

G8 Hokkaido Toyako Summit Carbon Offsetting Report

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Ministry of Foreign Affairs of Japan

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Summary

One of the major topics discussed during the G8 Hokkaido Toyako Summit, held from July 7th to 9th, 2008, was climate change. With this in mind, a variety of measures were taken to minimize environmental impacts arising from hosting the Summit. As part of these efforts, the Government of Japan made a decision to offset additional CO₂ emissions generated from hosting the Summit.

Carbon offsetting primarily encourages individuals/businesses to become aware of the greenhouse gas (GHG) they emit and to act to avoid/reduce them. Offsetting is a way of mitigating the effect of the unavoidable emissions by purchasing credits equivalent to the total or partial amount of GHG emissions.¹

Carbon offsetting has been carried out on several occasions worldwide including the G8 Gleneagles Summit in 2005 and the FIFA World Cup in Germany in 2006. In Japan, a guidance document on carbon offsetting was released by the Ministry of the Environment in February 2008. This carbon offsetting on the occasion of the G8 Hokkaido Toyako Summit is the first attempt for the Japanese government to offset CO₂ emissions associated with an international conference at the leaders level.

This report provides an overview of how we shaped the carbon offsetting policy, defined the boundary, calculated the CO₂ emissions, and offset the emissions.²

The Japanese government established an Advisory Panel to discuss: how to minimize CO₂ emissions, how to define the boundary and a method for calculating CO₂ emissions, and how to offset the emissions. The following summarizes the outlines of the carbon offsetting carried out by the Government of Japan taking into consideration the result of the discussions within the Panel:

1. CO₂ emissions reduction measures

The Japanese government committed itself to minimize the environmental impact, in particular CO₂ emissions, associated with the Summit. The measures include: a thorough application of the 3R (Reduce, Reuse and Recycle) principle in the construction and deconstruction of the International Media Center, installation of solar panels, green wall system and snow storage for air conditioning, and the use of fuel cell powered buses and hybrid cars as means of transportation to the Summit site.

2. Method for calculating CO₂ emissions and how to offset the emissions

1) Method for calculating CO₂ emissions

The GOJ determined the boundary of the CO₂ emissions to be offset and the method for calculating the emissions after having considered the suggestions offered by the Panel, guidelines that are relevant to carbon offsetting, and similar endeavours of late. The GOJ also took into account in this process the type of emission sources of additional CO₂ associated with the Summit, the amount of CO₂ emitted by each source and its data availability. Those whose additional CO₂ emissions are included in the

¹ Ministry of the Environment, 2008, "Establishing Guidelines for Carbon Offsetting in Japan."

² This carbon offsetting project was commissioned by the Ministry of Foreign Affairs of Japan to KPMG AZSA Sustainability Co., Ltd.

calculation are: members of delegations (including those from non-G8 countries), contractors and providers of supporting services, and press/media correspondents.³ The kinds of activities included in the calculations are: international and domestic air travel, transportation between New Chitose Airport and the Toyako area, lodging, and the use of facilities including the International Media Center. Based on this method, the amount of additional CO₂ emissions is estimated to be 25,837tCO₂.

2) How to offset the emissions

In order to ensure the transparency of the selection process of carbon credits, and to showcase a variety of carbon offsetting methods, it was decided to develop a portfolio of credits and projects chosen from public applications.

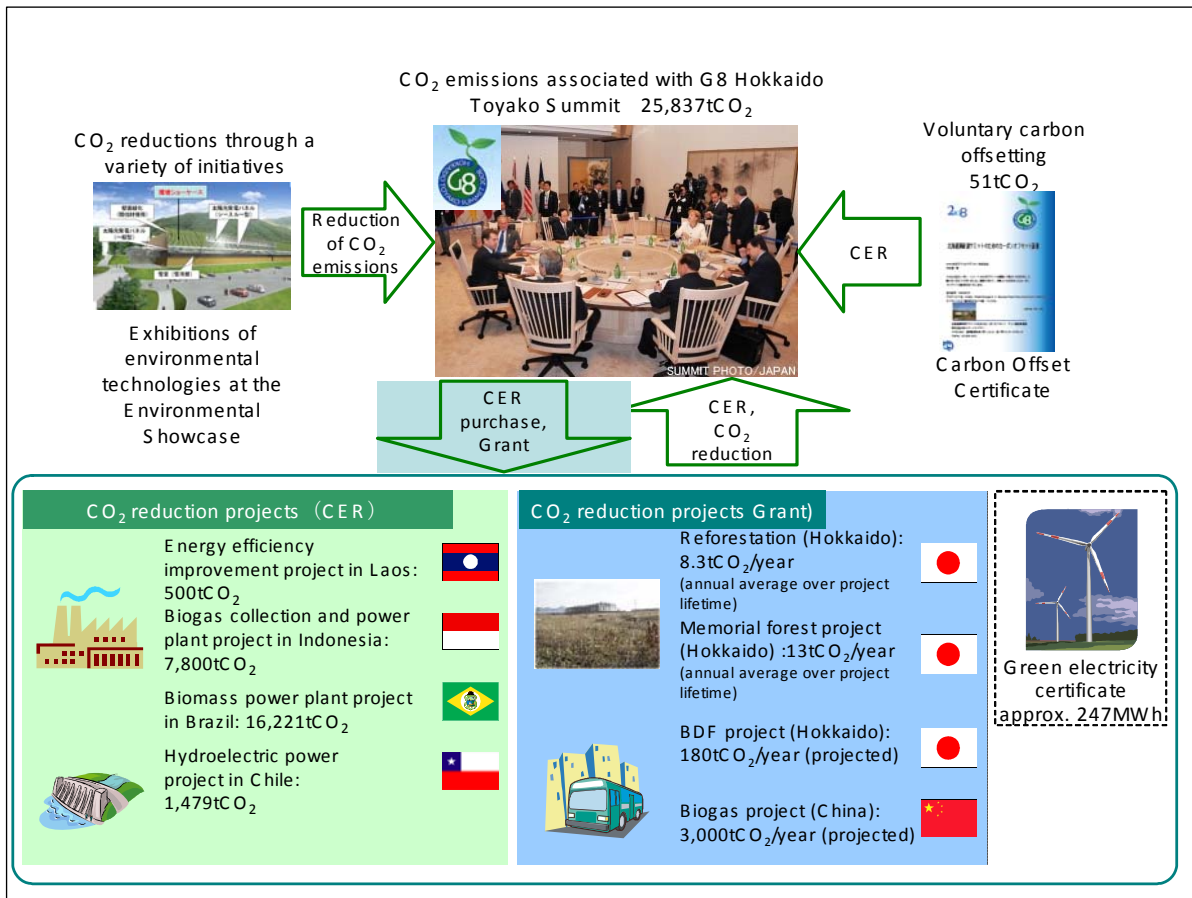
The Advisory Panel examined the public applications in terms of how certain the projects could achieve a quality carbon offsetting and how best the credits and projects could represent the G8 Hokkaido Toyako Summit hosted by the Japanese government. The CERs to be generated from four Clean Development Mechanism (CDM)⁴ projects were eventually selected. We also decided to provide grants to four projects overseas and in Hokkaido. These projects were chosen not only because they were expected to contribute to carbon reduction/sequestration, but also because our support for them was considered important, socially and environmentally, as commemorative projects of the G8 Summit.

