Options for Designing a Green Investment Scheme for Bulgaria

I. Introduction

1.01 The Kyoto Protocol adopted under the United Nations Framework Convention on Climate Change (UNFCCC) in December 1997, commits industrialized country signatories (called "Annex I" countries[1]) to reduce their greenhouse gas (GHG) emissions by an average of 5.2 percent compared with 1990 emissions, in the period 2008-2012 (called the First Commitment Period). This means that annual Annex I emissions must, on average, be around 550 million metric tons of carbon dioxide equivalent (tCO_2e) lower than 1990 emissions during the period 2008-2012[2]. By 2012, the effort needed from the Annex I countries[3] to reach the Kyoto target is a reduction of roughly 1 billion tons of Carbon Dioxide equivalents (tCO_2e) per year. Under the Kyoto Protocol, Annex I countries may achieve these reductions either domestically or through three international market-based mechanisms:

- Joint Implementation (JI), or purchasing GHG emission reductions (ERs) from projects in other Annex I countries (generally, economies in transition) under Article 6 of the Kyoto Protocol;
- Clean Development Mechanism (CDM), or purchasing ERs from projects in developing countries under Article 12 of the Kyoto Protocol; and
- Emission rights trading among Annex I (industrialized) countries under Article 17 of the Kyoto Protocol.

1.02 These mechanisms of the Kyoto Protocol provide an unprecedented opportunity for industrialized countries to reduce GHG emissions and at the same time help developing countries and economies in transition invest in climate friendly technologies and infrastructure that will contribute to their sustainable development.

1.03 The total amount of GHG that an Annex I country is allowed to release in accordance with the Kyoto Protocol during the first commitment period is its assigned amount measured in Assigned Amount Units (AAUs).[4] For most economies in transition (EITs) such as Bulgaria, the projected growth in emissions by 2012 still leaves their total GHG emissions below 1990 levels.[5] The positive difference between their AAUs and projected GHG emissions is often called "headroom" or "hot air", which can be sold as excess AAUs to other Annex I countries or corporations in need of GHG emission reductions.

[1] Annex I countries are the 38 industrialized countries and economies in transition (EIT) listed under Annex I to the Kyoto Protocol.

[2] Excluding the USA and Australia, which have confirmed that they would not ratify and be bound by the Kyoto Protocol.

[3] All countries included in Annex I to the UN Framework Convention on Climate Change. Since the US and Australia have signaled not to ratify the Kyoto Protocol, the burden of emission reductions rests with Europe, Japan, New Zealand, and Canada. The numbers given refer to the countries included in Annex I to the Kyoto Protocol which have ratified the Protocol.

[4] One AAU corresponds to one ton of CO2 equivalent greenhouse gas emissions.

[5] Under the UNFCCC Bulgaria's emissions are measured against the base year of 1988.

Emission Reductions, Compliance, and Greening

1.04 As noted above, annually, Annex I countries together require a reduction of about 1 billion tCO_2e per year during the 2008-2012 period to comply with their Kyoto Protocol targets. The Bank estimate, as well as those of several experts outside, shows that the annual emission reductions expected to be delivered from JI and CDM activities are about 300 million metric tCO_2e during 2008-2012 period, leaving a compliance gap of about 700 million tCO_2e per year. Therefore, trading of AAUs is likely to be key to achieving compliance across Annex I countries.

1.05 At the same time, it is estimated that, for all the countries with economies in transition combined (including the Russian Federation), about 1.2 billion tCO_2e of excess AAUs are available annually. The total supply therefore seems to satisfy the compliance requirements of Annex I countries; however, the political economy of AAU trading is much more complex and it cannot be assumed that simple availability of these excess AAUs on the scale equaling demand will result in trade. The main reasons are as follows:

a) The first set of constraints on use of AAUs for compliance is capacity of the EITs to obtain and maintain compliance under Articles 5, 7 and 8 of the Kyoto Protocol. These Articles stipulate a variety of monitoring, reporting and review requirements such as the compilation and reporting of emission inventories, and the maintenance of a registry to track transfers of emission reductions. While there is less doubt that those EITs acceding to the European Union (EU) in the First Commitment Period will achieve and maintain compliance, this will be challenging for non-accession countries with a poorer track record in submitting inventories of emissions, sources and sinks, such as the Russian Federation and Ukraine, which between them have the majority of the estimated AAUs surplus (about 79%). <u>These constraints could potentially reduce the supply of AAUs for trading during the 2008–2012 period, further increasing the demand upon tradable AAUs</u>.

b) Assuming that appropriate administrative and policy measures are taken by these EITs, the most important constraint appears to be the Annex I sovereign buyers' appetite for "hot air". Of the countries that have already declared their position on the purchase of AAUs, Canada and some EU countries, have expressed strong preference for purchasing only "greened AAUs", which is interpreted as linking AAU purchases with investments and activities which give rise to actual greenhouse gas emissions reductions. These policies naturally reflect the concern of domestic constituencies about the environmental integrity of their countries' actions to mitigate climate change in complying with obligations under the Kyoto Protocol. <u>Hence administrative and policy constraints on the sellers' side are compounded by policy constraints on the buyers' side for transactions, which would appear to either considerably diminish the scope or render inaccessible a mechanism to achieve compliance that is otherwise straightforward under Article 17 of the Kyoto Protocol</u>.

1.06 On the other hand, the expectations of the ratifying Annex I countries that they can turn to the Clean Development Mechanism to fill compliance gaps are unrealistic. The capacity of Joint Implementation projects to supply ERs may be even more limited than that of the CDM,

namely less than 100 million tons in total for the First Commitment Period. These factors increase the interest of buyers in (greened) AAUs.

1.07 It is clear that EITs need to have a comprehensive strategy on how they manage their excess AAUs. Such strategy includes a decision as to how they want to use the mechanisms defined by the Kyoto Protocol for the maximum benefit of the global climate and their domestic economies. The respective roles that Joint Implementation, Article 17 International Emission Trading, as well as the EU Emissions Trading Scheme (EU ETS) will play in their strategies will vary.[6] In this context it is important to note that the EU ETS does not limit Bulgaria's ability to sell AAUs. Once Bulgaria has joined the EU, the EU ETS does, however, limits the amount of AAUs that can be allocated to private sector entities in the form of EU Allowances.

1.08 Since it is obvious that International Emissions Trading under Article 17 of the Kyoto Protocol is key to achieving compliance across the Annex I countries and simple purchases of AAUs are not widely, or publicly embraced, "Greening of AAUs" would be an important and strategic approach to preserve the environmental integrity of the Kyoto Protocol while enabling the achievement of the emission limits set by the Protocol. As the preference for "green AAU" purchases in order to trade them arises at the national level in Annex I Party deliberations and is not an interpretation of any requirements of the Kyoto Protocol, it should be clarified that there is no widely accepted definition of "greening" of AAUs yet. In general, greening is understood as a mechanism which matches AAUs with emission reductions arising from investments (e.g., in the energy sector, infrastructure, forestry, etc.) or policies and measures taken with the support of (in part) the proceeds of AAU sale.

1.09 Following this general introduction, the second Chapter of this report provides an overview of Bulgaria's available excess AAUs, primarily based on its recent national communications to the UNFCCC. Chapter 3 offers different definitions for greening of AAUs and how they can be interpreted in the context of a green investment scheme. Chapter 4 deals with institutional aspects for establishing a Green Investment Scheme (GIS), while Chapter 5 reviews the financial aspects of such a Green Investment Scheme. Chapter 6 examines the various legal issues and the potential for green investments in Bulgaria based on proposed definitions of greening and an analysis of various sectoral programs is provided in Chapter 7. A typical sales transaction model is provided in Chapter 8 and some recommendation on next steps are included in Chapter 9.

[6] Formulating such a strategy may not be easy, especially given the blurred borderlines between the different mechanisms. When a host country fully meets all the eligibility requirements related to methodological and reporting obligations under the Protocol, it can choose to follow the so-called 'Track One' JI procedure when it implements JI project activities. The host Party may then apply its own guidelines and procedures to the projects, as opposed to the 'Second Track' requirements which have been agreed internationally. Track One JI eligibility includes the right of the host party to verify the emission reductions generated by a project and to transfer them to the investing/ purchasing project participant. These far-reaching rights of the host country, which include a prerogative to assess the emission reductions generated by a JI project activity may make it difficult to draw the line between Track One JI and Emission Trading under Article 17, especially if the later goes along with a scheme of 'greening AAUs'.

II. Bulgaria's Surplus Emission Credits

2.01 This chapter presents a summary of Bulgaria's emission trends across different sectors. The analysis relies on existing GHG inventories and projected emission trends. A more detailed analysis is included in Annex A to this report.

2.02 Bulgaria's annual GHG emissions during 1988 through 2001 decreased from about 144 million tons of CO2e to about 66 million tons per year. The decreasing trend seems to have reversed with a slight increase starting in 2001, but seems to have stabilized around the 1999 emission levels.

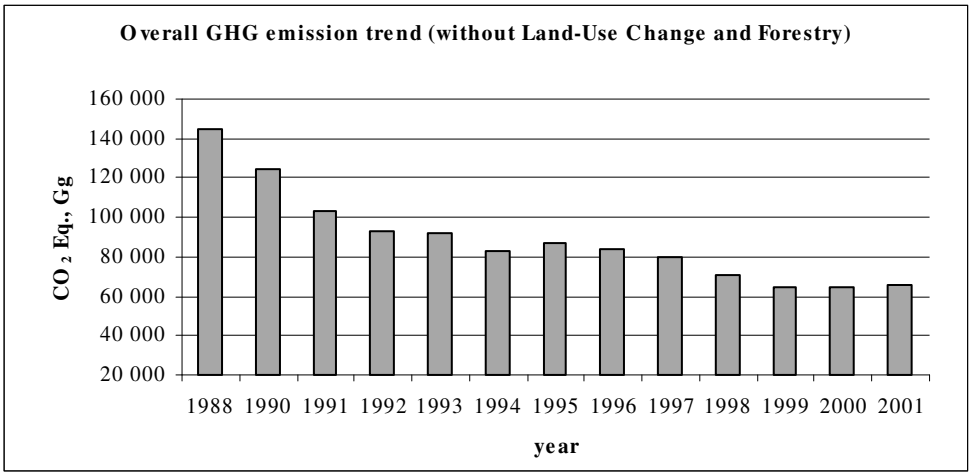


Figure 2.1: GHG Emission Trends Bulgaria (1 Gg = 1000 tons)

2.03 The prospects of matching each AAU with an measurable reduction in emissions , thereby regaining the AAUs sold (by collecting credits for the emissions saving accrued through a Green Investment Scheme) are high since there are a number of opportunities in Bulgaria to improve current carbon/energy intensity levels, in both energy production and consumption parts of the economy. For example, while primary energy demand has decreased by 45 % from 1988, primary energy consumption per unit of GDP decreased by only 28 %. This would suggest that the overall efficiency of the energy transformation system is not in line with the decrease in its overall energy consumption.

