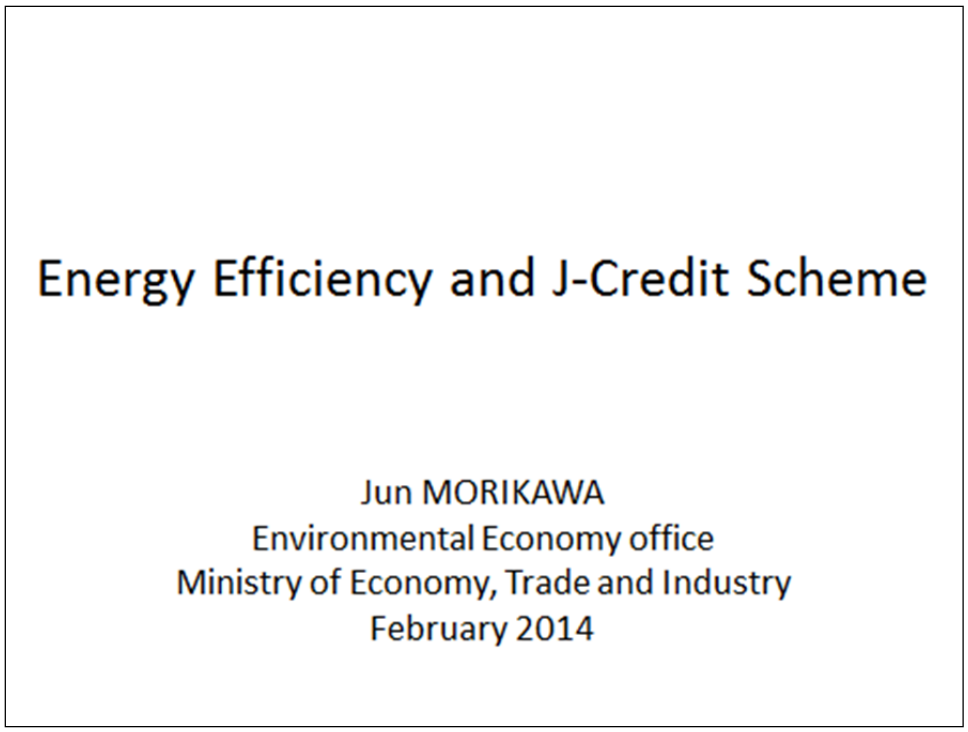
So for the participants included in Part 2 and Part 3, I hope you will engage yourselves in active discussion and exchange opinions and I do hope you could give us your opinion or comments on JST at the same time.

Takase: Next we would like to invite the next speaker from the Environmental Economy Office of the Ministry of Economy, Trade and Industry. Mr. Jun Morikawa will be giving a presentation titled Energy Efficiency and J-Credit Scheme. He will be spending the next 15 minutes on this presentation.

Energy Efficiency and J-Credit Scheme

Presentation by Mr. Jun Morikawa (Deputy Director, Environmental Economy Office, Ministry of Economy, Trade and Industry)

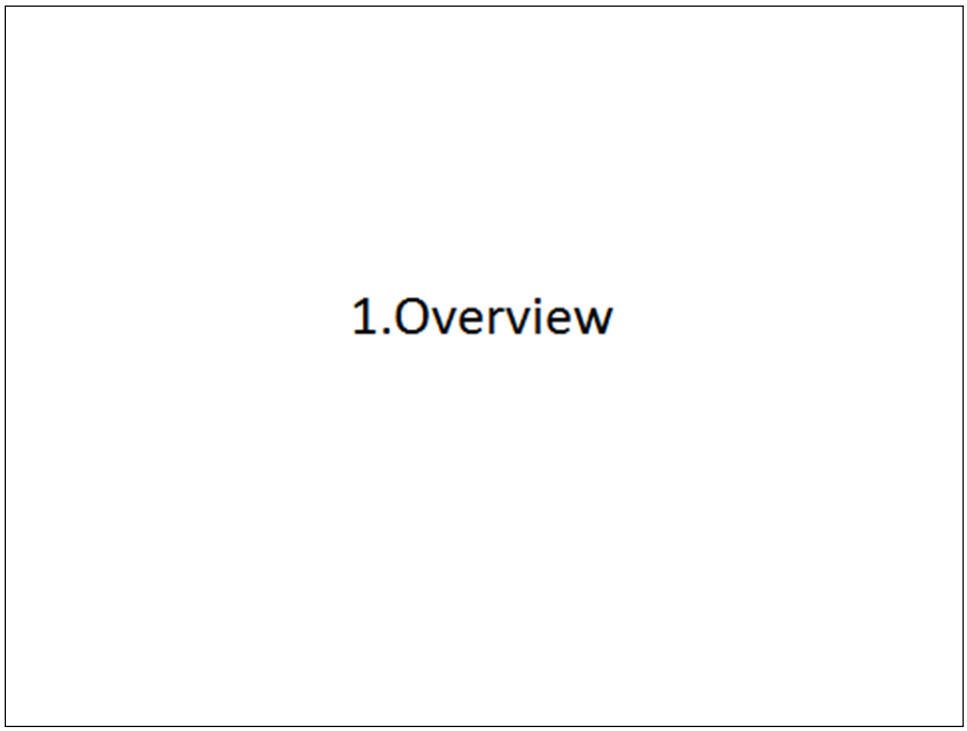


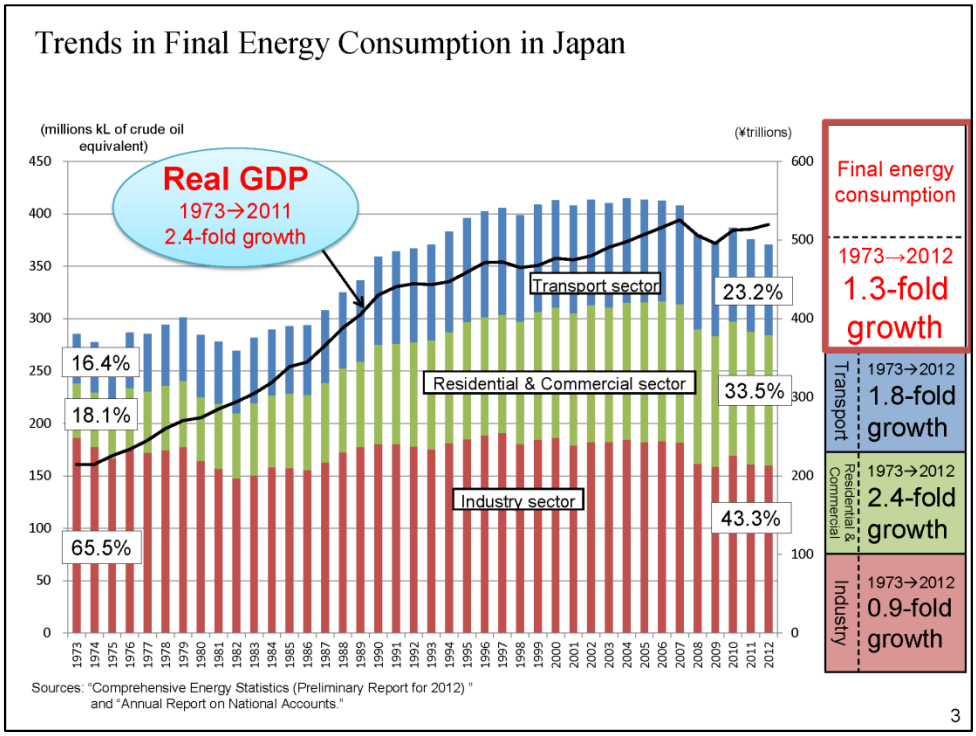
Morikawa: Good afternoon ladies and gentlemen and thank you very much for your kind introduction. I am Jun Morikawa, Environmental Economy Office, Environmental Industries Office of the Industrial Science and Technology Policy Environment Bureau. Actually, the department that I work for is not necessarily in charge of energy saving but rather in emission reduction and operationalization of the policies and credit systems.

But anti-global measures and energy saving measures are two sides of the same coin and the J-Credit System, which I am in charge of, promotes efficient reduction as well, so I think that my area of expertise is somewhat related or akin to the Green Deal policies as well.