Carbon offsetting will be completed when CERs (to be) obtained through purchase or through the selected project are nullified, or when measures are taken to ensure that the amount of CO₂ to be absorbed through the selected projects will not be used for any other purposes than the carbon offsetting of the G8 Hokkaido Toyako Summit.

³ See Chapter 3 for details.

⁴ A Kyoto Mechanism that allows industrialized countries (Annex I countries) to generate emission credits through investment in emission reduction projects in developing countries (non-Annex I countries).

Diagram 1 Overview of the G8 Hokkaido Toyako Summit carbon offsetting



1. Policy for Carbon Offsetting

One of the major topics discussed during the G8 Hokkaido Toyako Summit, held from July 7th to 9th, 2008, was climate change. With this in mind, a variety of measures were taken to minimize environmental impacts arising from hosting the Summit. As part of these efforts, the GOJ made a decision to offset additional CO₂ emissions generated from hosting the Summit.

Carbon offsetting primarily encourages individuals/businesses to become aware of the greenhouse gas (GHG) they emit and to act to avoid/reduce them. Offsetting is a way of mitigating the effect of the unavoidable emissions by purchasing credits equivalent to the total or partial amount of GHG emissions.⁵

The Japanese government established an Advisory Panel to discuss: how to minimize CO₂ emissions, how to define the boundary and a method for calculating CO₂ emissions, and how to offset the emissions.

1-1. Advisory Panel

Tables 1 and 2 describe the members of the Advisory Panel and the issues discussed within the Panel, respectively. The Ministry of Foreign Affairs of Japan (MOFA) participated in the discussion. KPMG AZSA Sustainability Co., Ltd., which was commissioned by the MOFA to carry out carbon offsetting, served as the secretariat to the Panel.

Table 1 Members of the Advisory Panel

Name	Position
Jusen Asuka	Professor, Tohoku University Center for Northeast Asian Studies
Yurika Ayukawa	Vice President, 2008 Japan G8 Summit NGO Forum
Takejiro Sueyoshi	Director, Japan Carbon Offset
Naoki Matsuo	CEO, PEAR Co., Ltd.
Wataru Miyamoto	Special Associate Professor, Hokkaido University Center for Sustainability Science

⁵ Ministry of the Environment, 2008, *ibid.*

Table 2 Issues discussed within the Advisory Panel

	Date (Location)	Issues discussed
First meeting	15 th of April 2008 (Ministry of Foreign Affairs of Japan)	1) Possible CO ₂ emission reduction measures to be taken by the Japanese government 2) Method for calculating CO ₂ emissions 3) How to offset the emissions
Second meeting	9 th of May 2008 (Ministry of Foreign Affairs of Japan)	1) <i>Ex-ante</i> estimate of CO ₂ emissions, boundary, method for calculating CO ₂ emissions 2) Portfolio of carbon offsetting projects 3) Policy for purchasing carbon credits and for providing grants to emissions reduction/carbon sink enhancement projects
Third meeting	End of May 2008 (Through e-mails)	Final discussion on the portfolio of carbon offsetting projects and on how to select projects

1-2. Discussions within the Panel

The members of the Advisory Panel had active discussions on the following issues:

- 1) Possible CO₂ emission reduction measures
- 2) Definition of the boundary and method for calculating CO₂ emissions
- 3) How to offset the emissions
- 4) Criteria for selecting emissions reduction/carbon sink enhancement projects

Comments/suggestions made by the Panel were summarized below:

- 1) Possible CO₂ emission reduction measures
 - Participants of the G8 Hokkaido Toyako Summit should be encouraged to make effort to voluntarily reduce their own CO₂ emissions.
- 2) Definition of the boundary and method for calculating CO₂ emissions
 - Generally speaking, what to be included in the calculations should be reasonably and practically as broad as possible. When it is difficult to collect particular data for calculating CO₂ emissions, it is preferable to use conservative estimates.
 - For the calculations of CO₂ emissions from air travel by the Summit participants, it is advisable to include the emissions from government chartered airplanes. (This is due to the fact that a large proportion of the Summit-related emissions was to arise from air travel and that many countries were expected to use government chartered airplanes).
 - Radiative Forcing should be taken into account when the emissions from air travel are calculated.
- 3) How to offset the emissions
 - To ensure transparency, carbon credits could be purchased through the projects chosen from public applications.
 - It is advisable, at the time of inviting applications, not to specify the type of carbon credits to purchase, so as to ensure attracting broad range of applications.

- In terms of the certainty of obtaining credits, CERs originating from CDM projects are the most reliable credits since they have gone through the certification process of the United Nations.
- Projects should be those expected to contribute to sustainable development of developing countries, and whose additionality can be relatively easily demonstrated.
- Opportunities can be provided for press/media correspondents to participate in voluntary offsetting of their own carbon emissions.
- For a quality carbon offsetting that should be implemented in a reliable manner, carbon sink type afforestation projects must be treated with caution due to its dubious permanence as a carbon sink.

