## A thesis submitted to the Department of Environmental Sciences and Policy of Central European University in part fulfillment of the

**Degree of Master of Science** 

# Green Investment Scheme (GIS) ----Maximizing its benefits to climate and society: The current development and proposal on its modality

design

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### Management

## **MESPOM**



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### **CENTRAL EUROPEAN UNIVERSITY ABSTRACT OF THESIS**

Submitted by: Liming QIAO for the degree of Master of Science and entitled: Green Investment Scheme (GIS) ---Maximizing its benefits to climate and society: The current development and proposal on its modality design

May, 2008.

Under the Kyoto Protocol, the Economic in Transition (EIT) countries possess a great amount of surplus Assigned Amount Units (AAUs) gained not from genuine reduction effort, but from economic recession. Thus, other Annex-I countries has vowed not to purchase the AAUs for compliance under Kyoto. GIS is proposed as a mechanism to green the AAUs by channeling the revenue from AAU sales to environment and climate related activities.

GIS is not under any international regulation, thus, there is no rule to ensure the environmental integrity in the whole greening process. The objective of the thesis is to fill in this gap by proposing the key modality structure of GIS to ensure environmental integrity.

The paper used empirical analysis to map out the current status of GIS development in EIT countries, and analyzed the problems with these countries' GIS. The paper also reviewed the Kyoto Protocol project based mechanism to see how GIS could fit into the area, where the other mechanisms failed. A modality structure was proposed by this thesis, which could be used for both selling and buying countries as a tool to evaluate GIS and as a reference to improve GIS.

Keywords: Greening Investment Scheme (GIS), greening of AAU, International Emission Trading

(IET), and modality design.

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## Abbreviation

AAU	Assigned amount unit	
CEE	Central and Eastern Europe	
CER	Certified emission reduction	
CO2-e	Carbon dioxide equivalent	
СОР	Conference of the parties	
EE	Energy Efficiency	
EIT	Economy in transition	
ERU	Emission reduction unit	
EUA	European Union Allowance	
GHG	Greenhouse gas	
GIS	Green Investment Scheme	
IET	International Emission Trading	
JI	Joint implementation	
MOP	Meeting of the parties	
Mt	Million tons	
SSC	Small Scale CDM	
pCDM	Programmatic CDM	
S-CDM	Sectoral CDM	
UNFCCC	United Nations Framework Convention on Climate Change	

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### 1. Introduction

### 1.1. Background

The Green Investment Scheme (GIS), a financial mechanism proposed to address the surplus Assigned Amount of Units (AAUs) in Economies in Transition (EIT) countries, is one of the emerging carbon finance mechanisms in recent years. Due to the economic recession, the former socialist countries have excessive AAUs, also called "hot air", which are not gained from emission reduction efforts. In theory, countries fulfilling the eligibility requirements to participate in the International Emission Trading (IET ) under Article 17 of the Kyoto Protocol, can sell surplus AAUs through IET, while Annex-I countries can purchase the AAUs to fulfill their Kyoto emission reduction targets (Blyth and Baron 2003; Tangen et al. 2002).

However, the surplus AAUs in the EIT countries are gained passively through economic recession. Due to pressure from environmental groups and the public, most of the Annex-I countries have vow not to purchase the "hot air" in this region. On this occasion, GIS was proposed as a solution to unlock the surplus AAUs in the region. The basic assumption is that the greening of surplus AAUs is possible if the revenues gained from sales of AAU through IET are channeled to environment and climate related activities.

GIS is applicable to the countries having the surplus AAU not gained from emission reduction activities. These countries are confined to Russia, Ukraine, and the Central and East European countries. The scope of this research will be only focused on GIS development in these countries.

### 1.2. Benefits of GIS for climate and society

If GIS is to be developed well with environmental integrity fully realized, it offers the Annex-II countries an additional compliance means to fulfill their Kyoto Protocol target. Various research has been done to estimate the volume of the surplus AAUs in the EIT region and the demand for such AAUs. It is estimated that the demand of the AAU could be up to 2.0-4.8 billion tCO2eq, while the supply could be 6.1 - 7.3 billion tCO2eq (Ürge-Vorsatz, Novikova, and Stoyanova 2007).

On the other hand, GIS opens a great financial opportunity for areas with significant climate mitigation benefits, but are currently underdevelopment, for example energy efficiency in housing sector (Ürge-Vorsatz, Novikova, and Stoyanova 2007). If designed well, GIS could overcome the barriers in the areas where significant emission reduction could be realized.

However, the concept of GIS was only proposed after 2000 and was only applicable to EIT countries. Research related to GIS is quite limited compare to that of other prevailing carbon finance mechanisms. GIS is applicable for the Kyoto Protocol first commitment period, which is the period of 2008-2012. Given the fact that the first commitment period has already started, the time left for the GIS to realize its full potential is limited.

### 1.3. The research need on GIS issue

Unlike CDM and JI, the major characteristic of GIS is that it is not under any international regulation. Currently, all the project based emission reduction schemes are under international or

<sup>&</sup>lt;sup>1</sup> Annex-I countries: Countries that are Kyoto Protocol parties taking a legally binding emission reduction target.

regional agreement or regulations. In other words, these mechanisms are under a commonly agreed protocol, which act as a goal keeper for the environmental integrity.

CDM and JI are Kyoto Protocol mechanisms. Thus the rules and modality are under the decision of UNFCCC Conference of the Parties (COP) and Kyoto Protocol Meeting of the Parties (MOP). The Marrakesh Accord, which was produced on COP-7, was one of the key rulebooks for the CDM and JI, in which the basic modality of both schemes were defined. Nevertheless, even the voluntary markets of emission trading are also under commonly agreed protocols, which are mainly charged by the International Emission Trading Association and other international associations.

GIS, on the other hand, is a hybrid of two mechanisms: the International Emission Trading (IET) of the AAUs and the greening activities with the revenue from the sales of AAUs. For the part of the IET, it is under the Kyoto Protocol. The buyer and sellers could follow rules of IET under Kyoto Protocol, Marrakesh Accord and COP/MOP decision. However, the greening activities are completely uncovered by any international regulation.

Due to the lack of international agreement and lack of commonly agreed protocol on how the domestic greening activities should be done, lots of issues could be generated, such as, how green is greening, should activities that are not link to quantifiable reduction be included in greening activities; should the activities be additional. Currently, there is no common agreement on these issues. The proceeds are mainly based on negotiations between the buyers and sellers.

On that occasion, there is a need for an analysis on the basic modality of the GIS to cover the grey

area that are left unanswered due to a lack of commonly agreed regulation or protocol. The basic assumption of this research is that the modality design of the GIS is crucial to ensure the environmental integrity of the GIS.

The modality or architectural design of the GIS is the key element to ensure its environmental integrity. However, current research related to this topic are either done in the early 2000's or done on country case basis. The research that combines the recent development in the GIS in the EIT region and covers overarching architecture design of the GIS is limited. This research will try to fill this gap to propose architecture design of GIS by drawing the experiences and lessons from Kyoto flexible mechanisms and recent development in the region.

### 1.4. Research objective

This research analyzes the architectural design of GIS based on the review of Kyoto Protocol flexibility mechanisms, and the experiences from countries that have established or are in the process of establishing GIS.

Accordingly, the objectives will be:

I. Review the development of GIS in the EIT countries in terms of its current status. By mapping out the key countries which have made progress in GIS development and countries with barriers to GIS development, lessons and experiences from the development of the GIS in the respective countries will be drawn to shed light on the countries in pursuit of the establishment of the GIS.

II. Review the current Kyoto Protocol flexibility mechanisms, CDM and JI, to show their shortcomings when addressing some key issues in climate mitigation. And will try to see how GIS

could better tackle these issues through architectural designs.

III. Propose the key modality or architectural structure of GIS, which will provide buyers and hosting countries a tool to evaluate GIS and a model to operate GIS.

### 2. Methodology

### 2.1 Research design

The purpose of this research is to propose the architectural design of GIS given the fact that there are no specific international regulations for GIS. The research will be based first on a literature review of past research on various issues related to the architectural design of GIS, and issues related to the architecture's arrangement. Based on the literature review, the author proposes a list of the basic elements to be considered in the architectural design of GIS.

Then there will be a part to review the Kyoto project based flexible mechanism, CDM and JI, which will be based desk-top analysis. This process is to analyze the experiences and lessons from the Kyoto Protocol's project based mechanisms for the purpose of improving the GIS modality design

After this, there will be an empirical analysis of the current status of GIS development in the EIT countries. This part of the research will be carried out through the interview of the people in charge of the GIS development in the EIT countries. The interviews will be based on a survey developed on an initial proposal of GIS modality elements. At the same time, along with the survey, questions will also be asked on the status of the GIS development in the respective countries and about barriers and prospects for the development.

The final part will be a conclusion based on the previous findings. This section will combines the findings from previous sections to help further improve the modality design of the GIS.

Evaluation of different GIS modality design in EIT countries will be made.

The chart below shows how these components interact with each and how they contribute to the objectives of the research.



### 2.2 Methodologies used in the research

The following methodologies will be employed in the research:

A. Desk study: Will be based on the review of the literatures of the GIS related literatures, the

CDM and JI related literatures;

B. Interview: Will be done based on a survey developed for the purpose of evaluating the GIS modality design in different EIT countries;

C. Survey: The survey is the same as the survey mentioned above in B. It is developed on the basis of the preliminary proposal on GIS modality for the purpose of mapping different EIT countries on the modality design of GIS;

D. Policy analysis: This section will be similar to that of the literature review. However, the focus will be more on the policies, such as the Kyoto Protocol, Marrakesh Accords, etc.

Below is a table of the methodology I used and how these methodologies serve the objectives

of the research:

Table 2.2 Research methods and how they serve the objectives of the research			
Research components	Method of research		
1. GIS modality options and modality options	Desk research: past literatures on GIS, from the literature identify key modality elements and different modality elements. The modality and modality elements were then used as a template to review each country's GIS development. These elements and options of modality serve as a basis of the GIS modality design.		
2. Review of the Kyoto Protocol	Desk research:		
Project mechanisms: CDM and JI	a) UNFCCC rules and regulations on CDM and JI;		
	b) Literature on the barriers and constraints of CDM and JI.		
3. Empirical analysis of the current status of GIS development	a) Survey: A survey was developed based on the modality elements and options after the review of the literature of GIS. The purpose of the survey is to identify the options these countries are choosing in the modality of GIS;		
	Another survey was developed to ask the buyers' preferences on the modality choices, which is also based the modality elements and options identified in the first part of the research		
	b) Interview: interview serves as a supplementary tool for the survey to further identify the modality choices countries made in GIS. The major questions in the interview won't be too much different from that in the survey.		
4. Analysis based on the findings in section 1-3	Analysis and compilation of the findings from the previous sections and propose an evaluation tool for buyers and sellers for GIS.		

## 2.3 Limitations of the research

The main limitation of the research lies in the interviews with the officials from the countries developing GIS. As GIS is still in the process of development, the current planning regarding the modality design may change within a very short period. So it is questionable that how much the interview will reflect the future changes. One possible strategy to mitigate this risk is to keep

track of the changes in these countries and update changes in time during the research period.

The other limitation also lies in the interview, some interviewees may consider the survey be intruding on national confidential information and may be reluctant to give answers. To mitigate this risk, at the beginning of the interview, the interviewer should inform the interviewee that the result of the survey will be kept in confidential and will be reported in aggregate, no individual information will be revealed.

## 3. Key concepts on Green Investment Scheme and key elements related to modality design

In this section, major literature in GIS is reviewed. The literature related directly to GIS is quite limited as the concept was only introduced after 2000. Besides GIS was not yet a mainstreamed financial mechanism in carbon market. Thus, with limited number of available literatures, the other material are either conference presentation or workshop proceeding.

### 3.1. Origination and development of the GIS issue

The issue of GIS was first officially initiated by the Russia Federation in COP 6, UNFCCC, in 2000, as a way to address the excessive AAU due to the economic recession of the economy (Tangen et al. 2002). After this, several research were done to further explore the mechanism, with a focus on Russia and Ukraine, which host around 70% of the surplus AAU(Gorina 2006). However, development of GIS in Russia was limited in recent years. The reasons were mainly the lack of political will in developing the scheme and barriers in setting up administrative structure for GIS etc.

As identified by Vorsatz et al (2007), one of the major concerns of the buyers on purchasing GIS is the "credibility risk", which is always associated with the general "business climate and financial reliability" of a country. In other word, countries with better business climate and financial reliability are easier to reduce the credibility risk in establishing GIS. On this occasion, the CEE countries, though with only a smaller share of surplus AAU, are actually having a

comparative advantage to that of Russia. Most CEE countries are EU accession countries, with relatively stringent criteria for business and investment environment.

The recent development trends do show that the CEE countries are catching up fast in terms of GIS development since 2005. Various research has been done on a country basis to explore how to develop the GIS better in a country specific case. Small countries, with larger flexibility on setting national law on GIS and establishing administration structure for GIS, are really moving fast in GIS developments. By the time this research began, Hungary and Latvia had got their national law on GIS approved by the parliament. This paper has a special focus on the development of the GIS in the CEE regions.

### 3.2. Definition and major concepts of GIS

GIS is the greening of AAU by earmarking revenue of the sales of AAUs and channeling them to environmental or climate friendly activities (Tangen et al. 2002, Atur et al, 2004). The establishment of GIS is a governmental action. Seen from the perspective of a hosting country, a GIS could be divided into two connected parts.

a) International Emission Trading (IET) part: the process of making a deal with the buyers on the sales of AAU; this part is covered by the Kyoto Protocol under the regulations related to International Emission Trading;

b) Domestic Greening part: the process of implementation of the "greening" activities with the sales of the AAU revenues; for this part, there is no international agreed regulation on how it should proceed; this part is more related to the modality design of the GIS, such as how the GIS

is structured, how the greening is defined, etc.

