

Energy Efficiency for Future Climate Framework

25 June 2014

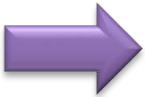
Roundtable: Frontiers in the Economics of Energy
Efficiency

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Shared recognitions among UNFCCC parties (ADP2 May 2013)

- All countries participation;
- Framework based on CBDR and equity principles;
- Nationally determined efforts/commitments depending on the circumstances of each country;
- Under common rules ensuring transparency and environment integrity of countries' action

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- fairness and effectiveness for global GHG reduction
 - promoting private investment incentives and utilizing various business opportunities in the economic development
 - strategy both sides of domestic and international, esp. technology transfer
 - strengthening domestic policies and measures

Message from Japan at UNFCCC

- Importance of reduction target and policy measures for which each country opted themselves; and improve the transparency with confirming mutually pre-and post actions by common MRV---@ADP2
- **3.8% GHG reduction** at 2020, compared to 2005 expressed by Minister of Environment, Ishihara ---@COP19
- Actions for Cool Earth: ACE: further technology innovation, application of low carbon technology from Japan to world, **16 billion USD support for 3 years (2013-2015) to developing countries** ---@COP19

IPCC industry chapter messages

- Wide-scale deployment of BAT reduces the energy intensity by up to 25%
- Many options for improved EE still remain. Innovation realizes additional reductions of up to 20% in energy intensity
- Barriers: the initial investment costs and lack of information

