



# Carbon Market

## *CDM Support Activity*

**Banco Sumitomo Mitsui Brasileiro S.A.**



**SMBC** SUMITOMO MITSUI  
BANKING CORPORATION

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# The Kyoto Protocol

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- 1997 - The Kyoto Protocol has been approved at the United Nations Framework Convention on Climate Change (UNFCCC) - Conference of the Parties (COP3).
- Target: 5% reduction of emissions of Greenhouse Effect Gases (GHGs) in relation to 1990's emissions, in a first "commitment period" between 2008 and 2012, by the so-called Annex 1 nations (developed countries).
- Main Gases Involved:
  - CO<sub>2</sub>: Carbon Dioxide
  - CH<sub>4</sub>: Methane
  - N<sub>2</sub>O: Nitrous Oxide
  - HFCs: Hydrofluorocarbons
  - PFCs: Perfluorocarbons
  - SF<sub>6</sub>: Sulphur Hexafluoride

# The Kyoto Protocol

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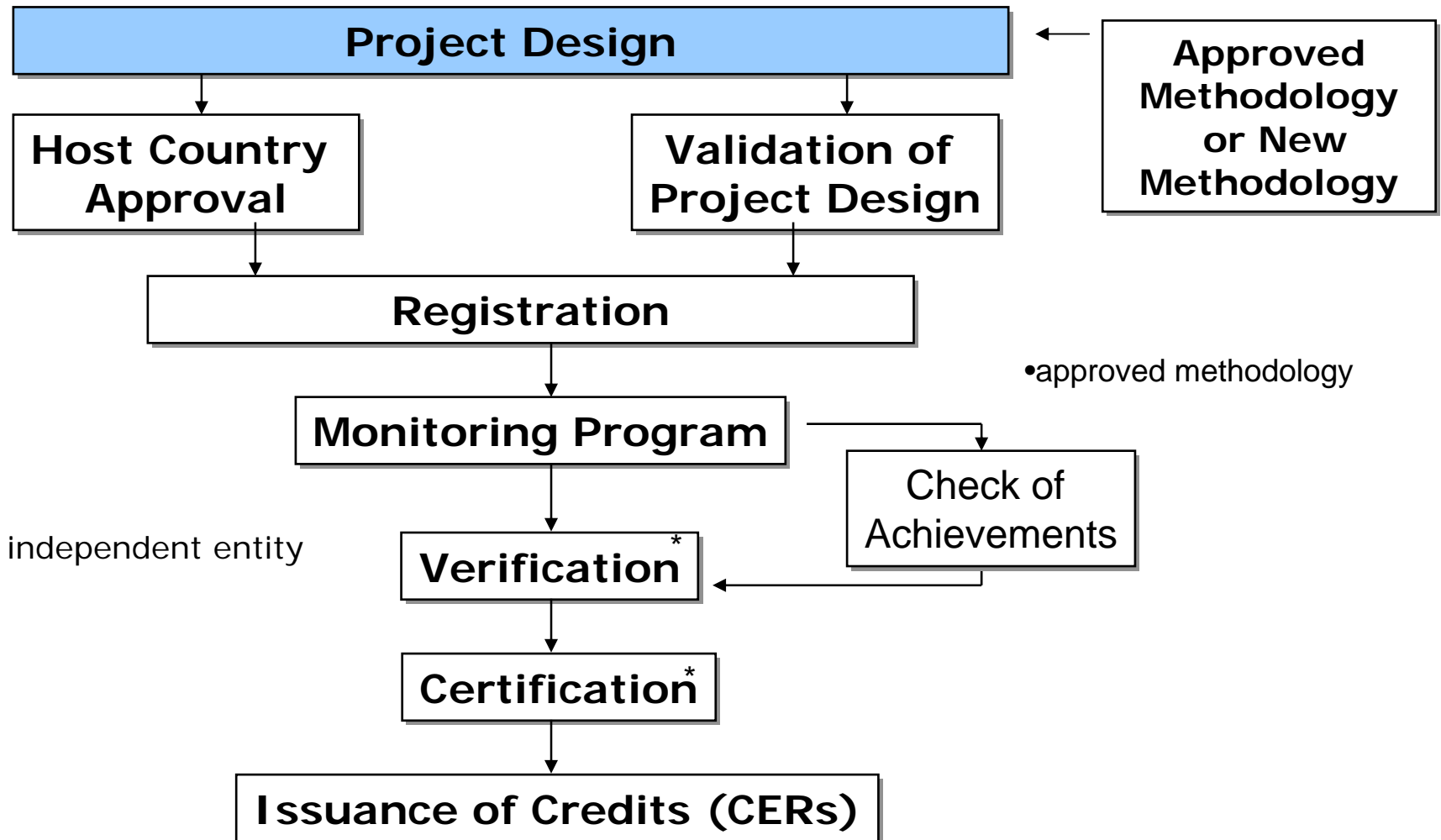
- **Minimum Requirements Established:** It should enter into force 90 days after it has been ratified by at least 55 Parties of the Convention, including developed countries representing at least 55% of the total 1990 carbon dioxide emissions from this group.
- **February 16th '2005 - The Protocol enters into force, 90 days after the ratification of Russia, on November 18th '2004.**
- **Three emission reduction mechanisms:**
  - **Emissions Trading (ET)**
  - **Joint Implementation (JI)**
  - **Clean Development Mechanism (CDM)**

## The Mechanisms

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- **Emissions Trading (ET)**: Trade of carbon credits among Annex 1 countries;
  
- **Joint Implementation (JI)**: Carbon credits generation through projects that absorb or reduce GHGs, developed in Annex 1 countries;
  
- **Clean Development Mechanism (CDM)**: Carbon credits generation through projects that absorb or reduce GHGs, developed in Non-Annex 1 countries.
  - The CDM is the only mechanism that may be applied in Brazil. The Certified Emission Reductions (CERs) can only be generated by CDM projects developed in the country.