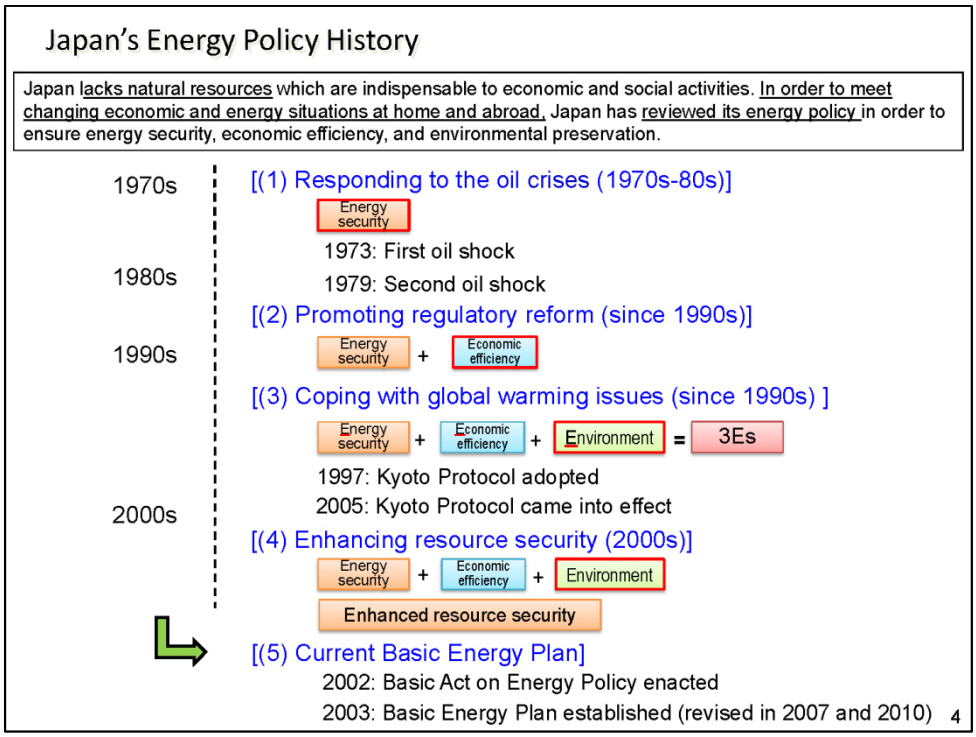
I'll be making a presentation in 3 large parts of the discussion and I'll be starting off with the background of Japanese businesses. It's not really about the Japanese lifestyle but more focused on the Japanese business

structure.

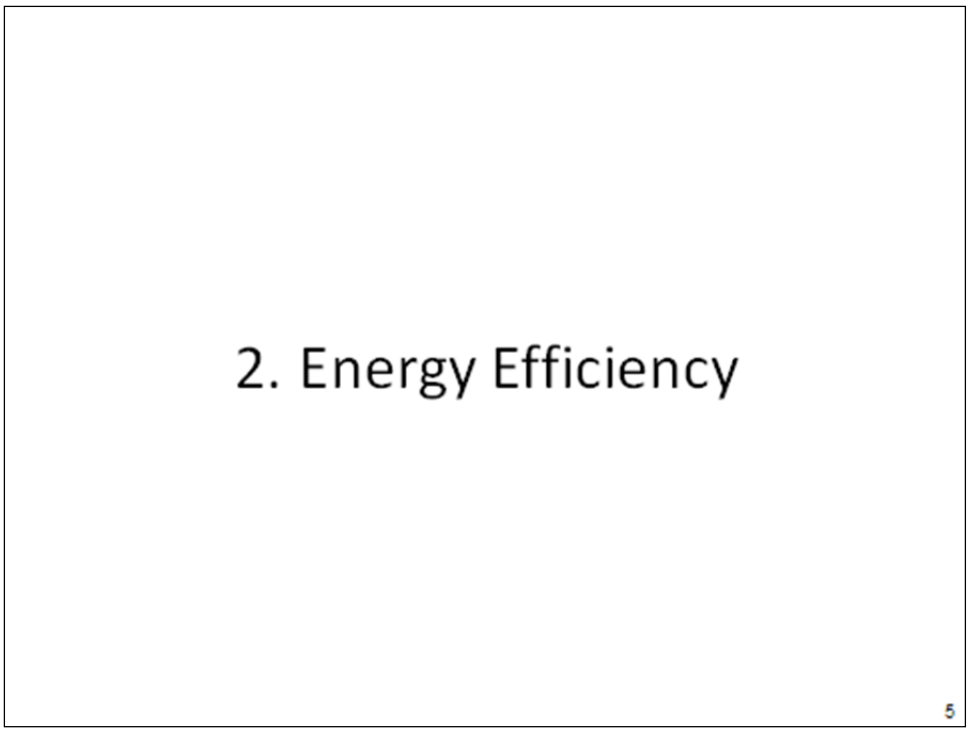




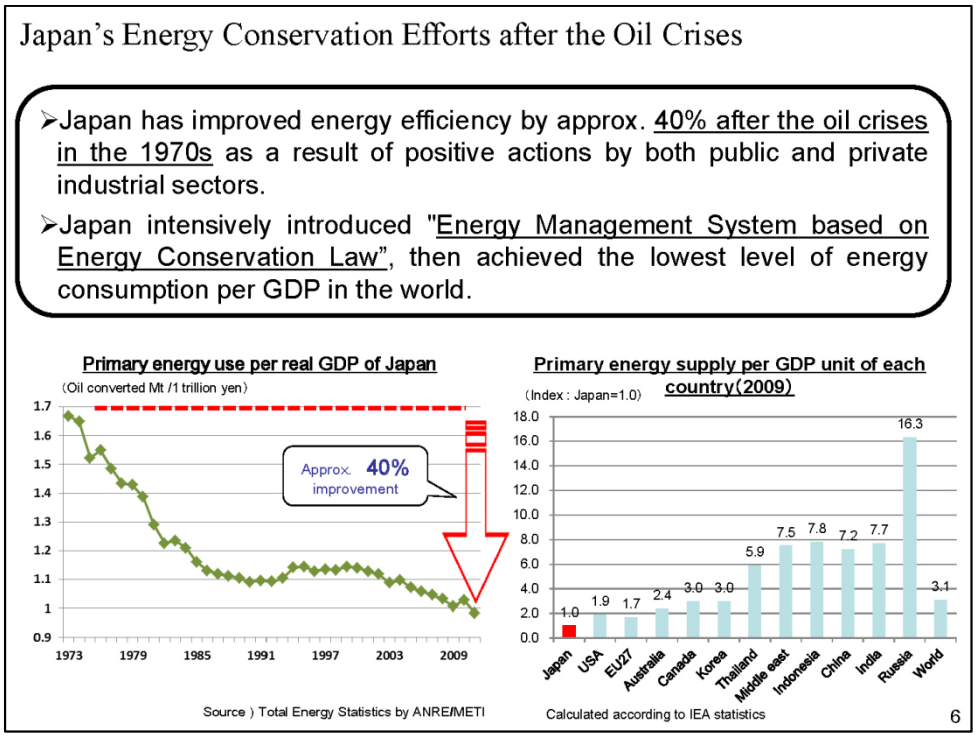
This is a very brief overview. Starting from 1973, Japanese GDP has grown by 2.4 times whereas the energy consumption increased only by 30% and as you can see from this chart, the Japanese industrial sector has in fact reduced energy consumption, and transport, residential and commercial sectors have increased their energy consumption.



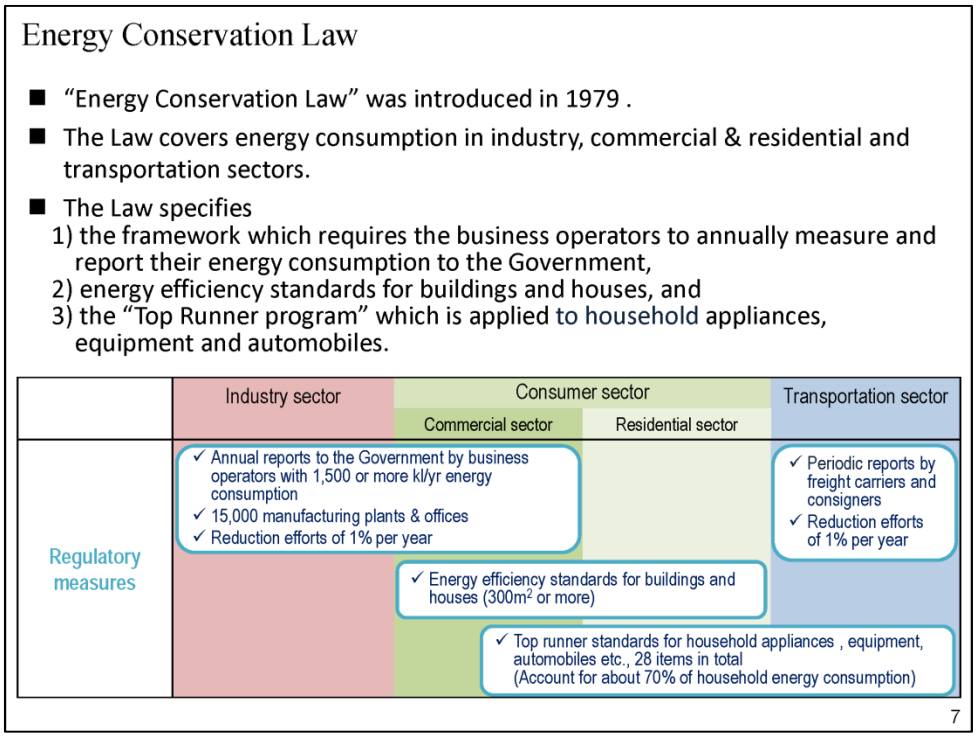
Now Japan's energy policy history is briefly discussed on this slide. Japan is a country that has various scarce natural resources so it has changed to a variable environment as well as the economic environment. It first focused on economic efficiency and it also shifted its focus more onto environmental protection. This is the overall trend of Japanese energy-related policies.