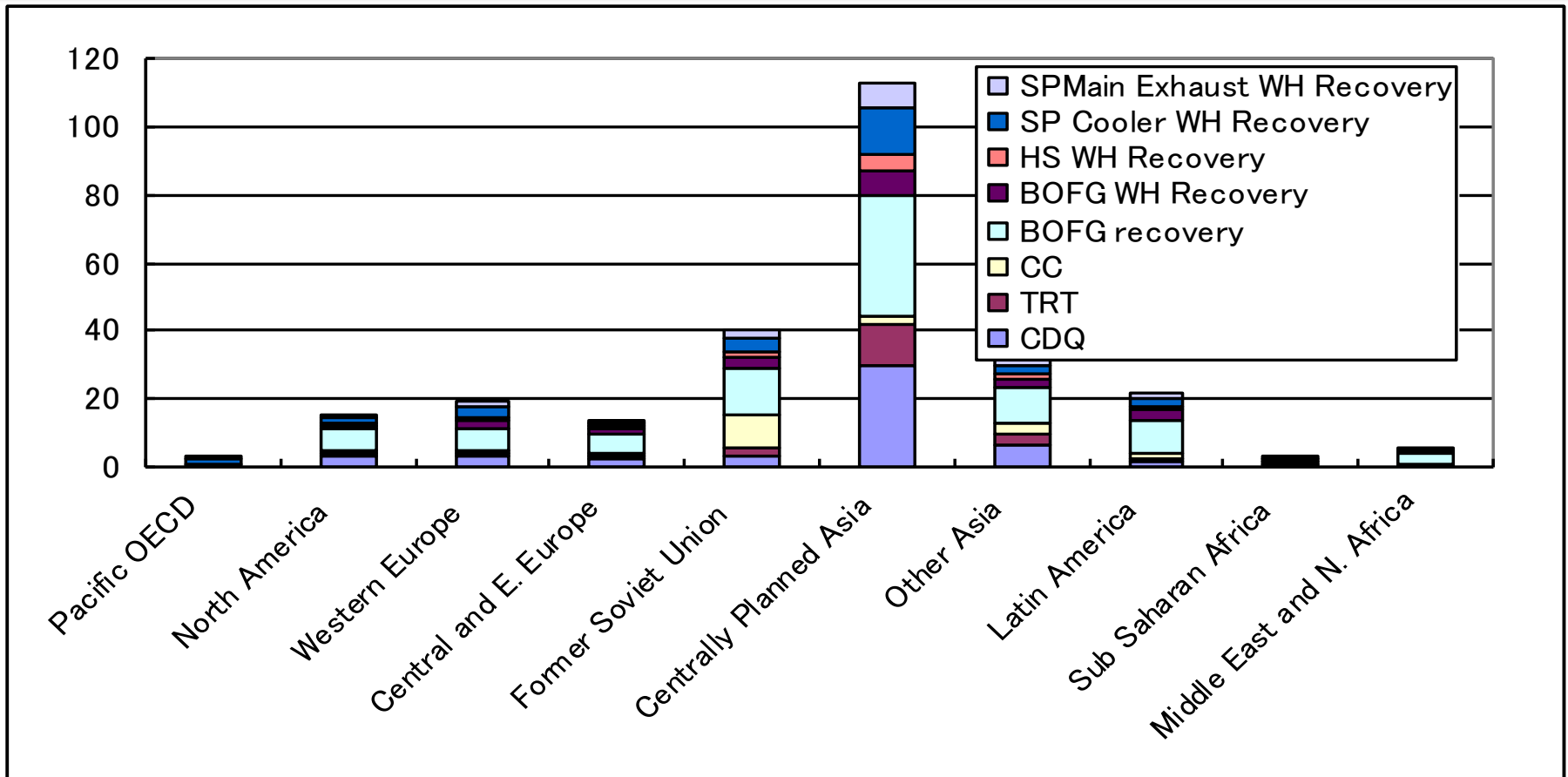
IPCC AR5 Technical Summary, 2014

IEA messages

- Energy intensive industry has made great strides in improving efficiency, but overall industrial energy use continues to grow strongly, particularly in the emerging economies
- Need better information/data for proper analysis and policy implementation
- Governments and industry must co-operate

Tracking Industrial Energy Efficiency and CO₂ Emissions, 2007, OECD/IEA
Tanaka, IEA information paper, 2008

GHG reduction potential evaluation by the application of energy-saving technology in the steel industry (IPCC SRES A1 scenario) [Mt-CO₂/year]

