

Output-Based Rebates:

A Proposal to Address the Impact of Federal Climate Policy on Energy-Intensive Industries Exposed to International Competition

Policy Challenge: International Competition May Motivate Some Firms to Relocate

The U.S. has a national interest in protecting a small number of industries that would be particularly sensitive to the effects of a federal climate policy that would put a price on greenhouse gas pollution. If these industries leave the country because such a climate policy would make them uncompetitive in their global markets, then the U.S. loses jobs as well as the opportunity to engage those essential industries on the path to climate stabilization.

Three key criteria can be applied to the national industry classification system to identify those industries that ought to be eligible for special treatment in a federal climate policy:

- (a) *energy-intensive* energy is a high proportion of variable costs
- (b) *global commodity* limited ability to pass on cost of carbon permits to customers because products are subject to international competition
- (c) *potential for "leakage"* more imports from countries with no carbon costs in response to carbon prices in the U.S.

Examples of high-level industry categories that would meet these criteria are cement, steel, iron, paper & pulp, and certain manufactured chemicals. Energy-intensive industries such as refining and mining would *not* qualify since they are able to pass on their costs to customers.

In order to neutralize the impact of a carbon pricing on firms in these industries, a policy must meet the following design criteria:

- (1) neutralizes the cost of carbon from the cost of production in qualifying industries
- (2) reliable and automatic mechanism for delivery of compensation
- (3) easy to understand
- (4) does not depend on data considered to be trade secret
- (5) preserves a modest price signal to reward innovation and improvements
- (6) annually updates payments based on actual manufactured output and carbon prices
- (7) adaptable terms for managing policy without major legal renegotiation
- (8) unlikely to trigger WTO challenges or aggravate international trade conflicts

Compatibility with a federal cap-and-trade program that auctions all permits is an attractive feature, *but not required*. However, a 100% auction cap-and-trade design would *preclude* the use of free permits as a form of compensation.

Policy Solution: Output-Based Rebates

The purpose of Output Based Rebates is to return to qualifying manufacturers a refundable tax credit approximately equal to the value of the permits purchased to cover their GHG pollution.

Refundable tax credits are familiar to anyone who has ever received a tax refund in the mail, and there are also precedents in the tax code for use of this instrument with businesses.¹ The tax credits would be automatically claimed by eligible facilities and directly funded by permit auction revenue, a portion of which would be reserved for the purpose.

A. Implementation for Electricity Use

Under most federal cap-and-trade proposals, electric power generators acquire pollution permits for their fossil fuel power plants, and they incorporate the market value of those carbon permits into their bills to customers. An Output Based Rebate would return to qualifying industrial facilities a refundable tax credit that comparable to those costs.

The Output Based Rebate is calculated as follows:

$$\begin{array}{ccccccc} \text{Site} & & \text{Sector} & & \text{Utility} & & \text{Market Value} \\ \text{Output} & \times & \text{Average Electricity} & \times & \text{ton CO2} & \times & \text{of Carbon Permit} \\ \text{(production)} & & \text{Per Unit of Output} & & \text{per Electricity} & & \text{per ton CO2} \\ & & & & & & = \text{Rebate} \\ & & & & & & \$\$ \end{array}$$

Example: Output of 1 metric ton of Steel

$$1 \text{ mton Steel} \times \frac{\text{Avg 0.45 MWh}}{\text{Per Ton of Steel}} \times \frac{0.70 \text{ mtCO2}}{\text{per MWh in Penn.}} \times \frac{\$50}{\text{mtCO2}} = \$15.75 \text{ Rebate per ton of Steel}^2$$

Every year this formula is updated to reflect the current average performance for the sector, the market value of carbon that year, and the declining carbon intensity of the electric power sector.

B. Implementation for Process-based Emissions

Coal is used heavily in the production of steel and other energy-intensive industries, generating emissions in their production process. For process-based emissions, the eligibility and implementation of Output Based Rebates *would be the same as above*:

$$\text{Output} \times \frac{\text{Sector Average Coal}}{\text{Per Unit of Output}} \times \frac{\text{ton CO2}}{\text{per ton Coal}} \times \frac{\text{Permit Value}}{\text{per ton CO2}} = \text{Rebate}$$

The cost of purchasing pollution permits is approximately equal to the rebate. The only difference is the relative performance of the facility compared to the sector average.³

¹ A "refundable" tax credit means the recipient will receive a check if the credit exceeds the firm's tax liability.

