1. Japan's good practices of green industry policy instrument

To our view, there is no universal definition of green industries to date. In this report, "green industries" are interpreted roughly in two meanings: greening of industry (GI) and creating green industry (CGI). Policy instruments for GI contain those that promote industries to operate in a greener manner, while those for CGI are to create new green industries.

There exist a number of policy options relevant to GI and CGI in Japan. Japan's good practices for policy instruments on green industries are summarised in Table 1. This report introduces some of these instruments to provide information on how Japan has striven to strengthen its green industries over the past years.

2.1 Greening of Industries (GI)

Short/Mid/Long term strategy/plan for policy setting of command and control:

There are three policies that are particularly concerned with green industries in Japan. These are "Law concerning the promotion of the measures to cope with global warming", "The Kyoto Protocol Target Achievement Plan", and "Basic Act on Energy Policy". The first law has established the legislative basis of Japan's climate policy and provided inter-ministry framework, which also involves local authorities in designing and implementing stages. The second plan consists of a mix of regulation, governmental spending, voluntary measures, and economic incentives addressing key economic sectors. The third policy sets the key priorities of Japan's energy policy, such as energy security, environmental suitability, and use of market mechanisms.

Energy Saving Act for standards and regulations of command and control:

One of the policy instruments perhaps with the largest impact in the history of Japanese industries, in our view, is "Energy Saving Act". This Act was first exacted in 1979 and has been amended several times since then. As it is widely known, Japan experienced two times of considerable oil crises: one time in 1973 and the second in 1978. Japan's energy self-sufficiency rate was extremely low. The only 4% of total fossil fuel consumed in Japan was domestically supplied, compared to 64% in USA and 27% in Germany. In addition, heavy industries were the dominant industries in Japan. Energy consumption in the industrial sector accounted for more than 42% of the total energy consumed in the country, which is higher than 30% in countries like USA, UK, Germany and France. Combination of the three factors (i.e. oil crisis, low energy sufficiency rate, high energy consumption in industries) made oil critically important for the Japanese economy.

The government of Japan developed Energy Saving Act for its industries in 1979. Since then, this Act has been amended for five times in 1983, 1993, 1996, 2005, and 2008. As shown in Figure 1, there are different observed trends in the relationship between energy efficiency and GDP growth, along with the policy implementation. Until the first oil crisis, the growth rate of primary energy consumption was higher than that of GDP. After that, there was a period when GDP continued to grow, while energy consumption became more or less stable (i.e., 1973-1986). Then, up until 2000, both the growth rates of energy consumption and GDP appeared almost similar. The amendment of this Energy Saving Act was made in response to these changing situations and helped to drive companies to improve their energy efficiency.

With the earliest version of Energy Saving Act (1979), there were only three thousands factories that were designated as for energy management. The major industries were also obliged to follow guidelines on rational use of energy. As the Act was amended, the number of targeted factories was also increased. With the latest version of this Act (2008), any entities that consume more than 1,500 kle per year have to implement energy management. They also have to assign energy manager and submit medium- and long-term plans and periodic reports, and so on. Under this Act, there is also the so-called "Top Runner Program", that is to promote energy efficiency of equipment, such as home appliances, by setting energy efficiency standards for particular products.

Global Warming Measure Tax for carbon pricing of economic instruments:

Japan enforced Global Warming Measure Tax in October 2012. This tax is imposed on fossil fuels, in addition to existing Fossil Fuel Tax. Its rate corresponds to the amount of CO2 emitted for all the fossil fuels. Tax price for one ton of CO2 emissions is 289 yen, regardless of types of fossil fuels. The price of Fossil Fuel Tax however, is varied among different types of fossil fuels (e.g., crude oil, LPG, coal). The government of Japan intends to increase the price of Global Warming Measure Tax by steps. The estimated tax revenues from Global Warming Measure Tax for 2012 were 39.1 billion yen, which is equal to 391 million USD. It is expected that revenues for normal years will be 262.3 billion yen or 2.61 billion USD. These revenues will be used to measures to reduce energy-oriented CO2 emission, such as renewable energy and enhancement of energy-saving measures.

Japan's Voluntary Emissions Trading Scheme (J-VETS) for carbon pricing of economic instruments:

J-VETS was launched in 2005, and since then there have been 7 phases implemented. The

latest 7th phase covers the period between 2011 and 2013. The objective of J-VETS is to support voluntary CO2 emissions reductions activities by business entities in a cost-effective way with subsidies and emissions trading. Under J-VETS, companies make their own commitments to reduce emissions. If one company could not meet with its commitment after verification, it can purchase emissions reductions allowances from another company which successfully met with its commitment and has surplus allowances. The Ministry of the Environment of Japan provides subsidies to facilities holding voluntary commitments. Through J-VETS, the government of Japan and private entities gain knowledge and experiences relating to emission trading systems.

Joint Crediting Mechanism (JCM) subsidies for general incentive of economic instruments:

The government of Japan currently promotes the Joint Crediting Mechanism with partner host countries. The JCM is the mechanism for emissions reductions through project implementation between Japan and its partner developing country, using low carbon technologies, systems, etc. Under this mechanism, the government of Japan subsidizes the maximum up to 50% of investment costs for project implementation. The budget for the subsidies was 1.2 billion yen for the fiscal year 2013 and came from the above mentioned Global Warming Measure Tax.

Public Green Procurement Act:

Public Green Procurement Act is to promote the purchase of green products and services in the public sector both at the central and local government levels. It also increases available information on green products and services. Under this green procurement, the central government determines and announces a procurement policy with targets on designated type of products and services every year. Then the government purchases products and services in line with the policy and later informs the public on their performance of purchasing green products and services. While at the central level, these actions are obligation, the local governments are just asked to do their best to determine a procurement policy with targets on designated products and services. With this Act, suppliers, including manufacturers, have to provide environmental information regarding their products and services. Eco-labelling bodies also should promote eco-labeling programmes in line with national standards.

Energy Management System (ISO 50001) for voluntary initiatives:

The government of Japan promotes ISO50001 among private companies as the way to improve energy-saving through energy management. For example, when private companies

are willing to take public work projects, they are required to have ISO50001 certification in order to apply for it. Some local government in Tokyo also provides subsidies for small to medium companies to obtain this certification. ISO50001 recommends PDCA cycle to be applied in energy management. The company first develops a policy for more efficient use of energy then fix targets and objectives to meet with the policy goals. Then it uses data to better understand and make decisions on energy use. After measuring results of implementing the plan, it will review and continually improve energy management.

Carbon Footprint of Products (CFP) for GHG information disclosure:

Carbon Footprint Products aims to visualize CO2 emission associated with products and services from manufacturers to consumers with certificates. There are over 460 products and services which have been CFP certified under the pilot CFP implementation up until 2012. This pilot phase has been followed up by the full-scale CFP.

2.2 Creating Green Industries (CGI)

Renewable Portfolio Standard Act and Japan's Feed-in tariff (FIT) for standard and regulations and carbon pricing of economic instruments, respectively:

For policy instruments relevant to CGI in Japan, feed-in tariff (FIT) has been implemented so that the development of renewable energy can be accelerated. In Japan, sources of energy largely depend on fossil fuels, given renewable energy contributing to the only few percent of the total energy supply. From the energy security and environmental points of view, it is the priority policy area for Japan to promote the development and use of renewable energy. Japan has set the national targets for renewable energy in 1990, 1994, and 2003. The last target setting (2003) was made to meet with the Japan's Kyoto Protocol target under the UNFCCC (i.e., 6% reduction compared to the 1990 baseline). Subsidies were mostly provided to research and development between the 1970's and 1990's. This however has been shifted to installation of renewable energy in more recent years.

As its initial step for promoting renewable energy, the government of Japan first enacted Renewable Portfolio Standard Act (RPS) between 2003 and 2008. This Act requires power producing companies to set their own targets on how much proportion of total energy used comes from renewable sources, including wind, solar, geothermal, hydro, and biomass. Then such targets needed to be approved by METI. The strength of this Act is to increase cost efficiency of renewable energy. Its weakness, on the other hand, is that it can increase electric rate. However, as targets were renewed, year by year, by companies, there was the point when power producing companies hardly could increase their targets further.

It was when FIT was enacted for promoting renewable energy in 2009. The power companies are obliged to purchase renewable power at a fixed price for ten to twenty years from business entities engaged with renewable power generation. Price setting and duration for fixing at that price are decided by METI with the advisory committee. METI with the advisory committee is also responsible for approving facilities generating renewable energy. Consumers cover certain surcharge for renewable energy on the top of regular electricity charge. The strengths of FIT include that it can make renewable energy so economically valuable that small to medium entities can also participate in renewable power generation. Therefore it can vitalize local economy through investments to renewable energy facilities. However, FIT may be disadvantageous because it is sensitive to political decisions. Also, since FIT may work as a kind of subsidy, it may reduce incentives of renewable energy equipment suppliers for further reduction of equipment price, which may go down generally along with technological development.