2.04 Based on Bulgaria's latest national communications to the UNFCCC, it appears that there are significant amounts of excess Assigned Amount Units. The target for Bulgaria established under the Kyoto Protocol amounts to about 120.8 million tons of CO2e per year, whereas average annual emissions forecast analyzed by the Energy Institute during the 2008-12 period is about 79 million tCO2e, thereby providing about 41 million tons of average annual surplus or a total of about 200 million tons of CO2e during the 2008-12 period.

2.05 It is understood that Bulgaria is reviewing its emission projections in light of the government's reconsideration of some of the future electricity generation expansion options, and that potential headroom of AAUs that could be sold to Annex I countries might be smaller than 200 million tons.

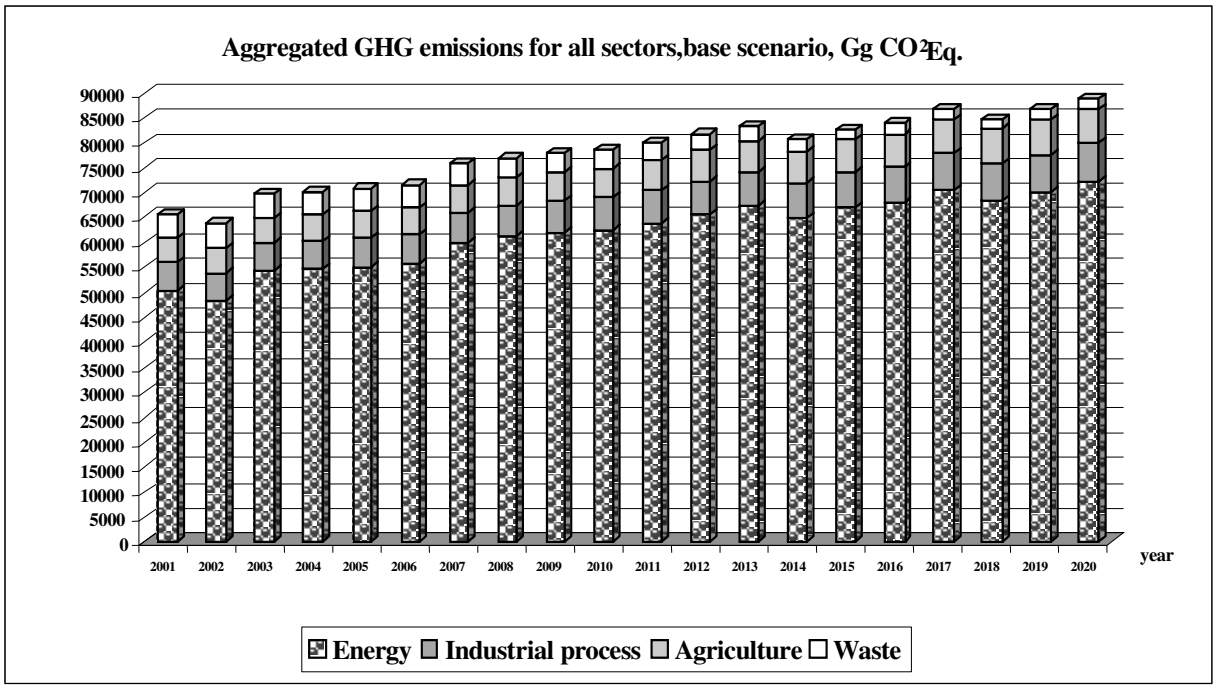


Figure 2.2: Aggregated GHG Emissions From All Sectors (1 Gg = 1000 tons)

2.06 The GHG emissions forecast is based on forecasts for the following country specific indices such as demographic forecast, GDP growth rates, energy intensity, changes in energy consumption by households due to changed incomes of the population and changed energy efficiency of buildings and household appliances, etc. Some key assumptions and impacts are noted below, and details are included in Annex A.

- GDP rates assumed are in the range of 5% to 5.5% during 2004-2016 and thereafter reducing to 3.5% by 2020. Based on population trends, negative rates of 0.6% are embedded in the tools associated with forecasts.

- Annual growth expected in the transport sector is 2.65 %, followed by the service sector (2.13 %) and the other industries (1.94 %). The transport sector also includes fuels for lighting, heating and others in the related objects – auto and railway stations, transport companies and others.
- Lower annual growth are expected in the residential sector (1.17 %), metallurgy (1.32 %) and agriculture (1.14 %).
- Development forecast for electricity production and primary fuel consumption was elaborated based on some preconditions following significant events: (a) decommissioning of units 3 and 4 in Kozloduy NPP before the year 2007; (b) wider range of electricity importers in and out of the region; and (c) certain acceleration in restructuring the energy sector and privatization.

III. Defining Greening of AAUs

3.01 From a legal point of view, all AAUs are the same, regardless of the performance of the country relative to its Kyoto target. If a country meets the conditions for trading under Article 17 of the Kyoto Protocol, there is no difference between "excess" and "normal" AAUs. In fact, it is impossible to establish the amount of excess AAUs *ex ante*, because the transfer of units can only take place during the First Commitment Period established under the Kyoto Protocol, that is between 2008 and 2012.[7]

3.02 From a political economy point of view, on the other hand, the presence of large amounts of "hot air" presents a serious challenge to credibility of the Kyoto Protocol. Buying hot air for compliance is not palatable with public opinions. As a result, major stakeholders, governments and firms are under pressure not to purchase "hot air". The idea of "greening" AAUs links the transfer of AAUs to emission reductions and hence makes the purchase of AAUs more acceptable. Greening AAUs implies the tying of the revenues from the sale of AAUs to activities beneficial to the environment, defined under a Green Investment Scheme. By ensuring the environmental integrity of the AAUs, it provides political ground for the buyer, while increasing demand for AAUs, and providing additional liquidity to the market. In fact, Canada and a number of EU countries have indicated that they would not purchase "hot air" unless it is somehow "greened".[8] In order to make greening of AAUs possible, buyer and seller have to agree to a mutually acceptable definition of "greening", and to create an implementation scheme which is both credible and transparent (Green Investment Scheme).

Definition of Greening

3.03 Greening AAUs" schemes, which rely on Green Investment Schemes (GIS), are typically defined as mechanisms through which part or all of the revenues from the sales of AAUs are available only for environmentally-related purpose in seller countries. This definition is very broad, and still leaves a wide range of options open depending on the activities that are deemed eligible, and on when an AAU is exactly considered to be "greened".

3.04 As the preference to "green" AAU" purchases in order to trade them arises at the national level in Annex I Party deliberations and is not an interpretation of any requirements of the Kyoto Protocol, it should be clarified that there is no widely accepted definition of greening. In this report, greening is defined rather strictly as ensuring that the trade of AAUs results over time in a corresponding volume of emissions reductions linked to the purchase transaction, and which can be independently monitored and verified. A more extensive and equally plausible, although not exhaustive set of definitions are as follows.

a) *"Greening hot air" is ensuring that the proceeds of the sale of AAUs do not result in higher emissions during the commitment period, or in the future*. A practical variation of this could be: hot air is "greened" if it can be demonstrated that the proceeds of sales only financed a given list of

[7] That means also that the final transfers take place before the emissions for that period are measured (emissions inventories are typically available with a 1-2 years delay).
[8] Based on discussions with the Carbon Finance Unit of World Bank

environmentally friendly sectors/activities (for example forest management, renewable energy projects, coal to gas, etc.). The monitoring problem is then restricted to tracking the funds, and controlling for leakages.

b) *"Greening hot air" is ensuring that the proceeds of the sale of AAUs are reinvested in such a way that they reduce emissions compared to the baseline, regardless of the amount*. This is slightly stricter than (a), and would require establishment of a baseline and monitoring of ERs, although in a very limited way. It still provides for investment in modal shifts, energy efficiency policies, eco-taxation with rebates on other distorting taxes, and such policies which are likely to reduce emissions in the medium and long run, but for which the benefits are difficult to evaluate.

c) *"Greening hot air" is ensuring that the proceeds of the sale of AAUs are reinvested in activities which match emission reductions one to one with the volume of AAU sold*. This tends to narrow the range of activities that would generate matching reductions after 2012 to well-defined projects where the stream of ERs can be easily anticipated, measured and monitored.

d) *"Greening hot air" is ensuring that the proceeds of the sale of AAUs are reinvested in activities which reduce emissions by more than the volume of AAUs sold*, so that there is compensation for the fact that most such emission reductions would occur long after the AAU forward sale transaction is completed. This is the strictest definition, although in the medium run, good policies and measures, through all kind of diffusion effects, could probably lead to such outcome.

Based on the above, two main forms of "greening" can be distinguished.

(a) Hard Greening

3.05 In the "hard" greening case, an AAU is greened when the activities financed through the proceeds of the sale have generated one unit of emission reductions (measured in tones of CO_2 equivalent GHG reductions) measured against a baseline scenario describing what would have happened in the absence of the greening activity. There can be many variations around this theme (one might require more or less than one unit of emission reduction per AAU sold), but the central idea remains that the yardstick for measuring greening is the amount of emission reductions generated. Under this definition, "greening AAUs" is akin to Joint Implementation. But its key advantage relative to the streamlined form of JI (Track One JI) is that there is no limit on the time period during which the emission reductions are credited:[9] emission reductions produced before 2008 ("early crediting") or after 2012 ("late crediting") can be counted against AAUs sold.

(i) "Early crediting" is already used by projects that receive resources from the World Bank Prototype Carbon Fund and under the Dutch ERUPT program to increase the number of years for purchase alongside a normal JI project.