These two parts, however, are interdependent. The buyer's decision on the purchasing of AAUs

is dependent on the design of the domestic implementation of the greening activities.

Below are several key issues related to GIS:

a) Major stakeholders in the GIS:

As identified by Tengen et al (2002), there are two levels of actors in GIS: government and private actors. The following chart illustrates different pursuits and responsibilities of the actors.

	Table 3.2 Stakeholders in GIS		
	Seller: responsibilities	Buyer side: concerns	
Government	Establish the GIS, which ensures the greening	The design of GIS ensures the greening of the	
	of AAU; Management of revenue of GIS to	AAU; The management of the AAUs is	
	ensure the greening process implementation;	transparent and ensures the money is spent on	
	Conduct verification, monitoring process to	agreed areas; Necessary monitoring and	
	ensure the greening;	evaluation are in place.	
Private	No private sector on selling side	Same as above	
sectors			

### (Adapted from Tengen et al. 2002)

GIS is currently an activity mainly at government level. In the past years, discussion on exclusion of private buyers' participation emerged in some countries, especially in the case of Romania (Andrei, Relicovschi, and Toza 2006). The major reason for these countries to exclude the private buyers is that the AAU is national asset, thus are not open to private market. However, in recent years, most hosting countries have opened the GIS scheme to the private buyers. Even in Romania, the decision of inclusion of the private buyers is being discussed by the Romania government at the time this article was written. High possibility of inclusion of private buyer is expected [PC 9].

b) IET eligibility criteria:

The transaction and agreement between the buyers and sellers follow that of the rules under the Article 17 of the Kyoto Protocol, under the International Emission Trading (IET). Under IET, the Kyoto units and other regional or domestic units can be transferred and acquired between Annex-I countries.

The eligibility criteria for a country to participate IET lies follow:

• It is a Party to the Kyoto Protocol;

• Its assigned amount has been calculated and recorded in accordance with relevant guidelines and decisions;

• It has in place a national system for the estimation of emissions by sources and removals by sinks of all greenhouse gases;

- It has in place a national registry;
- It has submitted annually the most recent required inventory;
- It submits the supplementary information (e.g. on sinks) on assigned amount and makes any adjustments and recalculations required.
  - Submit supplementary information related to the AAUs.

### (UNFCCC 2001)

The eligibility issue of the participating countries in the IET is a very crucial issue and will be

elaborated in details in later sections.

### 3.3. GIS architectural design: Key elements for modality design.

The key modalities and different options under each key modality are reviewed for the purpose of getting whole picture of the architectural design of the GIS.

### 3.3.1 Management structure of the hosting country's GIS

As expected by the buyers, the sales revenue from AAU trading should be earmarked and be channeled to specific purposed, which are usually pre-defined in the contract. This requires a stringent management structure for the GIS. Various country case studies have proposed different structure for a sound GIS management. Several issues need to be address to ensure the transparency of the scheme.

According to WB(2006), the AAUs sales revenue, after each transaction is done, has three ways to be channeled. First is to enter the national budget with the consolidation process, then be allocated to specific greening activities. Second is to enter the national budget without consolidation process, but to a separate fund, together with other special fund, such as pension fund. In this case, GIS fund would be more easily to be earmarked and the funding could be more secured. The third option is that the money doesn't enter the state budget, but exist as an extra-budgetary fund, for example goes directly to National Environment Fund, which is prevailing in CEE region. The last option would be the best one as the fund is separated entirely from state budget, which is easier to earmark.

These three options would have significant impact on the GIS funding. As for the first option, if the national budget is in a deficit, the GIS fund may not be secured to be allocated to the targeted area. However, the situation is also much more dependent on national circumstance.

The management structure of the GIS is another major concern of the buyer. According to WB (2006), the following key functions should be covered by different institutes to ensure a sound management of GIS:

a) Institute responsible for AAU trading: responsible for finding buyer, negotiation with the buyer on contract, coordinate with the GIS management functional unit, etc.

b) Professional fund management: responsible for fund management, fund allocation, call for participation to the projects, etc.

c) Supervisory body: review the strategy of the GIS, such as the priority area, project selection process, the fund management, etc.

d) AAU Management for compliance status and maintenance of the IET eligibility cirteria: the GIS is based on the trading of the surplus AAUs. It would be crucial for the hosting country to manage their AAU well to ensure that committed surplus AAU would be available throughout the first commitment period. In the meanwhile, the hosting should also be wary of the country's status on the fulfillment for the eligibility criteria and maintain the eligibility criteria throughout the first commitment period.

### 3.3.2 Type of Greening

The key word in the GIS is the concept of "greening". Thus, how to define "greening" and how "green" the mechanism should be are the fundamental questions that have been analyzed.

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Greening is a process that links the surplus AAU, which has no environmental merit, with activities that can deliver environmental or climate benefits (Tangen et al, 2002. Blyth, W. and Baron, R. 2003).

As identified by various literatures, there are two types of "greening" by the nature of the activities in the greening process. If the activities in the greening process can deliver measurable and quantifiable emission reduction units, it is called hard greening. On the other hand, if the activities associated have non-quantifiable and non-measurable emission reductions, it is soft greening (Blyth and Baron 2003; Andrei, Relicovschi, and Toza 2006).

Typical hard greening activities are like emission reduction projects, for example renewable energy projects, retrofitting of old buildings, etc. Soft greening is usually a series of pre-defined activities, such as environmental education and capacity building related to climate change; demand-side management programs, technology development, capitalization of energy service companies, insurance funds for energy efficiency investors, dismantling of energy subsidies (Tangen et al. 2002; Blyth and Baron 2003; Andrei, Relicovschi, and Toza 2006).

#### 3.3.3 Project or program based approach

Project approach means the greening activity of the GIS is stand-alone project, with a clear cut project boundary. And it usually has a clearly defined and clear identified emission reduction activity.

A programmatic approach is greening activities with a discrete nature, dispersed but in a great aggregate number. For example, the lighting sector modernization, and energy efficiency standards in appliances. The emission reductions are demonstrated at an aggregated level (Hungary 2007).

The choice between project and program based selection also take place in connection with the section above about baseline setting, verification and monitoring process.

#### 3.3.4 Monitoring and verification issues

The eligibility criteria of the IET is quite similar to that of the track one JI. Under track one JI, the monitoring and verification process do not necessarily follow that of the CDM and track two JI, in which the verification is done by a third party. However, the hosting country of track one JI can verify and monitor the project in according to national guidance. In the case of GIS, we could use the Track One JI monitoring and verification procedure as a reference.

As identified by Vayrynen and Lecocq (2005), in Track One JI the validation, verification and monitoring process are all delegated to the host country, it leaves a huge opportunity for discrete verification and monitoring. They further identified that the verification and monitoring process is thus divided into three different types according to different nations' position on holding excess AAU and position in participating in the EU ETS. The three different types of verification and monitoring process were identified by Vayrynen and Lecocq (2005):

a) Standard baselines and multi-project emission factors for technologies or sectors. In this case, the hosting country could set a standard baseline for a certain technology or sector, similar to that of the baseline-credit system;

b) Domestic version of internationally approved track two JI methodology.

In this case, the national authority adopts the methodology and other guidance for validation,

verification and monitoring approved by the JI Supervision Committee, but the implementation must be within national boundary by the national authority of the hosting countries;

c) Negotiated baselines

The baseline and monitoring system would be based on the negotiation between buyer and seller on a case-by-case or project-by-project basis.

These three categories of baseline setting, verification and monitoring process could be used identical under the GIS process.

### 3.3.5 Time framework for the GIS

The World Bank study indicated that the GIS could be different from the conventional project based carbon mechanisms as the AAUs are more flexible and could give more flexible in terms of the time frame of the greening activities (Atur et al. 2004).

i) Early crediting: Early crediting is defined as the greening activities that could happen before the 2008. The emission reduction is then transferred and recognized as happened in the post 2008 period.

ii) Late crediting: same as the mechanism above, the greening activities take place after2012.

### **3.3.6 Fund allocation**

Fund allocation is defined as the way to allocate the funding in a GIS fund to the beneficiaries. Stoyanova (2006) has indicated several ways of the fund allocation:

a) Grants; b) Soft loans; c) Credit guarantees: Guarantees for credits granted by other institutions;

e) Equity for projects: GIS finances projects, taking an equity share and a corresponding share of

the revenues.

It worth mentioning that, Stoyanova (2006) proposed the latter two options, which are innovative ideas for carbon financing. Credit guarantees means that the GIS is provided as a credit guarantee for green projects when they are applying loan from the bank. The project developer pays the loan back to the bank, the GIS funding can be return from the bank or used as credit guarantee for other projects.

The option "equity for projects" is similar to carbon fund, that the money are invested to greening projects, and the greening projects will later be sold to the market and will generate profit. And the GIS management body can get the funding back and share some of the profit from the greening projects.

However, the last option, "equity for projects" should be screened out from the greening option for two reasons. First, if the credit generated from greening activity is then sold to the carbon market, it is an issue of double counting. It means the same project is serving for dual purpose: greening for AAU and credits for purpose of profiting. This could be counted as double counting. Second, as introduced by some literatures GIS should not be used for profit making (Vayrynen and Lecocq 2005). In the case of "equity for projects", GIS generates extra profit, which is not an option.

### 3.4. Risks in the GIS

Risks in GIS are not modality elements. However, risks have an impact on the GIS modality design. To hedge the risk, the modality has to take the risks into consideration and make relevant arrangements.

Similar to any other carbon finance mechanism, GIS does incur some risks. The following risks have been identified by various literatures. Vayrynen and Lecocq (2005) have categorized them as following:

 Greening activity delivery Risk: this is related to the greening projects not being implemented or the money were not channeled to real greening activities but sued for other purposes;

ii) AAU transferability risk: some of the AAU sales agreement have been signed in the form of MOU at this stage even before the selling country has the GIS in place and the eligibility criteria are met for the selling countries to participate in the IET; and the Marrakesh Accord further regulates that ERUs or AAUs cannot be used by a Party to meet its targets under the Kyoto Protocol, in case a participating country's compliance is in doubt.(Marrakesh Accord, 2001)

iii) Risk over the AAU management of the selling country: There is risk that there will be an oversell of the AAUs and fall in short in 2012, which is mainly caused by the mis-management of the AAUs or a unpredicted increase in the national emissions due to reasons like economic recovery.

iv) Price risk: the price fluctuation of the carbon market, and the dynamic between theKyoto related carbon market and regional carbon market, such as EU ETS.

 v) Environmental credibility of the greening: this is likely to arise where there is a lack of a third party validation and verification.

The risks identified will be analyzed further together with their impacts on GIS modality design.

## 3.5. Summary of the key modality in GIS

The fundamental elements for the GIS modality design could be concluded as follow:

- a) Where the AAU revenue goes to before channeled to targeted area
- State consolidated budget
- State special budget without consolidation
- Extra budgetary Fund
- b) GIS management structure
- AAU sales unit
- Fund management unit
- Supervision body
- AAU management unit
- c) Type of greening:
- **Hard greening:** GIS funding invest to the projects with quantifiable emission reduction.
- **Soft greening:** funding to the area with non-quantifiable emission reduction.
- d) The fund allocation:

The issue of the fund allocation may incur the issue of intruding the state aid rules and may be considered subsidies to the invested area. How the subsidies issues could be solved and how it affects the fund allocation will be discussed in later discussion.

The following five ways of fund allocation could be concluded from previous session:

- Grants
- Soft loans
- Credit guarantees
- 21

### e) The beneficiary:

Same as the issue above, the beneficiary of the GIS funding is also related to the state aid issue. And together with the fund allocation will be further analyzed in later chapter.

The following categories of beneficiary could be identified from previous session.

- Private companies;
- Non-profit organizations;
- Central and local authorities;
- NGOs;
- Physical persons;
- Government owned/municipal owned companies
- f) Time frame of the GIS:
- Early crediting
- Late crediting
- g) Monitoring and verification of the GIS greening activities:
- Sectoral standard baselines and multi-project emission factors;
- Domestic version of internationally approved track two JI and CDM methodology;
  - Negotiated baselines
- h) Whether the GIS includes a programmatic approach:
  - Project approach
- Policy/Program approach
- i) Project selection process:
- Top down

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### • Bottom-up

j) Designs considering risk mitigation or risk management:

Risks of GIS have an impact on the modality. In table 3.5, the risks, the risk mitigation and their impacts on modality are listed.

Table 3.5.1 Risks and their impacts on GIS modality design			
	Reason	Mitigation	Implication on
			modality design
Greening activity	Project not	Contract delivery;	Monitoring and
delivery risk	implemented; not		verification of
	enough credit generated		ER
AAU transferability	Doesn't meet eligibility	Ensure the	Institution
risk	criteria for IET;	eligibility criteria	arrangement to
	Mal-management of	is met; National	ensure that the
	AAU	AAU management	AAU
		plan	management
AAU oversell	Mal-management of	National AAU	Institution
	AAU	management plan	arrangement in
			the GIS system
Price risk	Market uncertainty		None

k) Summary of all the modalities elements and modality options for GIS:

Table 3.5.2 summarizes all the modality elements and modality options for GIS. The table serves as a template to identify the major issues in GIS structure. The table was used by the author as a reference to design the survey and to guide the author to gather the information in the countries developing GIS in the EIT region.