Through the enactment of RPS and FIT, energy supply from renewable sources has been gradually increased in Japan (Figure 2). Yet, the share of renewable power to the total energy supply is only at 4%. Therefore it is clear more efforts need to be made to further increase its share.

Containers/ Packaging Recycling Act for general incentives of economic instruments:

This Act was endorsed in 1995 to promote recycling of containers and packing materials, which consist around 60% of waste in volume from households in Japan. It distributes responsibilities for recycling among consumers for segregation, municipalities for collection, and designated companies for recycling treatment.

Table 1 Summary of policy options for greening of industries and creating green industries

Policy options		Greening of industries (GI)		Creating green industry (CGI)	
		Type	Good practices in Japan	Type	Good practices in Japan
Command and Control	Policy Setting	Short/ Mid/ Long term strategy/plan	Law Concerning the Promotion of the Measures to Cope with Global warming	Short/ Mid/ Long term strategy/plan	Law Concerning the Promotion of the Measures to Cope with Global warming
	Standards/ Regulations	Energy efficiency	Energy Saving Act	Greening of power producers	Renewable Portfolio Standard Act
		Water efficiency	-		
Economic instruments	Carbon pricing	Carbon tax	Global Warming Tax	Feed-in tariff (FIT)	Japan's FIT
		Emission trading scheme	J-VETS	Tradable green certificates	-
	General incentive	Provision of subsidies	J-VER, JCM subsidies	Deposit/refund for recycling/ reusing	Packaging Recycling Act
		Removal of harmful subsidies	-	Special zone for green industry	Eco-town
		Eco-industrial park	-		
		Public procurement system	Green Procurement Act	Public procurement system	Green Procurement Act
Voluntary initiatives		Environmental Management Standard	ISO14001, Eco-Action		
		Energy Management System	ISO50001		
		CSR	-		
GHG information disclosure		Labelling scheme	Carbon Foot Print, Eco-labelling		

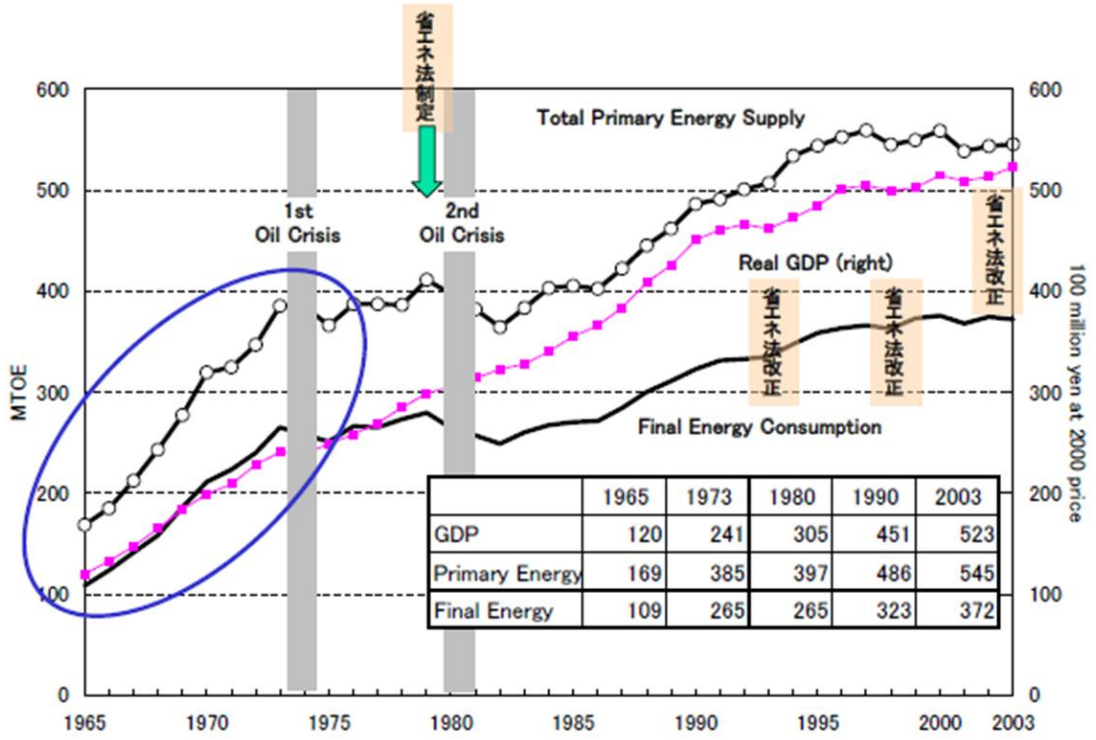


Figure 1 Trends of total primary energy supply and real GDP in Japan

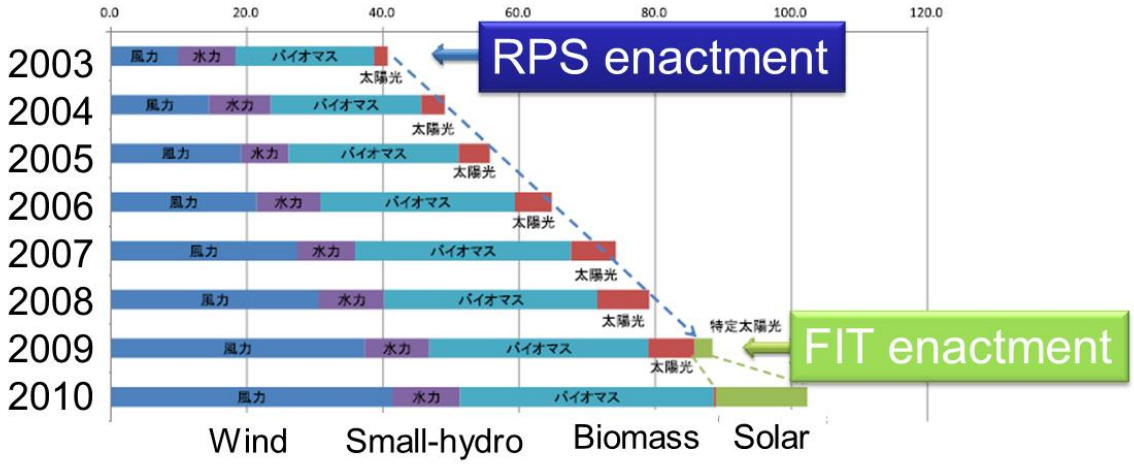


Figure 2 Japan's total energy supply by renewable power generation

(Unit: 100,000,000 kWh)

2. Initial recommendations on policies of greening industry in Lao PDR and Cambodia

1. Both countries need to ensure that the strategy of greening industry is effectively mainstreamed into national development plans.

   The social and economic conditions in these countries make the facilitation of greening industry a challenging task, as these countries lack necessary infrastructure, financial resources, and human capacity to take quick actions. Yet, the quality of economic growth and the achievement of development goals are determined by energy security, the access to clean water and food, and the resilience to environmental risks. Thus, a focus on decoupling economic growth from environmental degradation and the integration of greening industry into development planning is particularly relevant.

2. Lao PDR needs to formulate a National Green Growth Plan, including a national green industry development plan, and UNIDO should provide technical support for this process.

   Such a plan, including a national green industry development plan as one of its fundamental components, enables the country to identify medium-, and long-term needs for green growth and to develop strategies and programmes to address these needs. Since this process is continuous, progressive and iterative, UNIDO should provide regular technical support for this process.

3. Both countries need to establish and empower relevant government bodies to create the enabling environment for greening industry.

   The enabling environment includes but is not limited to factors like a supportive legislative, regulatory, and policy framework; social awareness and public support; resource efficient infrastructure; and a comprehensive knowledge and skill base. The capacity of government bodies to carry out policy intervention is critical. It has been observed that policy implementation and enforcement are difficult in developing countries. Establishing appropriate institutional arrangements, in particular at the sub-national and local level, is one of the preconditions of carrying out greening of industry.

4. Both countries need to designate professional personnel at the enterprise/factory level in charge of energy and environment management.

Enterprises/factories need to designate a professional staff member in charge of energy and environment management. The designated person is responsible for conducting energy auditing, ensuring environment compliance, and performing environmental assessments on fixed asset investment. To incentivize enterprises/factories, the cost of energy auditing and environmental assessments could be covered by the government or be shared between the government and the enterprise/factories. In the near future, both countries need to establish an energy and environmental data reporting and collection system, because a robust information system is the foundation for tracking progress in policy implementation.

5. Policy intervention in both countries should focus on small and medium enterprises (SMEs) and employ more incentive and voluntary measures.