² The price of steel has exceeded \$500 per metric ton since January 2004 (U.S. spot price for hot rolled steel sheet).

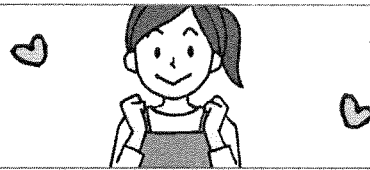
³ Among energy-intensive industries that would qualify for a rebate, the range is small between the best and worst U.S. facilities compared to the average energy intensity.

Advantages of an Output Based Rebate

In addition to satisfying all the criteria on page 1, this policy design has the following advantages:

1. It does not depend upon a nebulous legal condition of “comparable action” by foreign nations.
2. Firms would not receive a subsidy relative to their international competitors, nor would they be subject to a cost that would require them to seek trade protection through border taxes.
WTO challenges or retaliatory actions would be unlikely at all – not just unlikely to be successful.
3. Output Based Rebates accommodate the terms of global competition for certain energy-intensive industries (that account for a fraction of U.S. emissions), without tying the remedy to the negotiation of commitments from developing countries involving *other* policy instruments.
4. Output Based Rebates can be implemented promptly, without years of delay after enactment.
5. The policy design uses refundable tax credits as a familiar and *reliable* form of compensation to the qualifying industries impacted by the climate policy.
6. The mechanism of delivering compensation is *automatic*, and not subject to general appropriations (e.g. the risk of recreating the Yucca Mountain saga.)
7. Use of a refundable tax credit allows firms to claim the full value of compensation, avoiding the transaction costs of selling free permits that other proposals offer as compensation.
8. The formula is based on data that would already be reported and available.
9. The rebates would be based on updated performance, not arbitrary historical statistics.
10. The design is the same for emissions from electricity use as well as industrial processes.
11. If states or regions claim pre-emption from the federal policy, the Output Based Rebate mechanism easily accommodates varying carbon prices to maintain fair interstate competition.
12. This design is compatible with a climate policy in which any or all permits are auctioned.
13. By using a sector *average* metric, firms that perform better than the average would receive a modest windfall, and others would face a modest price signal that rewards improvements.
14. Use of a sector-level metric can be updated from *average* to *best practice* to increase the incentive for investments in improved performance, especially if international negotiations for sector-level agreements in affected energy-intensive industries are successful.
15. Because U.S. industries are typically more efficient than competitors, the U.S. would be in an excellent position to advance the OBR approach in global sectoral agreements.
16. In the *absence* of global sector-level agreements, the mechanism is adaptable as a “fair play” measure in any foreign country that enacts a price-based climate policy.
17. If firms relocate to other countries for *other* competitive reasons, it would not be a *political liability for federal climate policy*, which would not be a major factor for those decisions.

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China to back Japan's plan on post-Kyoto emissions

05/03/2008

THE ASAHI SHIMBUN

China for the first time will express its support for Japan's sectoral approach on reducing greenhouse gas emissions for a post-Kyoto Protocol framework, sources said Friday.

Beijing's support will appear in a joint statement released May 7, following a summit between Prime Minister Yasuo Fukuda and Chinese President Hu Jintao in Japan.

China, a major source of greenhouse gas emissions among developing nations, will hold the key to negotiations on deciding the post-Kyoto Protocol framework starting in 2013.

Such support for Japan's approach is expected to help build a consensus on anti-global warming measures at the Group of Eight (G-8) summit scheduled for July in the Hokkaido resort of Lake Toyako.



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According to a draft of the joint statement obtained by The Asahi Shimbun, China will regard Japan's proposal as an important measure in setting emission reduction targets and carrying out reduction efforts.

Japan in the statement will offer its technical and financial assistance to China's emission-cutting efforts.

