APEC International Workshop and Training on The Role of Business Incubators in Developing Green Technology-Based SMEs Yogyakarta, Indonesia, 27 - 29 September 2011

Annex B

Annex B. PRESENTATIONS FROM SPEAKERS



How Does ITRI Assist SME to Develop Green Technologies

Ren-Chain (Joseph) Wang Green Energy and Environment Research Laboratories (GEL) Industrial Technology Research Institute (ITRI)

Sept 27, 2011

International Workshop and Training on The Role of Business Incubators in Developing Green Technology-Based SME (APEC SME 04 2011A)

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Outline

- Overview of ITRI's Roles in Helping Green Technology Development
- ITRI's Approaches to Promote Green Technology Development
- Examples of Green Technologies Transferred to SME
- Conclusions



Overview of ITRI's Roles in Helping Green Technology Development

- ITRI's Approaches to Promote Green Technology Development
- Examples of Green Technologies Transferred to SME
- Conclusions





ITRI Overview



Staff: 5,625	Patents	
Ph. D. : 1,219	15,847	
M.S.: 3,059		

<u>Spin-off</u>

Tech transfer: 70 Incubation: 167

Service (2010)

Company : 15,139 Licensing : 695

(2011.8.1)



ITRI Units



工業技術研究院 Industrial Technology **GEL Organization and Human Resources** Research Institute



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Three Types of Tenants in CIS Open Lab

- Age<18 months
- Initial Capital<NT\$80million
- Period=3+1 years
- Now: **17**

- Joint R&D Contract with Labs/Centers
- Foreign Entity Allowed
- Now : **39**



- IP/ Industry Association/ ID
- Now : **11**



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工業技術研究院 Industrial Technology Research Institute ITRI's Green Tech Promotion and Development Activities

>Promotion:

- Cooperation, Alliance, and Symposium
- Exhibition & Promotion
- e –Journal & News

Technology Collaboration:

- Early stage participation
- Collaborated R&D
- Exclusive licensing
- Contracted service and non-exclusive licensing
- New business investment
- Others

≻IP:

- Licensing of Patent Combination
- Foreign Patent Acquiring and Licensing









Cooperation, Alliance, and Symposium

Zero Energy Building Technology Alliance (ZEBTA) 2011.6. 24 Taipei 7\]bYgY'HUJdY]



International Symposium on Smart Grids 2010.9.14 ,Taipei Chinese Taipei



2010 Cross-strait Renewable Industry Cooperation and Exchanges 2010.7.27 Nanjing China





Exhibition & Promotion

Energy Technology Exhibition (2010)



Annual R & D Accomplishmnt Presentation (2010)



Green Industry Exhibition (2010)



Green Technology Promotion (2010)





e – Journal & News

EPA's 3R Web



http://recycle.epa.gov.tw/Recycle/index2.aspx

Bureau of Energy/ Ministry of Economic Affairs



http://www.moeaboe.gov.tw/English/english_index.aspx?Group=4

<complex-block>



Technology Collaboration - 1

Model	Early stage participation	Collaborated R&D	
Target	Current MOEA projects and potential IP	Current MOEA projects and potential IP	
Funding	Less than 10% of MOEA funding from each participating companies	Higher than 10% of MOEA funding from each participating company	
IP	Belong to ITRI	Shared based on funding percentage	
Benefit	 No need to go through R&D topic screening Lower R&D risk and lower cost in technology feasibility evaluation 	 R&D topics can be adjusted to meet participants' needs Participating companies can send researchers to join the R&D activities Exclusive right to participants and ITRI 	
Note	ITRI has the whole licensing right	Need to be approved by MOEA	



Technology Collaboration - 2

Model	Exclusive licensing	Contracted service and non- exclusive licensing	
Target	Patents granted or in application	Specific R&D target or IP	
Funding	From interested companies through bidding process	From interested companies	
IP	ITRI keeps the IP ownership; the licensee may relicense the IP	Funding company has the IP rights; Co-sharing can be negotiated	
Benefit	 Licensee share the IP right Licensee can use the IP right to relicense, cross license, use on negotiation and litigation etc 	 Target specific and shorter R&D duration Lower risk and cost due to possible stepwise R&D investment 	
Note	Need to be approved by MOEA panel	Follow ITRI's existing procedures	