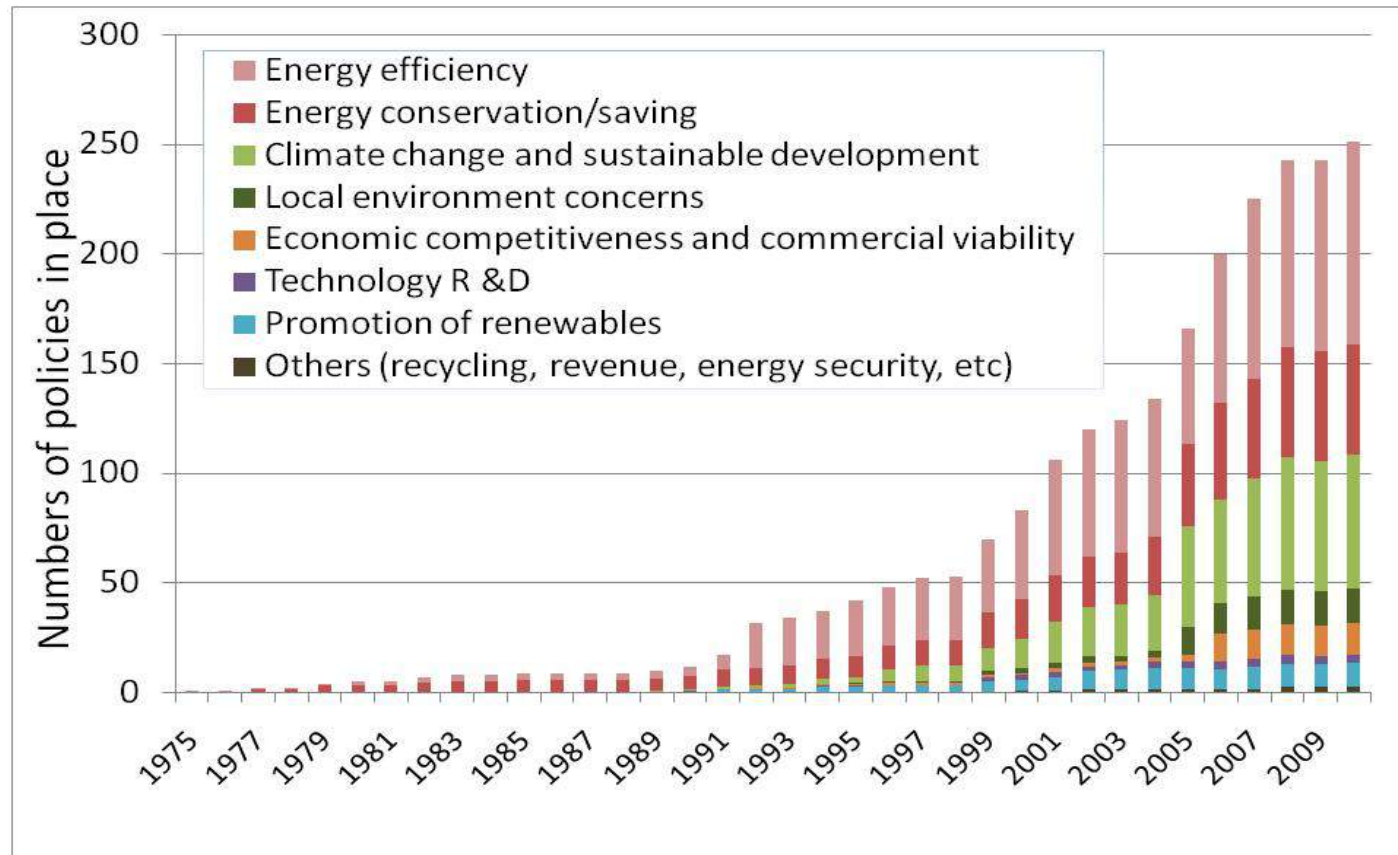


Source: Tanaka et al (2006), CO₂ reduction potential by energy efficient technology in energy intensive industry.

- Reduction of 210 million tons of - CO₂ in the world in 2030 by BAT use
- Potential is high in China, India, and other Asia including Non-Annex I East Asia, as well as the former Soviet Union and Europe
- These techniques are widely used already. introduction and deployment of technology should be promoted.

Objectives of Energy Efficiency Policy in Industry (IEA and BRICS countries)

- Rapidly increased by more than 10 times in 20 years from 1990, about 3.5 times from 2000 in 10 years.
- Not only energy efficiency objectives. Many win-win opportunities.



Policies related to Energy Efficiency in Japan

- Regulation

- Energy Conservation Act (energy saving, management) 1978-
- Top Runner Program (product standard) (1999-)
 - Electric appliances, vehicle, construction materials;


- Promotion

- Eco-tax and subsidies for vehicles (tax reduction) 2009-
- Domestic credit scheme (market based) 2008-
- Labeling system (2000-)
 - Electric appliances, vehicle, house window
- Eco-points scheme
- Other tax incentives, R&D etc