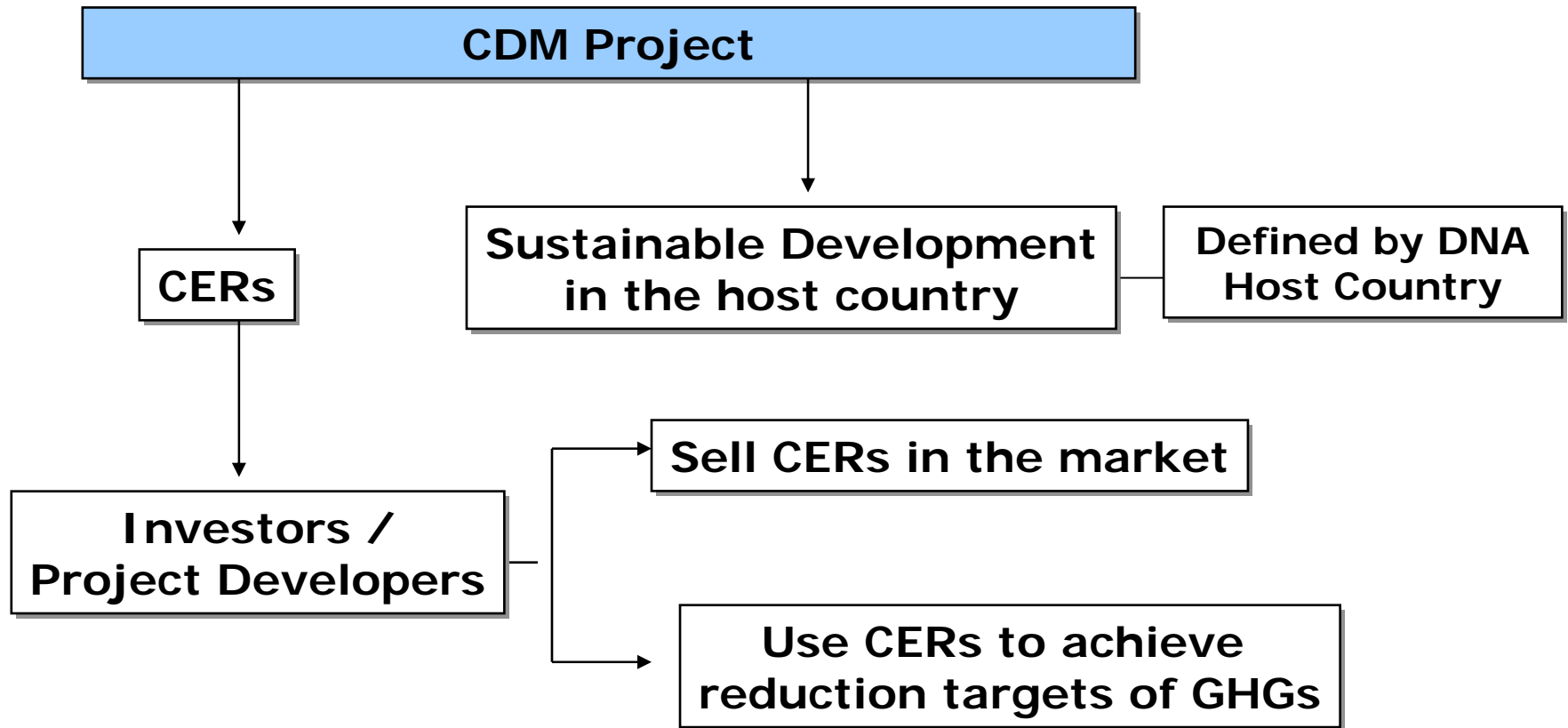
# The CDM Project Approval Cycle



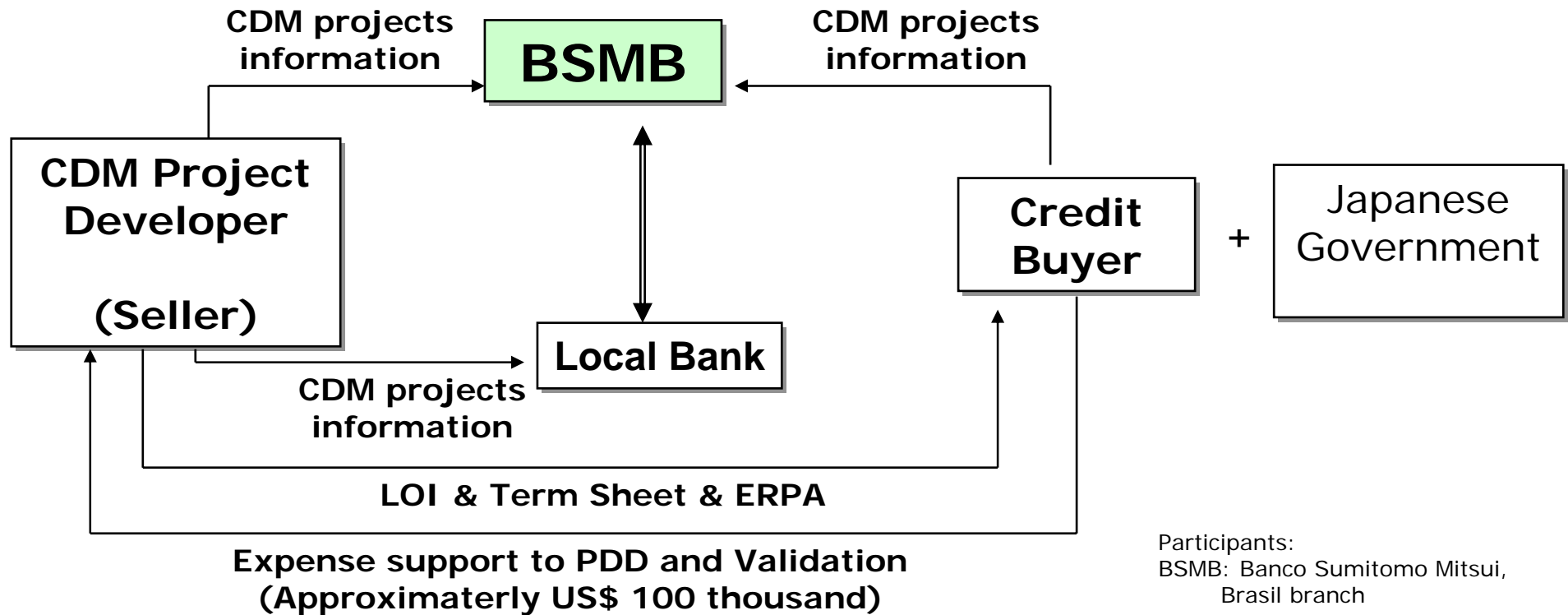
\* : Done by independent entity

# The CDM Project Structure

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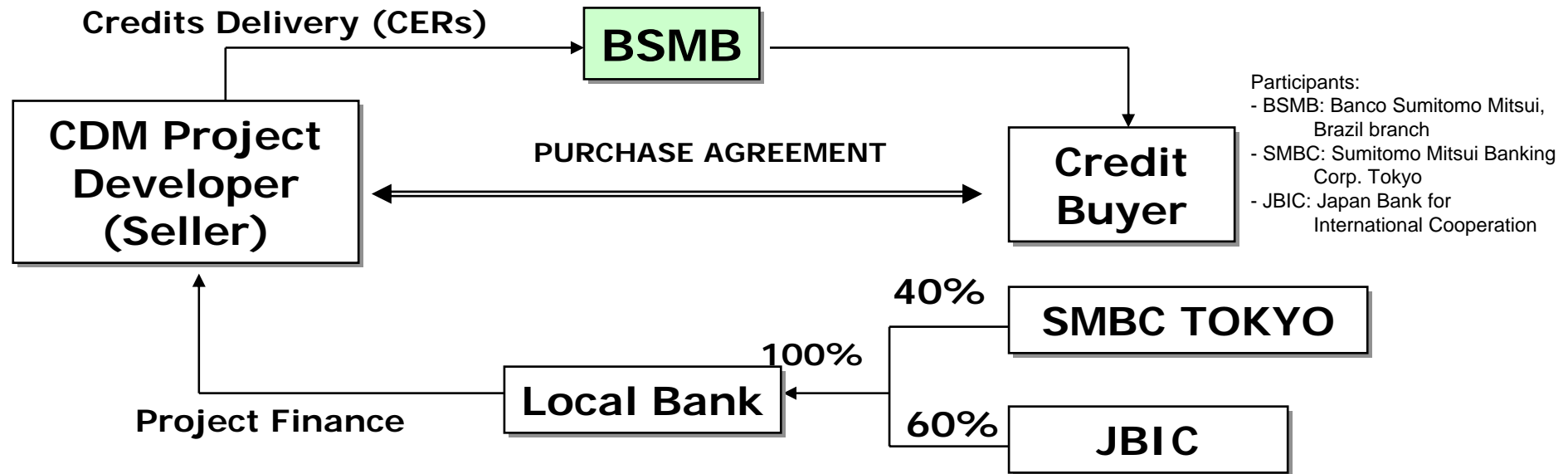
# BSMB's Business Models - Model I



1. CDM projects information exchange between Banco Sumitomo and the local bank, in order to generate business opportunities under the rules of the Clean Development Mechanism of the Kyoto Protocol.

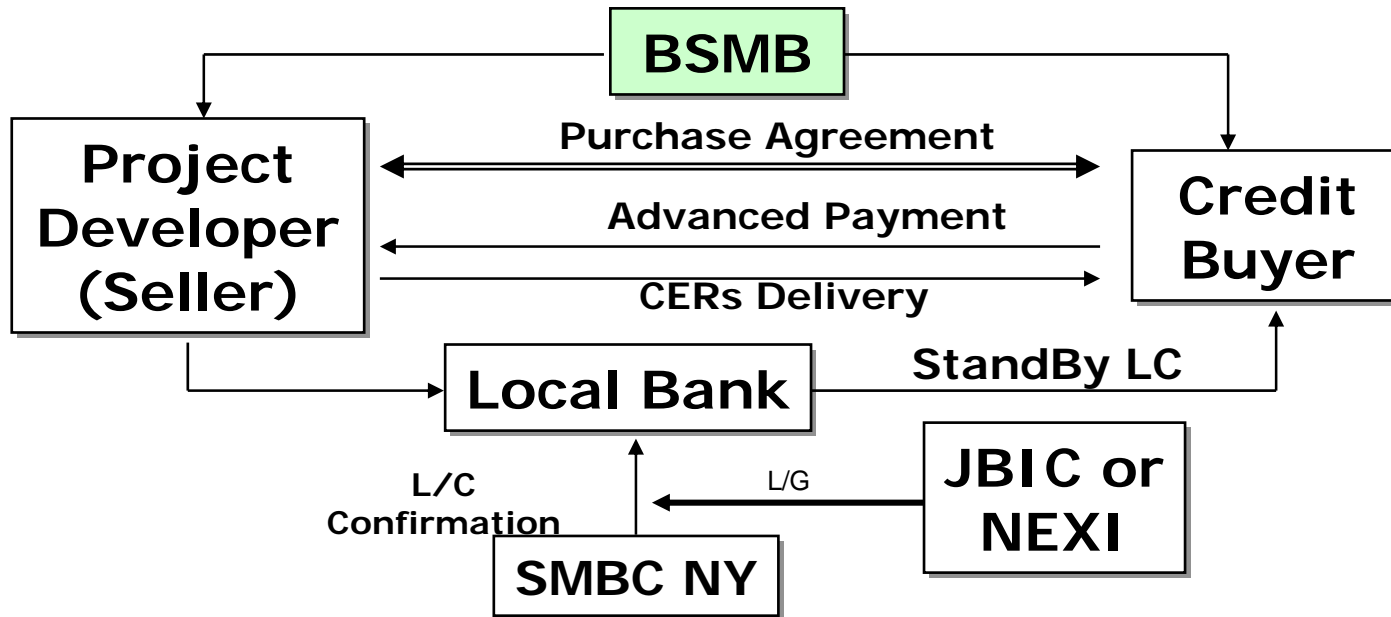


# BSMB's Business Models - Model II



1. BSMB's main role is to intermediate the purchase of carbon credits for the Japanese buyers, identifying the CDM projects through its local network and negotiating with local players.
2. The local bank will be responsible for the project finance. Banco Sumitomo will have the role to intermediate the credits purchase, generating future purchase commitments through agreements.
3. On a case-by-case basis, JBIC may provide funding through the 2 Step Loan program to the local bank.