Under Japan's proposed sectoral approach, the total emission reduction goal for each nation would be calculated by adding up attainable levels of cuts for various sectors, such as industries.

The system would also enhance global reduction efforts through cross-border technical cooperation in each industrial sector.

But the sectoral approach will likely be one of the few issues that Fukuda and Hu can agree on. The two countries remain at odds over joint development of gas fields in the East China Sea in addition to Beijing's crackdown in Tibet.


However, China will not mention specific emission reduction targets for each nation in the joint statement. Instead, the focus will be on environment-related technical cooperation between the two countries.

Japan will refer to technical aid in five fields, such as energy-saving, renewable-energy technologies and improving coal-thermal power generation plants and facilities.

Concerning financial aid, China in the statement

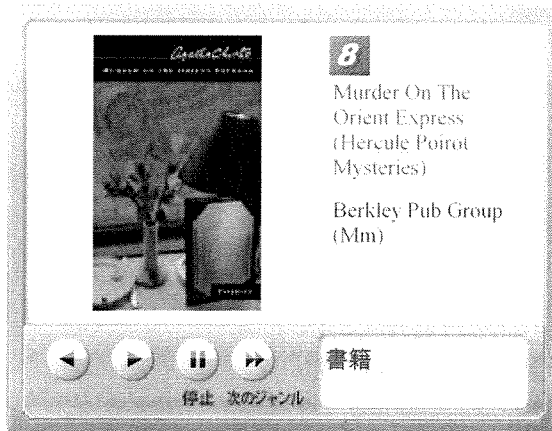
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05月07日

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will highly evaluate the Cool Earth Partnership, a financial mechanism established by Japan to provide more than 1 trillion yen to help developing nations with measures to curb global warming.

Japan will express its willingness to assist in China's national plan to deal with climate change.

The statement will say that China will consider Japan's long-term goal of at least halving global emissions of greenhouse gases in 2050 from the current level.

The two nations will declare that they will establish a partnership to cope with climate change.

In addition, the statement will say the two nations share a common understanding that talks on the post-Kyoto Protocol framework should produce results by the end of 2009, with China's active involvement.(IHT/Asahi: May 3,2008)

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**Statement by HE Ichiro Kamoshita,
Minister for Environment of Japan
At the High-Level Segment of
the 13th Session of the COP and 3rd Session of the COP/MOP
Bali, December 2007**

Thank you, Mr. President.

Mr. Secretary General Ban, Mr. President Witoelar, Distinguished Ministers, delegates, ladies and gentlemen,

It is my great honour to have this opportunity to speak on behalf of Japan. I am Kamoshita, the environment minister of Japan.

Let me start by expressing our deepest gratitude to your hosting this COP13 and COP/MOP3.

Mr. President,

December 11th which was yesterday marks the tenth year since the Kyoto Protocol was signed by the Parties. I had the privilege of attending the 10th Anniversary event hosted by the UNFCCC secretariat and CAN.

Japan's commitment under the Kyoto Protocol is a challenging 6% reduction from the base year. Considering Japan's current situation, achievement of this target is not an easy task. Nevertheless, Japan will prepare for its best on fulfilling the commitment. In fact, we are in the process of revising the Kyoto Protocol Target Achievement Plan and will deliver a new strengthened plan with additional measures in March next year.

The world is watching us in Bali. To respond to the mounting expectations of the world, we must strengthen our actions against climate change based on the latest scientific evidence presented by the IPCC 4th assessment report. It is my pleasure that the IPCC received the Nobel Prize for Peace. The adverse effects of climate change are already serious.

The outcome of COP13 must be taken forward in the form of the Bali Roadmap. We must launch the negotiations for a new post 2012 framework here in Bali, to significantly strengthen measures on mitigation, adaptation and reducing emissions from deforestation in developing countries.

On launching negotiations for establishing the future framework, there are three elements which are essential. The first element is the timeline of year 2009. To avoid a gap in the commitment periods, the timeline of the negotiation should be scheduled with a view to agreeing by 2009.

