



Keio-Tsinghua



CDM Market Overview

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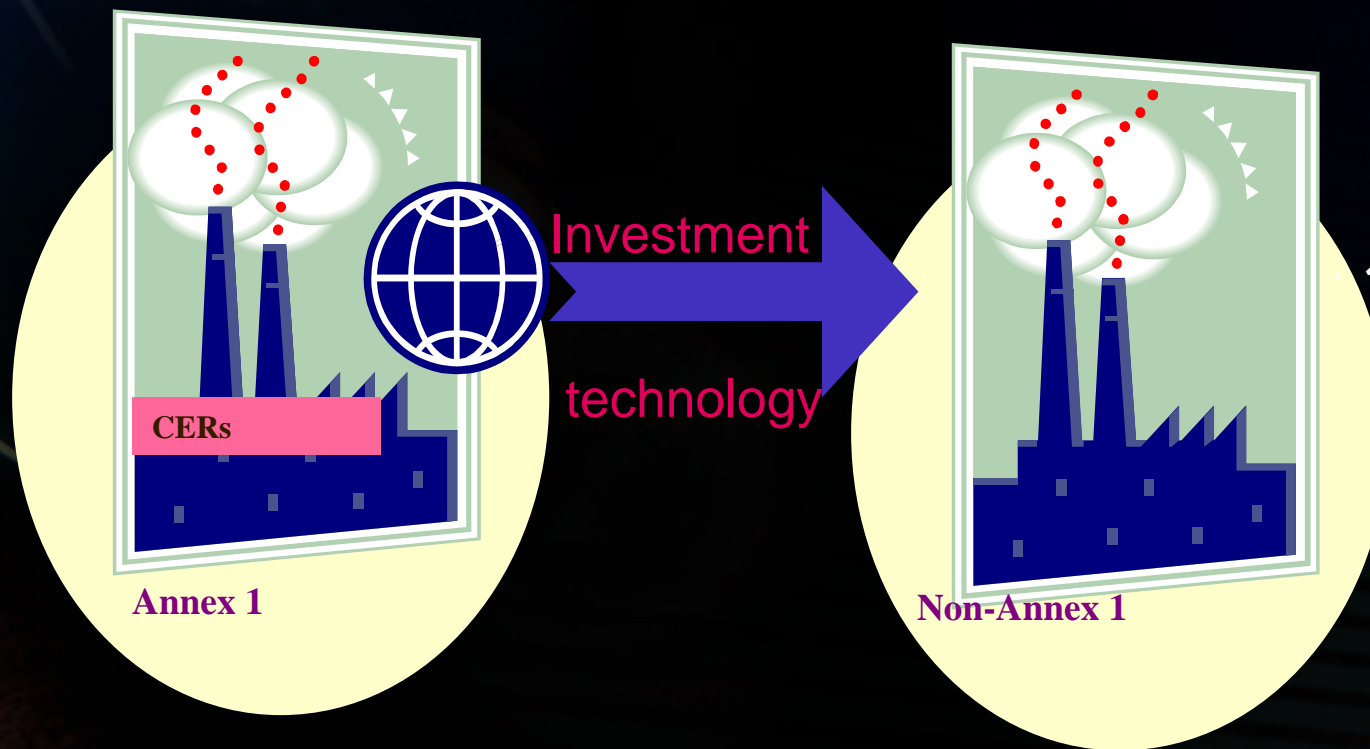


Background



Kyoto Mechanisms

Clean Development Mechanism, CDM



◆ certified emission reductions , CER



CDM Demand & Supply

Key insights

- Planned CER procurement -2012 \approx 100 MtCO₂e; will likely increase Preferred project type: Renewables
- Price preference: indicatively 3-6.5 USD/tCO₂e (limited data); some willing to pay more for “quality CERs”
- Investment preference: neighbouring countries; large, well-known countries
- Internal Annex I resource competition CDM vs JI?

