japan leading in emissions reduction targets - that will also open doors for Japan to lead in technology changes to reduce emissions and adapt to climate change effects."

"See comments above. Japan's NGOs are very knowledgeable, and partnerships within Japan's society for emissions reductions could be strong examples for other count[ri]es."

"There is no other option than to show commitment and leadership of industrialised countries in order to have an impact on our future."

"Keep up with the good work!"

"[S]afe' atmospheric levels of CO<sub>2</sub> are in fact closer to 350ppm than 450ppm, therefore we as a planet will need to cut back on carbon emissions stringently, as soon as possible. With heavy manufacturing, Japan could set an example to other heavy polluting countries like Australia."

"Japan [has] some of the best technology in the world and is capable of tackling the challenges the entire planet must address in order to reduce the effects of Global Warming. Japan is capable of developing solutions for their own industries and once developed will put the country in a strong position to export those technologies and services to other parts of the world."

"Don't let the old industries that have wed themselves to fossil fuels impede new industries that are needed world wide to solve the problems of the 21st century."

"Option 6 is the only option where a price on carbon is mentioned. I don't really have a strong opinion about the level of Japan's reduction, since what counts is the world's collective commitment, the rest is just distribution of burdens/income. The single most important measure to reduce GHG emissions globally is the

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introduction of a price to pollute. This is far more effective than subsidies and other so-called ‘incentive schemes’.

“With Japans demographics, it should probably not be a huge cost to be ambitious, if policies are carried out in a cost-effective way (carbon tax or ETS).

“The study release by the researchers at MIT show that the risk we are running by not doing enough is very high. We need to reduce more than what is shown in Option 6 to reduce the risk of warming the planet by 5C or more.

“Please visit this web site for the MIT risk report. <http://globalchange.mit.edu/resources/gamble/>

“Massive problems are solved by massive action.”

“Jap[a]n should focus on ‘green’ technology and it will prosper in the end.”

“Early action towards deep reduction targets should be the only option for developed and developing countries.”

“Japan, a global leader in innovative technologies in several sectors, including auto-manufacturing and power, should further invest on green technologies in order to remain a global leader.”

“This is the only option that is in line with measures identified as necessary [by] IPCC to keep climate change at tolerable levels.”

“Carbon pricing will be essential, if we are to attain long term (2050) targets.”

“This is a great time to optimize this maximum position, re[-]tool, and re[-]educate the workers ,planners and owners. Japan leads the Industrilized world as the holder of Kyoto Protoc[o]l, car innovations, duel fuels, battery and electrics for 'exports '...but does not pursue the same policies with the same vigor within Japan. Slow exer[cis]e of planning, lack of transportation imagination ( bikes vs cars )lack of duel vehicles ,air cars etc. (not electric which rely on Nuc[le]ar energy This economic slowdown presents the only opportunity to forge ahead to become the leader . There IS a time limit and there is a limit to the damage done to the earth before we tru[I]y all suffer .

Japan needs to 'think green' but also 'Think Big ' with a time table that is doable and not to be held 'hostage' to vested con[]sumer indust[r]ies that make up the 'carbon rust' ( sabi) belt of Japan. Do wait for America /Obama or anyone else . Japanese people need a leader with the guts to lead. Mr. Aso is what?”

“Medium term target are a cop out”

“There is no time anymore to wait.

Your approach is reasonable”.

“Science, equity, justice and historical contribution.”

“The emissions should be measurable, verifiable, reportable by credible independent agencies on quarterly and annual basis. 75% of emission should be based on reduction within the country and some of the rest can come from buying credits elsewhere, from genuine reductions elsewhere, not like the fraudulent claims currently being made in terms of CDM etc.”

“This is the only option which sits within the IPCC range for stabilising emissions at 450ppm CO2.

It is vital that OECD countries do their best to implement emissions cuts of this magnitude. My experience of Japanese industry is that they are very conservative and tend to underestimate what could be done to further reduce emissions (e.g. by expanding renewable energy).”

“This says it all: ‘IPCC 450 ppm CO2 target -25% to -40% (Annex I region)’.

Even that may not be enough.”

“Japan does not owe the world as much as the USA does, but Japan's emissions are and have been large.”

“Without this level of commitment, our global climate and thus our planet, the risk of catastrophic climatic events will be inescapable. More over this level of commitment from Japan will help my country to follow in those footsteps.”

“The rate of expansion of the mechanized/industrialized fossil fuel and non-renewable energy based sectors has been at the forefront of pushing over-consumption in the west as well as other developing nations and may actually help to curb such appetites.”

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"The Earth can not wait. Japan should take a lead"

"Japan has to stay an example...  
...and should become a standard for the whole world!"

"The climate crisis threatens the stability not only of our environment, but our economy, and our entire planet. As an industrialized country, Japan must lead the way in cutting its emissions at least 40% below 1990 levels by 2020 if we are to reduce CO2 emissions to the safe upper limit in our atmosphere, 350 parts per million." "Cutting greenhouse gas emissions is a tremendous economic opportunity. As a highly technological and educated country, Japan could be a global leader in the new, clean energy economy. A full fledged transition to clean energy is exactly what Japan needs to stimulate its economy and regain its economic leadership in Asia and around the world. The stronger a mid-term target the government sets, the faster Japan can move towards this clean energy future, and the faster the economy will grow."

"Small Island Developing States will be at risk from disappearing as viable sovereign nations unless strong mitigation measures are taken. The IPCC best science would set such a target for Annex 1 as a whole to at least 45% reduction from 1990 levels by 2020."

"Japan needs to show leadership having been the host for the Kyoto Conference. That leadership seems to be lacking right now."

"Option 6 is what the science demands."

"As an American, I would like to see our countries take the lead in making dramatic emissions cuts in the short-term. I will be disappointed in Japan if they don't lead the way with my country."

"We must do as much as we can as fast as we can to reduce global warming emissions.  
Japan needs to show leadership in this area and force the US to follow."

"This is the only option really consistent with the IPCC analysis to keep global temperature rise below 2 degree Celsius. In the long term Japan will gain a competitive advantage in a global economy that takes the lowest-carbon pathway, as it has efficient infrastructure, a mild climate, and no fossil fuel reserves. (note: option 4 equal marginal costs is not a solid basis for agreeing targets, as each country's economists can make up their own convenient costs projections)."

"this is a good initiative, but results could be more balanced if participants had to suggest reductions for all major blocks (including europe, us, china)"

"Scientific projections for climate change do require extra efforts from all nations, but initially from the developed world. In particular, the adoption of an effective climate change regime demands for clear leadership of developed countries in terms of reducing their emissions. Developing countries would participate, as the future major emitters, when a fair agreement is reached. Even though it seems to be a tough decision to go on with a higher assumption of emission reductions, there is still the chance to count on different measures, such as the use of carbon markets, to balance the amount of domestic and abroad reductions."

"If other developed countries such as the members of the EU, Australia, the US have showed openness[s] for talking about mid-term targets, Japan is obliged to present ambitious targets for the sake of mankind."

"Japan consumes a huge amount of important fossi[!] energies.

Therefore It is a big polluting country, even it is carrying out some environmental actions. Japan participates very significantly to global warming , through its GHG emissions in the atmosphere."

"Japan has pledged to reduce its GHG emissions by 30%, by 2020.

As an international NGO in Morocco ..., we regret that Japan is al[i]gning its decisions on those of the USA, particularly on Bush's decisions to reject GHG reduction.

We do hope that with President Obama administration, Japan will come back to the reason, and accept to stick to Kyoto Protocol[!] and [the] Bali decisions."

"[We] regrets that Japan's greenhouse gas emissions rose to a record high in 2007, putting the world's fifth-largest carbon dioxide producer at risk to fail its Kyoto target over the next four years.

We are ready to discuss the issue with the Jap[a]nese Government, in Tokyo, an[d] with Jap[an]ese NGOs, to press Jap[a]nese Government stopping the rise of its GHG emissions, even if the Jap[a]nese industries are

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against any GHG reduction.

It is a world matter! No country has the right to continue causing climate change on Earth.

We encourage Japan to not always align its decisions on the USA. We would like to see Japan reducing its GHG emissions by 30%, by 2020. And developing a big effort to encourage China and India, as well as developing nations achieve economic growth and tackle pollution and waste management through a 'o-benefits approach'

[We are] ready to engage discussions with the Jap[a]nese side on these vital issues."

"More reduction the better for the world. As a host [c]ountry of Kyoto Protocol, Japan has obligation to lead the effort. Will Option 6 crush Japanese economy? I don't think so. On the other hand, 'larger reduction' will stimulate technology development, will help national economy."

"Simply because this is the very least needed if our children and grandchildren and humanity are to have a chance on this planet."

"I get the impression that the government of Japan is doing little more than cosmetic appr[oa]ches to give the impression it is concerned. A shame, since it could really fuel its economy on new environment-friendly technology if it set its mind to it. Ambitious targets would drive this development. See what happened when Japan stopped backing solar properly. It needs to do the opposite, and to be much bolder."

"We must be very serious about tackling global warming and show our strong commitment on reducing the greenhouse gas emissions to the world.

Being surrounded by seas, our country is extre[me]ly vulnerable to ever rising sea levels derived from melting ices due to global warming. Our own existence as a country is at risk.