Now on to energy efficiency, measures taken by Japan which I would like to go into details.

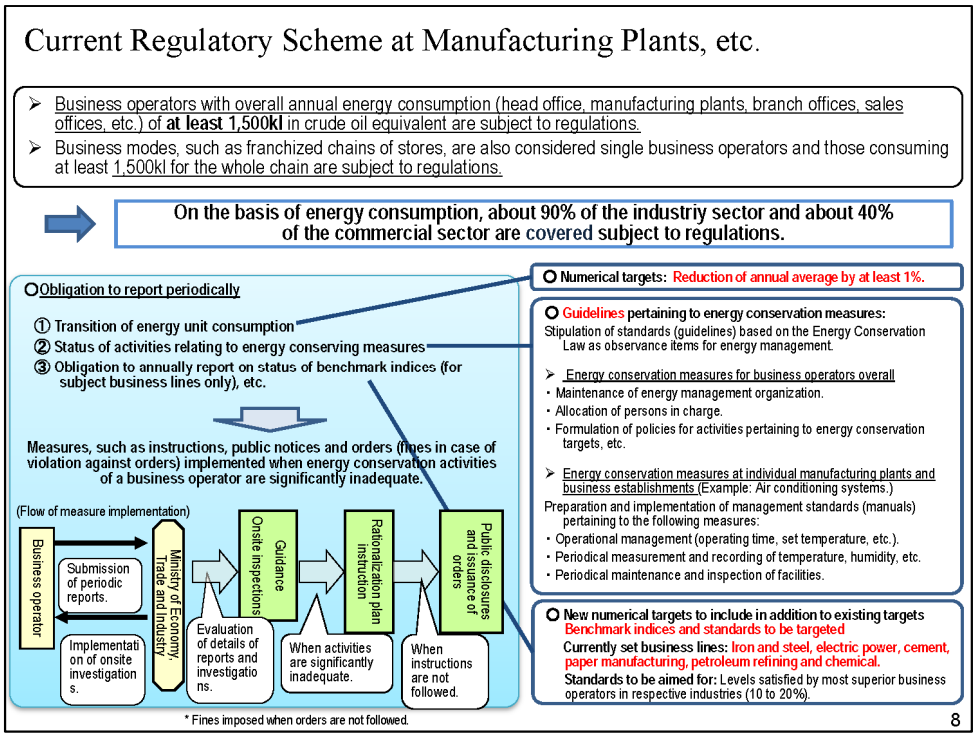


Following Japan's endeavor to promote energy conservation especially after the oil crises in the 1970s, we have achieved higher energy efficiency by 40% as you can see from these charts. And with the enactment of the energy management system, or Energy Conservation Law, we have achieved the lowest level of energy consumption per GDP in the world.



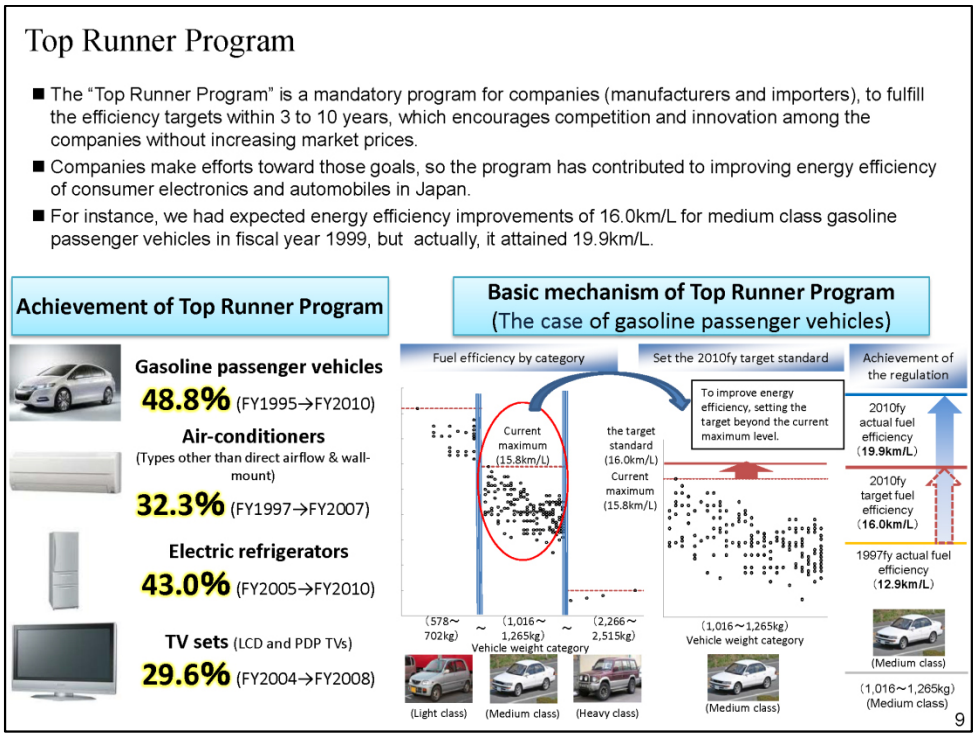
On the Energy Conservation Law, the industrial sector, home and commercial and transport sectors are all covered

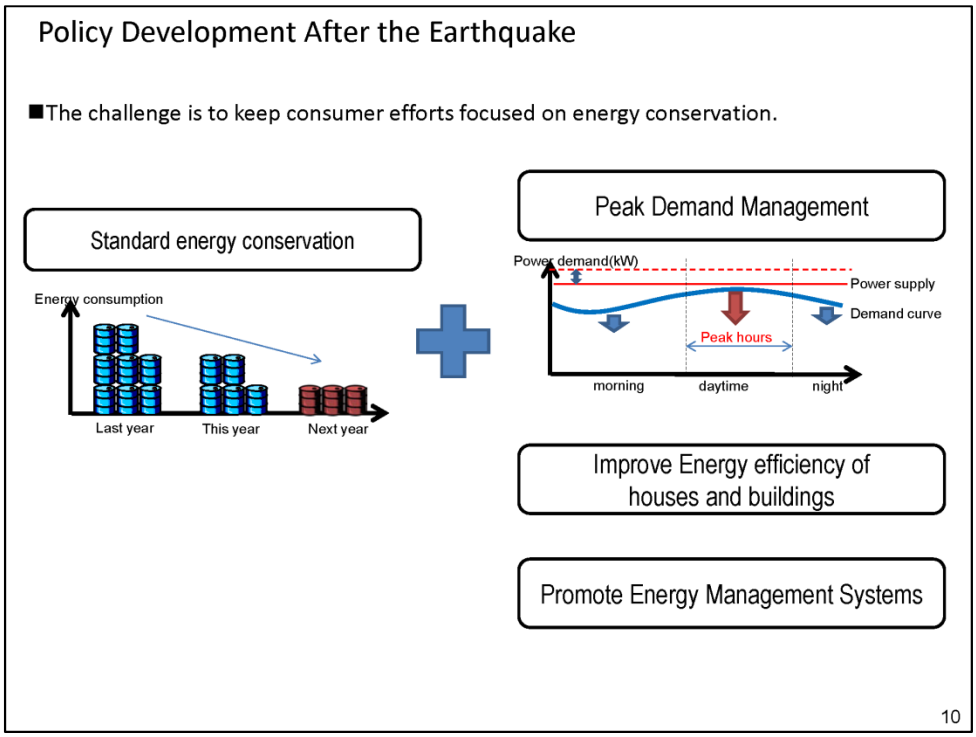
by this law. Energy consumption needs to be periodically reported to the government. The top runner system as well as energy efficiency levels, which need to be reported to the government, and detailed information is available in the chart at the bottom half of this slide.