- Voluntary action

- Keidanren Voluntary Action Plan on the Environment

Historical Development of Energy Conservation Law



Industry



Residential Commercial



Transportation

1947 Establishment of heat management

1979 Establishment

- Designated Energy Management Factories
- Guidance for Buildings and Appliances

Effective use of electric power and fuel in industrial sector

Promote energy efficiency of automobiles and household electrical appliances

1983 Amendment

- Licensed energy manager system

1993 Amendment

- Periodical reporting

1998 Amendment

- Expand coverage of factories

2005 Amendment

- Integration of Heat and Power Control

1998 Amendment

- Top Runner Program for automobiles and household electrical appliances

2002 Amendment

- Energy Management of Office Buildings

2005 Amendment

- Reporting System on Energy by Carriers

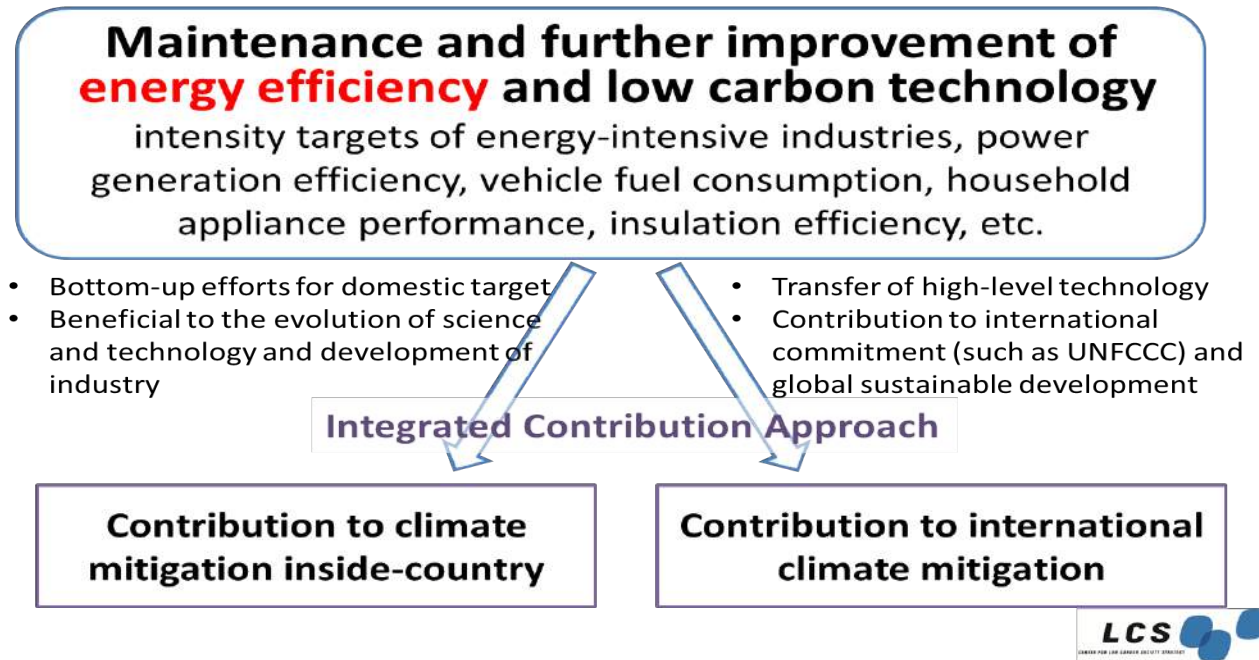
2008 Amendment

- Company based regulation include franchised chains

2012 Amendment

- Measures on demand side at peak demand hours
- Top Runner Program for Building Materials etc.

Proposal of Integrated Contribution Approach



- Promote further R&D and innovation of high-level energy efficiency and low carbon technology;
- Bring up industry and drive its further development
- Learning from existing laws and regulations
- Clarify the objectives, manages the process;
- Efficient technology cooperation and transfer, and show the contribution quantitatively.

