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JBIC Finance for Energy Efficiency Investment

~ Over the Environment and Energy Constraint ~

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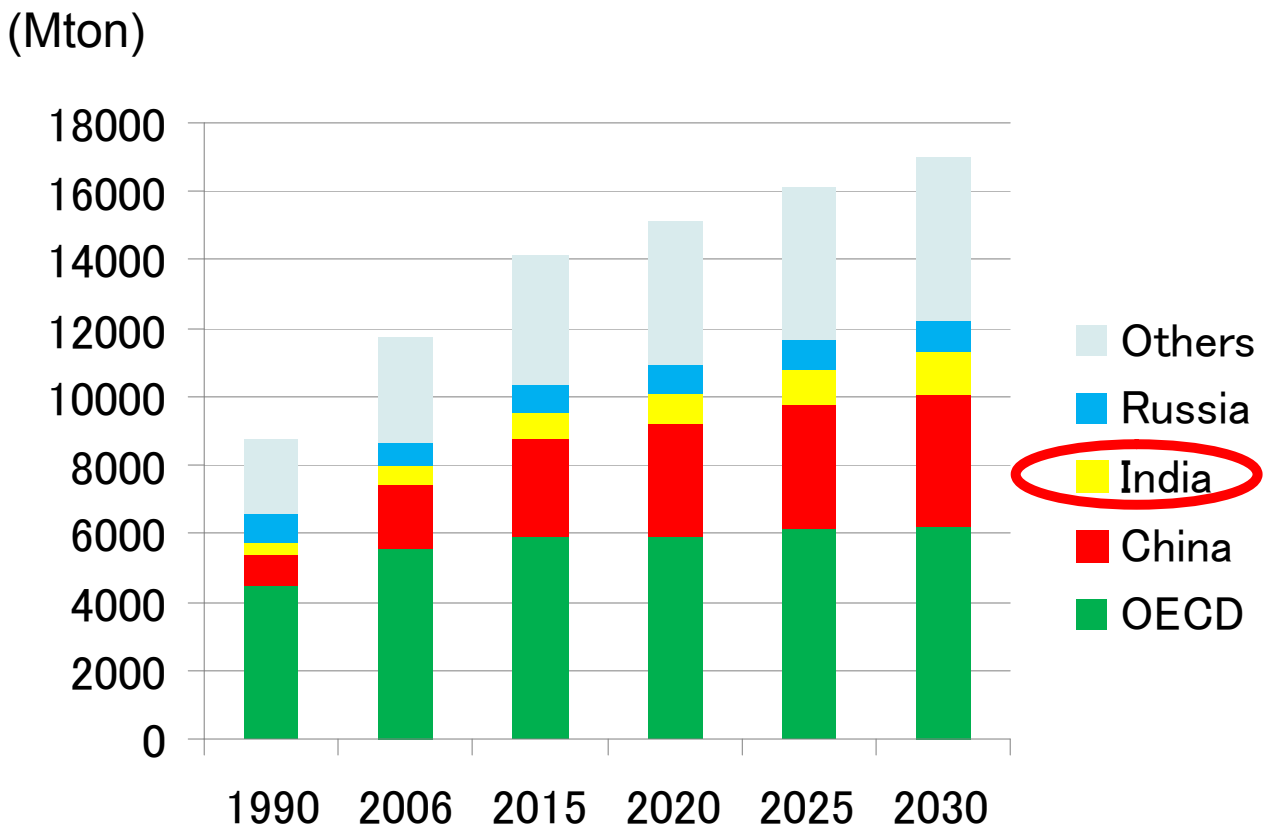
Copenhagen Accord

- Increase in global temperature below 2 degrees
- Emissions targets of Annex I Parties for 2020 are to be submitted by 31 January 2010.
- Nationally appropriate mitigation actions (NAMAs) by Non-Annex I Parties are to be communicated every two years. NAMAs seeking international support are to be recorded in a registry.
- Crucial role of REDD-plus
- Additional funding to developing countries:
  - USD 30 billion (2010-2012)
  - mobilizing USD 100 billion a year by 2020 (public & private, bilateral & Multilateral)
  - Copenhagen Green Climate Fund
- Technology Mechanism to accelerate technology development and transfer
- Assessment of the implementation of this Accord is to be completed by 2015.

出所：UNFCCC

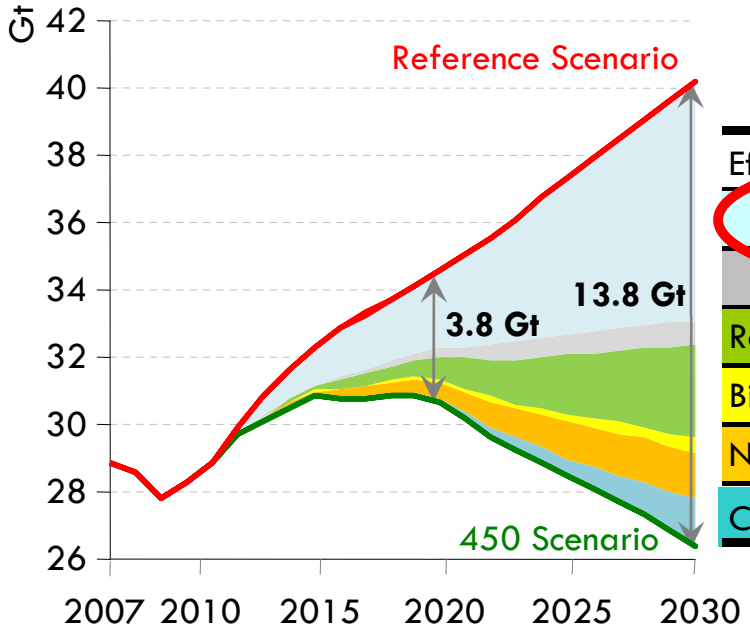
Where is business opportunities?