GHG Market Is Evolving

Kyoto Protocol:

Drives Demand & System Development

Australia:

US\$208 million in government tenders for GHG reductions

United Kingdom:

200-250 Trades under UK Emissions Trading Scheme

Canada:

Ratified Kyoto Protocol; Trading system under development; Provincial GHG requirements implemented

Denmark:

GHG cap in power sector, 2001-2003; Danish and UK allowances swapped

Japan:

Ratified Kyoto Protocol; GHG trading simulations in 2002; implementation of domestic measures

Netherlands:

Purchased \$56 million in GHG reductions; 2 more tenders issued for JI and CDM-like reductions

Other EU Countries:

Planning to implement domestic trading programs in 2005 in line with EU plan

European Union:

Ratified Kyoto Protocol; GHG trading system operational in 2005



CDM's part of the cake

Country	Total planned CER purchase, 1st Kyoto commitment period (2008-12)
Austria	20-30 MtCO ₂ e (JI&CDM)
Canada	50 MtCO ₂ e (CDM, JI and ET)
Denmark	6,25MtCO ₂ e, but ≈ € 120 million to be invested in JI/CDM -2007
EU	Unclear (depends on linking proposal and possible procurement initiative)
Italy	At least 60MtCO ₂ e (JI&CDM)
Japan	At least 95MtCO ₂ e (JI&CDM)
Netherlands	67MtCO ₂ e

Payment and price preferences

Country	Preferred price range and payment terms
Austria	Market price. Upfront payment possible.
Denmark	Price preferences not decided. Max price for domestic reductions: 18USD. Payment on delivery. Tender information not yet made public.
Finland	About €3 (for the CDM projects in its portfolio). Upfront payment possible
Germany	About €5. Payment terms currently discussed.
Japan	None, but detailed examination of project agreements
Netherlands	6.7 USD is max price. May pay more for renewable energy projects. Payment on CER issuance.
Sweden	5 USD. May pay more for sustainable projects. Upfront payment possible.

Project types preferences

Country	Preferred project types
Austria	Energy efficiency, renewable energy. Not sinks.
Canada	No preferences so far. Companies decide.
Denmark	Renewable energy, fuel switch, cogeneration.
EU	Current status of "linking proposal": sinks and large hydro in danger.
Italy	Renewables (biomass), energy efficiency, landfill gas for power.
Japan	No official policy but emphasis on Japanese new renewables/energy efficiency technology.
Netherlands	Renewable energy, biomass, landfill gas; no sinks in CERUPT tender.

MoUs

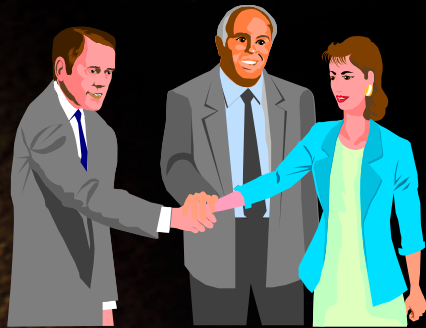
Country	MoUs – countries (MtCO ₂ e)
Austria	Discussions with Bosnia & Herzegovina
Canada	Costa Rica, Colombia, Chile, Nicaragua, Tunisia, South Korea
Denmark	Malaysia; discussions with China, South Africa
Finland	China (general agreement), Costa Rica, El Salvador, Nicaragua, India
France	Colombia and Morocco
Germany	None (capacity building initiatives: East Asia incl. India, Indonesia, China; Chile; Peru; Colombia)
Italy	Algeria, China, Cuba, Cyprus, Egypt, El Salvador, Israel, Moldavia, Morocco, Serbia
Japan	None (close co-operation with ASEAN, China)
Netherlands	Colombia (25 MtCO ₂ e), Costa Rica (30 MtCO ₂ e), El Salvador (5 MtCO ₂ e), Panama (20 MtCO ₂ e), Uruguay (5 MtCO ₂ e), Bolivia (10 MtCO ₂ e), Nicaragua (5 MtCO ₂ e), Guatemala, Honduras. SE Asia (Indonesia, Philippines)?

Characteristics of expected CDM Market* Asia

- Volume : 100 - 200
Mt C year
- Export revenues: 1500 - 5000
M US \$
- Profit : 500 - 2500 M
US \$
- Expected beneficiaries
 - China, India
 - Indonesia, Philippines, Bangladesh and Pakistan
- * Without USA



Project types & Current buyers of CERs





Project areas

1. Renewable energy
 - (1) Hydropower
 - (2) Wind energy
 - (3) Solar energy
 - (4) Biomass energy
2. Energy efficiency
 - (1) Industrial process
 - (2) Non-energy consumer
 - (3) Energy substitution
 - (4) Others
3. Other areas
 - (1) Waste Management
 - (2) Fuel Switching
 - (3) Fugitive

Project types

System

Scope

Small-scale/Non-grid

- Solar home systems
- Small wind power systems & hybrid solar/wind/diesel systems that have no associated distribution network
- Pico- and micro-hydropower