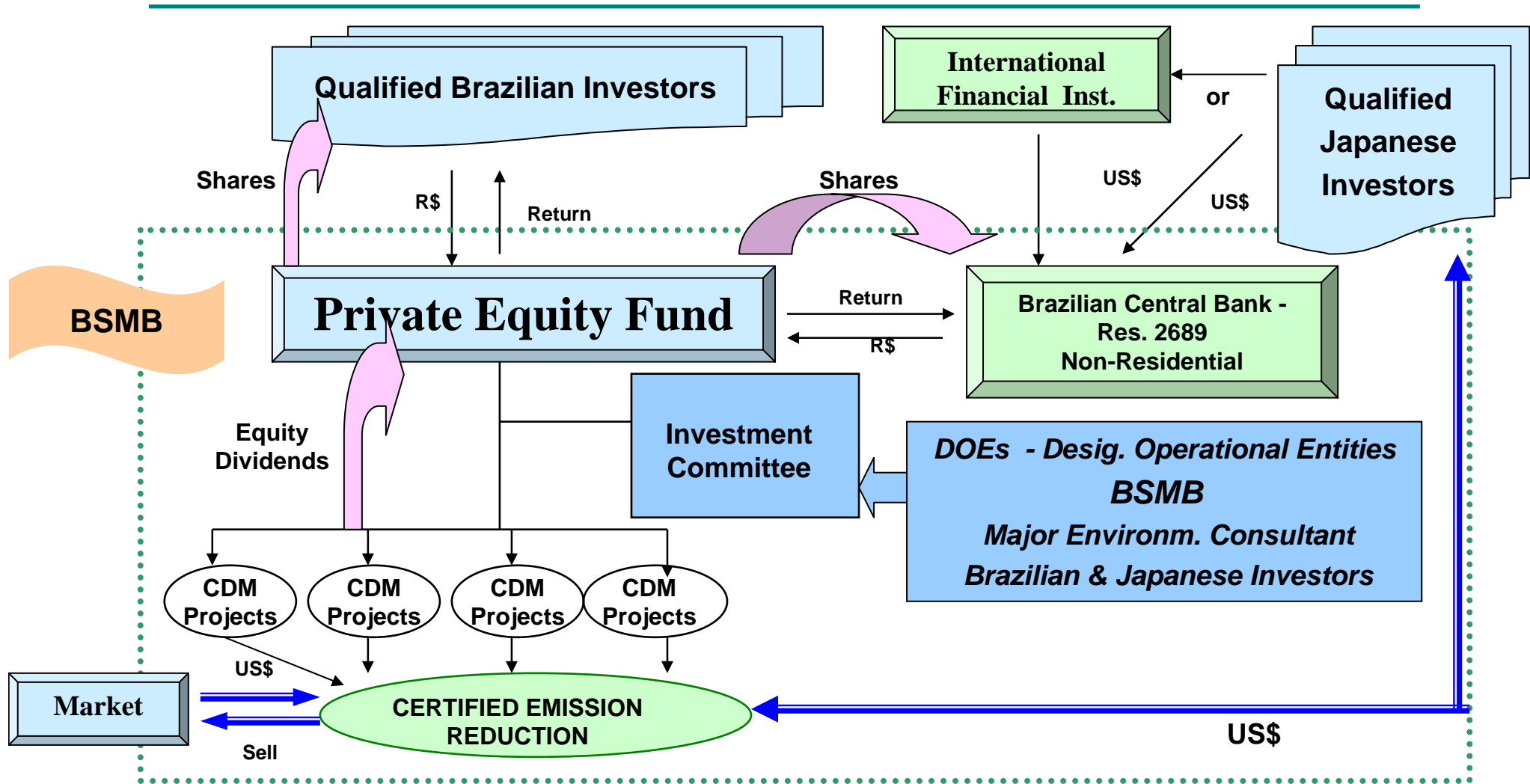
# BSMB's Business Models - Model III



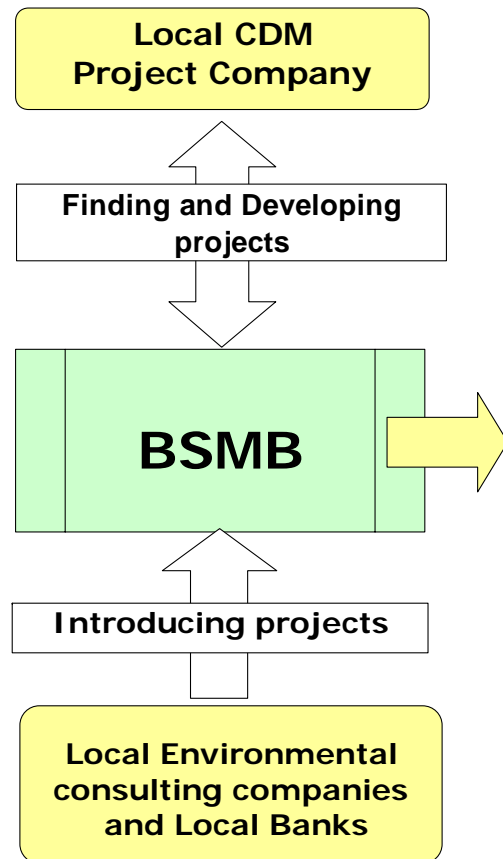
- Participants:
- BSMB: Banco Sumitomo Mitsui, Brazil branch
  - SMBC NY: Sumitomo Mitsui Banking Corp, NY branch
  - JBIC: Japan Bank for International Cooperation
  - NEXI: Nippon Export and Investment Insurance

1. BSMB's main role is to intermediate the purchase of carbon credits for the Japanese buyers, identifying the CDM projects through its local network and negotiating with local players.
2. Depending on the risk perception of the credit buyers about the project developer and the project itself, the buyers may proceed to advanced payments of CER purchases. In such case, a Standby LC from a local bank and further confirmation from SMBC NY will be required. In a case by case basis, it is possible to add a guarantee from JBIC or NEXI, in order to reduce costs and risk.

# BSMB's Private Equity Fund - Model IV



# CDM's Analysis Process in BSMB



## Inspection as CDM project

- Methodology
- Possibility of creating New Methodology
- Feasibility of Constructing the Base Line
- Feasibility and Bases for the construction a new line
- Expected price of generated CER
- Compatibility with possible Japanese buyers' criteria
- Hearing and opinion concerning DOE
- Hearing and opinion by Environ. Consulting Company
- Hearing and opinion by the Brazilian DNA
- Verifying quality and contents of PIN and PDD
- Verifying contents of Validation Report
- Verifying point of view of BAU (Business as Usual)

## CDM's Analysis Process in BSMB

### Company's Credit Risk Analysis

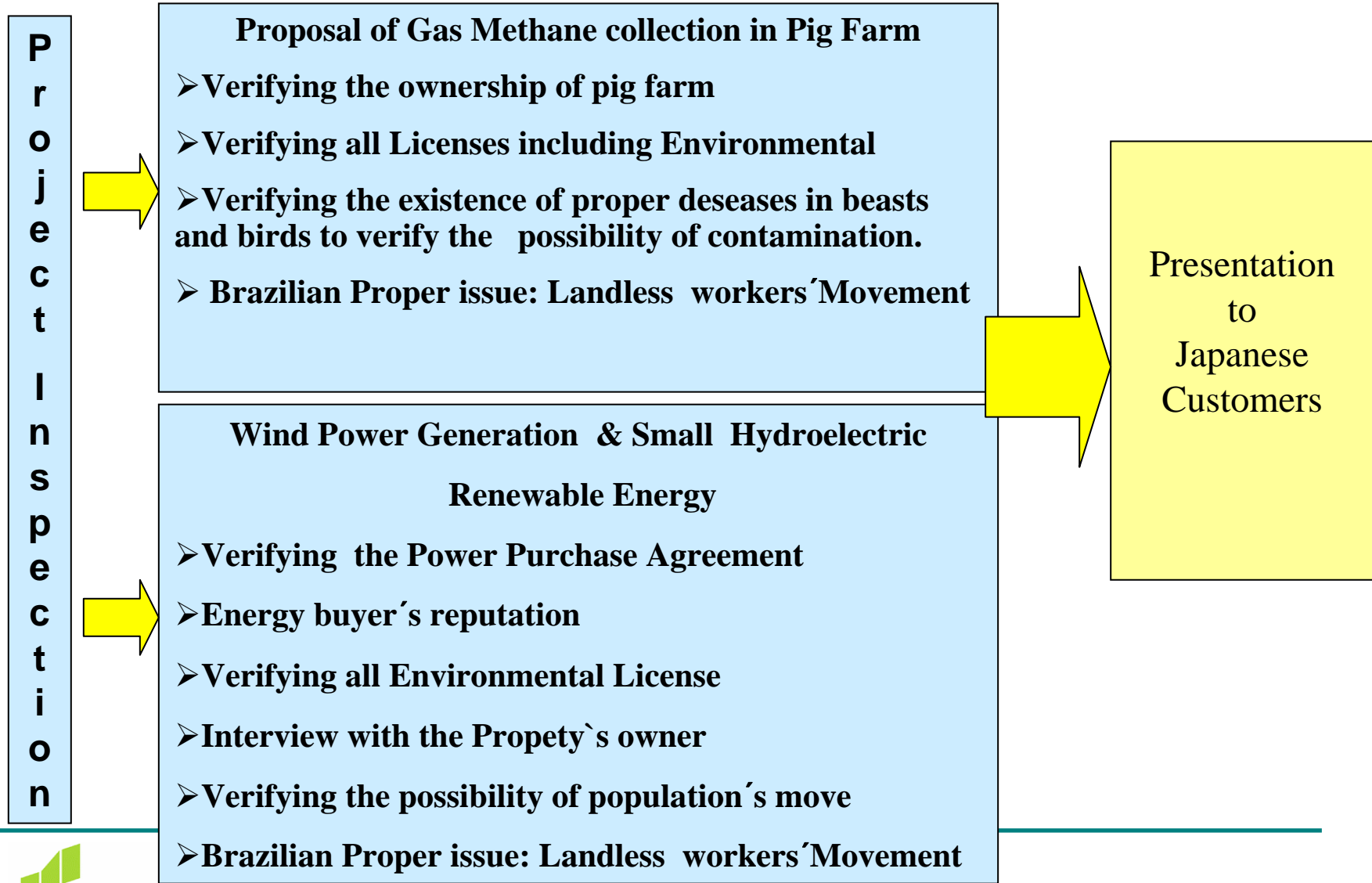
- **Company's Credit Risk Analysis**
- **Financial Statements Analysis**
- **Verifying the contents of Company By-laws**
- **Research about company's reputation in the market**
- **In case of capital increase, evaluate its validity**
- **Investigation on reputation of future stockholder's structure**
- **Proportion of common and voting shares**