Growing Energy Demand



Sources：IEA, World Energy Outlook 2008

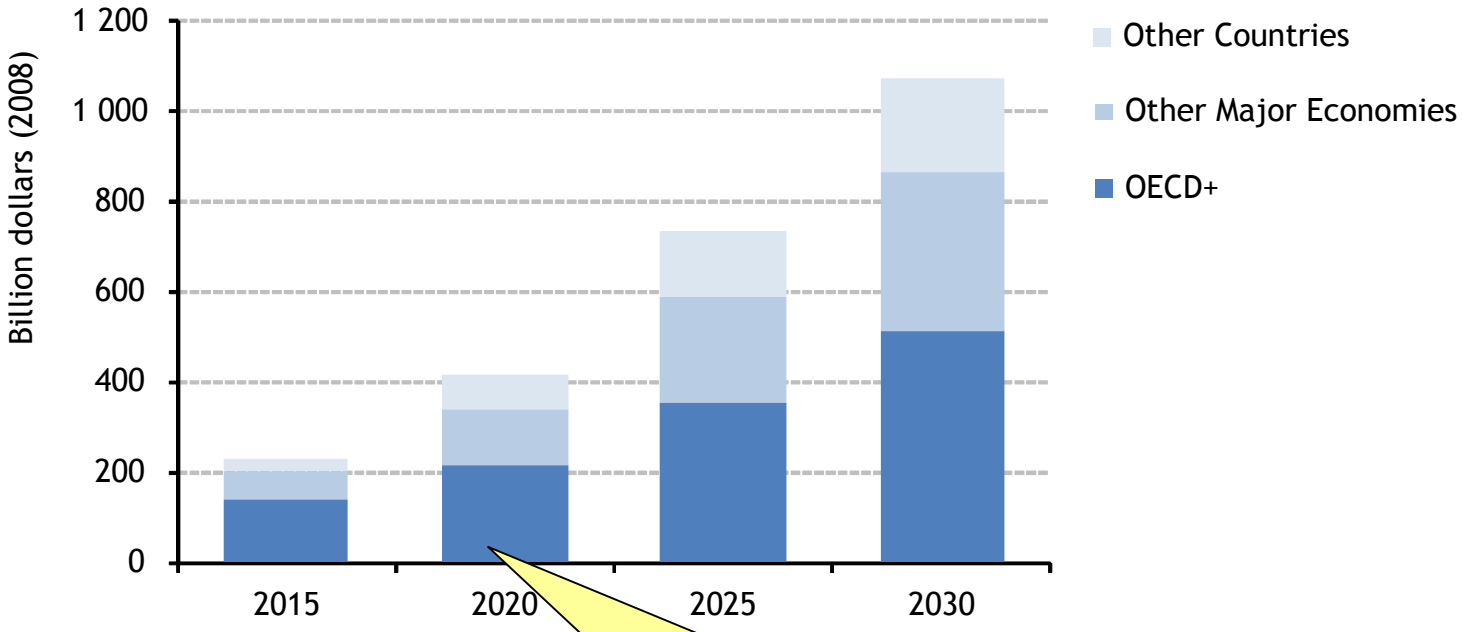
Opportunity for CO2 emission reduction



Share of abatement %	2020	2030
Efficiency	65	57
End-use	*59*	*52*
Power plants	*6*	*5*
Renewable	18	20
Biofuels	1	3
Nuclear	13	10
CCS	3	10

Source IEA WEO2009

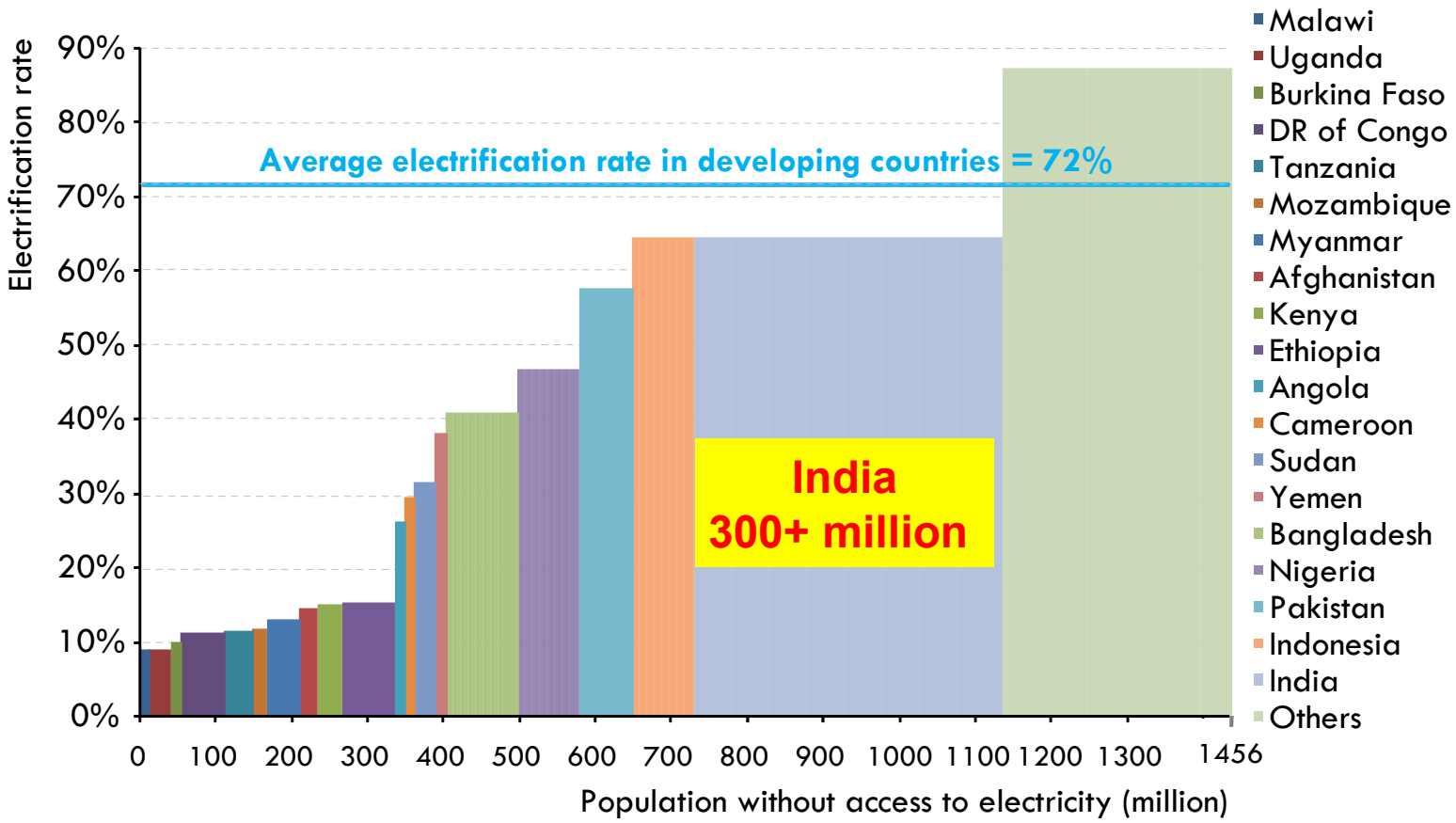
Investment demand for Climate Change Mitigation