   The majority of enterprises in industry sector of both countries are in the agro-processing industry and are small and medium in size. SMEs often do not carry substantial assets, have difficulty accessing commercial loans and credit, and lack expertise to identify and implement environmental technologies. The way SMEs operate business implies that more incentives and support from the government, rather than command and control, could enable them to improved environmental practices and adopt efficiency measures.

6. The policy options for incentivizing enterprises in both countries include price and tax mechanisms like a punitive electricity price or a reduction on value-added tax.

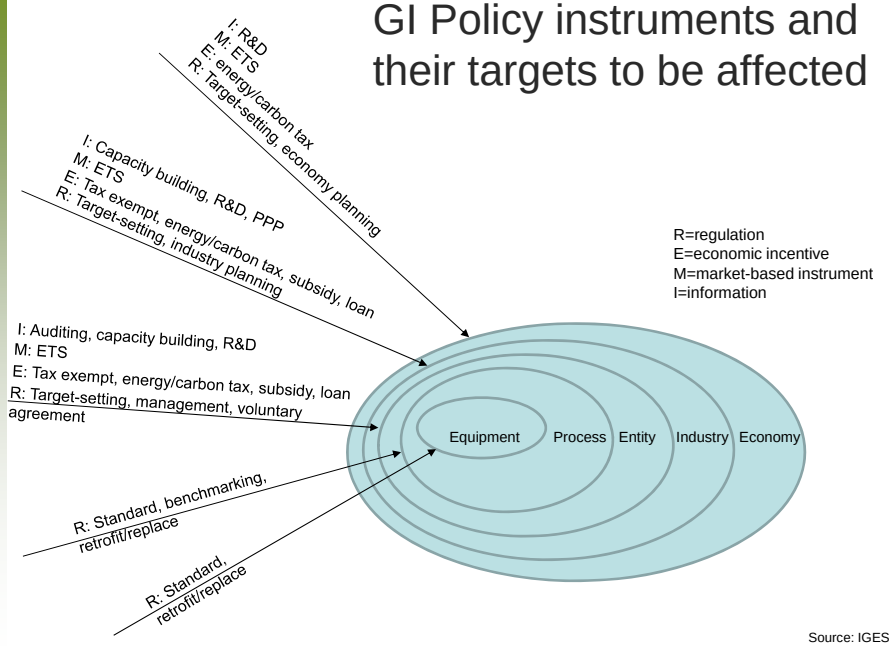
   For example, China uses a differentiated electricity pricing policy. Enterprises are categorized into one of the four groups based on their energy efficiency level—encouraged, permitted, restricted, and eliminated—and paid different prices for electricity. Encouraged and permitted enterprises pay the normal electricity price, while restricted and eliminated enterprises pay surcharges that were 17% and 51% higher than the normal price. Lower governments are allowed to retain revenue collected through the differential electricity pricing system and apply the revenue to provincial-level energy conservation funds in support of energy efficiency investment. Moreover, a reduction on value-added tax can encourage the enterprises to reuse and recycle waste heat, pressure, and products. Such a policy provides some amount of VAT deductions on project inputs, if the project uses certain wastes as feedstock.

Low-carbon policy instruments and Japan's practices

21 Nov. 2013, Vientiane

Kenji Asakawa
Institute for Global Environmental Strategies (IGES)

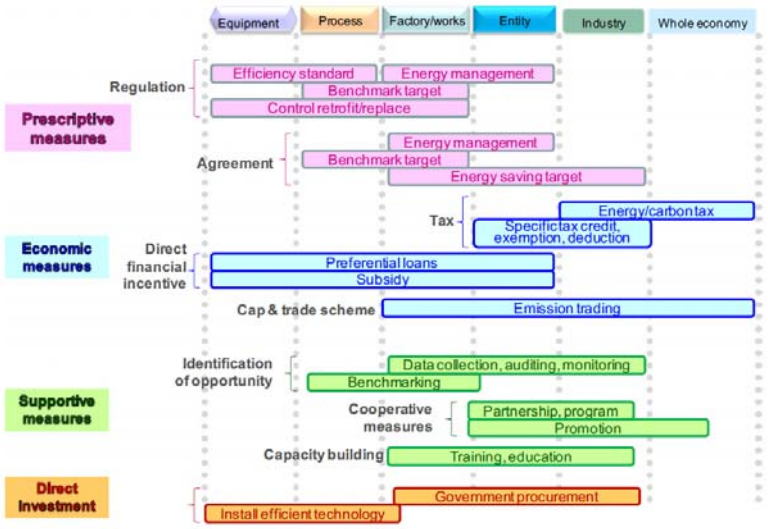
GI Policy instruments and their targets to be affected



Source: IGES

2

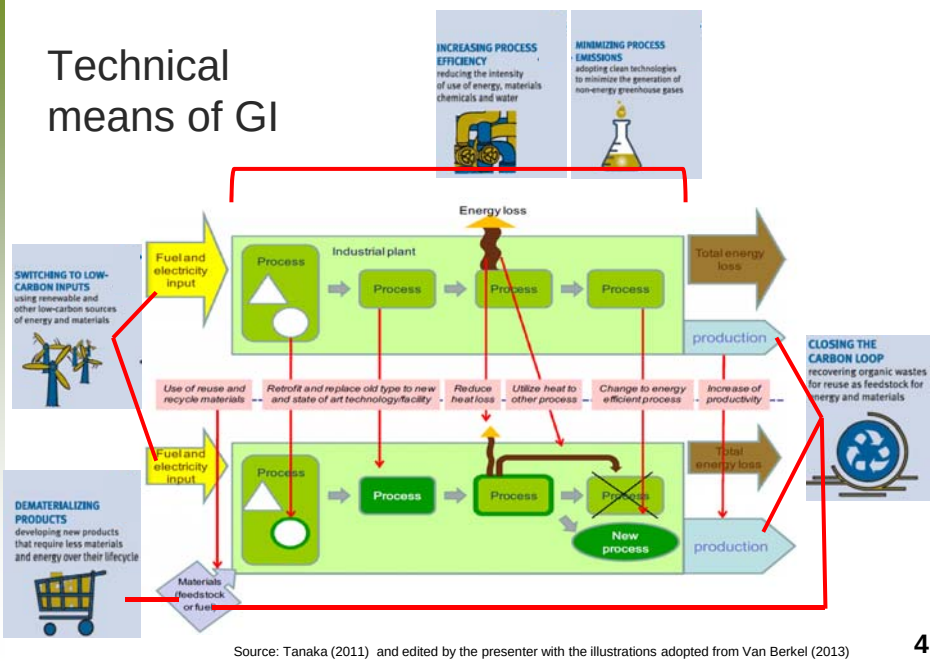
GI Policy Mapping by target to be affected



Source: Tanaka (2011)

3

Technical means of GI



Source: Tanaka (2011) and edited by the presenter with the illustrations adopted from Van Berkel (2013)

4

Policy instruments for GI

Policy Options		Policy Instruments of "Green Industry" (Good practices of Japan)	
		Greening of Industry	Creating Green Industry
I. Command and Control	Policy setting	● Short/Mid/Long term strategy/plan (Law Concerning the Promotion of the Measures to Cope with Global Warming)	
	Standards/ Regulations	● Energy efficiency (Energy Saving Act) ● Water efficiency	● Greening of power producers (Renewable Portfolio Standard Act)
II. Economic instruments	Carbon pricing	● Carbon tax (Global Warming Tax) ● Emission trading scheme (J-VETS)	● Feed-in tariff (Japan's FIT) ● Tradable Green Certificates
	General incentive	● Provision of subsidies (J-VER, JCM subsidies) ● Removal of harmful subsidies ● Eco-Industrial park	● Deposit/refund for recycling/ reusing (Packaging Recycling Act) ● Special zone for green industry (Eco-town)
		● Public procurement system (Green Purchasing Act)	
III. Voluntary Initiatives		● Environmental Management Standard (ISO14001, Eco-Action) ● Energy Management System (ISO50001) ● CSR	---
IV. GHG Information disclosure		● Labeling scheme (Carbon Foot Print, Eco-labelling)	---

Source: IGES

5

I. Command and control: Policy setting

- Law concerning the promotion of the measures to cope with Global Warming
  - … has established the legislative basis of Japan's climate policy.
  - … has provided inter-ministry framework, which also involves local authorities in designing and implementing stages.
- The Kyoto Protocol Target Achievement Plan
  - … consists of a mix of regulation, governmental spending, voluntary measures, and economic incentives addressing key economic sectors.
- Basic Act on Energy Policy
  - … sets the key priorities of Japan's energy policy: Energy security, environmental suitability and use of market mechanisms.