This climate change requires global efforts to reverse the trend. If Japan can reduce the CO2 emissions at the rate in Option 6, it would be a good model for other countries."

"Japan should show a strong leadership on solving the global warming. We need to encourage other countries to adopt stringent reduction targets as well."

"Japan's efforts to reach its 2008-2012 target have been largely cosmetic, with Keidanren and other groupings of Japanese corporations effectively blocking any meaningful attempts to reach the -6% target. While it is true that Japan has been a frontrunner in energy efficient technology, in some areas there is massive room for improvement: i) renewable electricity, which provides only a tiny share of Japan's power generation; ii) commercial and domestic energy consumption - emissions from these sources have soared in the past 5-10 years, but little attention is paid to this, with demand side efficiency improvement seen as the only answer - little attention is paid to issues such as building regulations to promote use of natural light / heat / cooling, which could lead to far more emission reductions than simply upgrading your aircon; iii) the transport sector has also seen significant increases, and insufficient incentives are given to encourage greater use of public transport - recent stimulus package included a massive reduction in tolls on highways, which will only bring more people off the trains and onto the road."

"Japan needs to take a far more proactive stance to emission reduction, and start looking at the opportunities rather than continually seeing threats. Japanese policy should pay more attention to the genuine desire of Japanese citizens to contribute to the threat of global warning, and not be driven purely by the short term agenda of Japanese corporations. The media also needs to play a role, and be more questioning of corporations' 'emission offsetting' measures or 'eco-initiatives', which, when closely scrutinised, frequently turn out to be little more than window-dressing."

"Time is running out the earli[e]r action is taken the better"

"We must reduce emissions as fast as possible otherwise the mere existence of man on this planet may be at stake."

"This option best matches need for reductions with capacity for change. It is not unreasonable in an efficient country such as Japan to ensure that most new and existing equipment is highly efficient and to be required to set a price for carbon"

"There is no choice but to take bold decisions to drastically cut emissions. If, as a world, we do not do that then the consequences for humanity and all other wildlife will be very grave. Also, it is poorer, developing countries that suffer most from climate change and they have contributed least to the problem. Industry can no longer claim exemption from this issue and have to be forced to act NOW!"

"There are signs that countries like China, India and the US are ready to take bold steps to cut emissions,

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citing their inactivity is no longer an excuse to dodge the issue. We MUST all act now to avoid a global catastrophe.”

“The industrialized world must take responsibility for cutting green house gas emissions.”

“all for sustainability. Carbon tax and e[m]issions trading can be applied if gover[n]ment has strong d[e]termination.”

“Hope to see Japan the leading country to deal with this important issue.”

“This is the most effective way to reduce pollution, since everyone is polluting everywhere. It is also fair, easy to understand, easy to monitor, and easy to adjust. Incentives also could be established across the board.”

“Japan is a great country with a noble tradition of hard work and quality of products. Don't wait for all nations to agree. Start doing it, and all nations will benefit. It is a global issues about humanity and the human habitat. No sense splitting hairs about costs and benefits for each nation.”

“Option 6 is the most realistic and most promising of the given options, although a much more ambitious opt[io]n 7 will have to follow up soon. The bottom line of recent scientific results is that even the most ambitious emissions reduction targets that are currently on the international political agenda, are probably not sufficient to avoid dangerous interference with the global climate system. Such an interference would seriously damage economic productivity around the world and even in wealthy countries, let alone the social and ecological inferences especially for more vulnerable parts of the world. A major shift towards a carbon-free global economy within the next one or two decades is essential from the social, ecological, as well as from the economic point of view. Japan as a leading economy can contribute most significantly to this process, and profit from decoupling its economic growth from greenhouse gas emissions and fossil fuel consumption, thus making it resistant to current and future instabilities. Option 6 is therefore the most realistic and most promising of the given options, although a much more ambitious opt[io]n 7 will have to follow up soon.”

“If we want to avoid dangerous climate change, we must reduce our emissions drastically.”

“Climate change is not merely an issue of international power-play negotiations any longer - only science should drive the debate, particu[la]rly as early mitigation action makes economic sense as shown in the Stern Report. Achieving the target of staying beneath an increase of +2 degrees global temperature increase is quickly becoming unrealistic, with current emissions and emission trends pointing at +3-6 degrees which would be devastating for the integrity of the ecosystem services that ultimately underpin human economies and well-being globally (even if a large portion of the world's population is not aware of the immense degree of dependency). To achieve a 50% reduction on global GHG emissions by 2050 developed countries will have to reduce emissions by up to 90%. Projections now require developed countries to adopt emission reductions of AT LEAST 25-40% by 2020. Japan thus should decide on Option 6 and not bow to the pressure of potentially narrow-minded and shortsighted industry groups. More and bigger issues are at stake.”

“The EU and Japan must lead the way for the US and developing countries to follow, with even greater commitments than commonly tabled. We cannot fail the world.”

“Let us set as high standards as possible, considering present situation.”

“On behalf of Friends of nature [an NGO],  
THANKS for all your efforts and this initiative!”

“[A]ll industrial countries have to overtake high targets, it's the only solution to really reduce greenhouse gases and achieve the 2 degree Celsius target. This will be much reasonable then a worldwide climate chaos.”  
“[F]rom a new green deal all industrial countries will profit soon and on a long term.”

“Needs to be 25% at minimum but should be 40%”

“Japan needs to act on climate change with serious targets that actually reduce emissions and set the world on a decreasing emissions profile”

“The EU has unilaterally committed to reductions of 20% relative to 1990 levels and is willing to increase the target to 30% if other countries agree to comparable efforts. A reduction of 25% relative to 1990 by Japan can be roughly considered a comparable effort.

Japan has significant mitigation potential. By introducing a cap-and-trade scheme similar to that in the EU,

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reductions could be achieved cost-effectively. Overall, due to its potential for innovation and its global leadership in energy efficiency, Japan is expected to benefit from ambitious climate policy targets.” “The IPCC’s fourth assessment report clearly shows the need for substantial emission reductions to avoid dangerous climate change. Recent research that was not yet included in the IPCC’s AR4 indicates that the situation is even sterner than previously thought. In particular, the existence of tipping points in the Earth system (Lenton et al., 2008) - components that will switch to qualitatively different states once a certain level of warming is exceeded - such as the arctic sea ice, ice sheets in Greenland and West Antarctica, Boreal and tropical forest systems,... aggravates the concern that any warming in excess of 2 degree Celsius above pre-industrial levels would result in large-scale and irreversible changes, thus a truly dangerous level of climate change.” “Recent work published by Meinshausen et al. (2009) concludes, based on a broad and systematic statistic analysis of uncertainties in the climate system that in order to maintain a high likelihood of limiting global warming to below 2 degrees Celsius above pre-industrial levels, the emission budget for the time from 2000-2049 is no more than 1000 GtCO<sub>2</sub>. The following conclusions can be drawn:

- 1) Rapid medium-term decline of emissions are required in developed countries
- 2) Suitable policy frameworks resulting in peaking and decline of emissions in emerging economies are required. Technological and financial assistance from developed countries should be subject to negotiations in the Copenhagen process.
- 3) The further debate should focus on emission budgets rather than point targets. For the long-term (2050) an almost complete decarbonization of energy systems are required. In addition to 2020 targets, developed countries should establish binding targets for 2030, 2040 and 2050 in order to stabilize expectations of investors.

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Meinshausen, M. et al (2009): Greenhouse-gas emission targets for limiting global warming to 2 degree Celsius. Nature 458, pp. 1158-1162.”

“While option 4 seems very rational and realistic I still decided for option 6 as by my opinion we should try harder. Climate change will not wait, so we have to act fast and rigorously.”

“It is great that you have prepared different options, so the impact of the different policies can be seen.”

“All countries need to strive for the highest possible target. Developed economies MUST lead the way and help developing countries implement CO<sub>2</sub> reduction measures. We have created this mess, let’s clean our act up and also show the rest of the developing world that it can be done. A huge shift is needed in moving the world to a green economy. If we don’t this current generation of humans will be despised and cursed by future generations. Please aim very high- you never know - Australia might then follow your lead!”

“keep it up. The Japanese people seem ready to move to a green economy. Just look at what is happening with electric vehicles in Japan. Great to see this technology finally coming to fruition!”

“I choose option 6, because Japan can compromise and settle for option 4. Option 4 is in fact more fair based on GDP. It would be fair to say GDP is a good indicator of GHG emissions. But there will be some perverse incentive for Japan to cut emissions. Personally coming from a developing country, this makes more sense, even though we are still left in the danger zone.”

“Japan has already taken good initiative and should set an example in the region (to China and India more specifically).”

“Due to the rapidly changing climate due to global warming, I believe all countries, including the United States, should focus on a 25% reduction across the board.”

“The medium term targets are a good start toward reaching ‘Option 6’ 25% goal. Each country needs to start somewhere on the goal of reaching 25% or more.”

“To set the same reduction target across the board for all industrial countries would allow each country to work on an equal level to achieve one mutual goal. That should be a good approach..”

“Japan will need to assist with local city offices/other organizations to educate and activate more drastic change to cut CO<sub>2</sub> emissions. Within each prefecture there is a need to be more open with the public and get everyone involved in this process, for example making the local paper work process to planting trees around each city more simple or helping residents to use solar power, Geo power system to cut energy use, etc... gov’ts and individuals must work together towards turning the environment around for the benefit of all.”

