# Japan

## The World's Carbon Markets: A Case Study Guide to Emissions Trading

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## Environmental Policy Overview:

Japan is the third biggest economy in the world,[1] and, in 2010, its GHG emissions (including LULUCF) of 1,208 million metric tons of carbon dioxide equivalent ($MMtCO_2e$)[2] placed it fifth among the world's countries.[3] In the July 2008 "Action Plan for Achieving a Low-carbon Society," Japan introduced possible GHG emission reduction goals.[4] As part of the ***Copenhagen Accord***, Japan pledged to ***reduce GHG emissions 25% below 1990 levels by 2020***.[5] The country's 2030 goal is to reduce $CO_2$ from fossil fuels 30% below 1990 levels.[6] In December 2010, the Japanese Central Environmental Council confirmed that Japan would commit to reducing its GHG emissions to 80% below 1990 levels by 2050.[7] Japan also made a commitment under the ***Kyoto Protocol*** to ***reduce its average annual GHG emissions 6% below 1990 levels for 2008-2012***. According to Reuters (2013), however, "Japan emitted 313 million tons of CO2 equivalent more than its annual target during the Kyoto Protocol… The country will make up the shortfall through buying emission permits from other governments or project-based offset credits from major developing countries and Eastern Europe."[8] At the 2010 conference of parties (COP) in Cancun Japan declined to renew its Kyoto commitment.[9]

The goals enumerated above are ambitious compared to those of other industrialized countries. However, Japan's 2020 target is contingent upon ample international action, as defined by the Japanese government, and, according to a 2011 World Bank report, "in the absence of such an agreement, it appears unlikely that Japan will make a unilateral 25 percent cut."[10] On January 25th 2013, Prime Minister Abe ordered the Minister of the Environment and other relevant ministers to reexamine climate change policies and "conduct a zero-based review of the 25% emission reduction target by COP19 in next November as well as to develop assertive diplomatic strategies to tackle climate change with the aim of contributing to the world by fully utilizing Japanese advanced technologies."[11] According to Reuters (2010) the Japanese target would be virtually impossible to achieve unless the country were to commit to steeper emissions cuts from manufacturers, power generators, offices, and commercial operations which combined account for 60% of the country's total GHG emissions.[12] According to Reuters (2012)[13] and PBL Netherlands Environmental Assessment Agency (2012)[14], the earthquake and tsunami of March 2011 and the resulting Fukushima nuclear power plant disaster have forced Japan to review its current climate and energy policies. This policy review has raised questions about if and how the country will meet its 2020 target.[15] Prior to the Fukushima incident, METI's June 2010 figures indicated that nuclear power's percentage of Japanese generation would increase from 26% in 2007 to 50% in 2030[16]; so, potentially losing a significant quantity of low-carbon power generation could stress Japan's achievement of its climate targets. Furthermore, according to PBL Netherlands Environmental Assessment Agency's (2012) projections, if Japan were to fulfill its current climate commitments, the country's GHG emissions would still exceed its 2020 pledge by 290 $MtCO_2e$ (see Figure 1).[17]

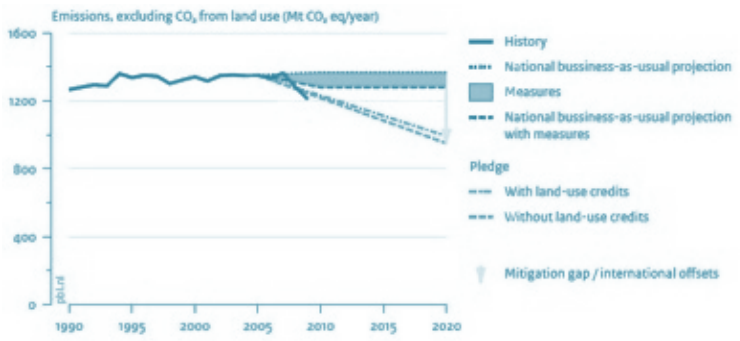


**Figure 1: Japanese Emissions Reduction Pledge Relative to Business as Usual (BAU) and Active Climate Measures. Source: PBL; UNFCCC 2011**[18]