[9] Here we compare "greening AAUs" and "Track One JI" because if a country meets the requirements for AAU trading under Article 17 of the Kyoto Protocol, it also meets the requirements for "Track One JI".

(ii) In a "late crediting" scenario, AAUs would be exchanged against emission reductions realized after 2012. Obviously, the emission reductions realized after 2012 cannot be verified before the AAUs are transferred; but some form of mixed monitoring system can be developed. For example, effective emission reductions could be measured up to 2012, and the fact that the project is operational at that date, and deemed likely to keep generating emission reductions in the future, is sufficient to trigger payment for the AAUs corresponding to the emission reductions expected beyond 2012. Annex B to this report summarizes the "early" and "late" crediting options, and their impact on the seller's supply of AAUs during the first commitment period.

With "early" or "late" crediting, hard greening can either be a complement of a traditional JI project, or be used separately.

(b) Soft Greening

3.06 Soft greening can be defined as the effective implementation of certain pre-defined activities, such as, for example, implementation of a demand side management program, dismantling of energy subsidies, or capacity building activities related to climate change. Soft greening could also encompass activities associated with managing the GIS. This form of greening does not overlap with any of instruments defined under the Kyoto Protocol, because it is based on the implementation of pre-defined policies, and not on the effective measure of emission reductions. This allows for supporting a much wider range of policies and measures, which might not be easily packaged into emission reduction projects, but could still significantly affect emissions in the medium and long-run.

It is proposed that the GIS in Bulgaria adopt both soft and hard greening approaches to allow for both management and implementation of GIS.

Earmarking of Funds

3.07 Central to the definition of "greening" is the notion of earmarking the proceeds from the sale of AAUs for "environmentally friendly" activities. One possible interpretation is that *all* the proceeds from the sales of AAUs should be earmarked this way. Such a position is consistent with the overall objective of establishing a "greening" scheme, which is to ensure the environmental integrity of the sales of AAUs. Earmarking the *whole* proceeds from the sale of AAUs depends upon the details of the transaction(s) since emission reductions are purchased using an international price for carbon, which may not necessarily depend on the underlying abatement costs. This allows sellers—as long as their marginal abatement costs are lower than the price of carbon—to make a profit out of the sales, which they can spend without restriction. This supplemental income from carbon finance and AAU sale transactions is a critical incentives for sellers.[10] Since a GIS would be based on a portfolio of projects from various sectors with a range of abatement costs, technically, such profits from one sector could be used to defray higher costs in other sector(s).

[10] By contrast to, for example, the incremental cost approach followed by the Global Environmental Facility, where only the incremental mitigation costs are covered.

3.08 Whereas in the case of JI proceeds are bound to a specific project activity, transactions under Article 17 of the Kyoto Protocol allow full flexibility on the side of the seller as to where to channel funds for greening activities. The seller can choose a project with abatement costs lower than the market price of AAUs and (potentially) lower than the abatement costs of any particular JI Project. Another difference is that most carbon buyers in case of JI projects only make payments on delivery of the Emission Reduction Units (ERUs). However, AAU transactions are likely to be structured to allow for significant upfront payments. Since each AAU transaction effectively is backed by a sovereign guarantee of the selling country, the buyer's risk is significantly lower than in the case of JI projects. An illustration of the impact of JI, early and late crediting on national emissions balance is shown in Annex B.

Greening of AAUs in the Absence of the Kyoto Protocol

3.09 AAUs come only into existence in 2008 and after the Kyoto Protocol has entered into force. Thus, unlike Certified Emission Reductions under the prompt start provisions of CDM, Emission Reduction Units under JI and AAUs are dependent on the entry into force of the Kyoto Protocol. A number of Annex I countries, however, have signaled their willingness to comply with the emission limitation targets defined under the Kyoto Protocol even in the absence of the Protocol. Since it is unlikely that these Annex I countries will forego the possibility to use JI and International Emissions Trading for their compliance, countries need to decide how to integrate these mechanisms in their climate strategy in the absence of defined accounting units (ERUs, AAUs).

3.10 In the context of a scheme which relies on Greening AAUs, the parties to the agreement which establishes a GIS would have to include in their agreement the terms and conditions of the scheme in the absence of AAUs. The agreement could include a definition of 'emission reductions' which would be accepted as a substitute of AAUs. Delivery of such substitute AAUs could be defined by the seller of written evidence that a certain amount of emission reductions has been achieved. In the internal accounting of the buying country, these amounts would count against the Kyoto target of that country.

3.11 In the absence of the Kyoto Protocol, it seems that attracting significant funds for soft greening may be a challenge due to lack of easily measurable emission reductions.

IV. Institutional Requirements for Establishing a GIS

4.01 The establishment of a GIS requires institutions that are capable of managing Bulgaria's AAUs as well as institutions equipped to implement an investment scheme. The former requires the capacity to acquire and maintain Bulgaria's legal ability to transfer AAUs on one hand. The latter requires the managerial capacity to administer one or several funds, to identify eligible projects and supervise their implementation. This chapter summarizes the main institutional requirements for the establishment of an investment scheme based on the promise to transfer AAUs from the national registry account of Bulgaria to the account of another Annex I Party of the Kyoto Protocol. A more detailed analysis is in Annex C.

4.02 For the establishment of a GIS two institutional areas are of particular interest: (i) institutions that are best equipped to ensure Bulgaria's compliance with the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol; and (ii) institutions that are capable to implement a Green Investment Scheme (GIS).

4.03 *Responsibilities in the Area of Climate Change*: The Ministry of Environment and Water (MoEW) is responsible for representing Bulgaria at the international level and its compliance with any obligation under the UNFCCC. It also hosts the UNFCCC Focal Point and coordinates the preparation of Bulgaria's National Communications under the UNFCCC, the maintenance and updating of the greenhouse gas inventory, and the compliance with any other reporting requirements.

4.04 *Management and Implementation of GIS*: The implementation of a GIS depends on the close coordination between the relevant line Ministries. A GIS aiming at investing in climate change mitigating projects would include investments in the areas of energy, forestry and waste management as well as the implementation of training, public awareness and capacity building programs. It therefore requires the support and coordination of the following ministries and agencies: the Ministry of Environment and Water, the Ministry of Energy, the Ministry of Finance, the Ministry of Agriculture, Forests and Agrarian reform, The Ministry of Justice and Euro-integration, the Ministry of Regional Development and Public Works, The National Energy Efficiency Agency with the Council of Ministers. In order to implement a GIS, Bulgaria should develop a portfolio of projects from the relevant sectors. The line Ministries would be required to supply information and, if necessary, to supervise the implementation of the projects.

4.05 Of the existing institutions in Bulgaria, the National Trust EcoFund (EcoFund) provides a model of a fund which provides financing for projects exist in Bulgaria. The EcoFund is a legal entity established pursuant to *"Debt-for-Environment" Swap Agreement* between the Governments of the Swiss Confederation and Bulgaria on October 23, 1995 and Article 66 of the *Environmental Protection Act*[11]. Its organization and activities are defined in the *Ordinance on the Structure and Functioning of the National Trust Eco-Fund*[12] adopted on the basis of Article 67 of the *Environmental Protection Act*. The goal of the EcoFund is to

[11] Promulgated in State Gazette, Issue No. 91 of September 25, 2002, as last amended in Issue No. 86 of September 30, 2003.

[12] Promulgated in State Gazette, Issue No 41 of May 18, 2004.

manage funds provided under debt-for-nature and debt-for-environment swaps, as well as funds provided by governments and international financial institutions and other grantors aimed at environmental protection in the Republic of Bulgaria. The reduction of carbon dioxide, methane, and CFCs is included in the listed priority areas of the EcoFund's activities. The fund's revenue can be sourced in resources allocated from the national budget, grants from international financial institutions, governments and other entities, repayments and interest payments on loans, interests, income from government securities and bonds and other external revenues consistent with the nature of the activities of the EcoFund.[13] The management bodies of the EcoFund are a Board of Directors, an Advisory Committee and Executive Bureau.

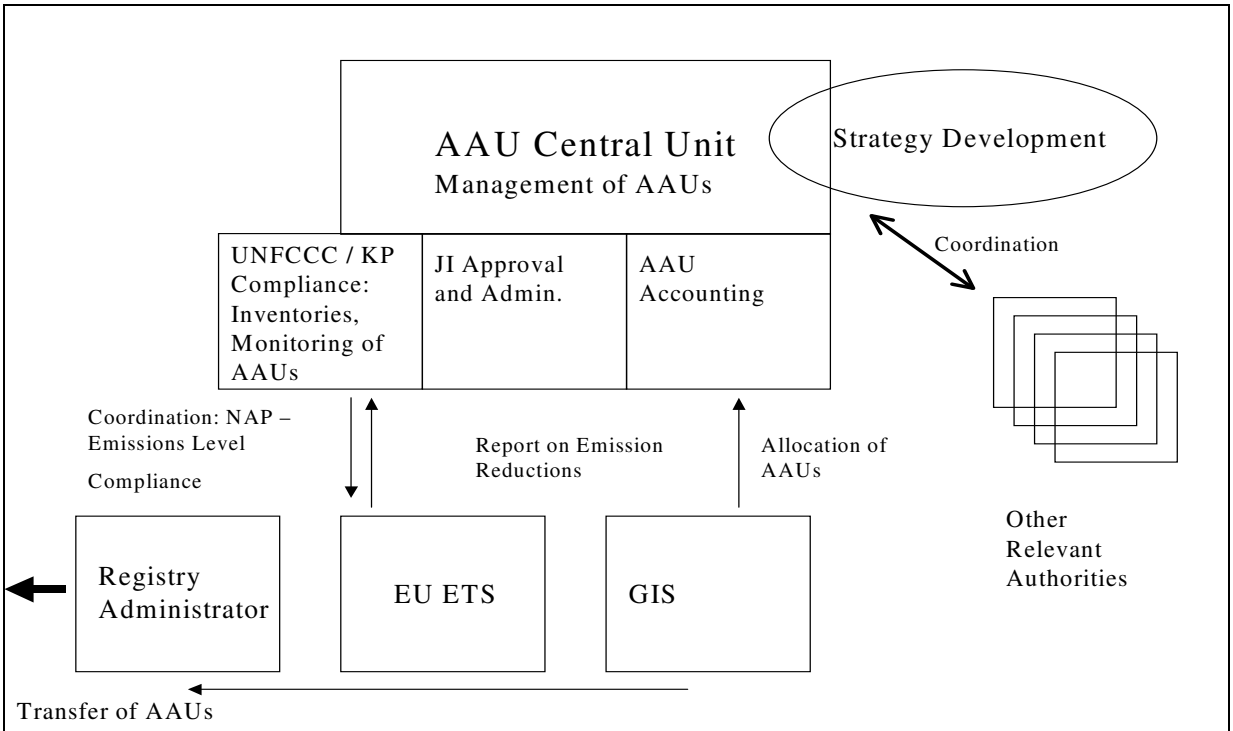
Institutional Needs: A Central AAU Management Unit

