Japan International Cooperation Agency
Thailand Greenhouse Gas Management Organization

The Project for Capacity Development and Institutional Strengthening for GHG Mitigation in the Kingdom of Thailand

Project Activity Completion Report (Annexes)

March 2012

Oriental Consultants Co., Ltd.

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12-050

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Thailand Greenhouse Gas Management Organization

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Annexes

1: Capacity assessment
2: Materials for PIN study session
3: Project long list
4: Materials for training in Japan
5: Materials for CTC
6: JCC M/M

Annex 1: Capacity assessment

1st Quarter Exam

Instructions

- Please answer all 10 questions in your own words (**please do not simply copy and paste from external sources**).
- Discussion with others is encouraged but each person should write his/ her own answer in order to evaluate the level of understanding accurately.
- Please answer questions in English.
- Please try to write an answer within the target number of words of each question; however, the number is just for reference and you can write more than or less than that target.
- Please submit a completed answer in Word format to Ms. Eiko Watatsu of JICA Expert Team by email (watatsu@oriconsul.com) by the **evening of 14th July**.

A1-1

JICA Training Seminar courses covered in this exam

Items	Training Topics	Seminar Date
CDM	1. Background and history of CDM/ current situation and issues	20/04/2010
	2. Technical aspects of baseline determination	27/04/2010
	3. Overview of large-scale/small-scale methodologies	25/05/2010
	4. Technical aspects of additionality demonstration	22/06/2010
Carbon Trading	1. Background, history and overview of carbon trading markets in the world	20/04/2010
	2. Overview of European Emission Trading System (EU-ETS) and Tokyo ETS	27/04/2010
	3. Overview of emission trading systems in the United States, and future international trading system in post 2012	22/06/2010
	4. Overview of voluntary emission trading system in Japan - J-VER	29/06/2010
UNFCCC Structure and Negotiations	1. Overview of UNFCCC and international negotiations: from establishment to present	20/04/2010
	2. UNFCCC and key international negotiations after COP 3	27/04/2010
	3. Overview of international negotiations over post-2012 mechanisms	25/05/2010
	4. Overview of international negotiations by EU and the United States over post-2012 mechanisms	22/06/2010
	5. MRV/NAMA/ SCM	29/06/2010
	6. Exercise: MRV/NAMA/SCM	29/06/2010

Word Count
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"The Project for Capacity Development and Institutional Strengthening for GHG Mitigation in the Kingdom of Thailand"

Name: (Department/ Office)

A. CDM (4 questions)

1. Describe your idea on current issues or problems of CDM. (around 150 words)

2. Describe definition of "baseline" of CDM project activity and why setting a baseline is important. (around 100 words)

3. Describe name and outline of an approved CDM methodology, either small-scale or large-scale, which is most frequently used in registered CDM projects. (around 100 words)

Word Count
Ctrl+Shift+G

4. Describe how the additionality is demonstrated in the PDD of "TBEC Tha Chang Biogas Project." And describe your idea on its validity of additionality demonstration. (around 250 words)

A1-2

Word Count
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"The Project for Capacity Development and Institutional Strengthening for GHG Mitigation in the Kingdom of Thailand"

B. Carbon Trading (3 questions)

5. Describe the outline of EU-ETS phases I, II, and III. (around 150 words)

6. Select one of the regional carbon markets in USA and describe its outline. (around 100 words)

7. Referring to J-VER positive list, describe your own idea about what would be the potential project types in "T-VER". Please choose at least 2 potential project types and the reason why you select those types (exclude projects in J-VER positive list). (around 150 words)

Word Count
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C. UNFCCC Structure and Negotiations (3 questions)

8. Choose 3 key issues in Copenhagen Accord and describe your opinion about each. (around 200 words)

A1-3

Word Count
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"The Project for Capacity Development and Institutional Strengthening for GHG Mitigation in the Kingdom of Thailand"

9. Describe outline of international support NAMA and domestically-funded NAMA. (Around 100 words)

10. Select two key players in the post-Kyoto scheme and describe reason why you choose them. (Around 100 words)

Thank you for your cooperation!

Word Count
Ctrl+Shift+G

2nd Quarter Exam

Instructions

- Please elaborate to answer all 10 questions in your own words (**Do not copy and paste information from JICA seminar materials and external sources**).
- Discussion with others is encouraged but each person should write his/ her own answer in order to evaluate the level of understanding accurately.
- Please answer questions in English.
- Please submit a completed answer in Word format to Ms. Eiko Watatsu of JICA Expert Team by email (watatsu@oriconsul.com) by the evening of 30th December.

JICA Training Seminar courses covered in this exam

Items	Training Topics	Seminar Date
CDM	5. Measures to obtain CER of CDM project	07/09/2010
	6. Validation and Verification including communication with DOE	07/09/2010
	7. Overview of programmatic CDM (PoA)	21/09/2010
	8. Exercise: Programmatic CDM (PoA)	21/09/2010
	9. Development of CDM project activity	28/09/2010
	10. AR-CDM/current situation and issues	23/11/2010
GHG Mitigation in relevant sectors	1. International trend in GHG mitigation measures	28/09/2010
	2. Monitoring of contribution to the sustainable development by mitigation measures, including co-benefit approach	19/10/2010
	3. Importance of low carbon society/low carbon city	19/10/2010
	4. Mitigation measures in commercial building and residential sectors	23/11/2010
	5. Exercise: Quantification of GHG emission reduction with MRV (commercial building and residential sectors)	23/11/2010
	6. Mitigation measures in waste management sector	23/11/2010
	7. Exercise: Quantification of GHG emission reduction with MRV (waste management sector)	23/11/2010
UNFCCC Structure and Negotiations	7. REDD/ carbon sink	06/07/2010
	8. Exercise: REDD/ carbon sink	06/07/2010
Carbon Footprint	1. Overview of carbon footprint concept and current situation of the system in the world	12/10/2010
	2. LCA related issues	12/10/2010
	3. Calculation of carbon footprint	12/10/2010
	4. Issues in implementation and dissemination of carbon footprint system	19/10/2010
GHG Inventory	1. Overview of IPCC Guideline	07/09/2010
	2. Introduction of GHG inventory of Japan and Thailand	14/09/2010
	3. Overview of energy sector	14/09/2010
	4. Overview of industrial processes and product use sector (IPPU)	14/09/2010
	5. Overview of agriculture, forestry, and other land-use sector (AFOLU)	21/09/2010
	6. Overview of waste sector	28/09/2010

"The Project for Capacity Development and Institutional Strengthening for GHG Mitigation in the Kingdom of Thailand"

A. CDM (3 questions)

1. Describe your idea on advantages and benefits of Programme of Activities (PoA) compared with a regular CDM project.

2. Describe three issues on A/R-CDM project and their solutions.

3. Use Excel and calculate the IRR under the specified conditions.

Assumptions:

- Initial investment: 10,000 (in Year 1 only)
- O&M cost: 500 (from Year 2 onward)
- Raw material acquisition cost: 1,000 (from Year 2 onward)
- Annual profit: 3,000 (from Year 2 onward)
- CER sales revenue: 500 (from Year 2 onward)
- Evaluation period: 10 years
- Compare result without CDM and with CDM

Calculation: Input the data in excel sheet shown below and calculate IRR by using FUNCTIN tool.

	A	B	C	D	E	F	G	H	I	J	K	L
1		Year	1	2	3	4	5	6	7	8	9	10
2	Cost	Initial investment	10,000									
3		O&M										
4		Materials										
5	Revenue	profit										
6		CER sales										
7	Cash flow											
8	IRR with CDM:		=IRR(C7:L7)			%						
9	IRR without CDM:					%						

B. GHG mitigation (2 questions)

4. Select one of the major GHG emitting sectors in Thailand, and describe at least 3 possible GHG mitigation measures in that sector, which you think are suitable and effective to implement in Thailand (Please refer to Question 9.)

5. Select one of the GHG mitigation measures that you mentioned above and describe its co-benefit.

"The Project for Capacity Development and Institutional Strengthening for GHG Mitigation in the Kingdom of Thailand"

C. UNFCCC Structure and Negotiations

6. Describe definition of "REDD" and describe your idea on what is the possible project candidates of REDD in Thailand.

D. Carbon Foot Print (2 questions)

7. Taking into account LCA, describe GHG emission activities from each of the 5 cycle stages of a car production: raw material acquisition, manufacturing, distribution, use/sales, and disposal/ recycling.

8. Describe your idea on how Carbon Footprint contributes to CO_2 emission reduction.

E. GHG Inventory (2 questions)

9. Describe your idea on which sector is the largest contributer to the Thailand's GHG inventory (largest emitter), among "Energy sector", "IPPU sector", "Agricultural sector", "Land use sector", and "Waste sector"? Also describe some of the main emission sources of the selected sector.

10. Describe your idea on why it is important for Thailand to develop a GHG inventory (excluding the reason that UNFCCC requires the development and submission of GHG inventory.)

3rd Quarter Exam

Instructions

- Please elaborate to answer all 7 questions in your own words (**Do not copy and paste information from JICA seminar materials and external sources**).
- Discussion with others is encouraged but each person should write his/ her own answer in order to evaluate the level of understanding accurately.
- Please answer questions in English.
- Please submit a completed answer in Word format to Mr. Fumio Tsukamoto of JICA Expert Team by email (tsukamoto@oriconsul.com) by the evening of 10th January 2012.

JICA Training Seminar courses covered in this exam

Items	Training Topics	Seminar Date
Carbon Trading	6. Japan's Voluntary Emissions Trading Scheme (JVETS)	10/05/2011
UNFCCC Structure and Negotiations	9. & 10. UNFCCC Structure & Negotiations :Technology Transfer	11/01/2011
GHG Mitigation in relevant sectors	8. & 9. GHG Mitigation Measures in Energy and Industry Sectors	18/01/2011
	10. & 11. GHG Mitigation Measures in Transportation Sector	15/02/2011
Carbon Footprint	5. Issues in carbon footprint (CFP) system for services - Example of printing services -	22/02/2011
	6. Carbon Footprint for Organization	10/05/2011
GHG Inventory	7. Overview of QA/QC of IPCC Guideline and Example of QA/QC measures taken in Japan	11/01/2011
	8. Analysis of Key Categories and Assessment of Uncertainties, Example from Japanese Cases	15/02/2011
	9. & 10. Review and Practice of Greenhouse Gas Inventory	22/02/2011

A1-7

"The Project for Capacity Development and Institutional Strengthening for GHG Mitigation in the Kingdom of Thailand"

Name: (Department/ Office)

A. UNFCCC (1 question)

1. Describe your idea on what kind of technology transfer, in terms of transfer of know-how/ experience and equipment, is useful for climate change mitigation in Thailand.

·Know-how/ experience:

·Equipment

B. GHG mitigation (2 questions)

2. Describe your idea on what would be possible mitigation measures in energy sector of Thailand.

3. From the below equation that can be used to estimate GHG emissions of the road transport, choose 2 parameters and describe how changing the selected parameters can contribute to climate change mitigation. *(example: reducing the value for parameter "Fuel," which indicates the fuel consumption of each for fuel type for vehicle, can lead to less CO_2 emissions due to the reduced amount of fossil fuel combusted by vehicles)*

$$\frac{CO_2}{capita} = \frac{TransServ}{capita} \times \frac{Pkm(Tkm)}{TransServ} \times \sum_{Mode} \left(\frac{Vkm}{Pkm(Tkm)} \times \frac{Fuel}{Vkm} \times \frac{CO_2EF}{Fuel} \right)$$

(a) (b) (c) (d) (e) (f)

Note: TransServ:transport-service, Pkm:passenger-km, Tkm:ton-km, Vkm:vehicle-km

(Source: "Transportation in Low Carbon Society", Yuichi Moriguchi, "Path toward Low-Carbon Society: Japan and Asia1st session: "The results of 'Japan Low-Carbon Society Scenarios toward 2050'Project" (Feb. 12th 2009)")

C. Carbon Footprint (1 question)

4. Describe what kinds of GHG emissions are included in the scope 3 of GHG Protocol corporate standard

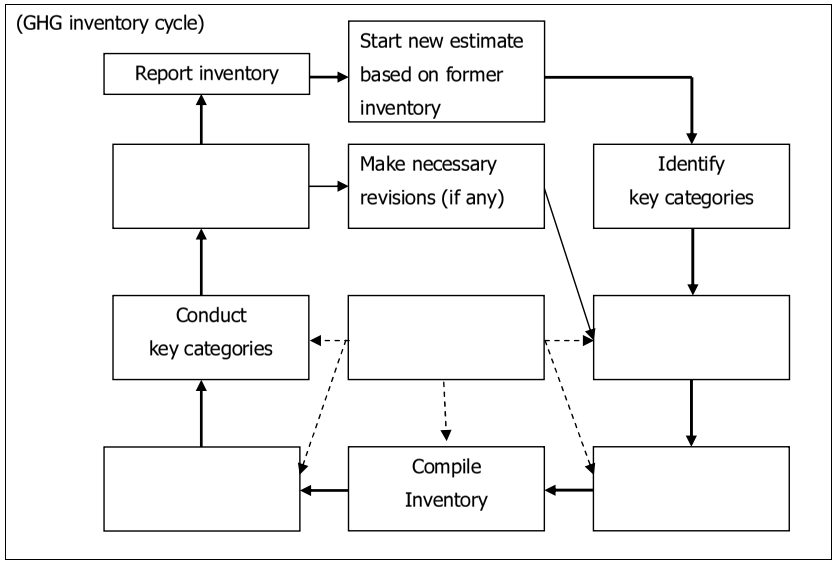
D. Carbon Trading (1 question)

5. Describe the benefits for Thai participants to join in a voluntary emission trading system, such as JVETS.

E. GHG Inventory (2 questions)

6. Why is key category assessment important for GHG inventory development?

7. The flow chart shown below indicates the GHG inventory cycle suggested in IPCC 2006 Guidelines. Please fill out the 5 empty boxes by choosing the appropriate inventory cycle from below.
    a. Collect data and estimate emissions and removals
    b. Check inventory through QA
    c. QC checking and documentation
    d. Uncertainty: evaluate input data and assess overall inventory
    e. Select method while considering data collection, uncertainty and time series



Thank you!

17 January 2010

Draft Check list for the Capacity Assessment

Structure of Check Points
- Each subject includes “Basic knowledge”, “Latest knowledge” and “Technical points”.

Types of Questions
- Questions format can be categorized to “Do you remember ....?” and “Is it easy to explain ....?”.
- Concerning the explanation, it means the situation to explain to someone who does not know the issue at all. The responder selects the answer assuming the situation to explain beginners of private entities.

A1-10

1. CDM

<Check Points>
- Number of CDM projects and their major types in Thailand,
- Number of CDM projects in the world, major host countries/project types,
- Advantages and issues of Programme of Activities (PoA),
  Categories of approved methodologies, in particular, the relation between types of methodologies and issuance if CERs,
- Most frequently applied large scale /small scale・methodologies,
- Trend of request for reviews and rejection of request for registration,
- Change/trend of institutional issues and technical issues of CDM (early stage, project increase stage, present),
- Major pitfalls for project proponents in terms of baseline settings, additionality, and monitoring plan.

1.1 Basic knowledge

Q-1: Do you remember total number of each type of registered CDM projects in Thailand until January 2010? [Up to 4th Jan. 2010: 30 projects have been registered.]
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-2: Concerning CDM projects in Thailand, is it easy for you to explain about the characteristics, trend and their reasons of the registered projects and approved projects by Thai DNA?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-3: Do you remember total number of registered CDM projects in the world until January 2010, including their major host countries and their project types? [Up to 4th Jan. 2010: Total 1,995 projects have been registered.]
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-4: Is it easy to explain about the characteristics, trend and their reasons of the registered CDM projects in the world?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-5: Is it easy to explain about the mechanism, characteristics and issues of small scale CDM?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-6: Do you remember the total number of registered small scale CDM projects and their major types in the world?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-7: Is it easy to explain about the mechanism, characteristics and issues of AR-CDM?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-8: Do you remember the total number of registered AR-CDM projects and their major types in the world?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-7: Is it easy to explain about the mechanism, characteristics and issues of PoA-CDM?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-8: Do you remember the total number of registered PoA-CDM projects and their major types in the world?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

1.2 Latest knowledge

Q-11: Do you remember the number of types of approved CDM methodologies, the frequency of their utilization, and relation with the amount of issued CER?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-12: Do you remember the most frequently applied types of large scale/small scale CDM methodologies?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-13: Is it easy to explain about the request for review, including in what case the review is requested and how does the procedure go through?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-14: Do you remember the recent trend about the types (methodologies) of projects which are reviewed most frequently?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Do you remember the recent trend about the most frequent (or typical) reasons of request for reviews/rejection of registration requests?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-16: Is it easy to explain why such types/reasons of reviewed/rejected projects as above mentioned (Q-10 and 11) are increasing recently?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

1.3 Technical points

Q-17: Which is the recent and most important international problem to promote CDM projects?
Q-1: Much private entities are still not familiar with CDM (and its merit),
Q-2: Regional imbalance of host countries,
Q-3: Imbalance of project types,
Q-4: Too complicated modalities and procedures of CDM (CDM = Complicated and Difficult Mechanism)
Q-5: Too rigorous decision process for the registration by the CDM EB
Q-6: Limited know-how for the realization of CDM projects
Q-7: Limited sectors which have potential to develop CDM projects
Q-8: Others ( )

Q-18: Whish is the recent and most important problem to promote CDM projects in Thailand?
Q-1: Much private entities are still not familiar with CDM (and its merit),
Q-2: Imbalance of private sectors which have knowledge about CDM,
Q-3: Too complicated modalities and procedures of CDM (CDM = Complicated and Difficult Mechanism)
Q-4: Too rigorous decision process for the registration by the CDM EB
Q-5: Limited know-how for the realization of CDM projects
Q-6: Limited sectors which have potential to develop CDM projects
Q-7: Others ( )

Q-19: Do you have any measures and/or ideas to solve above mentioned problems? / Is it easy to explain the methods/ideas?
A-1: No particular idea/Not easy to explain,
A-2: Have a vague idea/Possible to explain roughly,
A-3: Have original idea(s)/Easy to explain without problems

Q-20: For project proponents, which process is the most difficult to understand or tend to be trapped?
A-1: Whole process of CDM project cycle (procedure, documents, etc.)
A-2: Differences between CDM projects and normal projects, in particular concerning decision making records,
A-3: Differences between CDM projects and normal projects, in particular concerning financial planning = profitability = additionality,
A-4: Selection and understanding of approved methodologies / proposal of new methodologies,
A-5: Determination of project boundaries and explanation of leakages,
A-6: Baseline scenario setting or selection,
A-7: Demonstration of additionality,
A-8: Determination of monitoring plan,
A-9: Calculation the amount of emission reduction by the project,
A-10: Validation including communication with a DOE,
A-11: Request for approval to the host country's DNA, including communication with them,
A-12: Request for registration to the UNFCCC, including communication with the secretariat,
A-13: Negotiation and conclusion of ERPA with CER buyer(s).