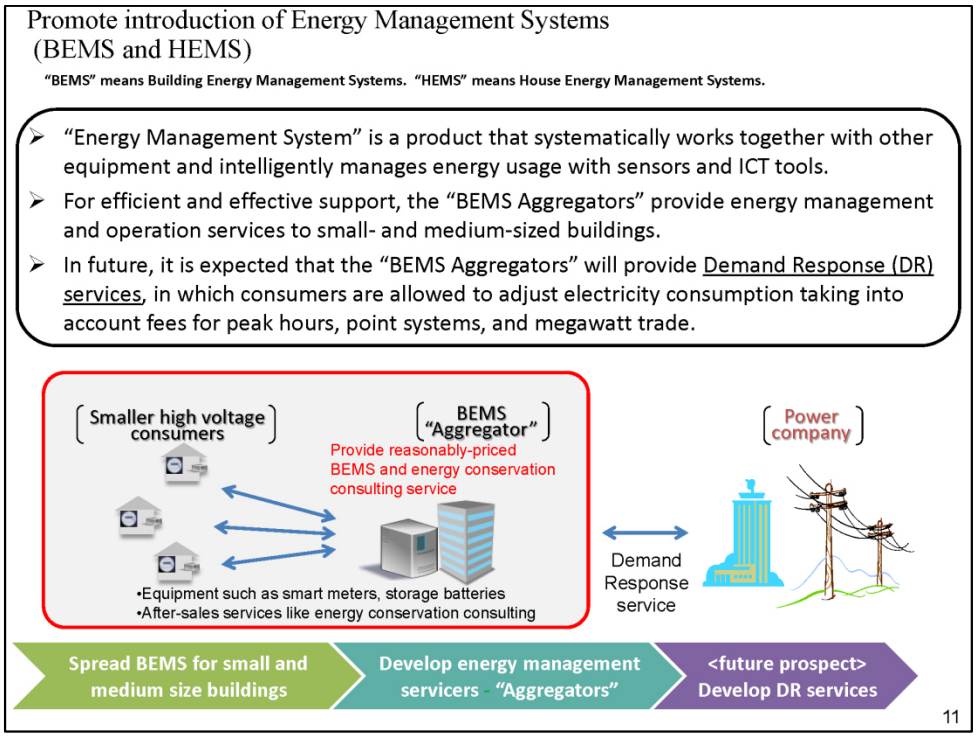
This is the current regulatory scheme for manufacturing plants and this shows more of the industrial side. Any entity that uses more than the crude oil equivalent of 1500 kiloliters per year is subject to regulations and that also means that 90% of the Japanese industry sector is covered by this rule. All of these entities need to reduce energy consumption at least by 1% per year so this is more like a measure to promote, steady energy consumption.

On to our top runner program. This is an energy conservation targeting a span of 3 to 10 years by the Japanese industrial sector with a special focus on automobiles and home appliances. On the left hand side you can see the history of the treatment of energy, gasoline efficiency, which has increased by 48.8% since 1995, air conditioners, which have improved their efficiency by 32.3%, and electrics and refrigerators, which have improved their efficiency by 43.0% since 2005.

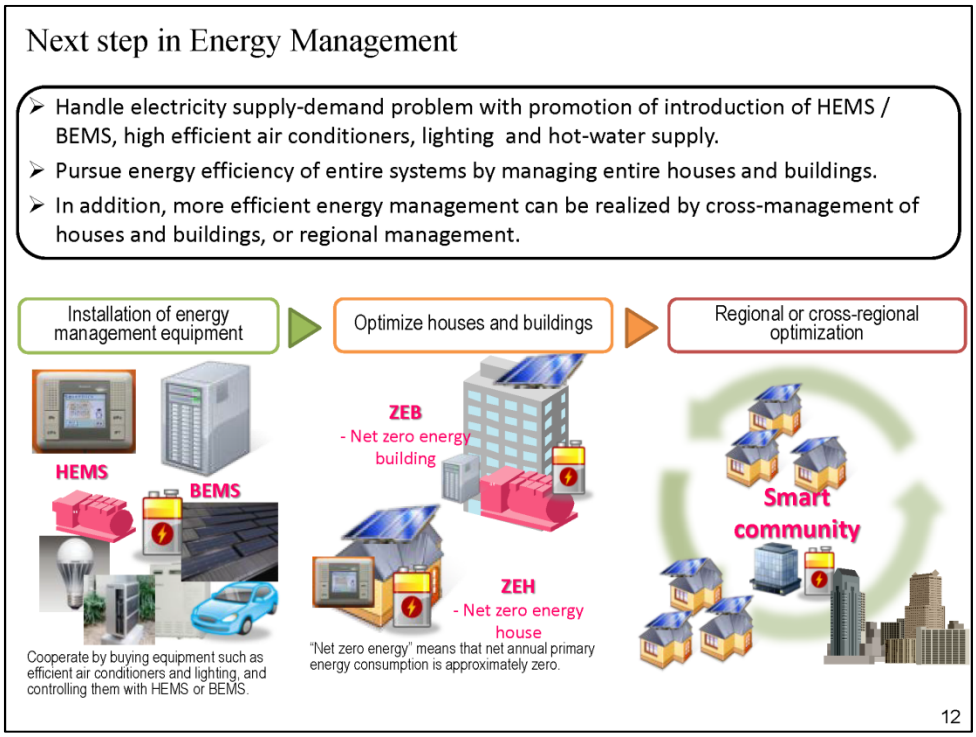




Especially after March 11, 2011, in order to further promote energy conservation, we have taken up an additional challenge to promote peak demand management and also promoted energy efficiency in houses and business buildings.



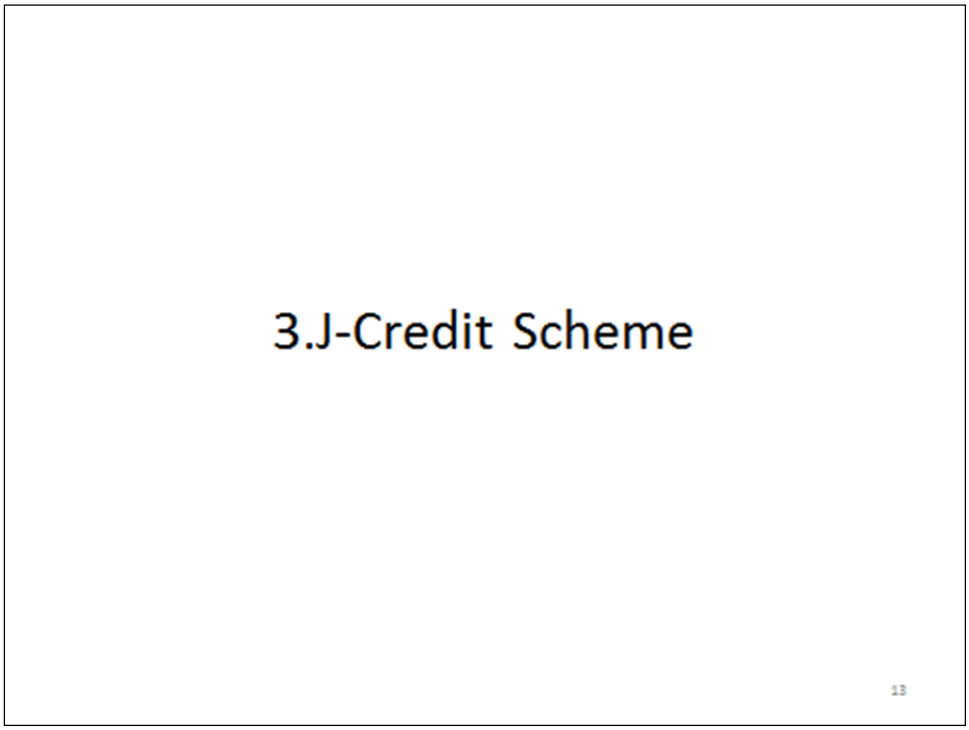
We also have taken measures to promote energy management systems and these are all the additional measures taken after March 11, 2011; hence building or home energy management systems were promoted and then aggregators provided management services to the surrounding areas, and a demand response service will be further disseminated in the coming years.

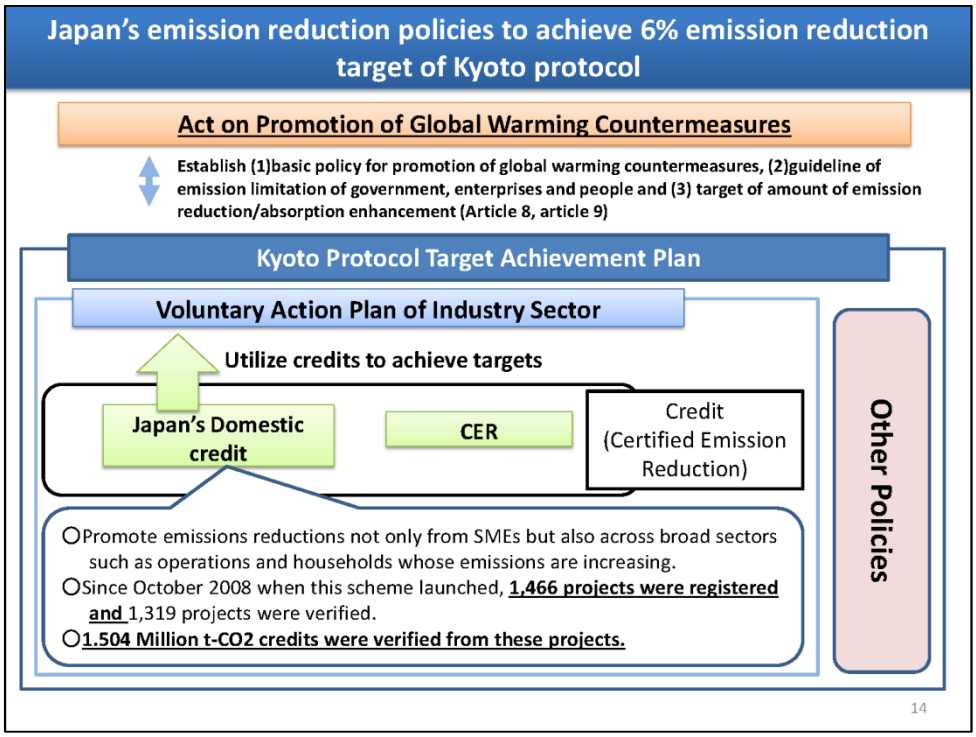


Further, we are expecting that, zero energy buildings (ZEBs), and zero energy houses (ZEHs) will be widely