4) Criteria for selecting emissions reduction/carbon sink enhancement projects

- It is desirable if grants could provide a chance for socially and environmentally significant projects to be implemented.
- Projects could be chosen from those that could be positioned as ‘seed projects.’
- It may be appropriate to provide grants to projects to be implemented in Hokkaido.
- Projects should ideally have ‘co-benefits’, i.e. social, economic and environmental benefits in addition to CO₂ reduction.
- It is desirable if we could give priorities to projects in least developed countries (LDCs) that are normally considered financially infeasible even as CDM projects.
- It is vital to follow up on the implementation of the projects to see whether they have succeeded in delivering expected results.

Such matters as CO₂ reduction measures, boundary, method for calculating CO₂ emissions, policy for procuring credits and criteria for selecting projects to provide grants, were decided upon based on these comments/suggestions made by the members of the Advisory Panel. Details of each issue are referred to in the following chapters.

2. CO₂ emission reduction measures

The Japanese government committed itself to minimize the environmental impacts, in particular CO₂ emissions, associated with the Summit. The measures include: a thorough application of the 3R (Reduce, Reuse and Recycle) principle in the construction and deconstruction of the International Media Center, installation of solar panels, green wall system and snow storage for air conditioning, and the use of fuel cell powered buses and hybrid cars as means of transportation to the Summit site.

Please refer to the webpage of the G8 Hokkaido Toyako Summit for the details of these measures (<http://www.g8summit.go.jp/eng/info/consider.html>).

3. Boundary and calculation method

The GOJ determined the boundary of the CO₂ emissions to be offset and the method for calculating the emissions as below, after having considered suggestions offered by the Panel, guidelines that are relevant to carbon offsetting, and similar endeavours of late. The government also took into account in this process the type of emission sources of additional CO₂ associated with the Summit, the amount of CO₂ emitted by each source and its data availability.

3-1. Summit participants included in the calculations

Those whose additional CO₂ emissions are included in the calculation are shown in Table 3.

Table 3 Boundary of participants

	Participants	Description
1	Members of delegations	G8 delegates (Canada, France, Germany, Italy, Russia, UK, US, EU and Japan), Non-G8 delegates (Algeria, Ethiopia, Ghana, Nigeria, Senegal, South Africa, Tanzania, AU, Brazil, China, India, Mexico, Australia, Indonesia and South Korea), Heads of international institutions (UN, World Bank, IMF, OECD, IEA) and their staff.
2	Contractors and providers	Contractors and providers of supporting services to the Summit ⁶
3	Press/media correspondents	National and international press/media correspondents

⁶ These contractors and providers are mostly based in Hokkaido.

3-2. Activities included in the calculations

Operational boundaries are shown in Table 4.

Table 4 Operational boundaries

	CO ₂ emissions by activity	Source of emissions
1	CO ₂ emissions resulting from international air travel of participants from their home countries to Narita Airport or New Chitose Airport and the returning flight	<ul style="list-style-type: none"> • Burning of jet fuels
2	CO ₂ emissions resulting from domestic air travel by participants between Narita or Haneda Airport and New Chitose Airport	<ul style="list-style-type: none"> • Burning of jet fuels
3	CO ₂ emissions resulting from traveling between New Chitose Airport and the Toyako area by car	<ul style="list-style-type: none"> • Burning of gasoline
4	CO ₂ emissions resulting from participants lodging around Toyako	<ul style="list-style-type: none"> • Electricity consumption by hotels • Fuel consumption by hotels
5	CO ₂ emissions resulting from the use of the Summit facility	<ul style="list-style-type: none"> • Electricity consumption by the facility • Fuel consumption by the facility
6	CO ₂ emissions from other related facilities including the International Media Center	<ul style="list-style-type: none"> • Electricity consumption during construction and deconstruction of the facilities • Fuel consumption during construction and deconstruction of the facilities • Electricity consumption during the use of the facility • Fuel consumption during the use of the facility

3-3. Calculation method

The method for calculating CO₂ emissions associated with the G8 Hokkaido Toyako Summit is shown in Table 5. *Ex-ante* estimate of the emissions was obtained using various assumptions and projections, whereas the final estimate was obtained using actual data.

Table 5 CO₂ emissions and method for calculation

	CO ₂ emissions by activity	Calculation method
1	CO ₂ emissions resulting from international air travel of participants from their home countries to Narita Airport or New Chitose Airport and returning flight	<ul style="list-style-type: none"> • Flight distance (km) (round trip) multiplied by CO₂ emissions factor (gCO₂/person km) • The flight distance was estimated using the Carbon Neutral Flights of The Carbon Neutral Company⁷ • CO₂ emissions factor (gCO₂/person km) was taken from the guidelines of Defra⁸. Radiative Forcing Index multiplier of 1.9 was used⁹. • CO₂ emissions from government chartered airplanes were calculated using the available data on the number of passengers and flight distance. • When the CO₂ emissions were offset by the participants themselves, the offset emissions were deducted from the emissions.
2	CO ₂ emissions resulting from domestic air travel by participants between Narita or Haneda Airport and New Chitose Airport	<ul style="list-style-type: none"> • CO₂ emissions resulting from the participants traveling from Narita or Haneda Airport to New Chitose Airport were calculated. • Flight distance (km) (return journey) multiplied by CO₂ emissions factor (gCO₂/person km) • The flight distance was estimated using the Carbon Neutral Flights of The Carbon Neutral Company¹⁰ • CO₂ emissions factor (gCO₂/person km) was taken from the guidelines of Defra¹¹. Radiative Forcing Index multiplier of 1.9 was used¹². • CO₂ emissions from government chartered airplanes were calculated using the available data on the number of passengers and flight distance. • When the CO₂ emissions were offset by the participants themselves, the offset emissions were deducted from the emissions.
3	CO ₂ emissions resulting from traveling between New Chitose Airport and the Toyako area by car	<ul style="list-style-type: none"> • The distance between New Chitose Airport and the Toyako area (km) (round trip) was divided by the average gas mileage (km/L), provided by the Ministry of Land, Infrastructure, Transport and Tourism (March 2008)¹³, to calculate gasoline consumption (L). • The calculated gasoline consumption (L) was then multiplied by the calorific value of gasoline and further multiplied by the CO₂ emissions factor of the fuel. The Ministry of the Environment and the Ministry of Economy, Trade and Industry provide these values¹⁴. • When the CO₂ emissions were offset by the participants themselves, the offset emissions were deducted from the emissions.
	CO ₂ emissions	Calculation method