Q-21: Is it easy to explain major pitfalls for project proponents about baseline settings, including

their solutions and practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> Problem(s):
Solution(s)
A-3: Easy to explain without problems
<Practical example(s)> Problem(s):
Solution(s)

Q-22: Is it easy to explain major pitfalls for project proponents about additionality, including their solutions and practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> Problem(s):
Solution(s)
A-3: Easy to explain without problems
<Practical example(s)> Problem(s):
Solution(s)

Q-23: Is it easy to explain major pitfalls for project proponents about monitoring plan, including their solutions and practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> Problem(s):
Solution(s)
A-3: Easy to explain without problems
<Practical example(s)> Problem(s):
Solution(s)

Q-24: Is it easy to explain major pitfalls for project proponents during validation process, including their practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> ( )
A-3: Easy to explain without problems
<Practical example(s)> ( )

Q-25: Is it easy to explain major pitfalls for project proponents during verification process, including their practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> ( )
A-3: Easy to explain without problems
<Practical example(s)> ( )

2. Carbon emission trading

<Check Points>
- Major emission trading schemes in the world, their types and current conditions (carbon trading /other trading),
- Current condition of Kyoto credit,
  - Characteristics of major host countries,
  - Characteristics of major project types,
- Current condition of trading schemes of developed countries including EU-ETS, trading schemes in the USA, etc.

2.1 Basic knowledge

Q-1: Is it easy to explain the trend and history of emission trading in the world?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-2: Do you remember what kinds of carbon trading schemes are in operation in the world?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-3: Do you remember what kinds of trading schemes are in operation besides carbon trading in the world?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-4: Is it easy to explain the current conditions and characteristics of Kyoto credits (CDM, JI, GIS/ET)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-5: Is it easy to explain the role and structure of National Registry system?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

2.2 Latest knowledge

Q-6: Is it easy to explain the characteristics of EU-ETS (organizer, participating countries, trading amount, content of the scheme, etc.)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-7: Is it easy to explain problems/issues of EU-ETS, including their reasons?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-8: Is it easy to explain the characteristics of regional carbon trading schemes among states in the USA (organizer, trading amount, content of the scheme, etc.)?

A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-9: Is it easy to explain problems/issues of the regional trading schemes in the USA, including their reasons?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

2.3 Technical points

Q-10: If Thailand participate international carbon trading scheme, do you have any ideas about merits and issues of it?
A-1: No particular idea/Not easy to explain,
A-2: Have a vague idea/Possible to explain roughly,
A-3: Have original idea(s)/Easy to explain without problems

Q-11: If Thailand establishes its own domestic carbon trading scheme, do you have any ideas about merits and issues of it?
A-1: No particular idea/Not easy to explain,
A-2: Have a vague idea/Possible to explain roughly,
A-3: Have original idea(s)/Easy to explain without problems

Q-12: Do you have any ideas about how the Thai private entities understand emission carbon trading scheme?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-13: Which entity will be the key to the carbon emission trading in Thailand?
A-1: Governmental organizations/departments,
A-2: Banks and securities firms,
A-3: Project implementers (energy industries, manufacturers, etc.)
A-4: Project implementers (agriculture, forestry, etc.)
A-5: Others ( )

3. GHG Mitigation Measures

<Check Points>
- International trend of GHG mitigation measures,
- Technical issues in major sectors for which GHG mitigation measures should be promoted, including relations with CDM,
  - Commercial buildings and residences,
  - Waste management,
  - Transport,
  - Energy and industries,
  - Agriculture, land use and forestry,
- Co-benefit approach of mitigation measures

3.1 Basic knowledge

Q-1: Is it easy to explain the general necessity and merit of mitigation measures (except for CDM)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-2: Is it easy to explain the general issues/difficulties of mitigation measures (except for CDM)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-3: Is it easy to explain necessity and merit of mitigation measures in Thailand (except for CDM)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-4: Is it easy to explain the issues/difficulties of mitigation measures in Thailand (except for CDM)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

3.2 Latest knowledge

Q-5: Have you read the IPCC-AR4-WG3 Report?
A-1: No/Have read a part which was referred to other document,
A-2: Have read a part of SPM or TS of WG3,
A-3: Have read all of SPM or TS of WG3,
A-4: Have read a part of the main report of WG3,
A-5: Have read all of the main report of WG3,
A-6: Have not read WG3 Report but have read a part of WG1 Report,
A-7: Have not read WG3 Report but have read a part of WG2 Report,

Q-6: Is it easy to explain co-benefit type mitigation measures, including practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> Problem(s):
Solution(s)
A-3: Easy to explain without problems

<Practical example(s)> Problem(s):
Solution(s)

Q-7: Is it easy to explain the current condition about emissions resulting from fuel used for International transport (aviation and marine bunker fuels)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

3.3 Technical points

Q-8: Which sector has high importance for mitigation in Thailand? What is the reason of the importance?
A-1: Commercial buildings and residences: (Reason:)
A-2: Waste management (Reason:)
A-3: Transport (Reason:)
A-4: Energy and industries (Reason:)
A-5: Agriculture, land use and forestry (Reason:)
A-6 Others ( ) (Reason:)

Q-9: Which is the major pitfall /difficult to understand for private entities when implementing mitigation measures in Thailand (except for CDM)?
A-1: Necessity for the implementation of mitigation measures,
A-2: Merit by the mitigation measures,
A-3: Quantification method of the effect of mitigation measures,
A-4: Availability of technologies for mitigation measures,
A-5: Financing for implementation/operation and maintenance of mitigation measures,
A-6: Technology/human capacity for implementation/operation and maintenance of mitigation measures.

Q-10: Is it easy to explain technical issues to promote mitigation measures in the commercial buildings and residential sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-11: Is it easy to explain institutional issues to promote mitigation measures in the commercial buildings and residential sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-12: Is it easy to explain technical issues to promote mitigation measures in the waste management sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-13: Is it easy to explain institutional issues to promote mitigation measures in the waste management sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-14: Is it easy to explain technical issues to promote mitigation measures in the transport sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-15: Is it easy to explain institutional issues to promote mitigation measures in the transport sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-16: Is it easy to explain technical issues to promote mitigation measures in the energy and industrial sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-17: Is it easy to explain institutional issues to promote mitigation measures in the energy and industrial sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-18: Is it easy to explain technical issues to promote mitigation measures in the agriculture, land use and forestry sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems
]

Q-19: Is it easy to explain institutional issues to promote mitigation measures in the agriculture, land use and forestry sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

4. UNFCCC and International Negotiations

<Check Points>
- Major points until COP 15 and future trend
- Historical points of the international negotiations from the establishment of UNFCCC until present
  - Developed countries,
  - Major emitters,
  - Other developing countries (including particularly vulnerable developing countries),
- NAMA/SCM/MRV: Major discussions and issues,
- REDD/sinks: Major discussions and issues.

4.1 Basic knowledge

Q-1: Is it easy to explain the background and objectives for the establishment of UNFCCC?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-2: Is it easy to explain the relationship between UNFCCC and IPCC?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-3: Is it easy to explain the background from adoption to the date of effect of the Kyoto Protocol, including (1) Definition of emission reduction targets/commitments, (2) Introduction of Kyoto Mechanisms, (3) Marrakesh Accord, (4) Withdrawal of the USA and Australia, and (5) Final ratification and effect of the KP?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-4: Is it easy to explain criticism from various stakeholders, including governments of developed and developing countries, industrial sectors of developed and developing countries, scientists, NGOs, etc?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

Q-5: What is the major problem of the Kyoto Protocol? (Please select the one closest to your own opinion.)
A-1: Emission reduction targets are low,
A-2: Covered GHGs are limited,
A-3: Number of Annex I Parties (with commitments) are low,
A-4: The rule of non-compliance is not enough,
A-5: No developing countries has commitment,
A-6: Kyoto Mechanisms are difficult to utilize,
A-7; Support system for developing countries are limited,
A-8: Others ( )

Q-6: What is the merit of the Kyoto Protocol? (Please select the one closest to your own opinion.)
A-1: Numeric target and commitment for the emission reduction,
A-2: Clear division of countries with and without commitment,

A-3: Introduction of Kyoto Mechanisms,
A-4: No special merit is confirmed,
A-5: Others ( )

4.2 Latest knowledge

Q-7: Do you remember the major decision (Copenhagen Accord) at COP15?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-8: Is it easy to explain the negotiation background of the Copenhagen Accord?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

Q-9: Which country/organization had most impact to the negotiation mentioned in the Q-8?
A-1: USA
A-2: China
A-3: Denmark
A-4: BASIC
A-5: G77＋China
A-6: EU
A-7: AOSIS
A-8: Others ( )

Q-10: Do you remember other decisions at COP15 concerning CDM and mitigation?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

Q-11: Do you remember major trend of recent international negotiation concerning the framework post 2012 (except for COPs)?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

4.3 Technical points

Q-12: Do you remember what is NAMA and what kind of discussions are on going in the international negotiations about NAMA?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-13: Is it easy to explain major issues of NAMA?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-14: Do you remember what is SCM and what kind of discussions are on going in the international negotiations about SCM?
A-1: Forgot/Not familiar,

A-2: Remember roughly,
A-3: Remember almost exactly

Q-15: Is it easy to explain major issues of SCM?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-16: Do you remember what is MRV including its historical background?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-17: Is it easy to explain general significance and meaning of MRV?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-18: Is it easy to explain the significance and meaning of MRV in developing countries including Thailand?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-19: Do you remember what kind of discussions are on going in the international negotiations about REDD/sinks?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-20: Is it easy to explain major issues of REDD?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-21: Do you remember what kind of discussions are on going in the international negotiations about technology transfer from developed to developing countries?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-22: Is it easy to explain general issues of technology transfer?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-23: Is it easy to explain major issues of technology transfer in Thailand?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

5. Carbon Footprint

<Check Points>
- Concept of the system (including background and international trend),
- Condition of dissemination in Thailand and in the world,
- Calculation methods: points and technical issues,
- Issues for practical application and dissemination of the system.

5.1 Basic knowledge

Q-1: Is it easy to explain about the concept of carbon footprint system?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

Q-2: Is it easy to explain about international trend and historical background of the carbon footprint system?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

Q-3: Is it easy to explain about the position and role of the carbon footprint system?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

5.2 Latest knowledge

Q-4: Do you remember dissemination condition of the carbon footprint system in Thailand?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-5: Do you remember example about dissemination condition of the carbon footprint system in other countries?
A-1: Forgot/Not familiar,
A-2: Not familiar other than a part,
A-3: Remember roughly,
A-4: Remember almost exactly

5.3 Technical points

Q-6: Do you have any idea about technical issues of the carbon footprint system? / Is it easy to explain about the idea?
A-1: No particular idea/Not easy to explain,
A-2: Have a vague idea/Possible to explain roughly,
A-3: Have original idea(s)/Easy to explain without problems

Q-7: Do you have any idea necessary condition for the appropriate utilization of the carbon footprint system? / Is it easy to explain about the idea?
A-1: No particular idea/Not easy to explain,
A-2: Have a vague idea/Possible to explain roughly,
A-3: Have original idea(s)/Easy to explain without problems

Q-8: Which sector will be effective to introduce carbon footprint system in Thailand? / Is it easy to explain about the reason?

A-1: Food ( )
A-2: Beverage ( )
A-3: Textile ( )
A-4: Detergent, shampoo, etc. ( )
A-5: Others ( )

6. GHG Inventory

<Check Points>
- Role of GHG Inventory (National inventories, including relations with projects such as CDM),
- Outline and important points of IPCC Guidelines concerning GHG inventory,
- Technical points for the establishment and revisions of GHG inventory.

6.1 Basic knowledge

Q-1: Do you remember the IPCC 1996 Revised Guidelines?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-2: Have you read the above mentioned Guidelines?
A-1: No,
A-2: Yes

Q-3: Do you remember IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories (Good Practice Report)?
A-1: No,
A-2: Yes

Q-4: Have you read the above mentioned Report?
A-1: No,
A-2: Yes

Q-5: Do you remember IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry (GPG LULUCF Report)?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-6: Have you read the above mentioned Report?
A-1: No,
A-2: Yes

Q-7: Do you remember the IPCC 2006 Guidelines?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-8: Have you read the above mentioned Guidelines?
A-1: No,
A-2: Yes

6.2 Role of GHG Inventory

**** The questions below are not for beginners but for people with some knowledge/experience and more.***

Q-9: Do you remember the calculation method of IPCC Guidelines are applied to the CDM methodologies?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-10: Is it easy to explain if the official statistics for GHG inventory are developed in each country, it will bring potential for co-benefits including air quality improvement?

A-1: Not easy to explain,
A-2: Easy to explain without problems

Q-11: Do you remember what are the Annex I Parties of UNFCCC?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-12: Do you remember (at least one of) requirement for the Annex I Parties to participate Kyoto Mechanisms?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-13: Do you remember examples of policies which applying the results of GHG inventory calculation?
A-1: Forgot/Not familiar,
A-2: Remember it

6.3 Outline and points of IPCC Guidelines

: "IPCC Guidelines" include IPCC 1996 Revised Guidelines, IPCC GPG, IPCC GOG LULUCF, and IPCC 2006 Guidelines.

Q-14: Do you remember common (standard) statistical data and emission factor data required for the GHG inventory?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-15: Have you calculated GHG using IPCC Guidelines?
A-1: No,
A-2: Yes

Q-16: Has Thailand developed enough statistical data and emission factor data required for the GHG inventory?
A-1: Not familiar,
A-2: Not yet developed,
A-3: Already developed.

Q-17: Is the organization structure is established to develop GHG inventory in Thailand?
A-1: No,
A-2: Yes

Q-18: How many years have Thailand calculated GHG inventory except for 1994? When the calculation was implemented in most recent year?
A-1: Calculation has been done for only one year, and the latest one was before 2004,
A-2: Calculation has been done for several years, and the latest one was after 2004

6.4 Latest technical points

Q-19: Do you remember which Guidelines are applied to the GHG inventory currently open to public in Thailand?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-20: Do you have experience of calculating GHG emission amount of sectors as follows:
- CO2 emission from energy sector,
- CO2 emission from industrial processes,

- CH4 emission from rice paddy fields,
- GHG emission from waste management sector,
- Calculation of new sectors and methods, for example, carbon capture and storage, CH4 emission from abandoned mines,

A-1: None,
A-2: Have experience of up to three sectors,
A-3: Have experience of more than four sectors,

Q-22: Do you remember the Key categories?
A-1: Forgot/Not familiar,
A-2: Remember it,
A-3: Have experience of calculating it

Q-23: Do you remember the "Uncertainties"?
A-1: Forgot/Not familiar,
A-2: Remember it,
A-3: Have experience of calculating it

Q-24: Do you remember the emission factors data base (EFDB)?
A-1: Forgot/Not familiar,
A-2: Remember it
A-3: Have experience of utilizing it.

Check List for 2nd Capacity Assessment

10 February 2011

Structure of Check Points

- Each subject contains question to check your "Basic knowledge", "Latest knowledge" and "Technical knowledge".

Types of Questions

- Questions asked are "Do you remember ....?" and "Is it easy to explain ....?".
- Please check whether you are able to explain to someone who does not know anything about the issue at all.

