

# Climate Change Policy

#### Background and Objective

Nations are negotiating a new international framework to combat climate change post-2020 and discussions on CO<sub>2</sub> reduction targets, country policy and measures are underway in Japan.

We examine the effectiveness of policy and measures to combat climate change that are compatible with economic development and energy security.

#### Main results

### 1 Integrated analyses of policy and measures to combat climate change

We analyzed the feasibility and costs of the 2 degree C target put forward by the Intergovernmental Panel on Climate Change (IPCC) fifth assessment report, to which our member contributed as a Coordinating Lead Author, and found that the economic and political challenges to meet the target are enormous. We also examined the Japanese policy package and

identified the role of voluntary action by the industry as a policy instrument that compliments other policy and measures such as direct regulation and energy taxes. These findings were presented and incorporated in the governmental councils which consider Japanese climate policy. (Figures 1 and 2).

### 2 Regulating carbon pollution emissions from power plants in the United States

Ongoing rulemaking to limit carbon pollution emissions from the U.S. power sector provides a useful reference for Japan to consider approaches to climate change mitigation. CRIEPI examined the details of the Clean Power Plan (CPP), which was proposed on June 2, 2014, to cut carbon emissions from existing power plants. We have summarized the key components of the CPP as follows. I) Proposed

CPP expects deep cut of carbon pollution from power sector assuming drastic fuel shift from coal to gas, which is feasible in the U.S. due to low-priced natural gas resources. II) There is high uncertainty and significant downside risks surrounding the CPP, which derive from a court order issued against the scope of legal power or authority (see Fig. 3) (Y14005).

### 3 International climate negotiations

In 2014, the scope of the intended nationally determined contribution (INDC) was a contentious issue. Most developed countries thought the scope should be mainly mitigation, while many developed countries insisted that INDC should cover not only mitigation but also adaptation and support for them. At COP20, the Parties agreed to include mitigation in their INDCs and also to include adaptation at their discretion. With regard to mitigation, the

Parties presented their views on many issues such as (1) target year/cycle, (2) a way to register their contributions, (3) the legal nature of contributions, and (4) rules for transparency (Table 1). In 2015, in order to obtain consensus agreement at COP21, the Parties need to consider difficult issues such as (1) balance among mitigation, adaptation and support, (2) participation of the United States, and (3) consistency with the 2 degrees goal (Y14020).

### 4 Energy efficiency policy

Increasing energy efficiency is considered to play a major role in reducing greenhouse gas emission. Based on our extensive surveys we make four recommendations: energy efficiency policy should be conducted only when it can remove market failures or barriers cost-effectively; the behavioral approach should be utilized more; energy management

regulation by the Energy Conservation Law should be reformed into a more informational approach in order to reach small-and-medium-sized companies; subsidy programs for energy efficient investment now amounts to 200 billion JPY, and some have low cost-effectiveness (Fig. 4), thus require strict evaluation.

<b>Carbon pricing:</b> Changes cost calculation Tax, ETS, ...	<b>Promote rational behavior:</b> Fix information asymmetry and lack of coordination Energy conservation law <b>Voluntary Agreement</b>	<b>Long term investment:</b> Tech development policy
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Fig. 1: Role of Voluntary Action

The role of voluntary action by the industry of Japan as a policy instrument is identified as a complimentary policy to the other policy instruments such as carbon pricing and energy conservation law.



Fig. 2: IPCC report to which CRIEPI contributed and the book "Dealing with Global Warming"

Table 1: Issues relating to mitigation and views of the Parties

Issues	Views of the Parties
Target year/ cycle	<ul style="list-style-type: none"> <li>① 10-year cycle (Japan, EU, Canada, South Korea, India and others)</li> <li>② 5-year cycle (US and others)</li> <li>③ 5-year commitment with indicative commitment for subsequent five years (Brazil, South Africa)</li> </ul>
Legal nature of contributions	<ul style="list-style-type: none"> <li>① Legally-binding (EU, least developed countries (LDC) and others)</li> <li>② Non-binding, but binding obligations to submit contributions, implement measures aiming to achieve them, and be exposed to ex-post review (Japan)</li> <li>③ Non-binding, but binding obligations to submit contributions and be exposed to transparency measures and domestic legal force for measures aiming to achieve contributions. (New Zealand, US)</li> </ul>

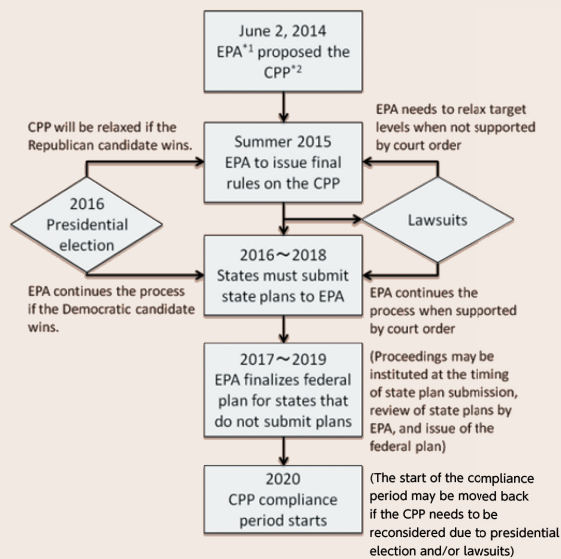


Fig. 3: Upcoming milestones and key events for finalizing the Clean Power Plan

The CPP needs to go through several steps shown in the above rectangles. Key events that influence the whole schedule are indicated in the rhombi.

\*1 the U.S. Environmental Protection Agency  
\*2 Clean Power Plan

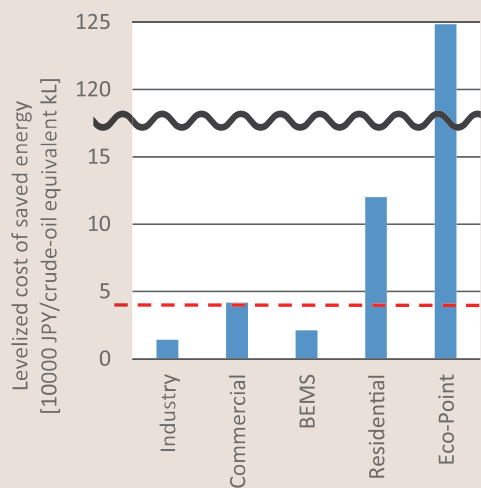


Fig. 4: Cost-effectiveness of selected energy efficient subsidy programs

Our estimation of levelized cost of saved energy shows that, while costs of several programs are lower than the avoided cost of energy, others show much higher costs.  
\*1, \*2, \*3) CRIEPI Report (Y13028), \*4) Estimation by CRIEPI, 5), Arakawa & Akimoto, J. Japan Inst. Ene., 94., (2014),