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"I believe that the scientific evidenc[e] since IPCC suggests the situation is far more serio[u]s than was thought a few years ago and, unfortunately, that we may be at or beyond tipping po[i]nts already."

"I do believe that it is correct to suggest that carbon trading or carbon taxes will lower economic activity. The money raised does not disappear into a black hole and become a drain on the economy. It can be reallocated to cleaner activities."

"Industry will fight change as much as they can. We need near-impossible targets and strict laws in order to see real changes. Japan, who is often looked up to as an example of good environmental policy, has failed to live up to the Kyoto protocols and emissions have increased. Japan must live up to its image in the world!"

"Japan should require all new building developments over 7 stories high to have either 1) roof garden, or 2) solar panels on the roof to generate electricity. This will stimulate one of the two industries who would provide these goods."

"Climate ch[an]ge is a global problem so any country has to reduce its emissions as much as possible. A change in the industry and production is [i]nevitable. Coal and Oil are limited resources that will have to be replaced anyway one day. By transforming the economy Japan could take on a leading role and would be at the forefront as a low-carbon economy."

"Developed countries are more responsible for high reduction targets because of their historical emissions and capacity but developing countries should not look for excuses but strive for high goals as well, financially and technically suppo[r]ted by developed countries."

"If we look at it, not many industrialized countries are willing to make such a large and forward thinking move, my thought is that Japan has a chance here to lead the world and really show that they care about the environment and the future of our children and our planet, Japan should lead from in front not like some of these other countries, all talk and no action."

"With a large number of industrialized countries (annex I ), and their large companies moving the production of their products to the developing countries, some stand has to be taken, if the move continues to be this way, some sacrifices have to be made on the part of the Annex I countries."

"There are several reasons:

1. Annex I countries in the UNFCCC need to reduce emissions by 25% to 40% by 2020 in order to stabilize at the 450 ppm CO<sub>2</sub>e in the atmosphere. We cannot afford to experiment with the climate, because it is impossible to foretell the consequences. A 2 degrees Celsius change could very possibly cause the end of civilization as now know it because of wars, mass migrations and massive mortality through climate change and disease. We must take the safest choice and prevent even the risk of this happening. Therefore it is imperative to do everything humanly possible to prevent further global warming, and cut CO<sub>2</sub> emissions by 25% to 40% by 2020.

2. Whenever you make a budget or plan, you must add a margin because nothing ever goes according to plan. A household should save extra money for unexpected expenses, when you drive somewhere you give yourself extra time in case you run into traffic jams or an accident, a general makes sure he has reserve troops in case his original plans don't work out. We should have a margin in cuts, too. If scientists believe we need to cut by 20%, we should really strive for 30%. That way the chance the 20% cut is actually reached, increases exponentially.

3. As a highly industrialized nation with the second largest economy in the world, Japan is in the perfect position to play an important leadership role in the discussions on Climate Change.

4. 'Kyoto' has become a watchword worldwide for fighting global warming. By taking a leadership role in emission reductions, Japan will establish itself as a 'green nation,' a brand that can be taken advantage of to grow new green industries that will create millions of new jobs while creating attractive sustainable lifestyles. Developing such new nature-friendly technology will also inspire and give hope to Japan's young.

5. Japan's highly developed engineering and management skills place the country in a perfect position to create green technologies. Few other countries possess the knowledge, know-how, education and trained workforce to pull off a large reduction. Japan therefore has a unique responsibility to help forge the new sustainable world economy that is required to keep our hard-won civilizations alive and healthy. Japan must take advantage of its prowess or it will founder as a nation, and with it the world."

"During the Meiji Period Japan transformed itself within a single generation from a feudal country into a modern nation. As a nation it managed to accomplish things that everybody thought impossible.

Once again, Japan is at the threshold of a critical time this time a critical time for the whole world. The people look to their leaders for visionary leadership that looks at the opportunities and possibilities of the future,

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instead of the fears of nay-sayers and penny-pinchers.

Instead of thinking of the cost to our current economy, we should look at the cost to our climate, as well as the magnificent possibilities we are now offered for building a brand-new economy. Such a new economy could create far more wealth and employment than we can now possibly imagine. New technologies need to be invented and developed, new industries created, new ways of managing society.

The investments are high, but the pay-offs are far, far bigger. Bigger than we have ever experienced in the history of mankind. Both economically and socially. And this time, our very survival as a species may depend on it.

We are at war with old-fashioned and outdated ways of production and organization, and if we loose we die. This war, Japan cannot afford to loose. This war Japan must win."

"a) The Stern Report indicates that taking action now would be cheaper overall than delaying reduction measures.

b) People are better a recovering from one big shock than having continuous small pains.

c) once a large saving is achieved, the overall mentality is changed, so that it would be easier to make the remaining savings. As long as no one 'feels' the pain, efforts will be half-hearted at best" "In Japan a massive savings potential exists: houses are very poorly insulated and waste heat / cooling. Convenience stores and Drinks machines are always on, and use bright fluorescent lights. Construction companies keep many trucks waiting with running engine while they wait for their turn at the site. There are too many Taxis and the Taxis are too large.

Those kind of businesses follow such wasteful practices without paying for them properly, and our children will suffer as a result. Therefore Government should ensure that such energy heavy users pay more, for example by cap and trade scheme or Carbon tax. Laws must be introduced to specify maximum permitted energy loss for buildings, and vehicle fuels should be taxed higher."

"The world should set targets to reduce CO2 emission by at least 50 percent by 2020 and by 90 percent by 2050. We need targets that do the job of reducing climate change and this means a 90% carbon free planet platform. Current data clearly indicates that radical action is needed to curb CO2 emissions.

About 200 years ago the concentration of carbon dioxide in the atmosphere was 250 parts per million (ppm). Now it is over 380 ppm. It is increasing steadily at a rate of about 0.3 - 0.4% per year and is likely to exceed 550 ppm in the next few decades. This will result in unstoppable climate change. Even if we stabilise it at 450 ppm there will be some climate change and it may be cataclysmic. So we really should aim to bring the atmosphere back to pre industrial levels.

We are presently not on target to keep the CO2 in the atmosphere below 450 ppm. Our targets should be based on what is necessary to reduce CO2 to pre-industrial levels, which is the 90% figure I proposed.

To do this we must stop building new coal power stations and quickly close down the existing ones until they can be fitted with carbon capture and storage technology. If we don't do this then we will destroy the planet.

Technological solutions like Carbon capture and storage research is too slow. Solutions like carbon capture and storage are needed now. Why don't you fast-track their research and development. It may not work even if and when it is put into production. The CO2 that is put in the ground may escape in only a few generations.

Solar, wind and wave technology are available now and are much safer - but you have to subsidise them and help them compete against cheaper fossil fuels.

Climate change is a symptom of a much bigger economic problem - unsustainable growth, unsustainable production, transportation, consumption of resources, and an unsustainable population. Our society needs to become sustainable.

Japan should lead by example. The window for action on climate change is closing. We need action now.

What is the point in a plan that will not save the Great Barrier Reef or the rivers or wetlands or the biodiversity of this planet? 10% and 25% reduction levels in CO2 have been proposed, both will result in extreme climate change, 90% should be our target. "

"Please do not create a weak emissions trading scheme and then make it weaker still by giving concessions to polluting businesses. This will not encourage them to change their behaviour. Compensations will undermine the integrity of the scheme.

Your emissions trading scheme should be tough and effective. It should be part of a range of options for disengaging from a carbon economy. Tax imports from countries with less strict environmental laws. Subsidise reforestation, and solar, wind, wave and geothermal products with generous tax breaks.

There are going to be costs, but the cost of cutting emissions to 450 ppm are only slightly higher than the cost of cutting emissions to 550 ppm. Let's get it right. Cosmetic changes won't save the planet.

Your government has a responsibility to protect the environment for future generations but we will certainly destroy it this century if you are too slow to act because you listened to the coal industry and did not pay

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### Appendix 2 Free Answers by Respondents (Option 6)

enough attention to the scientists.

We will not be able to stop climate change entirely, climate change is happening right now. Perhaps if we act now we can slow it and avoid the worst effects.”

“I think for all industrialised countries to work towards the same target is best. The US is a major consumer and polluter and the other options didn't seem to engage them. Looking at their commitments prior to now- I don't think they should be given an easy way out of taking leadership in environmental sustainability and climate change. How do rapidly growing countries like China and India fit into this?

To achieve a -25% reduction I am cautious about ‘all new and existing equipment will have to be highly efficient’. I can see Japan discarding good equipment for state-of-the-art efficiency, not fully appreciating the waste and resources necessary for this new equipment. None of these options really speak about education and I feel it can't be assumed. The disposable culture here in Japan is abhor[r]ent and I can't help but wonder where the voices of environmental educators are in this country!

Japan is awash with recycling programs (very good one's) but the message of REDUCE is so absent and direly needed.”

“I could write forever on these topics but will spare you.

Japan has long made efforts to conserve their OWN resources- often at the detriment of other countries (Borneo) and the big sea. However, while there are many initiatives to conserve, the disconnection from the notion that the nature that Japan so adores is threatened by the disposable consumer culture and culture of aesthetics. I wish there was more education about the life cycle of stuff so the reality of the impact of easy consumption and disposal was more appreciated”

“Japan had an increase in CO2 from 1990 to 2005.