Deadline for submission

- Please answer in the Answer Sheet
- Submit answer sheet to Mr. Morimoto of JICA Expert Team (morimoto-wt@oriconsul.com)
- Submit **before Friday, March 4th, 2011** (late submission will not be accepted for capacity assessment)

A1-19

"The Project for Capacity Development and Institutional Strengthening for GHG Mitigation in the Kingdom of Thailand"

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1. CDM

<Check Points>
- Number of CDM projects and their major types in Thailand,
- Number of CDM projects in the world, major host countries/project types,
- Advantages and issues of Programme of Activities (PoA),
  Categories of approved methodologies, in particular, the relation between types of methodologies and issuance if CERs,
- Most frequently applied large scale /small scale・methodologies,
- Trend of request for reviews and rejection of request for registration,
- Change/trend of institutional issues and technical issues of CDM (early stage, project increase stage, present),
- Major pitfalls for project proponents in terms of baseline settings, additionality, and monitoring plan.

1.1 Basic knowledge

Q-1: Do you remember total number of each type of registered CDM projects in Thailand until February 2011?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-2: Concerning CDM projects in Thailand, is it easy for you to explain about the trend and characteristics of the registered projects and approved projects by Thai DNA?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-3: Do you remember total number of registered CDM projects in the world until February 2011, including their major host countries and their project types?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-4: Is it easy to explain about the trend and characteristics of the registered CDM projects in the world?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-5: Is it easy to explain about the mechanism, characteristics and issues of small scale CDM?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-6: Do you remember the total number of registered small scale CDM projects and their major types in the world?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-7: Is it easy to explain about the mechanism, characteristics and issues of AR-CDM?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-8: Do you remember the total number of registered AR-CDM projects and their major types in the world?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-7: Is it easy to explain about the mechanism, characteristics and issues of PoA-CDM?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-8: Do you remember the total number of registered PoA-CDM projects and their major types in the world?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

1.2 Latest knowledge

Q-11: Do you remember the number of types of approved CDM methodologies, the frequency of their utilization, and relation with the amount of issued CER?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-12: Do you remember the most frequently applied types of large scale/small scale CDM methodologies?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-13: Is it easy to explain about the request for review, including in what case the review is requested and how does the procedure go through?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-14: Do you remember the recent trend about the types (methodologies) of projects which are reviewed most frequently?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-15: Do you remember the recent trend about the most frequent (or typical) reasons of request for reviews/rejection of registration requests?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-16: Is it easy to explain why such types/reasons of reviewed/rejected projects as above mentioned are increasing recently?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

1.3 Technical points

Q-17: Which is the recent and most important international problem to promote CDM projects?
Q-1: Much private entities are still not familiar with CDM (and its merit),
Q-2: Regional imbalance of host countries,
Q-3: Imbalance of project types,
Q-4: Too complicated modalities and procedures of CDM
Q-5: Too rigorous decision process for the registration by the CDM EB
Q-6: Limited know-how for the realization of CDM projects
Q-7: Limited sectors which have potential to develop CDM projects
Q-8: Others ( )

Q-18: Whish is the recent and most important problem to promote CDM projects in Thailand?
Q-1: Much private entities are still not familiar with CDM (and its merit),
Q-2: Imbalance of private sectors which have knowledge about CDM,
Q-3: Too complicated modalities and procedures of CDM
Q-4: Too rigorous decision process for the registration by the CDM EB
Q-5: Limited know-how for the realization of CDM projects
Q-6: Limited sectors which have potential to develop CDM projects
Q-7: Others ( )

Q-19: Do you have any measures and/or ideas to solve above mentioned problems? / Is it easy to explain the methods/ideas?
A-1: No particular idea/Not easy to explain,
A-2: Have a vague idea/Possible to explain roughly,
A-3: Have original idea(s)/Easy to explain without problems

Q-20: For project proponents, which process is the most difficult to understand or tend to be trapped?
A-1: Whole process of CDM project cycle (procedure, documents, etc.)
A-2: Differences between CDM projects and normal projects, in particular concerning decision making records,
A-3: Differences between CDM projects and normal projects, in particular concerning financial planning = profitability = additionality,
A-4: Selection and understanding of approved methodologies / proposal of new methodologies,
A-5: Determination of project boundaries and explanation of leakages,
A-6: Baseline scenario setting or selection,
A-7: Demonstration of additionality,
A-8: Determination of monitoring plan,
A-9: Calculation the amount of emission reduction by the project,
A-10: Validation including communication with a DOE,
A-11: Request for approval to the host country's DNA, including communication with them,
A-12: Request for registration to the UNFCCC, including communication with the secretariat,
A-13: Negotiation and conclusion of ERPA with CER buyer(s).

Q-21: Is it easy to explain major pitfalls for project proponents about baseline settings, including their solutions and practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> Problem(s):
Solution(s)
A-3: Easy to explain without problems
<Practical example(s)> Problem(s):
Solution(s)

Q-22: Is it easy to explain major pitfalls for project proponents about additionality, including their solutions and practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> Problem(s):
Solution(s)
A-3: Easy to explain without problems
<Practical example(s)> Problem(s):
Solution(s)

Q-23: Is it easy to explain major pitfalls for project proponents about monitoring plan, including their solutions and practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> Problem(s):
Solution(s)
A-3: Easy to explain without problems
<Practical example(s)> Problem(s):
Solution(s)

Q-24: Is it easy to explain major pitfalls for project proponents during validation process, including their practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> ( )
A-3: Easy to explain without problems
<Practical example(s)> ( )

Q-25: Is it easy to explain major pitfalls for project proponents during verification process, including their practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> ( )
A-3: Easy to explain without problems
<Practical example(s)> ( )

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2. Carbon emission trading

<Check Points>
- Major emission trading schemes in the world, their types and current conditions (carbon trading /other trading),
- Current condition of Kyoto credit,
  - Characteristics of major host countries,
  - Characteristics of major project types,
- Current condition of trading schemes of developed countries including EU-ETS, trading schemes in the USA, etc.

2.1 Basic knowledge

Q-1: Is it easy to explain the trend and history of emission trading in the world?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-2: Do you remember what kinds of carbon trading schemes are in operation in the world?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-3: Do you remember what kinds of trading schemes are in operation besides carbon trading in the world?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-4: Is it easy to explain the current conditions and characteristics of Kyoto credits (CDM, JI, GIS/ET)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-5: Is it easy to explain the role and structure of National Registry system?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

2.2 Latest knowledge

Q-6: Is it easy to explain the characteristics of EU-ETS (organizer, participating countries, trading amount, content of the scheme, etc.)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-7: Is it easy to explain problems/issues of EU-ETS, including their reasons?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-8: Is it easy to explain the characteristics of regional carbon trading schemes among states in the USA (organizer, trading amount, content of the scheme, etc.)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-9: Is it easy to explain problems/issues of the regional trading schemes in the USA, including their reasons?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

2.3 Technical points

Q-10: If Thailand participate international carbon trading scheme, do you have any ideas about merits and issues of it?
A-1: No particular idea/Not easy to explain,
A-2: Have a vague idea/Possible to explain roughly,
A-3: Have original idea(s)/Easy to explain without problems

Q-11: If Thailand establishes its own domestic carbon trading scheme, do you have any ideas about merits and issues of it?
A-1: No particular idea/Not easy to explain,
A-2: Have a vague idea/Possible to explain roughly,
A-3: Have original idea(s)/Easy to explain without problems

Q-12: Do you have any ideas about how the Thai private entities understand emission carbon trading scheme?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-13: Which entity will be the key to the carbon emission trading in Thailand?
A-1: Governmental organizations/departments,
A-2: Banks and securities firms,
A-3: Project implementers (energy industries, manufacturers, etc.)
A-4: Project implementers (agriculture, forestry, etc.)
A-5: Others ( )

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3. GHG Mitigation Measures

<Check Points>
- International trend of GHG mitigation measures,
- Technical issues in major sectors for which GHG mitigation measures should be promoted, including relations with CDM,
  - Commercial buildings and residences,
  - Waste management,
  - Transport,
  - Energy and industries,
  - Agriculture, land use and forestry,
- Co-benefit approach of mitigation measures

3.1 Basic knowledge

Q-1: Is it easy to explain the general necessity and merit of mitigation measures (except for CDM)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-2: Is it easy to explain the general issues/difficulties of mitigation measures (except for CDM)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-3: Is it easy to explain necessity and merit of mitigation measures in Thailand (except for CDM)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-4: Is it easy to explain the issues/difficulties of mitigation measures in Thailand (except for CDM)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

3.2 Latest knowledge

Q-5: Have you read the IPCC-AR4-WG3 Report?
A-1: No/Have read a part which was referred to other document,
A-2: Have read a part of SPM or TS of WG3,
A-3: Have read all of SPM or TS of WG3,
A-4: Have read a part of the main report of WG3,
A-5: Have read all of the main report of WG3,
A-6: Have not read WG3 Report but have read a part of WG1 Report,
A-7: Have not read WG3 Report but have read a part of WG2 Report,

Q-6: Is it easy to explain co-benefit type mitigation measures, including practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> Problem(s):
Solution(s)
A-3: Easy to explain without problems
<Practical example(s)> Problem(s):
Solution(s)

Q-7: Is it easy to explain the current condition about emissions resulting from fuel used for International transport (aviation and marine bunker fuels)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

3.3 Technical points

Q-8: Which sector has high importance for mitigation in Thailand? What is the reason of the importance?
A-1: Commercial buildings and residences: (Reason:)
A-2: Waste management (Reason:)
A-3: Transport (Reason:)
A-4: Energy and industries (Reason:)
A-5: Agriculture, land use and forestry (Reason:)
A-6 Others ( ) (Reason:)

Q-9: Which is the major pitfall /difficult to understand for private entities when implementing mitigation measures in Thailand (except for CDM)?
A-1: Necessity for the implementation of mitigation measures,
A-2: Merit by the mitigation measures,
A-3: Quantification method of the effect of mitigation measures,
A-4: Availability of technologies for mitigation measures,
A-5: Financing for implementation/operation and maintenance of mitigation measures,
A-6: Technology/human capacity for implementation/operation and maintenance of mitigation measures.

Q-10: Is it easy to explain technical issues to promote mitigation measures in the commercial buildings and residential sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-11: Is it easy to explain institutional issues to promote mitigation measures in the commercial buildings and residential sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-12: Is it easy to explain technical issues to promote mitigation measures in the waste management sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-13: Is it easy to explain institutional issues to promote mitigation measures in the waste management sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-14: Is it easy to explain technical issues to promote mitigation measures in the transport sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-15: Is it easy to explain institutional issues to promote mitigation measures in the transport sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-16: Is it easy to explain technical issues to promote mitigation measures in the energy and industrial sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-17: Is it easy to explain institutional issues to promote mitigation measures in the energy and industrial sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-18: Is it easy to explain technical issues to promote mitigation measures in the agriculture, land use and forestry sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems
]

Q-19: Is it easy to explain institutional issues to promote mitigation measures in the agriculture, land use and forestry sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

4. UNFCCC and International Negotiations

<Check Points>
- Major points until COP 15 and future trend
- Historical points of the international negotiations from the establishment of UNFCCC until present
  - Developed countries,
  - Major emitters,
  - Other developing countries (including particularly vulnerable developing countries),
- NAMA/SCM/MRV: Major discussions and issues,
- REDD/sinks: Major discussions and issues.

4.1 Basic knowledge

Q-1: Is it easy to explain the background and objectives for the establishment of UNFCCC?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-2: Is it easy to explain the relationship between UNFCCC and IPCC?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-3: Is it easy to explain the background from adoption to the date of effect of the Kyoto Protocol, including (1) Definition of emission reduction targets/commitments, (2) Introduction of Kyoto Mechanisms, (3) Marrakesh Accord, (4) Withdrawal of the USA and Australia, and (5) Final ratification and effect of the KP?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-4: Is it easy to explain criticism from various stakeholders, including governments of developed and developing countries, industrial sectors of developed and developing countries, scientists, NGOs, etc?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

Q-5: What is the major problem of the Kyoto Protocol? (Please select the one closest to your own opinion.)
A-1: Emission reduction targets are low,
A-2: Covered GHGs are limited,
A-3: Number of Annex I Parties (with commitments) are low,
A-4: The rule of non-compliance is not enough,
A-5: No developing countries has commitment,
A-6: Kyoto Mechanisms are difficult to utilize,
A-7; Support system for developing countries are limited,
A-8: Others ( )

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Q-6: What is the merit of the Kyoto Protocol? (Please select the one closest to your own opinion.)
A-1: Numeric target and commitment for the emission reduction,
A-2: Clear division of countries with and without commitment,
A-3: Introduction of Kyoto Mechanisms,
A-4: No special merit is confirmed,
A-5: Others ( )

4.2 Latest knowledge

Q-7: Do you remember the major decision (Cancun Agreements) at COP16?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-8: Is it easy to explain the negotiation background of the Cancun Agreements?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

Q-9: Which country/organization had most impact to the negotiation mentioned in the Q-8?
A-1: USA
A-2: China
A-3: Denmark
A-4: BASIC
A-5: G77＋China
A-6: EU
A-7: AOSIS
A-8: Others ( )

Q-10: Do you remember other decisions at COP16 concerning CDM and mitigation?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

Q-11: Do you remember major trend of recent international negotiation concerning the framework post 2012 (except for COPs)?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

4.3 Technical points

Q-12: Do you remember what is NAMA and what kind of discussions are on going in the international negotiations about NAMA?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-13: Is it easy to explain major issues of NAMA?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-14: Do you remember what is SCM and what kind of discussions are on going in the international negotiations about SCM?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-15: Is it easy to explain major issues of SCM?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-16: Do you remember what is MRV including its historical background?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-17: Is it easy to explain general significance and meaning of MRV?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-18: Is it easy to explain the significance and meaning of MRV in Thailand and developing countries?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-19: Do you remember what kind of discussions are on going in the international negotiations about REDD/sinks?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-20: Is it easy to explain major issues of REDD?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-21: Do you remember what kind of discussions are on going in the international negotiations about technology transfer from developed to developing countries?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-22: Is it easy to explain general issues of technology transfer?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-23: Is it easy to explain major issues of technology transfer in Thailand?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

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5. Carbon Footprint

<Check Points>
- Concept of the system (including background and international trend),
- Condition of dissemination in Thailand and in the world,
- Calculation methods: points and technical issues,
- Issues for practical application and dissemination of the system.

5.1 Basic knowledge

Q-1: Is it easy to explain about the concept of carbon footprint system?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

Q-2: Is it easy to explain about international trend and historical background of the carbon footprint system?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

Q-3: Is it easy to explain about the position and role of the carbon footprint system?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

5.2 Latest knowledge

Q-4: Do you remember dissemination condition of the carbon footprint system in Thailand?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-5: Do you remember example about dissemination condition of the carbon footprint system in other countries?
A-1: Forgot/Not familiar,
A-2: Not familiar other than a part,
A-3: Remember roughly,
A-4: Remember almost exactly

5.3 Technical points

Q-6: Do you have any idea about technical issues of the carbon footprint system? / Is it easy to explain about the idea?
A-1: No particular idea/Not easy to explain,
A-2: Have a vague idea/Possible to explain roughly,
A-3: Have original idea(s)/Easy to explain without problems

Q-7: Do you have any idea about necessary condition for the appropriate utilization of the carbon footprint system? / Is it easy to explain about the idea?
A-1: No particular idea/Not easy to explain,
A-2: Have a vague idea/Possible to explain roughly,
A-3: Have original idea(s)/Easy to explain without problems

Q-8: Which sector will be effective to introduce carbon footprint system in Thailand? / Is it easy to explain about the reason?
A-1: Food ( )
A-2: Beverage ( )
A-3: Textile ( )
A-4: Detergent, shampoo, etc. ( )
A-5: Others ( )

6. GHG Inventory

<Check Points>
- Role of GHG Inventory (National inventories, including relations with projects such as CDM),
- Outline and important points of IPCC Guidelines concerning GHG inventory,
- Technical points for the establishment and revisions of GHG inventory.

6.1 Basic knowledge

Q-1: Do you remember the IPCC 1996 Revised Guidelines?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-2: Have you read the above mentioned Guidelines?
A-1: No,
A-2: Yes

Q-3: Do you remember IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories (Good Practice Report)?
A-1: No,
A-2: Yes

Q-4: Have you read the above mentioned Report?
A-1: No,
A-2: Yes

Q-5: Do you remember IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry (GPG LULUCF Report)?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-6: Have you read the above mentioned Report?
A-1: No,
A-2: Yes

Q-7: Do you remember the IPCC 2006 Guidelines?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-8: Have you read the above mentioned Guidelines?
A-1: No,
A-2: Yes

6.2 Role of GHG Inventory

**** The questions below are not for beginners but for people with some knowledge/experience and more.***

Q-9: Do you remember the calculation method of IPCC Guidelines is applied to the CDM methodologies?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-10: Is it easy to explain if the official statistics for GHG inventory are developed in each country, it will bring potential for co-benefits including air quality improvement?
A-1: Not easy to explain,
A-2: Easy to explain without problems

Q-11: Do you remember what are the Annex I Parties of UNFCCC?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-12: Do you remember (at least one of) requirements for the Annex I Parties to participate Kyoto Mechanisms?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-13: Do you remember examples of policies which applying the results of GHG inventory calculation?
A-1: Forgot/Not familiar,
A-2: Remember it

6.3 Outline and points of IPCC Guidelines

****: "IPCC Guidelines" include IPCC 1996 Revised Guidelines, IPCC GPG, IPCC GOG LULUCF, and IPCC 2006 Guidelines.***

Q-14: Do you remember common (standard) statistical data and emission factor data required for the GHG inventory?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-15: Have you calculated GHG using IPCC Guidelines?
A-1: No,
A-2: Yes

Q-16: Has Thailand developed enough statistical data and emission factor data required for the GHG inventory?
A-1: Not familiar,
A-2: Not yet developed,
A-3: Already developed.