Source: Ministry of Environment and Ministry of Economy, Industry and Trade

6

I. Command and control
Standards/Regulations

…are mandatory approach by legal measures, including penalty.

- Strength
  - ✓ Minimize uncertainty in achieving target by elaborating standards, even in short term
- Weakness
  - ✓ No incentive of further reduction for small-emitters
  - ✓ High inspection cost
  - ✓ High economic cost

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I. Command and control
Standards/Regulations

- Classification (by control method)
  1. Performance control:
     e.g. energy efficiency standards
  2. Conduct control:
     e.g. purchase green power
     installation of specific equipment
  3. Control by permission system:
     e.g. EIA

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I. Command and control: Standards/Regulations

Energy Saving Act

Energy saving

Sector

Industry

- ☐Target: entity consuming more than 1,500kle-oil/y
- ☐Obligation
- ●Assign energy manager
- ●Implement energy management
  - • Required making effort to;
    - • reduce 1 % of specific energy consumption
    - • reach benchmark standard
  - •Collaborative action for energy saving (e.g. purchasing offset credit)
- ●Submit medium/long term plans & periodic reports

Transportation

Residence & building

Equipment

●Top runner program: energy efficiency standards to be achieved in next 3-10 years for 26 energy intensive products, incl. home appliances, vehicles

Peak load reduction

● Evaluate the targeted entities' efforts to reduce peak-load as activities to achieve energy saving target in the act.

Source: Ministry of Environment

9

I. Command and control: Standards/Regulations

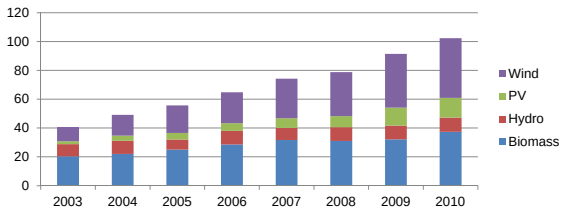
Renewable Portfolio Standard Act

Remarks: *This act was repealed in 2012 due to the enforcement of Japan's FIT

- **Target source of renewable energy**
  Wind, Solar, Geothermal, Hydro (Small-scale, less than 1000kW), and Biomass

- **Obligation on power producers**
  Purchase/Generate renewable power, more than specific % of volume of power sold
  - ➢ Measures: 1. Generate in-house
    2. Purchase from other electricity suppliers
    3. Purchase equivalent volume of target electricity from other suppliers (eligible to Renewable Energy Certificate)
  - ➢The facilities for generating target energy needs to get an approval from the Minister

Supply of renewable energy



Source: Ministry of Economy, Trade and Industry

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II. Economic instrument

- Classification
  1. Carbon pricing e.g. Tax, ETS
  2. General incentive e.g. Subsidy

- Strengths
  - ✓ Economic incentive of further reduction for small-emitters
  - ✓ Save economic cost

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II. Economic instrument
Carbon pricing

1. Carbon tax

… reduce emission by make carbon intensive activities less economically-viable.

- Strength
  - ✓ Social fairness through internalization of the external diseconomy
- Weakness
  - ✓Tax-rate hardly achieves consensus in industrial sector

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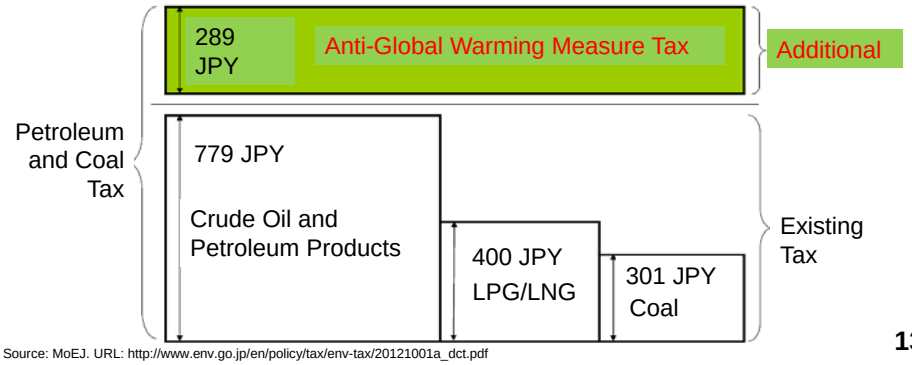
II. Economic instrument: Carbon pricing (Carbon Tax)

Anti-Global Warming Measure Tax

- Tax rate corresponds to the amount of CO_2 emitted for all the fossil fuels
- Enforced in October 2012, and tax rate gradually increased.
- Tax revenues estimated as 39.1 billion JPY (391 million USD) for the first year and 262.3 billion JPY (2.61 billion USD) for normal years.
- Revenue will be used to measures to reduce energy-oriented CO_2 emissions, e.g., renewable energy and enhancement of energy-saving measures

(Tax rate per ton of CO_2 emissions)



Source: MoEJ. URL: http://www.env.go.jp/en/policy/tax/env-tax/20121001a_dct.pdf

13

II. Economic instrument

Carbon pricing

2. ETS:

- ➢Strengths:
  - ✓Provide high-emitters with opportunity to save mitigation cost.
  - ✓Prevent low-emitters from losing incentive to take more mitigation actions.
  - ✓Minimise marginal economic cost for mitigation.
- ➢Weakness:
  - ✓Setting a cap on emissions (allocation) hardly achieves consensus in industrial sector.
  - ✓Market would collapse w/o frequent intervention.

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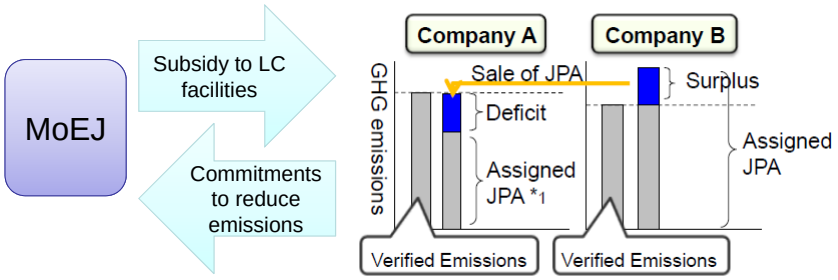
II. Economic instrument: Carbon pricing
Japan's Voluntary Emissions Trading Scheme (J-VETS)

- Launched by MOEJ in 2005 (7th phase: 2011-2013).
- Supports voluntary CO_2 emissions reductions activities by business entities in a cost-effective way with subsidy and emissions trading.
- Gains knowledge and experiences related with ETS.



*1: JPA: Credits under JVETS.

Source:
1) MoEJ. URL: http://www.env.go.jp/en/earth/ets/jvets1105.pdf
2) MoEJ. UR: http://www.env.go.jp/earth/ondanka/det/jvets/summary_draft.pdf

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II. Economic instrument
Carbon pricing

3. FIT:
   - ➢Strengths:
     - ✓Promote RE by making it so economically-viable and attractive as SMEs could also be RE power producers.
     - ✓Vitalize local economy in RE related sector by more investments to be facilitated.
   - ➢Weaknesses:
     - ✓Could be affected by political situations without guarantee of contract period
     - ✓Less incentive of the equipment suppliers for price-down accompanied with technological development.

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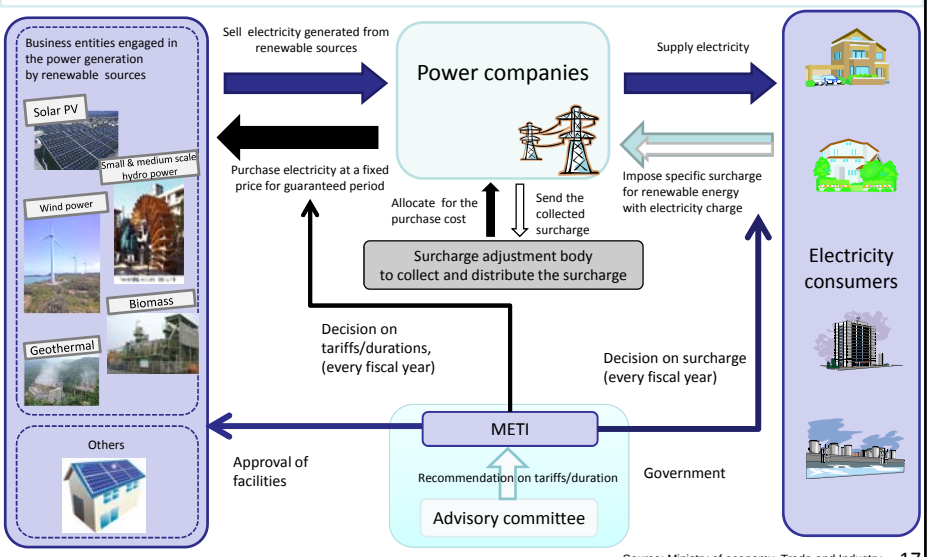
II. Economic instrument: Carbon pricing

Japan's Feed-In Tariff

The power companies are obliged to purchase renewable power at a fixed price for 10/20 years



Source: Ministry of economy, Trade and Industry 17

II. Economic instrument: General incentive

Subsidy for bilateral offsetting mechanism (JCM)

JCM Promotion Scheme by MOEJ

Financing Programme for JCM Model Projects

Max. 50% to be subsidized

MOEJ will finance part of an investment cost (up to the half) as premises for seeking to deliver JCM credits (half of issued) to the MOEJ.