Now it is time for the country to become serious, set the high goals, and show exemplary leadership for the sake of the citizens of Japan and for the Earth. With proper leadership, citizens will be proud to work toward a common goal together, become conscientious of how to reduce CO2 by using their creativity in their daily lives, and not have petty thoughts about making some sacrifices for the benefit of the world, nature and the future generation.

EU and US are aiming for -14% reduction from 2005.

Japan could just settle for -14% reduction from 2005, but couldn't we aim high at least?”

“Thank you to JFS for giving us readers the opportunity to contribute our opinions and share ideas for the betterment of all!”

“With high goals, we can rise up to meet the challenge. The Japanese people have a wealth of resources with well-educated creative citizens, hard-working spirit, and ability to work in harmony.”

“Denmark welcomed the CO2 reduction goals and expects to meet their target.

It would be nice if Japan could welcome CO2 reduction goals and show a positive stance.

Perhaps Japan can look to Denmark as a model for how a country can make dramatic changes in its energy self-sufficiency and environmental situation in a short period.

Denmark was able to change from energy self-sufficiency of 5% in 1980 to 156% in 2004.

This was through the government working hand-in-hand with the private sector.”

“Developed countries and Japan are in a position to change the state of the world in any issue presented if they so desire. Japan in particular has the tech[n]ology to create highly efficient new technology. Japan is one of the most wasteful countries in the world, with food and other products wrapped with plastic a few times unnecessarily. People must be educated to be more environmentally conscious, and the government can reduce emissions by reducing all the waste that the general population passively accepts.”

“It is time to stop negotiating and just accept the state of the world. More people need to be educated to demand more from the government and NGOs must collaborate with TV stations, commercials on trains, or kleenex handouts to provoke thinking and conscientization about the environment and how each one of us affects the environment, one person at a time. It is time to reverse the negative effects through mass education and movement.”

“Japan should select option 6. Reasons:

These reduction targets are the only ones which approximate the global reduction targets defined (but not resolved) at the international climate negotiations in Bali (COP13)-mid-term target for industrialised countries 25-40% (base year 1990), global emissions have to reach their peak in 2015 and must be halved, at least, until 2050. These reduction targets are based on the findings of the IPCC's Fourth Assessment report (AR4) and have a firm base in international climate science. Although it can be doubted that global warming can be

## Global Opinion Survey on Japan's GHG Emission Reduction Targets for 2020

### Appendix 2 Free Answers by Respondents (Option 6)

restricted to two degrees [C]elsius employing these reduction targets and it is not certain whether very serious impacts of climate change can be sufficiently avoided even within the two-degrees-limit, it is certain that the consequences of transgression would be disastrous and irreversible.

The leading role of industrialised countries in climate protection is an important element of the United Nations Framework Convention on Climate Change, the Kyoto Protocol and the Bali decisions. If non-Annex I Parties face a refusal of the industrialised countries to act as agreed, they will interpret this as an infringement of the Bali decisions. It is likely that this will result in failure of the international negotiation process.

Thus, choosing a less ambitious mid-term reduction target would endanger global climate protection in two ways: by insufficient effort to attain the two-degrees-limit and by endangering the international negotiation process. Under these circumstances, a post-Kyoto-regime which would provide at least a chance to tackle climate change will not come to pass. In the struggle against climate change, this would mean surrender.

Efficiency of climate policies should be measured by focu[s]ing on greenhouse gas emissions, not energy efficiency. Whereas energy efficiency is very important for economic as well as for ecological reasons, climate change is caused by greenhouse gas emissions, and accordingly emission reduction should be the overall target. Energy efficiency does contribute to emission reduction, but it is unwise to confuse a method with the target. The fire brigade has to put out fires, not to pump water efficiently. An archer should hit his target and not bend his bow efficiently. Whereas the fire brigade and the archer have to do these things efficiently, their endeavours are pointless if they regard them as goals, not as means.

A less ambitious reduction target does not bring about cost reduction. According to the Stern Review on the Economics of Climate Change (2006), the costs of inaction or insufficient action regarding climate change will be 5-20 times the costs of ambitious mitigation efforts. The report states that in the case of inaction or insufficient action a global economic crisis comparable to the Great Depression in the 20th century is likely to take place in the 21st, brought about by climate change. Thus, inaction or insufficient action regarding climate change during the global financial and economic crisis we face today may lead to an even deeper crisis or failure of economic recovery. In industrialised countries, consumers would have to bear the main burden of these costs in the face of job insecurity, declining standard of living and possibly political and social unrest. On the global scale, the impacts of climate change and the strains resulting from the failure of the negotiation process would likely add considerably to the decline and crises of global markets. Although the people in developing countries would suffer most, citizens of industrialised countries would have to face both the economic consequences and the manifold costs of international and possibly global conflicts.

It is true that ambitious climate protection brings about costs, but the costs of inactivity or insufficient activity would be much higher. Thus, inactivity or insufficient activity can be compared to bad business models and strategies. It is clear that costs will have to be met, but there is still the question of burden sharing. Decision-makers who know the established facts regarding climate change and are unwilling to face the lesser costs brought about by climate change mitigation clearly consider externalising the much greater costs brought about by climate change. Decision-makers who do not know the established facts regarding climate change are a risk for their national economies.

Whereas it is clear that climate change is bad for business, climate protection can provide excellent business opportunities if the right policies are employed. The industrial revolution was characterised by a scientific and technological innovation boost, a wave of technology implementation and dissemination and a steadily increasing demand for skilled employees. As climate protection demands a new 'green' industrial revolution, the necessity to tackle climate change can be turned into a vast range of business opportunities. Japan, as one of the world's most advanced nation regarding science, technology and innovation, faces an excellent opportunity to claim world leadership.

The condition-In the case in which all developed countries commit to 25% reduction as a group and make the same level of efforts is, in principle, sound and reasonable. The European Union recently committed to a 20% per cent target and is willing to commit to 30% under the condition of an international agreement. Whereas the first target does not meet the figures defined in Bali and will not suffice to attain the 2-degrees-target, the second target matches the Bali target and would provide a chance to restrain global warming within the two-degrees-limit. Clearly, the EU is not willing to commit unilaterally to a 30% target. The new proactive US administration strives to enact an ambitious climate policy. In this situation, the position of Japan is crucial. Japan could contribute significantly to ambitious reduction targets for all industrialised countries by once again becoming a front-runner and, at the same time, urging the other industrialised countries forward.

Concerning the rapidly developing economies, this would provide a base for urging them to commit to more ambitious mitigation measures. If the industrialised countries stand true to the Bali decisions, the rapidly developing economies will also employ 'measurable, reportable and verifiable' mitigation activities according to the principle of 'common but differentiated responsibilities and respective capabilities'. The assistance they need from industrialised countries to do so, which were pointed out in Bali, can provide very auspicious

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### Appendix 2 Free Answers by Respondents (Option 6)

business opportunities for Japanese companies. But these auspicious prospects-emerging economies reducing their emissions and Japanese companies prospering from this-depend on an ambitious Japanese mid-term reduction target.

Policies to achieve this target:

A mandatory national cap-and-trade system designed in order to bring about a global cap-and-trade system. Emission trade is based on the principle of ‘polluter pays’ it rewards innovations and endeavours. The revenues should be used for the funding of other climate policies.

Border adjustments to avoid carbon leakage, i.e. Japanese companies evading the cap-and-trade system by outsourcing their activities. At the same time, Border Adjustments can offset unfair advantages of companies outside Japan who operate under less severe conditions and wish to sell their products in Japan.

An ambitious ‘green’ stimulus programme. It should consist of boosting technological innovation, proliferation of ‘green’ skills, a transformation of Japan’s energy platform towards a sustainability path and implementation of Japan’s world-famous energy efficiency technologies throughout all branches of Japanese industry and th[r]oughout Japanese society. This stimulus programme can be employed to tackle the current global financial and economic crisis and climate change at the same time.

A public platform for debates on climate policies. Although the issue is very convoluted and involves many spheres of knowledge, climate change and climate policies concern all citizens alike. All Japanese citizens are stakeholders of Japanese climate policies, and accordingly the means for them to inform and educate themselves should be provided. Furthermore, as they have to bear a part of the costs, they should also have a say concerning the decisions. Japan is one of the most technologically advanced countries in the world, so it should be feasible to employ modern media to make climate policies more transparent.”

“Clearly, this is a historical moment for Japan. As has been sketched above, Japan’s position, while the world is ‘on the Road to Copenhagen’ is crucial.

The crossroad Japan finds itself at is characterised by Japan’s outstanding potential. Very unlike other countries in Asia, Japan is able to be among the top protagonists in humanity’s struggle against climate change, due to Japan’s eminent economic and technological capability. Already the Stern Review pointed out the prospects for eco[n]omic growth provided by ambitious climate policies and the economic dangers brought about by climate change. Understanding that ‘climate is business’ opens up a vast range of opportunities for business activities, innovation and economic growth. Certainly there would be initial costs to be met, but, as has been pointed out, these costs are comparatively negligible compared to the costs climate change would cause under a ‘business-as-usual’ - scenario, aggravated by the consequences of a failed negotiation process. Especially now, as the economic crisis and climate change both have to be tackled, it is high time to understand that ‘climate is business’

“Only yesterday an Ar[c]tic survey team reported that their ‘ground’ survey had found the ice thickness is already much thinner than had been predicted. The signs of Climate Change are more extreme than anyone has known, even in the recent past. Every coun[t]ry in the world must set itself the severest of targets to avoid the disaster of a more than 2 degree rise in the base world temperature.”