USD 200 billion from developing countries and more than half are China and India

Source IEA WEO2009

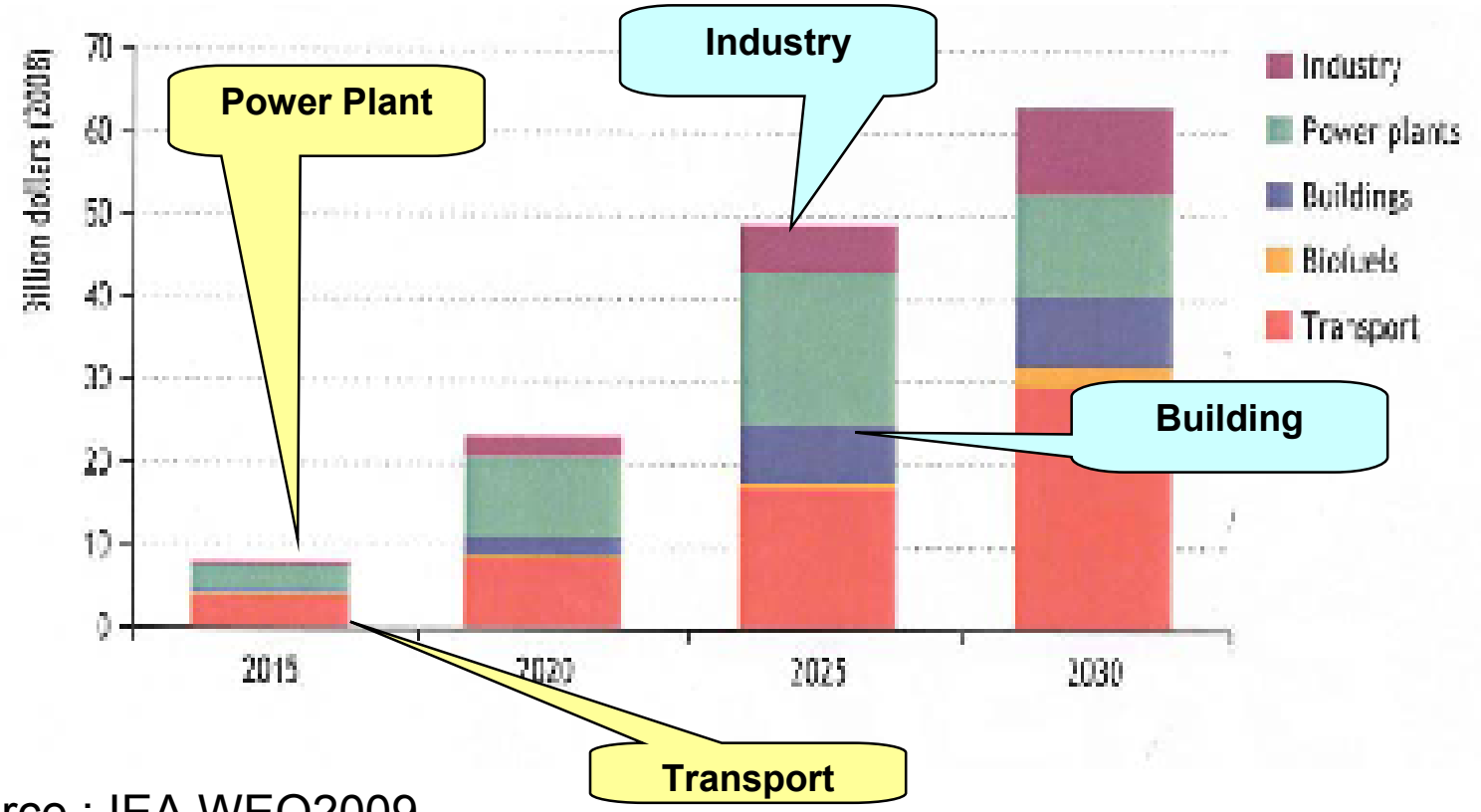
Without access to electricity



Source IEA WEO2009

Business Opportunities in India

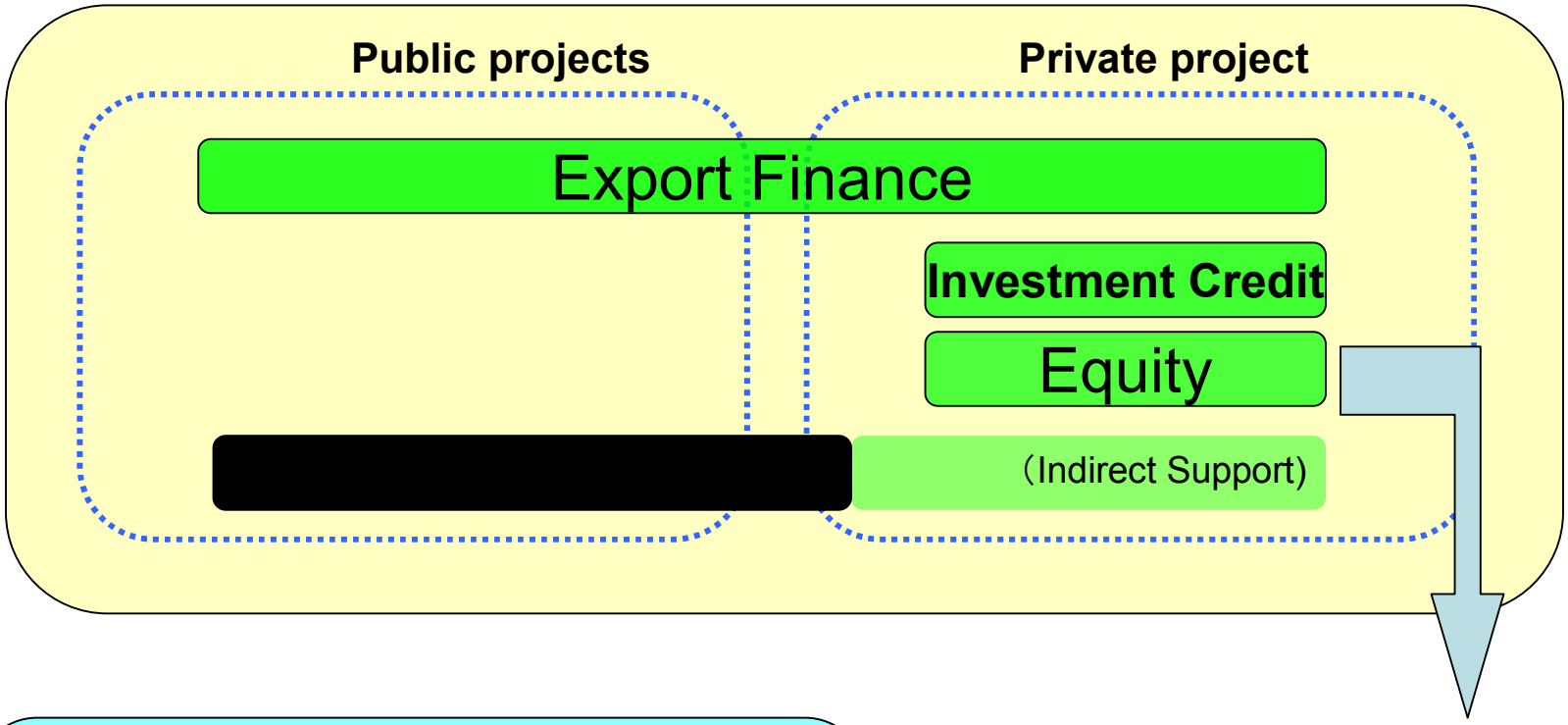
Expected investment in India



Source : IEA WEO2009

Finance of JBIC

Modality of JBIC's Finance



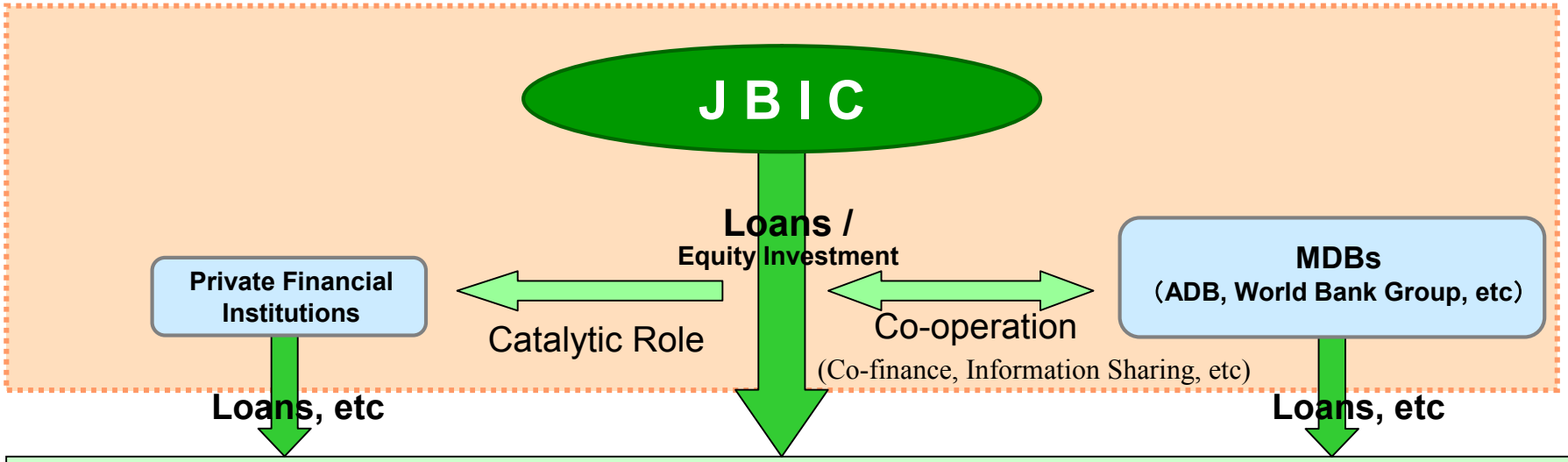
For Private project
- **Cash flow base finance**
- **Guaranteed**
- **Through Local FI**

PE type fund
Direct investment

"LIFE" (Leading Investment to Future Environment) Initiative by JBIC

●The LIFE will …
- ・support both public and private sectors,
- ・co-operate with Multilateral Development Banks (MDBs) and mobilize private finances.

●The JBIC's financial support under the Initiative will be around **5 Billion USD for the next 2 years.**



4 Main targeted sectors of the Initiative are ...

- ・**Clean Power Generation** (Solar, Geothermal, Wind Power, Clean Coal Power Plant, etc)
- ・**Energy Efficiency Improvement** (Upgrading of Existing Transmissions and Distributions, Modernization and Heat Recovery of Steel Furnaces and Cement Kilns, ESCO (Energy Service Company), etc.)
- ・**Water** (Water Purification and Supply, Sewage System, Wastewater Treatment, Desalination and Water Processing, etc)
- ・**Urban Transportation** (Modal Shift in Densely Populated Areas, etc)

Aims of LIFE

1 Mobilization of private fund

Demand is enormous.