### Project site Inspection

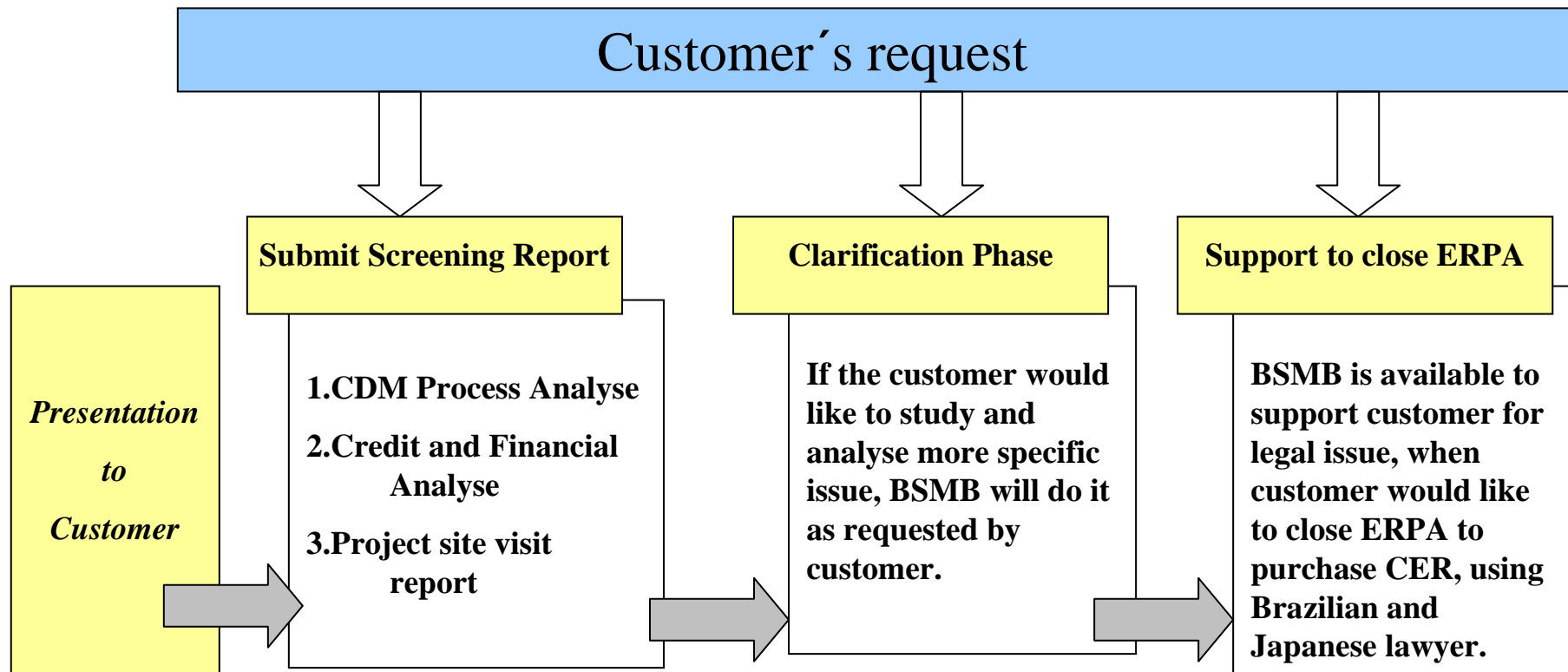
#### Methane Gas Collection in Landfill

- **Ownership of the Landfill (Private or Public)**
- **Verifying with public sector the contract of garbage collection**
- **Verifying the register of the past garbage treatment**
- **Verifying all Licenses, including Environmental**
- **Verifying the existence of "Scavengers" and the Citizens' measures in the area**
- **Brazilian Proper issue: Landless workers' Movement**

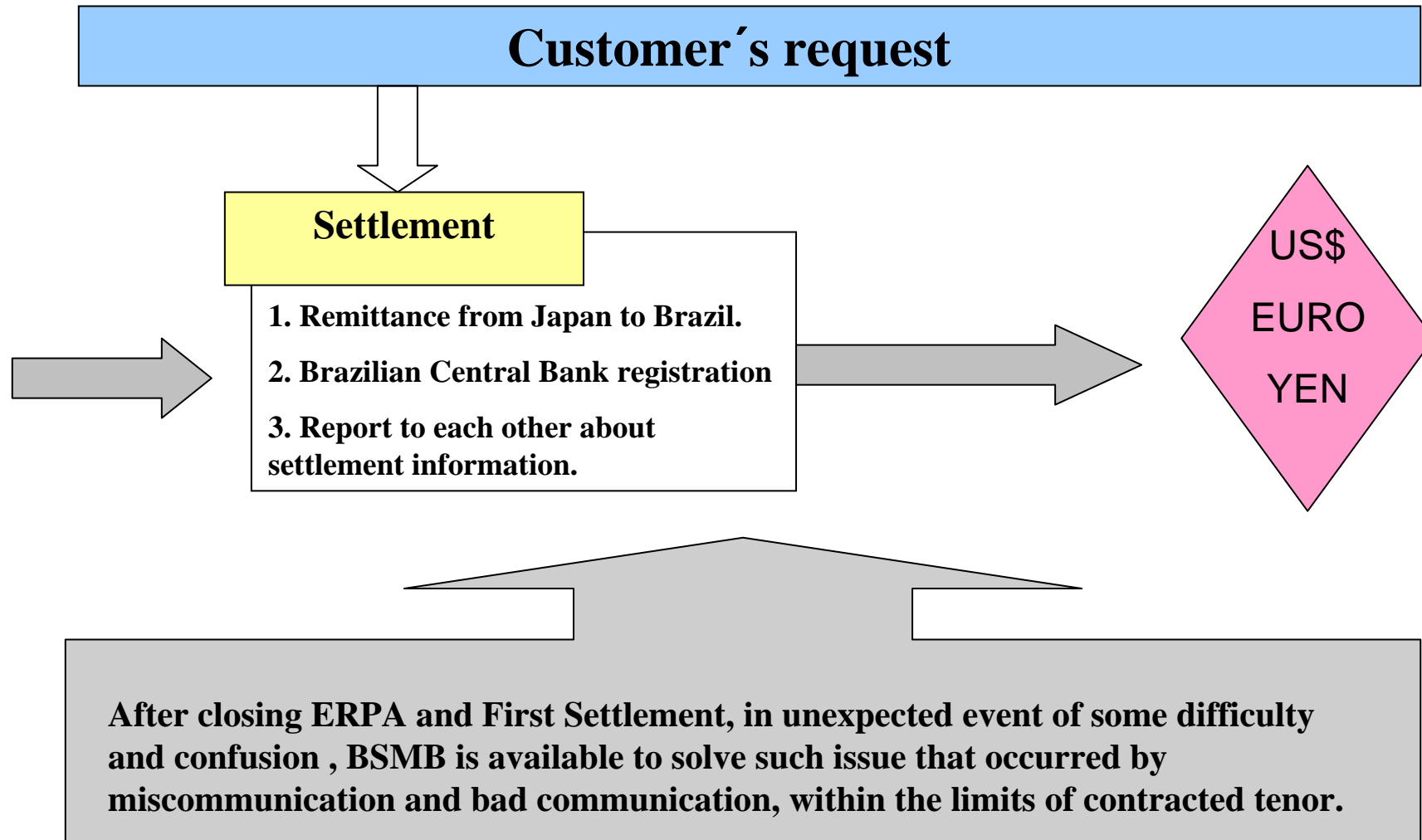
# CDM's Analysis Process in BSMB



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## CDM's Analysis Process in BSMB