Technology Collaboration - 3

Model	New business investment	Others	
Target	Using IP or know-how to invest in new business/company	1.Consulting service2.Contract experiments3.Analysis and certification	
Funding	Usually, IP and /or know-how is below 20% of the initial capital From interested companies		
IP	In form of right transfer and exclusive or non-exclusive licensing	In principle, ITRI has the IP rights; Co-sharing can be negotiated	
Benefit	 Both IP/know-how and technical experts can be transferred Provide best use of capital Quick team formation 	High flexibilitySimple process	
Note	Need to be approved by MOEA panel	Follow ITRI's existing procedures	



Licensing of Patent Combination

Innovative Model

- Enhanced IP strength, effectiveness, and value through licensing of patent combination
- Strategically exclusive licensing with sub-licensing option

Benefits

- Licensee can acquire more complete patent package for better position in IP competition and litigation
- Through patent combination, individual patent's value can be greatly enhanced
- Industry needs can be better met by strategic planning and considering the uniqueness of each industry



Foreign Patent Acquiring



• Speed up the entering of new industry

Win-win Benefit

- Foreign IP owners can dispose off 'idled'patents
- Chinese Taipei industry can reach better IP position and perform better in new industry/market



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Mobile Recharger

Unique technology

- Solid NaBH4 can be formed to various shapes with electricity density of 150Wh/kg、150Wh/L
- Higher than 7wt% usable hydrogen with 10~300 sccm controllable and stable releasing rate
- Stable and low cost nano-size base metal catalyst and recyclable NaBO2 by-product

> Applications

- Mobile recharging system
- Stationary recharging system

> Technology transfer

- 36 patent applications
- Technology licensed to YGE Co.
- Continued R&D collaboration and support



Solid hydrogen source with various shapes



Mobile recharger prototype

工業技術研究院 Industrial Technology High Efficiency Refrigerated Display Cases

>Technology advantage

- Integrating inverter, defog, and LED lighting systems to increase higher than 40% electricity saving
- 10~15% superior to imported products in energy saving

Applications

- Tested in HL Convenient Store for more than 2 years
- Used in 120 HL Convenient Stores in 2010 and plan to expand to 1,200 store in 1~2 years
- Negotiating with SE Convenient Store for a full scale of 9,300 store application. The annual electricity saving can reach 5 millions USD

Technology transfer

- 5 patent application and 1 granted
- Licensed the technology to PC Co.
- Collaborating with MT Co. to develop larger refrigerated display cases for supermarkets



High efficiency display case



LED lighting

工業技術研究院 Environmentally Friendly Packaging Foam

> Technology advantage

- Starch based, no chemical foaming agents and organic solvent needed. Has great potential replacing expanded PE or expanded PS
- Great impact damping effect. Meets ASTM D5276-98 standards; Biodegradable with higher than 90% degradation in 180 days

> Applications

• All kinds of green packaging including electronics, hole appliances, auto parts etc.

> Technology transfer

- · Patents licensed to SJ Co.
- Provided technical assistance to SJ Co. in commercial production
- Collaborate with WT Co. through Early Stage
 Participation program



Pilot run



Package application



Waste Shell Utilization

> Technology

- Formulation and analyses of anti-bacteria coatings derived from waste golden clam
- Verification of anti-bacteria and anti-fungus effects of coatings derived from waste golden clam

Potential benefits

- Helped coating industry developing waste shell based anti-bacteria coatings witch increase around 3 millions USD revenue annually
- Eliminated around 5,800 tons/year of shell waste

> Technology transfer

Transferred the know-how to LC Aquafarm



Golden Clam



LC Aquafarm



Waste to Fuel: RDF-5





- Complex composition
- Non-uniform shape and size
- High water contain (~50%)
- Low heating value (~1,800 kcal/kg)
- Easy to corrupt and produce ordor

MSW

~	
-	-

RDF

Incineration	1,500-2,500 kcal/kg	40-60%	15%@200-300°C	20-30 kg/cm²
Process	LHV	Moisture	Heat rate	Steam pressure
RDF power gen.	3,000-4,000 kcal/kg	5-10%	35%@540°C	100 kg/cm ²





- Homogeneous composition
- Uniform shape and size
- Low water contain (<10%)</p>
- > High heating value (~4,000 kcal/kg)
- Easy to store and transport



Treatment capacity: 1,000 kg/hr MSW

Potential for RDF utilization in Chinese Taipei

carbon dioxide reduction of 980 thousand tonnes.

tonnes of coal approximately.