⁷ The Carbon Neutral Company (<http://www.carbonneutral.com/cncalculators/flightcalculator.asp>)

⁸ Defra, 2007, "Guidelines to Defra's Greenhouse Gas Conversion Factors for Company Reporting Annexes updated June 2007"

⁹ Defra, 2008, "Code of Best Practice for Carbon Offset Providers: Methodology Paper for New Transport Emission Factors" (Radiative Forcing Index multiplier of 1.9 was used, and so the calculated emissions are 'GHG emissions measured in tCO₂e' rather than 'CO₂ emissions'. For the purpose of the convenience, however, this report uses the term 'CO₂ emissions' instead of 'GHG emissions', and the unit 'tCO₂' rather than 'tCO₂e'.

¹⁰ The Carbon Neutral Company, *ibid.*

¹¹ Defra, 2007, *ibid.*

¹² Defra, 2008, *ibid.*

¹³ Ministry of Land, Infrastructure, Transport and Tourism, 2008, "Automobile Fuel Efficiency List", page 8

¹⁴ Ministry of the Environment and Ministry of Economy, Trade and Industry, 2008, "Manual for Accounting and Reporting on Greenhouse Gas Emissions (ver.2.3)", page II-22

4	<p>CO₂ emissions resulting from participants lodging around Toyako</p> <ul style="list-style-type: none"> • CO₂ emissions of the delegation members who stayed in Windsor Hotel were calculated from the hotel’s actual consumption of the electricity and fuels. CO₂ emissions from the burning of fuels were calculated with fuel-specific calorific values and CO₂ emissions factors shown in the “Manual for Accounting and Reporting on Greenhouse Gas Emissions (ver.2.3)” (hereafter, the ‘GHG manual’) issued by the Ministry of the Environment and the Ministry of Economy, Trade and Industry. The emissions from electricity consumption were calculated with the emissions factor of fiscal 2006 of Hokkaido Electric Power¹⁵. • CO₂ emissions of the delegation members who stayed in hotels other than Windsor Hotel were calculated as the following. (only when the hotels’ monthly consumption of fuels is known.) <ol style="list-style-type: none"> 1) Calculating the daily electricity and fuel consumption by dividing the electricity and fuel consumption for selected period during which delegation members stayed, by the number of days they stayed. (a) 2) Multiplying (a) with the number of days the delegation members stayed at hotels to derive the electricity and fuel consumption. (b) 3) Multiplying (b) with the calorific values and CO₂ emissions factors shown in the GHG manual to derive CO₂ emissions from fuel consumption. The emissions from electricity consumption were calculated with the emissions factor of fiscal 2006 of Hokkaido Electric Power. • CO₂ emissions of the other participants, i.e. the rest of the delegation members who are not covered above (hereafter, the ‘other delegation members’), press/media correspondents and contractors, were calculated as the following. <ol style="list-style-type: none"> 1) It is assumed that the other delegation members stayed in one hotel, and that press/media correspondents and contractors stayed in one of the 4 hotels¹⁶. (c) 2) It is also assumed that the other participants stayed for 3 days, contractors for 4 days, and press/media correspondents for 3 days. (d) 3) Assumptions are also made that the daily electricity and fuel consumption per hotel was the same as that of Windsor Hotel (e). 4) The multiplication of (c), (d) and (e) is the total electricity and fuel consumption of the other delegation members, press/media correspondents and contractors. (f) 5) Multiplying (f) with the calorific values and CO₂ emissions factors shown in the GHG manual to derive CO₂ emissions from fuel consumption. The emissions from electricity consumption were calculated with the emissions factor of fiscal 2006 of Hokkaido Electric Power. • When the CO₂ emissions were offset by the participants themselves, the offset emissions were deducted from the emissions.
5	<p>CO₂ emissions resulting from the use of the Summit facility</p> <ul style="list-style-type: none"> • This is included in ‘4’ because the Summit was held inside Windsor Hotel.
6	<p>CO₂ emissions from other related facilities including the International Media Center</p> <ul style="list-style-type: none"> • CO₂ emissions resulting from the electricity and fuel consumption for construction, operation and deconstruction of the International Media Center and other related facilities were calculated using the actual measured data reported by the relevant companies. • Diesel oil consumption from transportation of building materials was calculated first by estimating the freight ton-kilometers from the travel distance (km), load (t) and number of return journeys, and then by multiplying the estimated freight ton-kilometers with the default fuel consumption factor per ton-kilometer, provided by the GHG manual.¹⁷ • The calculated diesel oil consumption was then multiplied by the calorific value of diesel and further multiplied by the CO₂ emissions factor of the fuel.

¹⁵ Ministry of the Environment and Ministry of Economy, Trade and Industry, 2008, *ibid.*, page II-25

¹⁶ The data was collected from the Hotel Reservation Center Website for Hokkaido Toyako Summit: <http://www.g8hotels.jp/accomm/index.html> and advice from Ministry of Foreign Affairs of Japan

¹⁷ Ministry of the Environment and Ministry of Economy, Trade and Industry, 2008, *ibid.*, page II-36

(1) Flight distance

For calculating CO₂ emission, it was decided to use the flight distance data provided by the Carbon Neutral Company from the practical point of view.¹⁸

In order to calculate the flight distances, the departure and arrival airports must be specified. However, it is not practically possible to identify all the departure and arrival airports of all the participants to the Summit. The departure and arrival airports were specified using the following assumptions:

- 1) All participants flew from the capital city of their home country to Narita Airport or New Chitose Airport.
- 2) If there is no direct flight to Narita Airport or New Chitose Airport, it is assumed that participants took a connecting flight with the shortest flight distance.
- 3) The participants' air travel inside Japan is assumed to be from Narita or Haneda Airport to New Chitose Airport.