## CDM's Analysis Process in BSMB

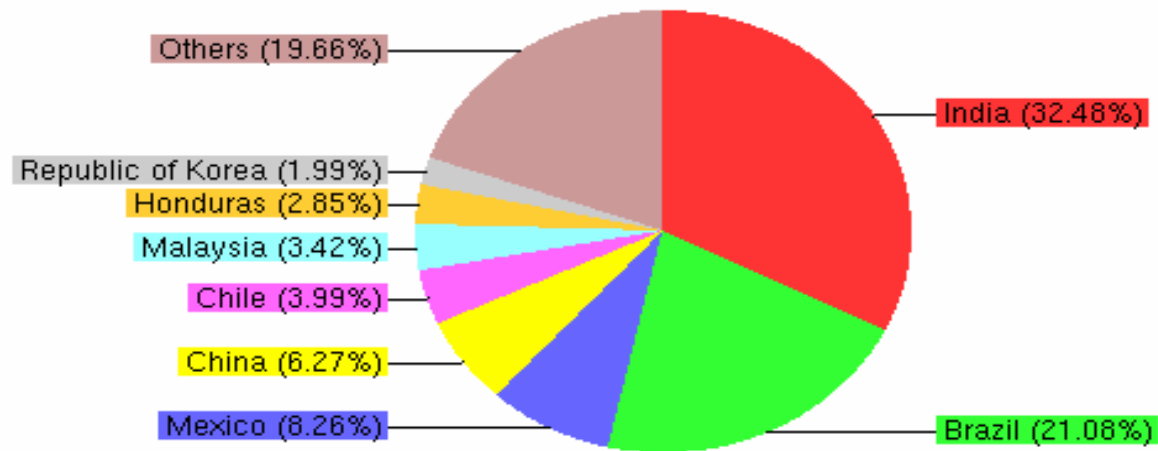
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### *MAIN POINTS*

- For Japanese CER purchaser who does not know Brazil and Portuguese language, BSMB is available to support and identify Brazilian potential CDM project and analyze the project from a few important view points.
- For Brazilian potential CDM project companies, BSMB is available to identify Japanese potential CER buyer and give instruction until close the ERPA and settlement from Japan. And it is possible to issue payment guarantee from Japan by BSMB.

# CDM Projects in the World

Registered project activities by host party. Total: 351

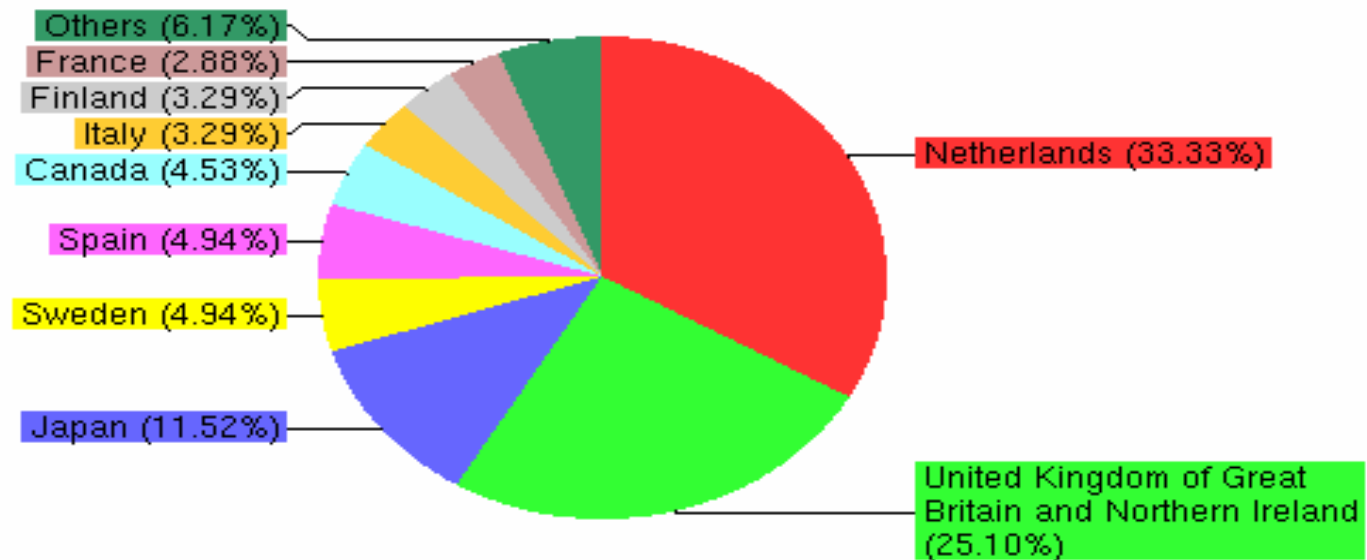


<http://cdm.unfccc.int> (c) 13.10.2006 15:34

Source: United Nations Framework Convention on Climate Change as of October, 2006

# CDM Projects in the World

Registered projects by AI and NAI investor parties

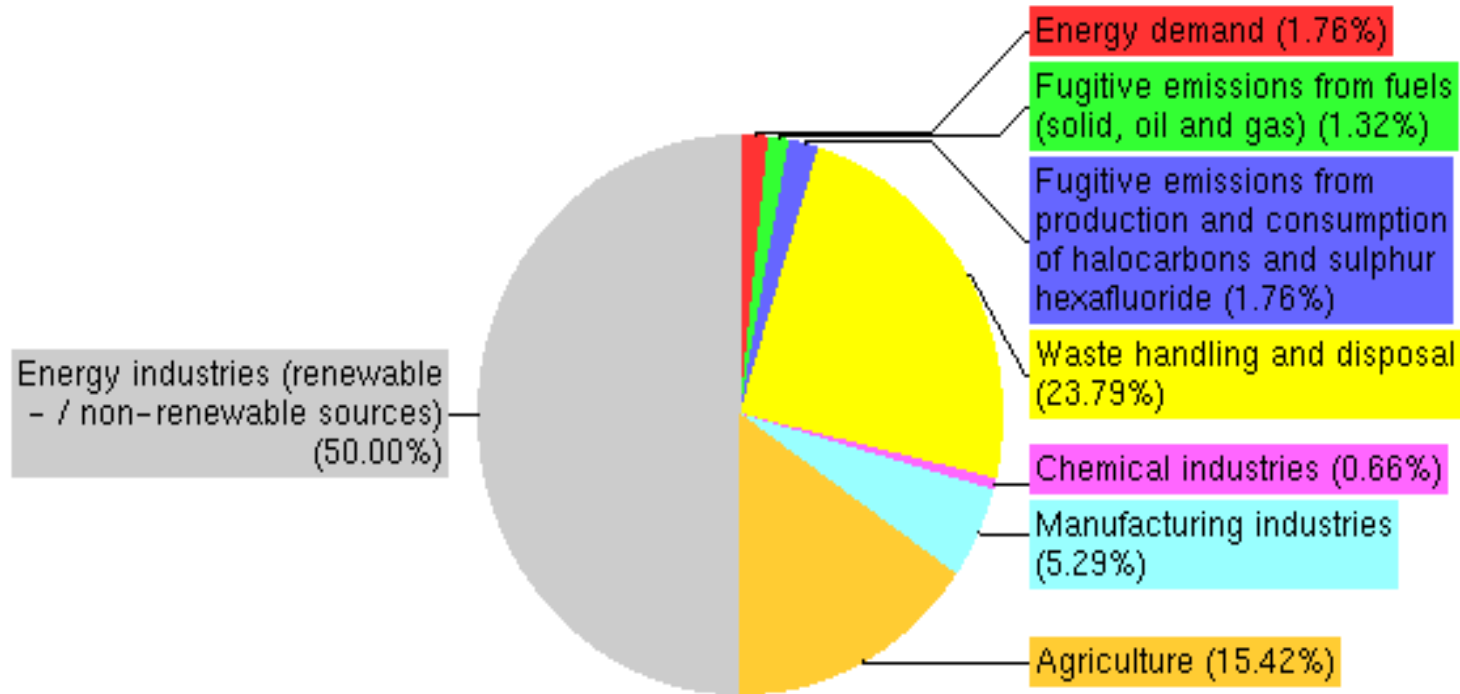


<http://cdm.unfccc.int> (c) 13.10.2006 18:44

Source: United Nations Framework Convention on Climate Change as of October, 2006

# CDM Projects in the World

Distribution of registered project activities by scope



Source: United Nations Framework Convention on Climate Change as of October, 2006

## Brazilian CDM Projects registered by CDM Executive Board

(as of June 22, 2006)

	Project	Reduction*
1	AWMS GHG Mitigation Project BR05-B-09, Brazil	49,388
2	AWMS GHG Mitigation Project BR05-B-02, Minas Gerais and São Paulo, Brazil	152,162
3	AWMS GHG Mitigation Project BR05-B-07, Mato Grosso, Minas Gerais and Goiás, Brazil	149,915
4	Electric Power Co-Generation by LDG Recovery - CST - Brasil	44,026
5	Landfill Gas to Energy Project at Lara Landfill, Mauá, Brazil	751,148
6	BK Energia Itacoatiara Project	145,370
7	Lages Methane Avoidance Project	220,439
8	BT Geradora de Energia Elétrica S. A. – Ferradura Small Hydro Power Plant	23,496
9	Usinas Itamarati Cogeneration Project	7,990
10	Moema Bagasse Cogeneration Project (MBCP)	13,139
11	Equipay Bagasse Cogeneration Project (EBCP)	31,821
12	Central Energética do Rio Pardo Cogeneration Project (CERPA)	16,290
13	Caieiras Landfill Gas Emission Reduction	770,932
14	Cruz Alta Bagasse Cogeneration Project (CABCP)	10,061
15	Zillo Lorenzetti Bagasse Cogeneration Project (ZLBSP)	53,774
16	Termoelétrica Santa Adélia Cogeneration Project (TSACP)	22,204

\* Estimated emission reductions in tCO<sub>2</sub>e per annum, as stated by the project participants.