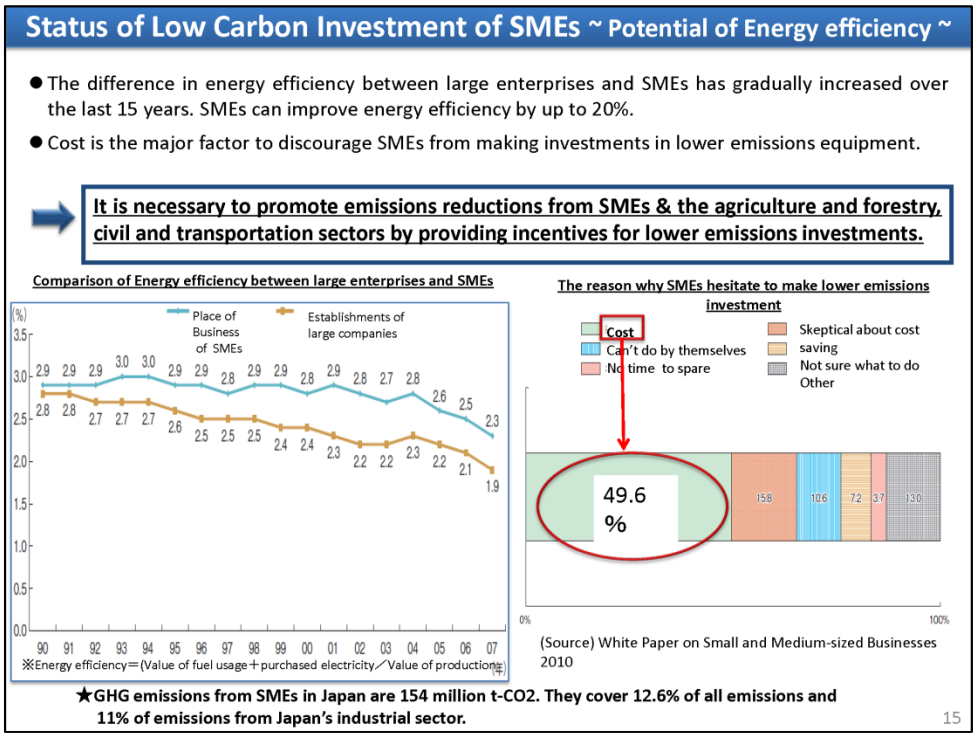
deployed toward achievement of so-called smart communities all around in Japan.
So this is a very brief overview of the energy conservation topics in Japan, landscape in Japan.

Now, I would like to briefly introduce the J-Credit scheme.





Under the Kyoto Protocol, Japan is obliged to reduce emissions by 6%. So the industrial sectors have made voluntary plans to reduce emissions. In the cases where they couldn't achieve their plans, Kyoto Credit or domestic CO_2 reduction credit can be used to fill the failed amount of reduction. That is how the domestic credit scheme (domestic CDM) came into place. It started in August 2012 and we currently have 1466 projects registered with a total of 1.5 million tons of CO_2 credits being verified so far.



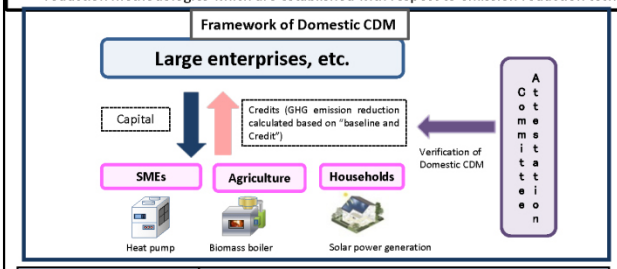
In terms of the impediments of emission reduction, we first have to recognize the difference in energy efficiency between major companies and small and medium sized enterprises (SMEs). If you make a comparison by the size of business, there has been a gap of 20% in terms of energy efficiency and there is more room for improvement in SME sectors. The reasons SMEs have not been able to promote higher energy efficiencies are shown in the right hand side, cost being the largest impediment for them to promote investments. And sometimes they are lost to recognize what kinds of measures are needed, but the biggest factor is the high cost. So sale of credit will possibly reduce the cost for the SMEs to invest toward higher energy efficiency.

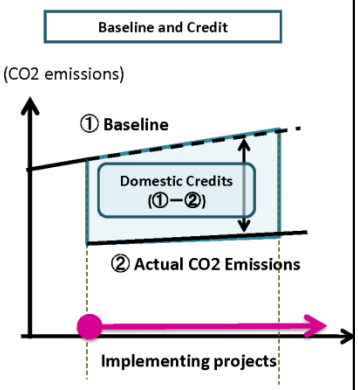
The providers of domestic CO_2 credits are major companies, SMEs, the agricultural sector, and households. SMEs and households, when they are to take measures or introduce a new system such as boilers or PV panels to further promote energy efficiencies, can calculate the actual reduction of emissions and reducing the emissions can be certified by the committee which then can be sold in the market and that is the structure of the scheme. METI, MOE and MAFF (Ministry of Agriculture, Forestry and Fisheries) have together set up a secretariat to manage the domestic CDM system and these credits are being used for the voluntary plans by major companies. Or it can also be used as a CSR or offset scheme, as part of the offset scheme for Japanese businesses.

Outline of Domestic CDM

○ Japan's Domestic CDM is a scheme in which large companies and SMEs conduct joint projects for GHG reduction. Large companies provide necessary capital in exchange for domestic credits, which are certified as credits by the Domestic CDM Certification Committee. They utilize those credits to achieve voluntary action plan goals for the Kyoto Protocol, CSR, offsets, etc.

○GHG emission reduction is valued based on idea of "Baseline and Credits". Concrete Evaluation will be conducted based on GHG emission reduction methodologies which are established with respect to emission reduction technologies ※68 methodologies are approved.



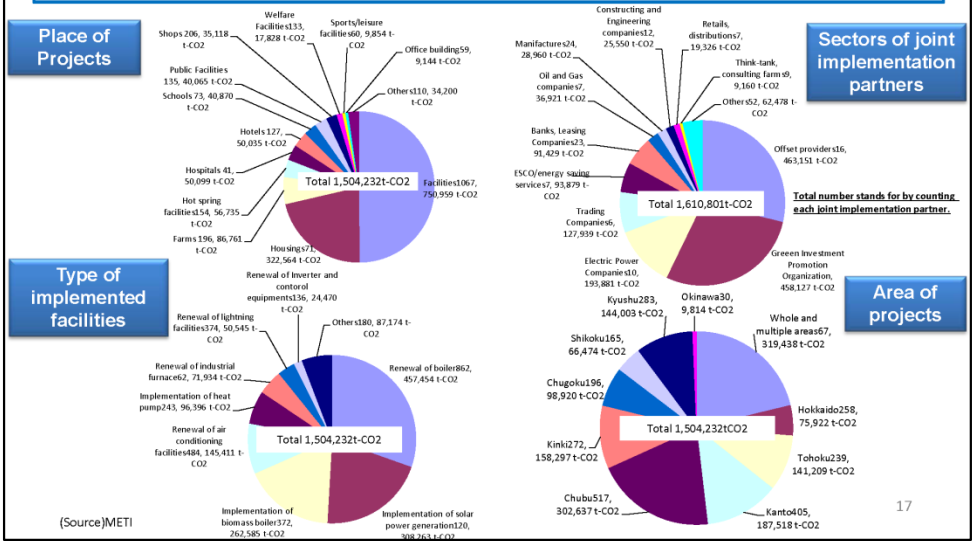


Item	内容
Grounds	Kyoto Protocol Target Achievement Plan
Management	Ministry of Economy, Trade and Industry, Ministry of Environment, Ministry of Agriculture, Forestry and Fishery
Terms	October 2008~ March 2013
Participants	SMEs that are not participating voluntary Action Plan
Projects	GHG Emission reduction projects
Application	Submit application form to the Attestation Committee
Usage of credits	①Achieve target of the Voluntary Action Plan ②Report based on Act on Promotion of Global Warming Countermeasures and Act on Energy Efficiency ③CSR (Voluntary Carbon Offsetting)
Registered projects	1,466 projects (as of July 2013)
Certified Credits	1,504 Million t-CO2 (2,432 times)

16

Place of projects and other stats of Domestic CDM

During the period of the scheme from 2008 to 2013
- Implementation of boilers at factories and implementation of solar power generations at households are mainstream of projects.
- While electric companies and trading companies are two major sectors as join implementation partners, proportion of Offset providers is high overall.