In order to calculate the flight distances of government chartered airplanes, the departure and arrival airports of these planes also need to be identified. The same assumption as above was applied.

¹⁸Flight distance could be drawn either from the Ticketed Point Mileage (TPM) data of the International Air Transport Association (IATA), which are used by air carriers to calculate plane ticket fees, or from flight distance data provided by carbon offset providers. TPM data, however, is not freely and publicly available. Some data is available through several airline company websites, but the data is limited to flight distances between cities they fly. TPM data is not available for connection flights either. On the other hand, the Carbon Neutral Company provides flight distance data on their Carbon Neutral Flight webpage and it provides flight distances between a number of cities around the world. There is a gap between TPM data and Carbon Neutral Flight data, but it should be considered insignificant (for example: the flight distance between Tokyo-London is 10,010km as TPM data and 10,451km as CNF data. The flight distance between Tokyo-Jakarta is 5,811km as TPM data and 6,360km as CNF data.) It is presumably ideal to use TPM data, but since this data is not freely and publicly available, and the distances data provided by the Carbon Neutral Company are not significantly different from TPM data, it was decided to use the data provided by the Carbon Neutral Flights.

(2) Radiative Forcing

There is a broad consensus that the water vapor and NO_x emitted from airplanes at high altitudes cause global warming. This is called Radiative Forcing, and it is possible to calculate its global warming effect by multiplying CO₂ emissions with the Radiative Forcing Index. A decision was made to include this calculation for the G8 Hokkaido Toyako Summit.

On the other hand, there is no consensus on the value of the Radiative Forcing Index. The value of 1.9 that is recommended in the guidelines of Derfa¹⁹ was used for this purpose.

4. CO₂ emissions

4-1. CO₂ emissions by participants

CO₂ emissions by participants are shown in Table 6.

Table 6 Number of participants and CO₂ emissions

	Participants	Number of participants	CO ₂ emissions (tCO ₂)
1	Members of delegations	approx. 2,500	20,490
2	Contractors and providers	approx. 2,600	427
3	Press/media correspondents	approx. 4,000	4,204
4	Emissions from related facilities including the International Media Center		716
	Total	approx. 9,100	25,837

Calculation: KPMG AZSA Sustainability Co., Ltd.

The largest among the CO₂ emissions of the members of delegations was from government chartered and commercial airplanes (international flights). Because some of the press/media correspondents flew on government chartered airplanes, part of their emissions is included in 'Members of delegations'.

4-2. CO₂ emissions by activities

CO₂ emissions by activities are shown in Table 7.

Table 7 CO₂ emissions according to different activities

	Scope of activities	CO ₂ emissions (tCO ₂)
1	CO ₂ emissions resulting from international air travel by participants from their home countries to Narita Airport or New Chitose Airport, including return flight	20,357
2	CO ₂ emissions resulting from domestic air travel by participants between Narita or Haneda Airport and New Chitose Airport	2,425
3	CO ₂ emissions resulting from traveling between New Chitose Airport and the Toyako area by car	136
4	CO ₂ emissions resulting from participants lodging around Toyako	2,203
5	CO ₂ emissions resulting from the use of the Summit facility	(included in 4)
6	CO ₂ emissions from other related facilities including the International Media Center	716
	Total	25,837

Calculation: KPMG AZSA Sustainability Co., Ltd.

5. Carbon Offsetting

5-1. Portfolio

In order to ensure the transparency of the selection process, and to showcase a variety of carbon reduction/sequestration projects, it was decided to develop a portfolio of credits and projects chosen from public applications.

The Advisory Panel examined the public applications²⁰ in terms of how certain the projects could achieve a quality carbon offsetting and how best the projects could represent the G8 Hokkaido Toyako Summit hosted by the Japanese government. Table 8 shows the CERs to be generated from four different types of CDM projects. It also shows the four projects for which we decided to provide grants. These projects were chosen not only because they were expected to contribute to carbon reduction/sequestration, but also because they are important, socially and environmentally, and suitable as commemorative projects of the G8 Summit.

Table 8 Portfolio

	Name of Project	Project Site	Type of Credit	Credit Amount
1	PT Navigat Organic Energy Indonesia Integrated Solid Waste Management (GALFAD) Project in Bali, Indonesia. (CDM registered by the UN)	Indonesia	CERs to be issued by the UN (Issuance and nullification will be done approximately by autumn in 2009)	7,800tCO ₂
2	Energy efficiency improvement project at a beer brewery in Lao PDR. (CDM registered by the UN)	Laos	CERs to be issued by the UN (Issuance and nullification will be done approximately by autumn in 2009)	500tCO ₂
3	Chacabuquito Hydroelectric Power Project. (CDM registered by the UN)	Chile	CERs to be issued by the UN (Issuance and nullification will be done approximately by spring in 2009)	1,479tCO ₂
4	Koblitz - Piratini Energia S. A - Biomass Power Plant – Small Scale CDM Project. (CDM registered by UN)	Brazil	CERs to be issued by the UN (Issuance and nullification will be done approximately by the end of 2008)	16,221tCO ₂
5	Green Electricity Certificate originated in Hokkaido Wakkanai Mega Solar Power Plant	Japan	Green Electricity Certificate	approx. 247MWh ²¹
6	Biogas Micro Digester Project in Chongqing, China (a project aiming to become a CDM project)	China	Expected CERs (acquisition and nullification will be done approximately by the end of 2010)	3,000tCO ₂ (Amount corresponding to the grant given)
7	Reforestation and Environmental Education Project in Tokachi, Hokkaido	Japan	Carbon stock enhanced by reforestation	8.3tCO ₂ (Annual average throughout 30 years of project lifetime)
8	Memorial Forest Project of the G8 Hokkaido Toyako Summit	Japan	Carbon stock enhanced by reforestation	13tCO ₂ (Annual average through 20 years of project lifetime)
9	Project to utilize bio diesel fuel produced by waste cooking oil as fuel for buses	Japan	CO ₂ emission reduction achieved by the project	180tCO ₂
Total				29,201tCO ₂ ²²

²⁰ There were ten applications for carbon offsetting credits and eight applications for grant projects.