## Brazilian CDM Projects registered by CDM Executive Board

(as of June 22, 2006)

	Project	Reduction*
17	Alto Alegre Bagasse Cogeneration Project (AABCP)	9,674
18	Iturama Bagasse Cogeneration Project (IBCP)	12,841
19	Coruripe Bagasse Cogeneration Project (CBCP)	5,784
20	Coinbra-Cresciumal Bagasse Cogeneration Project (CCBCP)	17,841
21	Bioenergia Cogeradora S.A. ("Bioenergia")	20,840
22	Lucélia Bagasse Cogeneration Project (LBCP)	14,362
23	Colombo Bagasse Cogeneration Project (CBCP)	28,018
24	ESTRE ́s Paulínia Landfill Gas Project (EPLGP)	212,558
25	Serra Bagasse Cogeneration Project (SBCP)	6,644
26	Campo Florido Bagasse Cogeneration Project (CFBCP)	10,175
27	Southeast Caeté Mills Bagasse Cogeneration Project (SECMBCP)	30,326
28	Cerradinho Bagasse Cogeneration Project (CBCP)	34,742
29	Jailles Machado Bagasse Cogeneration Project (JMBCP)	8,955
30	Vale do Rosário Bagasse Cogeneration (VRBC)	25,277
31	Pesqueiro Energia Small Hydroelectric Project (PESHP)	42,009
32	Santa Cândida Bagasse Cogeneration Project (SCBCP)	10,604

\* Estimated emission reductions in tCO<sub>2</sub>e per annum, as stated by the project participants.

## Brazilian CDM Projects registered by CDM Executive Board

(as of June 22, 2006)

	Project	Reduction*
33	Alta Mogiana Bagase Cogeneration Project (AMBCP)	12,024
34	Nova América Bagasse Cogeneration Project (NABCP)	12,027
35	Bandeirantes Landfill Gas to Energy Project (BLFGE)	1,070,649
36	Santa ELISA Bagasse Cogeneration Project (SEBCP)	45,801
37	CAMIL Itaquí Biomass Electricity Generation Project	57,341
38	Koblitz - Piratini Energia S.A - Biomass Power Plant	172,763
39	GHG capture and combustion from swine manure management systems at Faxinal dos Guedes and Toledo	24,277
40	Brazil MARCA Landfill Gas to Energy Project	231,405
41	UTE Barreiro S.A Renewable Electricity Generation Project	48,565
42	N2O Emission Reduction in Paulínia, SP, Brazil	5,961,165
43	Granja Becker GHG Mitigation Project	5,086
44	Onyx Landfill Gas Recovery Project - Trémembé, Brazil	70,063
45	Salvador da Bahia Landfill Gas Management Project	664,674

\* Estimated emission reductions in tCO<sub>2</sub>e per annum, as stated by the project participants.

# Kyoto Protocol and its influence in Japan

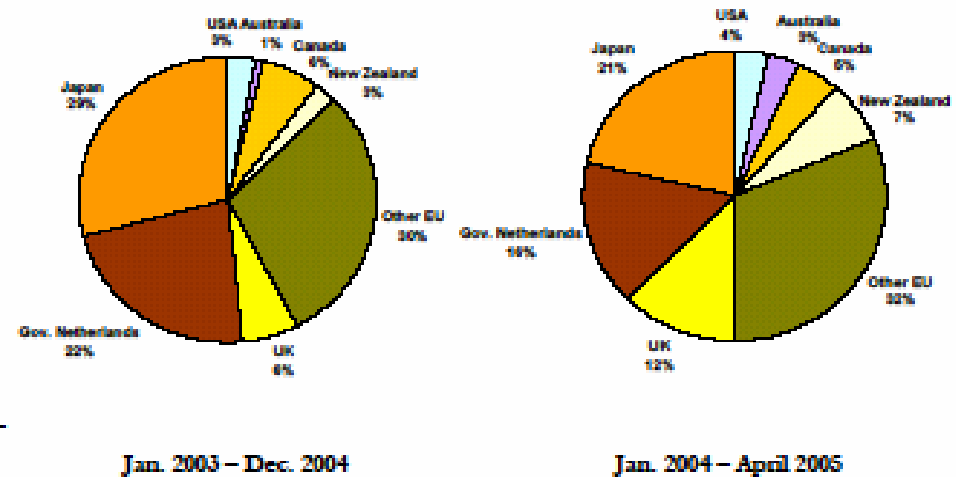
	Emission at base year		ratification	Commitment	Emission at latest year		Needed reduction
	mil. tCO <sub>2</sub> e	proportion			mil.tCO <sub>2</sub> e	base year ±	
USA	5,253.6	36.1%	NO	- 7%	5,999.6	+ 14%	+ 21%
EU	4,336.8	29.8%	YES	- 8%	4,176.3	- 4%	+ 4%
Russia	2,532.2	17.4%	YES	+ 0%	1,559.8	- 38%	- 38%
Japan	1,237.0	8.5%	YES	- 6%	1,331.0	+ 8%	+ 14%
Canada	480.2	3.3%	YES	- 6%	574.9	+ 20%	+ 26%
Australia	305.6	2.1%	NO	+ 8%	360.9	+ 18%	+ 10%
China			YES		3,000.0		
India			YES		1,000.0		

Increasing!

GHG Emission of Japan			
	mil CO <sub>2</sub> te	increase	
Base year	1,237	-	year 1990(partly 1995)
Commitment	1,162	-6.00%	
year 2002	1,331	7.60%	
Needed reduction	169	13.60%	2008-2012 average

- During the first commitment period of 2008-12, Japan needs to attain approximately 14% reduction
- Government has set a plan to attain Kyoto Protocol goal and has committed emission reductions. However, even when the goal is attained, Japan still needs to reduce 20 million tons (1.6%) to abide Kyoto Protocol.
- Under this circumstance, Government has announced to pursue CDMJI.
- Japan Business Federation (Keidanren) set voluntary reduction goal by industry sectors in 1997 and since then, has been monitoring and announcing the outcome.

## Emission reduction buyer in the market ( amount )



- Japan has become NO.1 player among emission reduction purchasers

**Japan has become the number 1 in the CER's Buyers.  
 Aggressive participation in trading is estimated.**



# Influence on Japanese firms(1)

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**Kyoto Protocol's influence on Japanese firms is estimated as follows:**

- 1 . **Social responsibility**    ··· Needs concrete and clear plan in IR activities and Environment Reports
- 2 . **Voluntary emission reduction goal by sectors set and monitored by Keidanren** (Japan Business Federation)
- 3 . **Passive actions**    ··· production control, giving up or transferring some business abroad
- 4 . **Positive actions**    ···
  - 1 ) Products and service development
    - Eco products
    - Green distribution/ green partnership
  - 2 ) CAPEX
  - 3 ) New Businesses
  - 4 ) Special loans (low interest rate, guarantees by JDB
  - 5 ) Environmental ratings
- 5 . **Evaluation by market and investors**    ··· Carbon disclosure

# Influence on Japanese firms (2)

Currently, each firm makes efforts to abide its voluntary goal. (1) Aggressiveness depends on industry, (2) some aim to acquire emission reduction through CDM and carbon fund, and (3) some show interested in emission Trading market