“The targets set in the UK Act of Parliament, 2008, on Climate Change, are far more demanding than anything Japan is presently working to, and probably they are still not tight enough. They would give the Japanese Government a good base to work from. The UK system also has an independent committee checking that in any one year the Government is doing enough to meet its targets. Here is a model for Japan and the rest of the world.”

“May cost more upfront, but in the long runs, the world would have lesser GHG emissions by reduction at the sources now”

“walk the walk and talk the talk”

“The planet is screaming out for less emissions. Twice as much as that is possible. Wake up Japan!”

“There seems to be pretty much zero consciousness in Japan about the issues the world is facing”

“Global efforts are required to fight global warming, and the leadership of rich and technologically advanced countries such as Japan is needed. If Japan shies away from being a leader in this field, then who can be? Japan has the wealth, intellect[tu]al resources and technology to continue to be more energy efficient, and to emit less GHG.

The only issue with respect to Japan targets, is that Japan is already less energy intensive than most developed countries. This means that cutting 25% of all emissions will cost marginally more in Japan than in North America, where there is a lot of energy waste, thus making energy efficiency improvement easier. Nevertheless, Japan will streng[t]hen its technological and international leadership by adopting the same

## Global Opinion Survey on Japan's GHG Emission Reduction Targets for 2020

### Appendix 2 Free Answers by Respondents (Option 6 and Others)

targets as others. If it might be costly in the short run, it will pay in the long run.”

“Any reduction of fossil fuel use in Japan will help achieve GHG goals and make Japan more energy independent. As Japan imports all or almost all of its energy from abroad, environmental efforts will also lead to a more independent Japan, in terms of energy. This is a benefit that should be taken into account.”

#### Free Answers to Other Options

“None of these options are holistic enough, and they give all the power to industry. Beside industry, we need to consider agriculture, trade, social relations and attitudes to wealth. We also need tougher targets that really get everybody moving and that actually meet the crisis at hand.

GDP is a meaningless measure, so it should not be made the basis of anything. GDP is in many ways a measure of wastefulness, so it should not be 'rewarded'.

A challenging target is required because most people are doing nothing at all towards reducing their emissions, and they need to be forced into doing the bare minimum. Those of us who have done as much as we can as individuals to reduce our footprint need the services of government and industry to offer us more green opportunities - for example, enabling home wind power in addition to our solar panels. These will only be forthcoming when government and industry are forced to act by an external requirement.

The issue of fairness is irrelevant. None of us will survive if don't work together, so we should set targets that get the job done as quickly as possible. What needs to be done is not very difficult anyway. If people would only turn their computers off at night, and walk to throw away their garbage, we would be heading in the right direction.”

“Japan needs to find its roots again - tough people with *gaman* who don't need to be air-conditioned at all times, who can get about using their own power, and who wear appropriate clothing for the season (not the useless 'cool-biz'). Smart people who can produce most of what they need themselves.”

“There is a clear dictate from science that ambitious GHG reductions are needed. An ambitious Japanese target would also demonstrate industrialised country leadership and as such help to facilitate international agreement in Copenhagen”

“I understand that Japan is already very energy efficient, though as far as I am informed there is a lot more unused potential in certain sectors. As minus 15% below 1990 levels may not be enough to be considered as a commitment comparable to those of other countries, Japan could also go for a 20% target”

“I wish you can list more options, such as per capita based one, historical emission per capita based one etc.”  
“I appreciate ex-PM Fuku[da]'s cooling earth 50 strategy. Japan can do more!”

“Even the most ambitious of options presented here, Option 6 (-25% on 1990 levels), is totally inadequate. The IPCC report clearly states that -25-40% is required \*for stabilization at 450 ppm CO<sub>2</sub>e\*. At this level, there is only a 50% chance of staying below 2 degrees Celsius - which means \*a 50% chance of EXCEEDING 2 degrees\*. This is taking a coin-toss with our future. Not good enough.

We should be aiming for 350ppm CO<sub>2</sub>e stabilisation, meaning more than 40% reductions by 2020.

Japan can do it. Set a high level of ambition and then let your best scientists and technological leadership show the way.

-40% by developed countries must be achieved.

“Japan must not hide behind the targets of other nations like the US and the EU. We need some nation to be a bold leader and take the action that is scientifically necessary. Who will that leader be?”

“- 40% or even more is now needed, in order to stay within the 2 degrees Celsius rise! And if we want, we can. It's the right of future generations that we act now!

“We need a high footprint tax on all products and services, in line with the use of (fossil) energy and space. See the Stern-report: fossil fuels are damaging so much, so they should be very expensive. Far more than solar- and wind-energy. So just fair competition on the market!”

“Target setting is a political exercise which dangerously masks the real world options of actually reversing climate change. Targets ask the wrong question, ‘to what extent should we harm our economy in order to protect the climate?’ and are based on the wrong assumption, that ‘higher emissions cuts mean a competitive disadvantage and reduced economic activity’. This attempts to solve the problem by using the same thinking that caused it - which cannot work, whatever level of targets is chosen.

Protecting the climate and running the economy are in conflict only in the traditional obsolete economic

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### Appendix 2 Free Answers by Respondents (Others)

'vehicle' that stupidly seeks to avoid costs by allowing externalities (such as rising GHG concentrations) to accumulate unaccounted. This is like running a car cheaply by avoiding the cost of maintenance. The car will appear to run well right up to the moment when it entirely fails. The answer is to envisage a new way of running your car where you pay the cost of keeping it going, that turns out to be the genuine cheapest option. For the economy the answer is to envisage a new way of running it so that rather than automatically causing problems such as climate change, the problems are automatically prevented and reversed.

In this new way, the economy engages in massive activity to reorient itself to a 'positive development' vision, so growth is not reduced. Instead you get a vigorous recovery based on the creation of genuine lasting wealth, not a bubble of virtual value. Climate would be protected not by reduced emissions (since this only slows the rises in GHG levels that are already too high), but by a switch to overall net-negative emissions so that GHG levels can be brought down.

Please see this link, <http://www.wiserearth.org/solution/view/fb62167e14809b30029768551d4135f6>, which references a book I've contributed to (called positive development', my UNEP site and my work in the NATO Science Programme on economic tools to achieve positive development."

"Japan's work on 'circular economics' is relevant and could mean that Japan is a global leader in climate and sustainability initiatives."

"Japan will be sever[e]ly damaged by the rising of the sea water. The world needs the greatest effort to avoid the worst effects of climate change. If ambitious targets are implemented there is hope, otherwise we would have to bear the consequences"

"The K[y]oto Protocol has failed to reduce emissions therefore, we need other mechanisms than purely market mechanism[s], taxes may be a more important mean to achieve the goal."

"A monitored, verifiable and accountable system for the strongest possible reductions mitigates the risk of climatic destabilisation most effectively. According to the IPCC's 2007 Fourth Assessment Report, 450ppm CO<sub>2</sub>eq will not provide a strong barrier to runaway climate change. Thus, a maximum limit on emission reductions should be avoided and a minimum target should be mandatory for all Annex 1 parties. -25% on 1990 is the nearest, appropriate minimum target suggested in this survey. Effective risk management would be to commit to strong, domestic emission reductions, with, but not dependant on, all Annex 1 parties, as part of a global framework that would see global emission peak in the period 2015 to 2017. The cost of strong commitment is low in relation to delayed adaptation and mitigation of emissions.

"I am 23. In 2050 I will be 65. I want to retire knowing that the climatic destabilisation did not affect the lives of millions and kill over 150,000 people each year as indeed it does today, according to the World Health Organisation.

Japan is a key player: a deciding factor in the lead up to global consensus for strong action. Japan is not known for leadership on this issue, but it is required of Japan. Medium term targets, such as accurate and equitable year-by-year reductions are absolutely necessary to ensure effective action. In reality, anything less than the strongest commitment to accurate and equitable emission reductions is not an option available to us. Time is critical. Thus, this agreement must be as strong as possible. To fail in stabilising and reducing emissions would be to fail a basic humane responsibility to other species and humanity.

I hope to see 2050 being the year we celebrated the human capacity for cooperation, through trust, love and scientific pragmatism. Because I will see 2050, after all. I will remember this survey and the efforts of all those involved in climate justice. When I'm 65, I hope I can be proud of Japan."

"The European Union is to reduce at least by 20% by 2020 base on 1990 levels, but is still discussing more progressive targets. The state-of-play in Germany is a reduction of at least 30% by 2020 with reference year 1990. It has been proposed in the German political arena to reduce by 40% by 2020 with reference year 1990 if other major contributors also commit to reduce, such as China."

"For the upcoming climate negotiations Japan may want to consider joining forces and establishing a mutual partnership with Europe - and especially Germany - thus gaining competitive advantage through the development and promotion of high-tech, high-efficient, low-energy consuming and overall renewable energy technologies. This will also increase pressure on more resilient countries to get on par with reduction commitments."