Q-17: Is the organization structure is established to develop GHG inventory in Thailand?
A-1: No,
A-2: Yes

Q-18: How many years has Thailand calculated GHG inventory except for 1994? When the calculation was implemented in most recent year?
A-1: Calculation has been done for only one year, and the latest one was before 2004,
A-2: Calculation has been done for several years, and the latest one was after 2004

6.4 Latest technical points

Q-19: Do you remember which Guidelines are applied to the GHG inventory currently open to public in Thailand?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-20: Do you have experience of calculating GHG emission amount of sectors as follows:
- CO2 emission from energy sector,
- CO2 emission from industrial processes,
- CH4 emission from rice paddy fields,
- GHG emission from waste management sector,
- Calculation of new sectors and methods, for example, carbon capture and storage, CH4 emission from abandoned mines,

A-1: None,
A-2: Have experience of up to three sectors,
A-3: Have experience of more than four sectors,

Q-22: Do you remember the Key categories?
A-1: Forgot/Not familiar,
A-2: Remember it,
A-3: Have experience of calculating it

Q-23: Do you remember the "Uncertainties"?
A-1: Forgot/Not familiar,
A-2: Remember it,
A-3: Have experience of calculating it

Q-24: Do you remember the emission factors database (EFDB)?
A-1: Forgot/Not familiar,
A-2: Remember it
A-3: Have experience of utilizing it.

Check List for Final Capacity Assessment

20 December 2011

Structure of Check Points

- Each subject contains question to check your "Basic knowledge," "Latest knowledge" and "Technical knowledge."

Types of Questions

- Questions asked are "Do you remember ....?" and "Is it easy to explain ....?".
- Please check whether you are able to explain to someone who does not know anything about the issue.

Deadline for submission

- Please answer in the Answer Sheet
- Submit answer sheet to Ms. Tsukamoto of JICA Expert Team (tsukamoto@oriconsul.com)
- Submit **before Friday, January 20th, 2012** (late submission will not be accepted for capacity assessment)

Please be noted that this is the final assessment under JICA technical cooperation project. And therefore, it is essential that every TGO staff who has been involved in the project submits answers to this evaluation check.
Your cooperation is highly appreciated.

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1. CDM

<Check Points>
- Number of CDM projects and their major types in Thailand,
- Number of CDM projects in the world, major host countries/project types,
- Advantages and issues of Programme of Activities (PoA),
  Categories of approved methodologies, in particular, the relation between types of methodologies and issuance if CERs,
- Most frequently applied large scale /small scale・methodologies,
- Trend of request for reviews and rejection of request for registration,
- Change/trend of institutional issues and technical issues of CDM (early stage, project increase stage, present),
- Major pitfalls for project proponents in terms of baseline settings, additionality, and monitoring plan.

1.1 Basic knowledge

Q-1: Do you remember total number of each type of registered CDM projects in Thailand until December 2011?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-2: Concerning CDM projects in Thailand, is it easy for you to explain about the trend and characteristics of the registered projects and approved projects by Thai DNA?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-3: Do you remember total number of registered CDM projects in the world until December 2011, including their major host countries and their project types?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-4: Is it easy to explain about the trend and characteristics of the registered CDM projects in the world?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-5: Is it easy to explain about the mechanism, characteristics and issues of small-scale CDM?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-6: Do you remember the total number of registered small scale CDM projects and their major types in the world?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-7: Is it easy to explain about the mechanism, characteristics and issues of A/R-CDM?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-8: Do you remember the total number of registered A/R-CDM projects and their major types in the world?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-7: Is it easy to explain about the mechanism, characteristics and issues of PoA-CDM?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-8: Do you remember the total number of registered PoA-CDM projects and their major types in the world?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

1.2 Latest knowledge

Q-11: Do you remember the number of types of approved CDM methodologies, the frequency of their utilization, and relation with the amount of issued CER?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-12: Do you remember the most frequently applied types of large scale/small scale CDM methodologies?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-13: Is it easy to explain about the request for review, including in what case the review is requested and how does the procedure go through?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-14: Do you remember the recent trend about the types (methodologies) of projects which are reviewed most frequently?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-15: Do you remember the recent trend about the most frequent (or typical) reasons of request for reviews/rejection of registration requests?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

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Q-16: Is it easy to explain why such types/reasons of reviewed/rejected projects as above mentioned are increasing recently?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

1.3 Technical points

Q-17: Which is the recent and most important international problem to promote CDM projects?
Q-1: Much private entities are still not familiar with CDM (and its merit),
Q-2: Regional imbalance of host countries,
Q-3: Imbalance of project types,
Q-4: Too complicated modalities and procedures of CDM
Q-5: Too rigorous decision process for the registration by the CDM EB
Q-6: Limited know-how for the realization of CDM projects
Q-7: Limited sectors which have potential to develop CDM projects
Q-8: Others ( )

Q-18: Whish is the recent and most important problem to promote CDM projects in Thailand?
Q-1: Much private entities are still not familiar with CDM (and its merit),
Q-2: Imbalance of private sectors which have knowledge about CDM,
Q-3: Too complicated modalities and procedures of CDM
Q-4: Too rigorous decision process for the registration by the CDM EB
Q-5: Limited know-how for the realization of CDM projects
Q-6: Limited sectors which have potential to develop CDM projects
Q-7: Others ( )

Q-19: Do you have any measures and/or ideas to solve above mentioned problems? / Is it easy to explain the methods/ideas?
A-1: No particular idea/Not easy to explain,
A-2: Have a vague idea/Possible to explain roughly,
A-3: Have original idea(s)/Easy to explain without problems

Q-20: For project proponents, which process is the most difficult to understand or tend to be trapped?
A-1: Whole process of CDM project cycle (procedure, documents, etc.)
A-2: Differences between CDM projects and normal projects, in particular concerning decision making records,
A-3: Differences between CDM projects and normal projects, in particular concerning financial planning = profitability = additionality,
A-4: Selection and understanding of approved methodologies / proposal of new methodologies,
A-5: Determination of project boundaries and explanation of leakages,
A-6: Baseline scenario setting or selection,
A-7: Demonstration of additionality,
A-8: Determination of monitoring plan,
A-9: Calculation the amount of emission reduction by the project,
A-10: Validation including communication with a DOE,
A-11: Request for approval to the host country's DNA, including communication with them,
A-12: Request for registration to the UNFCCC, including communication with the secretariat,
A-13: Negotiation and conclusion of ERPA with CER buyer(s).

Q-21: Is it easy to explain major pitfalls for project proponents about baseline settings, including their solutions and practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> Problem(s):
Solution(s)
A-3: Easy to explain without problems
<Practical example(s)> Problem(s):
Solution(s)

Q-22: Is it easy to explain major pitfalls for project proponents about additionality, including their solutions and practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> Problem(s):
Solution(s)
A-3: Easy to explain without problems
<Practical example(s)> Problem(s):
Solution(s)

Q-23: Is it easy to explain major pitfalls for project proponents about monitoring plan, including their solutions and practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> Problem(s):
Solution(s)
A-3: Easy to explain without problems
<Practical example(s)> Problem(s):
Solution(s)

Q-24: Is it easy to explain major pitfalls for project proponents during validation process, including their practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> ( )
A-3: Easy to explain without problems
<Practical example(s)> ( )

Q-25: Is it easy to explain major pitfalls for project proponents during verification process, including their practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> ( )
A-3: Easy to explain without problems
<Practical example(s)> ( )

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2. Carbon emission trading

<Check Points>
- Major emission trading schemes in the world, their types and current conditions (carbon trading /other trading),
- Current condition of Kyoto credit,
  - Characteristics of major host countries,
  - Characteristics of major project types,
- Current condition of trading schemes of developed countries including EU-ETS, trading schemes in the USA, etc.

2.1 Basic knowledge

Q-1: Is it easy to explain the trend and history of emission trading in the world?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-2: Do you remember what kinds of carbon trading schemes are in operation in the world?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-3: Do you remember what kinds of trading schemes are in operation besides carbon trading in the world?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-4: Is it easy to explain the current conditions and characteristics of Kyoto credits (CDM, JI, GIS/ ET)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-5: Is it easy to explain the role and structure of National Registry system?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

2.2 Latest knowledge

Q-6: Is it easy to explain the characteristics of EU-ETS (organizer, participating countries, trading amount, content of the scheme, etc.)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-7: Is it easy to explain problems/issues of EU-ETS, including their reasons?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-8: Is it easy to explain the characteristics of regional carbon trading schemes among states in the USA (organizer, trading amount, content of the scheme, etc.)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-9: Is it easy to explain problems/issues of the regional trading schemes in the USA, including their reasons?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

2.3 Technical points

Q-10: If Thailand participates into international carbon trading scheme, do you have any ideas about merits and issues of it?
A-1: No particular idea/Not easy to explain,
A-2: Have a vague idea/Possible to explain roughly,
A-3: Have original idea(s)/Easy to explain without problems

Q-11: When Thailand establishes its own domestic carbon trading scheme, do you have any ideas about merits and issues of it?
A-1: No particular idea/Not easy to explain,
A-2: Have a vague idea/Possible to explain roughly,
A-3: Have original idea(s)/Easy to explain without problems

Q-12: Do you have any ideas about how the Thai private entities understand emission carbon trading scheme?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-13: Which entity will be the key to the carbon emission trading in Thailand?
A-1: Governmental organizations/departments,
A-2: Banks and securities firms,
A-3: Project implementers (energy industries, manufacturers, etc.)
A-4: Project implementers (agriculture, forestry, etc.)
A-5: Others ( )

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3. GHG Mitigation Measures

<Check Points>
- International trend of GHG mitigation measures,
- Technical issues in major sectors for which GHG mitigation measures should be promoted, including relations with CDM,
  - Commercial buildings and residences,
  - Waste management,
  - Transport,
  - Energy and industries,
  - Agriculture, land use and forestry,
- Co-benefit approach of mitigation measures

3.1 Basic knowledge

Q-1: Is it easy to explain the general necessity and merit of mitigation measures (except for CDM)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-2: Is it easy to explain the general issues/difficulties of mitigation measures (except for CDM)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-3: Is it easy to explain necessity and merit of mitigation measures in Thailand (except for CDM)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-4: Is it easy to explain the issues/difficulties of mitigation measures in Thailand (except for CDM)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

3.2 Latest knowledge

Q-5: Have you read the IPCC-AR4-WG3 Report?
A-1: No/Have read a part which was referred to other document,
A-2: Have read a part of SPM or TS of WG3,
A-3: Have read all of SPM or TS of WG3,
A-4: Have read a part of the main report of WG3,
A-5: Have read all of the main report of WG3,
A-6: Have not read WG3 Report but have read a part of WG1 Report,
A-7: Have not read WG3 Report but have read a part of WG2 Report,

Q-6: Is it easy to explain co-benefit type mitigation measures, including practical examples?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
<Practical example(s)> Problem(s):
Solution(s)
A-3: Easy to explain without problems
<Practical example(s)> Problem(s):
Solution(s)

Q-7: Is it easy to explain the current condition about emissions resulting from fuel used for International transport (aviation and marine bunker fuels)?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

3.3 Technical points

Q-8: Which sector has high importance for mitigation in Thailand? What is the reason of the importance?
A-1: Commercial buildings and residences: (Reason:)
A-2: Waste management (Reason:)
A-3: Transport (Reason:)
A-4: Energy and industries (Reason:)
A-5: Agriculture, land use and forestry (Reason:)
A-6 Others ( ) (Reason:)

Q-9: Which is the major pitfall/ difficult to understand for private entities when implementing mitigation measures in Thailand (except for CDM)?
A-1: Necessity for the implementation of mitigation measures,
A-2: Merit by the mitigation measures,
A-3: Quantification method of the effect of mitigation measures,
A-4: Availability of technologies for mitigation measures,
A-5: Financing for implementation/operation and maintenance of mitigation measures,
A-6: Technology/human capacity for implementation/operation and maintenance of mitigation measures.

Q-10: Is it easy to explain technical issues to promote mitigation measures in the commercial buildings and residential sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-11: Is it easy to explain institutional issues to promote mitigation measures in the commercial buildings and residential sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-12: Is it easy to explain technical issues to promote mitigation measures in the waste management sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-13: Is it easy to explain institutional issues to promote mitigation measures in the waste management sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-14: Is it easy to explain technical issues to promote mitigation measures in the transport sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-15: Is it easy to explain institutional issues to promote mitigation measures in the transport sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-16: Is it easy to explain technical issues to promote mitigation measures in the energy and industrial sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-17: Is it easy to explain institutional issues to promote mitigation measures in the energy and industrial sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

Q-18: Is it easy to explain technical issues to promote mitigation measures in the agriculture, land use and forestry sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems
]

Q-19: Is it easy to explain institutional issues to promote mitigation measures in the agriculture, land use and forestry sector with concrete idea?
A-1: Not easy to understand/explain,
A-2: Understand roughly/Possible to explain roughly,
A-3: Understand almost exactly/Easy to explain without problems

4. UNFCCC and International Negotiations

<Check Points>
- Major points until COP 16 and COP17 and future trend
- Historical points of the international negotiations from the establishment of UNFCCC until present
  - Developed countries,
  - Major emitters,
  - Other developing countries (including particularly vulnerable developing countries),
- NAMA/SCM/MRV: Major discussions and issues,
- REDD+/sinks: Major discussions and issues.

4.1 Basic knowledge

Q-1: Is it easy to explain the background and objectives for the establishment of UNFCCC?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-2: Is it easy to explain the relationship between UNFCCC and IPCC?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-3: Is it easy to explain the background from adoption to the date of effect of the Kyoto Protocol, including (1) Definition of emission reduction targets/commitments, (2) Introduction of Kyoto Mechanisms, (3) Marrakesh Accord, (4) Withdrawal of the USA and Australia, and (5) Final ratification and effect of the KP?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-4: Is it easy to explain criticism from various stakeholders, including governments of developed and developing countries, industrial sectors of developed and developing countries, scientists, NGOs, etc?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

Q-5: What is the major problem of the Kyoto Protocol? (Please select the one closest to your own opinion.)
A-1: Emission reduction targets are low,
A-2: Covered GHGs are limited,
A-3: Number of Annex I Parties (with commitments) are low,
A-4: The rule of non-compliance is not enough,
A-5: No developing countries has commitment,
A-6: Kyoto Mechanisms are difficult to utilize,
A-7; Support system for developing countries are limited,
A-8: Others ( )

Q-6: What is the merit of the Kyoto Protocol? (Please select the one closest to your own opinion.)
A-1: Numeric target and commitment for the emission reduction,
A-2: Clear division of countries with and without commitment,
A-3: Introduction of Kyoto Mechanisms,
A-4: No special merit is confirmed,
A-5: Others ( )

4.2 Latest knowledge

Q-7: Do you remember the major decisions at COP16 and COP17?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-8: Is it easy to explain the negotiation background of COP16 and COP17?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

Q-9: Which country/organization had most impact to the negotiation mentioned in the Q-8?
A-1: USA
A-2: China
A-3: Denmark
A-4: BASIC
A-5: G77＋China
A-6: EU
A-7: AOSIS
A-8: Others ( )

Q-10: Do you remember other decisions at COP16 and COP17 concerning CDM and mitigation?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

Q-11: Do you remember major trend of recent international negotiation concerning the framework post 2012 (except for COPs)?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

4.3 Technical points

Q-12: Do you remember what is NAMA and what kind of discussions are on going in the international negotiations about NAMA?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-13: Is it easy to explain major issues of NAMA?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-14: Do you remember what is SCM and what kind of discussions are on going in the international negotiations about SCM?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-15: Is it easy to explain major issues of SCM?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-16: Do you remember what is MRV including its historical background?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-17: Is it easy to explain general significance and meaning of MRV?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-18: Is it easy to explain the significance and meaning of MRV in Thailand and developing countries?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-19: Do you remember what kind of discussions are on going in the international negotiations about REDD/sinks?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-20: Is it easy to explain major issues of REDD?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-21: Do you remember what kind of discussions are on going in the international negotiations about technology transfer from developed to developing countries?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-22: Is it easy to explain general issues of technology transfer?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

Q-23: Is it easy to explain major issues of technology transfer in Thailand?
A-1: Not easy to explain,
A-2: Possible to explain roughly,
A-3: Easy to explain without problems

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5. Carbon Footprint

<Check Points>
- Concept of the system (including background and international trend),
- Condition of dissemination in Thailand and in the world,
- Calculation methods: points and technical issues,
- Issues for practical application and dissemination of the system.