Mobilize of private funding is inevitable

Limitation of public funding

2 Specification of commercially viable BAT

Diffusion of BAT

Establishment of global de fact standard

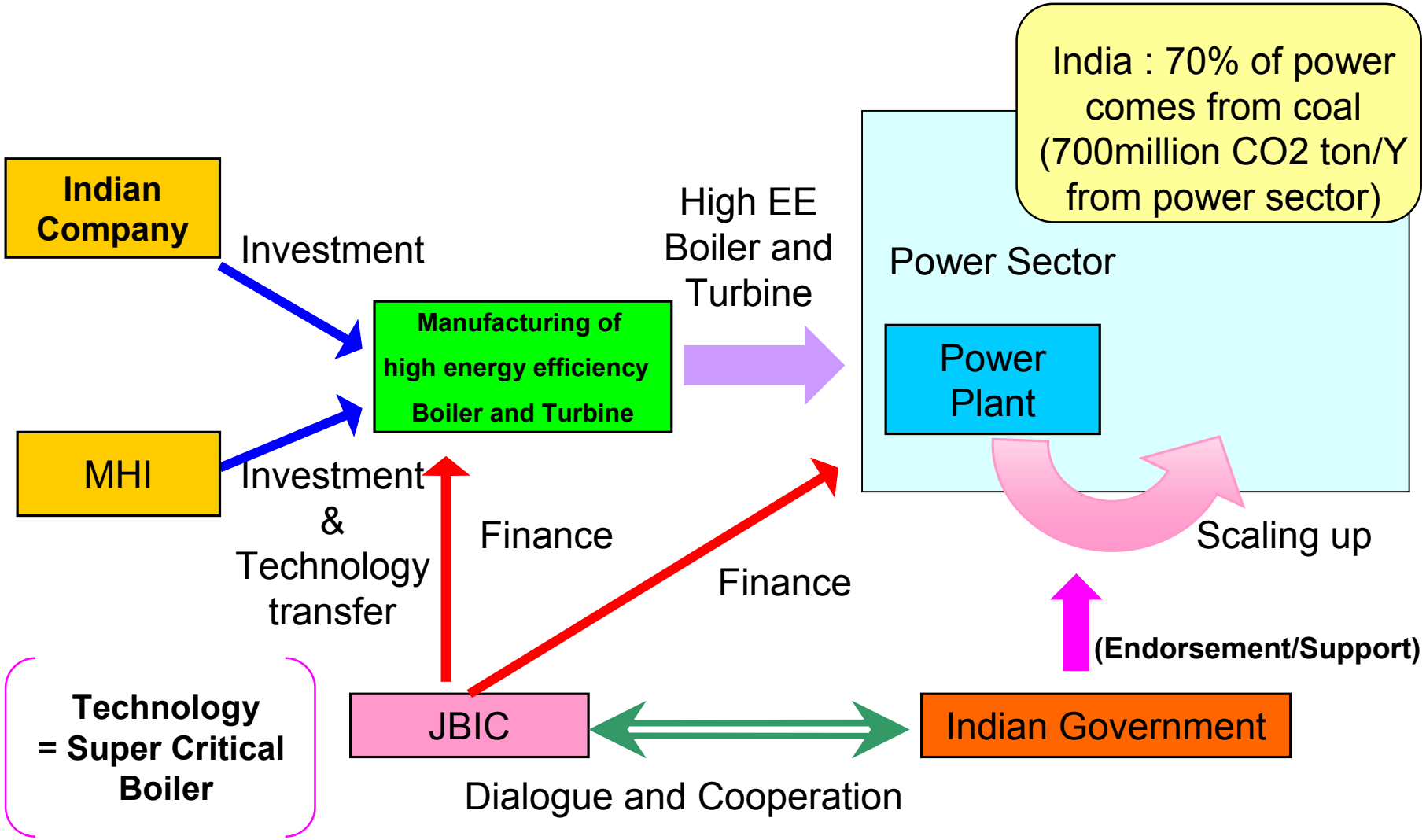
The first step of Environment Finance

LIFE

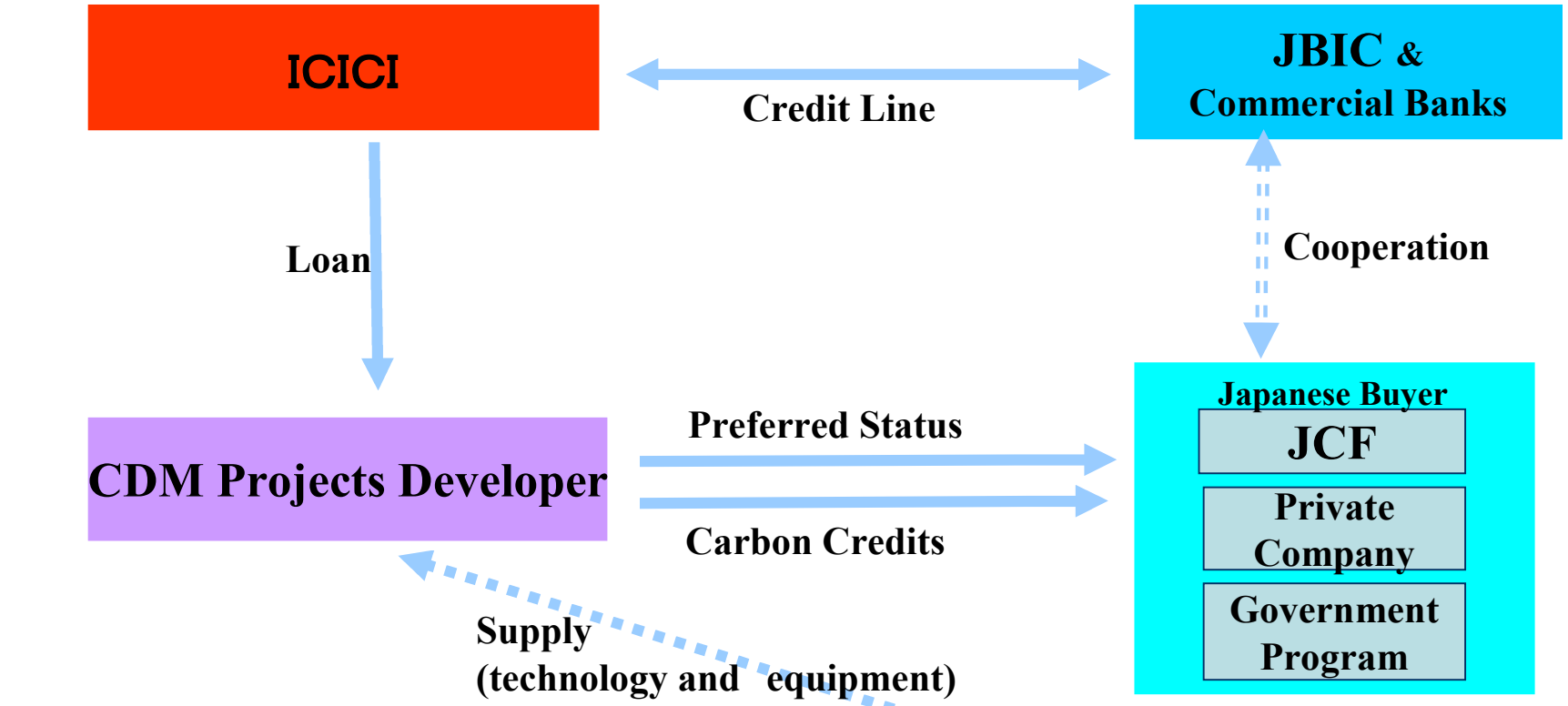
No.	Country	Project	Amount of Finance(million)	Date	Remarks
1	India	Production of Super Critical boiler and Turbine (MHI)	USD 153.7 m	July 2009	
2	UAE	IWPP Project	USD 1,111 m	October 2009	