²¹ It was decided not to use green electricity certificates to offset carbon emissions arising from the G8 Hokkaido Toyako Summit, taking into account the fact that how to translate green electricity certificates into carbon reductions is currently being discussed in Japan. We also chose not to deduct the purchased green electricity from the total electricity consumption. The primary aim of purchasing green electricity certificates is to promote renewable electricity generation in Japan.

The purchase of these credits and the provision of grants are expected to bring a reduction of 29,201 tons of CO₂, which are well above the CO₂ emissions of 25,837tCO₂ associated with the Summit. The reason for this to happen is as follows.

- Credits (CER) are a pre-order sale. We had to make an order in round number in advance, based on reasonably conservative estimates.
- The grant project abroad is still in the planning stage. The expected amount and timing of CO₂ emissions reduction is not guaranteed.

5-2. Policy for purchasing credits

Based on the comments/suggestions made by the Advisory Panel, the policy for purchasing credits to be used for offsetting was set as below:

- Credits should be chosen from the public application for the purpose of increasing transparency of process.
- The selection of credit should be based on the examination of the nature of original projects in addition to the prices.
- Priorities should be given to the credits with high probability of issuance, in order to ensure a sufficient volume of credits.
- The following factors should be taken into account in choosing projects:
 - 1) The existence of added values to the projects, such as the “Gold Standard”²³ certification, in addition to the registration by the UN.
 - 2) The location of the projects, i.e. whether or not they would be implemented in low income countries (including least developed countries (LDCs)).
 - 3) Involvement of ‘Japan’, e.g. investment by Japanese entities in the projects, transfer of technologies or other involvement in the development of the project by Japanese persons.
 - 4) Types of technologies employed by the projects, such as renewable energy.
 - 5) Environmental, economic and social benefits other than global warming protection for the hosting countries, such as contributing to sustainable development of low income local residents by improving the living standard and creating job opportunities.

²² This does not include 51tCO₂ (credits and the amount of carbon sequestered by forest) purchased by some Summit participants, mainly press people, as voluntary carbon offsetting.

²³ The Gold Standard was created to ensure top quality CDM projects, with an aim to achieve both the reduction of CO₂ emissions and the furtherance of sustainable development. It was developed with an initiative of the World Wide Fund for Nature (WWF), and is run by an independent organization, Gold Standard.

5-3. Overview of selected projects for carbon offsetting credits

After examining all applications by the above mentioned policies and criteria, four UN registered CDM projects shown in the Table 9 were selected.

Table9 : The list of credits (CERs) to be used for the carbon offsetting

	1	2	3	4
Name of Project	PT Navigat Organic Energy Indonesia Integrated Solid Waste Management (GALFAD) Project in Bali, Indonesia	Energy efficiency improvement project at a beer brewery in Lao PDR	Chacabuquito Hydroelectric Power Project	Koblitz - Piratini Energia S. A - Biomass Power Plant – Small Scale CDM Project
Type of Project	CDM	CDM	CDM	CDM
Type of Credit	CERs to be issued by the UN (Issuance and nullification will be done approximately by autumn in 2009)	CERs to be issued by the UN (Issuance and nullification will be done approximately by autumn in 2009)	CERs to be issued by the UN (Issuance and nullification will be done approximately by spring in 2009)	CERs to be issued by the UN (Issuance and nullification will be done approximately by the end of 2008)
Technology Employed	Biogas Power	Energy Efficiency Improvement in Manufacturing Plant	Hydroelectric Power	Biomass Power
Host Country	Indonesia	Laos	Chile	Brazil
Investing Country	Switzerland, Japan (planned)	Japan	Netherlands, Japan (planned)	Japan, UK, Switzerland
UN Registration Number	#0938	#0930	#1052	#0228
Provider	Mitsubishi UFJ Securities Co., Ltd.	Proact International Inc.	Mitsubishi Corporation	Japan Smart Energy Co., Ltd.

Overview of each project is as follows.

1) PT Navigat Organic Energy Indonesia Integrated Solid Waste Management (GALFAD) Project in Bali, Indonesia

- Biogas collection and power plant project in Bali, Indonesia
- A “GALFAD (GAsification, LandFill gas and Anaerobic Digestion)” plant to be constructed and operated at a landfill site in Bali. Expected to treat municipal solid waste and recover energy from it.
- Scheduled to be realized with an investment and assistance from Japan.
- Expected to bring about the following benefits other than CO₂ emissions reduction.
 - a. Environmental Benefit
 - Improvement of the environment around the landfill site, with reduced health hazards, odors and methane concentration, and increased sanitation.

b. Social and Economic Benefit

Increased work opportunities during the construction period, as well as for the operation of the site.

2) Energy efficiency improvement project at a beer brewery in Lao PDR

- A project to improve energy efficiency of a beer brewery of the Lao Brewery Co., Ltd. (LB).
- Aiming to reduce fuel oil consumption by improving the manufacturing process of beer.
- Japanese energy efficiency technology was transferred to this project. Developed by a Japanese company.
- A leading model to raise Lao people's awareness of energy efficiency.
- To be implemented in a least developed country.

3) Chacabuquito Hydroelectric Power Project

- Micro Hydroelectric Power Project in Chile.
- Expected to contribute to CO₂ emissions reduction by replacing fossil fuels.
- Expected to contribute to the development of the regional economy and create job opportunities.
- CDM projects in Chile are relatively small in number. To use CERs originating from this project for the Summit's carbon offsetting may contribute to ease regional imbalance of CDM.

4) Koblitz - Piratini Energia S. A - Biomass Power Plant – Small Scale CDM Project

- A project to construct consists in the generation of electricity with a thermoelectric power plant using wood residues from nine wood processing companies in the city of Piratini, in the State of Rio Grande do Sul, Brazil.
- Expected to serve by using wood biomass as a possible solution for various environmental issues such as conservation and sustainable development of forest resources.