Table 3.5.2 Key GIS modality elements and options			
Modalities	Design options	Explanations	
How the money is earmarked? What is the	State Consolidated budget	The money goes to state budget and consolidated with other funding. Allocation is made to the areas predefined in AAU sales	
budgetary option?	State special Budget	Money goes to a special budget without consolidation.	
	Extra budgetary Fund	Money goes directly to the a special fund	
The management structure	Fund management unit	For fund allocation, budgetary of the fund, reporting of the fund uses, preparing the tendering or other project selection process, management of the project: monitoring etc.	
	Supervision body:	To review the strategy, such as the project priority area, project monitoring and verification principle and methodology	
	AAU management unit	To supervise the nation's AAU status to secure the nation fulfill the compliance status.	
	AAU sales unit	responsible for finding buyer, negotiation with the buyer on contract, coordinate with the GIS management functional unit	
Type of Greening:	Hard greening	GIS funding invest to the projects with quantifiable emission reduction.	
	Soft greening	Funding to the area with non-quantifiable emission reduction.	
	Mixed	If mixed model is to choose, the key question will be how to decide the ratio between the two.	
The fund allocation:	Grants	Amount corresponding to the quantity of reduced emissions	
	Soft loans	Loans with below-market interest rates & longer repayment periods	
	Credit guarantees	Guarantees for credits granted by other institutions	
Beneficiary	Private firm; NGO; Cer owned/municipal owned	entral or local government; Physical persons; Government ed companies	
Time frame of the GIS	Early crediting	Early crediting is defined as the greening activities could happen before the 2008.	
	Late crediting	The greening activities take place after 2012.	
Monitoring and verification of	Sectoral standard baselines and	Sectoral baseline	

Table 3.5.2 Key GIS modality elements and options			
Modalities	Design options	Explanations	
the GIS greening	multi-project		
activities	emission factors;		
	Domestic version	CDM and JI methodology, verified not by third party	
	of internationally	but by the hosting country.	
	approved track two		
	JI and CDM		
	methodology;		
	Negotiated	Buyers and sellers negotiate the baseline by each	
	baselines:	transaction.	
Policy/program	Project approach	Stand-alone project, with a clear cut project boundary	
approach Vs.			
project approach	Policy/Program	Greening activities with discrete nature, dispersed but	
	approach	in a great aggregate number	
Project selection	Top down:	National priority area, depends on government	
process		decision, through regional or sectoral distribution;	
	Bottom-up:		
	Tender		

### 3.6. Miscellaneous issues about GIS

As most of the Central and East European (CEE) Countries are have become EU member states, the issue of GIS is further complicated with the EU regulation entangled. The issues related to GIS including

 i) The issue of the conflict between the GIS funding and EU state aid is one worth deep speculation (Andrei, Relicovschi, and Toza 2006). If the funding is allocated to competitive areas, the funding may be considered as state aid and might be violating the EU competitive rule.

ii) Interaction of structural fund and GIS fund: one of the EU structural fund priority areas is the environmental area. If the domestic funding is the same area of the EU structural fund, the same amount is cancelled from the EU structural fund. The interaction between the two is one
interesting influence the hosting country's decision on the priority area selection.

iii) EU ETS double counting issue: EU ETS double counting issue is not directly related to GIS, but to JI. If a project covered by JI is under EU ETS installation, the same amount of EU Allowance (EUA) is cancelled for each unit of Emission Reduction Unit (ERU) produced under JI. Currently, the EUA price is around 25 Euro. CER price is around 16 Euro. ERU has no market value, but will not possibly be higher than CER. Thus, project developer not develop JI project under EU ETS converge (Vayrynen and Lecocq 2005; Lefevere 2005).

EU ETS double counting issue doesn't have an impact directly on GIS. However, the interaction between JI and GIS exists. GIS could be potentially invested in the area where the JI is not able to cover.

Given the fact that the GIS is taking place in EIT countries, in which most of the CEE countries are EU member states, the EU rules and regulations are having their impacts on GIS, in terms of priority area, fund allocation method. It would be more relevant to analyze the EU regulations on a country level together with country specific situation. Thus, these issues would not be addressed in this thesis.

## 4. Kyoto Protocol Project based flexible mechanisms

In this chapter, the Kyoto Protocol project based flexible mechanisms, CDM and JI, are reviewed in terms of their development, constrains, and pitfalls in the modalities. The purpose is to review the problems with these two prevailing mechanisms and to see whether GIS is able to overcome these problems and to realize more profound emission reduction potentials.

So far, CDM has become one of the most sophisticated and mature mechanism in the three flexible mechanisms, with experiences gained and lessons learnt to be used for design of other new carbon finance mechanism. The CDM modalities, methodology and project cycle are now copied to the JI. Thus, the conclusion from the analysis of the modality of CDM and its constraints can also be applied to JI.

In recent years, there have been some new developments of CDM and JI taking place. The programmatic approach (hereafter: pCDM) was introduced, trying to capture the projects with dispersive nature, like EE and small scale RE projects. GIS priority areas, as well as the design of the modality of GIS, shares a lot of similarity with the pCDM. However, the pCDM is not experiencing a booming as expected. It would be interesting to analyze the problems in the pCDM and to see how the GIS deal with the programmatic approach.

In this part, the discussion is therefore focus on the CDM/JI: modality design, the pitfall, and the pCDM.

### 4. 1 Project based Kyoto flexible mechanism development

Currently, CDM is the most mature mechanism under the three Kyoto Protocol mechanisms. By 1<sup>st</sup>. May 2008, 3,403 projects are in the CDM pipeline<sup>2</sup>.(UNEP 2008) The Marrakesh Accord, adopted in COP-7, set up the basic modality for the CDM development. CDM followed an immediate start after the entry into force of Kyoto Protocol in 2005. Projects starting in 2000 and later are eligible to earn Certified Emission Reduction (CERs). All these conditions grant the CDM a unique booming opportunity. However, JI has started only after the first commitment started, which is Jan 2008. Currently, there are only 135 projects in the pipeline.(UNEP 2008) As mentioned at the beginning of this chapter, JI is now copying the project cycle and the methodology in the CDM. On that occasion, it would be more comprehensive to evaluate the CDM as a representation of the project based mechanism. Thus in the next session lessons learnt from CDM could be used to analyze the project based GHG abatement program.

As indicated by Kyoto Protocol(1997) and reiterated in Marrakesh Accord(2001), CDM should lead to real, measurable and long term GHG reductions which are additional to a baseline scenario in absence of the CDM project. The CDM project cycle is developed to ensure these concerns are met.

## 4.2 Constraints of the CDM

Basically, the whole project cycle for CDM is to ensure the environmental safeguards, by introducing the third party validation and verification, the approval of issuances of CER by the

<sup>&</sup>lt;sup>2</sup> Pipeline is defined as the projects from the validation stage, through registration and insurance of the Certified Emission Reduction (CER).

Executive Board, the public participation, the strict baseline setting and methodologies, and monitoring plan etc. However, criticisms towards CDM in recent years are plethoric on various literatures.

The foremost one is the failure to fulfill the sustainable development goal. The criteria for judging the sustainable development is in the control of hosting country, which is not guided by any international regulations. At the same time, around 29% (UNEP 2008)of CER to be issued in 2012 in the current pipeline are from industrial gas flaring projects, whose contribution to sustainable development is debatable (Hinostroza et al. 2007; Michaelowa 2005).

The modality design of the CDM also prevents the funding to be channeled to the areas where significant emission reduction could be generated, such as energy efficiency in residential sector. Meanwhile, the project-based characteristic of CDM blocks the funding to be channeled into the basic sectoral infrastructural construction in developing countries, which may have a lock-in effect on GHG emission in decades to come (Figueres 2005, 2006).

Next, we are going to review the constraints facing CDM in addressing deeper and broader emission reduction opportunities.

a) Additionality: Additionality ensures the project is happening additionally to the business as usual scenario (BAU). However, additionality caused the problem so called as "perverse incentive", which means that the developing countries do not have intensive to develop climate friendly policies, as it might set hurdles to prove the additionality of the CDM (Figueres 2006; Michaelowa 2005).

In 2005, CDM Executive Board (EB) have adopted a decision to correct the effect of "perverse

incentive", by including the  $E+^3$  policies, which implemented after 1997 and  $E-^4$  policies, which implemented after 2001, into the baseline scenario (EB 2001).

The decision is effective in eliminating the adverse effects of hosting countries to adopt new climate friendly policies, but it is still not sufficient in encouraging the hosting countries to be active to adopting policies for decarbonization (Hinostroza et al. 2007). At the same time the additionality approval or assessment still poses huge barriers to the Energy Efficiency (EE) project development in CDM, which will be discussed later.

b) Incompatibility of EE projects and CDM modality:

CEU eTD Collection

Recent energy scenarios demonstrate that demand-side energy efficiency will have to carry most of the weight. However, in currently CDM projects, these projects demonstrate only a small portion. In the current CDM pipeline, the EE projects, both EE supply and EE demand, take only a share of 14.9% of the total project number (UNEP 2008). For JI, EE projects demonstrate only 13.6 % of the total project number (UNEP 2008).

The reason for lack of EE projects in the CDM project stream is multifaceted, such as split incentive for energy saving, difficulty for monitoring, buyer's preferences towards EE CDM projects are lower, difficult to monitoring, etc (Hinostroza et al. 2007). Among all these reasons, one of the major reasons lies in the lack of methodology for EE CDM projects. The incompatibility between the nature of EE projects and the basic modality structure of CDM is one of the major reasons contribute to the lack of methodology approved for EE projects (Hayashi and Michaelowa

<sup>&</sup>lt;sup>3</sup> E+ policies are those, national and/or sectoral policies or regulations that give comparative advantages to more emissions-intensive technologies or fuels over less emissions-intensive technologies or fuels. (EB 2001)

<sup>&</sup>lt;sup>4</sup> E- policies are those, National and/or sectoral policies or regulations that give comparative advantages to less emissions-intensive technologies over more emissions-intensive technologies (e.g. public subsidies to promote the diffusion of renewable energy or to finance energy efficiency programs) (EB 2001)

2007; Hinostroza et al. 2007).

Hayashi and Michaelowa (2007) explained the major reasons for rejection of EE related new methodologies as follow. First, some new EE methodologies are based on the empirical analysis between the emission and procedural changes, which is different from the traditional methodology that is based on the technology approach, hence was rejected by EB. And the EE projects always require a more broad approach, which includes multiple procedures in one project. However, this is not a common approach accepted by the EB currently. Second, the baseline approach is not diverse enough to accommodate different EE project types. Thirdly, the EE projects are difficult to pass the additionality assessment due to the economic viability of EE projects themselves. Fourthly, it is difficult to calculate the emission reduction from EE projects. Table 4.2 summarizes the barriers in the EE methodologies:

Table 4.2 Barriers for EE methodology approval		
	Convention approach of CDM	EE Methodology barriers
Applicability: methodology to define	Technology based; bottom up	Employ an empirical approach, performance parameter or
proceedings which are directly	approach;	benchmarking and facility-level-bundling approach
applicable to project activities		
Baseline approach	historical baseline; emissions of	The different categories of EE are difficult to be fit into the
	an economically attractive	clear cut baseline
	course of action; taking into	
	account barriers to investment	
Additionality analysis	Investment analysis; Barrier	Investment analysis not easily to be approved;
	analysis	
Emission calculation		Difficult to address the issue of capacity expansion;
		Rebound effect; Endogenous EE improvement

(Adapted from Hayashi and Michaelowa. 2007; Muller-Pelzer and Michaelowa. 2005)

### c) Transaction cost:

Due to the lengthy procedure of the project cycle, the transaction cost is a huge barrier in the CDM

projects. There have been various literatures tried to analyze the transaction cost CDM.

It has been estimated that the for small scale CDM(SSC) project, 2-15% of the total capital cost is transaction cost, while large project has 0.2-0.3% of the capital cost for transaction cost.(ADB 2003) Michaelowa and Jotzo (2005) estimated the transaction cost in combination with the project size. For the very large projects with annual reduction of 200,000 ton CO2 e, the transaction cost could be  $\leq 0.1$ /ton. Small projects, with 2000-20000t CO2 e/yr, have a cost of 10/ton. If a new methodology is submitted along with a new project, the transaction cost for the new methodology approval is even higher. Currently, the CDM market price is about  $\leq 16$ /ton, it is obvious that the small project are not viable in the market.

All these facts indicate that the small scale CDM is less favorable and less profitable than the large scale projects. However, the SSC projects may have significant potential for emission reduction and contribution to sustainable development. As most of the energy efficiency project in demand side management is small scale and disperse in nature. These projects never get prioritized in CDM and the high transaction cost is one of the major reasons contribute to this phenomenon.

### 4.3 Programmatic CDM (pCDM)

Programmatic CDM (pCDM) has been proposed together with policy CDM and sectoral CDM as a way to reform the current project based, stand-alone CDM. In COP11/MOP1, the EB formally adopted the Programmatic CDM as a new form of CDM. Before introducing the pCDM, the Sectoral CDM and Policy CDM should be mentioned and their difference with the pCDM should be addressed.