"Well, the issue of climate change is global. It is not important who has been responsible for CO<sub>2</sub> raise. On the other hand, developing countries should have the right to promot[e] their economic through more energy use. The options for the Government of Japan are all good but the cost of implementation is most important. Considering the global e[c]onomic issues, it will not be practical for the government of Japan to select the stricter options. On the other hand, Japan has reached to a well defined level of energy efficiency and further

## Global Opinion Survey on Japan's GHG Emission Reduction Targets for 2020

### Appendix 2 Free Answers by Respondents (Others)

actions in this field will be very costly. For example cost of CO2 reduction in Japan (through efficiency measures) may be around 25 to 35 US\$/ton of CO2. Since Japan has always been active in the field of environment in developing countries; I suggest the same amount of money (for any of the 6 options) ought to be spent in developing countries than Japan. It does not matter where CO2 is decreasing; it anyhow should decrease. The same amount of money (US\$ 25-35) may reduce 5 tones of CO2 in developing countries than one ton in Japan. Therefore, I believe that Government of Japan should divert her activities towards a more effective mechanism than the 6 mentioned options."

"I don't know enough about the energy infrastructure of Japan to comment intelligently on this, but I have a general comment in the category below."

"Comment: I have this same comment for our own government. Any country needs to characterize the error term in its own emissions. Some countries are suggesting annual emissions reductions that are well within their error term, which seems to be of very limited value."

"The world is a crucial stage with respect to the [i]mpacts of global warming and climate change. In this context it requires a global effort involving all developed and developing nations to meet the same targets."

"This initiative is inspirational and should be taken up by all nations as global responses from all sectors and civil society are needed to guide national responses to this critical global problem."

"As mentioned above industrial countries should reduce their emissions -25 to -40% until 2020 from 1990 levels to keep global warming around 2C. After IPCC forth assessment report (2007) emissions has grown faster than expected. This means that industrial countries should reduce their emissions at least -40% until 2020 and close to zero until 2050."

"Japan should be one of the climate leaders who show the path to carbon neutral and carbon negative society."

"option 3 and 5 will work for industry and make it possible to continue positive economic activity. option 6 is the ultimate because all countries know what to focus on -30% is simple! Simple is much easier for every worker in the world to understand and so we'll be able to remember it far easier. It is important to remember that -30% is actually a vote for a world that is +30% better. If I ask you if you want to live in a world 30% better would you disagree? So as a businessman I would say option 3/5 and 6 are very workable because they open the floodgates for global investment.

We are a global consumer family now and anything short of playing to that behaviour will hinder the investment/certainty needed. I don't mean make plastic goods for landfill I mean make products we can use for 100-200 years that can go on being re-made in local global factories.

We can then move onto more important tasks for civilisation."

"I think it is helpful if you think about your life and that of others in your family and friends when you think about medium term. We are not in a medium term life we live 80+ years. Do what is best for LIFE in the long run and do it as soon as you know what is workable. Try not to FIX it as something that is for 'this period' in OUR lives. Try only to make it possible to flow as fast as possible. Remember we do not have medium term oil or gas supply it's quite simply not going to be there so an open and free global economy that allows 30% green growth as soon as possible is going to lead to 70%-90% faster in my mind.

Thanks for asking. - you are pioneers who are ahead of global thinking again - I wish you all well."

"The above options may seem rational and logical on paper, but reality is The Kyoto Accord was doomed for the beginning. The World must act as one, united in this factual adventure of the CO2 overload. Money must be taken out of the equation before logic can prevail and this NEVER going to happen. Having said this, one of the best plans can be 'Lead by Example'.

Japan must first and foremost wean itself from CO2 emitting energies and focus on becoming the leader in Passive Green Energy. The abundance of thermal energy on this tiny island would be a good start. Wave energy is another, and wind playing tag with solar would make this place I call home, more self-reliant, have a greater self-esteem for future generations.

Building more Nuclear Generators is not even an option, there are better ways to boil water, which is a Nuclear Station's one and only function.

Please excuse me, if I don't seem to want to be part of the pompous, back slapping, congratulatory crowd of regulars that refuse to change unless there is a \$ to be made...."

"As I said above, Japan must lead by example. An economic stimulus plan involving Passive Energy Generation would create jobs and get the economy rolling. Helping home owners (businesses as well) switch to the new energy sources with real concrete financial packages.

Thank you. PS I have some answers, not just criticism!"

## Global Opinion Survey on Japan's GHG Emission Reduction Targets for 2020

### Appendix 2 Free Answers by Respondents (Others)

"In order to stay with a certainty of more than 50% below 2 degrees, industrial countries need to reduce emissions by at least 40% from 1990 through 2020. This holds for Japan as well."

"Countries like Japan or Switzerland that will fail to fulfill the present Kyoto target by domestic reductions should not take this as an excuse to ask for targets that do not help avoiding dang[e]rous climate change."

"Japan can be the world leader in reducing CO2 emissions. Other countries can emulate what you are doing, thus bringing the nations together by placing the proper emphasis on working together for the common good and the good of our planet."

"I applaud you for generating a plan that may inspire the rest of the world to do what Japan is doing."

"The maximum approach should be taken. The true facts need be taken into account, not outdated IPPC findings. Pls watch David Wasdell's comprehensive presentation, delivered to world leaders (!!!) at Taellberg Forum 2008 AND the British parliament before the Bali negotiations. A small percentage reduction, considering today's knowledge, comes up to a crime against humanity."

"As to recent understanding of climate change, we have already crossed the tipping point of runaway climate change, indicated by oceanic methane release (see David Wasdell explaining this to world leaders at Taellberg Forum 2008 (he explained this to british parliament already before the Bali negotiations)) VIDEO : <http://www.apollo-gaia.org/PlanetEarth/index.htm>

Since we have crossed the tipping point the 5year old data of the IPPC (see Wasdell explaining the 5 year delay caused by peer review and spectacular new understandings of climate change gained in the past 5 years; note: an ice free Arctic was predicted for 2070, but we already have ships crossing the pole this year), - we have to move as fast as possible from a carbon to a LOW carbon to a NO carbon and a CARBON REMOVAL economy. Kyoto measures are neglectable in face of these real facts.

JAPAN should therefore proceed to a national strategy going BEYOND the maximum reduction targets set in the options listed.

JAPAN is in a VERY special position to make this shift and thus become THE world leading country on carbon reduction and REMOVAL in the nearest posisble timeframe compared to other industrial nations, -> which will provide many technological advantages that will pay back through sharing their model and achievements with the world in the decade to come.

Japan's specific advantages:

- dense, concentrated centres of economy allowing close cooperation across disciplines and industries
- much advanced technological capacity and technology
- a very evolved sense of collectiveness that facilitates cooperation better than in fractured western industrial nations
- highly networked industries fit for production and export
- need and capacity for knowledge building since Japan is a resource poor nation based on high tech export
- government initiatives such as Captain 7%, hydrogen zones, greening city building as heat islands, snow cooling measures, the prime ministers home hydrogen fueled, etc are leading in the world, - so ar Warm Biz and Cold Biz : take this momentum and go forward! it offers great opportunities for an integrated approach involving society as a whole!

- remains of a basically holistic integrative worldview amongst parts of the population facilitating the encompassing approach of a holistic society in harmony with nature

- ORIGIN country of Education for Sustainable Development Decade under Prof Osamu Abe, who launched ESD-J long ago and trig[ge]red the UN Decade of Edu[cation] for Sust[ainable] Dev[elopment] 2005-2014, incl many other related program activities, such as

- rural community co-learning programs building on local knowledge for sustainability etc; this is unique for an industrialised country ... still related to tradition(!)

- the dominant societal attitude towards peace and community is a unique prerequisite for measures involving the collective for positive activities, such as working towards a common goal of benefit to local, regional, national and international and GLOBAL peace through sustainability

- well evolved english language competence (for international cooperation with experts of all fields)

- high mental capacities through minds trained well through complex sign / symbol language systems (more evolved than other nations!, as indicated through comparatative PISA studies in Cyprus)

Some of these are touched in an expert dialogue held at UNESCO World Conference on Education for Sustainable Development in March/April 2009, Bonn, Germany

see videos here: <http://www.youtube.com/user/youthleadermagazine>

These are unique(!) capacities that are fit for national REPLICATION for continuing on developing a nationally integrated cooperative MACRO SCALE STRATEGY involving

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- government
- administration
- industry
- media
- civil society
- education
- sciences
- research

in international networks

We have to move towards a global, peaceful, just and sustainable civilisation in which individual AND collective possess and contribute to positive change, as indicated through Ashoka's slogan 'Everyone a Changemaker' ([www.Ashoka.org](http://www.Ashoka.org) : social entrepreneurs) and the achievements of Gram[i]n ventures.

How this can be multiplied and shared in participatory ways within the population is indicated in a recent article in Kosmos Journal ([www.kosmosjournal.org](http://www.kosmosjournal.org)), available as whole at <http://cafeweltgeist.org/shoal>

A shift in less rigid but more holistic education involving the whole being however is strongly advised, in order to unleash more coope[re]ation, creativity in young people AND reduce the number of psychological drop-outs produced through the high pressure schooling system in Japan.

These are my comparitative views from a global perspective on unique positions that Japan has, in terms of becoming part of change towards a shift in civilisation.”

“From the perspective of the Cook Islands as a Small Island Developing State, it is not acceptable for the developed country of Japan to strive for anything less than the minimum goal set by the IPCC.

