

Energy efficiency CDM / JI projects - back to basics -

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- May, 2007

- **Outline of presentation**
 - **Where are we now on CDM?**
 - **Where are we now on energy consumption**
 - **Our initiative: FutureCDM**

■ About MRI

- Based in Tokyo, Japan, established 1970
- >700 Employees
- Expertise ranging from corporate consulting to policymaking: strong in applied scientific consulting: environmental consulting one of its major domains
- Climate related expertise: one of our corporate focus areas
 - Research dates back to late 1980s
 - Has participated in every COPs since COP3
 - JEMS (Japan Emission Management Simulation) in 2001-2
 - Carbon Offset Initiative since 1999.
 - Helped formulate Japanese public / private sector climate policy
 - Voluntary action plan assessment committee (Tadashi Aoyagi)

■ MRI: CDM related activities

■ Focus on frontier efforts

- AM0009 (associate gas recovery)
- World bank baseline study projects
- International (indirect) export of electricity (expansion of ACM0002)
- Carbon Capture and Storage (NM0168)
- Energy efficiency on generation (NM0203)
- Capacity building in frontier areas (Central Asia, Middle East)

■ Pioneering activities

- FutureCDM
- Carbon Offset Initiative (China, Latin America)
- Contribution to

■ Where are we now on CDM?

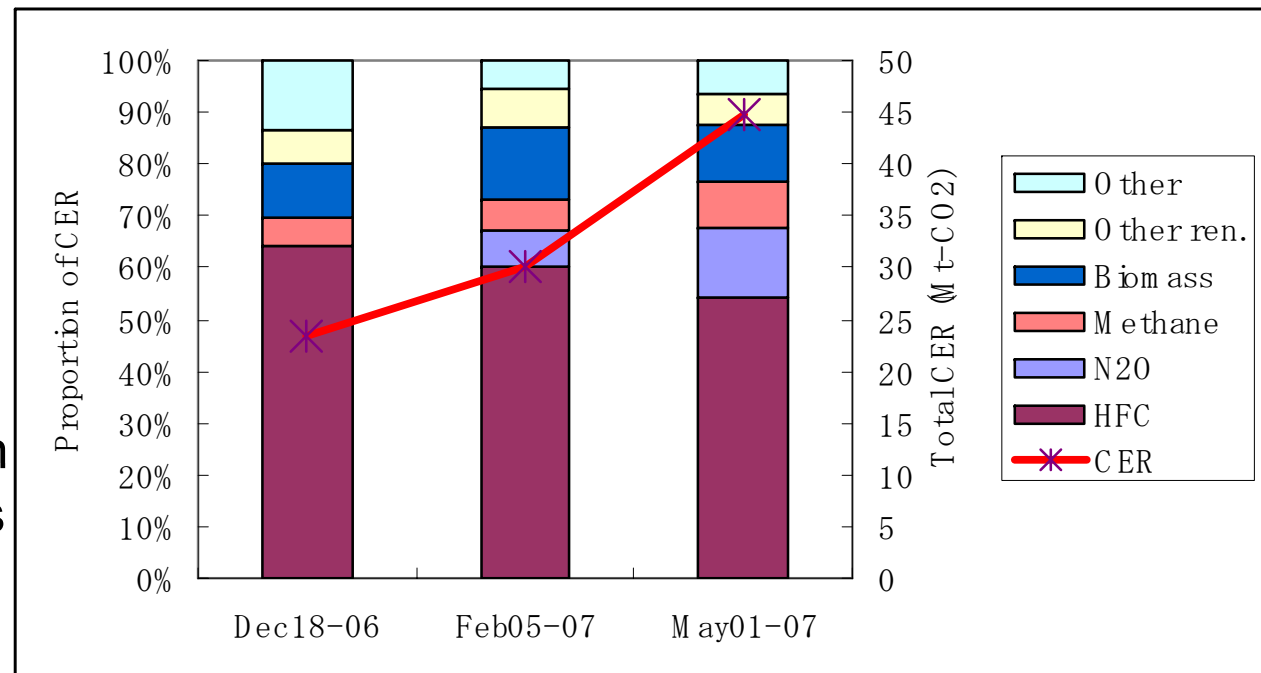
■ As of May, 2005

- Over 600 projects registered
- Over 180 requests for CERs resulting in 45 million t-CERs
- C. 60 methodologies (50 individual + 10 consolidated)

■ Overview of CERs issued

■ CERs issued

- Nearly 90% over 100,000t-CER request
- Over 50% from HFC projects
- CERs mostly in accord with PDD
- Significant proportion of registered projects have not requested CERs
 - Various reasons



■ Trends

■ If we see by project numbers...