Policy CDM, is defined as a deliberate government policy, measure or standard that lead to

emission reduction in one or more sectors (Figueres 2005, 2006; Samaniego and Figueres 2002). The sectoral CDM (S-CDM) is proposed originally to overcome the perverse incentive created by the additionality principle in CDM (Figueres 2005, 2006). The definition of sectoral CDM, however, is a little bit chaotic. Some literature misuses the term sectoral CDM with Sectoral Crediting Mechanism (SCM), also called as no-lose sectoral target, which is actually not CDM but a means for emission reduction target setting. Sectoral CDM, is not too much different from policy CDM, in that they all target a sector by implementing a series of measures for emission reductions (Bosi and Ellis 2005). However, what is different is the intermediary of the projects. Intermediary for policy CDM is always government or public sector, while the intermediary for sectoral CDM is usually private organization (Hinostroza et al. 2007).

The pCDM could be seen as a combination of some characteristic of Policy CDM and Sectoral CDM, as it targets a wholesale of projects with same goal under a same policy. In terms of the intermediary, pCDM can be coordinated by both public and private entities. However, it is also different from policy CDM and sectoral CDM, as EB further defined pCDM as follow:

...a local/regional/national policy or standard cannot be considered as a clean development mechanism project activity, but that project activities under a programme of activities can be registered as a single clean development mechanism project ...

(UNFCCC 2005)

... [Programm of Activities] addressing mandatory local/regional/national policies and regulations are permissible provided it is demonstrated that these policies and regulations are systematically not enforced and that noncompliance with those requirements is widespread in the country/region. If they are enforced, the effect of the *PoA* is to increase the enforcement beyond the mandatory level required....

(UNFCCC 2005)

The pCDM was introduced in 2005 by the UNFCCC and was seen as an innovation of the CDM to

better address the Energy Efficiency projects, which are not financed sufficiently by the conventional stand-alone CDM. However, in the past 3 years, contrary to what people have expected, the pCDM didn't experience a huge boom. The reasons is complicated, such as the awareness of the project developers towards the new mechanism, the preferences of the buyers in the carbon market towards the non-EE projects, the difficulties in the monitoring of the dispersive EE projects. However, one of the major reasons lies in the issues discussed in previous section, lack of methodologies for Energy efficient projects. The pCDM still uses the methodologies approved for the CDM, which is more suitable for stand-alone projects. The lack of favorable methodologies reflects in two ways.

a) General lack of EE related methodologies, due to the incompatibility of the EE project nature and CDM modality design. This has been covered in previous section.

b) Lack of methodologies for the projects that is not stand-alone. The EB decision on pCDM decides that the program is based on a single methodology for baseline and emission reduction calculation. However, most of the EE related projects involves multi procedures or multi projects, which requires several methodology or requires a facility-level-bundling methodology.

## 4.4 Findings of constraints on Kyoto Protocol project based mechanism

From this chapter, it is obvious that the modality in the CDM, the requirement of the additionality test, and the methodology approval process are posing huge threats to the EE projects in the CDM. The new type of CDM, pCDM still cannot overcome the same barriers lies in the methodologies.

In this case, to overcome the barriers preventing the EE projects in CDM, it would be crucial to

overcome the hurdles of the methodologies in CDM. The following points should be taken into consideration:

a) The methodology should be simplified for EE projects: the methodology should take consideration of the nature of EE projects, especially in terms of the additionality testing, etc;

**b)** Methodology for the projects should be diversified: Facility-level-bundling approach should be explored specifically for the EE projects, which allow the methodology, be set not only on technology basis, but also behavior change; application of multiple methodologies should be allowed for projects which have a programmatic approach.

c) The high transaction cost: a simplified project cycle should be expected in GIS, with more money spending on the projects rather than on the procedures for project development.
These constraints are difficult to be overcome as the barriers are built in the additionality principle in CDM and JI. GIS, on the other hand, doesn't have to follow the strict rules related to "additionality".
Thus GIS should be more flexible and more effective to address the Energy efficiency potentials.

The purpose of the review of the Kyoto Protocol project based mechanisms is to see if the lessons learnt from these mechanisms could shed lights on the GIS modality design. From the findings above, the following issues should be addressed in GIS, in terms of its modality.

- a) The additionality test has posed some major constraints CDM and JI in addressing emission reduction in energy efficiency. The GIS should not follow the strict additionality tests.
- b) The methodology constraints also come from the requirement for additionality test requirement.
   The methodologies used in GIS should be simplified. GIS may not have to follow the methodology in CDM and JI, but could use the methodologies for emission and baseline from

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other internationally agreed protocols.

c) The project cycle in CDM and JI are too complicated that a huge portion of the money is spent on transaction cost. GIS design should take transaction cost into consideration and make sure that more money is spent on real emission reduction activities.

These findings could be used as principles by the hosting countries in developing the GIS. For buyers, the same understanding should be shared to ensure that buyers will not employ the same strict requirement in CDM and JI on GIS.

## 5. The current status of GIS development in EIT countries

## 5.1 Eligibility issues

As mentioned in the previous section, to participate in IET, the party has to fulfill the eligibility criteria for IET defined in Article 17 of Kyoto Protocol and the modalities, rules and guidelines defined in the Marrakesh Accord.

According to the Marrakesh Accord, the eligibility criteria for a party are as follow:

a) It is a Party to the Kyoto Protocol;

b) Its assigned amount has been calculated and recorded in accordance with relevant guidelines and decisions;

c) It has in place a national system for the estimation of emissions by sources and removals by sinks of all greenhouse gases;

d) It has in place a national registry;

e) It has submitted annually the most recent required inventory;

f) It submits the supplementary information (e.g. on sinks) on assigned amount and makes
 any adjustments and recalculations required.

g) Submit supplementary information related to the AAUs.

### (UNFCCC 2001)

Table 5.1 lists the time when these countries will be eligible for the IET and Track One JI. The

Table 5.1 Eligibility status and JI track One Procedures <sup>5</sup>		
	Becoming Eligible For IET and Track One JI	Have adopted Track One JI procedure adopted
Bulgaria	(25 November 2008-Expected)	No, but in the near future
Czech Republic	21.Feb 2008	Yes
Estonia	15 <sup>th</sup> . April 2008	No
Hungary	30 Dec. 2007	Yes
Latvia	29 April 2008	No, but in the near future
Lithuania	22 April 2008	No, but in the near future
Poland	29 April 2008	No
Romania	1 Sep. 2008	Yes
Russia	20 June 2008	No, but in the near future
Ukraine	29 April 2008	No, but in the near future

second column shows the countries' status on the national procedure on Track One JI.

(www.unfccc.int, 2008. Survey done by the author, 2008)

For the EU accession countries, the IET eligibility criteria are inline with those of the requirement of the EU ETS. Some of those countries have already met all the eligibility criteria. Given the fact that the first commitment period ends in 2012, countries still have some time to gear up to fulfilling these complicated requirements. It could be expected that in one or two years' time all these criteria will be met and the eligibility criteria will not pose a huge barrier for the EIT countries to participate in GIS. However, the earlier the eligibility criteria could be met, the more bargaining power selling country could possess during the negotiations with the buyers.

At the time this report was written, only Hungary and Romania had adopted Track One JI

<sup>&</sup>lt;sup>5</sup> The information in table 5.1 are gathered by the May. 2008.

procedure. By April 2008, Hungary had already had 15 Track One JI projects approved, covering renewable energy, CH4 recovery and N2O projects. Romania has just approved the Track One JI procedure, and has already had 12 projects approved. The information related to JI is not directly relevant to the GIS. However, the information for the development in track one JI could be used as a reference for these countries' status on carbon trading related mechanisms.

## 5.2 Current development of GIS in EIT countries

This section focuses on the national development of the GIS, in terms of the stage of development and current barriers or problems. The information gained in this section is mainly through the survey sent out to the selling countries officials, the interview with them, and the workshop held in April, 2008 in Budapest. The information get here are first hand information.

### 5.2.1 Hungary

### 5.2.1.1. General development of GIS

In 2007, the Hungarian Parliament passed the Act LX of 2007 on the implementation framework of the Kyoto Protocol, which grants JI and GIS legislative status. In the Act, the Minister of Environment and Water (MOEW) was assigned as the key institute to exert rights of trustee over the Kyoto units (Hungary, 2007a). The law also regulated the uses for the Kyoto units, and the areas where the revenue from Kyoto units' sales could be invested. GIS was also defined as the mechanism to for managing the sales of AAU. In the same year, a secondary law, "Government Decree 323/2007. (XII. 11.) Korm. on the implementation of Act LX of 2007" was also approved by the parliament. Decree 323/2007 further defined the key elements in the GIS, such as the conditions for the sale of AAUs, conditions and types in the GIS; conditions for and decisions over applications of the sales revenue and monitoring and verification issues (Hungary 2007).

Hungary undertook a reduction target of 6 % under the Kyoto Protocol in comparison to the average of the base period of 1985-87 (UNFCCC 1997). The country has a National Climate Strategy (2008-2012), in which an AAU management strategy is outlined. The country has a total

amount of AAU of 542 million tCO2eq, in which 395 million tCO2eq is set for commitment period reserve, 10 million for JI reserve. The country's emission trend is expected to be between 432-443 million tCO2eq, thus another 47-48 million AAUs is reserved for this emission growth in addition to the commitment period reserve. On that occasion, the available AAU would be 80-90 million. The government will open 45-55 million AAUs for GIS, of which 15 million AAU for the pilot phase will be of GIS and 30-40 million for the 2<sup>nd</sup> phase of the GIS (Hungary 2007).

# 5.2.1. 2. Management structure and budgetary option for the AAU sales revenue of the GIS in Hungary

The revenue from the sales of AAU enters a special account in the MOEW and won't enter state budget. MOEW is the major institute in charge of the management of the GIS scheme and the management of the GIS fund. MOEW is delegated by the government to negotiate, draft and sign the contracts with the buyers, through which the condition of the greening activities and the price of AAU are determined. MOEW is then be responsible for the fund management, selecting projects, supervising the projects and disburse money to the beneficiaries (Hungary 2007).

### 5.2.1. 3. Principle for GIS design

The following principles were employed by the MOEW when designing the GIS. First, all the money goes to emission reduction activities. This is ensured by the earmarking of the AAU sales revenue. The revenue is not enter the state budget and be re-allocated, but is directly deposited at a special account in the MoEW.

Secondly, the GIS ensure additionality, which is defined by Hungary as climate additionality and legal additionality. Climate additionality means the project focuses on areas to create an enabling

environment, which echoes the choice of hard greening. Soft greening is excluded from the greening option. This decision grants Hungary better position when negotiating with the buyers on the price of AAU. Legal additionality is defined as the greening activities not covered by a business as usual scenario (Feiler 2008).

Thirdly, concerning the priority area for greening activities, the cost-benefit ratio of the emission reduction activities was the primary concern for choosing projects.

Fourth, the government tried to match funds from other Hungarian state sources with the GIS fund. In this case, projects with more emission reduction potential but having larger requirement for investment could be covered. This could ensure that the emission reduction effects could better achieved than in the case where funding sources are not combined. This principle is applied to the greening activities in retrofitting of the public housing and household housing, in which a government building retrofitting program was taking place and GIS funding was provided as an additional funding source for the program.

### 5.2.1.3. Priority area and programmatic window for the GIS

The GIS has two windows: a programmatic window, which starts in mid 2008 and project window, which will be phased in in late 2009. The programmatic approach focuses on the projects, whose emission reduction activities are easy to execute in large numbers, using standard procedures. The project window focuses on project-based, stand alone projects (Hungary 2007).

Priority areas for investment of GIS follow the principle mentioned above: a) hard greening; b) additional: not covered by BAU; c) cost effective; d) matching up with other government funding

sources. The following areas were identified as target priority area:

a) Programmatic window:

• Residential and public sectors: heat insulation of buildings and the change of heating/cooling systems; application of small scale renewable energy utilization technology in household; measures to increase the effectiveness of district heating systems; planning and construction of low energy use buildings; lighting modernization

• Renewable energy use for smaller to larger heating systems;

• Biogas production and utilization;

• Other measures of energy conservation, energy efficiency and promotion of the use of renewable energy

b) Project window:

The government hasn't got a detailed plan on how this window will be like, but renewable energy will probably be a key investment area.

### 5.2.1.4. Verification and monitoring of the greening activities:

• Programmatic window

The verification is different for programmatic and project window. For programmatic window, the project are usually small in scale, disperse and large in number. In this case, the greening activities are reported by beneficiaries. A technical protocol is provided by the government, regarding energy consumption of the building by its physical properties. The beneficiaries use the technical protocol provided by the government to calculate the emission reduction and report it in the form provided by the government when applying for the fund. At the same time, a physical check of the electricity and gas bills can help to prove the effect of the emission reduction as well. For example,

if a household change the window into double glazing, the household is responsible for reporting the activity in its GIS application form. According to the technical protocol, the emission reductions could be calculated by using the standardized factor or formula directly. Then if the beneficiary complies with all the condition of getting funding, he/she gets a grant from the bank. After the retrofitting project is done, there will be a random check on whether the activities have taken place.

In short, the verification for the programmatic window is done by a) reporting by the beneficiary of the project with documentation; b) Random verification by the GIS Management Office.

• The Project window

The projects in the project window are usually large projects, where a third party verification takes place according to the ISO 14064 standard. The verifier will be a Hungarian domestic verifier.

### 5.2.1.5. Monitoring of the overall funding and performance of the GIS

The Hungarian monitoring has the following feature:

• Financially, the Hungarian government will invite an internationally renowned auditing firm to audit investments and use of the revenues.

• Performance of the greening activities: MOEW prepares a final report on the performance of the GIS;

• An advisory board, which consists of technical experts, representatives from the buyer and civil society organizations. The advisory board can assess to the performance information about GIS and can give recommendations.

• Buyers are presented with all reports and will have full and unrestricted access all relevant data, information and documentation: the buyers will have an opportunity for feedback based on the

reporting. After the audit buyers can request additional information and clarification [PC 4].