In March 2010, the Japanese government introduced the "Basic Act on Global Warming Countermeasures."[19] An initial feature of the Act was a nation-wide emissions trading system (ETS) that would have begun in April 2013. While this nation-wide ETS was removed from the Act in December 2010, other cap-and-trade measures, such as the Japanese Voluntary ETS (which began in 2005 and became part of the Experimental ETS in 2008), the Tokyo ETS, and the Experimental ETS (the trial period was for 2008-2012, and the government continues to encourage firms to participate), have been active in the country (see Table 1).

| Policy | Jurisdiction | Details |
|---|---|---|
| **Emissions Trading System** | Japan | On Mach 12, 2010, the government of Japan proposed the "Basic Act on Global Warming Countermeasures", an overall climate change policy framework that includes introducing an ETS |
| **Feed-In Tariffs** | Japan | Feed-in tariff for all renewable energy sources with the goal of increasing domestic energy generation from renewable sources by 10% of total primary energy supply by 2020 |
| **Anti-Global Warming Measure Tax** | Japan | Anti-global warming tax is proposed as an add-on to existing taxes covering a wide range of fuels, of which rates are proportional to CO2 emissions |
| **Voluntary Experimental Integrated ETS** | 715 organizations | 715 organizations had applied to participate, of which 521 supplied targets (as of July 2009). The trial program aims to bring together several existing initiatives, such as the Keidanren Voluntary Action Plan, plans for a domestic offsets program, and the Japan-Voluntary Emissions Trading System (J-VETS), which targets smaller emitters |
| **Tokyo Emissions Trading System (cap and trade)** | Tokyo | The Tokyo metropolitan area launched its own mandatory cap-and-trade system on April 1, 2010, which targets office and commercial buildings (including universities) and factories. The system covers approximately 1,400 installations and 1% of the country's emissions |
| **Saitama Prefecture Trading System (Cap-and-Trade)** | Saitama Prefecture | Starting April 1, 2011, Saitama, the fifth largest prefecture in Japan, became the second Japanese prefecture to implement a mandatory emissions trading system. Saitama and Tokyo signed a pact to link their cap-and-trade programs in the future |

**Table 1: Current Climate Change Policies in Japan. Source: Peak Oil (2011)**[20]

## Domestic Markets:

According to Japan's former National Strategy Minister, Koichiro Gemba, the primary reason that the Japanese ETS was deferred was because fellow nations (particularly the United States and Australia) struggled to develop their own robust climate policies.[21] The lack of international action presumably made it more difficult to overcome industry concerns over the economic consequences of the program. A September 2010 Nippon Keidanren-led survey questioned Japan's most influential businesses and found that 61 out of 64 companies opposed the ETS. [22] In November 2012, Japanese ETS as proposed in the Basic Act was formally abandoned when Prime Minister Noda dissolved the Lower House.[23]

### DETAILS OF THE EMISSIONS TRADING PROGRAM PROPOSED BY THE JAPANESE MINISTRY OF ENVIRONMENT IN 2010:[24]

- Two phases: Phase I (2013-2015) and Phase II (2016-2020).
- Covered gases: Initially only $CO_2$, but there were considerations for including other gases. $CO_2$ is responsible for 95% of Japanese GHG emissions.
- Covered sectors: Primarily industry, business, and energy conversion.
- Allowance Distribution: Each sector would have received an absolute emissions cap based on sector-specific emissions reduction potential.
- Point of obligation: Downstream, firm-level.
- Inclusion: Covered entities must hold an allowance for every unit of $CO_2$ generated that exceeded emissions thresholds.
- Banking: Allowed, but few details were determined.
- Borrowing: To be determined.
- Offsets: Emissions reductions and carbon sinks from domestic entities not covered by the program as well as valid international offsets offered via the Kyoto mechanism would have been included.
- International linkage intentions: To be determined.
- Price Volatility Measures: Cost-containment reserve.
- Compliance: One-year commitment periods and penalties for non-compliance.
- Monitoring, Reporting and Verification (MRV): Uniform emissions rules for reporting with third-party verification based on international standards.