Estimated GHG mitigation potentials in industry

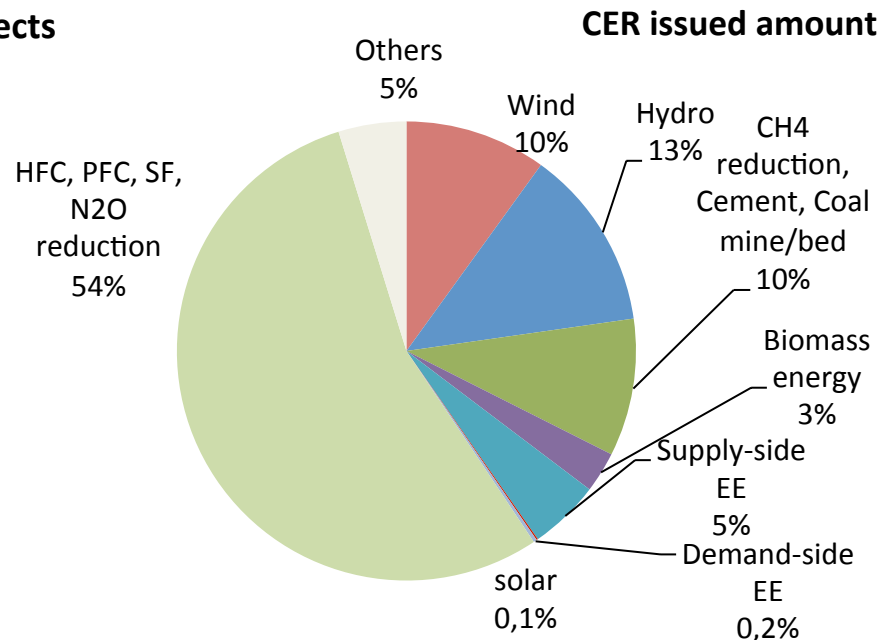
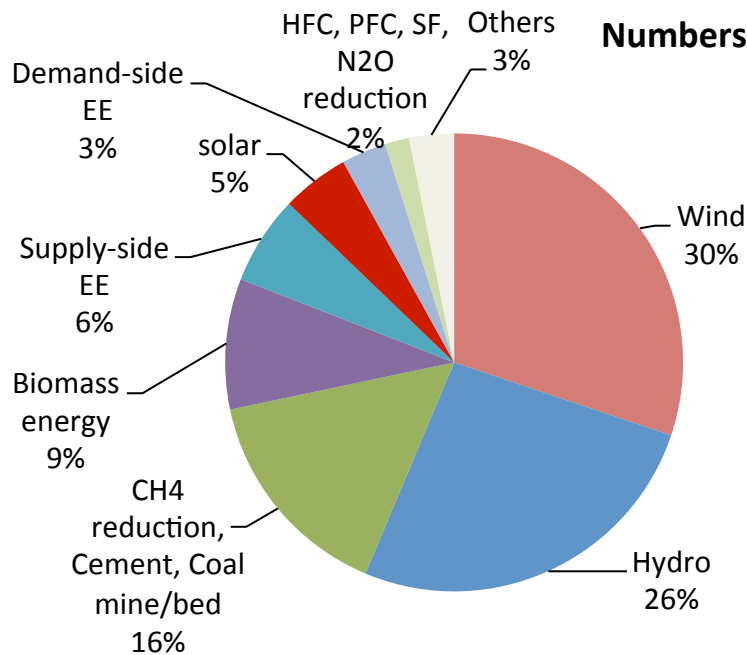
- Some can be carried out below 20US\$/tCO₂-eq, but others needs more.
- For the certain enforcement, low financial risk is important.

[SRES B2 baseline, 2030]

Mitigation option	Region	Economic potential <100 US\$/tCO ₂ -eq		Economic potential in different cost categories			
		Cost category (US\$/tCO ₂ -eq)		<0	0-20	20-50	50-100
		Cost category (US\$/tC-eq)					
		Low	High				
		(MtCO ₂ -eq)					
Electricity savings	OECD	300		70	70	150	
	EIT	80		20	20	40	
	Non-OECD/EIT	450		100	100	250	
Other savings, including non-CO ₂ GHG	OECD	350	900	300	250	50	
	EIT	200	450	80	250	20	
	Non-OECD/EIT	1,200	3,300	500	1,700	80	
Total	OECD	600	1,200	350	350	200	
	EIT	250	550	100	250	60	
	Non-OECD/EIT	1,600	3,800	600	1,800	300	
	Global	2,500	5,500	1,100	2,400	550	