### 5.2.1.6 Summary of GIS development in Hungary

Hungarian GIS design is one of the most completed one, in terms of its coverage on the elements in GIS modality. It covered all the elements that are key to the modality design. The government also had some innovative ideas employed in the monitoring and verification process, such as using the ISO 14640. The government is a top runner GIS development. Its experiences could be borrowed to other countries, which are in the process of establishing the GIS.

### 5.2.2 Latvia

### 5.2.2.1 General development of GIS in Latvia:

The Latvian government has great political commitment towards the development of GIS. In 2006, the Cabinet of Ministers adopted the decision to participate in IET under Article 17 of the Kyoto protocol. In 2007, Latvia has passed the law on the Kyoto Protocol mechanism, in which the GIS was adopted to manage the AAU sales revenue.Now, Latvia, together with Hungary, are the two countries with the most significant development in GIS.

The country is working on the secondary legislation to better elaborate the general law, in which the basic procedures for managing the GIS fund will be covered. The process of making the secondary law will be together with the process of the pilot transaction, through the discussion with the buyer. The buyer's view will influence how the GIS structure should be better formulated, such as monitoring and verification plan, timeframe for the GIS, etc.

Latvia has an 8% reduction target under Kyoto Protocol, with a base year of 1990 (UNFCCC 1997). The country has a total number of 119 Million CO2 e of AAU, out of which 53 million is used for the commitment period reserve (UNFCCC 2007). The Latvian government has already got a national strategy of AAU management, in which around 40million AAUs are allocated for GIS, out of which 8-10million AAUs are used in pilot transaction in 2008. The ministry of Environment is the major institution to coordinate the GIS work and manage the GIS funding. The MOE has already started negotiations with a limited number of buyers on the AAU transaction in the pilot phase. The first deal is expected to be done by June, 2008 (Prūse 2008). As mentioned above, Latvia expects to gain experience through the pilot transaction, which will shed light on the secondary legislation of the GIS.

## 5.2.2.2. Management structure and budgetary option for the AAU sales revenue of the GIS

### in Latvia

In the law, it is clearly stated that all income from the sale of AAUs shall be earmarked for "greening" projects. Money from the sale of AAUs is transferred to an income budgetary account in the State Treasury. Disbursements are organized under the budget program "Climate change financial instrument", which is the official name of GIS in Latvia (Prūse 2008).



(Adapted from Puse 2008)

### 5.2.2.2 Monitoring and verification issues

Details of the monitoring plan of the Latvia are still is not yet finished, however, key elements for

monitoring has been decided. The monitoring plan includes financial audit; check of procedural conformity of GIS; assessment of greening results [PC 5]. The report of the greening activities will be submitted to the Latvian government and the buyer annually.

For the purpose of transparency and accountability to the public, an Advisory Council is proposed to be established for the GIS fund. The Advisory Council will be represented by relevant stakeholders, including state institutions, non-governmental organizations and buyers. The verification procedure is not clearly defined so far as the development of the secondary law for GIS in ongoing.

### 5.2.2.4. Priority area for investment

The law on GIS ensured the solid legal background for the scheme to take place. However, the size of the surplus AAU is quite limited with the amount allocated to the GIS really small. Meanwhile, Latvia is marked as a country with limited opportunities for greening with direct reductions of GHG. On this occassion, the country is going to have both hard greening and soft greening, with the latter to balance the lack of hard greening opportunities in the country.

The hard greening focuses on the following areas: small scale RE, such as biomass CHP; biogas recovery and use; energy efficiency in buildings; efficient public lighting; heat distribution in district heating systems; industrial power intensity; For soft greening, the priority will be on application of innovative low carbon technologies: lower carbon transportation systems; other low and zero- carbon emission technologies; capacity building for climate change policy design and implementation and capacity building for GIS management (Prūse 2008).

### 5.2.2.5 Summary of the GIS in Latvia

GIS development in Latvia is also very completed, as it covers almost all the elements in the modality. The Latvian GIS shares a lot in common with the Hungarian GIS, in terms of basic structure of GIS management, GIS priority area, monitoring scheme arrangement, etc. However, as the country is still in the process of developing its secondary law, lots of details of the scheme are not completed yet, such as emission reduction calculation and methodology.

#### 5.2.3 Ukraine

### 5.2.3.1 General development of GIS in Ukraine

Back in 2006, the World Bank started the "Ukraine Options for Designing a Green Investment Scheme under the Kyoto Protocol", which outlined the options for GIS scheme in Ukraine.

In Ukraine, Decree No. 221 on 'The Procedures for Consideration, Approval, and Implementation of the Special-purpose Environmental (Green) Investment Projects During the Period of Obligations of Parties to the Kyoto Protocol of the UNFCCC" was adopted in March, 2008. The decree is the major legal document for GIS development. Ukraine has a total AAU of 4,604 Mt CO2e, out of which 2,059 MtCO2e is set for commitment period reserve. According to NEIA, there will be 1.2 Gt CO2e for GIS (source: survey done by the author).

# 5.2.3.2 Management structure and budgetary option for the AAU sales revenue of the GIS in Ukraine

The government assigned the National Environmental Investment Agency (NEIA), which was established in May, 2007, as the main institution for both JI and GIS management. For GIS, NEIA is responsible for negotiation with buyers and also greening activities domestically (Ukraine 2008).

In January 2008, the government set up a price floor for the AAU and ERU in order to avoid the corruption (Semkiv 2008). However, the price floor is not an effective instrument for corruption avoidance, but creates an imperfect market. In April, 2008, the government abolished the price floor (PointCarbon 2008).

NEIA is in charge of GIS approval procedure, from the project selection to the project implementation and monitoring. Preliminary selection of the projects is done by the internal working group, consisting of participants from different interested ministries. The projects are approved according to the conditions of the contracts signed with the buyers. Buyers can choose the project type. After that, NEIA then selects a project manager and accredit the independent entities for determination of the GIS project documentation (Semkiv. 2008).

At this stage, some operational rules for GIS has not been clearly determined, such as the rules and timeframe for establishing the inter-departmental working group; the accreditation rules for independent entities and clear rule for tender and clear rule for financial incentives.

The AAU revenue is channeled through the state budget, which poses some uncertainty. If the state budget is in deficit, then the GIS fund will not be secured.

### 5.2.3.4. Priority area for investment

The GIS has both hard greening and soft greening options. The priority area for investment is: housing and public utilities, reconstruction of district heating systems, and forestry. In 2009-2012 period, the 25% of the GIS funding is used in soft greening (Semkiv 2008).

### 5.2.3.5 Summary of the GIS in Ukraine

Ukraine is developing also fast in terms in GIS. It has become the third country, after the Latvia and Hungary, to have law on GIS. However, the country still has a long way to go to finalize the details of the GIS.

### 5.2.4 Czech Republic

### 5.2.4.1 General development of GIS in Czech Republic

In Nov 2007, the government of the Czech Republic made a decision on further the GIS implementation steps. By May 2008, the law related to GIS was under review and is expected to be passed in June 2008 [PC 2]. According to a government official, the government is preparing an auction of AAUs in the November with around 5-10 million AAUs. The government has already signed MOU with Denmark and Austria, and is now preparing for discussion with Japan, Netherlands, Spain and Finland.

The Czech Republic has an 8% reduction target under Kyoto Protocol, with a base year of 1990 (UNFCCC 1997). The country's total AAU amount is 902 Mt CO2 e, with 732 Mt CO2 e for the commitment period reserve (UNFCCC 2007). The government already has a national AAU management strategy, and the possible allocation to GIS would be 100 Mt CO2 e [PC 2].

# 5.2.4.2 Management structure and budgetary option for the AAU sales revenue of the GIS in Czech Republic

The government has decided that, by 2010, the revenues from IET will be used for financing energy savings in family houses and flats, administrative and public buildings [PC 2]. The Ministry of Environment (MOE) will be the major institution to coordinate GIS management and to negotiate with the buyer on sales of AAU. The MOE will be responsible for establishing a Working Group(WG) for the GIS management both in international negotiation with buyers and coordinated work with the State Environment Fund, while the State Environmental Fund (SEF) will be responsible for the management of the funding under GIS (Fiala 2008). The graph below show the structure of the GIS management.



### 5.2.4.3 Priority area GIS investment

Both soft and hard greening will be included in the GIS in Czech Republic. Similar to the choices of the other countries, Czech Republic also chose retrofit of old building stock; Promoting energy efficiency in buildings, energy efficient appliances; and biomass for district heating as priority for the hard greening choice.

For the soft greening, it covers for administrative procedures. Other areas for soft greening options are not decided.

### 5.2.4.4 Monitoring and verification of the GIS

Czech Republic is now preparing for the legislation of the GIS, details of monitoring and

verification procedure is not yet decided. However, the government is considering the option of having independent verifier, most likely domestic, to verify the emission reduction.

### 5.2.4.5 Summary of GIS in Czech Republic

GIS development in Czech Republic is very fast. The government is almost in the final stage for the law to be passed. Meanwhile, the government demonstrated a very good understanding of the issues in the GIS. Some concrete progress from Czech Republic could be expected in the future.

#### 5.2.5 Romania

### 5.2.5.1 General development of GIS in Romania

In Romania, discussion on GIS has been going on for more than five years. In 2006, the Regional Environmental Center (REC), in cooperation with the Ministry of environment, coordinated a report on "Developing a Green Investment Scheme in Romania". The report proposed a basic structure for the GIS in Romania, including the basic management structure, the priority area, etc. However, the final decision on GIS by the government of Romania was not made until recently.

At the time this report was being written, some new developments in GIS were taking place. The Romanian government officials confirmed a strong political will towards establishing the GIS. A draft Governmental Decision for GIS was prepared based on the REC study and has undergone internal negotiations. At the same time, the Procedure for GIS project approval was prepared and will be approved after the Government Decision. In the meantime, the Romanian government has already started negotiations with different buyers. By summer 2008, the Romanian government will start the GIS pilot phase.

Romania is having a emission reduction target of 8 % under the Kyoto Protocol and have a total

AAU of 1299M t CO2eq.and a commitment period reserve of 780 Mt CO2 eq (UNFCCC 2007) .Currently, the government is working on updating the National Strategy on AAU management, in which the amount of AAU to be traded will be decided and the indicative price range of AAU will be established. The work is expected to be completed in June 2008 [PC 9].

# 5.2.5.2 Management structure and budgetary option for the AAU sales revenue of the GIS in Romania

Ministry of Environment is the key institution responsible for the GIS. The institution, which manages the fund, will be chosen from two options: either to use the current existing Environmental Fund or to establish a new unit under the MOE called the Program Management Unit (PM Unit). In the first case, the revenue from the AAU sales enters directly to the budget of the Environmental Fund Administration - a public institution which is coordinated by the Ministry of Environment. In the second case, the money enters a budgetary account of the specially established Project Management Unit within the MoE. In none of the above cases the money would enter the state budget, neither the consolidated nor any special account in the state budget [PC 10].

### 5.2.5.3 Priority area GIS investment

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Romanian GIS has both soft greening and hard greening options. For the hard greening, the priority is rehabilitation of district heating systems; construction of small co-generation installations (non-ETS); recovery of methane generated by urban waste landfills; fuel-switching in energy productive installations (non-ETS); reducing non-CO2 emissions in industrial installations; energy efficiency in buildings (public and private); GHG emission reduction in agriculture and transports sector and forestry. For soft greening, the priority has not be determined yet (Trusca

2008).

### 5.2.5.4 Government concerns over the monitoring and verification issues

Romanian is considering simplify all the emission calculation, verification and baseline issues. The purpose is to save the transaction cost and time delay for project approval. The basic idea so far is to have no baseline, no calculation of emission and no verification of emission (Trusca 2008). The hosting country creates a database of projects for greening. When sign the contract, the buyers are provided with a list of projects from the project database and buyers can choose the projects they like. Greening projects in the database were selected on cost-benefit principle. Projects are implemented after the AAUs sales revenue is received. As the projects are demonstratable, monitoring is on the project implementation rather than on emission reduction [PC 9].

It is doubtful if the approach of having no baseline, no emission reduction calculation and verification can be accept by buyers, who are used to the strict baseline setting and verification process in Kyoto based mechanism. However, the government of Romania is very confident of the approach and it is highly possible this approach will be employed in GIS in Romania [PC 9].

### 5.2.5.5 Summary of GIS development of Romania

The government of Romania has demonstrated very strong political will in the GIS development. And the Romanian GIS development is gearing up, with the law expected to come into force soon. However, the approach of having no emission calculation, no verification and no monitoring is an approach not appeared in other countries' GIS. Whether this approach would be appropriate will be further analyzed in this thesis later.

### 5.2.6 Other countries with modest development of GIS

### 5.2.6.1 Bulgaria

Bulgaria started GIS work back in 2005, far before most of the other countries in the same region. With funding and technical assistance from World Bank, a report entitled "Options For Designing A Green Investment Scheme for Bulgaria" was developed in 2005. The report was among the first country GIS option studies.

However, the development of GIS has been frozen since 2005. According to an energy expert in Bulgaria, the reason is that the new government administration of Bulgaria is expecting to sell the surplus AAUs without GIS or any greening activities. Meanwhile, the government intends to bank the AAUs to the post-2012 period (Christov 2008).