3	India	Production of Super Critical boiler and Turbine (Toshiba)	USD 90m	October 2009	
4	Asia （General）	EE and Environment Fund	USD20m （Equity）	November 2009	Fund Total USD 300M
5	Asia (General)	Infrastructure Fund	USD 50 m （Equity)	December 2009	
6	Kazakhstan	Flare Gas Power Generation	USD 21 m	December 2009	

The 1st Project by LIFE

~ High EE Boiler supply project in India ~



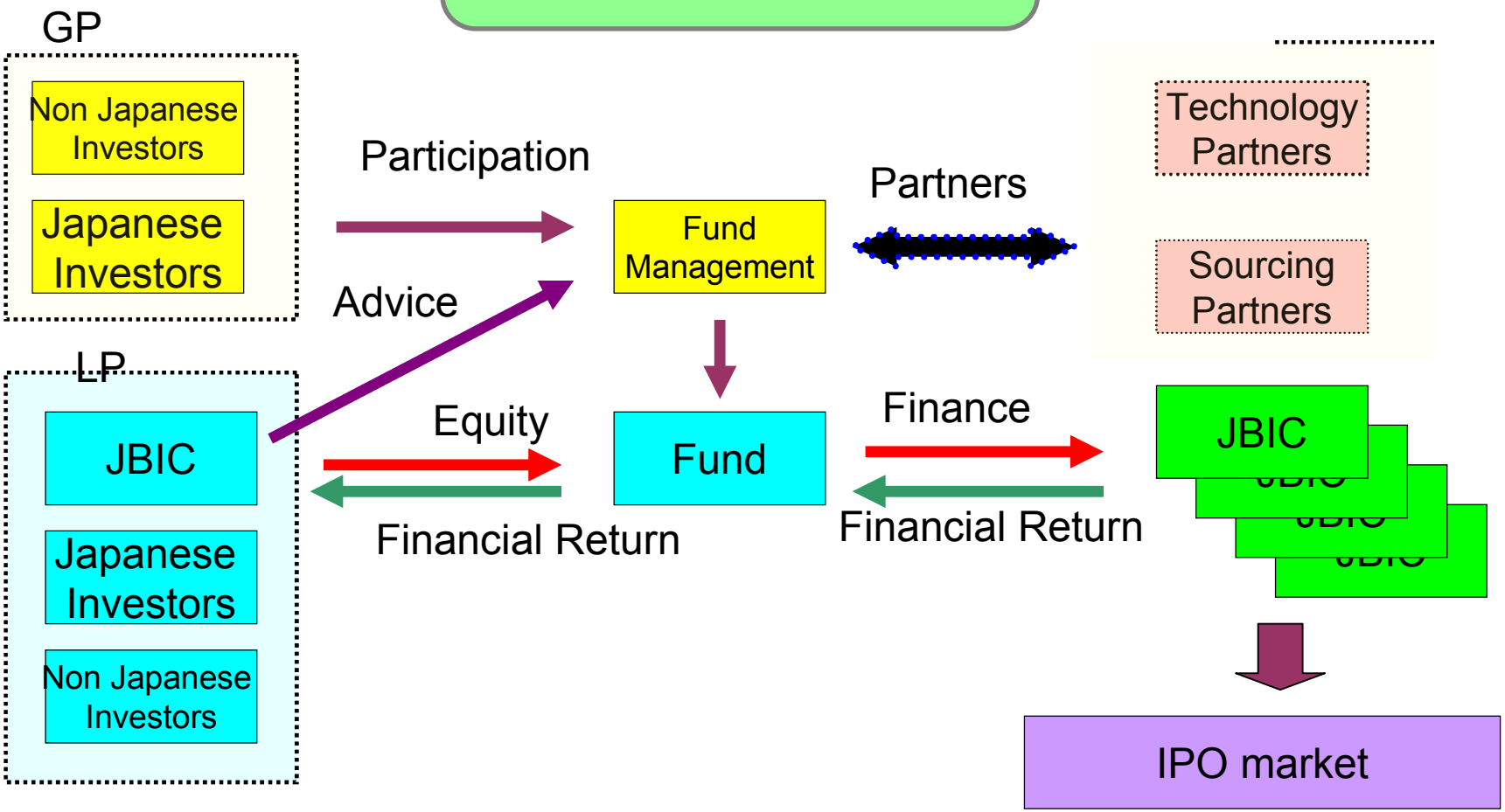
CDM Support Credit Line



JBIC extended Credits Line in many countries, including Asia and South America .