- 15% of MSW converted into the RDF can substitute for 350,000

- The total electricity generation can reach about 145 MW with a





Opening ceremony, Jun 24, 2004





> Technology

- Lighting optical simulation and design
- Light fixture prototyping
- Environmental stability testing, EMI design and testing

Industry benefit

- High efficiency fluorescence light fixture design and simulation platform
- Light fixture system evaluation, environmental stability testing, EMI design and testing

> Technology transfer

- Y Co.
- YJ Co.



Fluorescent Lamp



Lighting pattern



LED Lighting Laboratory

> Technology

- Established the first LED lighting measurement laboratory and is certified by TAF
- Completed the first international road lighting standard leading the standardization of LED lightings

> Applications

- LED lighting design and testing
- LED light fixture production

Technology transfer

- Transferred LED lighting measurement knowhows to 4 Chinese Taipei companies
- Developed CNS 15233 LED road lighting national standard



Optical Integrating Sphere



Lighting effect comparison



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Conclusions

- Government's support plays a very significant role in green technology development particularly for resource limited SME
- A wide span of program is needed to provide substantial assistance to SME in green technology development:
 - Promotion and alliance formation
 - Technology and IP
 - Standards, regulations and incentives
- In addition to innovative technologies, green technology development also heavily relies on:
 - Innovative combination of existing technologies
 - Creative ideas and design
 - Regulation and standards
- Platform facilities, expert services and pilot to commercialization assistance are particular needs for SME in successful green technology development



Thank you for your attention!





Adaptation of Green Business by Incubator Programme

September 27, 2011 Yogyakarta, Indonesia

by Dave Feldman Executive Director, Bethesda Green & CEO, Livability Project







Today's Agenda

- Video
- Introduction
- Clean (Green) Tech
- Business Incubators
- Bethesda Green
- Support Services
- Livability Project
- Questions



Dave Feldman Background

"We can't solve problems by using the same kind of thinking we used when we created them."

~ Albert Einstein

- Tech Sector
 - Sales, Marketing, Partnerships
 - Telecom, Software
- Consul, UK Trade & Investment
 - Led Economic Development Team
 - NBIA speaker International Incubation
 - Business Incubator Competition
- Launch of Livability Project
- Why I do this work





Green Business Incubation









What is Clean Tech?

<u>Technology</u>, <u>products</u> and <u>services</u> that generate superior commercial benefits to customers while addressing significant environmental concerns such as global warming, sustainability of natural resources and energy security.

Cleantech technologies include renewable energy generation, energy storage, energy efficiency, biofuels, cleaner fossil fuel processes, water purification and management, waste water treatment, recycling, pollution reduction and advanced materials (including nanotechnologies).




Demand for Green (Tech)

Sectors

- with existing green industrial strength
- that have related strengths in engineering, IT
- leveraging R & D strengths of universities
- where there is government policy commitment to build strength







bethesda green Top US Cleantech Incubator Cities

- 1. <u>Austin, Texas</u> The Clean Energy Incubator (CEI) formed within Austin Technology Incubator in 2001; managed by University of Texas.
- 2. San Jose, California (Silicon Valley) Attracts Cleantech venture funding alongside Web 2.0, nanotechnology, semiconductor start-ups.
- 3. **Berkeley, California** A \$500 million center for biofuels and energy research to be co-located at Berkeley and the University of Illinois.
- Pasadena, California California Technical Institute of Technology 4. (Caltech) leverages strong venture capital to create a Cleantech incubation cluster.
- Greater Boston, Massachusetts Supportive state policies for 5. renewable energy and energy efficiency; strong Cleantech VC investments(after CA).

From SustainLane.com





- Physical infrastructure
- Professional management
- Transparent guidelines for admission and progress
- Professional services
- Solid financial base







- 1. Ties to local community; source of demand for products and services
- 2. Inclusion of government agencies of both economic development and environmental regulatory responsibility
- 3. Influence in policy making, but not political partisanship
- 4. Formulate incubator plans (sectors, company admission) based upon local economic and environmental priorities
- 5. Inclusion of advisors and counselors with green business and sustainability expertise
- 6. Diversified funding base from government, business and community support, as well as rent





Bethesda Green (BG)



- Public-Private Partnership
- Launched January 2008
- Not-for-profit
- Multiple Stakeholders
- Community Engagement = Market Demand
- Scale What Works; Identify Gaps





Bethesda Green Mission/Strategy

Our Purpose/Mission

At Bethesda Green, we bring business, government and community together through programs and services to promote a healthy economy and sustainable living practices in order to reduce our collective impact on the environment.