4.06 The transactions involving Assigned Amount Units impact Bulgaria's sovereign climate change obligations. An administrative unit should be charged with overseeing the countries obligations under the UNFCCC and the Kyoto Protocol as well as strategically decide on the use and allocation of AAUs for Joint Implementation (under Article 6 Kyoto Protocol), AAU trades (under Article 17 Kyoto Protocol), and for an established national AAU reserve. Considering the extensive scope and importance of these functions, it is essential that all these tasks be coordinated by one unit as a central function. Hence, a central AAU Central Unit should be established as the coordination point for the management of Bulgaria's AAUs. It is a priority that the AAU Central Unit has the necessary human and financial resources to comply with its mandate. The mandate for the unit would include:

a) Providing strategic advice to the Government;
b) Accounting for the level of GHG emissions in Bulgaria;
c) Overseeing the compliance with all obligations under the UNFCCC and the Kyoto Protocol;
d) Establishing and maintaining the eligibility of Bulgaria to participate in International Emissions Trading and JI;
e) Accounting for AAUs;
f) Administrating AAUs of any GIS;
g) Coordinating with the relevant authorities implementing the EU Emissions Trading Scheme and administrating the national registry for Bulgaria; and
h) Coordination with UNFCCC Focal Point and relevant Ministries.

4.07 It is essential that all these tasks will be coordinated by a central unit as they are interlinked and decisions on the different issues will be conditional on the status and fulfillment of requirements related to the other tasks. However, the AAU Central Unit would not execute all relevant functions, such as establishing and operating of registries, monitoring of GHG emissions, itself. It would, however, receive frequent periodic updates and reports from the technical units undertaking the specific tasks.

[13] See Article 68 of the Environmental Protection Act, promulgated in the State Gazette Issue No. 91 of September 25, 2002, as last amended in Issue No. 86 of September 30, 2003.



Picture 1: Administrative Functions of the AAU Central Unit

4.08 The AAU Central Unit would therefore act as focal point for knowledge and expertise. Based on the information it collects, it would supervise AAU management in the country and provide strategic advice to the Government. In this context it would oversee the following activities:

(a) Accounting for Emissions – Compliance Check : Overseeing Bulgaria's GHG emission levels is a key requirement in order to ensure the compliance of the country with the quantitative emissions limitations under Article 3 of the Kyoto Protocol. In the context of the GIS, it will be important that the entity administrating the GIS forwards the monitoring reports of GHG reductions achieved through investments under the GIS to the Central Unit for accounting. The Central Unit would on the other hand update the GIS administrative unit on the current emission levels and on the status of compliance and eligibility for International Emissions Trading.

(b) *Eligibility for Trade:* A successful GIS is based on the assumption that a country is legally authorized and eligible for the transfer of AAUs. In order to fulfill its contractual obligations under a GIS, a country must legally be enabled to transfer AAUs from its national accounts to the accounts of the investors, which have acquired a contractual right to a certain number of AAUs. This transaction would be governed by (i) the contract between the two parties defining the parameters of the GIS and the contractual rights to AAUs, and (ii) Article 17 of the Kyoto Protocol.

Article 17 establishes international emissions trading, which is based on the transfer of AAUs between registry accounts. In order to participate in an Article 17 transactions, countries have to meet a certain set of eligibility requirements defined in the Marrakesh Accords (the implementation guidelines of the Kyoto Protocol). The fulfilment of these requirements are a prerequisite for Bulgaria to be able to transfer AAUs to another Party and therefore to meet its contractual obligations under a GIS. The eligibility requirements are:

(i) The country is a Party to the Kyoto Protocol;
(ii) The country's assigned amount has been calculated and recorded in accordance with relevant guidelines and decisions;
(iii) The country has in place a national system for the estimation of emissions by sources and removals by sinks of all greenhouse gases;
(iv) The country has in place a national registry;
(v) The country has submitted annually the most recent required inventory;
(vi) The country submits the supplementary information (e.g. on sinks) on assigned amount and makes any adjustments and recalculations required.

A Party is considered to meet these eligibility requirements after 16 months have elapsed since the submission of its report to the UNFCCC Secretariat to facilitate the establishment of its assigned amount and to demonstrate its capacity to account for its emissions and assigned amount (unless the enforcement branch of the compliance committee finds that the Party does not meet these requirements).

(c) Coordination with Registry Administrator: The AAU Central Unit would also receive periodic updates from the administrator of Bulgaria's National Registry. The establishment of a Registry is the single most important institutional requirement for the establishment of a trading mechanism. In the Registry the actual transfer of AAUs, including the transfer of AAUs in the framework of a GIS, will take place. The Registry Administrator would undertake the transfer following the instructions of the AAU Central Unit or the GIS administrator. The AAU Central Unit or the GIS administrator would account for the AAUs allocated to the GIS (or a particular window of the GIS) and instruct the Registry Administrator to undertake a transfer upon notification from the GIS manager.

According to Article 7.4. of the Kyoto Protocol, such registry will have to be established by January 1, 2007. In this context, each national registry is to have in place at least one holding account for legal entities authorized by the Party to hold Emission Reduction Units (ERUs), Certified Emission Reductions (CERs), AAUs and/or RMUs (Removal Units for sequestration activities) under its responsibility.[14] Since it is expected that Bulgaria will take all necessary steps in order to implement the European Emissions Trading Scheme by 2008, it will also ensure the timely implementation of the EU Registry Regulation. The Registry for the European Emissions Trading Scheme will include the registry as required by the Kyoto Protocol.

While National Registries are likely to be most frequently used for European or International Emissions Trading, they are also the key instruments in accounting for AAUs. Transfers of ERUs, import of CERs and recalculations of AAUs under Articles 3.3 & 3.4 of the Kyoto Protocol (creating Removal Units or RMUs) need to be tracked in the National Registry. The Registry contains also the most reliable report on the availability of AAUs on Bulgaria's accounts. The registry provides the basis on which taking into all contractual obligations to transfer AAUs the Central Unit will establish any AAU surplus or liability.

(d) Coordination with the EU ETS : With the accession to the European Union, Bulgaria will have to implement an Emissions Trading Scheme as required by the Directive establishing the EU Emissions Trading Scheme in the EU[15] Under this scheme the Bulgarian government has

[14] See Marrakech Accords – FCCC\CP\2001\13\Add.2
[15] *Directive 2003/87/EC of the European Parliament and of the Council, of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC'* published in the Official Journal of the European Union on October 25, 2003; *L 275 , 25/10/2003 P. 0032 – 0046*

to develop a National Allocation Plan (NAP) under which it allocates emission rights (EU Allowances) among the sectors covered under the EU ETS. The NAP has to be compliant, among others with EU state aid and competition rules, and will have to be approved by the EU Commission. The EU ETS does not constrain Bulgaria's ability to sell AAUs. However, it poses limits at the free allocation of AAUs to sectors covered by the EU ETS. One EU Allowances is equal to one AAU, as both units describe the right to emit a ton of CO_2 equivalent GHG emissions. The AAU Central Unit would have to take into account that the allocation of EU Allowances under the EU ETS in Bulgaria will have effects on the availability of AAUs for sale. The more generous the Bulgarian government is with the allocation of EU Allowances to Bulgarian industry, the smaller the AAU surplus; the more restrictive the allocation, the greater the AAU surplus. It will be a political decision by the Bulgarian Government how much limitation it will impose on its industries through the NAP, provided that the Plan will be comply with the legal criteria defined for the establishment of national Allocation Plans.

(e) Coordination with UNFCCC Focal Point and Relevant Authorities : The UNFCCC focal point and the AAU Central Unit need to align their strategies in order to represent Bulgaria efficiently on the international level on one hand, and to translate the international agreement into domestic policy and law on the other.

(f) Management of and Accounting for AAUs : Management of AAUs is the central and core function of the Central Unit. A prerequisite for the management function is that the Unit is properly informed about the emissions levels, AAUs and contractual obligations involving the transfer of AAUs. Any contract which includes the transfer of AAUs would therefore need the clearance of the Central Management Unit. All contractual obligations would be accounted for as AAU liabilities. Such liabilities could be compensated through emission reduction and limitation activities. Resulting from the accounting activities, the Central Unit would also be enabled to develop a strategy with respect to further investments under a GIS as well as to further sales of AAUs.

The following issues should be taken into account when accounting for AAUs:

(i) Timing of accounting: The Unit must decide on the periodicity of accounting for activities.
(ii) Quality of monitoring and reporting: Information submitted for the purpose of accounting will need to subject to in-depth review before approval.
(iii) Emissions and Emission Reductions: Approved emissions and emission reductions in the national inventory need to be accounted for by subtracting the appropriate amount from existing AAUs, RMUs, CERs or ERUs.
(iv) Reserve: The Central Unit should hold a commitment reserve (above the commitment period reserve established under the Kyoto Protocol); and
(v) Banking: Excess AAUs can be 'banked' for use in a subsequent period.

In order to manage its AAUs successfully Bulgaria needs to decide how many AAUs it needs for compliance purpose, how many are already committed and bound to approved JI projects, how many to allocate as early credits, the level at which it will establish its reserve, and how many AAUs are to be banked. Subsequently, a portion of the remaining AAUs could be allocated to a GIS.

Funding for Central AAU Management Unit

4.08 The institutions administrating Bulgaria's climate change obligations as well as the AAU Central Unit are of crucial importance for the establishment and maintenance of a credible GIS. Funding for developing the necessary capacity within the Bulgarian public sector can come from four sources:

(i) Bulgaria's national budget;
(ii) A Capacity Building and Training Window under the GIS;
(iii) Fee income of the AAU Central Unit, distributed;
(iv) Direct funding from AAU sovereign purchasers.