Second, on how to proceed with the negotiations, we must have a new Ad-hoc Working Group under the Convention, with the participation of all major emitting countries. Together with the AWG under the Kyoto Protocol discussing future commitments by Annex I Parties to the Protocol, this new AWG under the Convention should compose “Two Tracks” of negotiations with linkages in between them. If the new process cannot be launched, I must say that this conference in Bali would be seen as a failure.

Third, on the elements of the future framework, in addition to the four building blocks of the Convention Dialogue of mitigation, adaptation, technology and finance, we should include the elements of a global long- term goal; efficiency, energy security and co-benefits; a level playing field in terms of international competitiveness; and forestry.

As for the methodologies for setting emissions reductions targets, it is promising to use the sectoral approach which implements effective measures focusing on each sector. This sectoral approach is quite practical for promoting concrete actions such as technology deployment by identifying sectoral reduction potentials based on technical grounds through bottom-up public private partnership. For instance, an intensity indicator such as CO2 emissions per one unit of production can be considered. Such indicators enable us to look at the issue of levelling the playing field in terms of international competitiveness.

A “Co-benefits” approach which addresses both regional pollution and climate change would be a significant way for developing countries which face serious environment problems such as air pollution.

Mr. President,

I would like to reiterate the urgency of climate change.

The post-2012 framework must support actions on adaptation in countries and regions vulnerable to adverse effects of climate change, as well as promote reduction of greenhouse gases with the sense of solidarity.

Japan, in its “Cool Earth 50 Initiative”, proposes principles for establishing an international framework to address climate change. The post-2012 framework must take greater strides than the current Kyoto Protocol. Japan promises to create a new financial mechanism which supports those countries which face imminent threat from climate change, and those countries that are in support of the long term goal of halving global emissions by 2050, and that reduce their own emissions and achieve economic growth in a compatible way with the concept that all countries must take action under a flexible and diverse post 2012 framework.

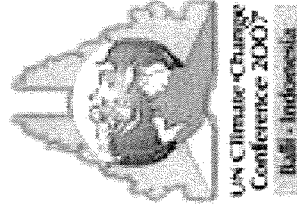
Last but not least, what we need as an outcome at this Bali Meeting is a Bali Roadmap, launching international negotiations for building the new framework. This is of utmost importance, and we must exert our efforts on achieving this.

Mr. President,

In July next year, Japan will host the G8 Hokkaido Toyako Summit and climate change will be one of the main agendas. We would like to feed the outcomes of the G8 Summit into the UNFCCC process. Japan promises to the world that we will collaborate with other countries in the battle against climate change, under the United Nations, and under other forums as well.

Thank you.

Effectiveness of Sectoral Approach and Reasonable Indicators

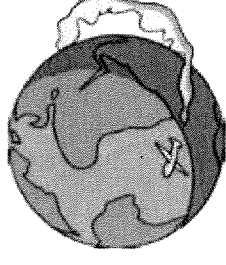


Dr. Ryutaro Yatsu
Ministry of the Environment
Government of Japan

10 December, 2007

Presentation Outline

- Global Emission and Reduction Potential
- Why Sectoral Approach?
- Importance of Reasonable Indicator Setting
- Policy to Realize the Reduction Potential
- Future Task



Worldwide CO₂ Emissions and Anticipated Levels

Drastic reductions of greenhouse gas emissions are necessary for the entire planet.