5-4. Selection policies for grant projects

Based on the comments/suggestions made by the Advisory Panel, the priorities for providing grants were given to the following projects.

- Projects in Hokkaido and LDCs.
- Projects which may also bring about environmental, economic and social benefits other than global warming protection, i.e. projects with ‘co-benefits’.
- Overseas projects with a higher involvement of ‘Japan’, such as the transferring of Japanese technologies and a Japanese organization as a responsible entity.
- Projects that are small in size but have the potential to expand or spawn similar good projects in future should be treated as ‘seed projects.’
- (Projects expected not to generate carbon credits such as CERs should not be excluded, as long as they are expected to contribute to carbon reduction/sequestration.)

In addition to the grant projects, the Green Electricity Certification of 247MWh, originating from Wakkanai Mega Solar Plant in Hokkaido, was purchased for the purpose of contributing to making clean energy better known in Japan. This amount is equivalent to the electricity used in the International Media Center and its related facilities.

5-5. Overview of Grant Projects

After examining all applications by the above mentioned policies, three projects in Hokkaido and one overseas project were selected (Table 10).

Table 10 List of Grant Projects

	Name of Project	Project Site	Responsible Entity	General Description	Environmental, Economic, Social Benefits Expected
1	Reforestation and Environmental Education Project in Tokachi, Hokkaido Expected carbon stock enhanced by reforestation: 8.3tCO ₂ (Annual average through 30 years of project lifetime)	Tokachi, Hokkaido	Carbon Free Consulting Co., Ltd.	Carbon will be sequestered by tree planting in Tokachi, Hokkaido. This project also plans to invite the local junior and junior-high schools to participate in tree planting experience and environmental education.	<ul style="list-style-type: none"> • A showcase as a tree planting which is friendly to the local ecosystem and biodiversity • Avoidance of negative impacts on local people's lives by e.g. planting beans and pasture plants as bottom weed. • Prevention of excessive grazing • Prevention of soil runoff
2	Memorial Forest Project of Hokkaido Toyako Summit Expected carbon stock achieved by reforestation: 13tCO ₂ (Annual average through 20 years of project lifetime)	Sapporo, Mihoro-cho, Sobetsu-cho, Hokkaido CO ₂	NPO Convention Sapporo Network	This project invites corporations and organizations to donate to the Memorial Forest at the G8 Hokkaido Toyako Summit for planting and maintaining trees, which will enhance carbon sink.	<ul style="list-style-type: none"> • A carbon offsetting scheme to be initiated by the private sector. • Prevention of soil runoff • Environmental education • Contribution to local development through ecotourism.
3	Project which utilize bio diesel fuel produced from waste cooking oil as fuel for buses CO ₂ emission reduction achieved by the project: 180tCO ₂ /y	Obihiro, Hokkaido CO ₂	The mobility center steering chamber of Obihiro station	This project utilizes bio diesel fuel produced with waste cooking oil as fuel for fixed route buses. By placing waste cooking oil collection boxes on board to facilitate collection and giving eco-points in forms of bus tickets in return, this project will encourage people to use public transportation.	<ul style="list-style-type: none"> • Improvement of local people's awareness of waste cooking oil recycling. • Increased waste oil collection, production of BDF, buses fueled by BDF, and CO₂ emission reduction achieved by such efforts. • More stable management of the Obihiro station center.
4	Biogas Micro Digester Project in Chongqing, China (a project aiming to become a CDM project) Expected CO ₂ emission reduction achieved by the project: 3,000tCO ₂ /y	Chongqing, China	PEAR Carbon Offset Initiative Co., Ltd.	Expected to introduce biogas micro digesters to households in poor farming villages in Chongqing, China.	<ul style="list-style-type: none"> • Aid to low income farming village. • Reduction in coal usage. • Improvement of health and sanitary environment. • Prevention of air pollution in households by using biogas instead of coal. • Production of good fluid fertilizer. • Increased local energy self-sufficiency ratio by utilization of bio fuel produced locally.

The overseas project has the possibility of being registered as a CDM project in the future. Once CER is successfully generated from the project, Japan Smart Energy Co., Ltd., which is the subcontractor of this carbon offsetting project, will acquire the CER corresponding to the grants given and nullify them. Japan Smart Energy will monitor the development and outcomes of the projects.

5-6. Voluntary Carbon Offsetting

As part of the carbon offsetting project, we opened “a Carbon Offset Website for the G8 Hokkaido Toyako Summit²⁴” to provide the Summit participants, mainly press/media correspondents, with an opportunity to participate in voluntary carbon offsetting.

Individuals can calculate their own emissions from international and domestic flights, domestic land transportation, and accommodation. After the calculation, they can decide whether to offset their own emissions fully or partially by using its carbon offsetting service. There are two options: one is to purchase carbon credits, and the other is to make contribution to reforestation projects. The payment is made in the form of credit card settlement online and a carbon offset certificate is sent to the participant as request.

The participants are presented not only with the four projects chosen by the Advisory Panel, but also other projects including reforestation from public applications.

During the Summit, forty eight people participated in this voluntary offsetting and purchased credits or chose to make contribution to reforestation projects. This brought about the reduction of emissions of 51tCO₂ equivalent in total.

5-7. Completion of Offsetting

Carbon offsetting will be completed when the CERs (to be) obtained through purchase or through the selected project are nullified, or when measures are taken to ensure that the amount of CO₂ to be absorbed through the selected projects will not be used for any other purposes than the carbon offsetting of the G8 Hokkaido Toyako Summit.²⁵

²⁴ Carbon offsetting website for Hokkaido Toyako Summit, <http://www.smart-offset.com/g8summit/en/index.html> (This website is no longer in service as of July 15, 2008.)

²⁵The credits to be used for carbon offsetting happened to be all CERs. Among the CERs obtained through purchase or through grant, an amount corresponding to the emission for the G8 Hokkaido Toyako Summit will be nullified by transferring into the voluntary cancellation account of the GOJ.