4.09 Due to Bulgaria's budget limitations, it is unlikely that additional resources for AAU management and institutional needs can be mobilized. The other three sources could be used to finance different activities of GIS, including the AAU Central Unit. If synchronized with the establishment of a GIS, an AAU Central Unit could have different funding mechanisms to finance the Unit's administrative expenses.

Phase 1 – *Prior to any AAU sale*. A barebone AAU Unit should be in existence to manage the allocated AAUs and perform accounting and reporting functions. In addition, an operating unit demonstrates the Government's capability to handle AAU transfers. This would require some initial funding to cover expenses which could be recovered after AAU sale proceeds are realized.

Phase 2 - *After AAU sale and during the disbursement period*. After financial close for an AAU sale, funds would be available from the first installment. A buyer might agree that 3% to 5% of the sale proceeds be allocated to Soft Greening and be used for capacity building of the AAU management. Alternately, the interest earned on the undisbursed AAU fund could, after agreement with the buyer, be used to cover administrative expenses of the GIS and AAU administration.

Phase 3 – *After the disbursement*. The administrative expenses are expected to be heaviest at the disbursement phase and taper when the green investments are completed. There could be an annual administrative levy per AAU sold to cover administrative expense incurred after disbursement.

V. Designing a Financial Scheme for GIS

5.01 This chapter outlines the recommendation for a GIS fund structure (GIS Fund) that would serve as a channel for AAU backed activities in Bulgaria. It thereby takes into account:

(i) the fundamental issues driving the AAU framework;
(ii) Bulgaria's opportunity to implement public and private sector funded projects; and
(iii) the key risks in implementing a GIS and approaches to mitigating them.

5.02 The funds from a transaction involving the transfer of AAUs could support the Government's co-financing obligations in official borrowings, activate EU counter-part funds, be channeled into high priority environmental projects, or be used to leverage private financing into private public partnership activities. If AAU transactions are realized and a GIS is implemented, the financial return to Bulgaria would be high. Therefore, it is critical to understand the fundamental legal and commercial issues driving AAU transactions in order to formulate the best AAU solution for Bulgaria. It should be noted that Bulgaria is also competing with other Eastern European countries that are potential AAU sellers. The Bank's discussions have indicated that sovereign buyers would look for well structured proposals for their AAU purchases.

5.03 The GIS would consist in a funding mechanisms for green investments in Bulgaria. The Scheme would be established to allow the transfer of payments in an investment model consisting of an administrative structure and a fund. The use of the investments would be governed by a pre-determined set of criteria (special fund model) or the bilateral agreement between the buyer and seller of AAUs. Under this model AAU purchasers could choose to allocate between different investment possibilities in the GIS, including soft greening.

Framework for a GIS

5.04 The establishment of a GIS will eventually require a careful legal review of the proposed scheme under Bulgarian law. The absence of a clear framework governing International Emissions Trading in Bulgaria and the fact that the Kyoto Protocol has not entered into force is an issue for the structuring a GIS in Bulgaria. In order to legally transfer AAUs under a GIS, Bulgaria will have to enter into an agreement (bilateral or multilateral) with the AAU purchasers defining the parameters of the GIS and the contractual rights to AAUs. This agreement will need to be ratified and promulgated in Bulgaria in order to become law. This structure could be simplified as soon as there is a legal basis allowing the transfer of AAUs in Bulgaria. Before the Kyoto Protocol has entered into force any contract involving the promises of AAUs need to address the issue of incapability of transfer.

5.05 To transfer AAUs, Bulgaria has to ensure that the eligibility requirements for the transfer of AAUs are met. Additionally, it is the seller's responsibility that there are no flaws in the legal, administrative and reporting requirements which would impede the transfer of AAUs. Finally, the selling government has to ensure that it has the full legal title and ownership to the AAUs.

5.06 To be eligible to transfer and for the buyer to be able to receive AAUs, all participants in the transaction (in case private entities participate directly in the transaction, the Annex I country where the seller or the buyer are located) must meet the requirements under the Kyoto Protocol for the transfer of AAUs. Contractually, it would be each parties responsibility to ensure that it is able to meet its obligation under the GIS and that it is eligible to transfer or receive AAUs. The seller would have to demonstrate to potential purchaser that the eligibility requirements for the transfer of AAUs are met. In addition, the seller has to ensure that it has the full legal title and ownership of the AAUs.

5.07 It is likely that Bulgaria will not initially meet the eligibility requirements for the trade of AAUs at the time it enters into contracts which governs the sale and purchase of AAUs. This means that the contract must include a covenant through which Bulgaria warrants to meet the eligibility requirements at the time the AAU transfer is scheduled to take place.[16] Bulgaria may seek funds which enable it to meet these requirements. It can agree to return AAUs in exchange for such funding (structuring a forward sale of AAUs) and thus include the preparatory and regulatory tasks which need to be undertaken to meet the International Emissions Trading (Article 17 Kyoto Protocol) requirements in the GIS itself. However, such a transaction would require an appropriate risk-management which most likely would lead to a significant discount on the price paid for the AAUs.

5.08 Even where a country meets the eligibility requirements at the time it enters into a contract on a GIS, it may lose its eligibility in future. As the eligibility requirements for the participation in Art. 17 transactions need to be met at the time of the AAUs transfer, this poses an additional risk for the transaction. This means that the GIS and its underlying contracts need to define risk-sharing mechanisms which take into account the ineligibility of the country to transfer AAUs to the recipients' accounts.[17] Consequently, ensuring the compliance with the eligibility requirements is a key functions within the establishment of the GIS. The AAU Central Unit would forward all relevant information on the status of compliance to the registry operator and the entity administrating a GIS.

5.09 Under the anticipated GIS the principal responsibility of the AAU seller is to ensure the timely transfer of AAUs, the principal responsibility of the buyer is to make timely payments both following a time schedule as per agreed contract with the seller. In most circumstances, the buyer would pay an initial amount with subsequent installments based on verification of greening. The buyer has to pay according to the installment schedule and (at least in the case of Hard Greening) has to agree with Bulgaria on a verification procedure which gives evidence for the greening. Alternatively, the payments could be disbursed as per pre-defined criteria. Prior to negotiation with the AAU seller, the buyer has to ensure it has the authority to purchase the AAUs and that it has met its internal (sovereign or corporate) requirements[18]. In case private sector entities would participate in the GIS, they would need to be authorized by their respective governments to engage in such transactions. Before the entry

[16] Under the rules of the Kyoto Protocol, any transfers of AAUs can take place only after 2008.

[17] An analysis on to which extent Bulgaria meets Art. 17 participation agreements may be based on the following research work undertaken so far: http://www.oecd.org/dataoecd/46/47/21022503.pdf [Bulgaria's institutional capacity]; http://www.oecd.org/dataoecd/5/40/2467141.pdf [inventories, registries].

[18] Most likely, the first AAU buyers would be sovereigns. Under the EU Emission Trading System, the EU industries cannot meet their compliance obligations with the purchase of AAUs. Annex 1 countries, principally Canada and Japan, may allow their private sector to meet the targets through AAU acquisitions. It is to an AAU seller's benefit if there are more participants (i.e. private buyers) in the systems as this could increase the AAU price.

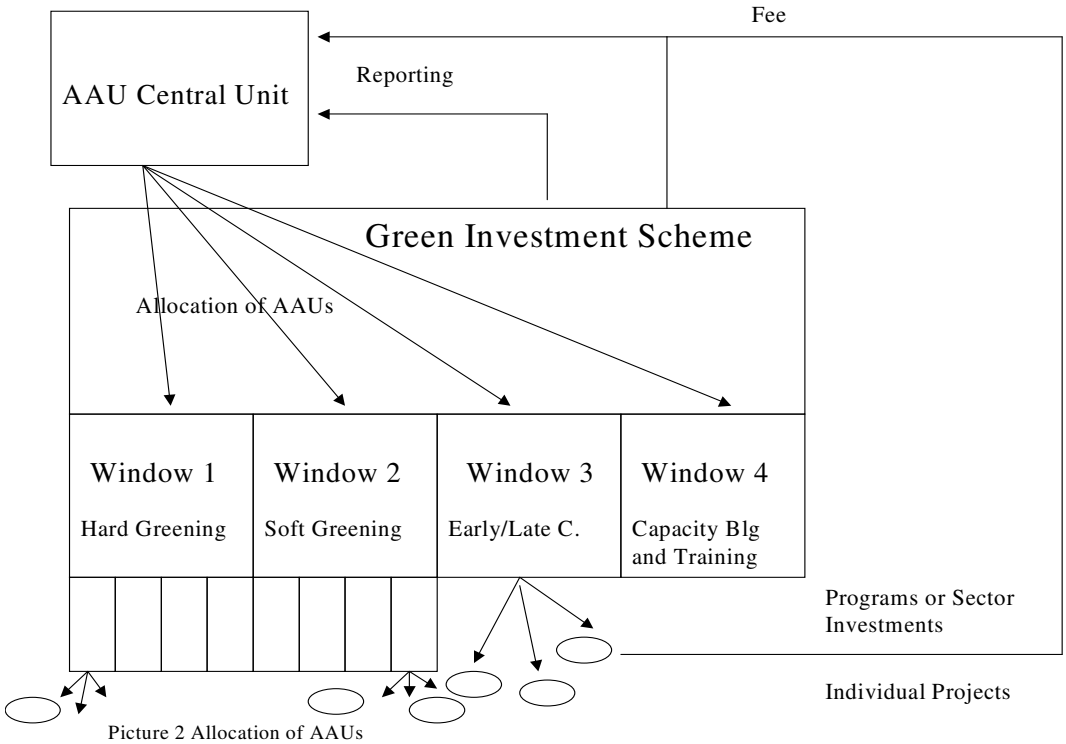
into force of the Kyoto Protocol and in the absence of another legal framework, the trade would need to be integrated in a legal framework defined between to sovereign parties.

5.10 There are two basic transaction structures (bilateral arrangement or an AAU fund) and two basic type of projects (public projects versus private projects). The GIS would probably combine features of both models. This report suggests the establishment of a GIS Entity and Fund which would allow bilateral purchasers as well as pooled investments. It would offer different windows of investments which would allow the outmost flexibility in the management of the fund while safeguarding its financial and environmental sustainability.