Both of the two options have with huge risks in the context of the complex climate politics. The first option, sell AAUs without GIS or greening activity, is not possible as currently no buyers, government and private, have explicitly expressed their willingness to buy non-greened AAUs. The EU buyers, mostly government buyers, have their parliament and public supervising the use of tax payers' money on the carbon unit purchases. The Japanese buyers, both government and private, have also expressed their concern on the purchasing of non greened AAUs. Given the fact that the neighboring countries in the region have already developed GIS with environmental integrity ensured, there is hardly any chance that the buyers will risk their reputation in the international climate community to buy the non-greened AAU from Bulgaria.

The second option, to bank the AAUs to the next post-2012 period is also a decision with risk.

Given the fact that the post-2012 climate regime is not clear at this time, there is a possibility that a new protocol will replace the Kyoto Protocol (Gassan-zade 2008). In this circumstance, whether the surplus AAUs will be able to be transferred to the new protocol is highly debatable. In other words, if there is no Kyoto Protocol second commitment period, but a new Protocol to replace the Kyoto Protocol, then it may not be possible to carry forward the AAUs.

It might happen that the government will realize the situation and change its position on AAU management. But at the time this report was written, there was no indication that the government will develop GIS in the near future.

Bulgaria has a target of 8% reduction under Kyoto Protocol, with the a base year of 1988(UNFCCC 1997). The nation's total AAU is 610 Mt CO2e, with a commitment period reserve of 353 million(UNFCCC 2008). The surplus of AAU in Bulgaria is now only 15million ton/year. In the five year commitment period, it will be 75 million tons. This number is hugely reduced after the European Commission's decision on the Bulgaria National Allocation Plan (NAP) for European Union Emission Trading Scheme(EU ETS) was published for Bulgaria. Untill now the country have not produced a national strategy to management the AAU and this AAU management strategy is not expected to be developed in the foreseeable future.

### 5.2.6.2 Poland

Holding the third largest share of surplus AAU (Ürge-Vorsatz, Novikova, and Stoyanova 2007), the Polish government is now very positive about developing GIS. The government has already started initial talk with the WB on collaboration to develop the Polish GIS, though GIS in Poland has not entered any legislation process [PC 8].

Poland has a 6% reduction target under the Kyoto Protocol, with a base year of 1988 (UNFCCC 1997). The total AAU amount is 2.75 Gt CO2 e., with a commitment period reserve of 1.94 Gt (UNFCCC 2007). The government is in the process of creating national AAU strategy, in which the total available AAUs will be allocated to different purposes: the commitment period reserve, back up for JI and GIS. The surplus is estimated to be 700 million tCO2eq (Survey, 2008).

According to an interview with an official from Ministry of Environment, Ministry of Environment will be mainly in charge of the GIS management work. The institution managing the fund under GIS will possibly be in the environmental fund [PC 8].

At the time this paper was written, most of the decision related to the modality design had not been made. According to the interview with official from MOE, the priority area for investment would be more likely in the areas that are not covered by current funding sources, such as: retrofit of old building stock, promoting energy efficiency in building, promotion of passive buildings, adaptation, capacity building on climate change and industrial process [PC 8].

### 5.2.6.3 Lithuania

Lithuania has a Kyoto Protocol emission reduction of 8%, with a base year of 1990 (UNFCCC 1997). The total AAU is 227million tCO2eq, with 109 Mt CO2 e for the commitment period reserve (UNFCCC 2007). Although Lithuania has not approved a National AAU management strategy, the possible allocation for GIS could be up to 50-55million tCO2eq according to a government official [PC6].

Currently, no legal document has been developed regarding GIS. The government is now doing an option study for GIS, which is expected to come out by June, 2008 [PC 6]. After this, the nation

will possibly have a more positive position on GIS development.

As the discussion on the GIS is still in its early stage, details of the modality of GIS have not been decided yet. The possible organization in charge of the GIS will be Ministry of Environment and the possible institute for fund management will be Environmental Investment Fund (Skrockaite 2008).

### 5.2.6.4 Estonia

The Estonian government is now showing interest towards development of the GIS. The government expects that GIS will give the country with more flexibility according to the national circumstance and could avoid the complicated and lengthy JI project cycle. The government is still at an early stage of planning the GIS. Thus, details of the GIS modality are not clear at present [PC 3]. The country has a target of 8% reduction target under Kyoto Protocol, with a base year of 1990. (UNFCCC 1997)The nation has a total AAU of 196 Mt CO2 eq, 107 Mt CO2 eq for the commitment period reserve. The possible surplus for entering into the GIS is less than 90Mt. (Survey done by the author)

### 5.2.6.5 Russia

Russia was the first country to initiate the idea of GIS back in 2000. However, eight years have passed and the government still has not adopted a decision on the development of the GIS. In January 2008, the World Bank started a country option study for Russia. The study will hopefully give insights on setting up GIS, in terms of GIS management structure, modality design, priority areas, etc.

Interestingly, there are several reasons why Russia is slow in developing GIS. One of the concerns

is that the government is interested in extending the GIS into a post 2012 regime, which actually faces the same risk as mentioned previously in the discussion of Bulgaria. The other reasons is that, the government's attention is diverted by the revenue from oil and gas export. The AAU sales revenue is not of the country's priority concern [PC 11].

Russia does not have a national strategy on AAU management, but is now in the process of creating it. The nation has a target to maintain the same emission level as the base year of 1990.(UNFCCC 1997) The nation has total AAU amount of 16.6 Gt CO2 e., with a commitment period reserve of 10.6 Gt. (UNFCCC 2008)The country is planning to have 10%, around 1-1.6 Gt to back for JI. The possible allocation of AAUs to GIS would be 800-1000 million tCO2eq. [PC11] According to a interview with a government official from the Ministry of Economic Development of Trade, [PC 11] the country is considering soft greening as the major greening activities type, which will cover not only issues related to climate change, but broader on pollution control.

### 5.2.6.7 Summary of the countries with modest progress in GIS development

The countries with modest progress of GIS development could be divided into two categories. One category is the countries do not want to establish GIS, such as Bulgaria. The other category is the countries with GIS development in a very early stage. For the latter category of countries, the experiences from the fast runner, such as Hungary and Latvia, could be used to benefit these countries.

## 5.3 Evaluation of the GIS development in the EIT region

### 5.3.1 Findings on the GIS in the EIT regions

From the description above, I compiled the modality options from the CEE countries in table

5.3.1.1 One point need to be highlighted is that these countries are in different stages of development of the scheme. Some countries have already got GIS fully established, some are establishing it in the way. Thus, decisions on some of the elements are opened to changes. Below re some key findings from Table 5.3:1.1

a) The rigid requirements for approving "additionality", as defined in Kyoto mechanism, are disappearing. Some of the countries still use the word "additionality" to describe their emission reduction, but this additionality is different from what is the strictly defined under the Kyoto project based mechanism. The term "additionality" is more like qualitative criteria rather than quantitive evaluation criteria.

This phenomenon could be justified by the fact that GIS is taking place in EIT countries, who are annex-I countries taking legally binding targets under the Kyoto Protocol. Thus, it doesn't matter if these countries' projects are proved to be additional or not as the whole annex-I countries are under the cap. The more emission reduction the countries achieved, the more allowances or credits it could gain for trading, which internally gives incentive for countries to invest additionally to climate mitigation. The same ideology was also applied originally to JI, but in reality JI followed CDM project cycle and copied most of the procedures in CDM, including the requirements for additionality tests. In addition, as mentioned in previous section, the rigid "additionality" tests in the project-based mechanisms have killed lots of projects with huge emission reduction potentials.

b) It makes people feels that if the additionality is not testing on a quantitive level, then emission reduction related calculation and verification are not important. However, this understanding is incorrect. In the case of hard greening, emission calculation and verification are crucial for two reasons. First, GIS is an agreement between the buyer and sellers regarding the greening activities or

the emission reduction activities. The emission calculation and verification are the proof of the projects taking place as agreed between buyers and sellers. As GIS is a mechanism not under control of the international rule, there is no third party approval of the projects, like CDM Executive Board (EB) or Joint Implementation Supervision Committee (JISC). The decision and procedures are under the hosting country control. The emission reduction calculation and verification would be a crucial supervision tool of the greening activities. Secondly, the emission reduction calculation and verification of how much emission reduction was achieved is crucial for buyers to assess the greening effective of the projects.

c) The reason that some countries are not strict with the emission calculation and verification is because there is a de-link between the amount of emission reduction gained from greening activity and the amount of AAU transferred between the buyers and sellers. Emission reduction generated from greening activity is not 1:1 matched with the AAU transferred to the buyers. In other word, for one tone of AAU sold, the revenue doesn't generate 1 ton of CO<sub>2</sub> eq. reduction. The is called greening ration, which means one unit of AAU equals to certain emission reduction achieved under greening. It doesn't have to be 1:1. However, currently, in most of the countries, the greening ratio is not employed as a standard to regulate the greening. Buyers in most of the cases are provided with a list of projects as the greening options, rather than provided with a certain amount of emission reduction to be achieved.

d) In the Hungarian and Latvian GIS, the mentioning systems in both schemes are structured in similar format. The monitoring system all consists of three parts. A) A financial monitoring plan, which is done through a annually financial auditing; B) A project performance monitoring plan,
which supervising the conformity of the projects; C) A supervisory body comprised of people from different sector to give independent supervision over the scheme. This model should be copied and followed in others GIS. Especially the supervisory body composing of people from public and NGOs could be served as a important supervising power for GIS in a hosting country.

e) Regarding the baseline for the GIS, most of the sellers chose the sectoral baseline and was expecting that the simplified methodology could be expected. The Hungarian experience in the housing sector is worth mentioning that the government is developing a technique protocol for different property of the projects and the rating system for the housing is employed.

f)Regarding the priority investment areas for greening activities: the following priority areas for investment are identified through the research.

	Table 5.3.1.2 List of priority area for investment
	Potential Greening activities
Hard greening	Retrofitting old building
	Energy efficiency in buildings
	Construction of small co-generation installations
	Rehabilitation of district heating systems
	Renewable energy (small scale)
Soft greening	GIS management capacity building
(according	Capacity related CC awareness
buyers	monitoring and observation on climate system
preferences	building capacity on climate related legislation and policy
ranking)	

(Source: author's survey)

In table 5.3.1.1, the hard greening activities are priority areas identified by the hosting countries for

GIS. The soft greening activities are identified by buyers according to their preferences.

From the table, we could find that most of the countries choose the energy efficiency as the priority areas. Retrofitting old building, such as improve thermal insulation and energy efficiency improvement in appliances and lighting system are the priority. This decision is mainly based on the concern of cost-benefit ratio of the project. This choice actually fills in the gap where the CDM and JI failed. It confirms the assumption made at the last section in chapter 5, that GIS don't have to follow the strict "additionality" rules, thus it should work more flexible in the areas of energy efficiency where significant emission reduction is.

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	Table 5.3.1.1 N	<b>Aodalities Opt</b>	ions in the Countries wit	h GIS Progree	SS
	Hungary	Latvia	Ukraine	Czech Rep	Romania
ning	Hard greening	Hard + soft	Hard +soft Greening	Hard + soft	Hard + Soft
l l					
rammat	Project +programmatic approach	Project	Project approach	Project	Project +programmatic approach
oject		+programmati		+programmati	
		c		S	
getary	Money goes directly to the	Money enters	Money enters the national	Money enters a	Special account in the
on of the	special account in MOEW	budgetary	budget and enters the	special account	management unit
		account in state	consolidated budget: risk of	under MOE,	
		Treasur then	securing fund in the case of	not entering	
		disbursed to	national budget deficit	the state	
		CCFI		budget	
eline	programmatic windows-Sectoral	TBD	Sectoral baseline; domestic	Sectoral	No baseline
	baseline		version of CDM and JI	Baseline &	
	Project window: TBD		methodology	Negotiate with	
				the buyers	
fication	Small project: a) a desk review;	TBD	Independent entity, mostly likely	TBD	No verification
	b) a random check; c)after the		domestic, to issue determination		
	project realization check on		report		
	performance of the applicant.				
	Large project, ISO standard is				
	employed;				
itoring	Financial audit; Reported by the	Financial +	Monitoring plan is proposed by	Yearly report	No monitoring for the emission
	MOEW in the format of a report:	nroiect	the project beneficiary no	which covers	reduction procedure other

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# Table 5 3.1.1 Modalities Ontions in the Countries with GIS Pro

	I auto o.o.	audilities Opt	ious in the Councils wi	uro ringra	2
	Hungary	Latvia	Ukraine	Czech Rep	Romania
	An advisory committee	conformity;	concrete rules on the monitoring	the monitoring	monitoring plan, such as
	monitoring of GIS overall.	assessment of	is regulated at this stage	of money,	financial monitoring, are under
		the greening		projects and	planning
		result		results	
Crediting	TBD	TBD	TBD	TBD	Post 2012
period					
Timeframe	First commitment period	TBD	First commitment period or	DBD	Extended to next commitment
			beyond		period
Fund	Grants	Grants	Not decided yet	Soft loan and	Grants and soft loan
allocation				grants	
Beneficiary	Private Companies; Non-profit	Private	Private companies,	TBD, but	Private companies, non-profit
	co.;Central and local authorities;	Companies;	government/owned municipal	preferably	organizations, central and local
	NGO; physical person	Non-profit	owned companies	physical	authorities, NGOs, physical
		co.;Central and		person	persons
		local			
		authorities;			
		NGO; physical			
		person			
Project	Tender	Tender	Tender and top down	Tender	Top down, bottom up and tender
selection					

# 5.3.2 Evaluation of the GIS in the region

# **Evaluation criteria**

As there is currently no international rules for GIS, the author would like to employ the buyers' preferences and adapt them into a set of criteria to help evaluate the current GIS development in the region. The buyers of the GIS are mostly government buyers from EU country and Japan. Some private buyers from Japan are also keen on purchasing AAUs through GIS. Most of the EU countries have their parliament, public and NGOs supervising the money spent on the carbon purchase. NGOs in these EU countries are especially vigilant on the money spent on the surplus AAUs in EIT. The government buyers' are very cautious in making their decisions on purchasing through GIS and are wary about environmental safeguarding. Thus the buyers' preferences are employed as criteria for evaluating the GIS in the region. There might be some doubts about the Japanese private buyers' position on environmental safeguarding. However, this group of buyer is only be a small portion of the whole buyer group.