Figure 5.1: Energy-Related CO₂ Emissions by Scenario

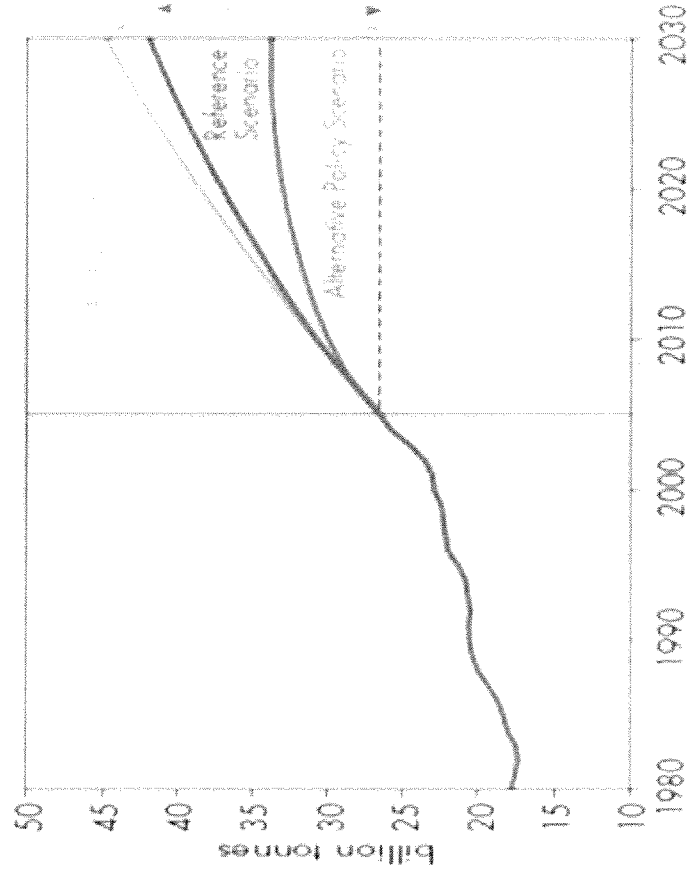
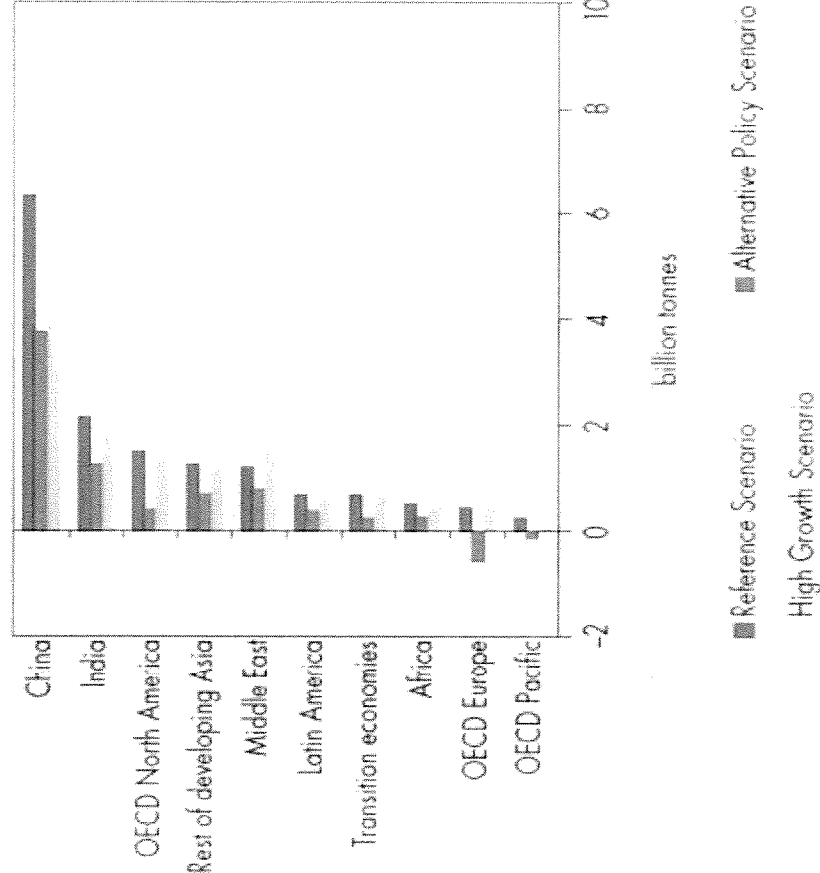