5.1 Basic knowledge

Q-1: Is it easy to explain about the concept of carbon footprint system?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

Q-2: Is it easy to explain about international trend and historical background of the carbon footprint system?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

Q-3: Is it easy to explain about the position and role of the carbon footprint system?
A-1: Not easy to explain,
A-2: Not easy other than a part,
A-3: Possible to explain roughly,
A-4: Easy to explain without problems

5.2 Latest knowledge

Q-4: Do you remember dissemination condition of the carbon footprint system in Thailand?
A-1: Forgot/Not familiar,
A-2: Remember roughly,
A-3: Remember almost exactly

Q-5: Do you remember example about dissemination condition of the carbon footprint system in other countries?
A-1: Forgot/Not familiar,
A-2: Not familiar other than a part,
A-3: Remember roughly,
A-4: Remember almost exactly

5.3 Technical points

Q-6: Do you have any idea about technical issues of the carbon footprint system? / Is it easy to explain about the idea?
A-1: No particular idea/Not easy to explain,
A-2: Have a vague idea/Possible to explain roughly,
A-3: Have original idea(s)/Easy to explain without problems

Q-7: Do you have any idea about necessary condition for the appropriate utilization of the carbon footprint system? / Is it easy to explain about the idea?
A-1: No particular idea/Not easy to explain,
A-2: Have a vague idea/Possible to explain roughly,
A-3: Have original idea(s)/Easy to explain without problems

Q-8: Which sector will be effective to introduce carbon footprint system in Thailand? / Is it easy to explain about the reason?
A-1: Food ( )
A-2: Beverage ( )
A-3: Textile ( )
A-4: Detergent, shampoo, etc. ( )
A-5: Others ( )

6. GHG Inventory

<Check Points>
- Role of GHG Inventory (National inventories, including relations with projects such as CDM),
- Outline and important points of IPCC Guidelines concerning GHG inventory,
- Technical points for the establishment and revisions of GHG inventory.

6.1 Basic knowledge

Q-1: Do you remember the IPCC 1996 Revised Guidelines?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-2: Have you read the above mentioned Guidelines?
A-1: No,
A-2: Yes

Q-3: Do you remember IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories (Good Practice Report)?
A-1: No,
A-2: Yes

Q-4: Have you read the above mentioned Report?
A-1: No,
A-2: Yes

Q-5: Do you remember IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry (GPG LULUCF Report)?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-6: Have you read the above mentioned Report?
A-1: No,
A-2: Yes

Q-7: Do you remember the IPCC 2006 Guidelines?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-8: Have you read the above mentioned Guidelines?
A-1: No,
A-2: Yes

6.2 Role of GHG Inventory

**** The questions below are not for beginners but for people with some knowledge/experience and more.***

Q-9: Do you remember the calculation method of IPCC Guidelines is applied to the CDM methodologies?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-10: Is it easy to explain if the official statistics for GHG inventory are developed in each country, it will bring potential for co-benefits including air quality improvement?
A-1: Not easy to explain,
A-2: Easy to explain without problems

Q-11: Do you remember what are the Annex I Parties of UNFCCC?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-12: Do you remember (at least one of) requirements for the Annex I Parties to participate Kyoto Mechanisms?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-13: Do you remember examples of policies which applying the results of GHG inventory calculation?
A-1: Forgot/Not familiar,
A-2: Remember it

6.3 Outline and points of IPCC Guidelines

****: "IPCC Guidelines" include IPCC 1996 Revised Guidelines, IPCC GPG, IPCC GOG LULUCF, and IPCC 2006 Guidelines.***

Q-14: Do you remember common (standard) statistical data and emission factor data required for the GHG inventory?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-15: Have you calculated GHG using IPCC Guidelines?
A-1: No,
A-2: Yes

Q-16: Has Thailand developed enough statistical data and emission factor data required for the GHG inventory?
A-1: Not familiar,
A-2: Not yet developed,
A-3: Already developed.

Q-17: Is the organization structure is established to develop GHG inventory in Thailand?
A-1: No,
A-2: Yes

Q-18: How many years has Thailand calculated GHG inventory except for 1994? When the calculation was implemented in most recent year?
A-1: Calculation has been done for only one year, and the latest one was before 2004,
A-2: Calculation has been done for several years, and the latest one was after 2004

6.4 Latest technical points

Q-19: Do you remember which Guidelines are applied to the GHG inventory currently open to public in Thailand?
A-1: Forgot/Not familiar,
A-2: Remember it

Q-20: Do you have experience of calculating GHG emission amount of sectors as follows:
- CO2 emission from energy sector,
- CO2 emission from industrial processes,
- CH4 emission from rice paddy fields,
- GHG emission from waste management sector,
- Calculation of new sectors and methods, for example, carbon capture and storage, CH4 emission from abandoned mines,

A-1: None,
A-2: Have experience of up to three sectors,
A-3: Have experience of more than four sectors,

Q-22: Do you remember the Key categories?
A-1: Forgot/Not familiar,
A-2: Remember it,
A-3: Have experience of calculating it

Q-23: Do you remember the "Uncertainties"?
A-1: Forgot/Not familiar,
A-2: Remember it,
A-3: Have experience of calculating it

Q-24: Do you remember the emission factors database (EFDB)?
A-1: Forgot/Not familiar,
A-2: Remember it
A-3: Have experience of utilizing it.

Thank you very much for your cooperation!
It has been a big pleasure for JICA Expert Team to work with you all!

Answer Sheet for Final Capacity Assessment

Name: _____ Office: _____

1. CDM

Q1	Q2	Q3	Q4	Q5

Q6	Q7	Q8	Q9	Q10

Q11	Q12	Q13	Q14	Q15

Q16	Q17	Q18	Q19	Q20
	(If A8, write here)	(If A7, write here)		

Q21	Q22	Q23
(If A2 or A3, write Problems here)	(If A2 or A3, write Problems here)	(If A2 or A3, write Problems here)
(If A2 or A3, write Solutions here)	(If A2 or A3, write Solutions here)	(If A2 or A3, write Solutions here)

Q24	Q25
(If A2 or A3, write examples here)	(If A2 or A3, write examples here)

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2. Carbon emission trading

Q1	Q2	Q3	Q4	Q5

Q6	Q7	Q8	Q9	Q10

Q11	Q12	Q13
		(If A5, write here)

3. GHG Mitigation Measures

Q1	Q2	Q3	Q4	Q5

Q6	Q7	Q8	Q9
(If A2 or A3, write Problems here)		(If A6, write here) (Reason, write here)	
(If A2 or A3, write Solutions here)			

Q10	Q11	Q12	Q13	Q14

Q15	Q16	Q17	Q18	Q19

4. UNFCCC and International Negotiations

Q1	Q2	Q3	Q4

Q5	Q6	Q7	Q8	Q9
(If A8, write here)	(If A5, write here)			(If A8, write here)

Q10	Q11	Q12	Q13	Q14

Q15	Q16	Q17	Q18	Q19

Q20	Q21	Q22	Q23

5. Carbon Footprint

Q1	Q2	Q3	Q4	Q5

Q6	Q7	Q8
		(Effective sector)
		(Reason)

6. GHG Inventory

Q1	Q2	Q3	Q4	Q5

Q6	Q7	Q8	Q9	Q10

Q11	Q12	Q13	Q14	Q15

Q16	Q17	Q18	Q19	Q20

Q21	Q22	Q23	Q24

Annex 2: Materials for PIN study session

Introduction to CDM Project Idea Note (PIN)

May, 2010

Advisor of JICA Expert Team
Akifumi NISHIHATA

A2-1

Outline

- Overview of the PIN
- Development of the PIN
- Summary

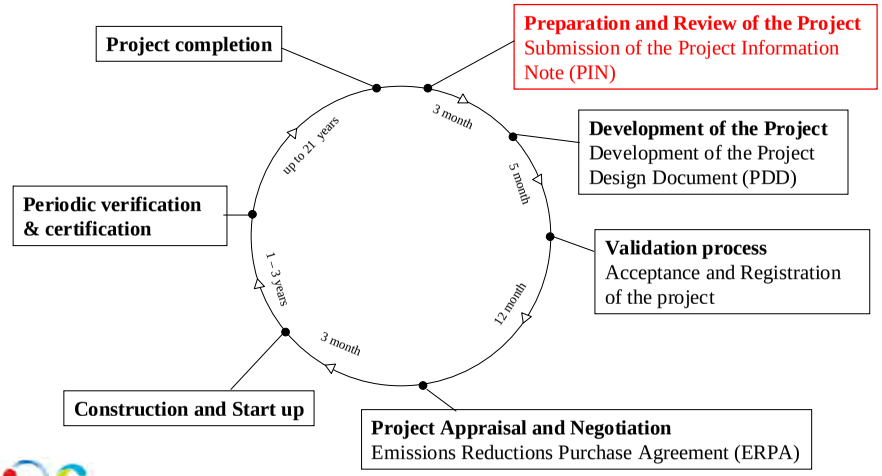
Sample PIN: V.P. Farms Pig Manure Methanisation, Methane Recovery and Energy Production Project

Overview of the PIN

What is merit from the PIN development?

- First step in the development of a project
  - "Road map" for formal CDM application/project documentation
- Developed to standardize submission requirements and review of project ideas to the various relevant parties
  - Communication tool used by project developers and investors early on in the process
  - Aids in the conceptualization, marketing, financing and screening/evaluation of projects
  - Prerequisite for more serious negotiations (e.g. Letter of Intent)
  - DNA may require before issuing Letter of No Objection

Typical CDM Project Cycle



What is main information of a PIN?

- Basically a PIN will consist of 5-10 pages providing indicative information on:
  - the type and size of the project
  - its location
  - the anticipated total amount of GreenHouse Gas (GHG) emission reductions compared to "business-as-usual" scenario (that is "baseline" scenario in a PDD)
  - the suggested crediting life time
  - the suggested Certified Emission Reductions (CERs) price in US$ per tCO2-equivalent
  - the financial structuring (inter alia project's financing)
  - the project's other socio-economic and environmental effects/benefits

A2-2

Contents of a PIN Template

- A. Project description, type, location and schedule
- B. Expected environmental and social benefits
- C. Finance
- D. applicability (recommended for TGO version)

A. Project Description, Type, Location and Schedule

- Objective of the Project
- Project Description and Proposed activities
- Technology to be employed
- Project Developer/Sponsors
- Type of Project
- Location
- Expected Schedule
- Current Status of Acceptance of Host Country

B. Expected Environmental and Social Benefits

- Estimate of GHG abated/CO2 Sequestered
- Baseline Scenario
- Specific Global and Local Environmental Benefits
- Socio-Economic Aspects
- Environmental Strategy/Priorities of the Host Countries

C. Finance

- Total Project Cost Estimate
- Sources of Finance to be Sought or already Identified
- Sources of Carbon Finance
- Indicative CER Price
- Total Emission Reduction Purchase Agreement (ERPA) Value

D. applicability (for TGO version)

- The approved methodology applied to the project activity
- The applicability of the chosen methodology
- The “additionality” of the proposed CDM project activity

A. Project description, type, location and schedule

A. Project description, type, location and schedule

Name of Project:_____

Template

Technical summary of the project Date submitted:_____

Objective of the project	*Describe in less than 5 lines*
Project description and proposed activities (including a technical description of the project)	*About ½ page*
Technology to be employed	*Describe in less than 5 lines.* Please note that support can only be provided to projects that employ commercially available technology. It would be useful to provide a few examples of where the proposed technology has been employed.

A. Project description, type, location and schedule

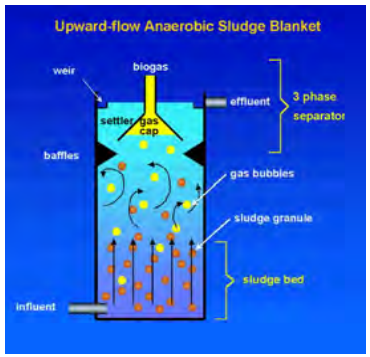
- Name of Project: V.P. Farms Pig Manure Methanisation, Methane Recovery and Energy Production Project
- Date submitted: November 30, 2009
- Objective of the project: The project involves the capture of methane (CH4) rich biogas produced during the treatment of swine manure in the barn flushing wash waters and the power generation at swine farms.

A. Project description, type, location and schedule

- Project description and proposed activities:
  - Currently the barn flushing effluents, which has a high content of organic solids produced from the swine rearing operation, are channelled to the open lagoons for retention. The treatment of the swine manure in the open lagoons is by anaerobic degradation processes. These result in the production of biogas which is released into the atmosphere and causes CH4 emissions.
  - This project activity is to replace the existing open lagoons waste management system with covered lagoons and UASB digesters. The biogas with a high calorific value is combusted using gas engines for the production of electricity. This power generated will replace the electric power brought in from the grid. Thus the project will result in emission reductions from two sources, the open lagoons and the electricity grid.

A. Project description, type, location and schedule

- Technology to be employed: The anaerobic wastewater treatment plant is based on the well-known Upflow Anaerobic Sludge Blanket (UASB) concept. Biogas is produced by the digestion of organic substances in the wastewater. This biogas is then captured and scrubbed. It is then fed into the high efficient purposed-built gas engine to generate electricity.



Project developer

Project developer	
Name of the project developer	
Organizational category	Government / Government agency / Municipality / Private company / Non Governmental Organization *(mention what is applicable)*
Other function(s) of the project developer in the project	Sponsor / Operational entity / Intermediary / Technical advisor / *(mention what is applicable)*
Summary of the relevant experience of the project developer	Describe in less than 5 lines
Address	Address, PO Box, City, Country
Contact person	Name of the Project Development Manager
Telephone / fax	
E-mail and web address, if any	

Template

Project developer

- Organizational category: Private company
- Other function(s) of the project developer in the project: Technical advisor
- Summary of the relevant experience of the project developer: Since 20XX, the project developer runs a pilot research and test facility on the future location of the project to optimize the technical design for this project with instruments to measure methane content, temperature and pH during the digestion trials. The pilot plant is equipped with a covered lagoons and UASB digesters.

Project sponsors

Project sponsors	
(List and provide the following information for all project sponsors)	
Name of the project sponsor	
Organizational category	Government / Government agency / Municipality / Private company / Non Governmental Organization / *(mention what is applicable)*
Address (include web address, if any)	Address, PO Box, City, Country
Main activities	*Not more than 5 lines*
Summary of the financials	*Summarize the financials (total assets, revenues, profit, etc.) in less than 5 lines.*

Template

Project sponsors

- Organizational category: Private company
- Main activities: The company have two pig farms which have integrated operations where breeding operation is at #1 farm and the weaned piglets are transferred to #2 farm at about 25 days old. The farms manage the population at a fairly constant level throughout the year.
- Summary of the financials: Total investment required at the farms is about $ 500,000. The project activities can only be started with the financial support of the local banks. The banks will support projects with a payback period of 5 years or less.

Type of the project

Type of the project	
Greenhouse gases targeted	CO_2 / CH_4 / N_2O / HFCs / PCFs / SF_6 *(mention what is applicable)*
Type of activities	Abatement / CO_2 Sequestration
Field of activities	
a. Energy supply	Renewable energy, excluding biomass / biomass / cogeneration / improving energy efficiency by replacing existing equipment / minimization of transport and distribution / fuel switch (e.g., switch coal to biomass) *(mention what is applicable)*
b. Energy demand	Replacement of existing "household equipment" / improvement of energy efficiency of existing production equipment *(mention what is applicable)*
c. Transport	More efficient engines for transport / modal shift / fuel switch (e.g. public transport buses fuelled by natural gas) *(mention what is applicable)*
d. Waste management	Capture of landfill methane emissions / utilization of waste and wastewater emissions *(mention what is applicable)*
e. Land Use Change and Forestry	Afforestation/ reforestation/ forest management/ wetlands management/ watershed management/ improved agriculture / land degradation prevention *(mention what is applicable)*

Template

Type of the project

- Greenhouse gases targeted: CO2 and CH4
- Type of activities: Abatement
  - Abatement: emission reduction type (large/small scale) CDM
  - CO2 Sequestration: Afforestation and Reforestation (A/R) CDM
- Field of activities:
  - a. Energy supply: biomass
  - b. Energy demand: N/A
  - c. Transport: N/A
  - d. Waste management: utilization of waste and wastewater emissions
  - e. Land Use Change and Forestry: N/A

A2-6

Location of the project

Location of the project	
Region	East Asia & Pacific / South Asia / Central Asia / Middle East / North Africa / Subsaharan Africa / Southern Africa / Central America & the Caribbean / South America/Central & Eastern Europe *(mention what is applicable)*
Country	
City	
Brief description of the location of the plant	*No more than 3 - 5 lines*

Template

Location of the project

- Region: East Asia & Pacific
- Country: The Kingdom of Thailand
- City: Mae-rim and Mae-tha District
- Brief description of the location of the plant: The two farms are located in northern Thailand, approximately 700 km north of Bangkok. The V.P.F. Farm is located about 30 km from Chiangmai City. Mae-tha V.P. Farm is distanced about 20 km from Lamphun City.