- The budget for FY 2013: 1.2 billion JPY (approximately ~~$13 million~~)
- Recipient: International consortiums which include Japanese entities
- Scope of the financing: Facilities which reduce CO_2 from fossil fuel combustion as well as construction cost for installing those facilities
- Eligible Projects : Starting construction after the adaption of the financing, and finish construction within FY2013 (one year extension may be approved)

Study Programmes for JCM Projects

JCM Project Planning Study (PS)	The study for development of a Model Project in the near future.
JCM Methodology Demonstration Study (DS)	The study to check the practicality of the draft methodology by applying existing projects under operation.
JCM Feasibility Study (FS)	The study to promote potential JCM projects and to survey its feasibility.

Capacity Building Programmes for the JCM

Source: Ministry of Environment Japan 2013 **18**

II. Economic instrument: General incentive
Public Green Procurement Act

Objective: ・Promotion to purchase green products and services in public sector
・Provide information of green products and services.

Green procurement

Central Gov.

■ Obligations
- determine and announce a procurement policy with targets on designated type of products, etc. every year,
- purchase products and services in line with the policy, and
- announce and report their performance to Minister of the Environment

Bearing in mind it might increase the total procurement volume

Local Gov.

■ Best effort
- only determine a procurement policy with targets on designated type of products, etc. every year.

Environmental info disclosure

•Supplier, including manufacturers, should provide environmental information on their products
•Eco-labeling bodies, etc. should promote eco-labeling programs on scientific basis and in complying with national standards
•The Government considers appropriate information providing systems on green products, etc.

Source: Ministry of Environment

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II. Economic instrument
General incentive

3. Deposit/refund

… reduces lifecycle emission by facilitating recycling/reusing at higher collection rate.

- ➢Strengths:
  - ✓Save screening and recovery cost by inducing end-users to help selective recovery
  - ✓Avoid scattering
- ➢Weakness:
  - ✓Government intervention would be required in case that cost of new product is cheaper than cost of recycling/reusing

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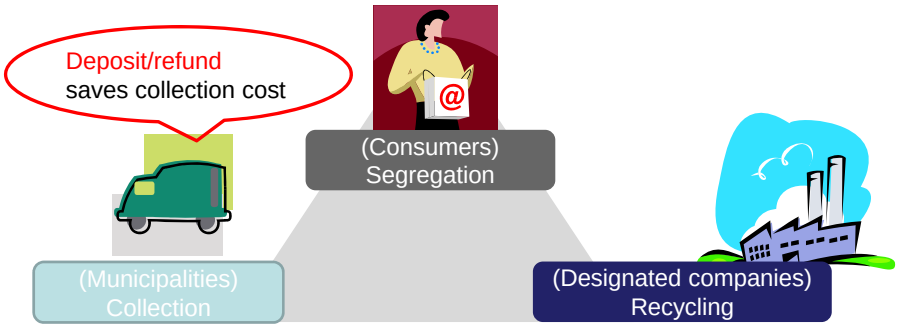
II. Economic instrument: General incentive
Containers/Packaging Recycling Act

- Endorsed in 1995. Containers and packaging consist around 60% of waste in volume from households.
- Promote recycling of containers/packaging material by distributing responsibilities of municipalities among consumers, municipalities, and designated recycling companies.



Source:
1) MoEJ. URL: http://www.env.go.jp/recycle/yoki/a_1_recycle/recycle_02.html
2) The Japan Containers and Packaging Recycling Association. URL: http://www.jcpra.or.jp/eng/jcpra/02.html

21

III. Voluntary Initiatives

1. Environmental Management Standard
2. Environmental Management System Standard
3. Corporate Social Responsibility (CSR)

➢Strengths:
- ✓Promote realistic action in line with the situation in each industry.

➢Weakness:
- ✓No fine is issued in case of non-compliance, and no additional action is taken toward compliance.

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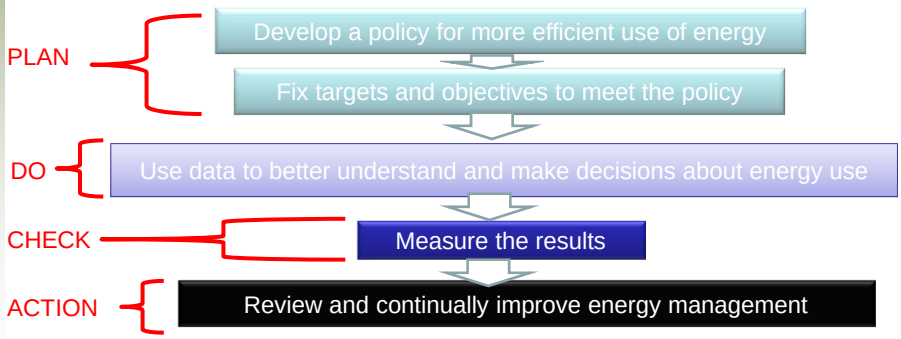
III. Voluntary Initiatives:
Energy management system (ISO 50001)

- ISO50001 would provide opportunity for energy-saving by energy management
- GoJ promotes ISO50001 among private sector by requiring ISO50001 certification under GoJ-funded projects.

PDCA cycle of ISO50001



Source:
1) http://www.iso.org/iso/home/standards/management-standards/iso50001.htm
2) http://www.enecho.meti.go.jp/policy/iso50001/subsidy.html

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IV. Information Disclosure

1. Labeling scheme
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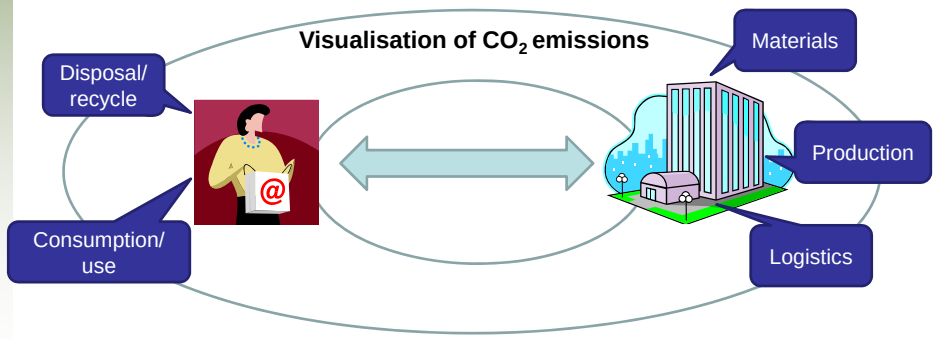

Source:
1) http://www.cfp-japan.jp/system/ http://www.enecho.meti.go.jp/policy/iso50001/subsidy.html
2) http://www.env.go.jp/policy/hozen/green/ecolabel/f01.html

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Institute for Global Environmental Strategies

Towards sustainable development - policy oriented, practical and strategic research on global environmental issues

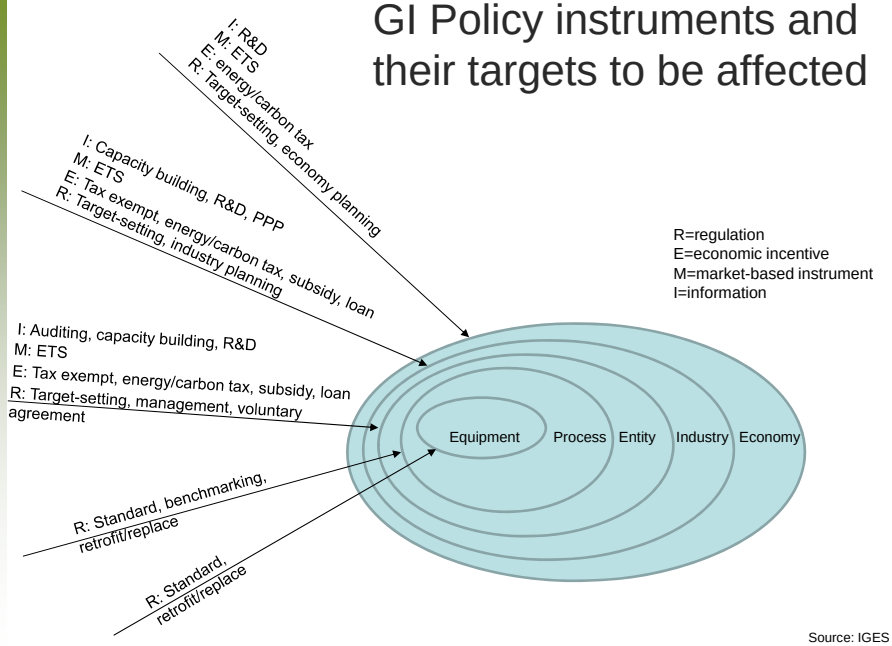
Low-carbon policy instruments and Japan's practices