Strategies to Achieve Our Mission

Incubate	Educate	Initiate
Stimulate next generation green business models and solutions.	Raise awareness and inspire action through the programs, online tools, and education and resource center.	Develop, manage and promote programs that leverage community assets.





Bethesda Green Incubator

- SMEs are prime focus
- Integration with Education Center and programs
 - Common funding
 - Joint initiatives
- Culture of innovation
- Collaboration is key
- Launch space
 - Part-time, October 2009
 - Full-time, November 2010









SMEs of Bethesda Green

- 1. Green, social responsible, sustainable
- 2. Start-up, early-stage, local
- 3. Large companies seeking local presence
- 4. For- and not-for-profit
- 5. Diverse sectors IT, architecture, consulting, media, marketing and distribution
- Products/Services energy efficiency, transportation, environmental stewardship, planning, design, neighborhood revitalization and recycling







SME Support

How Can Incubators Help....

- 1. Bring government, business, university and community stakeholders together to create demand, incentives and opportunities (testing, prototyping, pilot programs)
- 2. Perform feasibility study to determine overall and specific areas of need
- 3. Develop business plans/strategy for implementation, including space, location, management, budget and financing
- 4. Establish broad-based advisory for mentoring, financing





Bethesda Green - Facilities

1. Facility and Shared Resources

- Furniture
- Sustainable center design (in-kind contributions from supporters)
- Broadband wireless internet
- Phones (extra fee)
- Utilities
- Conference rooms
- Full Kitchen
- Copier, printer, A/V equipment
- 2. Facility management
 - Staffed reception and information area
 - Incoming mail and package handling
 - Security







BG - Professional Services

- 1. Business plan development
- 2. Marketing, promotion through website and press
- 3. Access to professional services firms, including accounting, investing and legal
- 4. Networking, contacts, and events
- 5. Speakers bureaus, entrepreneurial presentations
- 6. Semi-annual progress reviews
- 7. Internships
- 8. Tech transfer, technical assistance, regulatory compliance
- 9. Introductions to potential strategic partners





Partnerships

- 1. State and Local Economic Development Agencies
- 2. Chamber of Commerce
- 3. Universities, Academic Institutions
- 4. Small Business Development Center (SBDC)
- 5. Research Institutes, Laboratories
- 6. Other







Livability Project



BRINGING SUSTAINABLE COMMUNITIES TO LIFE

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- 1. Where we are today:
 - MOU with Bethesda Green
 - Consulting Services
 - Building Toolkits
- 2. Where we are going:
 - Replicating framework in other Cities
 - Education/Workshops





"We can't solve problems by using the same kind of thinking we used when we created them."

~ Albert Einstein

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Towards sustainable development - policy oriented, practical and strategic research on global environmental issues

Progress on CDM and Voluntary Offset Projects and Future Prospects

September 28, 2011 Jun Ichihara, Ph. D. Institute for Global Environmental Strategies

Introduction

 Smart utilization of carbon markets could aid further introduction of green technologies which lead to emission reduction of greenhouse gases (GHGs)



Carbon Market at Glance , Market Value, 2005-10 (\$ Billion) Source: World Bank, Thomson Reuters Point Carbon, Bloomberg New Energy Finance, and Ecosystem Marketplace

Introduction: Carbon markets

	Compliance Markets	Voluntary Markets
What are the markets?	-Compliance markets provide credits for the needs for the entities to comply regulations.	-Voluntary markets cater for the need of the entity voluntarily to reduce emissions by providing credits
Why do the markets exist?	-Under the regulation, entities (companies, governments) need to meet standard on emission reduction.	 -Entities (companies) voluntarily set target to reduce emission. -for CSR -for anticipating future regulations
Typical markets	-Kyoto Market (CDM, JI) -EU ETS	-VCS -CCX -CAR

Presentation Flow

- 1. Introduction
- 2. What is CDM?
- 3. Progress of CDM and Small Scale CDM
- 4. Barriers to CDM Development and CDM Reforms
- 5. Progress of Voluntary Offsets
- 6. Current Discussion on New Market Mechanisms and Climate Financing
- 7. Conclusion

What is CDM?

- What is CDM (Clean Development Mechanism)?
 -CDM reduces Greenhouse gas emission by introducing additional measures for projects in developing countries
- Then CDM generates carbon credits (called CERs) based on emission reduction
- Also CDM aims to contribute to sustainable development in host countries of CDM projects
- CDM provides an opportunity for new investment, new technology and additional revenue from carbon credits

What is CDM?