Typical Structure of Fund Approach of JBIC

Why Fund approach ?
・For small scale projects
・To use local network



Carbon Finance

Additional revenue source and market base incentive system

Growing market, USD 6 billion in 2008(primary market)

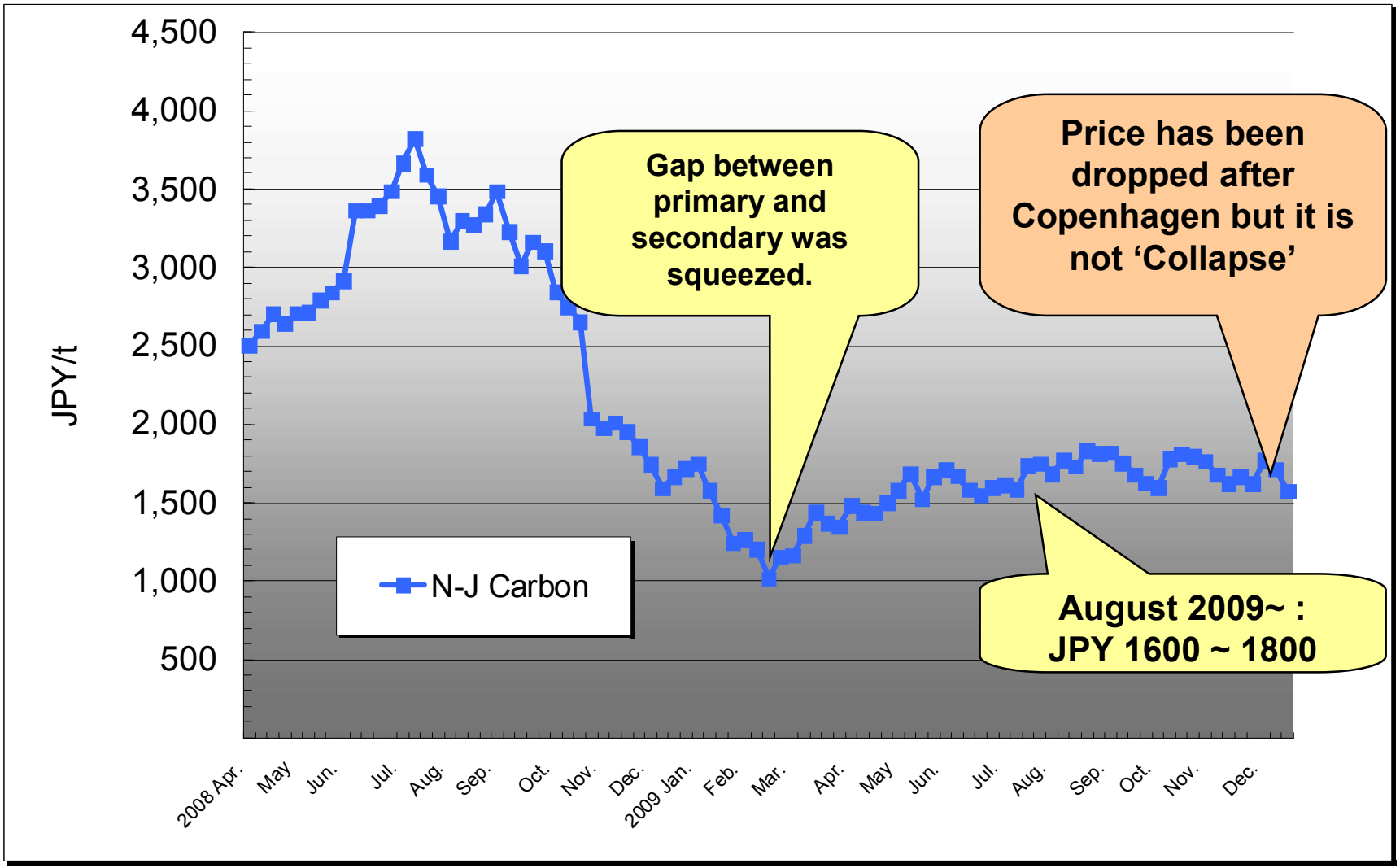
Limited contribution (May not cover all project cost)

Complicated and unpredictable process (CDM reform)