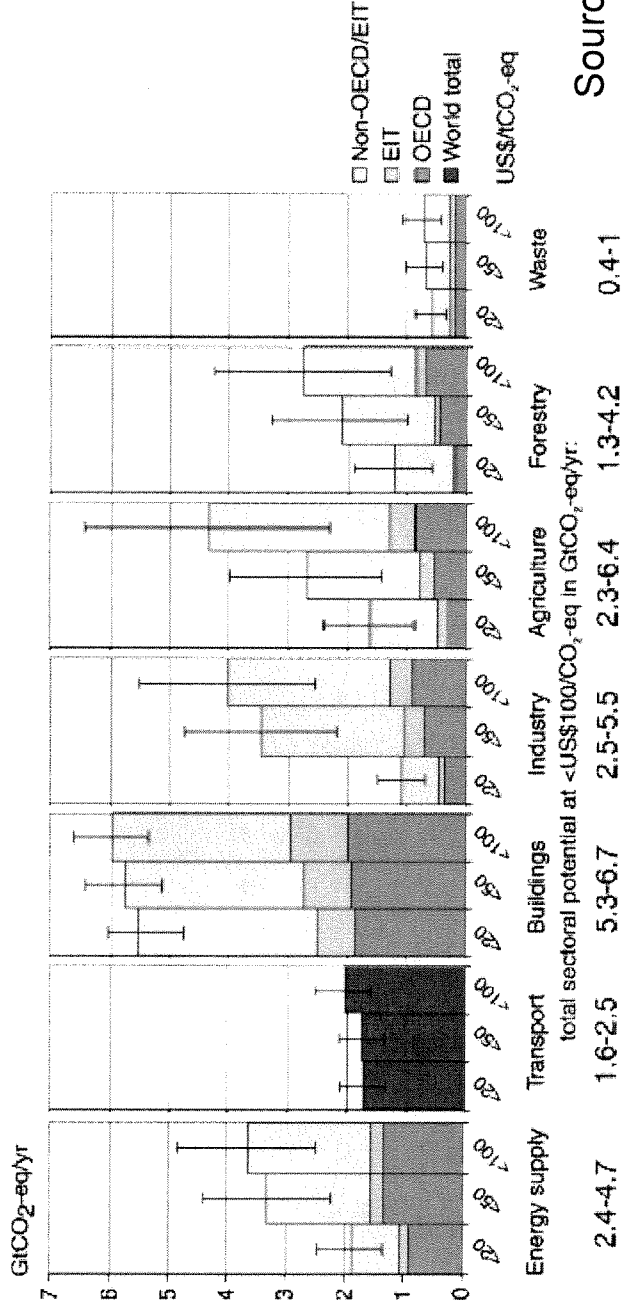
Figure 5.2: Incremental Energy-Related CO₂ Emissions by Scenario, 2005-2030



Source: IEA WEO2007

Economic mitigation potential by sectors in 2030

- There is substantial economic potential for the mitigation of global GHG emissions over coming decades, that could offset the projected growth of global emissions or reduce emissions below current levels.
- Mitigation potential differs between sectors, which suggests the necessity to consider situation of each sector.
- Also, there are large mitigation potential in both developed and developing countries.



What is the “Sectoral Approach” ?

- **Sectoral Approach** realizes practical mitigation actions through:
 - Identifying the targeting sector
 - Conducting detailed survey on technology and emission
 - Developing indicators for benchmarking (intensity)
 - Identifying the best technologies and estimating reduction potential
 - Setting target (intensity/absolute)
 - Implementing actual mitigation by introducing identified technologies

- **Being practiced in various forum:**

- APP
- IEA
- WBCSD
- IISI etc.

Sectors	Possible efficiency indicators
Power Generation	CO2 emissions / GWh
Energy intensive industries (Steel, Cement, Paper & pulp etc.)	CO2 emissions or energy use / production output (t)
Residential	CO2 emissions or energy use / household
Transportation	CO2 emissions or energy use / freight or passengers
Waste	Methane emissions / waste buried CO2 emissions / waste incinerated