Expected schedule

Expected schedule	
Earliest project start date	Year in which the plant will be operational
Estimate of time required before becoming operational after approval of the PIN	Time required for financial commitments: xx months Time required for legal matters: xx months Time required for negotiations: xx months Time required for construction: xx months
Expected first year of CER delivery	Year
Project lifetime	Number of years
Current status or phase of the project	Identification and pre-selection phase / opportunity study finished / pre-feasibility study finished / feasibility study finished / negotiations phase / contracting phase / etc. *(mention what is applicable and indicate the documentation [e.g., the feasibility study] available)*
Current status of the acceptance of the Host Country	Letter of No Objection is available / Letter of Endorsement is under discussion or available / Letter of Approval is under discussion or available / Host Country Agreement is under discussion or signed / Memorandum of Understanding is under discussion or available / etc. *(mention what is applicable)*

Template

Expected schedule

- Earliest project start date: 01/11/2008
- Estimate of time required before becoming operational after approval of the PIN:
  - Time required for financial commitments: 4 months
  - Time required for legal matters: 1 months
  - Time required for negotiations: 1 months
  - Time required for construction: 4 months
- Expected first year of CER delivery: 2009 (after verification)
- Project lifetime: 15 years (engine lifetime)
- Current status or phase of the project: feasibility study finished (the feasibility study report is available)
- Current status of the acceptance of the Host Country: Letter of No Objection is available

The position of the Host Country

The position of the Host Country with regard to the Kyoto Protocol	The Host Country a. signed, signed and ratified, accepted, approved or acceded to the Kyoto Protocol or b. signed and has demonstrated a clear interest in becoming a party in due time (e.g., countries which have already started or are on the verge of starting the national ratification, acceptance or approval process) or c. has already started or is on the verge of starting the national accession process d. other. *(mention what is applicable)*

Template

- The position of the Host Country with regard to the Kyoto Protocol: Thailand ratified the United Nations Framework Convention on Climate Change (UNFCCC) on 28 December 1994 and the Kyoto Protocol on 28 August 2002

B. Expected environmental and social benefits

Estimate of Greenhouse Gases abated / CO_2 Sequestered (in metric tons of CO_2-equivalent)	Annual: Up to and including 2012: xx tCO_2-equivalent Up to a period of 10 years: xx tCO_2-equivalent Up to a period of 7 years: xx tCO_2-equivalent Up to a period of 14 years: xx tCO_2-equivalent

Template

- Estimate of Greenhouse Gases abated / CO2 Sequestered (in metric tons of CO2-equivalent)
  - Annual: 31,131 tCO2-equivalent per year
  - Up to and including 2012: 129,713 tCO2-equivalent
  - Up to a period of 10 years: 311,310 tCO2-equivalent
  - Up to a period of 7 years: N/A
  - Up to a period of 14 years: N/A

The project will use Fixed (not Renewable) Crediting period.

B. Expected environmental and social benefits

Baseline scenario	CDM projects must result in GHG emissions being lower than "business-as-usual" in the Host Country. At the PIN stage questions to be answered are at least: • What is the proposed Clean Development Mechanism (CDM) project displacing? • What would the future look like without the proposed CDM project? • What would the estimated total GHG reduction be? *(About ¼ - ½ page)*

Template

B. Expected environmental and social benefits

- Baseline scenario:
  - The treatment of the swine manure in the open lagoons is by anaerobic degradation processes. These result in the production of biogas consisting of CH4 which is released into the atmosphere. This CDM project activity is to replace the existing open lagoons waste management system with closed lagoons system, where the biogas is collected and prevented from being released into the atmosphere.
  - Besides, capture and targeted production of biogas for on-site power generation by using purposed-built gas engines is also realized. Reduction of atmospheric emissions of the GHG namely CH4 and reduction of indirect emissions of GHG in form of CO2 associated with brought-in grid electricity which is mainly produced by the nearby coal-fired power plant is accomplished by this CDM project activity.

Specific global & local environmental benefits

Specific global & local environmental benefits	*(In total about ¼ page)*
Which guidelines will be applied?	Name and, if possible, the website location
Local benefits	
Global benefits	

Template

Specific global & local environmental benefits

- Which guidelines will be applied?: Environmental Impact Assessment for the proposed project activity is not mandatory according to the law of Thailand.
- Local benefits:
  - Since the new waste treatment system operates in a closed system, undesirable odour and fly nuisance associated with old open treatment system in the farms and surrounding communities will be reduced;
  - The new waste treatment system can remove organic matter in the wastewater, so that environmental impacts of possible overflow during the rainy season and of groundwater contamination will be reduced;
  - The new waste treatment system has installed a sand bed filter for sludge separation which will improve the handling of solid waste, whereby the environmental impacts of solid waste disposal will be reduced.

Specific global & local environmental benefits

- Global benefits: CH4 emissions associated with previous open anaerobic lagoon treatment system will be reduced. Moreover, CO2 emissions associated with the use of fossil-derived imported grid electricity in the swine rearing facility will be eliminated.

Socio-economic aspects

Socio-economic aspects What social and economic effects can be attributed to the project and which would not have occurred in a comparable situation without that project?	*(In total about ¼ page)* Template
Which guidelines will be applied?	Name and, if possible, the website location
What are the possible direct effects (e.g., employment creation, capital required, foreign exchange effects)?	
What are the possible other effects? For example: • training/education associated with the introduction of new processes, technologies and products and/or • the effects of a project on other industries	

Socio-economic aspects

- Which guidelines will be applied?: "Environmental Friendly Swine Farm Manual", Pollution control department, Ministry of natural resources and environment
- What are the possible direct effects?: Excess electrical power will be supplied to the national grid during peak demand so as to help the electrical generating authority manage power demand and slow down the need to build more fossil fuelled power plants.

Socio-economic aspects

- What are the possible other effects?:
  - Enhancing the productivity and finances of local farmers through the availability of high quality natural dried sludge fertiliser supplied at low cost. Effluent from the facultative ponds can be used to cultivate spirulina algae which can be further supplement as feed for the swines;
  - Promoting technological excellence and innovation in Thailand;
  - Building confidence for farmers and other potential project developers in the efficacy, cost and safety of biogas systems as an emerging swine rearing waste-to-energy technology within the South-East Asia region.

Environmental strategy/priorities of the Host Country

Environmental strategy/ priorities of the Host Country	A brief description of the relationship of the consistency of the project with environmental strategy and priorities of the Host Country *(Not more than ¼ page)*

Template

- Thailand's CDM policy priority is currently based on 'Energy Sector', which includes Energy Development, Energy Efficiency, Environment, Project to increase transport efficiency and Industrial Process. The project fulfills mainly two purposes above. The first is "Energy Development" as a project for the use of bio-energy such as biogas from farm waste and wastewater. The second is "Environment" as a project to convert waste into energy.

C. Finance

Total project cost estimate	
Development costs	xx US$ million
Installed costs	xx US$ million
Other costs	xx US$million
Total project costs	xx US$million
Sources of finance to be sought or already identified	
Equity	Name of the organizations and finance (in xx US$million)
Debt – Long-term	Name of the organizations and finance (in xx US$million)
Debt - Short term	Name of the organizations and finance (in xx US$million)
Not identified	xx US$million
CDM contribution sought	xx US$million
CDM contribution in advance payments.	xx US$million and a brief clarification (*not more than 5 lines*)

Template

A2-10

C. Finance

- Total project cost estimate:
  - Development costs: 300,000 US$
  - Installed costs: 1,600,000 US$
  - Other costs: 1,100,000 US$
  - Total project costs: 3,000,000 US$
- Sources of finance to be sought or already identified:
  - Equity: 1,000,000 US$ (own fund)
  - Debt – Long-term: N/A
  - Debt - Short term: 1,000,000 US$ (the local bank loan)
  - Not identified: 1,000,000 US$
  - CDM contribution sought: 3,000,000 US$
  - CDM contribution in advance payments: N/A

C. Finance

Sources of carbon finance	Name of carbon financiers other than PCF that your are contacting (if any)
Indicative CER Price (subject to negotiation and financial due diligence)	
Total Emission Reduction Purchase Agreement (ERPA) Value	
A period until 2012 (end of the first budget period)	xxUS$
A period of 10 years	xx US$
A period of 7 years	xx US$
A period of 14 years (2 * 7 years)	xxUS$
If financial analysis is available for the proposed CDM activity, provide the forecast financial internal rate of return for the project with and without the CER revenues. Provide the financial rate of return at the expected CER price above and US$3/ tCO2e. DO NOT assume any up-front payment from the PCF in the financial analysis that includes PCF revenue stream. Please provide a spreadsheet to support these calculations.	

Template

C. Finance

- Sources of carbon finance: N/A
- Indicative CER Price: 10 US$/CER
- Total Emission Reduction Purchase Agreement Value:
  - A period until 2012: 1,297,130 US$
  - A period of 10 years: 3,113,100 US$
  - A period of 7 years: N/A
  - A period of 14 years: N/A
  - If financial analysis is available for the proposed CDM activity, provide the forecast financial IRR for the project with and without the CER revenues:
    - Without CDM: payback period 6 years (IRR 7%)
    - With CDM: payback period 3 years (IRR 18%)

D. applicability (for TGO version)

- The approved methodology applied to the project activity: AMS-III.D "Methane recovery in animal manure management systems" and AMS-I.D "Grid connected renewable electricity generation"
- The applicability of the chosen methodology:
  - AMS-III.D: The project activity is a methane recovery project from manure and waste from agricultural or agro-industrial activities, which includes a change in management practices of bio-organic waste, in order to achieve a controlled anaerobic digestion equipped with methane recovery and combustion system. For the methane recovery component of the project activity, the result in emission reduction is less than 60,000 t CO2e annually.
  - AMS-I.D: For the renewable electricity generation component of the project activities, the added generation capacity is less than 15 MW.

D. applicability (for TGO version)

- The demonstration of "additionality" of the proposed CDM project activity: Income from electricity production only will give a payback time of about 6 years at the farm. With the additional income from sales of CER credits, the payback time is reduced to about 3 years. In order to get the local bank loan for the project activities, the income from the sales of CER credits is crucial.

- The demonstration of "Prior consideration": The project participant informed a TGO and the UNFCCC secretariat of the commencement of the project activity and of their intention to seek CDM status, using the form F-CDM-Prior Consideration, before the project activity start date.

Key Elements of the PIN

- Clear description of project activities and technologies employed
- Identify project participants and arrangement for implementation
  - Participants' roles and their technical, financial capability to undertake
  - Status of third party involvement if appropriate
- Eligibility outline: additionality and baseline scenario
  - Why the project should not happen on its own?
  - Sources of GHG emission reductions and total CER volume including possible leakage
- Identify socio-economic/environmental benefits/risks

Annex 3: Project long list

Project long list

Sector	No.	Project name (tentative)	Project Description	CDM applicability	Comments	Current Status
Fuel Switch	1	Natural Gas Vehicles	BMA will install NGV gas equipment (diesel dual fueled: DDF) to diesel or gasoline vehicles that will allow the use of natural gas. Expected GHG emission reduction: 140 (t-CO_{2e}/year) Investment cost: 15.6 million Baht	PIN	BMA has installed the equipment to the existing 47 gasoline and 200 diesel vehicles, and it has a plan to expand to 53 gasoline vehicles and 50 diesel vehicles. This project was selected for PIN development as a result of screening.	Financial benefit through fuel switch to natural gas may be quite large compared with initial equipment cost of fuel conversion kit. Also, project proponent is able to finance the project. The project may not face significant investment barrier and therefore, demonstration of additionality using the investment analysis may be difficult.
	2	Improvement of waste collection system	The project will improve the current waste collection system in Bangkok which leads to the reduction of fossil consumption by waste collection trucks. The project will also involve switching fuel from diesel to CNG. Expected GHG emission reduction: 13,780 (t-CO_{2e}/year) Investment cost: N/A	N/A	The project was cancelled because of the budget constraint. The department in charge in BMA has the intention of implementation, but agreement of the higher decision makers was not provided.	-
Energy efficiency improvement	3	Natural gas for water distribution pumps	The water distribution pumps in Bangkok were installed more than 10 years ago. 240 – 360 MWh of electricity generated by a diesel power unit is currently used by each water pump. The project will involve conversion of fuel to natural gas for 150 pumps. Expected GHG emission reduction: 54 (t-CO_{2e}/year) Investment cost: 3.5 million Baht (for equipment cost)	N/A	The project corresponds to energy policies of Thailand and will be effective as a GHG mitigation measure. Therefore, the project was select for PIN development.	Project proponent withdrew the project for undisclosed reason. The project can still be further analyzed for CDM applicability.

Sector	No.	Project name (tentative)	Project Description	CDM applicability	Comments	Current Status
Waste management	4	Sewage sludge treatment	The current digested sewage sludge disposal manner is composting pilot project. The utilization purpose of biogas, which is currently flared, will be electricity generation in the project. BMA has installed the bio digester. There are two existing wastewater treatment facilities, and one of them has been stopped its operation to meet the volume of sludge emitted from sewage treatment plant. Expected GHG emission reduction: 251(t-CO_{2e}/year) Investment cost: N/A	N/A	BMA has invested and installed the bio digester, so the project may not face significant barriers for operation of second tank. Therefore, the project may not be suitable as a CDM project activity. Therefore, the project was not selected for PIN development.	-
Waste management	5	Biogas generation from food waste at schools	Schools collect food waste from local schools, market, and restaurants and use as an input to bio-digester. Biogas generated will substitute the use of LPG currently used for cooking fuel at the school. About 20 kg of waste is collected and used for a digester per day. No truck transportation will be involved since school staff will manually carry all necessary organic wastes to bio-digester. Byproduct sludge will be used as a fertilizer and provided to nearby communities and factories with no charge. Pilot projects cover 80 schools and now BMA is trying to expand to 84 schools. BMA plans to install the new biogas system in 2011. Expected GHG emission reduction: N/A (depends on the size) Investment cost: N/A (depends on the size)	PDD (PoA-CDM)	The project will be developed as a PoA-CDM project. By using PoA-CDM scheme, BMA is able to expand the project to their all schools. And it is expected to enhance similar PoA-CDM project activity which will correspond to policies of local governments in Thailand. Therefore, the project was selected for PDD development.	• TGO and JICA expert team have discussed about this project and decided to develop PDD as a PoA-CDM project for the following reasons; - Bio-digester has been installed in 80 schools already introduced and started operation. -BMA is currently planning to expand to the target to schools and also other facilities. -DEDE is planning to introduce a bio-digester throughout Thailand. • Feasibility study on new bio-digester has been conducted by DEDE. • BMA is currently selecting the target schools and facilities. • Draft PDD has been developed by TGO and JICA Expert Team.

Sector	No.	Project name (tentative)	Project Description	CDM applicability	Comments	Current Status
Waste management	6	Namfon Farm Dairy Farm Bio-Gas Development Project	Namfon Farm LP has more than 5,000 dairy cows, and has been implementing 2 phases biogas project. At first phase, it started to implement with 2,000 cows and 3,000 m^2 digester 3 years ago. Agriculture activities were expanded and had a problem because of 5,000 cows. New 20,000 m^3 digester and 20,000 m^3 reservoirs are necessary to develop. New bio-digester will be introduced. Expected GHG emission reduction: 19,258 (t-CO_{2e}/year) Investment cost: Approx. 120 (million Baht)	PIN	Project proponent is planning to introduce a new bio digester. The project may face significant technological and investment barriers, and will be suitable for as a CDM project. Therefore, the project was selected for PIN development.	Financial analysis on the project yielded IRR of about 10%, which can be used to prove the project is facing significant investment barrier. In addition, the project proponent is facing a significant problem in finding financial sources. Furthermore, the equipment to be installed at the site is new to the project proponent, which may impose technological barrier, or prevent proper operation and maintenance of the equipment.
Renewable energy	7	Bangchak Solar Farm at Bangpa-In	Solar panels of 38MW will be installed. It will generate 65GWh/ year of electricity, all of which will be supplied to the national grid. Expected GHG emission reduction: 32,500 (t-CO_{2e}/year) Investment cost: 4,715(million Baht)	N/A	Project proponents have already conducted F/S and they have intention to develop only PDD instead of PIN. Since other candidates were selected for PDD development, the project was not selected for PIN nor PDD development.	-
Energy saving	8	Roadside LED lighting	Switch the current inefficient street lighting to more energy-efficient roadside Light Emitting Diode (LED) lighting system. Expected GHG emission reduction: 173 (t-CO_{2e}/year) Investment cost: N/A	N/A	Since the project is still under consideration, the project was not selected for PIN development. The implementing agency for the project is not decided. It is under discussion between BMA and MEA (Metropolitan Energy Authority) .	-

Sector	No.	Project name (tentative)	Project Description	CDM applicability	Comments	Current Status
Energy saving	9	Energy saving at buildings	The project will reduce energy consumption at all BMA-related buildings. Total of 600 buildings include 2 of the main BMA office buildings, 9 hospitals, 50 district offices, schools, etc. Expected GHG emission reduction: 22,580 (t-CO_{2e}/year) Investment cost: N/A	N/A	It was agreed that the PDD of the project will be developed by assistance from World Bank. Therefore, the project was not selected for PIN development.	-
	10	Repair of air-conditioning and refrigerator	The project will involve repair and exchange the existing energy-inefficient air conditioning machines and refrigerators. Expected GHG emission reduction: 579 (t-CO_{2e}/year) Investment cost: N/A	N/A	This project is still under consideration, so that is not selected as a candidate for PIN development.	-
Transportation	11	Biodiesel from cooking oil – for BMA forklift	Introduction of cooking oil-based biodiesel into forklift machines of BMA. Biodiesel will be supplied to 2 forklifts that are currently using petro diesel. Expected GHG emission reduction: 32 (t-CO_{2e}/year)	PIN	Project proponent is planning to expand productivity of biodiesel by increasing quantity of used cooking oil collection. There are several approved CDM methodologies for biodiesel use. Therefore, the project was selected for PIN development.	Biggest barrier of the project is that there exists no applicable approved methodology to the project since the project will introduce B100 biodiesel, which is higher than maximum permitted biodiesel content of the approved methodology. Considering the low financial return and limited CER revenue, the project may face significant investment barrier. Future options for further analysis may include bundling or PoA that can reduce per CER transaction cost.
	12	Biodiesel from cooking oil –for gas station	Introduction of cooking oil-based biodiesel into petroleum market (gas stations) in Thailand. Expected GHG emission reduction: 332 (t-CO_{2e}/year) Investment cost: 3.2 (million Baht)	N/A	The project has already started in 2006, and new factory was constructed in 2009. A new project or capacity expansion plan is not planned in the near future.	-