Medium-scale/Isolated-grid/Grid-connected

- Mini-hydropower
- Biomass gasifiers & cogeneration systems
- Wind/diesel/solar hybrids & other medium-scale renewable energy systems in the some range

Large-scale/Grid-connected

- All (renewable) energy systems with capacity greater than 15 MW

The Way of participating in the GHG ER plan

- Direct Way : The government or Companies directly invest and operate one or more than one project which satisfies the CDM
- Indirect Way : The government or companies invest into the fund and support the CDM or JI ER plans indirectly

Current Main buyers of CERs

- Multilateral Funds Government Funds
 - Prototype Carbon Fund (US\$ 180 million)
 - Community Development Carbon Fund (US\$ 100 million)
 - World Bank Bio-Carbon Fund (US\$ 100 million)
- Government Funds
 - Dutch Government C-ERUPT Program
 - Finnish CDM/JI Pilot Program (€20 million)
 - Sweden International Climate Investment Program – CDM
 - Austria JI/CDM Procurement Program
 - Italian CDM fund

Current Main buyers of CERs

➤ Through Commercial/Development Banks


- Rabo Bank (Dutch Government)
- Japanese Bank of Industrial Cooperation (Japan CDM Fund - 4 billion yen)
- Development Bank of Japan (Japan CDM Fund - 3 billion yen)
- German KfW Bank group (10 million €)

➤ Through Multilateral Institutions

- World Bank (The Netherlands Clean Development Facility - €70 million)
- IFC (IFC-Netherlands Carbon Facility - €44 million)

➤ Through Bilateral Transactions (signed MOUs)

- Canadian Government with Colombia and Chile
- Dutch Government with Bolivia, Colombia, Uruguay and Ecuador
- Danish CDM Portfolio