CDM Project Cycle

Step	Conducted by	Activities
1: Planning	Project participants	Plan a CDM project activity and prepare necessary document (project design document: PDD)
2: National Approval	Host and Developed Countries	Project participants shall get written approvals from the countries.
3: Validation	Auditor (called DOE)	Validation is the process of independent evaluation of a project activity
4: Registration	UN Entity	Registration is the formal acceptance of a validated projects.
5: Monitoring	Project participants	Collect and archive all relevant data
6: Verification	Auditor (called DOE)	Verification is the independent review of the achieved GHG emission reductions.
7: Issuance of CERs	UN Entity	Issue certified emission reductions (CERs) 7

Typical type of CDM projects (in Indonesia)

Project Type	Example
Biomass	Biomass Utilization in Power Generation (i.e. Rice Husk, Bagasse from sugar process, EFB from Palm, Wood chip)
Biogas	Waste water treatment (i.e. Palm oil process) Animal waste treatment
Methane Recovery & Utilization	Land fill gas collection
Methane Avoidance	Composting
Fuel Switch	Switch oil to natural gas / biomass in Power Generation
Energy Efficiency	Energy Efficiency in Factory

Example: Biomass

- Current situation / Business as Usual
 Using coal/diesel for heat/power in plant
 - Using coal/diesel emits amount of CO2
- Future situation / after CDM applied
 - Using rise husk for heat/power in plant
 - Reducing usage of coal
 - \rightarrow Reduction of CO2 emission
 - \rightarrow Credit generated from CDM: Additional Income
 - Using rise husk is no emission of CO2.



Coal power plant



Biomass power plant

Example: Biogas

- Current situation / Business as Usual
 - No treatment of waste water from Palm Process: Open Lagoon
 - Waste water emits methane (one of GHGs).



Open Lagoon



- Future situation / after CDM applied
 - Adding digester / treatment process of waste water
 - \rightarrow Reduction of methane emission
 - \rightarrow Credit generated from CDM: Additional Income



Process of treatment of waster water

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Progress on CDM



Source: IGES CDM Project Database as of 1st Aug 2011

Progress on CDM



Source: IGES CDM Project Database as of 1st Aug 2011

Progress on CDM





Source: IGES CDM Project Database as of 1st Aug 2011

Demand for CDM

- Estimated demand for Kyoto Market in 2008-2012 is 1392 MtCO2e.
 - Major buyers are EU and Japan.

Potential Demand from Industrialized Countries (MtCO2e)

	EU	Japan	Rest	Total
Government	315	100	22	437
Private Sector	750	200	5	955
	1065	300	27	1392

Small Scale CDM Projects

- Simplified modalities and procedures are applicable for the small scale CDM project to reduce transaction costs.
 - Simplified documents and simplified methodology for calculation and monitoring of emission reductions
- Small scale CDM project has clear definition:
 - Renewable energy projects: up to 15 MW
 - Energy efficient projects: reduced energy consumption less than 60 GWh/y
 - Other projects: emission reductions less than 60,000 tonnes of CO2 equivalent annually









Source: IGES CDM Project Database as of 1st Aug 2011



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Barriers to CDM development

- CDM process is lengthy
- Transaction costs for CDM process is not low, esp. for projects generate small credit

 consultant, auditor and registration fee
- Limited progress of Forestry CDM
- Uneven distribution of CDM projects
 among countries/regions, esp. LDC

- some countries dominate a market

Barriers to CDM development



CDM Reform

- New guidelines and rules have been introduced to make project development simplified and effective, for example:
 - Programmatic CDM
 - Microscale CDM
 - Positive trend toward an increase in CDM project development in LDC
 - Standardized Baseline

Programmatic CDM (pCDM)

- Programmatic CDM (pCDM) allows a group of similar activities to be implemented as CDM
 - Can take place in different locations (even multicountries) over long period of time (some projects can join later)
 - Potentially expected to reduce transaction costs
- pCDM is suited to small-scale, dispersed activities

Progress on pCDM by countries

Brazil	4	Latin Ame	rica	Middle East Yemen	1
Mexico	3	16%		1%	
Peru	2			≻Dissemin	ation of the PoAs
El Salvador	1			CDM thous	further untake
Guatemala	1				
Honduras	1	Africa_		Asia Tieeus to b	e pursueu
Nicaragua	1	24%		59% China	10
South Africa			7	India	10
Nigeria			2	Viet Nam	6
Tanzania			1	Bangladesh	4
Burkina Faso, Gambia, Senegal, Togo Burundi, Kenya, Rwanda, Sudan, United Republic of Tanzania, Uganda			1	Republic of K	orea 4
				Indonesia	3
			1	Philippines	3
				Singapore	3
Egypt			1	Malaysia	1
Kenya			1	Nepal	1
Morocco			1	Pakistan	1
Senegal			1	Srilanka	1
Tunisia			1	Thailand	1
Uganda			1	Thananu	27
Zambia			1	Source: IGES CDM Programme of A	ctivities (PoA) Database