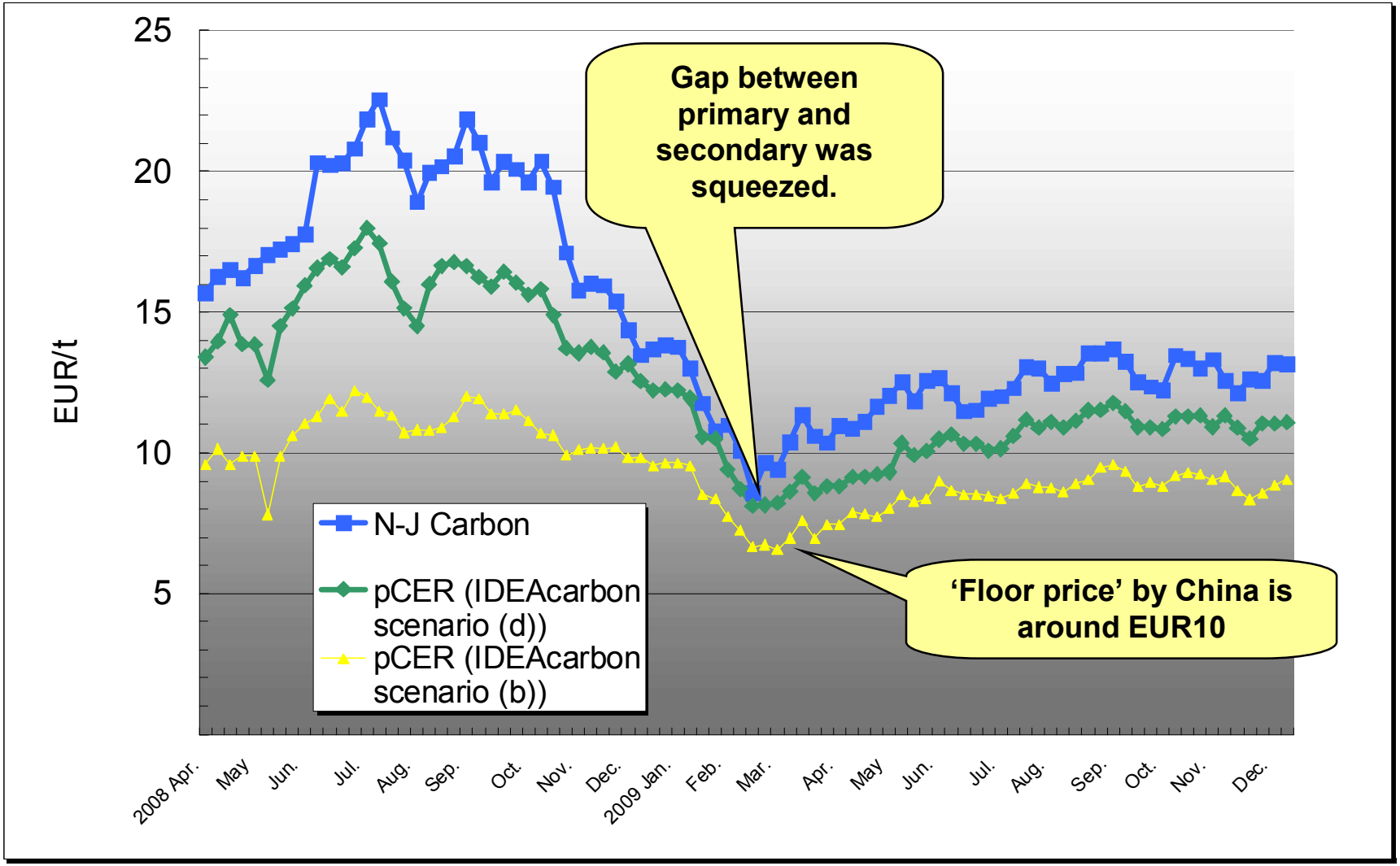
Volatility of Carbon Market

No international Framework Beyond 2012

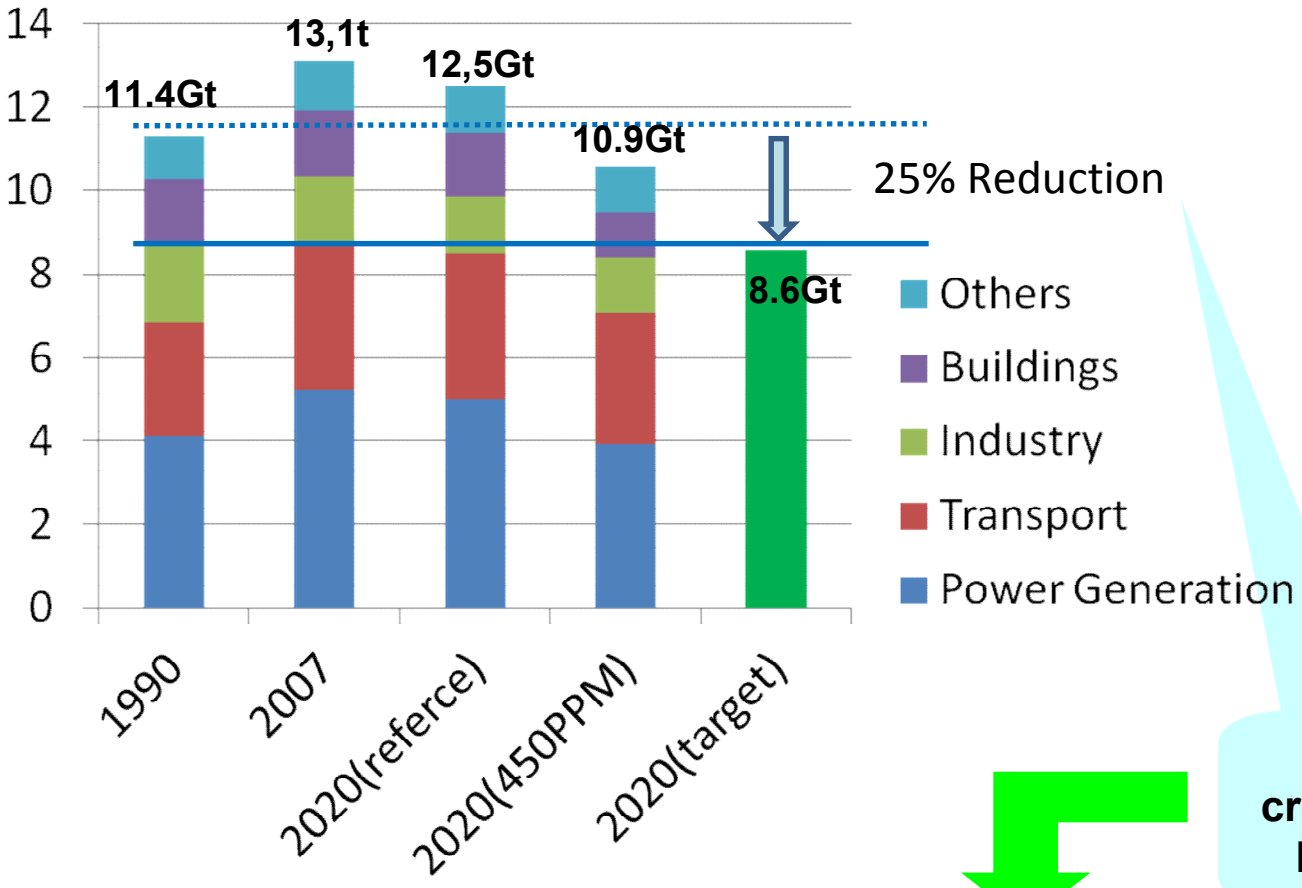
Secondary Market (Nikkei JBIC)