IPCC(2007) Working Group III to the Fourth Assessment Report, Table 7.10, pp477

Percentages of number of projects and issued CER amount of CDM projects



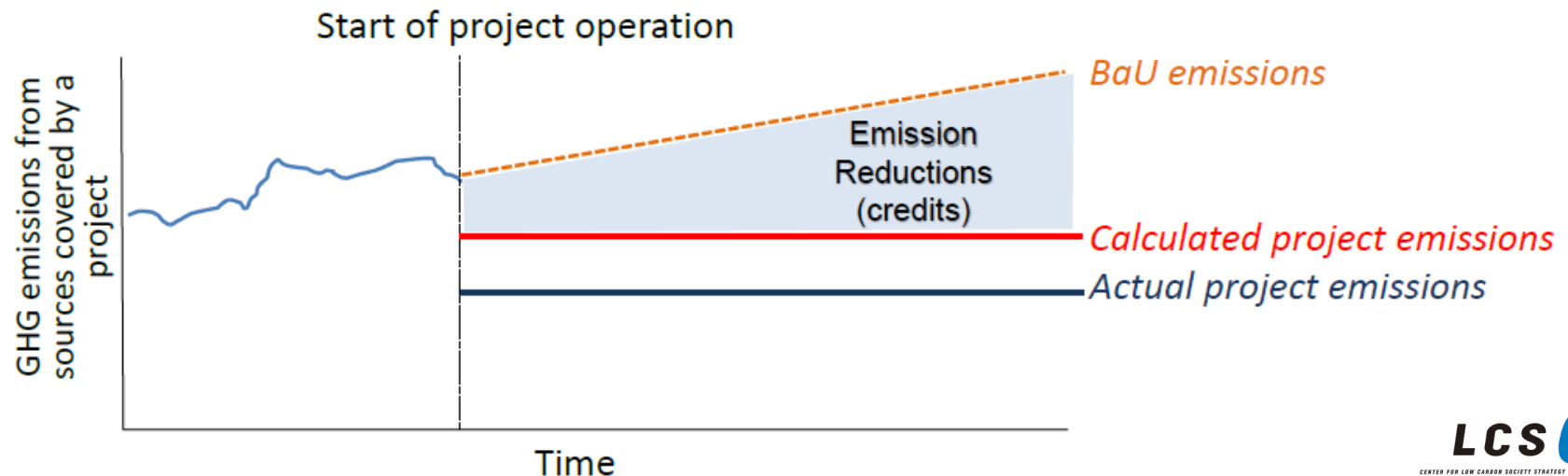
UNEP RISO, last update 1st June, 2014

- Low incentive for private sector to invest in climate change mitigation technology to other countries
- Limited by the constraints of "additionally", a considerable for review
- Demand side EE : 3% for number, 0.2% for CER amount
- Conservatively setting the baseline → credit generated suppressed
- Not effective in a substantial significant reduction

“ Way to realize net reduction” of Japan Joint Crediting Mechanism

(Subject to further consideration and discussion with host countries)

- A net decrease and/or avoidance of GHG emissions can be realized in alternative way, instead of calculating the reference emissions below BaU emissions.
- Using conservative default values in parameters to calculate project emissions instead of measuring actual values, will lead calculated project emissions larger than actual project emissions.
- This approach will also ensure a net decrease and/or avoidance of GHG emissions, as well as reduce burdens of monitoring.



Problem of conservative baseline setting

- CDM scheme(①②) and higher thermal efficiency cases (③④), reductions were estimated smaller than cases using average of all plants (⑤-⑦)
- Efficiency of baseline increases higher in existing power plants
→ reductions become close to zero

	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th
① Option 1 of ACM0013	57	57	57	0	--	--	--
② Option 2 of ACM0013	58	24	0	--	--	--	--
③ Average of 5 newer power plants	71	45	31	19	8	0	--
④ Average of newer power plants up to 20% of the total power production	83	56	25	0	--	--	--
⑤ Average of all power plant (JAMALI grid)	173	154	139	126	115	107	99
⑥ J-MRV 004 : average of all power plant	43	Based on the government published value.					
⑦ J-MRV 004 : average of all power plant using same fuel	173	154	139	126	115	107	99

For Integrated Contribution Approach

- identify the technical area of specialty
- clarify the technological strategy
- set the target by aggregating reduction efforts by area/sector
- supporting environment and regulatory framework to technology development and the spreading and promotion
- Facilitate cooperation and investment from private sectors