While this proposed nation-wide ETS was characterized by opponents as an 'economic burden,' an expert panel from the Environmental Ministry projects that such a program, which ***could have cut GHGs by up to 18% relative to BAU by 2020***, would have had little adverse effect on Japanese GDP or job growth. If Japanese firms were to cut emissions 10% below 2006-2008 averages, the nation's GHGs would be reduced by 84 $MtCO_2$, an 18% reduction relative to the scenario that does not include the program, and the natural fall in employment of the productive population through 2020 would be less than 0.3%.[25]

**JAPANESE VOLUNTARY EMISSIONS TRADING SYSTEM (JVETS):** In September 2005, the Ministry of Environment Japan (MOEJ) constructed the ***Japanese Voluntary Emissions Trading System (JVETS)*** to provide government support for Japanese companies to reduce emissions through activities not supported by the Voluntary Action Plan (VAP).[26] The Competent Authority Committee (CAC), under MOEJ, managed JVETS; CAC drafted guidelines, approved monitoring plans and verification reports, and evaluated verifiers' achievements.[27] JVETS participants became part of the Experimental Integrated ETS in 2008.[28]

From fiscal 2006-fiscal 2009, ***303 companies participated*** in JVETS, and over this period the cumulative emissions reductions achieved was 1.990 $MMtCO_2e$, an amount that exceeded the covered firms' emissions reduction commitment of 0.961 $MMtCO_2e$ (see Table 2).[29] Of the participating firms, about 80 adopted absolute targets. The ***target sectors*** for JVETS include non-VAP participants from nonferrous metal industry, ceramic, steel, machine and other manufacturing, chemical, pulp and paper, food and drink, textile, and some non-industrial sectors.[30] With ***less than 1% of the country's industrial sector's $CO_2$ emissions*** represented by participating firms, policy makers learned that a mandatory system is necessary for substantive nation-wide emissions reductions.[31] Nevertheless, JVETS helped to inform the construction of the proposed nation-wide Japanese ETS.[32]

| Commitment Period | FY 2006 | FY 2007 | FY 2008 | FY2009 |
|---|---|---|---|---|
| **Achieved Reduction (kt-CO2)** | 377 (29%) | 280 (25%) | 383 (23%) | 950 (28%) |
| **Committed Reduction (kt-CO2)** | 273 (21%) | 217 (19%) | 136 (8%) | 335 (10%) |
| **Number or Transactions** | 24 | 51 | 23 | 24 |
| **Average JPA Price (JPY/t-CO2)[33]** | JPY$1,212 (US$10.15) | JPY$1,250 (US$11.30) | JPY$800 (US$8.81) | JPY$750 (US$8.14) |

**Table 2: JVETS results for fiscal 2006-fiscal 2009. Source: MoE Japan (2011)[34]**

Under JVETS, participants with absolute emissions targets were obligated to submit a corresponding quantity of Japanese Emission Allowances (JPAs) for every ton of emissions produced. Participants that emitted beneath their caps were allowed to sell to other participants who emitted in excess of their caps. There was ***unlimited usage of Clean Development Mechanism (CDM) credits***, known as j-CERs, as long as these credits were not the primary means for achieving pledged targets. ***Banking*** of allowances and credits was allowed, but ***borrowing*** was not.[35]

In an effort to incentivize participation, the Japanese government subsidized one-third of the cost of GHG reduction measures until April 2009. In the event of ***non-compliance***, entities were forced to return this ***subsidy*** to the government.[36]