Source: IGES CDM Programme of Activities (PoA) Database



Energy efficiency is the most popular project type with 38% of the total PoAs
 In Africa, more than 50% of the PoAs are "Energy Efficiency"

Standardized baselines

- Standardized baselines aim to provide simplified CDM methodologies
 - Standardized baselines can provide baseline and additionality determination as *ex-ante*
 - Standardized baselines allow project participants to demonstrate CDM eligibility and emission reductions in simplified manner
- Preparation of Standardized baselines is on-going

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CDM and Voluntary Offsets

	CDM	Voluntary Offset
Why exists?	Under the regulation, entities (companies, governments) need to meet standard on emission reduction.	Entities (companies) voluntarily set target to reduce emission. -for CSR -for anticipating future regulations
Governance	Centralized system under UN	Independent systems developed by entities -VCS, CCX, CAR, Gold Standard, etc.
Modality and procedure	Transparent, reliable yet complicated	Simplified and flexible
Market share	Medium 16% in volume in 2010	Small 1.9% in volume in 2010

Progress on Voluntary Offsets

 Histric Volume in Volutary Carbon Markets (MtCO2e)



Transaction Volume by Project Locations (by Regions), 2010



Progress on Voluntary Offsets

Transaction Volume by Project Type (tCO2e)



•Forestry/Land Use sector occupies largest share in voluntary market, including REDD+ type of projects.

•CDM and Voluntary Markets have complimentary relationship in some aspects.

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New Market Mechanisms

- Consideration on New Market Mechanisms was decided COP meeting in Cancun (2010)
- Decided to consider the establishment of one or more market-based mechanisms
 - Maintain and build upon existing mechanisms, including those established under the Kyoto Protocol
 - Complementing other means of support for NAMAs by developing Parties
 - Ensuring a net decrease and/or avoidance of global GHG emissions
- Negotiation is still on-going.

New Market Mechanisms



•22 Countries Submit their Views on New Market Mechanisms to UNFCCC by Feb.11, 2011

•New Market Mechanism will target the expanded scope and activities

•Many countries expect the market should be enlarged to sector or NAMA.

•New approaches are also proposed.

Figure. Proposals for New Market Mechanisms (Number of countries mentioned in their submission)

New Market Mechanisms

New Market Mechanisms

- Sector/NAMA based
- Project/Programme based
- Etc

Existing Mechanisms

Project/Programme-based

•Many country expects the existing mechanism such as CDM will continue and coexist with new mechanisms.

•How different mechanisms can co-exist will depend on the design of the system.

Bilateral Offset Credit Mechanism

Government of Japan purposes of the Bilateral Offset Credit Mechanism

- Contribute to the ultimate objective of the UNFCCC through promotion of mitigation activities globally.
- Appropriately evaluate the contribution to GHG emission reductions or removals.
- Facilitate the bilateral cooperation in the field of climate change in such a way that best suits each country's national circumstances.
- Contribute to the sustainable development of developing countries.
- Facilitate diffusion of low carbon technologies, products and services and enhance capabilities to utilize them.



Broader financing issue: Green Climate Fund

- Cancun Conference (2010)
 - Commitment from developed countries to mobilize USD 100 billion a year by 2020 to address needs for tackling climate change in developing countries.
 - Decided to establish the Green Climate Fund, expected to manage a portion of the above.
- Funding sources are unclear. → a portion of USD 100 billion will come from private sector.
- Negotiation to operationalize the fund is ongoing.

Conclusion

- Carbon market including has been expanding
- It may expand further or shrink
 - uncertainty of international climate regime after Kyoto Protocol
- Utilizing carbon market smartly could aid further introduction of green technologies
- It is recommended to follow the further development of:
 - -CDM
 - Voluntary Carbon Markets
 - New market mechanism and climate financing 40

Thank you very much!

Terima kasih banyak!

Jun Ichihara Institute for Global Environmental Strategies ichihara@iges.or.jp

For further information http://www.iges.or.jp/en/cdm/report.html