- Evenly split between large and small projects
- Energy efficiency projects have a large number
- Equal split of countries

■ If we see by CERs issued...

- Overwhelming majority of HFC projects (and still more to come)
- Energy efficiency projects occupy less than 10% of total CERs
- CERs concentrated in countries where large-scale projects can be identified
- Trend will continue (with nitric acid N₂O projects, PFC/SF₆ projects)

■ Until 2012

■ Present trends are likely to continue... in terms of CER

- 5 new HFC recovery projects (total CER of 37 million t-CO₂/yr)
- Some new AdOH-N₂O recovery projects (several million t-CO₂/yr per project)
- Many new HNO₃-N₂O recovery projects (several 000,000t-CO₂.yr per projects, three new methodologies)

■ However, present trends are likely to continue... in terms of GHG emissions

- Considerable rise in energy consumption
- Deforestation for fuelwoods

■ Potential not utilized

■ “Traditional” areas

- Energy efficiency
 - Upgrade of power plants (w/o fuel switch)
 - Transmission and distribution
 - Use of efficient energy consumption equipment

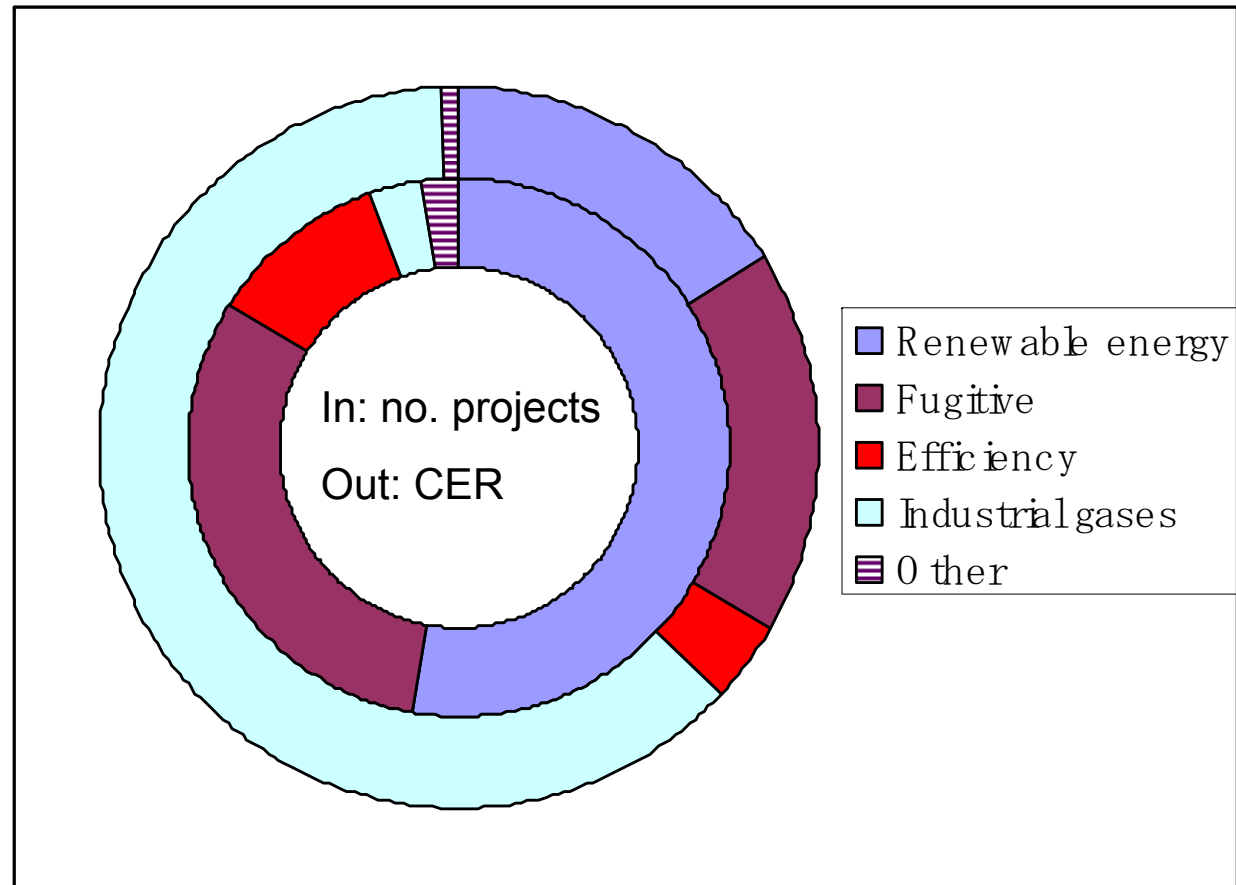
■ “New” areas

- Carbon capture and storage
- Prevention of deforestation
- Agriculture

■ Further work is due in the “traditional” areas

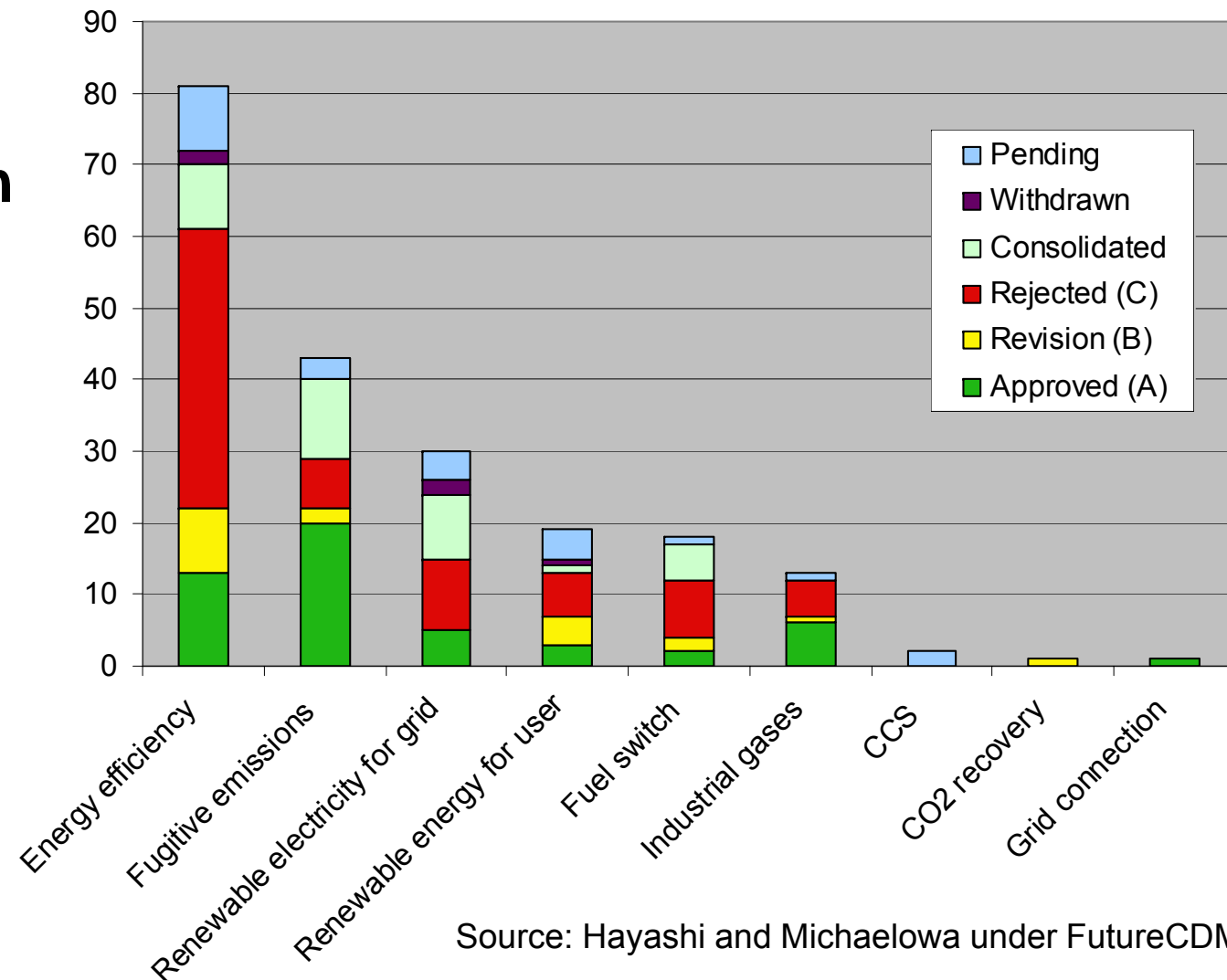
- Recommendation of COP10 (EE, district heating, transport)