25 Nov. 2013, Phnom Penh

Kenji Asakawa

Institute for Global Environmental Strategies (IGES)

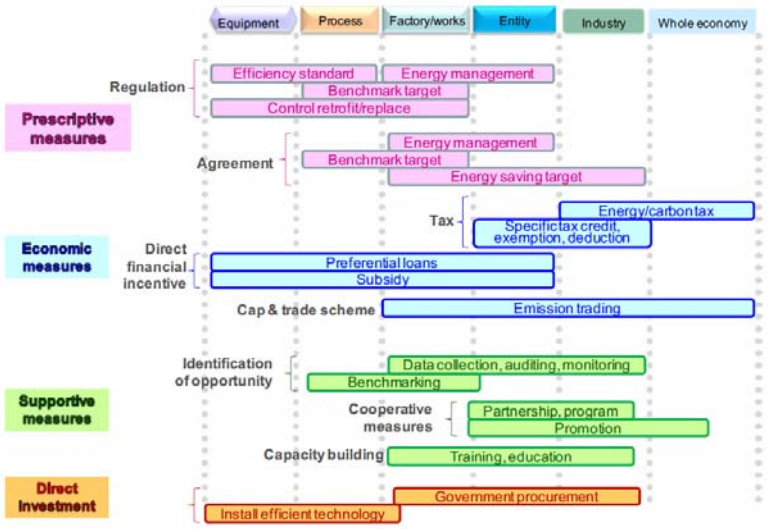
GI Policy instruments and their targets to be affected



Source: IGES

2

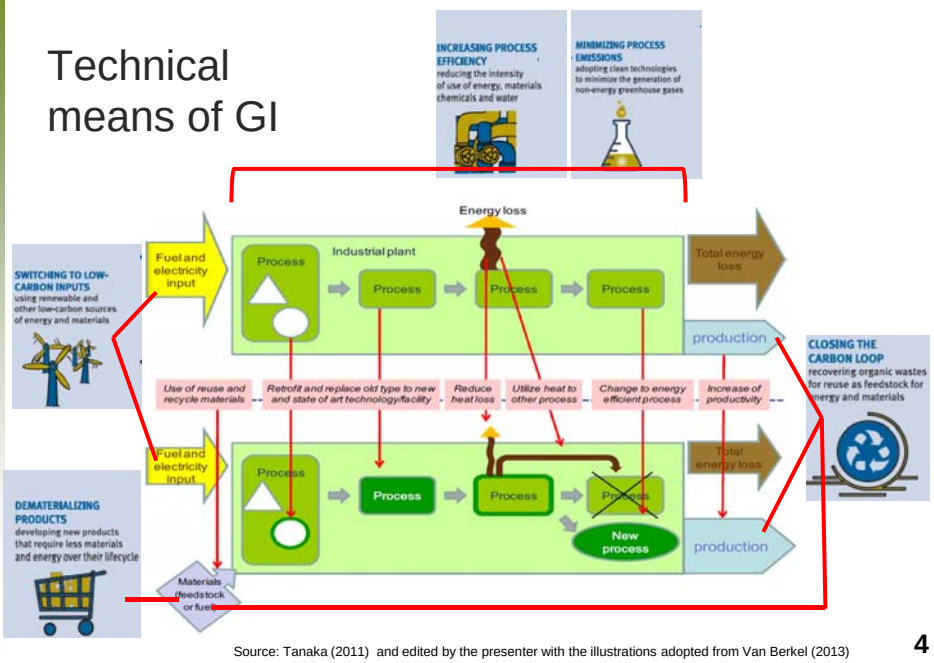
GI Policy Mapping by target to be affected



Source: Tanaka (2011)

3

Technical means of GI



Source: Tanaka (2011) and edited by the presenter with the illustrations adopted from Van Berkel (2013)

4

Policy instruments for GI

Policy Options		Policy Instruments of "Green Industry" (Good practices of Japan)	
		Greening of Industry (GI)	Creating Green Industry (CGI)
I. Command and Control	Policy setting	● Short/Mid/Long term strategy/plan (Law Concerning the Promotion of the Measures to Cope with Global Warming)	
	Standards/ Regulations	● Energy efficiency (Energy Saving Act) ● Water efficiency	● Greening of power producers (Renewable Portfolio Standard Act)
II. Economic instruments	Carbon pricing	● Carbon tax (Global Warming Tax) ● Emission trading scheme (J-VETS)	● Feed-in tariff (Japan's FIT) ● Tradable Green Certificates
	General incentive	● Provision of subsidies (J-VER, JCM subsidies) ● Removal of harmful subsidies ● Eco-Industrial park	● Deposit/refund for recycling/ reusing (Packaging Recycling Act) ● Special zone for green industry (Eco-town)
		● Public procurement system (Green Procurement Act)	
III. Voluntary Initiatives		● Environmental Management Standard (ISO14001, Eco-Action) ● Energy Management System (ISO50001) ● CSR	---
IV. GHG Information disclosure		● Labeling scheme (Carbon Foot Print, Eco-labelling)	---

Source: IGES

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GI/CGI: Policy setting

- Law concerning the promotion of the measures to cope with Global Warming
  - … has established the legislative basis of Japan's climate policy.
  - … has provided inter-ministry framework, which also involves local authorities in designing and implementing stages.
- The Kyoto Protocol Target Achievement Plan
  - … consists of a mix of regulation, governmental spending, voluntary measures, and economic incentives addressing key economic sectors.
- Basic Act on Energy Policy
  - … sets the key priorities of Japan's energy policy: Energy security, environmental suitability and use of market mechanisms.

Source: Ministry of Environment and Ministry of Economy, Industry and Trade

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GI: I. Command and control Standards/Regulations

…are mandatory approach by legal measures, including penalty. e.g. Energy Saving Act

- Strength
  - ✓ Minimize uncertainty in achieving target by elaborating standards, even in short term
- Weakness
  - ✓ No incentive of further reduction for small-emitters
  - ✓ High inspection cost
  - ✓ High economic cost