The science is telling us that less than 350ppm CO<sub>2</sub>eq is necessary to stabilise global temperatures at 1.5 degrees above pre industrial levels. Recent evidence indicates the Greenland Icesheets are melting much faster than anticipated and this will increase sea level this century by more than the IPCC estimates.

Deep cuts and a high level of ambition through a strong signal from developed countries is vital to minimise further adverse impacts of climate change on Small Islands Developing States and avoid threatening our sovereignty.

We recognise that Japan does not bear as much historical responsibility for emissions as some other OECD countries, however do not believe that your option 6 accounts fully for the mitigation potential of Japan, and is overly restrictive in saying all developed countries have same target across the board, EU is already looking at being more ambitious.“

“1990 is the only acceptable base year, for consistency with Kyoto Protocol and to avoid moving targets to suit countries or trying to hide targets not being met.

We are very disappointed that it seems like Japan is trying to wiggle out of their Kyoto commitments, as well as trying to delay progress on any real action or implementation of adaptation in developing countries. All we hear is endless calls for more studies and scientific certainty. This violates the precautionary principle. We find the Cool Earth Programme to date has been very little substance, and lots of public relations. Very little or no action on the ground has been achieved especially in developing countries.

It is interesting that some of the JICA courses, for example in waste management, are very practical in nature. However the climate change one was very theoretical and not useful to the participants on their return home.”

“Refer to 350.org. This is the amount of carbon dioxide scientists now think is the safe maximum for the planet. Currently, our atmosphere holds 387 parts per million, which is why the arctic is melting and Australia is catching on fire, according to Bill McKibben and founder of 350.org. Already more than 700 actions have been planned in a third of the countries of the world. The news coming out of the world capitals makes it clear we need more than lobbying by environmentalists to get the change science demands. We need a groundswell to give these environmentalists the clout they need. My personal vote is for the highest standards our economy can sustain. This is a # 1 issue if we humans are to continue to inhabit this planet.”

“I applaud Japan for their work in combating global warming. The scientific journal Nation said in its April 29 cover story that ‘ a growing number of scientists agree that THE CO<sub>2</sub> CHALLENGE IS EVEN GREATER THAN PREVIOUSLY THOUGHT.’(my caps)”

“There are three reasons why Japan must select the highest medium-term target possible. First, because it is the right thing to do for Japan's businesses. Second, because it is the right thing to do for Japan's people. Third, because it is the right thing to do for the people of the world.

1) Benefits for Japan's businesses

Because climate change is not a problem, it is an opportunity, and businesses that lead on the issue will have

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the first-mover advantage.

Until now, the issue of climate change was thought of as a problem that had to be dealt with at significant cost to economies and nations. However, it has increasingly become clear that climate change presents the biggest business opportunity ever. Carbon markets, wind energy, solar energy, new infrastructure, and other new markets are all contributing to the Green Boom.

The carbon market alone has shown huge growth since its inception. As Business Green reported in January, 2009:

"Further evidence emerged today backing up predictions that the carbon market will shrug off the worst of the economic downturn, as Point Carbon became the latest analyst firm to confirm that the global carbon market enjoyed record growth throughout 2008. According to the latest figures from the company, the global carbon market doubled in size to ?92bn (\$125bn) last year, while traded volumes soared by 83 per cent year-on-year to 4.9 gigatons of carbon. The release of the research comes just days after rival analyst firm New Carbon Finance reported that the global carbon market almost doubled to \$118bn last year. It also predicted that the market would still enjoy a growth rate of 27 per cent this year, despite the slowing global economy."

In the US, President Obama made a campaign promise to invest \$15 billion a year in renewable energy sources and create five million new energy jobs through 2018. He also stated that he would emphasize a program to spend \$150 billion over 10 years to develop renewable energy sources, like wind, and to encourage energy conservation.

Wind energy growth is averaging 28% a year. SBI estimates that the total wind energy market in the U.S. is valued at \$151.3 billion. The U.S. wind industry expanded rapidly in 2008 fueled by three key market drivers:

- Fossil fuel and oil prices for commercial and home heating
- Long-term demand for renewable energy sources domestically
- Improvements in technology that streamlines the manufacturing of wind turbines, especially for larger machines required for offshore wind farm initiatives
- Positive employment outlook in turbine manufacturing sector

Photovoltaic production worldwide has been doubling every two years, increasing by an average of 48% each year since 2002, making it the world's fastest-growing energy technology. 90% of this generating capacity consists of grid-tied electrical systems, in which PV panels generate electricity and interconnect with a utility's power line.

According to a recent report by GlobalData, a business information company providing global business information reports and services, the US is the fourth largest solar PV market in the world. The market has grown from 168 megawatts (MW) in 2001 to around 1,111 MW by the end of 2008. Grid-connected solar PV grew to 61% of all solar PV installations, accounting for 677 MW in 2008.

In the US, average installed costs prior to receipt of any direct financial incentives or tax credits declined from \$10.50/Watt in 1998 to \$7.60/Watt in 2007. This equates to an average annual reduction of \$0.30/Watt, or 3.5% per year in real dollars.

The GlobalData report, entitled "The US Solar PV Market Analysis and Forecasts to 2013," finds additional reasons for the growth of solar power. The report credits growth in the solar market to supportive policy frameworks by federal and state governments for solar PV technology, as well as high-end investments by major solar companies.

GlobalData credits the increase in share of on-grid capacity to incentives provided by the federal and state governments like the Renewable Portfolio Standards (RPS), Feed-In Tariff laws, and the California Solar Initiative.

But what has happened in Japan?

In 2001, an article by Oliver Ristau (SolarServer) stated:

"Since 1999, Japan has been number one when it comes to photovoltaics. The East Asian country's global market share exceeded 40 % in the year 2000, and this year that position will at least be held. One reason Japan achieved this solar prominence can be attributed to the uninterrupted federal assistance, which has been afforded mostly by the very influential Ministry for the Economy, Trade, and Industry (Meti).

No other country in the world promotes photovoltaic technology more than Japan. Due especially to the research program "New Sunshine Project" started in 1993 and the incentive program "Residential PV System Dissemination Program", as well as its predecessor "Residential PV System Monitoring Program" begun in 1994, the Japanese have been able to build up a self-supporting market. These programs are supported by Meti (known as Miti until 2000), while the concrete development is subject to the supervision of the New Energy and Industrial Technology Development Organization (Nedo)."

And yet, just 7 years later, we see a very different story painted by Dave Englander (GreenTechMedia):

"In the country that hosted the Kyoto Protocol and wrote the book on solar policy, the wind-power industry has ground almost to a halt. Among the culprits: policy, cost and technology challenges.

In the country that hosted the Kyoto Protocol, wind power has ground to a stunning halt. According to the last

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assessment by the Brussels-based Global Wind Energy Council, Japan ranked a dismal 14th in terms of yearly growth in wind capacity, with newly installed wind power totaling only 139 megawatts in 2007. That compares with 5.2 gigawatts - 38 times the capacity - installed the same year in the United States, and lags even further behind other wind-power giants such as Denmark, Germany and Spain.

Toshio Hori, president of the Tokyo-based Green Power Investment Corp., has been affiliated with the wind-power industry in Japan for 20 years. He blames Japan's renewable-energy policy for the slow growth. "Japan's windpower industry is not growing," he said. "The renewable targets the government has set for wind power are tiny in comparison to other countries. There are no incentives for companies to grow."

The case of wind in Japan is instructive, as it shows how renewable energy can stumble without proper government intervention. It's especially significant given that Japan previously had been a green policy leader. Japan invented the solar incentives used as a model for similar programs in Germany and in other countries, and its strength in the solar industry often is cited as an example of a key policy success.

In contrast with its history of policy leadership, Japan's renewable targets look almost embarrassingly small compared to other countries' policies. The targets, set by the country's Ministry of Economy, Trade and Industry, stipulate that 1.35 percent of Japan's total energy supply must come from renewables, such as wind, solar, and biofuels, by 2010. The target inches up to 1.63 percent by 2014.

Denmark, the most advanced country in terms of wind-power capacity and support policies, generates 20 percent of its energy from wind. The Danes accomplished this goal through heavy government subsidies and tax breaks over the last 20 years.

Tetsunari Iida, executive director of the Tokyo-based Institute for Sustainable Energy, believes Japan's dominant electric companies are preventing the growth of wind power. The country's 10 electric companies are formidable regional monopolies. The largest dominate the areas of Tokyo, Chiba and Kansai, and they leverage significant political clout.

"They act as regional monopolies, functional monopolies, and political monopolies," Iida said. "They are the rule makers and they make an effort to exclude wind power from their grid."

According to him, utilities limit wind energy to just 2 to 3 percent of the electricity flowing on the grid - and the low renewable standards aren't requiring them to take more."

Under President Obama, the US has already set targets of 20% or more wind energy by 2030. The EU has implemented a 20% CO<sub>2</sub> emissions reduction target by 2020, with up to 30% if other countries implement similar policies. The UK has passed the world's first climate change law, requiring a 26% decrease in CO<sub>2</sub> emissions by 2020 and 80% by 2050. And while Australia has delayed the implementation of its carbon reduction scheme, this has been with the promise of increasing the target for the plan from the initial 15% to 25%. Under the revised plan, Prime Minister Kevin Rudd said Australia would cut more deeply into its carbon emissions by 2020 if the United Nations reaches a new pact on cutting global pollution at a summit in December in Copenhagen. Originally, the emissions-cutting target was set at up to 15% below 2000 levels by 2020. The new target announced yesterday is 25% if the Copenhagen summit can agree on tough global targets.

