Japan: A Case Study
Development of Emissions Trading Around the World

Environmental Policy Overview:

Japan is the third biggest economy in the world,\(^1\) and, in 2009, its non-LULUCF emissions of 1,101 million metric tons of carbon dioxide equivalent (MMtCO\(_2\)e) placed it fifth among the world’s countries.\(^2\) In the July 2008 “Action Plan for Achieving a Low-carbon Society,” Japan introduced possible GHG emission reduction goals.\(^3\) As part of the Copenhagen Accord, Japan pledged to reduce GHG emissions 25% below 1990 levels by 2020.\(^4\) The country’s 2030 goal is to reduce CO\(_2\) from fossil fuels 30% below 1990 levels.\(^5\) 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.\(^6\) Japan also made a commitment under the Kyoto Protocol to reduce its average annual GHG emissions 6% below 1990 levels for 2008-2012. While a 2008 review had estimated that Japan would be 22-36 MMtCO\(_2\)e beyond its Kyoto target,\(^7\) partly due to the economic slowdown, Japan now seems on track to meet its commitment.\(^8\) However 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.”\(^10\) In addition, 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.\(^11\) According to Reuters (2012)\(^12\) and PBL Netherlands Environmental Assessment Agency (2012)\(^13\), 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.\(^14\) Prior to the Fukushima incident, 54 nuclear power plants supplied 30% of the country’s electricity\(^15\); 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 pledge by 290 MtCO\(_2\)e (see Figure 1).\(^16\)
In March 2010, the Japanese government introduced the “Basic Act on Global Warming Countermeasures.” 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 is for 2008-2012, and the government continues to encourage firms to participate), have been active in the country (see Table 1).

<table>
<thead>
<tr>
<th>Policy</th>
<th>Jurisdiction</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emissions Trading System</td>
<td>Japan</td>
<td>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</td>
</tr>
<tr>
<td>Feed-In Tariffs</td>
<td>Japan</td>
<td>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</td>
</tr>
<tr>
<td>Anti-Global Warming Measure Tax</td>
<td>Japan</td>
<td>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</td>
</tr>
<tr>
<td>Voluntary Experimental Integrated ETS</td>
<td>715 organizations</td>
<td>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</td>
</tr>
<tr>
<td>Tokyo Emissions Trading System (cap and trade)</td>
<td>Tokyo</td>
<td>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 installation and 1% of the country’s emissions</td>
</tr>
<tr>
<td>Saitama Prefecture Trading System (Cap-and-Trade)</td>
<td>Saitama Prefecture</td>
<td>Starting April 1, 2011, Saitama, the fifth largest prefecture in Japan, will become 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</td>
</tr>
</tbody>
</table>

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

DETAILS OF THE EMISSIONS TRADING PROGRAM PROPOSED IN 2010:

- Covered gases: Initially only CO₂, but there were considerations for including other gases. CO₂ 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 CO₂ 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 cut GHGs by up to 18% relative to BAU by 2020, would have 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 MtCO₂, 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%.

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). The Competent Authority Committee (CAC), under MOEJ, managed JVETS; CAC drafted guidelines, approved monitoring plans and verification reports, and evaluated verifiers’ achievements. JVETS participants became part of the Experimental Integrated ETS in 2008.

Throughout JVETS’ first four phases (2005-2010), 250 firms participated with about 80 of these firms adopting 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.
For the **280 participants** in JVETS’ second phase (FY 2006), FY 2007 emissions reductions were equivalent to 25% of total base year emissions (or 280,192 MtCO$_2$e). In Phase II, there were 51 transactions that accounted for 54,643 MtCO$_2$e, and the average price was JPY$1,250/tCO$_2$ (USD$15.77/tCO$_2$ based on November 13th 2012 exchange rates). 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. Nevertheless, JVETS has helped to inform the construction of the proposed nation-wide Japanese ETS.

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

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.

**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 postponed in December 2010. As mentioned above, the EI ETS **incorporates JVETS**. The trial period for the EI ETS ends in 2012 but the government continues to encourage firms to participate.

**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**.

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 approximately **70% of the industrial sector**. The 60 companies that engaged in credit trades include banks, trading companies, and similar types of entities.