Management and Administration of a GIS Fund

5.11 Apart from the central AAU Management Unit, a specialized function should be created to administer a GIS and to manage the obligations under GIS contracts. This GIS would be established as legally independent entity and would administer the investments and any risk mitigation mechanisms specific to the GIS. The GIS would receive a specific allocation of AAUs which again could include allocations for the different windows under a GIS. Such allocations would include:

(i) Allocation of AAUs for Greening of AAUs (Hard Greening);
(ii) Allocation of AAUs for Greening of AAUs (Soft Greening);
(iii) Capacity Building and Training;
(iv) Allocation of AAUs for Early and Late Crediting.



Picture 2 Allocation of AAUs

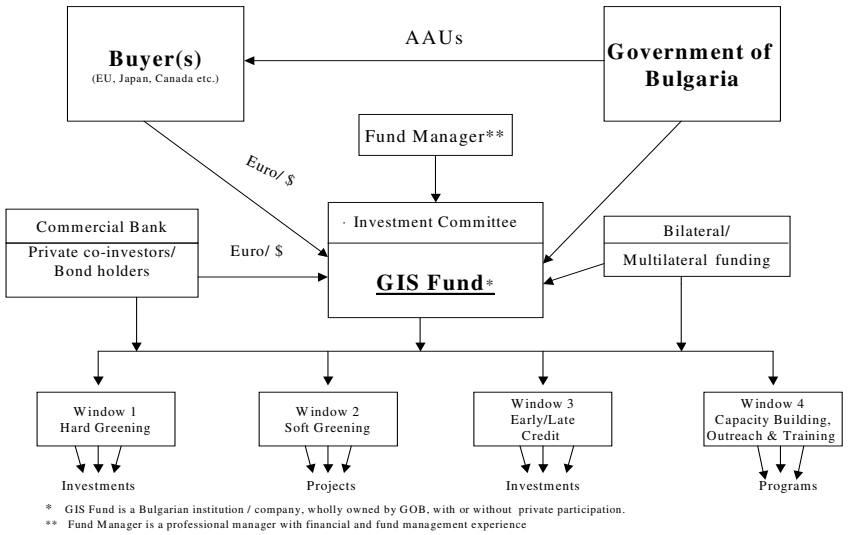
5.12 All these allocations can be specified further. Under the window for Hard Greening, investments in energy efficiency, renewable energies or the forestry sector could be supported

through specific programs. Soft Greening could include small scale energy efficiency demand side programs, such as the existing Energy Efficiency Fund (see: Annex D). The GIS could further administer specific funds for capacity building and training programs. Those programs could be targeted at groups within or outside of the public administration. Finally, the GIS should also comprehend a window which allows for the administration of 'Early Credits'.

5.13 The AAU Central Unit would allocate AAUs to the individual windows and programs in accordance with the agreement with the AAU buyers. However, it would not physically transfer any units. The AAUs would not leave the registry account of the Government of Bulgaria and the Government would not cease to own the AAUs until the transfer to the purchaser would happen. The AAU Central Unit would instead hold the AAUs of any GIS in trust and instruct the Registry Administrator to transfer AAUs upon notification of the GIS management.

5.14 For the AAU to be greened, the AAU buyer has to transfer funds to Bulgaria to implement greening activities. The Government of Bulgaria faces the challenge that the fund from GIS has to be managed and allocated so that green investment projects are realized within the agreed time frame. The GIS Fund would be wholly owned by the Government of Bulgaria, but managed by professional fund managers under performance contract terms in order to avoid conflicts of interests and enhance prospects for mobilizing funds from other sources, including capital market transactions. Options for structuring such a GIS fund are examined in the legal annex to this report and a generic schematic is shown below.

Generic Structure of a AAU Green Fund



* GIS Fund is a Bulgarian institution / company, wholly owned by GOB, with or without private participation.
** Fund Manager is a professional manager with financial and fund management experience

A brief description of the key management features of a GIS Fund is provided below.

GIS Fund: Created under Bulgarian law, it would be wholly owned by the Government of Bulgaria (GoB). It is anticipated that the GIS Fund would be an independent entity, whether building on existing functions or newly established, remains to be seen and will depend upon the requirements. A preliminary analysis showed that a special purpose corporation could be the most suitable legal vehicle to manage the GIS (see Annex D). It would be professionally managed by a fund manager, with a distinct investment committee that decides on funding and related matters. For example, the policies and criteria for operation of the GIS Fund would be set by the Funds board that would be constituted by representatives from the GoB (key ministries) and other investors depending upon the nature of participation.

Fund Manager: The GoB may consider hiring under performance based contracts an experienced commercial bank or a fund manager who is able to carry out the Funds capital market transactions on behalf of GoB. It is also possible to expect such fund manager to invest own capital in the Fund in their own capacity to ensure integrity of the proposals and management.

AAUs sale: GoB would sell to interested buyer(s) specified amounts of AAUs under forward sale contracts, with substantial payments structured to be received at the time of contract signing and subsequently at defined periods when AAUs or greening obligations are actually delivered (transferred as AAUs to buyer's registry or – in the absence of AAUs – as verified emission reductions). Advance payments into the GIS Fund would help mobilize additional funds from other sources to undertake the underlying greening investments.

Buyer(s): Sovereigns from the EU, Canada, and Japan who have initially expressed interest in a greening scheme to transact in AAUs. Depending upon the requirements of the buyer and the comforts the scheme offers, the buyer could be expected to define its role in the management and/or supervision of the GIS Fund.

Other Investors: Private investors (equity/debt), bilateral and multilateral support could be structured as parallel financing and/or commingled with the GIS Fund depending upon the suitability of the investment proposals

Disbursement Windows: Based on the GIS or new proposals made by sponsors, the fund manager would disburse funds from the GIS Fund to projects and programs approved by the investment committee. All operating costs of the GIS Fund, including fees to fund manager and other professional services would be covered from GIS Fund's own resources.

5.15 Hard greening will involve monitoring and verification of the emission reductions generated by the investments. The GIS management would coordinate such verification procedure, which would be conducted by the host country or an independent entity. Following Track One JI procedures, the parties to the transaction could agree that the country would verify emission reductions generated under a GIS. In order to do so (and to qualify for Track One JI) the country needed to have GHG verification procedures in place. Alternatively, verification could be conducted by an auditing company such as the verifiers accredited under the UNFCCC. Finally, other competent independent bodies, such as the World Bank could be

chosen to undertake verification. The GIS management would have to submit the verification report to the AAU buyer as well as to the GIS Central Unit.

Greening Opportunities

5.16 The GIS would include different investment windows to accommodate the investment priorities and needs of the GoB while at the same time enabling the potential purchasers of AAUs to direct the proceeds of the AAU sales in their priority areas.

Public Sector Projects

5.17 The development of realistic AAU funding opportunities is one of the most important elements in attracting prospective AAU buyers. Emission reductions could be achieved in the following sectors:

- Forestry
- Energy Efficiency
- District Heating
- Renewable Energy
- Fuel Switching
- Waste Management

Potential AAU buyers would gravitate towards different greening projects based on their political priorities. For a major AAU buyer, government sponsored public projects might be preferable because the ingredients of project success would be more under the government's control. In addition, given the GoB's fiscal constraints, the public sector window would be a source of funds for high priority government projects. The AAU funds could be used to meet the government's co-financing obligations required under many multilateral or bilateral loans or the funds could be used to finance stand-alone public projects. The benefit for a buyer to co-finance with official lenders is that the greening project has already been screened under some official criteria, and the GIS could also rely on the implementation and monitoring capacity of the official lender.

Private Sector Projects

5.18 The GIS would also include a window to support private sector projects as certain sectors such as renewable energy or energy efficiencies may be best accessed through private investments. Buyers may also be interested in supporting private sector initiatives. The GoB should select sectors for which it would provide indirect AAU funding support. For the private sector window, the selected sectors, the funding allocation mechanisms should be publicized; individual and ad hoc decision making should be avoided. For the private sector window, the GoB could guarantee delivery of the greened investments by compensating for any shortfall of emissions reductions through emission reductions achieved by other projects. The allocation of green investment delivery risk would have a significant positive impact on AAU price. In addition, for the private sector window, the Government could allocate a portion of the AAU proceeds for its own greening purposes and a portion to support the private projects, if accepted by the buyer.

Early Credits (JI)

5.19 Early Crediting refers to emission reductions generated by JI projects that occur before the start of the first commitment period in 2008 (hence: "early") and for which no ERUs can be issued. Yet the Bulgarian Government might want to promote JI and therefore give credit to such early emission reductions. Giving value to so-called Early Credits will attract investment into these projects before 2008. Under an 'Early Credit' GIS window the Government of Bulgaria would offer to exchange verified emission reductions into AAUs. This exchange could happen on a one-to-one basis, or at any other exchange rate (e.g. 1:2 - one AAU for each two tCO2e). Because an AAU is recognized under the Kyoto Protocol while a pre-2008 emission reduction from a future JI project is not, the former has a value while the latter does not. By means of exchange the originator of early credits would hence receive a value for his environmental investments.

5.20 This window of the GIS would be open to JI investors. When approving Early Credits for a project, the central AAU Management Unit would set aside the relevant amount of AAUs. It would transfer the AAUs upon the receipt of the verification reports of the project. A percentage of the AAUs transferred could be withheld as a fee for the services provided by the government.

Soft Greening

5.21 While many AAU Buyers would prefer a GIS that generates directly verifiable ERs, there are investment opportunities for which direct carbon emission reduction is difficult to verify, but which none the less have a significant impact on climate change. Given Bulgaria's fiscal constraints, funding for soft greening opportunities are much needed. These soft greening opportunities could generate emission reductions from demand side management projects. The Government through soft green funding might be encouraged to take policy that reduces carbon emissions. For instance, electric tariff pricing that is market based, implementing time of use charges, improvement in metering and increase collections and allowing cutoffs, would improve enforcement of energy management. The green funding could be used to support policy change for social support or to provide lifeline services.