**EXPERIMENTAL INTEGRATED ETS (EI ETS):** In October 2008, the Government of Japan initiated the ***Experimental Introduction of an Integrated Domestic Market for Emissions Trading*** (EI ETS) with the goal of assisting Japan's efforts to reach its Kyoto target. Policy makers were able to use the EI ETS as a building block for the proposed nation-wide Japanese ETS that was dropped [or abandoned] in November 2012. As mentioned above, the EI ETS ***incorporates JVETS***.[37] The trial period for the EI ETS ended in 2012 but the government continues to encourage firms to participate.[38]

***System participants set their own absolute or intensity-based emissions targets***. These targets are met with allowances and specified credits and are consistent with Voluntary Action Plans (VAPs). The ***government examines the validity of targets, and MRV for emissions is required***.[39]

Individual firms are the primary players in the EI ETS. As of February 2009, ***528 firms and organizations*** were participating in this system. 455 had set an emissions quota, 60 had made credit transactions, and 13 had engaged in some other form of participation. The 455 quota-setting firms come from the steel, automobile manufacture, cement, electricity, and oil refining sectors and make up approximately ***70% of the industrial sector***. The 60 companies that engaged in credit trades include banks, trading companies, and similar types of entities.[40]

J-CREDIT SYSTEM: In August 2013, the Japanese government announced the launch of its J-Credit system for domestic offset projects. The system consolidates the existing Japan Offset Credit (J-VER) scheme, a voluntary offset mechanism creating credits for mainly Corporate Social Responsibility (CSR) reasons[41], and the Domestic CDM

voluntary offset program.[42] The system provides voluntary credits that companies can use as part of the Keidanren's "commitment to a low carbon society" program. The business community established this voluntary program in 2009 to reduce emissions in industry and energy saving measures through company level target reductions to 2020.[43] The system also allows credits to be used for compliance with targets set under either the Act on Promotion of Global Warming Countermeasures or the Energy Efficiency Act, or as part of voluntary carbon offsetting.[44]