Sector	No.	Project name (tentative)	Project Description	CDM applicability	Comments	Current Status
Transportation	13	BRT project	The project will involve construction of Bus Rapid Transit (BRT) system project, which will cover 14 routes, with total extension of 249.6 km. Expected GHG emission reduction: N/A Investment cost: 38,050 (million Baht)	N/A	It was agreed that the PDD of the project will be developed by assistance from World Bank. Therefore, the project was not selected for PIN/ PDD development.	-
	14	MRT project (purple line)	The purpose of the project activity is the establishment and operation of a railway system, named Purple Line, Bang Yai – Rat Burana, as an effective mass transit system. Expected number of passenger is 195,505 in 2012 between Bang Sue and Bang Yai (23 km) and 493,717 in 2022 between Bang Sue and Rat Burana (20 km). Expected GHG emission reduction: 9,732 (t-CO_2e/y, 2014) ～ 23,559 (t-CO_2e/y, 2042) Investment cost: 60,072 (million Baht)	PIN	After project screening and upon request of MRTA and TGO, this project was selected for PIN development.	Prior consideration issue needs to be confirmed although some evidence shows CDM application was seriously considered in Oct 2007 prior to the starting date of loan contract with JBIC in March 2008. Project proponent is currently analyzing the additionality of the project based on their feasibility study report. Financial analysis revealed the project IRR is showing negative value, and CER revenue will not significantly increase the feasibility, which can be a good factor to argue investment barrier of the project.
	15	Smart Logistics: reducing fuel usage of commercial vehicles in Thailand	The fuel consumption in Thailand logistics will be reduced by optimization on usage of commercial vehicles (tracks) using advanced travel monitoring technology. The digital tachograph system is able to vehicle management and optimization on usage of resources. Expected GHG emission reduction: N/A Investment cost: 10.2 (million Baht)	PIN	Pre-F/S may be needed because this project is still under consideration. Since the transportation improvement is one of the key measures that can be taken in Thailand especially Bangkok. The project was selected for PIN development.	The project involves provision of equipment that can lead to emission reduction. Since the target vehicles/ users of the equipment have not been identified yet, project scenario cannot be set and thus detailed analysis cannot be performed. Furthermore, there is no applicable approved methodology. A new methodology that involves the same technology as the proposed project has been submitted to the CDM Executive Board. Upon approval of the SSC-NM, and identification of the target users, the project can be further analyzed for CDM applicability.

Sector	No.	Project name (tentative)	Project Description	CDM applicability	Comments	Current Status
Forestation	16	Mangrove plantation project in BMA Bangkunthien District	The project involves planting mangrove trees along 4.8 km coast of Thailand Gulf in Bangkunthien District. Currently the project site is used as fish and shrimp pond. Mangrove area covers 2,735 rai in year 1961. The areas are decreased continuously. There are 1,999 rai in year 2000. Information from the Office of National Research council of Thailand indicated that the mangrove area is 1,237 rai (1.98 km^2). Expected GHG Absorption: 4,349 (t-CO_2e/year) Investment cost: N/A	N/A	Possibility of immediate implementation of the project is very limited, because of the land ownership issues. Therefore, the project was not selected for PIN/ PDD development.	-
	17	Mangrove A/R project in Chantaburi Province	The project involves plantation of mangrove trees in Welu wetland, which is located at Ban Thasorn, Amphur Khlung, Chantaburi province, covered the area 19,000 ha. The area is classified as “reserved forest” heavily encroached by rural people. The natural mangrove forest was cut down and changed to shrimp and fish ponds. The RFD, DMCR and Chantaburi Province have been reforesting over several years. The 1,600 ha were proposed for A/R CDM. Expected GHG Absorption: 5,829 (t-CO_2e/year) Investment cost: 87 million Baht (not including maintenance cost)	PDD (SSC A/R CDM)	This project has been promoted by DMCR, RFD and Chantaburi Province, who are the project participants. Since this project has a high potential to be developed as a CDM project, it was selected for PDD development.	• On 1st phase (August – September 2010), DMCR has completed plantation that covers about 4,000 rai (640 ha). • On 2nd phase (October – December 2010), DMCR started to plant the remaining 5,784 rai in the end of October 2010. There is no information about the completion of the plantation at this stage. • PPs selected the target area for a small-scale A/R CDM project from the area covered in the 2nd phase and will prepare Prior Consideration letter to UNFCCC and TGO.

Sector	No.	Project name (tentative)	Project Description	CDM applicability	Comments	Current Status
Forestation	17	Mangrove A/R project in Chantaburi Province				• Project cost will be covered by various donations and the foundation, who signed MOU, and also the foundation signed an agreement letter with the Province. • PPs are currently selecting DOE for validation. Since this is the first case in the world that involves small-scale mangrove plantation, finding an appropriate DOE will be a key to registration. • Draft PDD is currently developed by TGO and JICA Expert Team.

Annex 4: Materials for training in Japan

Approaches for Low-Carbon Society by the City of Kitakyushu

August 2010

Environment Bureau, City of Kitakyushu

GreenFrontier 環境モデル都市 北九州市

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Table of Contents

GreenFrontier 環境モデル都市 北九州市

1. Eco-Model City Action Plan of Kitakyushu

GreenFrontier 環境モデル都市 北九州市

1. Eco-Model City Action Plan of Kitakyushu

（1）What is Eco-model city?
Background of the national project and the role of Japan government

（2）Selection of Eco-model cities

（3）History of environmental situations in Kitakyushu City

（4）Kitakyushu Eco-model city

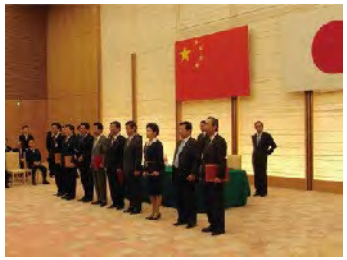
What is Eco-model city?

《Background》

-GHG emission reduction : the world's urgent issue

-Prime Minister's policy speech in January, 2008

→identified as a key of national policy



《What is Eco-model city?》

Eco-Model Cities are selected as top-runner cities with ambitious target of GHG emissions reduction to achieve low-carbon society.

《What is Low-carbon society?》

A society with established low CO_2 emission industry and society

《Role of Japan government》

Japanese government has selected Eco-Model Cities based on the following criteria.

①Ambitious target of GHG emission reduction ②appropriateness as a leading model city ③Local adaptability ④Feasibility ⑤Sustainability

Selection of Eco-Model City

【6 cities ware selected on July 22, 2008】

City of Kitakyushu, Yokohama City,

Toyama City, Obihiro City

Minamata City, Shimokawa-cho (Hokkaido)

【Additional 7 cities, on January 23, 2009】

Kyoto City, Sakai City, Iida City, Toyota City

Yusuhara-cho (Kochi Pref.), Miyakojima City, Chiyoda Ward (Tokyo)

A4-2

Pollution in Kitakyushu

Forest of chimneys

Soot and dust on the roof

Wastewater into the river

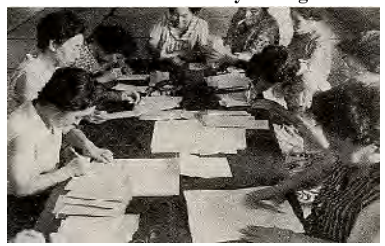
Melted Screw

Women's Campaign Against Pollution

Study meeting in community center

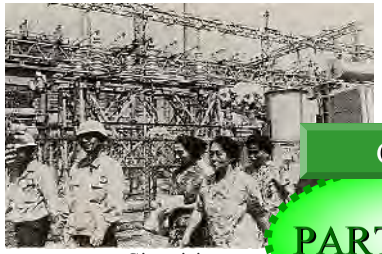
Petitions for factory managers

Production of documentary 8mm films [Aozora-ga-hoshii (We need clear sky!)]



Letters to appeal for governments and companies

Actions to overcome the pollution



Site visit

Class in the university

Citizens

PARTNERSHIP

Companies

Local governments

Energy saving and pollution control system

Environmental monitoring and
Environmental infrastructure

Recovered environment in Kitakyushu

A4-3

History of efforts for environmental problems in Kitakyushu

■First period（～1980）

Recognition of Environmental pollution and overcome
(Woman's communities, Academic-industrial and public-private partnerships)

■Second period（1980～）

Promotion of international cooperation
（KITA, participation to two summits, international award）

■Third period（Early1990s～）

Promotion of the recycling-oriented society
(Eco-city, management of PCB, introduction of garbage collection fee, promotion of waste separation）

■Fourth period（2005～）

Promotion of sustainable, low-carbon society
（Eco-center, research and development, Citizen collaboration, Eco-model city）

Kitakyushu, the Eco-Model City (Grand Design)

City of Kitakyushu is the environmental frontier for development of low-carbon social economy in Asia.

<Theme>

Citizens' thoughts to environment
"Strong partnership"

<Principle>

Formulation of stock-type society based on the citizens' ability to improve environment

Rich and active society of new values and culture for all generations

<Proposal / realization>

- Low-carbon society as an industrial city
- Low-carbon society suitable for low birthrate and aging society
- Environmental diplomacy of cities for building low-carbon society in Asia

Creation of Low-carbon society

Countermeasures for global warming

Increase dynamism of city

Development and interchange to Asia

<Greenhouse gas reduction target>

2005
15.6 million tons

2030: Reduce **30%**
2050: Reduce **50%**
(Asia: Reduce **150%**)

5 actions — Policy of approaches

1 Environment can create advanced cities
(Switch to Stock-type society, which can realize low-carbon society)
- Forming an advanced model city
- Promoting energy saving and new energy buildings
- Transitioning to intensive urban structure where you can live with walks
- Structuring efficient traffic systems
- Realizing a low-carbon society by logistics and traffic infrastructure development
- Developing the introduction model of new energy and energy saving at city centers
- Structuring systems for energy conversion and reuse in urban infrastructure
- Promoting urban greening

2 Environment can develop the economy
(Building an industrial cluster which contributes to the low-carbon society)
- Utilizing industrial energy widely
- Structuring highly-efficient energy systems for business offices
- Introducing new energy in plants and business offices
- Promoting resource recycling (eco-town business, etc.)
- Promoting development of environmental technologies and products
- Developing technical infrastructure supporting a low-carbon society
- Arranging IT infrastructure supporting a low-carbon society
- Industrial location strategies under the theme of environment

3 Environment can nurture humanity
(Establishment of education and activity systems of low-carbon society)
- Establishing a mechanism where you can "see" and "feel" a low-carbon society
- Developing the low-carbon society integrated learning system (Super CAT)
- Enhancing and propagating the official examination for the environment capital city of Kitakyushu
- Enhancing and enforcing distinctive school education
- Implementing eco-tours to an Eco-Model City
- Developing human resources highly-specialized on environmental technologies and systems

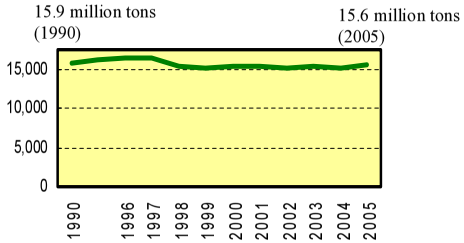
4 Environment can support rich life
(Creation of rich life through development of low-carbon society)
- Developing citywide movements for introducing new energy, etc.
- Establishing a platform for environmental activities
- Developing civil activities improved in the creating process of the environment capital of the world
- Informing environment culture
- Collaborating with neighboring municipalities including Kyushu and Yamaguchi
- Reporting on Eco-Model City of Kitakyushu

5 Environment can deepen the partnership of Asia
(Diversion of low-carbon society to Asia)
- Cooperating to make a co-benefit low-carbon society utilizing the network of the environmental cooperation city
- Developing experts on low-carbon technologies in Asia
- Promoting global environmental business
- Promoting studies on low-carbon societies in Asian cities
- Establishing Kitakyushu Asian Center for Low Carbon Society (tentative name)

Human development / life development — Urban development — Industry development — Creation of bonds

Creation of regional vitality (**Kitakyushu Green Frontier Plan**)

CO_2 Reduction Target



Trend of CO_2 emission of Kitakyushu

	2020	2030	2050
Comparison to 2005	(▲13.2%)	▲30%	▲50%
Comparison to 1990	(▲13.0%)	▲29.4%	▲49.1%

Reduction target of Eco-Model CityAction Plan of Kitakyushu

Structure of Eco-Model City Promotion

●Neighboring municipalities
●Kyushu-Okinawa 3 cities collaboration
●Overseas environmental city

Opening ceremony of Kyushu-Okinawa 3 cities collaboration (2009.4.29)

International Seminar of Eco-Model Cities (2008.12.14)

Eco-Model City of Kitakyushu Regional Promotion Meeting

<Affiliated organizations>
●Kitakyushu Eisei So-Rengokai (Federation of safety and health)
●Kitakyushu-shi Josei Dantai Renraku Kaigi (Women's conference)
●Junior Chamber International Kitakyushu
●Kankyo Shimin Katsudo Support Center (Support center for eco-activities)
●Kitakyushu Kasseika Kyougikai (KPEC)
●Kitakyushu Chamber of Commerce and Industry
●Kitakyushu Foundation for the Advancement of Industry, Science, and Technology
●City of Kitakyushu, etc.

Establishment and Promotion of Action Plans, Implementation of Projects

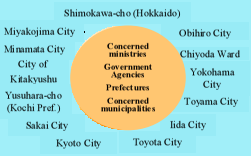
Collaboration

Participation, collaboration

Promotion Headquarters of the prefectural office for Eco-Model City of Kitakyushu

Promotion Council of the prefectural office	Project Team
●General Manager: Mayor ●Deputy General Manager: Deputy Mayor	●Energy and industry ●Urban structure ●Civil life ●Asia development

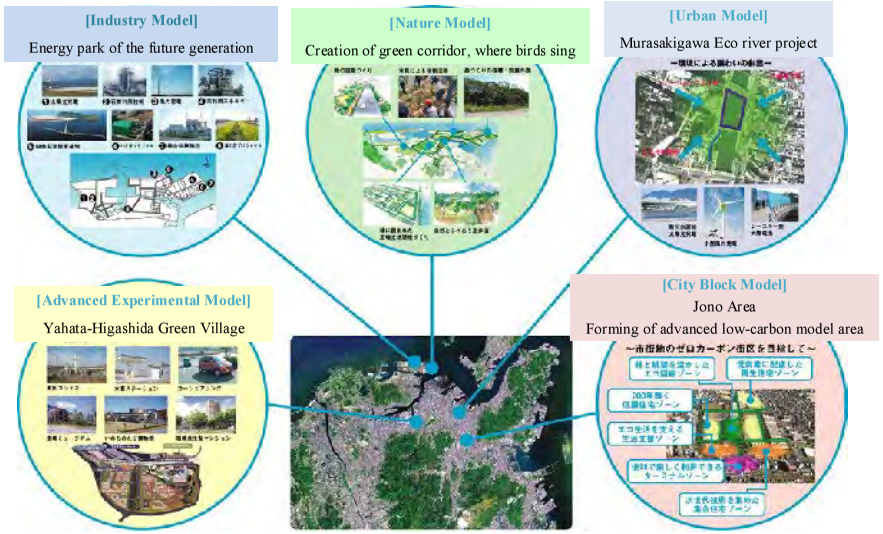
Promotion Council for the Low-Carbon Cities



Chairman Kitahashi (Promotion Council for the Low-Carbon Cities) handing the declaration statement to Prime Minister Aso (2008.12.14)

A4-4

Leading Projects



2. Progress of Eco-Model City Action Plan of Kitakyushu

GreenFrontier 環境モデル都市 北九州市

Progress of Eco-Model City(2009)

☑Progress of Green Frontier Plan
- Implemented 132, out of 135 planned for 2009

☑Enhancement of consciousness of citizens and development of civil activities
- Increase of recognition of Eco-Model City(Awareness survey of citizens)
  September 2008: 39%
  →September 2009: 52% (Implementation of environmental activities: 68%)

☑Enhancement of Kitakyushu Eco-Model CityRegional Promotion Meeting
- Registered organizations: 300→381 (as of July 2010)

【Public opinions】
- "Being a citizen of an Environment Model City, we are conscious of how to link our lives to low–carbon society at our work places, local areas, or houses", etc.