5.22 Additionally, funds could be used for awareness raising and capacity building. For instance, to comply with the Kyoto Protocol and to adequately manage the AAU obligations, Bulgaria needs capacity building in terms of equipment, and training and funding for staff. Funding for the UNFCCC and Kyoto Protocol reporting (compilation of inventories) and supervisory tasks could be obtained from the sale of AAUs -an example of soft greening investment that has impact on country-wide climate change initiatives. While a Buyer might prefer hard greening, a percentage of the funding could be earmarked for soft greening investments. Another area for soft greening is where the activity definitely reduces greenhouse gas emission but the reduction is difficult to quantify. Investment in the transportation area would be a good example. In addition, there are policies and measures that could have greater impact on carbon emission than project specific actions.

Risk Analysis

5.23 The forward contract for AAUs sale, the long term horizon for implementation of the GIS and the various uncertainties inherent in the scheme pose several risks to the parties involved. Obviously, these risks will be reflected in the price for the AAUs and the nature of covenants stipulated in contracts. This section presents an analysis of these risks and how they can be mitigated.

Table 5.1: Risk Assessment Matrix – Seller's Risks

Risks/Factors	Potential Impact	Risk Assessment	Risk Mitigation
A. Kyoto Protocol Risk: The KP has not entered in force by 2008.	AAUs do not exist and cannot be transferred (not seller's responsibility)	=>Does the Buyer commit to make payments in the absence of the Kyoto Protocol or does the Buyer make the transfer of AAUs a condition of the agreement? =>Soft Greening measures may not be funded in the absence of the Kyoto Protocol.	=> Contractual arrangements which define the obligations of the parties in the absence of the Kyoto Protocol. Definition of a substitute of AAUs. => Ensure that Soft Greening measures do not create a liability for the seller. Ensure that administrative expenses are covered in the absence of Soft Greening funding
B. Transfer Risk: Eligibility for Article 17 Emissions Trading	No transfer of AAUs possible (seller's responsibility)	=>Evaluate Bulgaria's current status in meeting Article 17 eligibility criteria =>Continuous monitoring of the Article 17 eligibility criteria =>Evaluation of Bulgaria's institutional capacity	=> Ensure that capacity and funding for achieving and maintaining Art, 17 eligibility is in place => Build funding mechanisms in the GIS agreements to monitor and maintain eligibility criteria => Establish a central AAU Management Unit for the overall coordination of AAU liabilities => Establish warning systems if Bulgaria is likely to loose eligibility for Art. 17 transactions => Enter into a guarantee agreement with other Annex I country(ies)
C. Payment and Resource Risk: Buyer fails to make timely payment	Delay in receiving payments	=> Assessment of the consequences of delayed payments for the implementation of GIS and the ability to generate emission reductions	=> Default provisions and remedies => Risk hedging through standby letters of credit or other guarantees provided by commercial banks

Seller's Risks continued…

Risks/Factors	Potential Impact	Risk Assessment	Risk Mitigation
D. Price Risk: Volatile price in AAUs	Price increase	=> Assessment of the carbon market => Development of a carbon strategy factoring different prices and timing in selling AAUs	=> Negotiate complex price structures (differentiated prices) linked to triggers effecting the market price => Maximize advance payments
E. Counterparty Risk under the GIS	Project sponsor fails to implement project/generate emission reductions	=>Evaluate the project sponsor's financial and institutional capacity =>Due diligence of the commercial project agreements =>Assessment of the financial liabilities of the government	=> Contractual arrangement with the project sponsor (defaults/remedies) => Diverse project pool/portfolio => Purchase less than 100% of the ERs the project generates (Over-Collaterization) => Conservative estimates of emission reductions
F. Risk related to the financial manager of the GIS	Failure to deliver projects/emission reductions	=>Careful appraisal and procurement of financial manager	=> Contractual arrangement with the financial managers (defaults/remedies) => Supervision (board) => Reporting and monitoring
G. Indemnities and Liabilities under the GIS	Financial risk of the government of Bulgaria	=> Assessment of government guarantees and step-in obligations in the context of the GIS =>Government liabilities with respect to the AAU buyer	=>Careful design of the GIS and all underlying agreements

5.24 Most of these risks are manageable if proper systems are in place. The future value of AAUs, however, is difficult to assess. The benefit to Bulgaria as an early entrant into the AAU market is that there are currently few competitors for large scale AAU sales able to meet the demand. There is no certainty that the AAU price would increase substantially in the future. By establishing a track record now, subsequent AAU sales from Bulgaria could involve more complex transactions (which could yield a higher return to the Government) and the AAU market could be stratified with an established AAU seller commanding price premium.

5.25 Similar risks impose on the buyers of AAUs, which are shown in table 5.2 below.

Table 5.2: Risk Assessment Matrix – Buyer's Risks

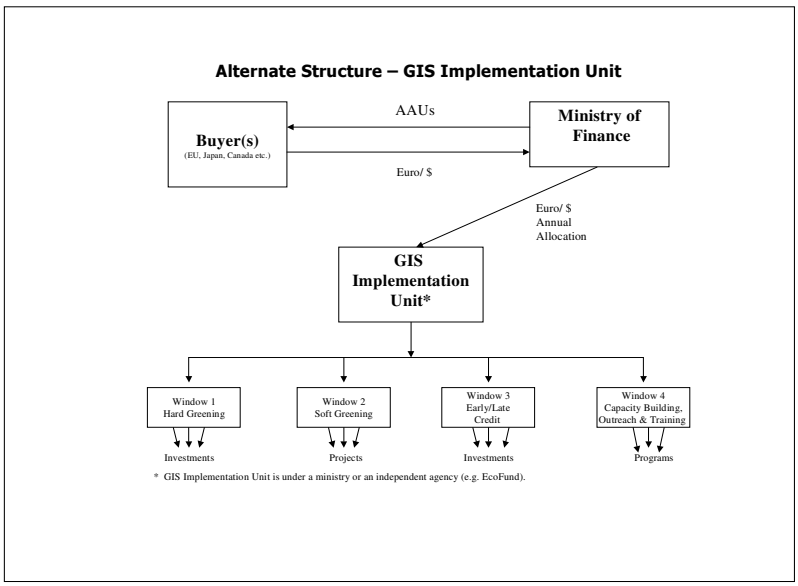
Risks/Factors	Potential Impact	Risk Assessment	Risk Mitigation
A. Kyoto Protocol Risk: The KP has not entered in force by 2008.	AAUs do not exist and cannot be transferred (not seller's responsibility)	=>Evaluation of the willingness to make payments for a defined 'emission reduction' other than AAUs. =>Possible exclusion of Soft Greening measures due to the impossibility to link these measures to emission reductions.	=> Contractual arrangements which define the obligations of the parties in the absence of the Kyoto Protocol. Definition of a substitute of AAUs
B. Transfer Risk: Eligibility for Article 17 Emissions Trading	No transfer of AAUs possible (seller's responsibility)	=>Independent evaluation of Bulgaria's status in meeting Article 17 eligibility criteria	=> Reporting requirements => Commercial risk guarantees and risk hedging mechanisms
C. Price Risk: Volatile price in AAUs	Price increase (and decrease)	=> Assessment of the carbon market => Development of a carbon strategy factoring different prices and timing in buying AAUs	=> Negotiate complex price structures (differentiated prices) linked to triggers effecting the market price => Payment on delivery => Defaults and remedies
D. Implementation Risk	Failure to deliver "Greening" of the AAUs	=> Appraisal of the management of the GIS => Ensuring implementation capacity of the GIS => Sector analysis of investment opportunities	=> Pre-appraisal of investment opportunities => Buy from a diverse portfolio of projects => Reporting, monitoring and supervision => Employ a independent verifier => Contractual remedies against the seller

5.26 When negotiating a transaction, an AAU buyer may anticipate some of these risks[19] and propose measures to address them. Other risks are commercial risks a purchaser is expected to assume. However, regulatory or government performance risks such the Kyoto eligibility risk are not risks that an AAU buyer can easily mitigate. For these risks, there need to be risk mitigations mechanism for the purchaser. A possible application of World Bank and/or EBRD risk mitigation tool is included in Annex D.

[19] There are other risks that need to be considered, such as technical trade risk to cover ineffective, unsuccessful or fraudulent trades if a AAU trading system were to develop.

An Alternative Model

The GIS Fund as proposed enables leveraging the resources obtained from the sale of AAUs and widen the scope of green investments. However, under the recent standby agreements the International Monetary Fund has reduced GoB's flexibility to establish new public agencies and/or funds, and alternative models that conform to the framework of IMF agreements would have to be explored. One such schematic could be as follows.



The proceeds from the sale of AAUs would be held in a special reserve account by the MoF, which will allocate funds on annual basis to a designated GIS Implementation Unit to carryout the agreed GIS. Such a unit can be part of a ministry or an existing agency, e.g. the EcoFund. The annual allocations could be based on a multi-year, rolling business/ implementation plan, subject to verification of previous year's achievements and results for enhancing accountability. The annual allocations could also include adequate funds for covering the costs of administering the unit.

While such an operating model could satisfy GoB's concerns and constraints, it is likely to increase the risks to buyers of AAUs, which risks might be reflected in a lower price paid and/or lower upfront payment. Since additional borrowing may also be constrained under such a model, only projects and investments whose cost effectiveness are at or below the price for AAU received could be financed. This would reduce the scope of GIS and hence of the overall potential AAUs that can be sold. Depending upon the terms of the negotiations with buyer(s), GoB can fine tune the structure.

VI. Legal Prerequisites for the Establishment of a GIS

6.01 The establishment of a GIS for Bulgaria requires a legal review of the proposed scheme under Bulgarian law. There is a gap in the domestic legislation in respect of the legal regulation of AAUs transactions and the options for establishment of a GIS related thereto. In substance, Bulgarian law encompasses the statute law, established by acts of Parliament and the secondary legislation, adopted by the Council of Ministers and other competent governmental bodies, as well as the international treaties (bilateral and multilateral agreements) that have undergone a separate process of ratification by the Bulgarian Parliament and promulgation in the State Gazette[20]. The Constitution proclaims the general principle of priority of international treaties to which Bulgaria is a party over the local regulations.

6.02 International Emissions Trading through trading in AAUs as defined under Article 17 of the Kyoto Protocol, or through participation in JI project activities, is not regulated under Bulgarian law.