### Survey of the Buyer

A survey of the buyers' opinion on GIS was developed by the author. The purpose of the survey was to understand the buyers' opinion on the following issues:

• Buyers' major concerns over the purchasing of GIS: It would be crucial to understand what the buyers' major concerns are on GIS. This would help us to identify basic functions that the modalities should cover.

• Buyers' major concerns over the soft greening and hard greening options: do they accept the soft greening as greening option and what activities would they like to be included in soft greening. Soft greening is different from hard greening in that it doesn't lead to direct emission reduction, or quantifiable reduction. But soft greening is contributing to emission reduction, and in some cases is crucial in addressing climate change issues.

• Buyers' concerns over the priority area for investment under GIS greening: this would not be crucial for modality, but would be interesting to comparing the buyers' preferences with the selling countries' priority areas.

• Buyers' concern over the monitoring process of emission reduction and the verification of the emission reduction

• Buyers' concern over programmatic approach of the GIS: do they accept the programmatic approach to be included in GIS.

# **Result from the Survey**

From the survey, Buyers' have showed three major concerns. Firstly, they would like to ensure the greening activities are implemented. They worry that the money will not be spent on greening activities or will not be earmarked for its designated purposes. The second concern is GIS management structure in the hosting country should be clear and simple to ensure the transparency of the whole scheme. The third concern is on the monitoring and verification of the emission reductions. The buyer would like to see a monitoring and verification plan prepared by the hosting country for the greening activities when building the GIS schemes.

Most of the buyers are positive towards soft greening and they admitted that soft greening is crucial for climate mitigation. However, they also raised the question that the soft greening would be hard to evaluate and monitoring. Thus, buyers would like to have a strict pre-defined list of soft greening activities, which could ensure that the money will spend at least to the areas where it mostly related to the climate mitigation. However, among the list of soft greening options, buyers strongly excluded the possibility to use the money to build climate change negotiation capacity. Activities related directly to GIS management capacity building are most favorable choice. Capacity related CC awareness raising is also one of the top choices, but some buyer prefer the CC capacity building to be in the same area as the priority target area, such as EE in building. Other choices such as building monitoring and observation on climate system and building capacity on climate related legislation and policy are less preferable choices. Money spent on other environment related activities, but not climate related activities are not favorable choices.

For the priority area for greening, buyers mostly focus on Energy efficiency, either in building sector or industrial process, where the CDM and JI failed to exert the full potential for mitigation. It also happened in the CDM and JI that some government buyers would like to transfer their own technology to the hosting countries and would even pay a higher price for the carbon credit generated to facilitate the technology transfer. However, in the GIS, most of the government buyers don't have an intension to transfer technology, as their technology transfer objectives will be realized through either JI or CDM. Regarding the programmatic approach, most buyers prefer programmatic approach, and attach great importance on programmatic approach.

Regarding the monitoring and verification: Most buyers agreed that for stand-alone

projects, a domestic version of the CDM and JI methodology should be applied or a simplified methodology, such as sectoral default baseline could be used. For programmatic projects, it would be more flexible. For verification process, most buyers currently don't have a concrete idea on how it should be. But a verification process and the reliability of the process are definitely important and crucial.

### **Criteria for evaluation**

From these buyers' preferences, we could conclude that the following categories of modalities should be covered for the GIS

a) Modality for funding transparency: modality designed to ensure that the funds are earmarked, traceable and monitored;

b) Modality for management structure of GIS: Modality designed to ensure that the structure of the GIS management is clear and transparent.

c) Modality for technical questions related to verifying the emission reduction: modalities related to baseline and baseline methodology, emission reduction calculation procedure, monitoring and verification procedure.

Modality for greening choices: modality related to soft and hard greening options,
programmatic and project approach.

At the same time, there are lots of modality elements that are left out from these three categories but are also very crucial for GIS. I would put all these modality elements into one big category:

e) Modality for operation: modalities such as fund allocation, beneficiaries, timeframe for the GIS.

If we combine the modality elements proposed in chapter 4 and the status report on the

country cases in chapter 5. We should review the modality structures as follow:

A) Modalities for fund management transparency:

• Earmark of the funding: The best option would be the revenue could not enter the national budget but set separated in an account in the fund management unit

• Financial monitoring of the fund usage: financial audit etc.

• Supervision from independent committee: Participate from other department of the ministry, public, NGO.

B) Modalities for GIS management structure:

• The hosting nation should have a law regarding the GIS establishment, a secondary law regarding the implementation procedures of the GIS.

- Fund management unit
- Project management unit
- AAU management unit
- AAU sales contract negotiation unit
- Supervision unit
- C) Modalities for emission reduction monitoring and evaluation:
- Monitoring plan regarding the emission reduction
- Verification plan regarding the emission reduction
- Baseline setting and emission calculation procedure
- D) Modality for greening option
  - Soft greening or hard greening
- Programmatic approach or project approach
- E) Modalities for operation:
- Fund allocation
- Beneficiaries
- Time frame for GIS

The first four categories are most relevant to buyers' concerns regard to the overall

management of GIS. I use these as criteria to evaluate GIS in these hosting countries. The

last modality category has the modalities crucial for the internal operation of the system,

which will be discussed later.

Table 5.3.	2 Evaluation of	the GIS in	the countries	ies with progresses developing the system				
		Hungary	Latvia	Ukraine	Czech Rep	Romania		
Funding	Earmarking	++	++		++	++		
transparency	Of the funding							
	Financial	++	++	TBD	TBD	TBD		
	monitoring							
	Supervisory	++	++	-	TBD	TBD		
	unit for the							
	whole project							
GIS	Law in place	++	++	++	<mark>++<sup>6</sup></mark>	<mark>++</mark> 7		
management	Fund mgt unit	+	+	+	+	+		
structure								
	Project mgt	+	+	+	+	+		
	AAU mgt.	++	++		++			
	Stg.+			-(in the		(in the process		
	procedure			process of		of creating it)		
				creating)				
	AAU sales	++	++	++	++	+		
	unit							
Modalities for	Monitoring	+	TBD	+	TBD			
emission	plan for ER			Determina				
reduction				tion paper				
monitoring	Verification	++	TBD	+	TBD			
and	plan for ER			Third				
evaluation				party				
	Baseline	+	++	TBD	++			
	setting and							
	emission							
	calculation							
	procedure							
Modality for	Hard greening	+	+	+	+	+		
greening	Soft greening		+	+	+	+		
option	Project	+	+	+	+	+		
	approach							
	Programmatic	++	++		+	+		
	approach							

\*Red means the legislation work is in the process.

 $<sup>^{6}</sup>$  Czech Republic is in the process of making the law passed in their country. As the law is going to be approved, I give them "++" Romania is also in the process of making the law.

From table 5.3.2, we could find that, for the funding transparency, most of the countries either have the GIS revenue not entering the state budget or entering a special account in the state budget. However, Ukrainian GIS revenue enters the state budget.

For the modality of GIS management structure, most countries have all these function units in place. However, in terms of AAU management strategy and procedure, some countries don't have it yet, but in the procedure of making it.

For the modality for emission calculation and verification, most countries have this function in GIS. However, Romania is going to have this section of modality totally missing, as their approach is not based on emission reduction calculation and verification. Details of the monitoring in some countries at this stage are not clear yet.

For the modality for greening choice, most countries have programmatic approach, which is very good. Soft greening is included in most of the countries, except Hungary. It is hard to tell whether it is good or bad to exclude soft greening. On the one hand, soft greening does contribute to climate mitigation, on the other hand, it is hard to evaluate. As the author of this article, I would propose that soft greening should be kept as one option of the greening, but strictly define its scope and keep the soft greening as a small portion. In Ukraine, the soft greening is planned to take 25% of the total revenue after 2009. The author's personal opinion is that the percentage of 25% is a little bit high, given the fact that the total amount of AAU available in Ukraine, 25% will be a big amount of money.

# 5.3.3 The modality for operation

In previous session, we came up with five categories of modalities choices:

- A) Modalities for fund management transparency
- B) Modalities for GIS management structure
- C) Modalities for emission reduction monitoring and evaluation
- D) Modality for greening option
- E) Modality for operation

The first four modality category could be used as criteria to judge the environmental integrity of the GIS and could also be used by the buyer to analyze the selling countries' soundness of GIS.

In this section, we are going to look into the fifth category of modality category, the modality for operation, which is more relevant to selling countries to structure their greening project management. Recall the modality elements in Chapter 4, the following modality elements should be included in the operational modality:

- Fund allocation: How the fund is allocated to the project beneficiary;
- Beneficiaries: beneficiary of the fund, who are also the people/organization that carry out the greening activities;
- Time frame for GIS: first commitment crediting or late crediting;
- Crediting period: the term/period the project generating credits;
- Project selection process: top-down, bottom up or tender

In table 6.3.3.2, the author sets up different models choices under different priority investment area.

Table 5.3.3.2 I	Interaction between the pri	iority area and the priority investment area				
Modality for	Modality options	Priority	area for investm	ent		
operation		Retrofitting	Big	CC awareness		
		buildings	renewable	raising		
			energy area			
Fund allocation	Grants	++	+	++		
	Soft loan	++	++			
	Credit guarantee	++++	++			
Beneficiaries	Central and local	++	++			
	government owned	<u> </u>				
	Government owned	++	++			
	/municipal Owned					
		+				
	Private companies		++	++		
		(Violation of the				
		state aid rule)				
	Non-profit companies	+	++	++		
	NGO			++		
		(don't have the				
		capacity)				
	Physical person	++		++		
Timeframe for GIS	First commitment	++	++	++		
	Late crediting	(if credit guarantee				
		is chosen as fund				
		allocation option)				
Crediting period	5 yr			/		
	10 yr			/		
	10 or more	++	++	/		
Project selection	Top down	++				
	Bottom up		++	+		
	Tender	++	++	+		

Table 5.3.3.2 sets up different operational choices for projects to be implemented in certain area. However, this model is interactive with different context and different priority investment given. For example, in the context of EU, EU regulations of state aid may have an impact on the fund allocation and beneficiaries. In Hungary, to avoid violating the state aid rules, the government chooses domestic and public sector for energy efficiency in building,

which has an impact on fund beneficiary. Thus, the table here is used as a reference for the hosting country, and should be used together with different context and different priority investment area.

# 6. Conclusion

The objective of this paper is to propose modality design of GIS to safeguard the environmental integrity. The thesis also used empirical analysis to map out GIS development in the EIT countries. A survey of the buyers of GIS was conducted with buyers concerns over GIS identified, which was then used to set criteria to evaluate GIS.

These criteria were then employed to the countries in EIT countries to evaluate their development. From this evaluation, I identified issues that need to be strengthened in the future, such as emission calculation and verification, budgetary arrangement, etc.

I would like to use the same criteria used to evaluate the GIS in Chapter 5.3.2 again and put them into a matrix. This matrix could be used for the buyers as an evaluation tool to assess the GIS in a hosting country and to help make purchasing decision. This tool could also be used by selling country to improve their GIS.

		Table 6.1 Evaluation Criteria for GIS
Funding	Budgetary option	"+" if the budget doesn't enter the state budget or a special in the state budget which is earmarked
transparency		"-"if enters the consolidated state budget
	Financial monitoring	"+" if there is rules for financial auditing and other financial monitoring mechanism
		"-" If no financial monitoring
	Supervisory unit for the	"+" if supervisory from public and NGO on the priority area choose, project implementation, fund
	whole project	management, etc
		"-" if the decision is closed to only management institution of GIS
GIS management	Law in place	"+" general law for GIS establishment & secondary law for GIS implementation
structure	Fund mgt unit	"+" if there is a professional fund management unit
	Project mgt	"+" if there is project management procedure
	AAU mgt. Stg.+ procedure	"+" if there is AAU management and also the procedure for implementing the AAU management
	AAU sales unit	"+" if there is one
Modalities for	Monitoring plan for ER	"+" if there is a ER management plan,

		Table 6.1 Evaluation Criteria for GIS
emission reduction	Verification plan for ER	"+" if there is verification plan
monitoring and evaluation	Baseline setting and emission calculation procedure	"+" if the emission is calculated and the baseline is set
Modality for	Hard greening	"+" if hard greening
greening option	Soft greening	"+" if the soft greening is kept as a small portion in the total fortfolio;
	Project approach	"+" if there is a project approach
	Programmatic approach	"+" if there is programmatic approach

Same as this effort, the author also came up with a model of key modalities for GIS operation, which could be used as a model for sellers to operate GIS. Details of the operational choices are in Table 5.3.2.3.

The paper also reviewed the Kyoto Protocol project based mechanisms in terms of their constraint from modality design. The conclusion for this section is that Kyoto project mechanism is having a limited impact in addressing energy efficiency issues. Even with newly adopted programmatic approach, the same constraints still exist and hard to be overcome. In the analysis of status of GIS development in EIT countries, the areas of energy efficiency, which failed to be addressed by CDM JI was picked up as the priority area for most countries. Programmatic approach was also employed in GIS. However, as the technical details of emission reduction calculation is not yet complete finished. It is hard to evaluate the effectiveness of the emission calculation, verification and baseline in the GIS. However, this issue could be a future research area. And if the evaluation shows that these issues in programmatic approach are well solved in GIS, it could shed lights on the programmatic projects in the Kyoto project based mechanisms.