- Energy efficiency
- 10% of projects, but 3% of CERs



■ Energy efficiency: methodologies

■ Many submissions, but high rate of rejection



Source: Hayashi and Michaelowa under FutureCDM

- **Energy efficiency – status of projects**
 - **Anticipated projects are just not happening**
 - Lack of capacity still exists
 - “Being crowded out” and “missing the train”

- **Additionality: the new and old question**
 - Interpretation between COP, EB and MP
 - (apparent profitability is not everything)
 - Risk of investment, lack of capacity
 - Financial risk
 - Optimal use of investment (more profitable options exist)
 - ESCOs, most country number less than 100, respectively less than 1000t-CER

■ FutureCDM initiative

■ Challenges

- Focus on energy efficiency
- Cooperation between “structural” experts and “sectoral” experts
- From the process-specific to the generic
- Cooperative effort under the sponsorship of Ministry of Economy, Trade and Industry (METI), Japan
- Organized by Mitsubishi Research Institute (MRI), support by CRIEPI
- Proposals by MRI., DSL Energy (India), Perspectives, Ecofys, LBNL, Pelangi

■ Areas

- Common baseline / bundling: ESCO (PMV), Cement, Chillers
- Large scale methodologies: Industrial boilers, Supercritical power plants)
- Transport
- Research in Programmatic CDM
- Other (awareness-raising workshops at COP/MOP1 and COP/MOP2)

■ FutureCDM initiative: Outline of proposed methodologies

■ ESCO (PMV)

- Bases monitoring on the parameters routinely obtained by Performance Measuring and Verification contract
- Focus on water pumping and lighting
- Reduction of grid electricity consumption
- Bases on the difference between the actual and rated voltage value

■ Cement

- An integrated approach on historical baselines
- Combines process, efficiency, and energy-related emission reductions (ACM0003, ACM0005, AM0024, AM0033, AM0040)
- Accounts for emission reductions in excess of projected baseline emissions

■ Chillers

- Establishment of baseline through statistical analysis of chillers currently installed (COP according to load) to establish a common baseline, which serves as a benchmark.

■ FutureCDM

■ Large scale projects

■ Ultrasupercritical generation

- Focus on (infrequently-used) Marrakech 48c on top 20%, efficiency and the load factor(of all similar plants over 100MW), to be compared with the most efficient subcritical PP.
- Electricity generated by the project in excess is expected to substitute the grid

■ Boiler replacement

- Division of boiler by load class (max. possible longterm load), for the purpose of obtaining specific fuel consumption according to ASME / DIN
- Generation in excess of baseline capacity is set at 100%

■ FutureCDM initiative: Outline of proposed methodologies

- **Transport: proposal as simplified SSC**
 - Bus rapid transit
 - Method 1: Baseline emission based on surveys, though existing survey is usable (through combination of passenger-based data)
 - Method 2: Allows for cases when monitoring of embarking / disembarking cannot be monitored (assumes average travel distance based on station-based data)
 - Clean energy vehicle
 - Baseline emission based on travel distance
 - Baseline efficiency based on a) catalogue spec, or b) control group, or c) top 20% (48c)
 - Applicable to both freight and passenger transport.
- Features: a cascade of approaches to enable
- **Further projects:**
 - Reduction of transmission losses
 - Electric motors

■ Issues

■ Methodological issues raised

- Approximation of parameters facilitates ease of monitoring...but how much should we sacrifice precision?
- Focus on subsystems facilitates precision... but will global system still remain optimal?
- Constant baseline is simple... but should endogenous development or, freeriders be factored in?
- Equipment (lifetime of equipment, treatment of old equipments)
- Causality of reduction... can it be precisely obtained in complex systems?