6. Remaining to be considered for carbon offsetting initiatives in large international conferences

Expectations are growing that carbon offsetting may be one of the key initiatives in the transition to a low carbon society. Carbon offsetting was carried out on several occasions including the G8 Gleneagles Summit in 2005 and the FIFA World Cup in Germany in 2006. In Japan, a guidance document on carbon offsetting was published by the Ministry of the Environment in February 2008. This is the first attempt for the Japanese government to offset CO₂ emissions associated with a high-level international conference it hosts.

The issues raised by the people concerned including the members of the Advisory Panel would include the following:

1) Who is responsible for emissions?

All the expenses for carbon offsetting that match the emissions arising from hosting the Summit were borne by the Japanese government. The whole thrust of carbon offsetting is, however, that all players become aware of their own emissions, try to minimize the emissions, and offset the unavoidable emissions. From this point of view, who should be responsible for the additional emissions is certainly an issue.

Opportunities were provided for the press/media correspondents to participate in voluntary carbon offsetting. We believe that this is in line with the spirit of carbon offsetting, and that this could be a model for carbon offsetting initiatives in large international conferences.

2) Guidelines defining the boundary of carbon offsetting

The guidance document issued by Japan's Ministry of the Environment in February 2008 states that the boundary should in principle be set by the ones who offset emissions, but also points out the need for further guidance and case examples. This carbon offsetting in the G8 Hokkaido Toyako Summit could be one such example by an official organization. There should ideally be a common understanding and possibly an internationally accepted guidance on how the boundary should be set. Otherwise, large gaps in boundaries among different international conferences might give an impression to the public that boundaries are set arbitrarily, without any principles.

3) How and by what method we should offset carbon emissions

Opinions often diverge about how we should offset carbon emissions. Options would include purchasing the carbon credits generated from existing GHG reduction/sequestration projects, and using the credits that are expected to be generated from the subsidized projects, but every option has some upsides and downsides. Likewise, we could offset emissions with a single type of credits, but alternatively could develop a portfolio of various types of credits. Portfolio could be constructed in a number of ways, too.

Our conclusion for this particular offset, after being discussed by the Advisory Panel, was to develop a portfolio of credits and projects as shown in Table 8. It would, however, be advisable to find an appropriate method, when a decision has to be made on how to offset carbon emissions from a

particular international conference, by taking into account every upside and downside of possible options for carbon offsetting as well as other elements including the situation of the carbon market.

1. Upsides and downsides of purchasing the carbon credits that are already available in the market

Upsides:

- The fact that carbon credits have already been issued means that some greenhouse gas emissions have already been reduced or removed somewhere on the earth. Purchasing the issued credits would therefore be an secure and effective way to achieve a quality carbon offsetting.
- In case of CERs, the availability and liquidity are sufficiently high, and the infrastructure for trading and account management is well established.

Downsides:

- Purchasing the issued credits for carbon offsetting might give an impression that this does not lead to any additional reduction or removal of greenhouse gases because the issued carbon credits are the ones that have been generated from existing projects.
- Since CERs are quite liquid and their prices easily fluctuate, developing a good portfolio is sometimes a daunting task.
- There are 'premium' CERs, notably Gold Standard CERs, generated from the projects that meet specific criteria on top of the requirements set out by the United Nations. These criteria are rigorous in terms of environmental and social concerns. They are, however, more expensive than 'usual' CERs, and it is not always easy to purchase the desired amount at the desired timing.
- There are some opinions that the credits delivered from carbon sink type afforestation projects must be treated with caution due to its dubious permanence as a carbon sink.

2. Upsides and downsides of providing funds for projects to use the credits to be generated from them

Upsides:

- This method can send a direct message that an additional carbon reduction or sequestration will be achieved as the result of the G8 Hokkaido Toyako Summit and its carbon offsetting.
- It is possible to convey a variety of messages by carefully choosing what projects to support, in accordance with the objectives of the conference. For example, we gave priorities to those projects that:
 - Are implemented in low income countries (including LDCs),
 - contribute not only to the prevention of global warming but also to poverty alleviation and/or living standard improvement in host countries, and
 - can be seen as 'seed' projects that may be expanded or developed further in future.
- It is possible to support a variety of initiatives and to showcase a variety of carbon reduction/sequestration projects.

Downsides:

- Uncertainty remains about the feasibility of projects and the deliverability of credits.

- It cannot achieve a speedy carbon offsetting because it takes some time for projects to deliver carbon credits.
- There are opinions that credits delivered from carbon sink type afforestation projects must be treated with caution due to its dubious permanence as a carbon sink, in terms of a reliable offsetting.

3. Obstacles to carbon offsetting and issues surrounding the carbon market

When a large amount of emissions from an international conference are to be offset, even if we intend to stick to our policies and principles on how to offset the emissions, there is practically no other way but to choose credits from among those available in the market or subsidize projects from among those ready to be expected in a given period of time. As a result, some elements of the policies and principles have to give way to practicality. For instance, our policy was to give priorities to those projects located in low income countries like LDCs, or those that can be seen as ‘seed’ projects, but no projects have in fact been found as candidates.

Regarding the types of credits, there was almost no other option but to use CERs on this occasion, since we needed to offset emissions with reliable credits which are appropriate from the point of view of the certification standards as well as proper management of issuance systems. There are other types of credits other than the CERs derived from CDM projects, e.g. verified emissions reduction (VER), which may lead to the reduction of greenhouse gas emissions and at the same time bring about social and environmental benefits to host countries. Several certification standards exist for VERs, but the issued VERs that have been verified and certified by these standards are still rare and hard to find in the market. Since many of the certification standards and the management systems for the issued VERs are still in development, we need to watch carefully for a while until we can be reasonably assured that those VERs are reliable in terms of credibility, additionality, and social and environmental benefits to host countries.

In Japan, the Ministry of the Environment is currently discussing a certification scheme for VERs to be used for carbon offsetting. Further progress in this area is needed.

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Independent Assurance

Note:

Assurance was provided on the CO₂ emissions associated with Hokkaido Toyako Summit, included in the Japanese-language original of this report, by the independent assurance provider PricewaterhouseCoopers Aarata Sustainability Certification Co., Ltd.