	Industry	year 2003			Voluntary goals		
		mil.t-CO2	no.of members	no.of firms	coverage (%)	attainability	use of Kyoto mechanism
1	Power	36,300	12	12	100%	△ ▲	○
2	Steel	18,240	68	68	100%	△ ▲	○
3	Paper	2,633	34	39	88%	○ ▲	-
4	Electric Goods	1,781	378	540	85%	× ▲	-
5	Auto Parts	671	194		82%	△ ▲	-
6	Rubber	218	27		88%	○ ▲	-
7	Automobile body	97	172		90%	○ ▲	-
8	Industrial machinery	52	193		86%	△ ▲	△
9	Machine tools	20	65	80	90%	△ ▲	△
10	Industrial cars	6	7	7	91%	○ ▲	-
11	Construction machinery				95%	△ ▲	△
12	Cement	2,186	20	20	100%	○ ○	△
13	Mining	517	17	17	100%	△ ○	-
14	Gas	76	229	229	100%	○ ○	○
15	Bearing	65	32	36	100%	○ ○	-
16	Copper processed goods	54	12		75%	○ ○	△
17	Limestones	37	97	238	86%	○ ○	-
18	Sanitation	36	7	7	100%	○ ○	-
19	Chemicals	7,617	216		90%	○ ⊗	-
20	Oil	4,385	18	18	100%	○ ⊗	○
21	Automobiles	579	14	14	100%	△ ⊗	-
22	Limestones	232	92	95	97%	○ ⊗	-
23	Aluminium	166	6		67%	○ ⊗	-
24	Glass	135	3	3	100%	○ ⊗	△
25	Electric wire	89	138	143	80%	○ ⊗	○
25	Coloring		81	279	55%	○ ⊗	-
26	Glass bottles		5		90%	○ ⊗	-
27	Department stores		292	stores	6%	○ ⊗	-
28	Chain stores		9,137	stores	11%	○ ⊗	-
29	Convenience stores		37,364	stores	5%	○ ⊗	-
30	Coal		1			#N/A	#N/A
	Construction	514					
	Housing	454					
	Pharmaceutical	212					
	Daily industry	118					
	Beer	92					
	Beverage	91					
	Sugar	48					
	Shipping	26					
	Milling	23					
	Railway coaches	3					

(left)	(right)	
Self evaluation	Evaluation by METI(*)	Use of Kyoto mechanism
○attainable	⊗already attained	○positively considering
△needs efforts	○possible to attain	△not decided yet
×difficult	▲need enough additional efforts	
	(*)Ministry of Economy, Trade and Industry	

# Countermeasures by Japanese firms (1)

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## 1 . Investment in Carbon Funds

### ■ Investment in Japan GHG Gas Reduction Fund (JGRF)

31 companies ( Power, Steel, Oil, Gas, Trading, Electrics etc. ) , JBIC, DBJ

### ■ Investment in World Bank Prototype Carbon Fund (PCF)

TEPCO, Chubu Power, Tohoku Power, Chugoku Power, Shikoku Power, Kyushu Power, Mitsui Co., Mitsubishi CO., JBIC

### ■ Investment in World Bank Community Development Carbon Fund (CDCF)

Daiwa Securities SMBC Principal Investments, Idemitsu, Shin Nihon Oil, Okinawa Power, Fuji Films

### ■ Investment in World Bank Bio Carbon Fund (BCF)

TEPCO, Okinawa Power, Idemitsu, Sumitomo Chemical, Sumitomo Joint Electric Power

## 2 . CDM/JI projects operation

Trading companies, power companies, general constructors, steel, oil, engineering etc.

## 3 . Other countermeasures

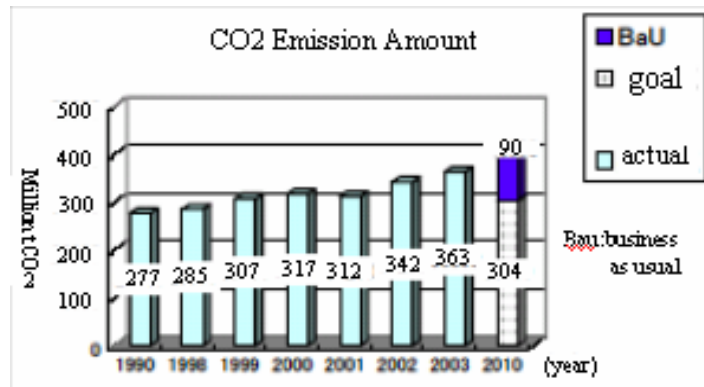
## Countermeasures by Japanese firms(2)

### Examples of CDM / JI projects by Japanese firms

#	Approval Date	JI/ CDM	Applicants	Country	Project	Estimated reduction tCO2e/year
1	02-12-12	JI	NEDO(*)	Kazakstan	Energy saving project of a heat and electricity plant	62,000
2	02-12-12	CDM	Toyota Tsusho Cor	Brazil	Brazil fuel exchange project	1,130,000
3	03-05-22	CDM	J-Power	Thailand	Rubber wood wastes power generation	60,000
4	03-07-15	CDM	Ineos Chemical	South Korea	HFC disposal	1,400,000
5	03-07-29	CDM	Kansai Power	Butan	Small hydroelectric power plant	500
6	03-12-03	CDM	Japan Vietnam Oil	Vietnam	Collection and efficient use of gas at an oil plant	680,000
7	04-05-19	CDM	Sumitomo Corp.	India	Disposal of HFC23 at HCFC22 plant	3,380,000
8	04-06-29	CDM	Chubu Power	Thailand	Chaff power generation	84,000
9	04-07-22	CDM	J-Power	Chile	Fuel exchange	14,000
10	04-10-01	CDM	TEPCO(*)	Chile	Livestock methane disposal	79,000
11	04-10-01	CDM	TEPCO	Chile	Livestock methane disposal	84,000
12	04-10-01	CDM	TEPCO	Chile	Livestock methane disposal	249,000
13	05-01-11	CDM	Showa Shell Oil	Brazil	Landfil gas management	870,000
14	05-01-11	CDM	NEDO	Vietnam	Energy saving project at a beer brewey plant	10,000
15	05-01-11	CDM	Kajima Corp.	Malaysia	LFG disposal and power generation	60,000
16	05-02-23	CDM	Shimizu Corp.	Almenia	Methane disposal and power generation at a Landfil	135,000
17	05-04-21	CDM	Showa Shell Oil	Brazil	Biomass Power Generation	180,000
18	05-07-27	CDM	Rhodia Japan	South Korea	N2O emission reduction	9,150,000
19	05-07-27	CDM	J-Power	Brazil	Landfil gas management	270,000
<b>Total per year</b>						<b>17,897,500</b>
(*) NEDO: New Energy and Industrial Technology Development						
TEPCO: Tokyo Electric and Power Company						
CDM registration, completed in March, 2005						

## Power (Power Industry Alliance) 363 mil ton

- Level of needs: high
- 90 mil. tons×5years
- Active use of Kyoto mechanism



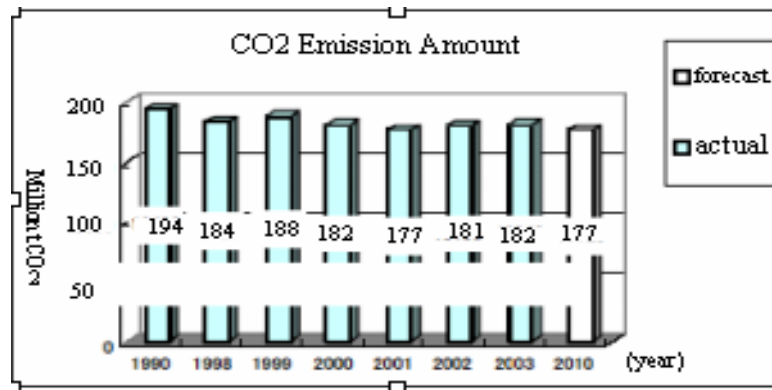
- 【Voluntary Plan by Keidanren as of Mar 2005】

- Goal : 20% reduction from base year 1990 /generation unit
- However in 2003: 4% increase

- Research made with 7 companies. All have intention to buy CREs;
- Like to purchase 0.2-5 mil tons or more /project;
- Target price: USD4-6.5;
- Best way to purchase is by participating in power CDM projects;
- Like to purchase early, if price and risk conditions combine to the purpose of the company;
- Prefer to purchase from Japanese companies;
- Basically, pay on delivery. Partial prepayment can be considered.

# Steel (Japan Steel Association) 182 mil tons

- Level of needs: high
- 6 mil tons×5 years



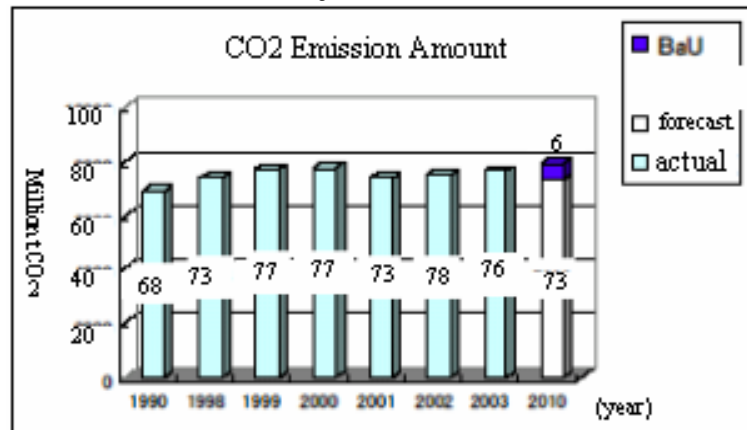
【Voluntary Plan by Keidanren as of Mar 2005】

- A big company showed interest to buy considerable amount of CERs
- Participation with CDM with technical transfer of their main business.