Japan, once the world's leader in not just technology, but also production, and implementation, has fallen embarrassingly far behind, and its companies are missing out on the opportunities for new competition, incentives for innovation, and the framework for destructive creation provided by market competition.

In short, if Japan's businesses have any hope of being able to compete in the new and expanding global Green markets, Japan must implement strong policies at home to encourage and promote business growth and lead the way to a Green Nation economy.

#### 2) Benefits for Japan's People

Annual mean temperature in Japan has increased by about 1°C over the last century, with the 1990s being the warmest decade and 1990 being the single warmest year. Summers have warmed slightly less rapidly than this, although several summer heatwaves - June 1991, July and August 1994, August 1998 - have been notable. Some of the current and predicted impacts of climate change in Japan include:

- More summer heatwaves are leading to increased rates of cardio-respiratory illness and mortality especially among over-65s, Japan's fastest growing population category.
- Changes in precipitation and water availability. Japan may see direct impacts of changes in precipitation, and major cities like Tokyo and Osaka could experience water restrictions. In addition, Japan is already feeling the impact of changing water regimes due to climate change in food producing nations such as Australia and India, as this has had major effects on international food production, supply and prices (see section 2.1).
- Coastal erosion as a result of rising sea levels. One estimate suggests that a 30cm rise in average sea-level might reduce the existing beach coastline of Japan by more than 50 per cent if no adaptation measures were implemented.
- Risk of inundation. The conurbations of Tokyo, Osaka and Nagoya account for more than 50 per cent of Japan's industrial production. An area of coastal land of about 860 km<sup>2</sup> in these metropolitan regions is

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already below the mean high-water level. A 100 cm rise in sea-level would enlarge this vulnerable area to nearly three times its current size and expand the flood-prone area from 6,270 km<sup>2</sup> to about 8,900 km<sup>2</sup>.

- Other impacts such as changes in agricultural regimes, forests, flora and aquatic ecosystems, and changes in energy demand.

Although Japan is the third largest oil consumer in the world behind the United States and China, the second largest net importer of oil, and the largest net importer of liquefied natural gas in the world, it has virtually no domestic oil or natural gas reserves. Hydroelectric power and renewable energy account for a relatively small percentage of total energy consumption in the country, around 3% and 1% respectively. In other words, Japan nearly completely reliant on other countries for energy.

As the effects of climate change become more noticeable, and oil and gas supplies begin to dwindle in the face of increasing demand, Japan is sure to face serious challenges in securing energy supplies. The manufacturing industry has reached near optimum efficiency levels in many areas, prompted by the oil shocks of the 1970s, and new energy sources are desperately needed.

In addition, Japan has one of the lowest food self-sufficiency rates in the world. Japan's food self-sufficiency ratio, defined as the domestically produced calories supplied per person over total calories supplied per person, has hovered at or around the 40% mark for over 8 years now. This means that Japan relies on imports for roughly 60% of its caloric supply. As climate change begins to impact global production, with droughts, floods and major storms becoming more commonplace, supplying food will become and increasingly difficult challenge.

In short, acting now to reduce climate change is essential to securing the future for Japan's population.

On the other hand, there are huge positive benefits for Japan's people if the government takes a strong stance now. Globally, there is a green jobs boom, accompanying the green economical boom. According to a report by the Environmental Industries Commission, this is already a \$3 trillion global marketplace, which is growing rapidly at over 5 per cent a year. Areas like wind power are helping this growth, but according to both governments and industry, we can expect many more jobs to appear across a much wider spectrum. As Paul Hannam wrote in September 2008 (GreenBiz):

"There is mounting evidence of a green jobs revolution that promises to transform the workplace across the nation. Media pundits, business leaders, activists, and politicians claim that the Green Economy will create millions of new jobs, lead us out of recession and, in the process, transform our economy into a 21st century engine of prosperity.

On the other hand, there is also a great deal of rhetoric and hype about this phenomenon and we should stand back and analyze what is really happening. The truth is that a massive economic transition doesn't happen overnight. Training and hiring millions of people for green jobs demands time, financial investment, and an adjustment of expectations about the very look and feel of a 21st century labor force that is fostering sustainable change.

As specialist recruiters in San Francisco and London, every day we see and wrestle with the emerging realities of the green labor market. For example, we see how America's lack of investment in engineering talent has left it short-staffed of renewable energy modelers and LEED Certified HVAC professionals to fuel this green labor revolution.

Underpinning -- and at times unlocking -- these challenges is the need for increased government policies, subsidies and laws. Without these it will be difficult for sectors like renewable energy to prosper. Currently, fossil fuels receive enormous subsidies and many solar, wind and other technologies are still in their infancy and need local, state and, above all, federal support to flourish.

A clear and tangible commitment from Washington will be critical to ensuring the long-term viability of the Green Economy. Thankfully, 2009 promises to see more progressive regulation with both candidates embracing a forward-looking domestic energy agenda. Internationally, agreeing on a successor to the Kyoto Protocol and creating an international authority for carbon trading and investment will be positive next steps towards an integrated, stable global economy that properly accounts for carbon and guards against damaging environmental practices."

Is the green economy receiving the kind of support it should in Japan?

According to the United Nations Environment Programme:

"Japan and the Republic of Korea have announced that they will invest billions of dollars in green projects to create jobs and spur economic growth, in the latest sign that the Green New Deal advocated by the United Nations is gaining momentum.

Japan has announced that it aims to expand the 'green business' market and create up to 1 million new jobs, with measures including zero-interest rate loans for environmentally-friendly companies."

However, if Japan's mid-term goals fall short of international standards, Japan's businesses will drop further behind the rest of the world, and Japan's job market will lapse too. In particular, Japanese business people will miss out on the skills necessary for integration in the global green marketplace, and essential markets for the

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future.

#### 3) Benefits for the People of the World

As noted in the IPCC Fourth Assessment Report, Summary for Policymakers:

"Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level. At continental, regional and ocean basin scales, numerous long-term changes in climate have been observed. These include changes in arctic temperatures and ice, widespread changes in precipitation amounts, ocean salinity, wind patterns and aspects of extreme weather including droughts, heavy precipitation, heat waves and the intensity of tropical cyclones.

Palaeoclimatic information supports the interpretation that the warmth of the last half century is unusual in at least the previous 1,300 years. The last time the polar regions were significantly warmer than present for an extended period (about 125,000 years ago), reductions in polar ice volume led to 4 to 6 m of sea level rise.

For the next two decades, a warming of about 0.2 degree Celsius per decade is projected for a range of SRES emission scenarios. Even if the concentrations of all greenhouse gases and aerosols had been kept constant at year 2000 levels, a further warming of about 0.1 degree Celsius per decade would be expected.

Continued greenhouse gas emissions at or above current rates would cause further warming and induce many changes in the global climate system during the 21st century that would very likely be larger than those observed during the 20th century."

The Arctic sea, Earth's "air conditioner," is melting. The US National Snow and Ice Data Center stated the following in October 2007: Arctic sea ice during the 2007 melt season plummeted to the lowest levels since satellite measurements began in 1979. The average sea ice extent for the month of September was 4.28 million square kilometers (1.65 million square miles), the lowest September on record, shattering the previous record for the month, set in 2005, by 23 percent. At the end of the melt season, September 2007 sea ice was 39 percent below the long-term average from 1979 to 2000. If ship and aircraft records from before the satellite era are taken into account, sea ice may have fallen by as much as 50 percent from the 1950s. The September rate of sea ice decline since 1979 is now approximately 10 percent per decade, or 72,000 square kilometers (28,000 square miles) per year.

All of these carefully phrased scientific words and facts and figures downplay a globally alarming fact, climate change is real, climate change is happening, climate change is caused by human activity, and more than anything else, the world's poorest people are going to bear the brunt of this global upheaval in the planet's climate.

Preventing climate change is not just good for business, good for jobs, and good for innovation, climate change prevention is something we must do because it is the decent, compassionate thing to do for all human beings.

"I have been in Japan for over 7 years now, and have been surprised, amused, confounded and perplexed by any number of aspects of Japanese culture, life and spirit. However, one thing I am convinced of: The Japanese people are perhaps the hardest-working, most dedicated people in the world and if they turn their mind to something, they will complete it, no matter how impossible it may seem. This Japanese spirit of indomitable perseverance was responsible for bringing the country out of post-World War II devastation, and raise it up to become one of the most economically successful countries in the world.

In recent decades, Japan has found itself facing severe challenges, a long-running recession, decreasing food self-sufficiency, an aging nation, increasing health care and pension costs, and now it is also being hit hard by the worst global downturn since the 1930s depression. It is in these most desperate times that I believe Japanese people are most resilient. By setting high targets, its people will stand up to the challenge and take the lead in promoting a global sustainable society, and create a green economy.

This is the time for the Japanese government to once again take the lead by promoting a revolution from an aging Grey Nation to a high growth, economically and environmentally sound, Green Nation."



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Japan for Sustainability (JFS), established in 2002, is a non-profit organization providing information on developments and activities in Japan that lead toward sustainability

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