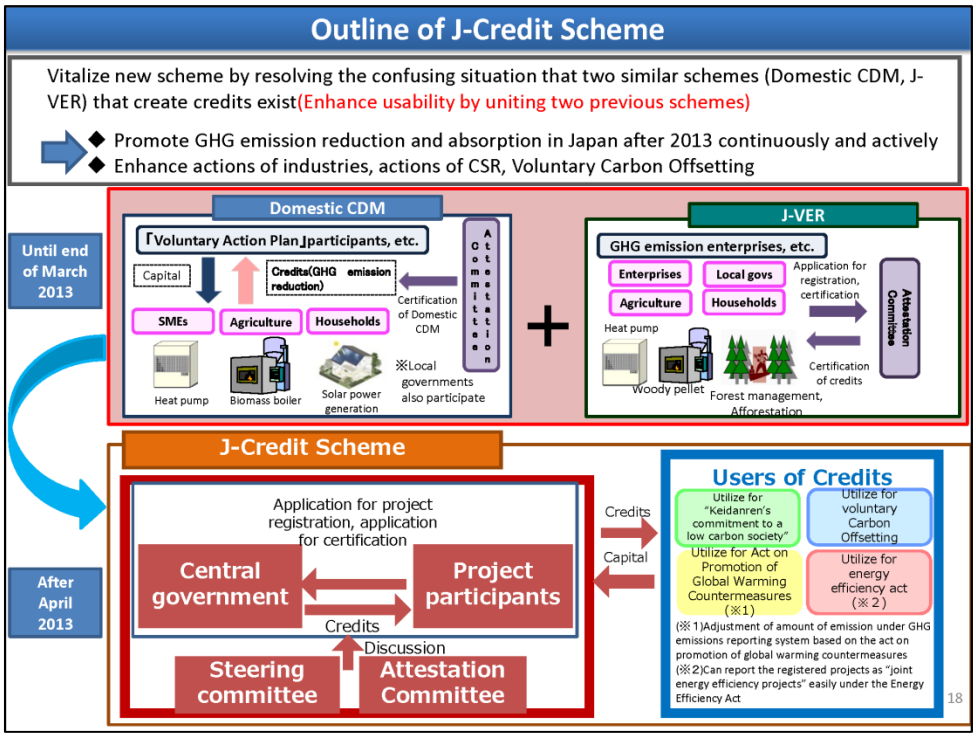


{Source}METI

17

Now we have come to the overall outcome of this domestic CDM Scheme. So far 1466 projects have been registered. As you can see, half of the projects are on the factory side, to be followed by houses, PV panels and other measures being taken at individual household levels, to be then followed by hot spring facilities or hospitals and other accommodation. With regard to the equipment introduced, approximately half of the new equipment introduced was boilers or boiler equivalent equipment. Boilers tend to have shorter recovery periods for

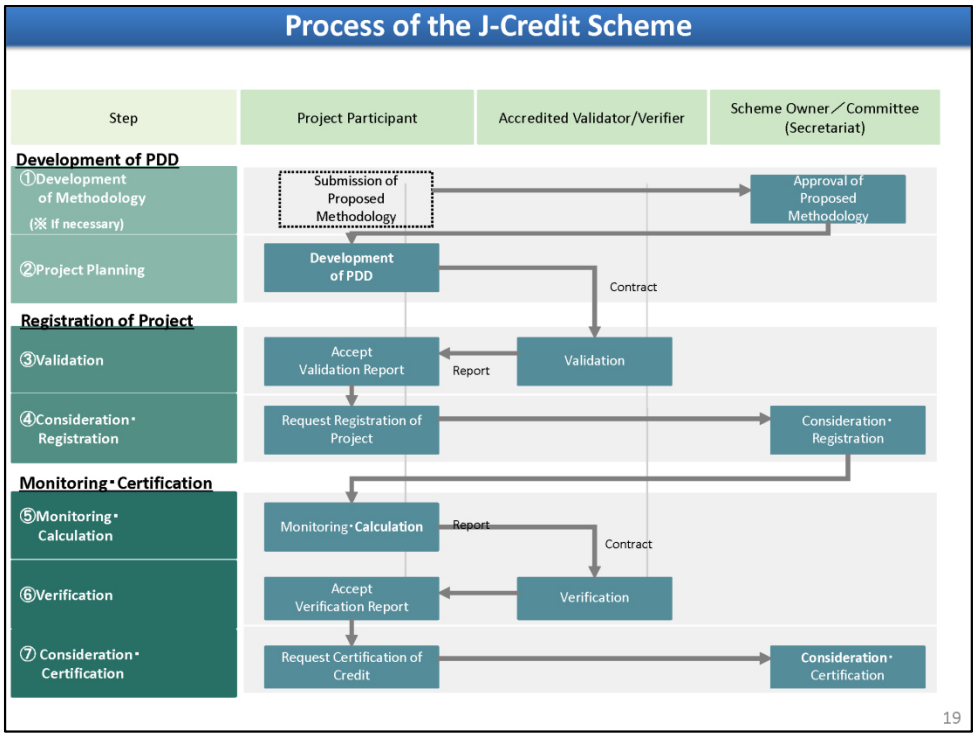
investments and that is the reason why this constitutes a large proportion of the investment. Lighting, use of LEDs or heat pumps, follows the boiler replacement.

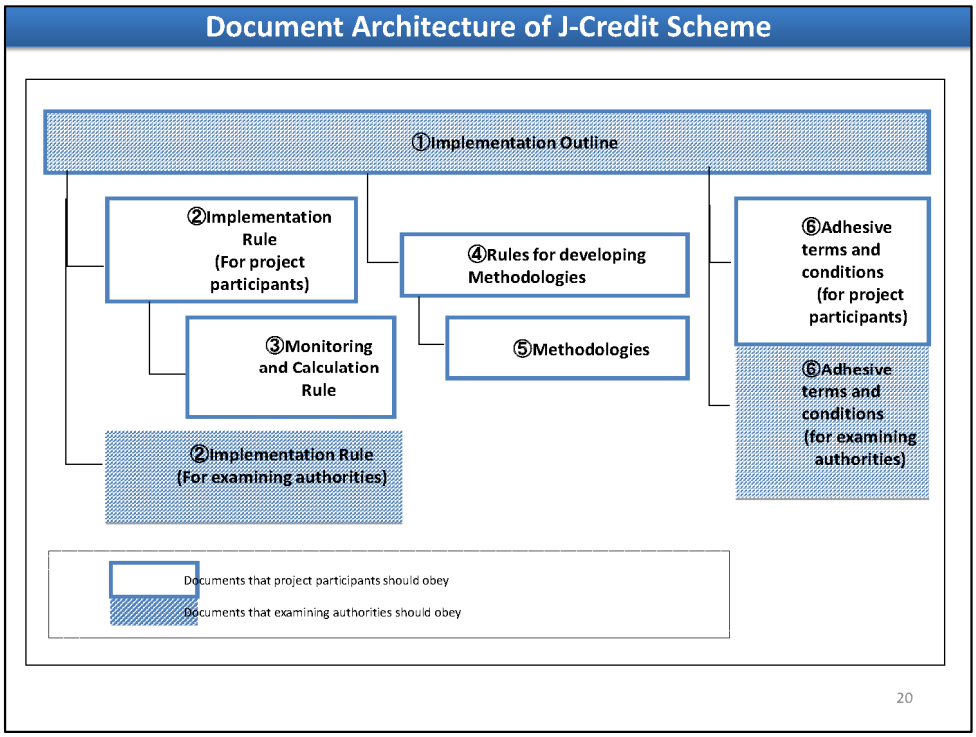


The next slide shows the J-Credit Scheme in Japan at the very center, domestic CDM, at the very center of this slide and we do also have a separate system of J-VER that is mainly for the carbon sync of the Japanese forest. This was aiming at March 2013 and we have integrated domestic CDM and the J-VER system which was renewed into the J-Credit Scheme. After 2013 the integrated system will promote emission reduction and we are also promoting the sale of credits for CSR and other purposes, as well as wider participation.