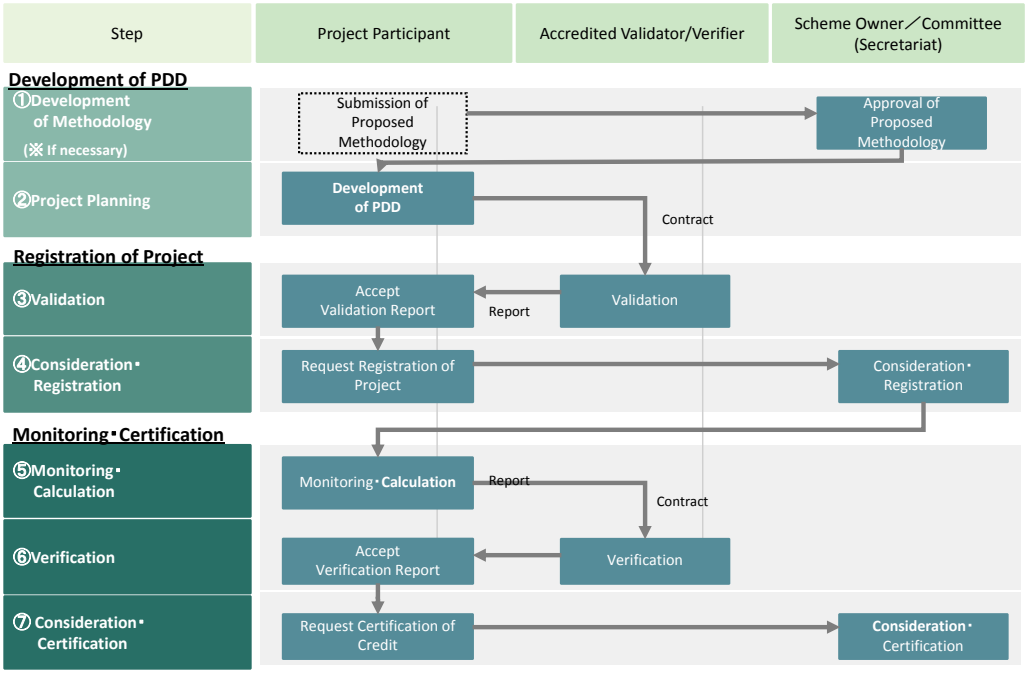


**Figure 2: J-Credit System Process (Source: Ministry of Economy, Trade and Industry (METI) September 2013**

Participation in the Domestic CDM program prohibited participants of the Voluntary Action Plan to host projects. The J-Credit system does not include this restriction, allowing companies with a Voluntary Action Plan to also participate in J-Credit projects. To avoid double counting, however, if the project is part of the Keidanren's Commitment to a Low Carbon Society then its credits can not be used to fulfill the company level targets ascribed under this program. There is also a range of methodologies available to project participants. As of July 2013, 56 methodologies have been approved, including 37 energy saving, 9 renewable energy, 4 industrial processes, 3 agriculture, 2 forestry and 1 waste sector methodology.[45]

Projects that can be considered in the J-Credit Scheme must meet the following conditions:

1. Be implemented within Japan
2. Be implemented after April 1, 2013
3. Satisfy additionality requirements
4. Be implemented based on methodologies
5. Be validated by validation authorities
6. Take action to ensure permanence (forest sink projects only)[46]

The J-Credit system is scheduled to terminate on March 31, 2021. Credits from the Domestic CDM and J-VER programs will expire on the same date. The expiration date for J-Credits will be discussed in the future.[47]

## International Markets:

***International offsets*** have been crucial for Japan to meet its pre-2020 climate goals, such as its 6% Kyoto target.[48] At present, however, the role offsets will play in achieving Japanese climate goals beyond the near future is unclear, for the country's climate policies are being re-examined. Japan has signed agreements with several nations in Southeast Asia to launch the Joint Crediting Mechanism (JCM). Under this scheme, Japan provides low-carbon technologies, products, and services to designated partner countries, which these partner countries then use to create GHG emissions reductions. For example, Japanese companies can implement greenhouse gas emission reduction projects in the developing countries, such as installing renewable energy capacity or planting trees, which can earn the companies credits for their own emissions reduction targets.[49] JCM frameworks are being constructed and agreed upon on a country-by-country basis. As of September 2013, Japan has signed agreements with Bangladesh, Vietnam, Mongolia, Ethiopia, Kenya, Laos, and Indonesia.[50] Japan's Environment Ministry continues to increase, and potentially to more than double, its spending on promoting JCM and subsidizing emission reduction projects and feasibility studies for emission reduction projects in developing nations.[51]

The JCM features a Joint Committee (JC) comprised of representatives of the Japanese and host governments. The committee is responsible for resolving technical issues, such as the approval of methodologies and projects, and the issuance of JCM credits. Methodologies are developed and proposed by project developers and the JC must give its approval. Following an agreement between Japan and Mongolia, the JC has developed numerous guidelines necessary for implementing the JCM.[52]

As mentioned earlier, since 2008 JVETS has allowed firms to meet their targets through ***unlimited CDM usage***.[53]

## Regulation and Oversight:

A byproduct of JVETS is competent Japanese ***monitoring, reporting, and third-party verification capacity***. In addition, a registry for emissions trading and an emissions management system were also developed.[54]

The ***registry*** prevents double-counting of allowances, provides for secure allowance retirement, and provides a public, web-based registry for all participants. The ***Trade Matching System*** is another web-based tool that enables participants to find trading partners. The following features characterize the ***emissions management system***: integrated calculation methodology; centralized database of all stakeholder information; and standardized and efficient emissions calculation and verification processes.[55] The J-Credit System, scheduled to commence in the second half of 2013, merges the Domestic CDM and J-VER registry systems.[56]