**International Markets:**

The Japanese government believes that access to **international offsets** is crucial to achieving its climate goals, and that, especially in light of the recent backlash against nuclear power, offsets will play an increasingly important role in helping the country meet its Kyoto pledge. One program Japan is developing is the **Bilateral Offsets Crediting Mechanism (BOCM)**. For BOCM, Japan provides low-carbon technologies, products, and services to designated partner countries, which these partner countries then use to create GHG emissions reductions. These emissions reductions are then credited to Japan as offset credits that are used to achieve Japan’s emissions reduction targets. BOCM frameworks will be constructed and agreed upon on a country-by-country basis, and, as of April 2012, Japan had already agreed to begin building a BOCM structure with India, Indonesia, Vietnam, and Thailand.

As mentioned earlier, since 2008 JVETS has allowed firms to meet their targets through **unlimited CDM usage**.
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. The registry prevents double-counting of allowances, provides for secure allowance retirement, and enables 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.

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. 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 tCO₂ had been credited via J-VER.

While the nation-wide, mandatory ETS was deferred; 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%. For FY 2011, the tax on fossil fuels increased by 0.76 JPY (USD$0.0096) per liter of petrol, an amount corresponding to an annual outlay of more than 1,000 JPY (USD$12.61) per household.

<table>
<thead>
<tr>
<th>National Level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1990s</strong></td>
</tr>
<tr>
<td>1990: Action Plan to Arrest Global Warming</td>
</tr>
<tr>
<td>1998: Adoption of Kyoto Protocol in Japan</td>
</tr>
<tr>
<td>- Promotion of Nuclear Power</td>
</tr>
<tr>
<td>- Energy Conservation Law</td>
</tr>
<tr>
<td>- Law Concerning the Promotion of Measures to Cope with Global Warming</td>
</tr>
</tbody>
</table>

| **2000-2005**                   |
| 2002: Ratification of Kyoto Protocol |
| - Decentralized climate change planning under “Target Achievement Plan” |

| **2005-2010**                  |
| 2008: Complete revision of Target Achievement Plan |
| - Focus on Kyoto Mechanisms (60-80% cuts in emissions from 2008 levels by 2050 and 14% by 2020) |

| **2009**                       |
| Prime Minister Yukio Hatoyama announces cuts of 25% from 1990 levels |

Table 2: History of Action on Climate Change Mitigation in Japan. Source: PBL 2012
CHALLENGES:

1. 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.

2. As evidenced by the deferral of a nation-wide ETS in December 2010, concerns over ETS costs in Japan are influential.

3. 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.

Author Acknowledgements:

If you have any comments or suggestions for this case study, please do not hesitate to contact lead authors:

Peter Sopher (psopher@edf.org)  
Environmental Defense Fund (EDF)  
1875 Connecticut Ave NW Ste. 600  
Washington, DC

Anthony Mansell (mansell@ieta.org)  
International Emissions Trading Association (IETA)  
1730 Rhode Island Ave NW Ste. 802  
Washington, DC

The authors would like to thank Ruben Lubowski, Joe Billick, Clayton Munnings, Jennifer Andreassen, Richie Ahuja, and Cassandra Mitchell for very helpful comments and information for this case study. We take full responsibility for any remaining errors.

Disclaimer: This Discussion Draft is intended as a reference of factual information regarding this program and is envisioned as a work in progress as policies continue to evolve and new information becomes available. 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.

5 Supra, Note 4.
9 Supra, Note 5.

Supra, Note 13.

Fraser, Caroline (March 2011). “Japan’s Once-Powerful Nuclear Industry is Under Siege.” Yale University. Environment 360. Available at http://e360.yale.edu/feature/japans_once-powerful_nuclear_industry_is_under_siege/2383/

Supra, Note 13.

Supra, Note 16.

Supra, Note 5.

Supra, Note 9.


The Japan Times (March 2010). “Cap and trade won’t hurt; eco panel.” Available at http://www.japantimes.co.jp/text/nb20120314a2.html

Supra, Note 5.

Supra, Note 10.

Supra, Note 16.

Supra, Note 22.

Supra, Note 11.

Supra, Note 12.

Supra, Note 10.

Supra, Note 23.


Supra, Note 25.

Fx-rate.net (November 2012). “Yen to Dollar Conversion Table.” Available at http://fx-rate.net/JPY/USD/


Supra, Note 4.

Supra, Note 25.

Supra, Note 29.

Supra, Note 25.

Supra, Note 26.


Supra, Note 26.

Supra, Note 35.

Supra, Note 10.


Supra, Note 29.

Supra, Note 29.

Supra, Note 29.

Supra, Note 29.

Supra, Note 29.

Supra, Note 29.

Supra, Note 29.

Supra, Note 29.

Supra, Note 29.

Supra, Note 29.

Supra, Note 29.


Supra, Note 29.

Supra, Note 28.

Supra, Note 28.

Supra, Note 8.