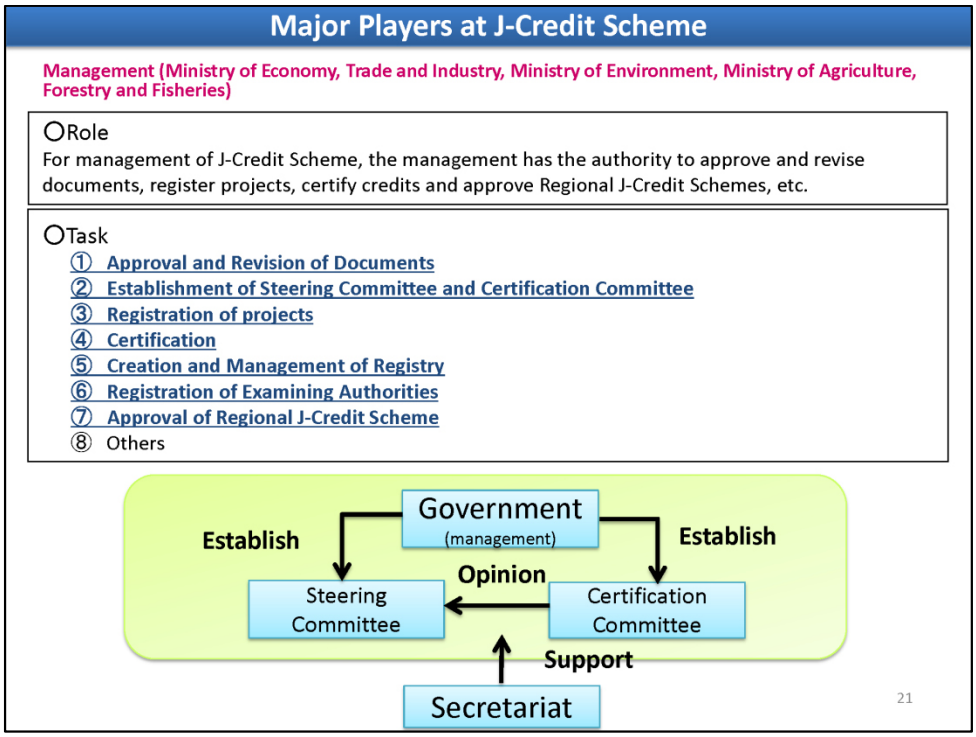
As for the process of this scheme, as was the case with the Green Deal, the system itself is very complicated. Our system is very complicated especially for SMEs. We need methodologies for calculation on a technology-by-technology basis, such as boilers or panels. We currently have around 60 methodologies and we usually use an existing formula but you first have to pick up the methodologies to calculate the estimated reduction in emissions. This process is referred to as number two, project planning development or PPD and after the development of plans, the document is submitted so that the document can be validated. After the validation process, participants apply for the registration of the project which is then registered by the government secretariat. These two steps are number 3 and 4 on the slide.

After a period of one, two or three years, after the operation of the equipment, they then measure the actual reduction amount. The reduction amount is monitored over an extended period of time which is compiled in a report by the SMEs which is then validated, verified and certified by a third party auditor. Along with this verified report, the credit is then issued by the government.

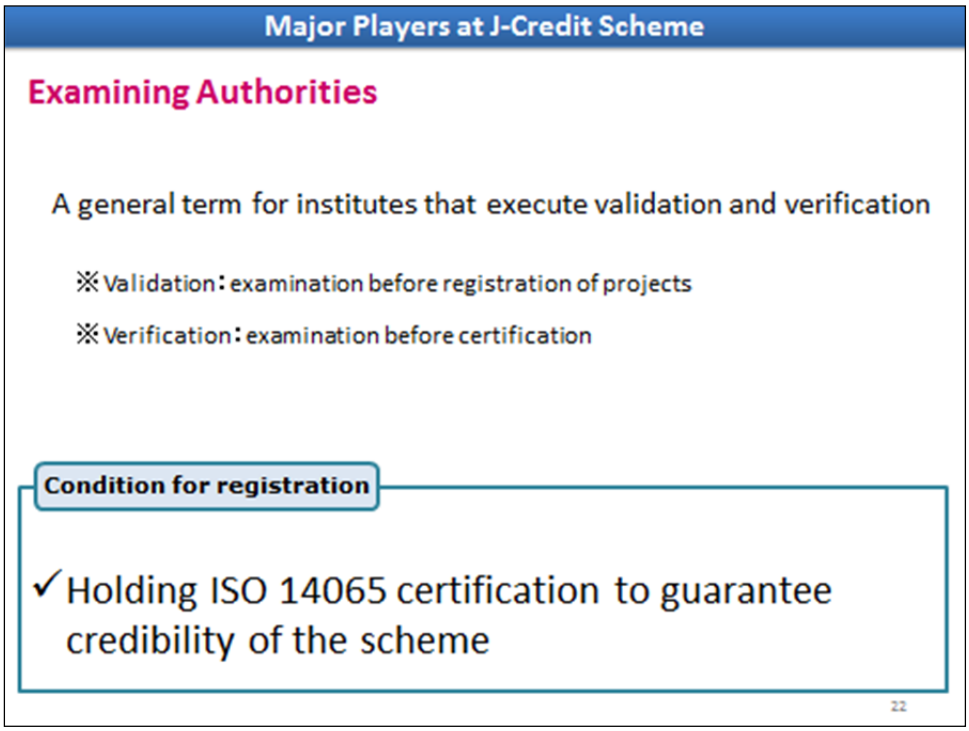




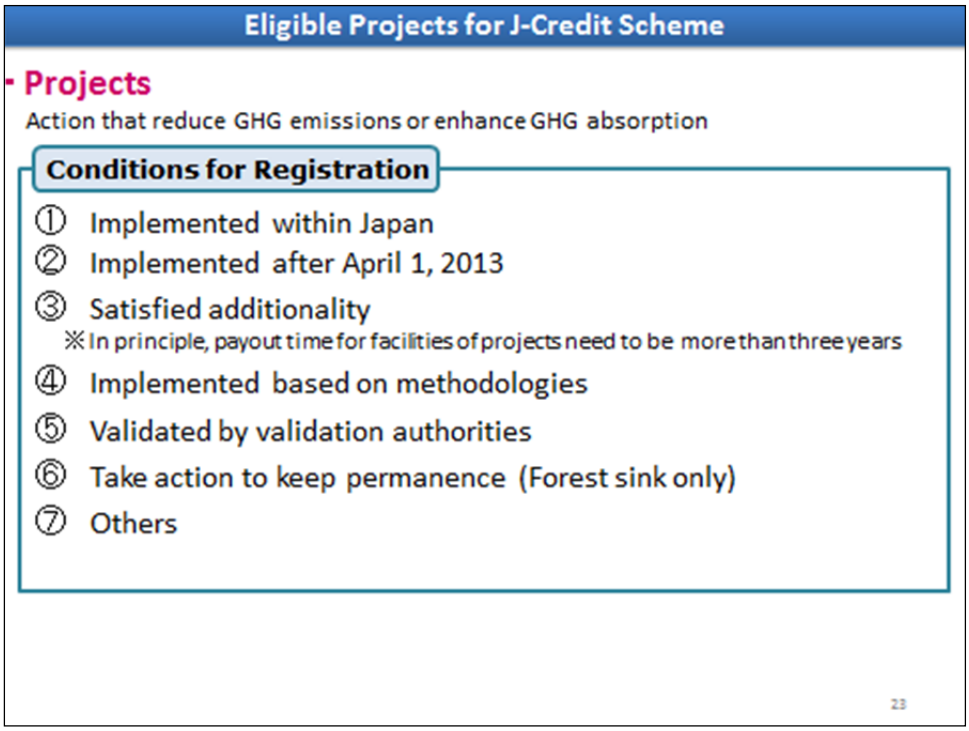
There are various documents related to this process. The implementation outline at the very top is the overarching document to which all those methodologies and procedure and processes are attached to.



The government has a screening process as shown on the slide. This is run by METI, MOE, and MAFF. There are two separate communities, one being a steering committee and the other is the certification committee that looks into specific, individual cases for certification. These two committees, especially the steering committee, review the PDD and formulate a methodology, and the credit certification is reviewed by the credit certification committee. METI is the secretariat, and we support the committees.



Also the examining authorities that validate the documents need to be ISO1465 holders which are registered at the government. Validation and verifications is how these examining authorities work.



The kinds of projects that can be registered are listed on this slide and this is the list of requirements from number 1 to 7. This project needs to be within Japanese national territory and it also needs to be implemented after April 1, 2013. Number 3 is quite unique for environmental scheme, to satisfy the additionality. It needs to satisfy the requirement of additionality in terms of emissions reduction. The duration of the recovery of investment needs to be 3 years or longer to prove the satisfactory additionality because investment with a shorter recovery period can often be funded privately so in order to promote an investment which requires a longer term of investment we are setting up this requirement and there are four other requirements as listed on this slide.

With regard to methodologies, energy, especially energy saving and renewable energy, industrial process and agriculture waste management and forest, these are the areas that have different methodologies. These are also the areas where we can expect large amount of syncs or emission reduction. On the right hand side you can see the explanation of base line credit. Suppose someone replaces a boiler in a project or a business, as usual calculations will be set up as a baseline to calculate the estimated reduction in emissions after the replacement of boilers. The introduction of a new boiler is calculated or is actually monitored, and the difference between the two amounts of emissions is certified as the credit of emission reduction.