■ Programmatic issues

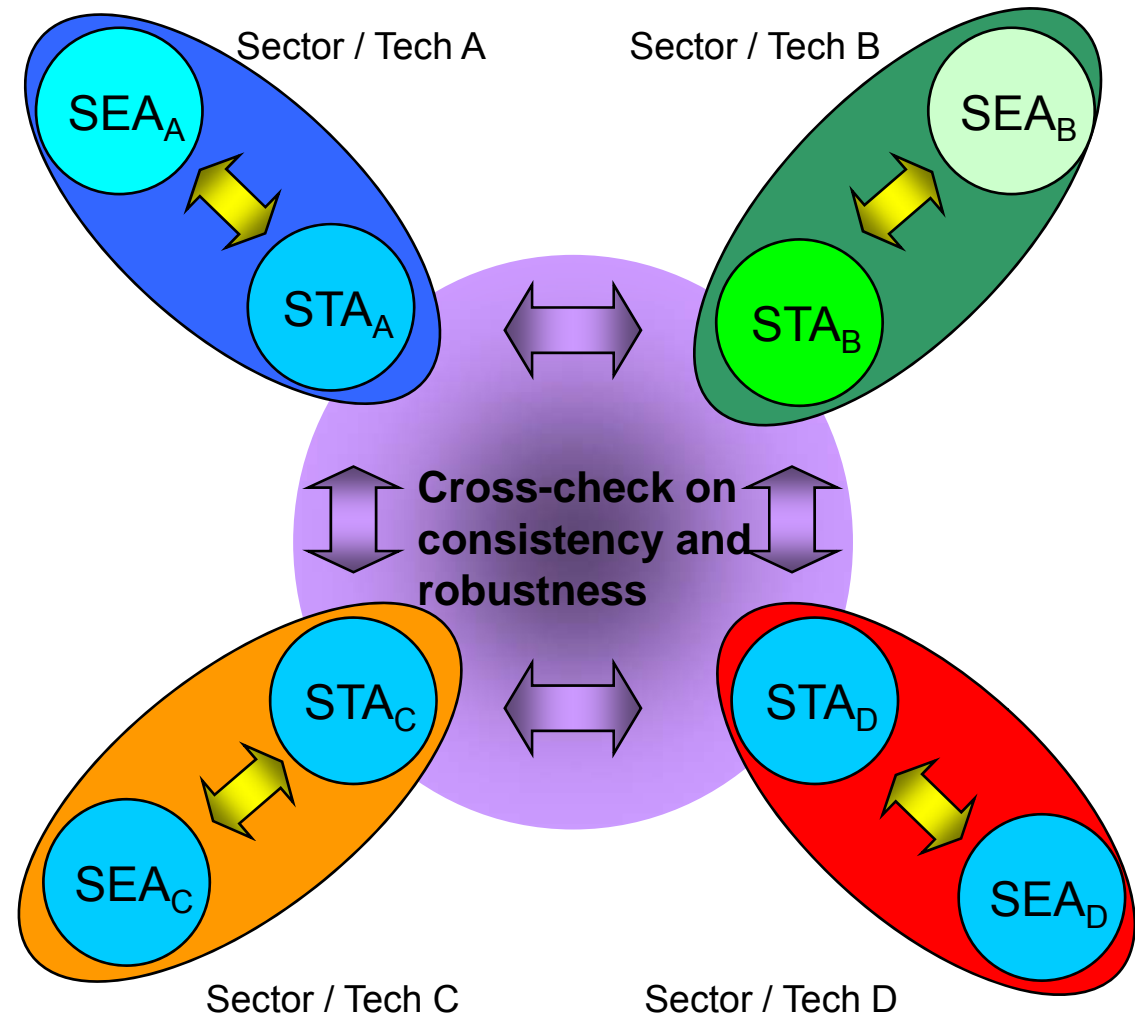
- Decision of programmatic CDM in EB still open to interpretation (programme or bundling?)
- NM0150, NM0157rev, NM0159

■ Cooperation of structural and sectoral experts

■ Anticipated cooperation

■ “Concentric” cooperation of structural experts

■ “Radial” cooperation of structural and sectoral experts



Thank you

(with gratitude to METI and the government of Japan)

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