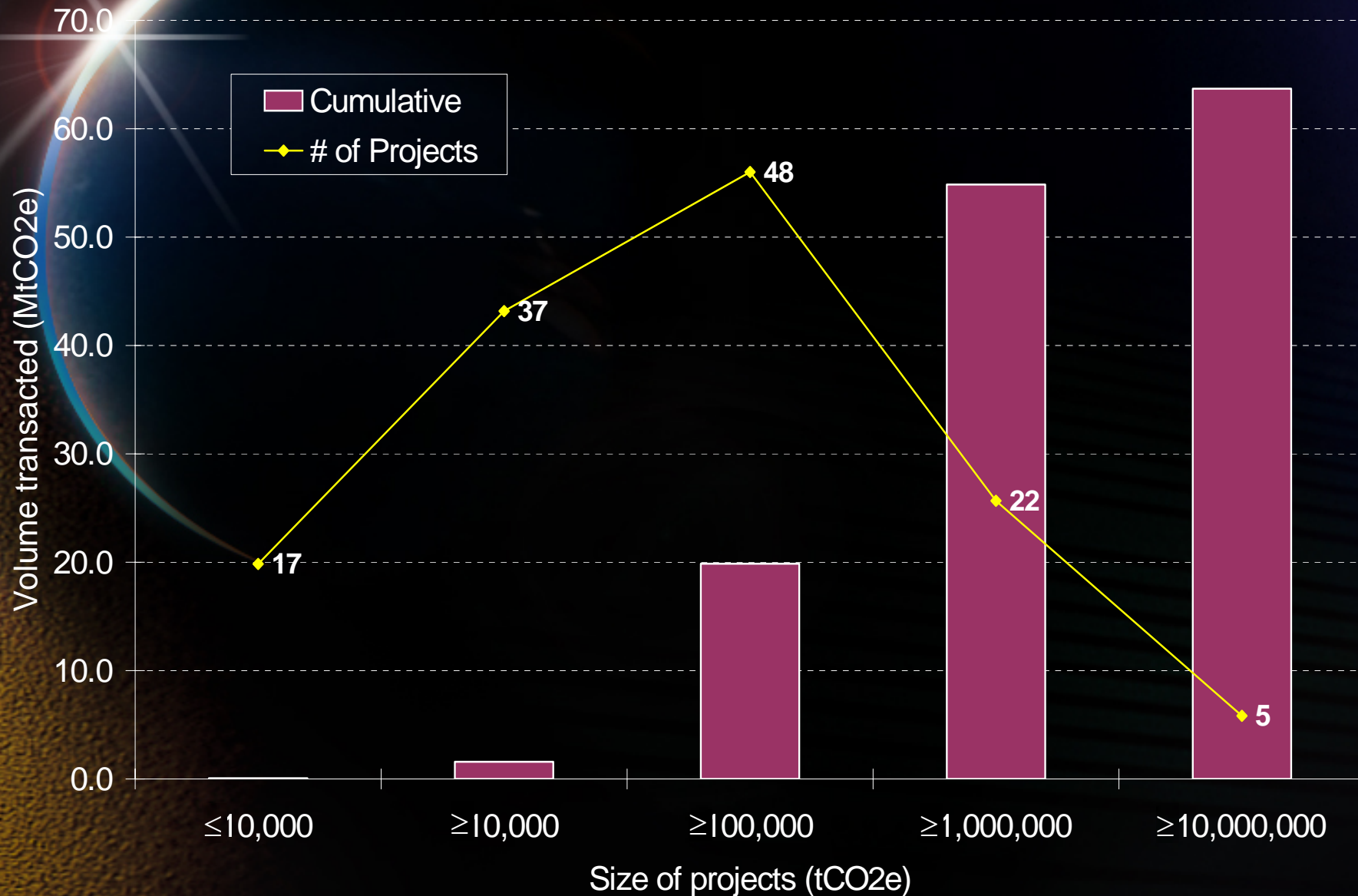


Why should companies
voluntarily participate in
CDM markets?

Corporate Reasons for Emission Trading

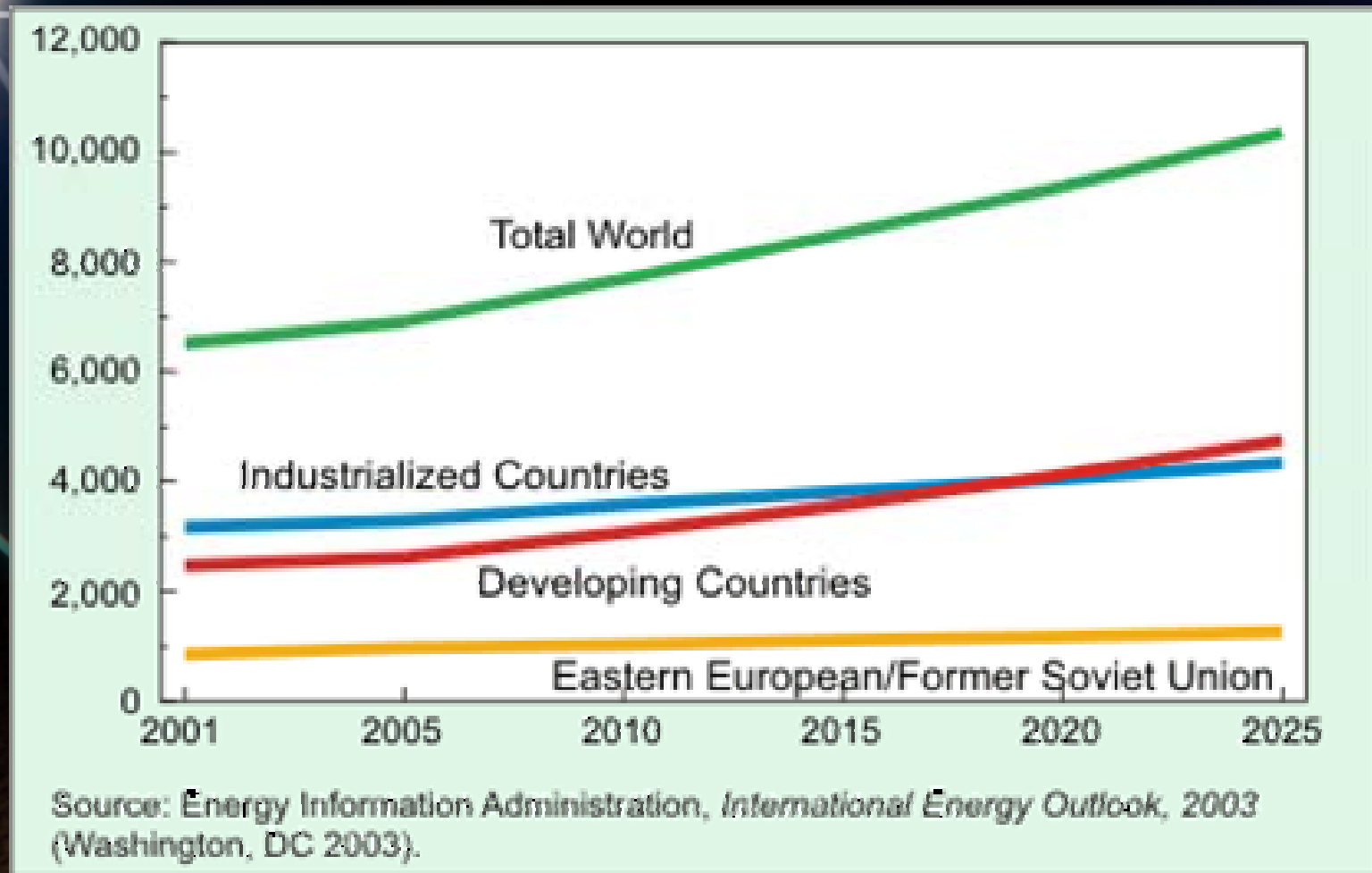
- ✦ Strengthens the link between business processes and environmental practices... the cost of pollution and the financial rewards resulting from abatement
- ✦ Engages market's ability to efficiently allocate resources
- ✦ Extracts the unanticipated