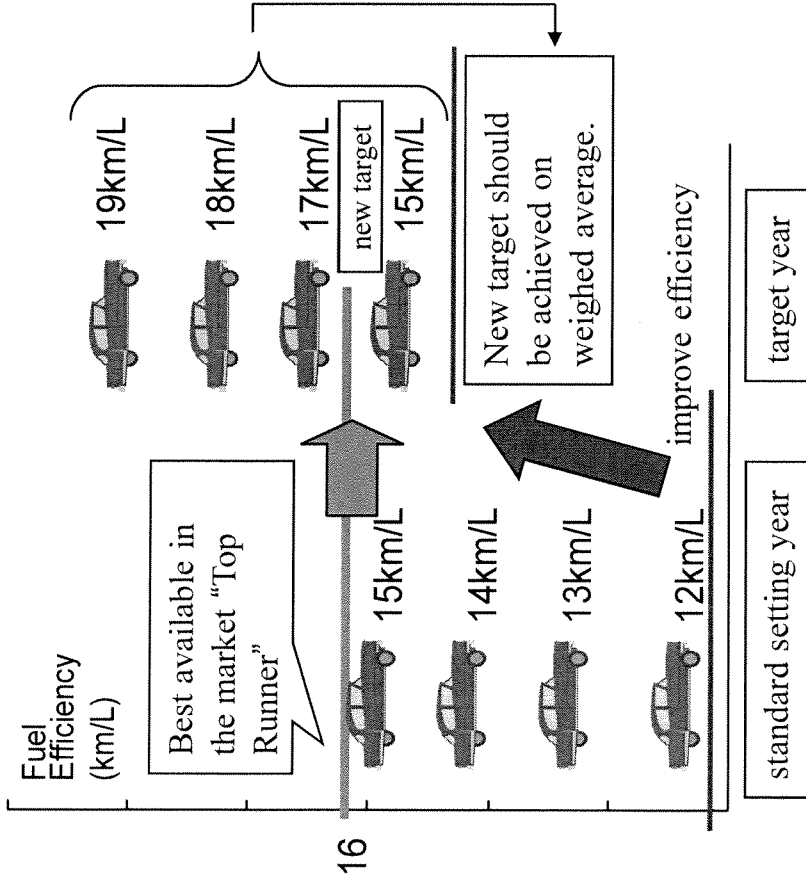
Role of Proposed Indicators

- **Proposed Indicators with benchmarking can be used for national/sectoral targets-setting**
- **Targets-setting by bottom-up sectoral approach have the following advantages:**
 - Enable setting realistic and ambitious targets by investigation and estimation of technology and its progress properly,
 - Enable setting quantifiable, measurable and verifiable targets,
 - Realizing CO2 emission reduction, energy conservation and environmental protection simultaneously,
 - Applicable both to developed and developing nations,
 - Applicable to set comparable targets,
 - Giving confidence both to governments and the private sector by showing a tangible path to the targets.
- **Cement, Steel, Power-Generation and Transportation sectors can cover 60-70 % of the total worldwide basis CO2 emissions.**

Policy to Realize Reduction Potential

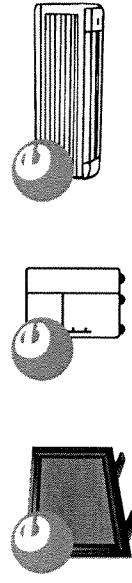
Legally-binding “**Top Runner Standards**” covering 21 products have successfully achieved the remarkable improvement in energy efficiency.

<Concept of “Top Runner Program”>



<The result of the Top Runner program>

Equipment	Improvement of energy consumption efficiency (Results)
TV sets	25.7% (FY 1997→FY 2003)
Video-cassette recorders	73.6% (FY 1997→FY 2003)
Air conditioners	67.8% (FY 1997→FY 2004)
Electric refrigerators	55.2% (FY 1998→FY 2004)
Electric freezers	29.6% (FY 1998→FY 2004)
Gasoline passenger vehicles	22.8% (FY 1995→FY 2005)



Summary

Sectoral Approach

- can identify actual reduction potential with certain technologies; “Effectiveness”
- addresses international “Competitiveness”
- provides indicator for equitable framework establishing national reduction target, sectoral target and voluntary measure; “Equity”



is promising elements for post-2012 framework

Japan accelerate the work through G8 process next year.

(Broadening Countries and Sectors: Power, Transport, Home, Agriculture and Forestry, etc.)