A4-5

FY 2010 Budget Related to Eco-Model City

～ Economic development through
creating low-carbon society ～

☑ 154 Projects in total, approx. JPY 4.42 billion

(40 new projects, approx. JPY 1.44 billion)

※ Initial budget of 2009: 138 projects, JPY 3.33 billion

☑ 35 Projects approx. JPY 0.83 billion:

Revitalize economy with environmental projects

1.Governmental special subsides for new environmental and new energy company for technology innovation (approx. JPY 0.12 billion)

2.New Yawata Higashida smart community projects（approx. JPY 7.20 million）
Preparation with new chamber for promotion of smart grid project with new energy infrastructures and ICT infrastructures

Follow up of Approaches of 2009 (Evaluated by the Government)

(Joint Office for Regional Revitalization, Cabinet Secretariat)

S	―
A	City of Kitakyushu, Kyoto City, Toyama City, Shimokawa-cho
B	Sakai City, Iida City, Obihiro City, Toyota City, Miyakojima City, Yusuhara-cho, Chiyoda Ward
C	Yokohama City, Minamata City

Evaluation by Joint Office for Regional Revitalization, Cabinet Secretariat
「S」In excellent progress, such as to be ahead of the national systems, at the municipal's initiative
「A」In very good progress such as moving up the schedule of advanced projects
「B」In good progress, such as implementing the project as planned
「C」Needs more progress, such as the project being behind schedule

3. Present State FY2010

GreenFrontier 環境モデル都市 北九州市

Present State as of 2010

1. Kitakyushu Smart Community Project
   Elected as model area by the government (April, 8)

2. Zero-Carbon Advanced City
   Start conference for sectoral review (August, 6)

3. Opened Kitakyushu Asian Center for Low Carbon Society (June, 4)

4. Established Murasakigawa Eco-River Project
   (Promotion plan for low-carbon city development of central Ogura)
   (July, 1)

5. Temporary Opening of Hibikinada Biotope (May, 22)

Kitakyushu Smart Community Project

Elected as model area for Japan's new energy and social systems

City of Kitakyushu
Yokohama City
Toyota City
Kyoto Pref. (Keihanna Science City)

Smart Community

Utilizing the "Smart Grid" which is a transmission grid for optimized power supply, the Smart Community aims to develop a future generation energy system, as well as to build a sustainable and comfortable society such as future generation transportation system or change of lifestyle, etc.

A4-6

Kitakyushu Smart Community Project

Realization of energy community → Society that can utilize energy → **50% CO2 reduction**

10% City Area for New Energy, etc.

Mega-Solar Town

Kitakyushu Hydrogen Town

Binary Cycle

【Role】
・Planned introduction of new energy
・Civilian use of exhaust heat from plants

Introduction of energy saving system in the whole region

Introduction of energy system which supplies according to the energy demand (BEMS),(HEMS)

Smart Office　Smart Data center　Smart Plant

Solar power generation
Small wind power generation
Recharger for EVs
Priority greening zone

Community development such as future generation transportation system

Integrated Mobility Management System

Integrated energy center, etc.　Rental bicycle station　"Odekake Kotsu" community bus

【Role】
・Development of future generation mobility station
・Elderly-conscious transportation system such as on-demand type community bus linked with hospitals

【Role】
・Efficient use of energy by facilities as well as optimization of the city's energy consumption at the same time
・Standardize smart meter of the city

Establish regional energy management

Power management facilities of the area

Carbon offset / Eco-Point System

Mass introduction of Smart Meter

【Role】
・Maximum utilization of new energy
・Minimize energy consumption of the region
・Minimize impact from main power of unstable new energy

Development of 10% City Area for New Energy, etc.

10% (2,000kW) of contract demand of the region (21,000kW) is supplied by new energy and regional energy

Mega-Solar Town
Developed 1,000kW solar power generator in the region

Utilization of exhaust heat from plants

Trans-heat container
Validated utilization of exhaust heat from local factories transferred offline and used at plant factories, etc.

Binary power generation
Validated binary power generation utilizing low-temperature exhaust heat.

Kitakyushu Hydrogen Town
Supply hydrogen through by-product hydrogen pipeline (used for fuel cells, etc.)

Development of DC housing experiment
Development of housings using DC power without transforming DC of solar energy, etc.

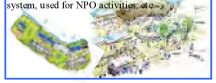
Small wind power generation
Introduction of small wind power generation to commercial facilities and public spaces in the area

Virtual introduction of wind power generation, etc.
Validate ideal introduction of wind power generation systems that are influenced by season or weather

Virtual introduction of wind power generation

Mega-Solar　Wind power generator 15,000kW

Development of eco-terrace-style houses in Higashida (Higashida Eco-Nagaya)
Development of Eco-Nagaya which utilizes solar power generation or future energy saving system, used for NPO activities, etc.

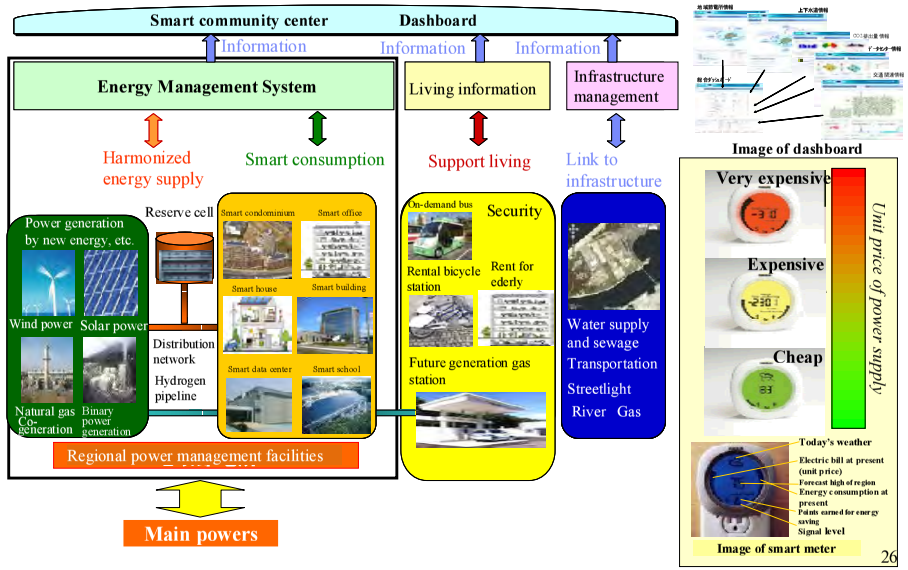


Introduction of Energy Saving System in the Whole Region

Intensive introduction of system for two-way communication and control with the center, and corresponding HEMS and BEMS

Establishment of Regional Energy Management System (Regional Power Management Facility)

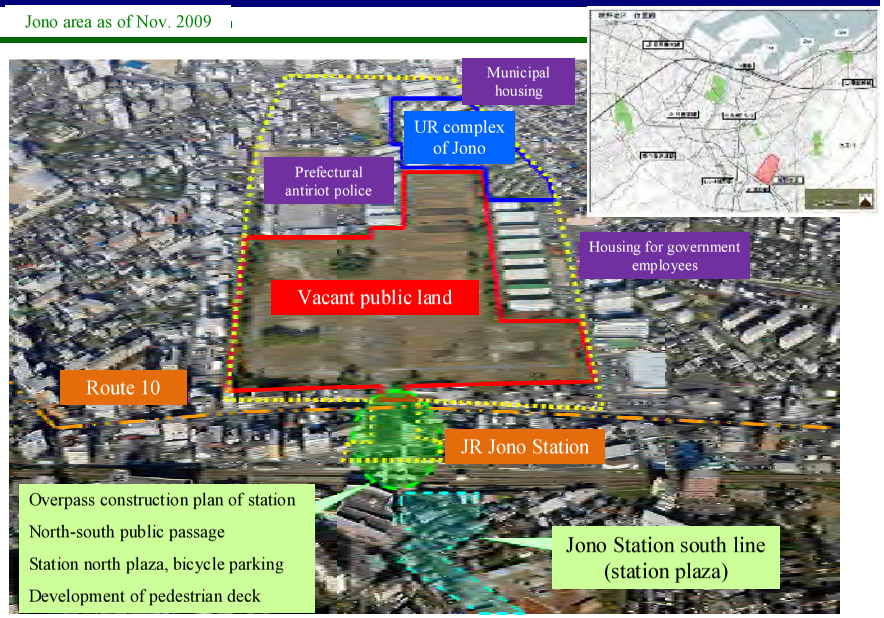
Minimize energy in the region, and realize mutual complement of large scale network, based on a new concept and framework, "regional power management facility"



A4-7

Forming an Advanced Zero-Carbon City

Jono area as of Nov. 2009



Forming an Zero-Carbon Advanced City

Forming a sustainable, energy efficient, and compact city by intensive measures such as solar panel, energy saving houses, public transport development, car sharing, preservation of nature, etc.

"Development of a city where walking is a means of transportation"
(measures for global warming and aging society)

- Consolidate housings and public facilities
- Public transport, park-and-ride
- Community bus, barrier-free
- Population aging rate: 32.5% (2030)

Realization of Low-Carbon Society in Asia

Organizational structure and functions of Kitakyushu Asian Center for Low Carbon Society

Center Manager

Hiroshi Komiyama
Center Manager
(former president of University of Tokyo)

Asia Green Camp

- **Center Manager**
- **Advisory Board**

Advisory Board Members
Chairman of Kyushu Economic Federation
Chief of Kyushu Bureau of Economy, Trade and Industry
Chairman of Kitakyushu Chamber of Commerce
President & CEO of Japan Bank for International Cooperation
President of Kyushu Institute of Technology
President of The University of Kitakyushu
Mayor of Kitakyushu

- **Environmental Cooperation center, KITA**
- **Global Environment Office of Environment Bureau**
- **Kitakyushu Urban Center of IGES**

Utilization of regional resources

○Consolidate excellent environmental technologies
・Technologies for resource-saving and energy-saving
・Cleaner Production

○Stronger ties within the network of Asian cities through global environmental cooperation

- **Support technology transfer**
- **Cultivate experts**
- **Transmit information regarding survey and research**

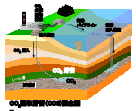
Promotion of low-carbon society development and vitalization of regional economy in Asia

Technology transfer of Kitakyushu Asian Center for Low Carbon Society

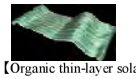
Establishing business model for technology transfer, from packaging of technology to financial support

Energy business

【Multipurpose coal gas manufacturing technology of Electric Power Development Co., Ltd.】



【Geological survey by Japan CCS Co., Ltd.】



【Organic thin-layer solar panel by Mitsubishi Chemical Corporation】

【Inverter of Yaskawa Electric Corporation】

Recycling business

Kitakyushu Eco-Town
Zero-emission type resource recycling base by collaboration of projects

Water business

Water Plaza
Water reclamation plant for sewage membrane treatment and seawater desalination
(Hiagari Water Purification Center)

Kitakyushu Asian Center for Low Carbon Society

①Packaging technologies
②Improvement of technologies to satisfy the needs
③Marketability survey
④Support demonstration experiment
⑤Support application for subsidy
⑥Financial and information support
⑦Dispatch business mission, etc.

Technology transfer to Asia

Utilization of city-to-city network
Institute for Environment Cities of Asia
(62 cities of 18 countries of Asia-Pacific region)
The Organization for the East Asia Economic Development
(10 cities of Japan, China and Korea)

6 Announcement of Achievement

STEP 1

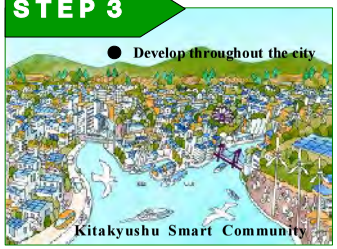
● Experiment at Yahata Higashida

STEP 2

● Advanced Low Carbon Model City Develop to (Jono Area)

STEP 3

● Develop throughout the city



Nationwide, then to Asia

● **Promotion Council for the Low Carbon Cities**
～Leadership of developing a low-carbon society～

Established for expanding role model approaches by 13 Environment Model Cities nationwide to transmit the information globally. (168 municipalities of Japan attended)

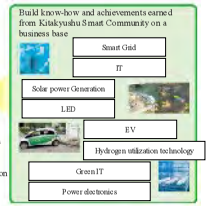
● **Kitakyushu Asian Center for Low Carbon Society**

Transfer achievements earned in the experiment projects on a business base, mainly to Asia

Transfer low carbon technology to Asia

Develop as a package of high-value added solution

Build know-how and achievements earned from Kitakyushu Smart Community on a business base



GreenFrontier 環境モデル都市 北九州市

Promotion Plan for Low-Carbon City Development of Central Ogura (Murasakigawa Eco-River Project)

Promotion Plan
As an Environment Model City, approaches for low-carbon society development such as introduction of natural energy, etc. are implemented in central Ogura based on the "Kitakyushu Green Frontier Plan". This plan also gives awareness of low-carbon society to the population, and is challenging for creating the "liveliness and symbol" of the city.

Period
・2009～2013 (5 years)
(period of Green Frontier Plan)
Area
・Range predefined by the Basic Plan for Vitalization of City Central (Ogura)
(Approx. 400ha)

Reduction of greenhouse gas
・CO2: 10,000 ton/year
※ Equivalent to 4,000 general households
Equivalent to 2,000ha of absorption by forests
(5 times the planned range)

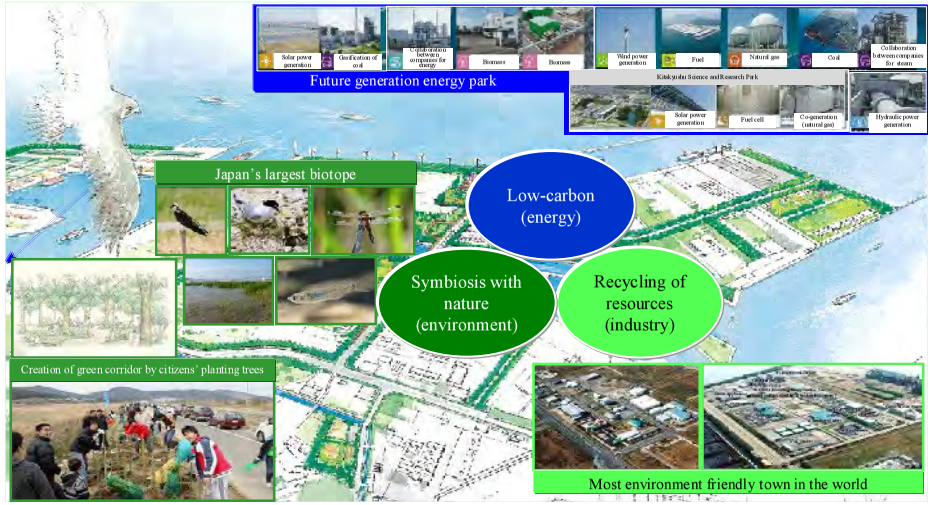
Leading Projects of the Environment Model City

Effects for accelerating vitalization
・Create liveliness and urban brand
・Create business model for low-carbon society

Hibikinada Area of Wakamatsu Ward – An Integrated Environmental Education Base of Environment and Industry

Hibikinada Area of Wakamatsu Ward where all three elements (low-carbon, recycle, and symbiosis with nature) required for sustainable society exist, is developed as an integrated environmental education base.

- Kitakyushu Eco-Town (Forming of recyclable society, promotion of environmental industry)
- Future generation energy park (comprehensive development and display of future generation energy for prevention of global warming)
- Hibikinada – green corridor where birds sing, the largest biotope in Japan (co-existence of city and nature, creation of pleasant and comfortable space for human and animals)



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4 . Important Law Revisions

GreenFrontier 環境モデル都市 北九州市

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Revision of Rationalization in Energy Use Law (Enforced in April 2010)

Applicable Scope:

Not only for plants or place of businesses, but for entities that consume 1,500kL/year or more energy in the whole entity.

Headquarters, plants, branches, service offices, as well as franchises of chain stores such as convenience stores, are applicable to the law.

However, existing law applies to the appointing of plants for energy management .

Contents:

Entities applicable to the law must apply for a certificate of "specified corporation" to the government.

Each entity shall assign one person each for energy management and energy management planning promoter.

Submission of regular report and mid-to-long-term plan.

Regular report and mid-to-long-term plan of each plant appointed for energy management shall be submitted by each company as one unit.

Energy consumption of the entire entity must be calculated starting from April 2009.

Period is from April 1, 2009 to March 31, 2010.

If energy consumption is 1,500kL or more per year, the entity must report to the Bureau of Economy, Trade and Industry in FY 2010.

Fines of 500,000 yen or less shall be charged to those who did not report, or who report false records.

Must show effort to improve 1% or higher energy consumption efficiency yearly, calculate actual value, and report.

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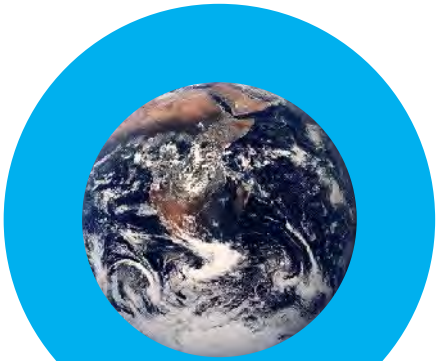
Low-Carbon Society

～ Reduced Greenhouse Gas, Enriched Life, and Sound Economical Growth ～



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