Distribution of projects by size



Source: Authors' own calculation, based on transaction database assembled with Natsource, Co2e.com and PointCarbon

Forecasted global carbon emissions






Current price of CERs




Current price of CERs


PCF

 US\$3.0-3.5

 premium of US\$0.5 per ton of CO₂e for projects with developmental components (Colombia Wind Farm)


CERUPT

 renewable energy – €5.5


 biomass energy - €4.4

 energy efficiency - €4.4

 fuel switch and methane - €3.3

 average price - €4.73

Finnish Government⁴

 small-scale - €2.47-3.2

Why are prices low?

- Considerable supply of PINs to few, dominant buyers that may co-ordinate actions
- Demand for potential CERs limited due to uncertainty and risk
 - Will CDM host country approve?
 - Will host country impose restrictions making project economically unviable?
 - Will CDM EB approve methodology & project?
 - Will we fail to implement the project?
- Dominant CDM buyers have probably had important influence on carbon prices so far

CDM project risks

- ✦ Country/political risk :
 - ✦ Sponsor risk
 - ✦ Technical risk
 - ✦ Environmental risk
 - ✦ Fuel/feedstock risk
 - ✦ Financial/legal risk
 - ✦ Construction risk
 - ✦ Operation risk

- ✦ New risks associated with:
 - ✦ project preparation
 - ✦ project approval
 - ✦ baseline & MVP validation
 - ✦ monitoring & verification of certified emissions
- ✦ Additional risks
 - ✦ lack of firm market, price, sales & trade mechanisms/history for CERs
 - ✦ unfamiliarity of CDM by financiers who would need to count CERs as part of finance plan

Future price drivers: Scenarios

Upward:

- First CERs issued (only Kyoto risk left for most buyers)
- Host country and CDM EB approval standardised
- CER price stratification
- Early CER supply limited due to barriers
 - Accumulated 3-3.5 MtCO₂e to enter the market within 2005
- Linking Directive approved
 - Possible to convert CERs and ERUs to EU allowance units
 - No significant barriers to CER supply
- EU ETS Allocation Plans concluded; many actors short
- Russian ratification, Kyoto entry into force

Downward:

- CDM awareness → no. of low-cost projects ↑
- Sinks modalities and guidelines clarified
- Host country skepticism towards pure mitigation projects
→ complicated approval processes
- Price competition AAUs v CERs



Significant contributions to climate change mitigation from China

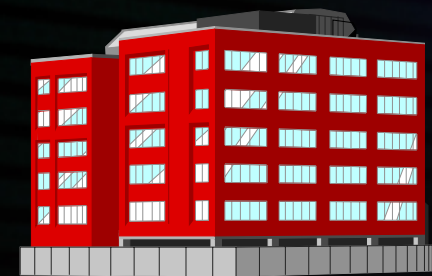
Dramatic improvement in carbon intensity

Emissions growth rate now just half its economic growth rate

Most significant, but unwanted ,huge under consumption of energy

China's CDM Rules

**Interim Measures for Operation and Management of
Clean Development Mechanism Projects in China**



General Rules

- ✦ Priorities are energy efficiency improvement, development and utilization of new and renewable energy, as well as recovery and utilization of methane and coal bed methane

Admission Requirements

- ✦ Project developer shall be wholly China-owner or China-controlled enterprises.

Other detail

- ✦ Benefits from the transfer of CERs will be owned jointly by the Chinese Government and project developer, with allocation ratio to be determined by the Chinese Government. Before the determination, the benefits will be owned by project developer
- ✦ These rules take effect as of June 30, 2004

Problems

challenges

countermeasure

inspire:

Thank you