Methodologies

・Methodologies

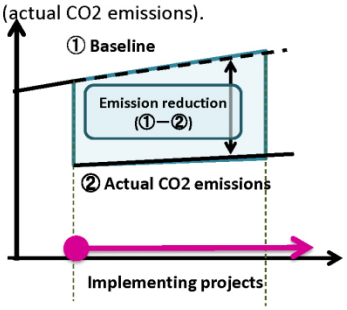
Methodologies rule boundary, calculation formula and method of monitoring for each technology of emission reduction and absorption.

Type of Methodologies

- **Energy (EN)**
  - ✓Energy saving(EN-S)
    Areas that reduce energy related emissions by reducing fossil fuel
  - ✓Renewable energy(EN-R)
    Areas that reduce energy related emissions by substituting fossil fuel to renewable energy
- **Industrial Processes (IN)**
  Areas that reduce GHG emissions from industrial processes through chemical or physical change
- **Agriculture (AG)**
  Areas that reduce GHG emissions from agricultural area (livestock, farm land)
- **Waste (WA)**
  Areas that reduce GHG emissions from waste management
- **Forest (FO)**
  Areas that absorb GHG by implementing forest management

Basic idea of "Baseline and Credit"

Emission reduction is the difference between the baseline emission and emission after implementation of facilities (actual CO2 emissions).



24

Approved Methodologies ①

As of February, 2014, 58 methodologies have approved.

- **Energy saving, 38, Renewable energy, 9, Industrial Processes, 5, Agriculture, 3, Waste,1, Forest, 2**

Area	Methodologies
Energy saving	Implementation of boilers
	Implementation of heat pumps
	Implementation of industrial furnaces
	Implementation of air conditioning facilities
	Renewal of fan and pump or installation of inverter and controlling equipment
	Implementation of lighting facilities
	Implementation of co-generation equipment
	Renewal of transformers
	Switch from private heat source equipment to outside heat sources
	Implementation of electric generators utilizing waste steam
	Utilizing heat source from recovered waste heat
	Implementation of electric vehicles
	Delivery efficiency of Propane gases utilizing IT
	Reducing meter reading utilizing IT
	Implementation of vending machines
	Implementation of refrigeration equipment
	Renewal of roll ironers
	Renewal of electric marine vessels
	Switch from fossil fuel or grid power to fuel from waste
	Renewal of fan and pump
	Renewal of construction machinery and industrial trucks by introducing power-operated machineries and trucks
	Renewal of productive facilities (machine tools, press machines or injection machines
	Implementation and utilization of digital tachograph and other equipment that support eco-drive

25

Methodologies ②

Area	Methodologies
Energy Saving	Renewal of private electric generators
	Renewal of drying machines
	Energy efficiency improvement of air conditioning facilities by installing a rooftop greenery
	Renewal of construction machinery and industrial trucks by introducing hybrid machineries and trucks
	Implementation of natural gas vehicles
	Implementation of printing machines
	Renewal of servers
	implementation of plumbing products
	Energy efficiency improvement by relocating servers to outside data centers
	Installation of Car Navigation Systems with Environmentally-friendly Driving Systems
	Efficiency Improvement of Land Transportation of Marine Container
	Reduction of Fossil Fuel of Sludge Disposal System by Renewal of Sewage Sludge Dryers
	Change to cooperative delivery
	Implementation of refrigerant treatment facility
Renewable Energy	Fuel Switch from Fossil fuel or Grid Power to Biomass Solid Fuel (woody biomass fuel)
	Introduction of solar power generation
	Renewal of heat source equipment utilizing renewable energy heat
	Fuel switch from fossil fuel or grid power to biomass liquid fuel (BDF, bioethanol, biooil)
	Fuel switch from fossil fuel or grid power to biomass solid fuel (biomass solid fuel from sewage sludge)
	Introduction of hydroelectric power generation
	Fuel switch from fossil fuel or grid power to biogas
	Introduction of wind generators
	Renewal of electric power facility utilizing renewable energy heat

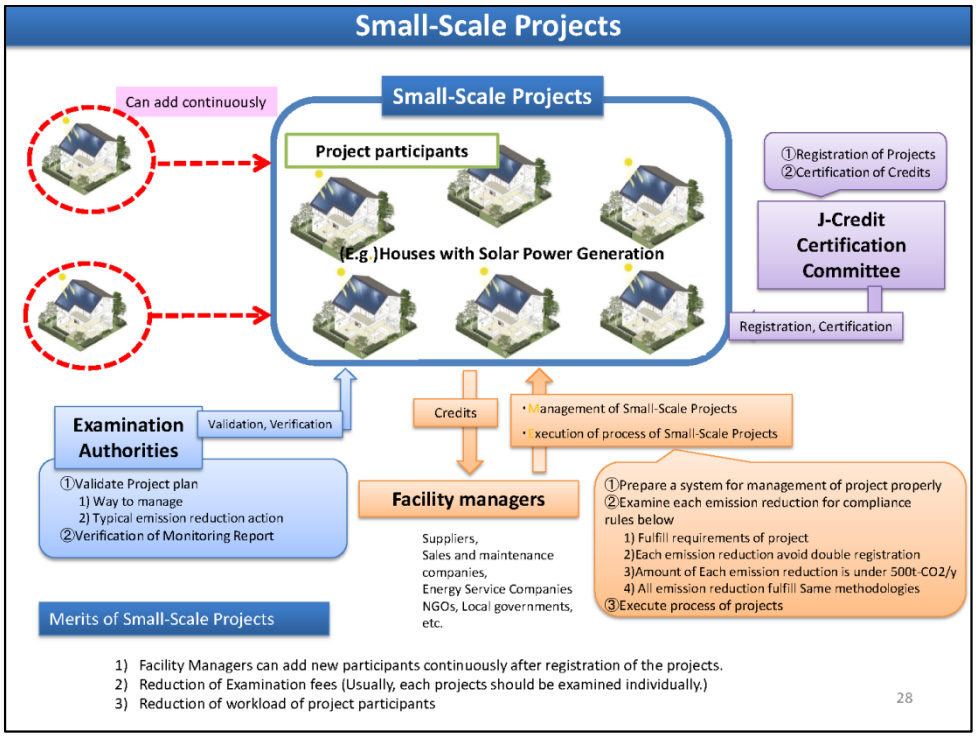
26

Methodologies ③

Area	Methodologies
Industrial Process	Switch of cover gas in casting magnesium from SF6 to lower GWP gases
	Introduction of recovery and degradation systems of N2O used for anesthesia
	Gas Switch from SF6 to COF2 in the Liquid Crystal Display Production Process
	Introduction of GHG-free Insulated Switchgears and More
	Reduction of Green House Gas of canned dust blower for equipment maintenance
Agriculture	Abatement of N2O emissions from pig and broiler excreta disposal by utilizing low-protein feed
	Conversion of disposal management system for livestock excreta
	Mitigation of N2O Emissions from Tea Land Soil by Applying Chemical Fertilizers Containing Nitrification Inhibitor or Compound Fertilizers containing lime nitrogen
Waste	Reduction of fossil fuel for incineration treatment by volume reduction of sludge utilizing microbially-activated solvent
Forest Sink	Forest management project
	Afforestation project

27

You can see a very long list of 58 approved methodologies, boilers and heat pumps. Those more popular ones at the top of the list and at the bottom I can't really translate some of the English versions into Japanese because some of the methodologies are rarely taken, but there are 58 methodologies in areas of energy savings, renewable energy, industrial processes, agriculture and waste and foresting all together constituting a list of 58 methodologies.



On to my very last slide. We have a scheme of program type project. Normally, if you replace a boiler, it is counted as a project, but in the program type, you can also gather ten thousands projects for PV installation at the household sector, and they can also counted as one "program type" project. Normally, one PV installation can only achieve 1 ton of CO_2 reduction, but in this case, it is possible to reduce ten thousand tons of CO_2 by setting a project. In this "program type" project, there would be an aggregator of the credit as a secretariat, and utilize sampling method based on statistical knowledge, so that cost reduces and benefit increases. This now constitutes a larger proportion of the projects.

Takase: Thank you very much Mr. Morikawa. We asked Mr. Morikawa to speak about J-Credit. That is because the J-Credit program may be able to experiment with the Green Deal, Japanese version of Green Deal, as part of it.

We'll have some discussion time afterwards so next we'd like to go on to the MOE's presentation. From the Global Environmental Bureau Climate Change Policy Division Deputy Director Ms. Masuda will make a presentation. In the Ministry of Environment, they have a Household Energy Assessment system. It's like an advisor or an assessor to the Green Deal system. They have this program of training and developing such advisors and so they have in mind the Green Deal policy as well so we'd like to ask her to explain.

Policy against Climate Change – Moving toward a Low Carbon Lifestyle—

Presentation by Ms. Hiromi Masuda (Deputy Director, Climate Change Policy Division, Global Environment Bureau, Ministry of Environment)