Within the JCM, registries will be constructed within the host government, and managed in Japan. The intention is for credits to be transferred from private entities to the Japanese government. The current policy is to have a "non-tradable" system where transfers take place between companies and the government.[57]

## Recent Environmental History:

In November 2008, MOEJ introduced ***Japanese Verified Emissions Reductions*** (J-VER), which is an offset crediting system that is comprised of verified emission reductions and removal projects from small/medium-sized enterprises (SMEs), agriculture, and forestry. This system credits domestic projects that function as additional GHG sinks. J-VER has also helped to promote the *Green New Deal* program via expansion of job opportunities, global warming prevention, and economic measures funded by the private sector.[58] As of September 2011, 160 projects were registered with the J-VER program and, of them, 98 had received J-VER certification. A total of 139,317 $tCO_2$ had been credited via J-VER.[59]

While the nation-wide, mandatory ETS was abandoned in November 2012; the ***Basic Act on Global Warming Countermeasures*** introduced a ***carbon tax*** and established a ***feed-in tariff for all renewable energy sources***. These measures introduce new taxes on coal, oil, and natural gas, as well as a feed-in tariff that incentivizes increased domestic renewable energy generation in order to meet the 2020 clean primary energy supply target of 10%.[60] For FY 2011, the tax on fossil fuels increased by JPY$ 0.76 (USD$0.0096[61]) per liter of petrol, an amount corresponding to an annual outlay of more than JPY$ 1,000 (USD$12.61[62]) per household.[63]

| | National Level |
|---|---|
| **1990s** | **1990: Action Plan to Arrest Global Warming** |
| | **1998: Adoption of Kyoto Protocol in Japan**<br>- Promotion of Nuclear Power<br>- Energy Conservation Law<br>- Law Concerning the Promotion of Measures to Cope with Global Warming |
| **2000-2005** | **2002: Ratification of Kyoto Protocol**<br>- Decentralized climate change planning under "Target Achievement Plan" |
| | **2005: Enforcement of Kyoto Protocol**<br>- Lower levels of government plans drawn up |
| **2005-present** | **2008: Complete revision of Target Achievement Plan**<br>- Focus shifts more towards Kyoto mechanism. |
| | **2009: Prime Minister Yukio Hatoyama announces cuts of 25% from 1990 levels** |
| | **2012: Prime Minister Noda dissolved the Lower House and abandoned the proposed nation-wide ETS** |
| | **2013: Prime Minister Abe ordered the reexamination of Japan's climate policies, including the 25% reduction target by 2020 relative to 1990 levels.** |

**Table 2: History of Action on Climate Change Mitigation in Japan. Source: PBL 2012[64]**

## CHALLENGES:

1. As evidenced by the deferral of a nation-wide ETS in December 2010 and the subsequent abandonment in November 2012, ***concerns over ETS costs in Japan are influential***.
2. Japan's climate targets are ambitious compared to those of other industrialized countries, but Japan's ***refusal to renew its Kyoto commitment*** may indicate that political interest in climate action is waning.

## UNIQUE ISSUES:

1. There is ***splintered sentiment toward cap-and-trade in Japan***. At the local level, the Tokyo government, the country's largest sub-national governing body, implemented an ETS with absolute, mandatory targets in April 2010. At the national level, JVERS and the EI ETS have built regulatory and infrastructural capacity for emissions trading. Despite these promising ETS actions, momentum towards a mandatory, nation-wide ETS with absolute caps has stagnated since December 2010.

2. Public backlash against ***nuclear power*** in the wake of the Fukushima power plant disaster will require Japan to restructure its plans in order to meet its 2020 climate targets. As a result, the country may be forced to significantly increase its use of international offsets.

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**Disclaimer:** The authors encourage readers to please contact them with any corrections, additions, revisions, or any other comments, including any relevant citations. This will be invaluable in strengthening and updating the case studies and ensuring they are as correct and informative as possible.

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