- **Goal: 10% reduction from base year 1990 / energy consumption unit.**
- **Affirmative comments on use of Kyoto mechanism.**

## Chemicals (Japan Chemical Industry Association) 76 mil tons

- Level of needs: relatively high (depends on companies)
- 6 mil tons×5 years
- Sumitomo Chemical invested in World Bank BCF (USD 2.5 mil. 0.4mil tons)

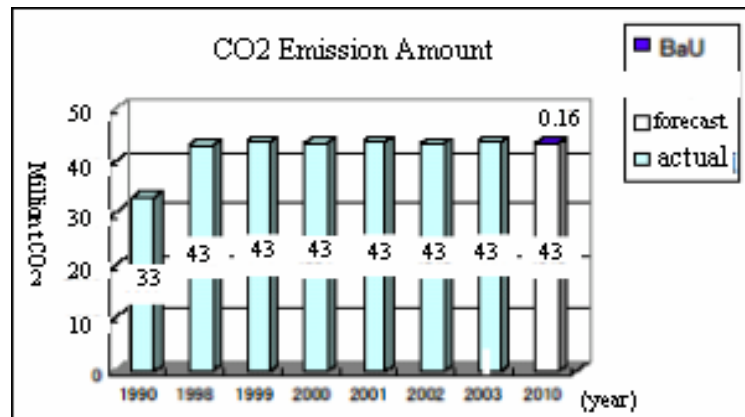


【Voluntary Plan by Keidanren as of Mar 2005】

- **Goal: 10% reduction from base year 1990 / energy consumption unit**
- **2005- Emission amount has been 10% increase of the level of 1990**
- **Emission reduction cost is estimated as USD 100 / ton**

## Oil (Oil Alliance) 43 mil tons

- Level of needs : low-intermediate
- No urgent needs



【Voluntary Plan by Keidanren as of Mar 2005】

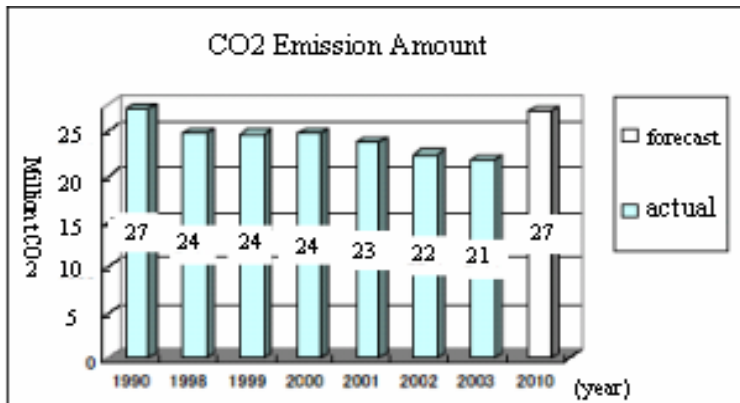
- **Goal: 10% reduction from base year 1990 / energy production unit**
- **Currently attained 13% reduction**
- **Declared use of Kyoto mechanism**

- **Shin Nisseki, Idemitsu, JE, Kyusyu Oil and Cosmo Oil invested in World Bank carbon funds, JGRF and Natsource Purchasing Pool etc.**
- **Priority in from whom to buy : Oil projects, governments, and business partners**
- **Showa Shell is promoting emission reduction business in Japan as a stronghold of Shell group**



## Cement (Cement Association) 22 mil tons

- Level of needs : low-intermediate
- Preparation for increase of production



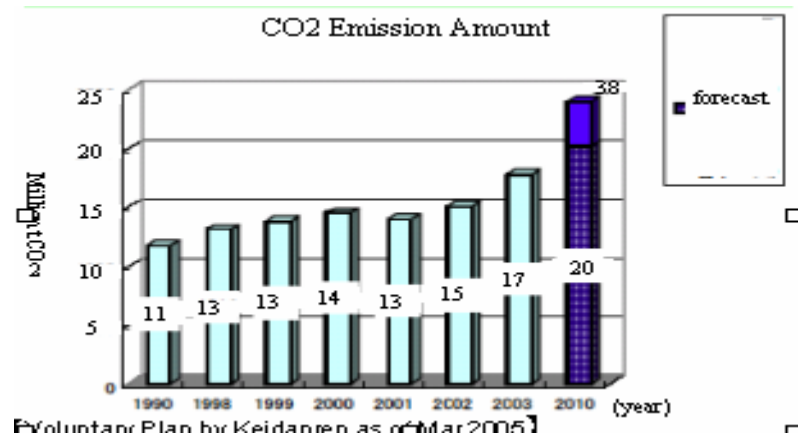
【Voluntary Plan by Keidanren as of Mar 2005】

- **Goal: 3% reduction from base year 1990 / energy consumption unit for production**
- **Attained 4.1% reduction in 2003**
- **Current emission amount: 21% decrease from 1990.**

- **Research concluded with a leading company, which invests in JGRF (USD 1 mil).**
- **Cement industry emits 0.8t Co2 per 1 ton cement production**
- **In order to prepare for future increase in production, the company invested in JGRF. Currently not planning additional investments**
- **Cement industry tends to follow Steel industry's action**

## Electrics (4 Associations) 18 mil tons

- Level of needs : low-intermediate
- Needs varies by each company



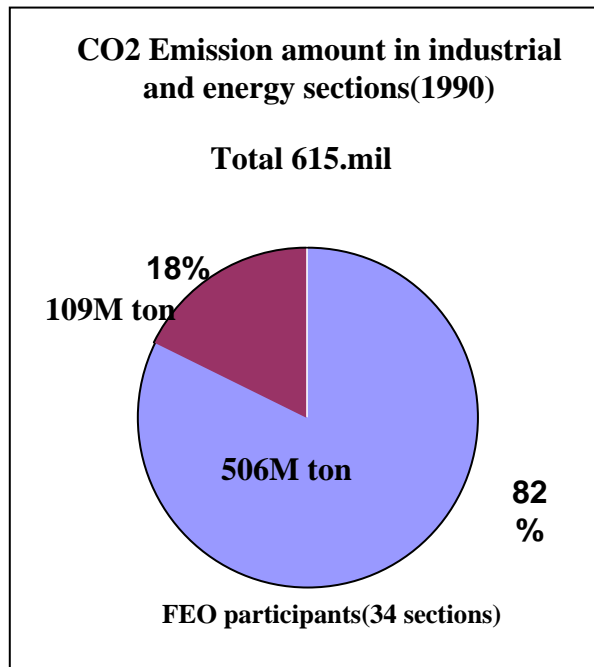
【Voluntary Plan by Keidanren as of Mar 2005】

- Initial goal of 25% reduction from the base year 1990 / production unit. However this purpose has become difficult to attain.

- Sony, Sharp, Toshiba, Fuji Xerox invest in JGRF etc;
- Purpose of investment in JGRF is the safest way to attain the voluntary goal;
- Ricoh was recognized by their activities towards environment. Also operates CDM projects;
- 10 companies invested and established JACO CDM, a validation, verification and certification institution. However, JACO's activities haven't progressed;
- Increase in emission amount is significant in this industry, but absolute amount is relatively small .

## Other Industries (not followed by Keidanren) 109 mil tons

- Level of needs : intermediate needs in growing companies
- Conscious to increase of emission in absolute term, and start of emission trading.



- Protective, insurance needs by growing industries, companies with sales increase
  - Aims to have flexibility in production plan
  - Preparation for future jump of emission price
  - Substitute for expensive emission reduction costs
- Example : a medical equipment maker
  - Has already attained its voluntary goal
  - Conscious to increase of emission in absolute term, due to production increase
  - Cheaper than emission reduction costs

## **Summary of demand ( All industries)      615 mil tons**

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- **Sum of high demand in 2010:  
Over 100 million tons**
  - **Power      90 million tons**
  - **Steel      6 million tons**
  - **Chemical 6 million tons**
- **Estimating roughly, demand in  
5 years of first commitment  
period: 500 million tons**
- **Government of Japan plans to  
purchase 100 million tons**

- **Power**
  - **Strong demand**
  - **30 million tons shortage even  
when atomic power plans operate  
as they are planned.**
- **Steel**
  - **High demand, though good cause  
to purchase CERs is needed**
- **Chemicals**
  - **Need to prepare for production  
increase**
- **Electrics**
  - **Depends on each company**
  - **Absolute term is relatively small**
- **Growing Companies**
  - **Protective, insurance purposes**
- **Emission reduction costs: USD100/ton**

## Summary of supply ( All Industries)

- **Investments in Carbon Funds**
  - **World Bank**
    - **PCF 36 million tons**
    - **CDCF 18 million tons**
    - **BioCF 7 million tons**
  - **Japanese investors portion of World Bank Carbon Funds: 10 million tons (estimated)**
  - **Japan GHG Reduction Fund (JGRF)**
    - **Total 20 million tons**
  - **GG-CAP (Natsource)**
    - **Japanese investors portion: 20 million tons**
- **TOTAL: 50 million tons**

- **Operation of CDM Projects**
  - **Currently, 19 projects have been approved by Government of Japan**
  - **Estimated total emission reduction : 18 million tons/ year**
  - **90 million tons in 5 years**

- **Emission reduction by CDM is merely an estimation**
- **No guarantee to be able to acquire the estimated amount by 2012**

## Summary of demand & supply (All Industries)

- **Demand (2008-2012)**
  - **All Industries 500 million tons**

- **Government 100 million tons**

- **Supply**
  - Funds and CDM: 140 million tons**
- **Shortage: 460 million tons**

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