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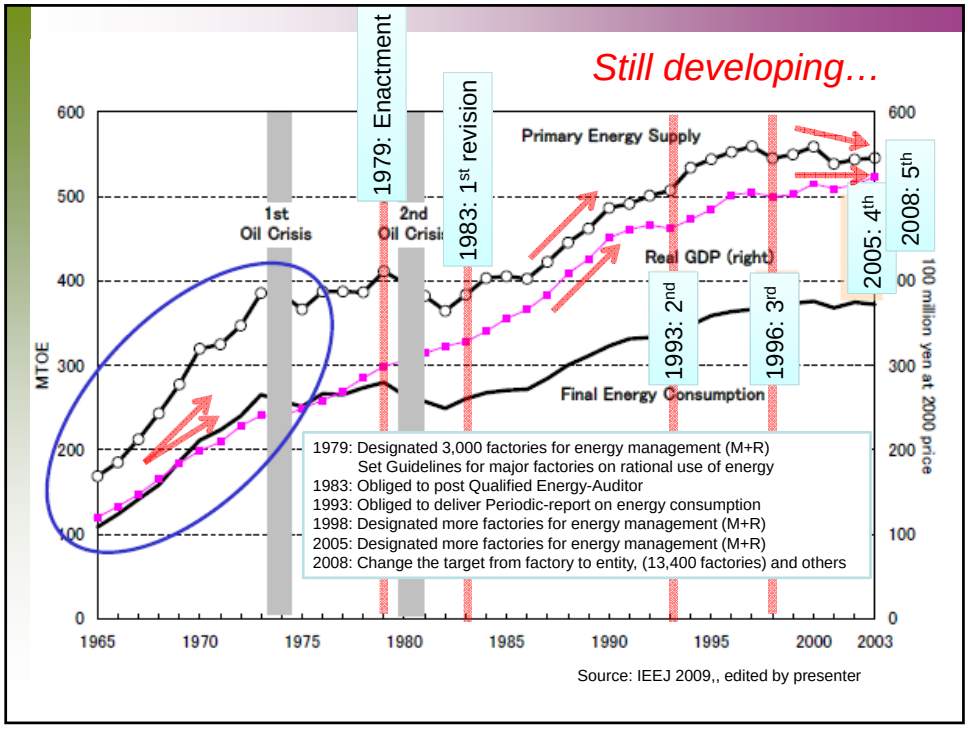
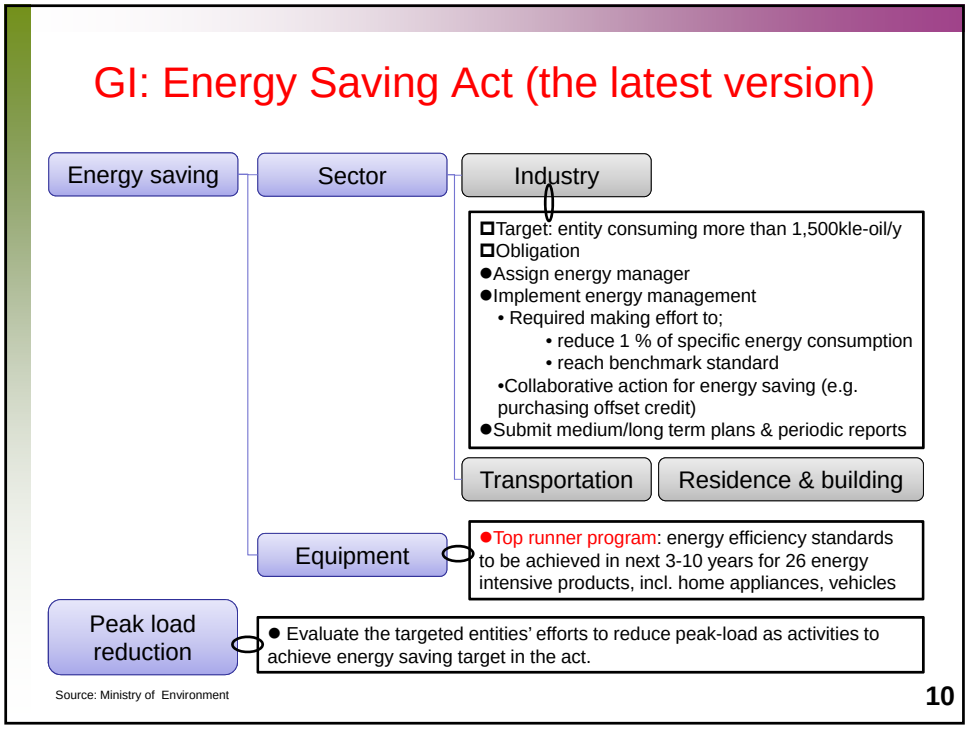
GI: since 1979, Japan has developed Energy Saving Act in Industry

- Strong incentives for Energy saving:
  - ✓ Low self-sufficient rate in fossil fuel: 4%,
    <-> USA: 64% Ger.: 27%
  - ✓ High energy consumption in Industry: 42%
    <-> USA, UK, Ger., Fr.: 30%
  - ✓ Suffered from oil-price jumping, i.e. "Oil crises"
    (1st : 1973, 2nd : 1978)
- Purpose:
  - Recognized as common norm of business judgment
    = *Upgrade the incentive to "reduce energy" as "expand production"*


Still developing…
1979: Enactment
1983: 1st revision
1993: 2nd
1996: 3rd
2005: 4th
2008: 5th
1st Oil Crisis
2nd Oil Crisis
Primary Energy Supply
Real GDP (right)
Final Energy Consumption
MTOE
100 million yen at 2000 price
1979: Designated 3,000 factories for energy management (M+R)
Set Guidelines for major factories on rational use of energy
1983: Obliged to post Qualified Energy-Auditor
1993: Obliged to deliver Periodic-report on energy consumption
1998: Designated more factories for energy management (M+R)
2005: Designated more factories for energy management (M+R)
2008: Change the target from factory to entity, (13,400 factories) and others
Source: IEEJ 2009,, edited by presenter


GI: Energy Saving Act (the latest version)
Energy saving
Sector
Industry
Target: entity consuming more than 1,500kle-oil/y
Obligation
Assign energy manager
Implement energy management
Required making effort to;
reduce 1 % of specific energy consumption
reach benchmark standard
Collaborative action for energy saving (e.g. purchasing offset credit)
Submit medium/long term plans & periodic reports
Transportation
Residence & building
Equipment
Top runner program: energy efficiency standards to be achieved in next 3-10 years for 26 energy intensive products, incl. home appliances, vehicles
Peak load reduction
Evaluate the targeted entities' efforts to reduce peak-load as activities to achieve energy saving target in the act.
Source: Ministry of Environment
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GI: II. Economic instrument

Carbon tax,

- Strength: Social fairness through internalization of the external diseconomy
- Weakness: Tax-rate hardly achieves consensus in industrial sector

Subsidy,

- Strength: Easy to start
- Weakness: Needs financial resources

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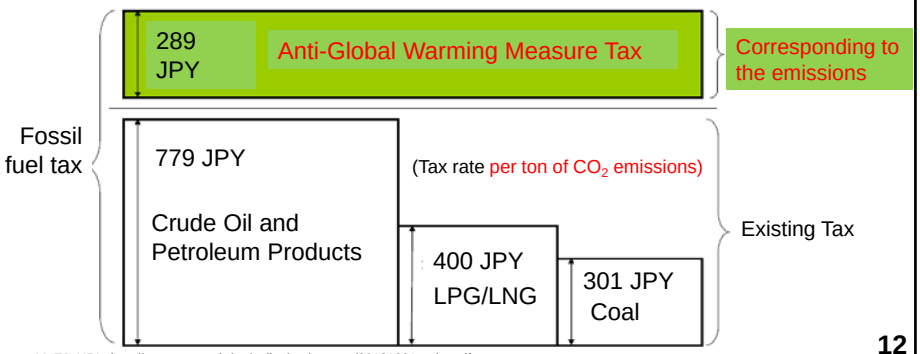
GI: Anti-Global Warming Measure Tax

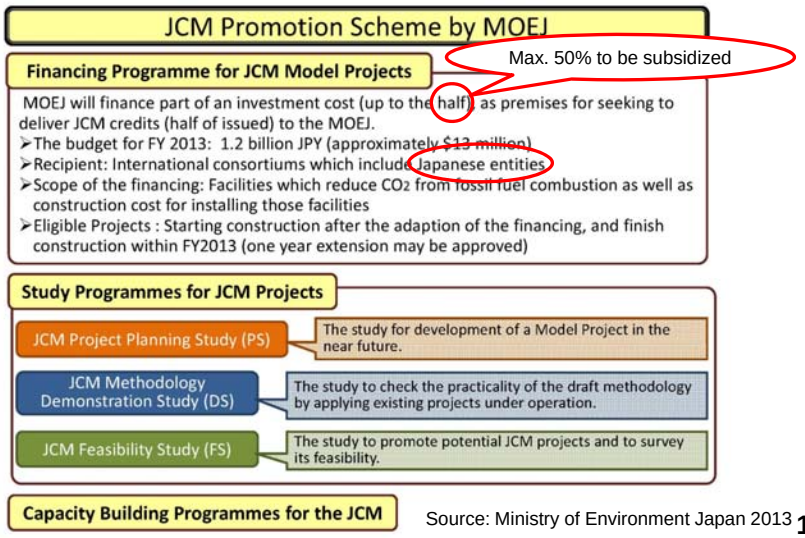
- Tax rate corresponds to the amount of CO_2 emitted for all the fossil fuels
- Enforced in October 2012, and tax rate will be increased by steps.
- Tax revenues estimated as 39.1 billion JPY (391 million USD) for the first year and 262.3 billion JPY (2.61 billion USD) for normal years.
- Revenue will be used to measures to reduce energy-oriented CO_2 emissions, e.g., renewable energy and enhancement of energy-saving measures



Source: MoEJ. URL: http://www.env.go.jp/en/policy/tax/env-tax/20121001a_dct.pdf

12

GI: Subsidy for Joint Crediting Mechanism (JCM)



Source: Ministry of Environment Japan 2013

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GI: III. Voluntary Initiatives

1. Environmental Management Standard
2. Energy Management System Standard
3. Corporate Social Responsibility (CSR)

➢Strengths:

✓Promote realistic action in line with the situation in each industry.

➢Weakness:

✓No fine is issued in case of non-compliance, and no additional action is taken toward compliance.