Trends of Primary and Secondary Price



Demand for Credits : 2013-2020



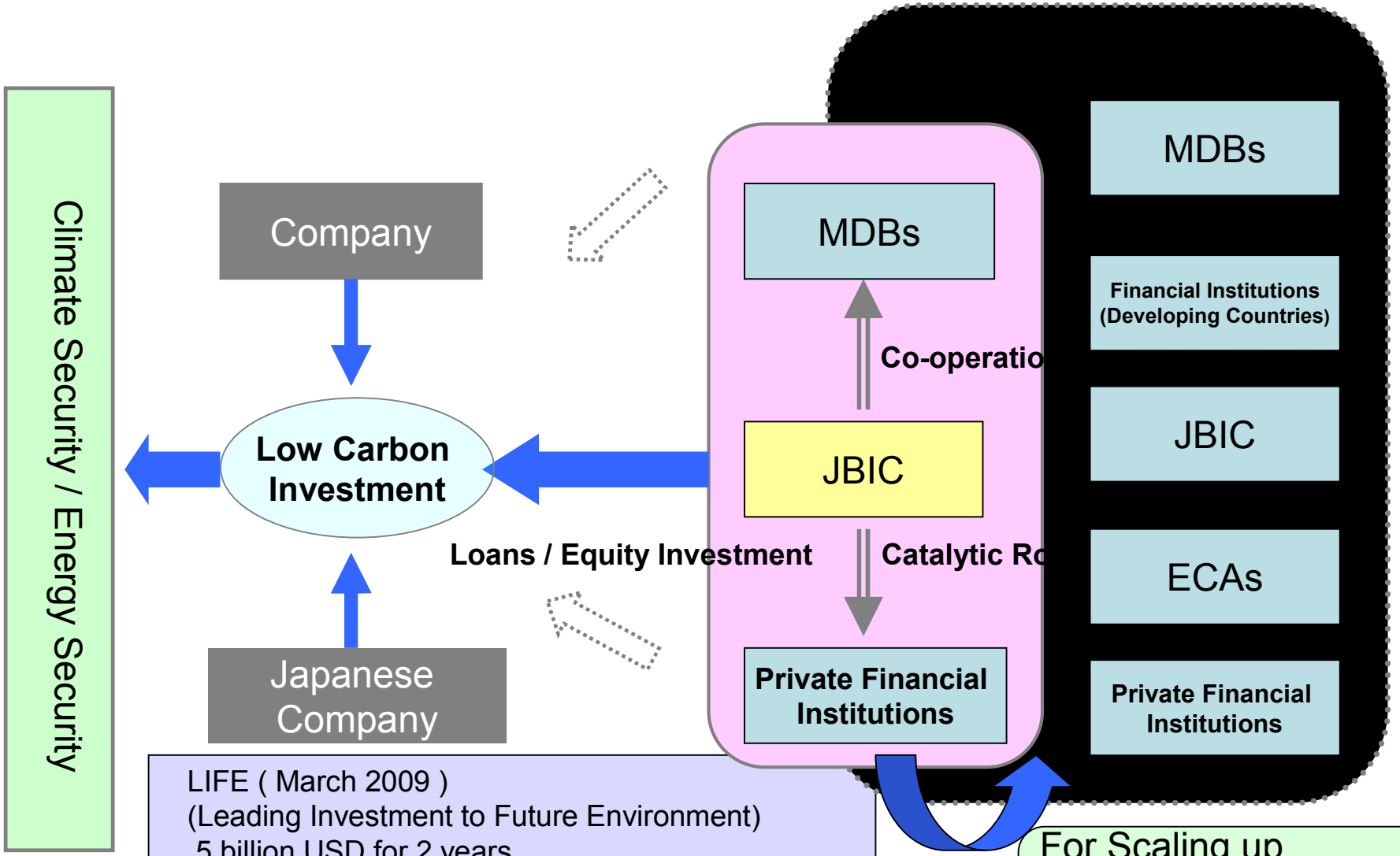
2.3~4Gt of credits PA will be needed.

5 times bigger market

Source IEA WEO2009

Scaling up of Investment

Scaling up Financing for Low Carbon Investment



LIFE (March 2009)
(Leading Investment to Future Environment)
5 billion USD for 2 years.
Target Sectors : Clean Power generation, Energy Efficiency, Water and Transport
(Steel : CDQ, Heat Recovery, Regenbarner, etc.)

For Scaling up

Step1 Measurement methodology
Step2 Specification of BAT
Step3 Voluntary EE standard

Commercially viable BAT
～ Steel industry ～

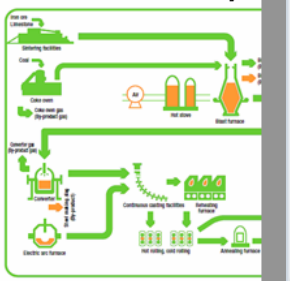
1. Iron and Steel Industry

Iron and steel industry is one of the energy intensive industries, the share of total green house gas is estimated 5 % (year2006, IEA data), which is top share of manufacturing sector.
According to IEA analysis, the process are complex structure, however, there are basic 2types of steel works:

1. **[Integrated steel works]** Integrated steel w… major company for making pig iron. T… process, which uses iron ore (and …
2. **[Electric furnace process]** Scra… Electric Furnace for melting. …

About 60% of product share is … comparing CO_2 emissions, one … defining the boundaries. Energy … steelworks or in electric furnace…

Processflow of steel industry



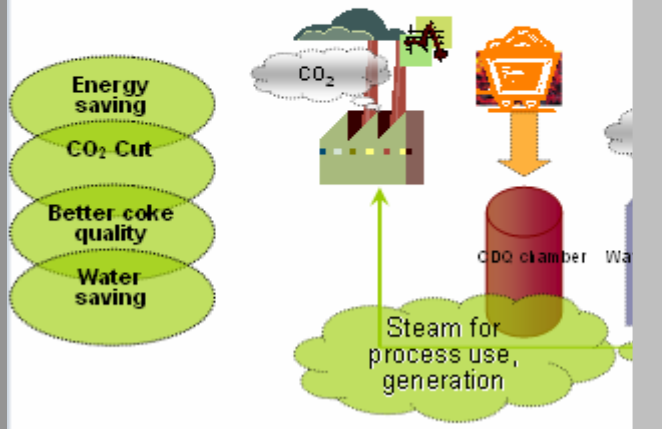
(Source)Nippon Steel 2008 -Sustaina…

1-1 CDQ (Coke Dry Quenching)

Description

Coke dry quenching is equipment, recovering the waste heat of the cokin… the traditional quenching using water (wet quenching) of the coking proce… improves the working climate, and recovers the sensible heat of the coke… applied at new and retrofitted at existing plants.

Coke Dry Quenching process



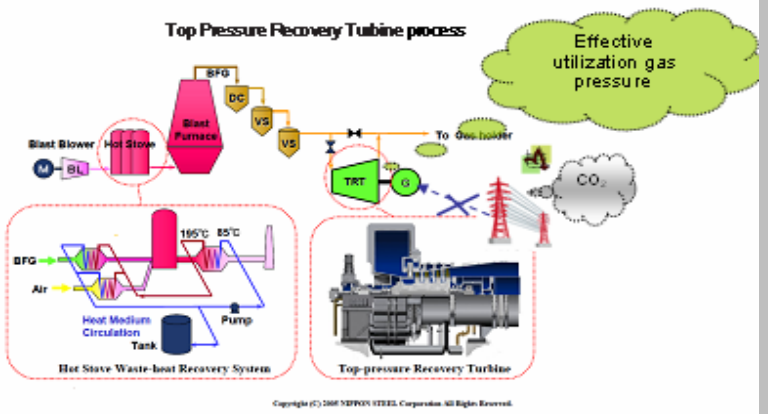
(Source) Drawn up by JISC based on SOACT, Asia-Pacific Partnership on Cle… "State-of-the-Art Clean Technology Handbook" (SOACT).

1-2 TRT (Top Pressure Recovery Turbine)

Description

Top Pressure Recovery Turbine (TRT) is a equipment for beneficial use of waste gas pressure generated from the steelworks' blast furnace top and converted into electricity using a turbine. Energy savings, noise is reduced when gas passes through the turbine.
Although the pressure difference is low, the large gas volumes make the recovery economically feasible.

Top Pressure Recovery Turbine process



(Source) Toru Ono (2007.Jan.)RITE International symposium "challenges for GHG Reduction in steel company" (Partially modified by JISC)

Cooperation of TERI and JBIC

- Cooperation Agreement on 17 September 2008
- Support the transition to Low Carbon Society
  - ✓ Study of possibility of EE and RE projects
  - ✓ Information exchange for scaling up investment
  - ✓ Facilitation of Emission Trading

Conclusion

Public- Private- Financial Partnership (PPFP)

New Market Mechanism for Climate Change with financing