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# Annex-I Survey of the Sellers' concerns on purchasing surplus AAU through Green Investment Scheme

This is the questionnaire that deals with Green Investment Scheme (GIS). Please take a few minutes to express your opinions on GIS and your organization's position on GIS.

Your survey responses will be strictly confidential and data from this research will be reported only in the aggregate. Your information will be coded and will remain confidential.

Your answers are important to the success of this study.

Thank you for your assistance!

When you finish your research, please send the result back to Ms. Liming Qiao at <u>giao liming@student.ceu.hu</u> or <u>gilimi723@gmail.com</u>

1. Please indicate (if you wish) which country you are from:

- 2. What is the status of your country's development of the GIS:
- a) Already have the legislation and secondary/implementation regulation;
- b) Already have the legislation but no secondary/implementation regulation;
- c) The law is under review and will soon be passed;
- d) Not yet entered any legislative process;
- e) Still doing research on the possibility of the establishment of GIS;
- f) Not going to set up GIS in the near future;
- g) Other\_\_\_\_\_

If your country decides not to set up GIS, please specify the potential main reasons:

\_\_(Multiple choices)

- a) Will bank the surplus AAUs to the next commitment period;
- b) Will not have enough AAUs for sale due to the recovering economy;
- c) GIS is complicated and is not worth setting up;
- d) Due to internal reasons, the set up of the scheme has legal, political or other barriers;
- e) Others\_\_\_\_\_
- 3. Does your country have a government approved strategy on AAU management?

- a) Yes, already has it;
- b) No, but is in the process of making it;
- c) No, will not have it in the foreseeing future.
- 4. Do you have a procedure for manage AAUs according to the strategy?\_\_\_\_\_
- a) Yes;
- b) No, but will have in the near future;
- c) No, not in the near future

If you have already got a plan to set up the GIS, please answer the following questions on the modality design of the GIS in your country:

- 5. Do you include private sector as buyers of GIS?
- a) Yes;
- b) No.
- 6. What will the GIS structure be like?\_\_\_\_
- a) Fund model: revenue will be pooled together from each transaction of AAU sales and invested to some predefined areas;
- b) Project-by-project model: each AAU transaction will individually define a project to deliver the greening activities based on negotiations with the buyer.
- 7. What is the organization in charge of GIS management?

What organization is in charge of the fund allocation?

Do you foresee a future that a private sector will be in charge of the management of GIS?

- 8. Is it established by the law that the AAU is a national asset?\_\_\_\_\_
- a) Yes
- b) No
- c) Not clearly defined

9. Does it require a MOU to be signed with the buyer?\_\_\_\_\_

- a) Yes
- b) No

# 10. What is your process of selecting a buyer?

- a) Tender
- b) Bilateral
- c) Other\_\_\_\_\_

- 11. What are your major concerns when choosing the priority investment area for GIS. \_\_\_\_\_
- a) Maximising the cost-efficiency of investments, or maximising GHG savings from revenues;
- b) Maximising gains towards national social, political and regional development priorities;
- c) Coverage of GHG reduction needs that are important but are difficult to foster by business-as-usual policies or available/foreseeable support schemes;
- d) Meeting the EU acquis communautaires;
- e) Buyer's preference: choose the area that buyers really prefer.
- f) Other\_\_\_\_\_
- 12. How will the baseline setting and monitoring process be based on? (If your countries haven't decided yet, please indicate an answer that you personally think should be applicable \_\_\_\_\_)
- a) Sectoral baseline/standard: Standard baselines and multi-project emission factors for technologies or sectors;
- b) Domestic version of internationally approved JI methodologies;
- c) Negotiated baselines;
- d) Other\_\_\_\_\_
- 13. Who will the verifier be?
- a) International verifier;
- b) Domestic verifier;
- c) Will dependent how the buyers' expectation is
- d) Other\_\_\_\_\_
- 14. How long will the crediting period of the greening project be?\_\_\_\_\_
- 15. How much available AAUs (in units) will be opened to GIS?

How much AAUs will you carry forward to the next commitment period?

- 16. What is the priority area for investment of GIS in your country? \_\_\_\_\_(multiple answers). (If your countries haven't decided yet, please indicate an answer that you personally think should be applicable \_\_\_\_\_ ( multiple answers).
- a) Retrofit of old building stock;
- b) Promoting energy efficiency in buildings, such as using the CFL bulbs, energy efficient appliances;

- c) Biomass for district heating;
- d) Promotion of new buildings with ultra-low specific energy consumption, such as passive buildings;
- e) Transportation;
- f) Biofuels;
- g) LULUCF;
- h) Adaptation;
- i) Capacity building on climate change: support national inventory building, ect.
- j) Awareness raising on energy saving or energy efficiency;
- k) Other\_\_\_\_\_
- 17. What is your countries position on soft greening? \_\_\_\_\_ (If your countries haven't decided yet, please indicate an answer that you personally think should be applicable \_\_\_\_\_)
- a) will not have a soft greening option;
- b) will have a soft greening option;
- c) should allow a mixture of hard and soft greening, with the latter well defined and limited to a small portion of the total greening option; and how much the proportion of the soft greening should it be?\_\_\_\_\_
- 18. If the answer to Question 17 is not a, please specify what is your plan on soft greening?

be	will		ivities	act	ening	t gre	soft	What	a)
			_					d?	include
tivities?	ac	nese	th	perceive		buyer	does	How	b)
eening?	ì g	sof	of	effects	the	evaluate	to	How	b)

- 19. Will the GIS greening activities in your country have a policy based approach?
- a) Yes
- b) No

20. What is the project selection process for the greening activities?

- a) Top-down
- b) Bottom-up
- c) Mix of the two
- d) Tenders

21. Is buyer going to have a say in the project selecting process?

- a) Yes;
- b) No.

22. What is the fund distribution process?

- a) Grants
- b) Soft loans
- c) Soft loans and grants
- d) Credit guarantees
- e) Equity for projects
- f) Other\_\_\_\_\_
- 23. Who will be the beneficiaries of the GIS fund? Or what will be the entities entitled to the greening activities and apply for fund? \_\_\_\_\_(multiple answers)
- a) Private companies;
- b) Non-profit organizations;
- c) Central and local authorities;
- d) NGOs;
- e) Physical persons;
- f) Government owned/municipal owned companies
- g) Other\_\_\_\_

24. What is the time frame for the GIS?\_\_\_\_\_

- a) Will only be within the first commitment period, 2008-2012;
- b) Will be extended to the next commitment period;
- c) Have not decided.

25. How do you anticipate each transaction?

- a) Small in size by each transaction, but big in number;
- b) Big transactions in small number;
- c) Other\_\_\_\_\_
- 26. Do you have any plan on managing the risks incurred from GIS?
- a) Project delivery risk\_\_\_\_\_
- b) Non transferability\_\_\_\_\_
- c) Reputation risk

27. Do you think AAUs will be of value after 2012?

- a) Yes
- b) No
- c) Hard to tell
- d) Other\_\_\_\_\_

28. How do you decide the price for the AAUs?

How much you expect will the AAU be?(in Euro)

29. Does your country have a Track One JI procedure already?\_\_\_\_\_

- a) Yes
- b) No, but in near future;
- c) No, not foreseen in the near future.

30. If the previous question if a), is it different from the track two JI?

- a) Yes;
- b) No.

31. Does your country have any Track One JI projects ongoing?

- a) Yes
- b) No

If Yes, how many projects are going on? \_\_\_\_\_ and in what sector?

Where to get the information on the Track One JI projects undergoing in your country? What is the website address?

32. .Does your country have any Track Two JI? \_\_\_\_\_

If Yes, how many projects are going on? \_\_\_\_\_ and in what sector?

# **Only for EU countries:**

- 33. Does the GIS funding in conflict with any national or/and EU regulation related to subsidies, state aid and protection of competition?
- 34. Have you got a plan to solve this problem?
- a) Yes;
- b) No;

Please brief elaborate the solution to the problem or your personal opinion on how to solve the issue:

When you finish your research, please send the result back to Ms. Liming Qiao at giao liming@student.ceu.hu or gilimi723@gmail.com

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# Annex-II Survey of the buyers' concerns on purchasing surplus AAU through Green Investment Scheme

This is the questionnaire that deals with Green Investment Scheme (GIS). Please take a few minutes to express your opinions on GIS and your organization's position on GIS.

Your survey responses will be strictly confidential and data from this research will be reported only in the aggregate. Your information will be coded and will remain confidential.

Your answers are important to the success of this study.

Thank you for your assistance!

When you finish your research, please send the result back to Ms. Liming Qiao at <u>giao liming@student.ceu.hu</u> or <u>gilimi723@gmail.com</u>

Are you a private buyer or government buyer?
a. Private b. Government

2. If you are a government buyer, please indicate which country you are from.

If you are a private buyer, please indicate your company's name.(if you wish)

3. Is there any possibility that you are going to buy Non-Greened AAUs?

- a) Yes;
- b) No
- 4. Does your country / company have a plan to purchase the surplus AAU through GIS? \_\_\_\_\_\_
- a. Yes b. No
- 5. If the answer to the Question 3 is Yes, please tell us how many units of AAU you would like to purchase through?

If the answer to the Question 3 is No, please give reasons for why you are not considering GIS?

5.	What are the major concerns from a buyers' perspective when purchasing
	AAUs through GIS? Please select <b>One</b> from the following

- a) GIS greening project performance;
- b) AAUs transfer risk;
- c) Lack of environmental credibility of the greening activities;
- d) Price risk;
- e) Other\_\_\_\_\_

6. How you expect the sellers to minimize the risks mentioned above?

performance		oject	pro	ng	green	GIS	a)
realized:	to	able	be	not	transfer	AAUs	b)
risk:		-				Price	c)

- d) Other\_\_\_\_\_
- 7. What are the major concerns for the GIS designs from the selling country, please select <u>**Two**</u> that are of the major concern\_\_\_\_\_ and
- a) Governance structure of the management of GIS;
- b) General investment and business climate of the selling countries;
- c) Greening activities: whether it is soft greening or hard greening;
- d) Different points of views with a seller on priority investment area: what area will the GIS money invest for the greening;
- e) Additionality of the greening activity(whether the money is spend on the activities not covered by the government budget);
- f) Monitoring and verification;
- g) Other\_\_\_\_\_

8. What is your opinion on soft greening?\_

- a) should be excluded from GIS, as it cannot deliver real and measurable emission reduction;
- b) should be kept as a target area for greening, as soft greening may also lead emission reduction indirectly and ultimately benefit the climate
- c) should allow a mixture of hard and soft greening, with the latter well defined and limited to a small portion of the total greening option
- d) Other\_\_\_\_\_
- 9. Which of the following soft greening activities you think should be **excluded** in the GIS greening activities? \_\_\_\_\_ (multiple answers)
- a) Operational costs of a GIS Fund;
- b) Awareness raising on Climate change;

- c) Climate change related national policy, legal and regulatory framework development;
- d) Information management, monitoring and observation development;
- e) Technology transfer;
- f) Negotiation skills building;
- g) Other\_\_\_\_
- 10. From the same list above, what should be definitely **<u>included</u>** in the GIS greening activities?

(multiple answers)

11. What does your government /company consider as the highest priority investment areas for GIS?

Please select from the following as Three most important priority areas:

- a) Retrofit of old buildings stock
- b) Promoting energy efficiency in building, such as using the CFL bulbs, energy efficient appliances;
- c) Biomass for district heating;
- d) Promotion of new buildings with ultra-low specific energy consumption, such as passive buildings;
- e) Energy efficiency in other areas, including industrial, power generation, ect.;
- f) LULUCF;
- g) Transportation;
- h) Biofuels;
- i) Others\_\_\_\_\_
- 12. What would you like the baseline and monitoring methodologies to be like?\_\_\_\_\_
- a) International methodology, like JI or CDM;
- b) Others\_
- c) Haven't got a position on this issue.
- 13. What kind of verifier would you expect to have for the verification of the greening activities?
- a) International verifier;
- b) Selling country's domestic verifier;
- c) Based on country cases and country situation;
- d) Haven't have a position yet;
- e) Other\_\_\_\_\_
- 14. Please select the from the same list in Question 16 on the items that should **<u>NOT</u>** be included in GIS priority area: \_\_\_\_\_(could be

multiple answers)

- 15. What is your opinion on the program approach under GIS. Program means emission reduction activities which are easy to execute in large numbers, using standard procedures, such as lighting modernization.
- 16. How high do you think the **Greened AAU** price will be?\_\_\_\_\_(in Euro)
- 17. How much do you think the price should be for you to consider a buying **Greened AAU**? \_\_\_\_\_(in Euro).
- 18. If you have a plan to purchase **Non Greened AAUs**, how much do you think the price should be for you to consider a buying? \_\_\_\_\_(in Euro)
- 19. If you are a private company buyer, is it mandate by your country that you have to buy AAU?
- a) Yes
- b) No
- 20. If you are a government buyer, would you ask the greening activities to target the area where your country possess technology or know how?
- a) Yes
- b) No
- 21. If the answer to Question 20 is a), then would you like to pay more, if the greening activities can use the technology or the know how that your countries is possessing?
- a) Yes
- b) No

When you finish your research, please send the result back to Ms. Liming Qiao at giao liming@student.ceu.hu or gilimi723@gmail.com