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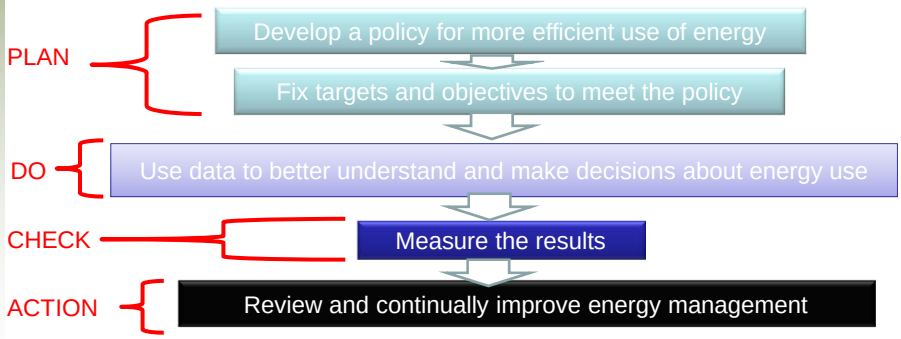
GI: Energy management system (ISO 50001)

- ISO50001 would provide opportunity for energy-saving by energy management
- GoJ promotes ISO50001 among private sector by requiring ISO50001 certification under GoJ-funded projects.

PDCA cycle of ISO50001



Source:
1) http://www.iso.org/iso/home/standards/management-standards/iso50001.htm
2) http://www.enecho.meti.go.jp/policy/iso50001/subsidy.html

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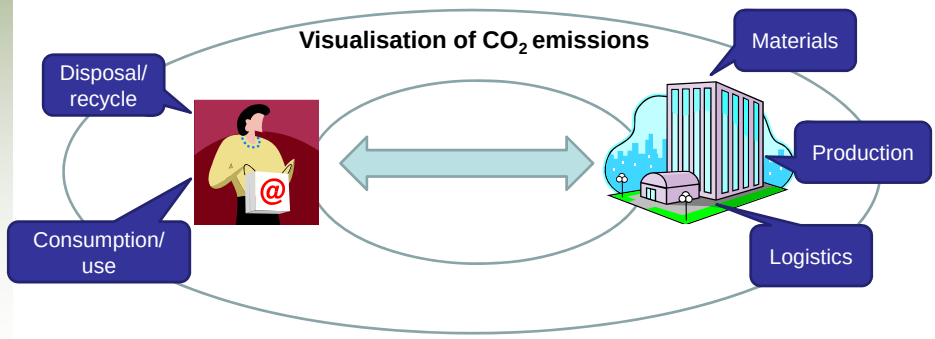

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CGI: II. Economic instrument

FIT (Feed-in Tariff):

- Strengths:
  - ✓Promote RE by making it so economically-viable and attractive as SMEs could also be RE power producers.
  - ✓Vitalize local economy in RE related sector by more investments to be facilitated.
- Weaknesses:
  - ✓Could be affected by political situations without guarantee of contract period
  - ✓Less incentive of the equipment suppliers for price-down accompanied with technological development.

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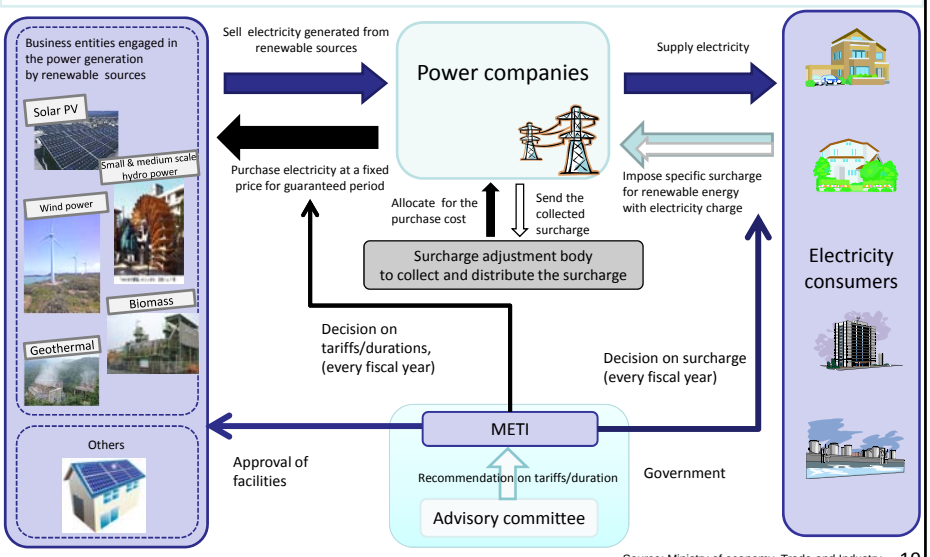
CGI: Japan's Feed-In Tariff

The power companies are obliged to purchase renewable power at a fixed price for 10/20 years



Source: Ministry of economy, Trade and Industry

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CGI: II. Economic instrument

Renewable Portfolio Standard Act (RPS) (-2012)

- **Target source of renewable energy**
  Wind, Solar, Geothermal, Hydro (Small-scale, less than 1000kW), and Biomass

- **Obligation on power producers**
  Purchase/Generate renewable power, more than specific % of volume of power sold
  - Measures: 1. Generate in-house
    2. Purchase from other electricity suppliers
    3. Purchase equivalent volume of target electricity from other suppliers (eligible to Renewable Energy Certificate)
  - The facilities for generating target energy needs to get an approval from the Minister

- Strengths:
  - ✓Promote more cost-effective RE (biomass/wind in Japan)
- Weaknesses:
  - ✓May increase electric rate

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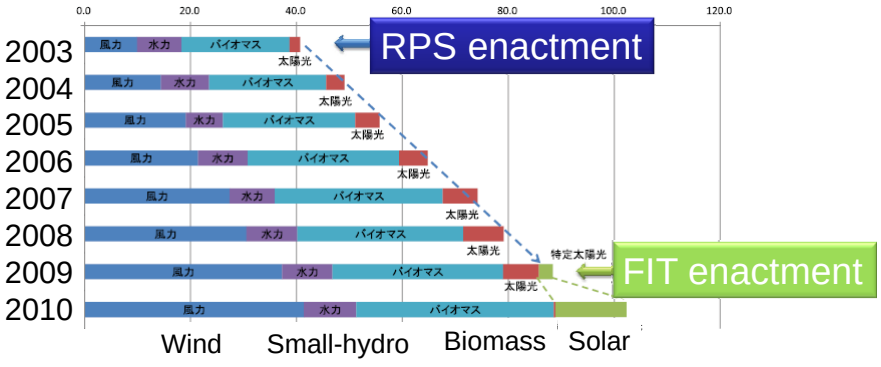
CGI: Japan's pathway of RE development

- Target setting
  - 1990, GoJ set target in 2010 (Long-term)
  - 1994, GoJ revised downward
  - 2003, GoJ revised upward for KP target
- Subsidy allocation
  - Shift from R&D (since 1973) to installation
- Legal framework
  - Shift from RPS (2003-2008) to FIT (2009-)

- Japan develops RE by steps
- Japan is now on 2nd step, FIT, to boost RE



Source: IEEJ 2012

But, still under 4% of total

CGI: II. Economic instrument

Deposit/refund

… reduces lifecycle emission by facilitating recycling/reusing at higher collection rate.

- ➢Strengths:
  - ✓Save screening and recovery cost by inducing end-users to help selective recovery
  - ✓Avoid scattering
- ➢Weakness:
  - ✓Government intervention would be required in case that cost of new product is cheaper than cost of recycling/reusing

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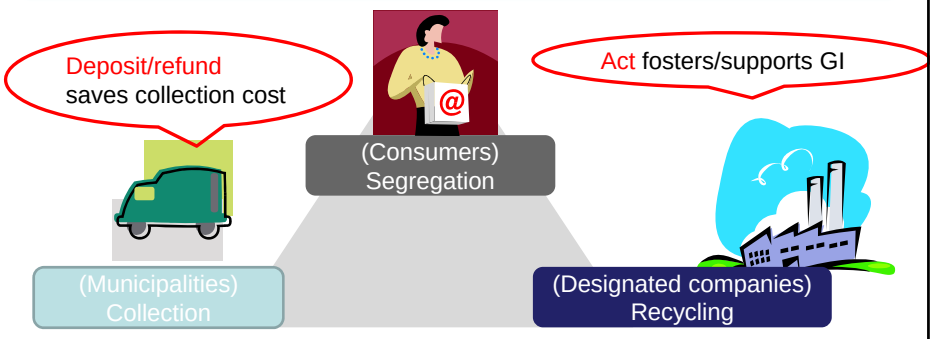
CGI: Containers/Packaging Recycling Act

- Endorsed in 1995. Containers and packaging consist around 60% of waste in volume from households.
- Promote recycling of containers/packaging material by distributing responsibilities of municipalities among consumers, municipalities, and designated recycling companies.



Source:
1) MoEJ. URL: http://www.env.go.jp/recycle/yoki/a_1_recycle/recycle_02.html
2) The Japan Containers and Packaging Recycling Association. URL: http://www.jcpra.or.jp/eng/jcpra/02.html

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