Delivery of Greening Obligations

6.03 Whether the greening obligations are based on soft or hard criteria, input or output measured, project or policy related, the Government has to deliver "greening" for the AAUs sold. In most circumstances, the AAU purchaser would transfer parts or all of the funds prior to the AAUs being greened. Any problem with implementation that delays or eliminates greening would reduce the credibility of the GIS and the confidence potential AAU purchasers would have in the implementation capacity of the country. This would effectively undermine the GIS completely.

6.04 For the AAU purchaser, the principal responsibility is to make timely payment following a time schedule as per agreed in the contract with the GoB. In most circumstances, the purchaser would pay an initial amount with subsequent installments based on verification of greening. The purchaser has to pay according to the installment schedule upon receipt of a verification report. Alternatively, funds could be disbursed per pre-defined criteria. The purchaser has to ensure it meets the requirements to acquire AAUs and, in case of a private entity, that it is duly authorized to participate in the trade.

Key Contractual Terms

6.05 The contract between the seller and the buyer may include the following features:

(i) A payment schedule, including milestones that trigger payments;
(ii) AAU delivery schedule;
(iii) Modalities governing the transfer of AAUs;
(iv) 'Greening' obligations on the side of the selling government;

[20] The State Gazette is the official bulletin in Bulgaria for promulgation of legislative acts, court resolutions, subject to promulgation, notifications to individuals and legal entities, etc.

(v) Price differentials reflecting the risk allocation in the contract (for instance, discounting the upfront payment if there are legal uncertainties on the status of AAUs);
(vi) Price re-openers based on market triggers to account for fundamental changes in AAU prices;
(vii) An option agreement on further purchases (call/put options);
(viii) In case of a treaty between governments: the agreement to have private entities participating in the GIS;
(ix) Default provisions and remedies;
(x) The possibility to re-allocate funds from hard to soft greening opportunities, depending on the success of different measures;
(xi) The possibility to broaden the agreement to include additional public or private funds;
(xii) Cancellation of certain projects and funds;
(xiii) Criteria setting out how the effectiveness of greening projects will be monitored and reported; and
(xiv) Accounting provisions governing disclosure of GIS accounts to participants.

Options for Structuring a GIS Fund Under Bulgarian Law

6.06 The following three options for structuring a GIS as a legal entity under Bulgarian law are examined, namely:

(i) Option I where the GIS is designed as a governmental organization under Bulgarian public law, which receives funding from the state budget or directly from the emissions trading;
(ii) Option II where the GIS is designed and governed as a not-for-profit organization under Bulgarian private law, affiliated with the Bulgarian State; and
(iii) Option III where the GIS is designed and governed as a special-purpose corporation (a profit making entity) under Bulgarian private law, which is wholly owned by the Bulgarian state;

Option I: GIS as a Governmental Organization

6.07 A GIS may be designed as a *sui generis* governmental organization under Bulgarian public law, which receives funding from the state budget or directly from the emissions trading. The best example for organizing such a structure in the field of Bulgarian environmental law is the National Trust EcoFund.

6.08 If the Republic of Bulgaria decides to adopt this option, then an act of Parliament (a law) might itself grant the status of a legal entity of the GIS, as well as provide for the terms of its operations. Alternatively, an act of Parliament might authorize an administrative agency to establish a GIS as a legal entity under public law, as well as to define the terms of its operations. A combination of both approaches is also possible. Alternatively, and given existing constraints in the establishing of new funds, the Government of Bulgaria may also chose to use an existing fund for the purposes of the GIS. The National Trust EcoFund with its established track record in developing emission reduction projects could be used as a

vehicle to administer and implement a GIS. With its governance structure, consisting of a Board of Directors, an Advisory Committee, and an Executive Bureau, it has established a track record in funding for environmental projects. The statutes of the EcoFund also allow for significant flexibility in the establishment of programs depending on the agreement with contributors to the fund.

Option II: GIS as a Not-for-profit Organization

6.09 This option provides for the establishment of a GIS as a not-for-profit organization affiliated with the Bulgarian State and functioning in accordance with the Bulgarian private law, namely the Law on Establishment of Non-Profit Associations[21]. It can function as a public benefit nonprofit organization for the purpose of protection the environment, in order to avail of the preferential tax treatment. However, performing of business activity by such organizational structure is unusual and an exception under Bulgarian law which could be an issue when trading AAUs and investing the revenues in accordance with the GIS.

Option III: GIS as a Special-purpose Corporation

6.10 A GIS may be structured as a special-purpose corporation (a profit making entity) under national commercial law, which is wholly owned by the Bulgarian State. Such a legal entity should be prohibited from distributing dividends. Profit that has been realized should be used for financing investment projects in accordance with the purpose of the corporation.

6.11 The joint-stock company (JSC) ("Акционерно дружество") is an appropriate structure for conducting the activity of a GIS in Bulgaria, in particular in the form of a one-person-owned company where the single shareholder is the Bulgarian State. Under Bulgarian law the provisions on establishment, corporate structure, governance and representation of such a JSC are set forth in the Rules on the Terms and Conditions Coordinating the Exercising of the State's Rights in Commercial Companies with State Participation[22] and the Law on Commerce[23.] The incorporation procedure requires the adoption of an act by the Council of Ministers on the establishment of the legal entity and registration with the Commercial Register of the District Court where its seat is located. Corporation owned by the State may be also established by virtue of an act (statute) of the Bulgarian Parliament. The rights of the State in a corporation to be established shall be exercised by the Council of Ministers or the respective sector-specific ministers.

6.12 The Bulgarian Law on Commerce envisages two systems of corporate governance of a JTC, namely - one-tier system, comprising of Board of Directors, and two-tier system, comprising of Supervisory Board and Management Board. In view of making the management of the company simple. Examples for incorporation of similar corporations by the Bulgarian Government are the Bank Consolidation Company AD established to administer the revenues from the banking privatization and the legislative proposal for

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[21] Promulgated in State Gazette, Issue No. 81 of October 6, 2000, effective as of January 1, 2001, as last amended in Issue No. 120 of December 29, 2002.

[22] Adopted by a Decree of the Council of Ministers No. 112 of May 23, 2003, promulgated in State Gazette, Issue No. 51 of June 3, 2003, as last amended in Issue No. 59 of July 1, 2003, effective as of July 1, 2003.

[23] Promulgated in State Gazette, Issue No. 48 of June 18, 1991, as last amended in Issue No. 58 of June 27, 2003.

transformation of the existing Privatization Agency into a profit-making legal entity, 100% owned by the State, intended to act as an agent of the State in the privatization process.

General Notes Related to a GIS Under Bulgarian Law

These comments apply equally to all of the three options described above.

Establishment (Design and Governance) of a GIS

A GIS could be structured as a single multilateral agreement involving all the parties, or several bilateral agreements between Bulgaria and each individual party, which would allow different governance rules applying to the activities under the scheme. These legal instruments would provide for mechanisms and procedures ensuring that the revenues from sale of AAUs are earmarked for environmental purposes and used in a way that benefits the Bulgarian society and the revenues are governed in a manner that is transparent, so that funds are not misused or wasted.

Special Purpose of a GIS

A GIS can be organized in two main ways: (a) a scheme with no link between the buyer of Bulgarian AAUs and the actual use of the income in Bulgaria – i.e. the income is used for financing projects designated and implemented independently of those involved in the AAUs transactions; and (b) a scheme where the buyer is involved in carrying out a project in Bulgaria.

Since the core idea behind a GIS is to use revenues from sales of AAUs for specific environmental purposes, the entities under any of the above options (corporation, nonprofit organization or a governmental organization) shall be organized in a way providing for the allocation of the funds generated by the GIS only to certain qualified projects and activities (environmentally related purposes). This shall be achieved by the incorporation of an entity as a special-purpose vehicle, where the exact purpose needs to be specified in its deed of incorporation (e.g. the purpose may be generally formulated as investment in projects and activities leading directly to additional emission reduction or by exhaustively enumerating such projects: enhancing energy efficiency, promoting renewable energy, encouraging reforms in relevant sectors to reduce emissions, reducing transport sector emissions, etc).

Consequently, the legal entity to be operated under a GIS, has to be organized as a special purpose vehicle to be set up by the Bulgarian State with the purpose to tie the revenues of sale of AAUs to projects that would yield environmental benefits, e.g. projects that lead to further emission reductions. The legal instrument establishing a GIS must provide mechanisms to ensure that funds shall not be wasted and misused for purposes, other than the environment-related ones.

Conclusion

6.13 Based on the above analysis of applicable legal framework, a GIS may be established as a special-purpose (to earmark revenues from sales of AAUs for projects that would yield environmental benefits) entity under Bulgarian law (corporation, not-for-profit organization or governmental organization) by virtue of an international bilateral or multilateral agreement or an act of the Bulgarian Parliament or the Council of Ministers. Although AAUs trading is an increasingly used form of funding "greening" projects there is no clear framework governing this matter or pertinent practice in Bulgaria, especially when contrasted against the relatively sophisticated framework in the EU. Taxation, public procurement and state aid regulations, as well as investment framework as discussed above, are important issues to be considered in structuring a GIS. For a more detailed analysis please refer to Annex D.

VII. Bulgaria's Greening Potential

7.01 The potential for reducing emissions in various sectors was examined as part of this study. The sectoral analyses are included in annexes to the report. The overall potential for greening is around 75 million tons of CO_2e through 2020 in sectors such as renewable energy, fuel switching, heating and cogeneration, energy efficiency, waste management, forestry, etc. The total estimated cost for undertaking all of the projects in these sectors is approximately US$878 million, excluding financing costs, as shown in the summary table below. The actual realizable potential would be lower (to be determined) when commercial feasibility, implementation and absorptive capabilities are factored into the analysis. Also, projects in the public sector face the challenge of finding counterpart financing.

		Emission Reduction Est. (million tCO2e)				Est. Cost	Cost/tCO2e
	Sector	**Pre-2008**	**2008-12**	**2013-20**	**Total**	**US$ M**	**$/tCO2e**
I	Renewable	0.4	2.3	4.2	6.9	107.0	15.5
II	Fuel Switch		0.9	2.0	2.9	105.0	36.2
III	Energy Efficiency	0.8	4.1	6.2	11.1	95.0	8.6
IV	DH & Cogeneration	3.0	16.0	30.2	49.2	512.0	10.4
V	Waste Management		0.8	2.4	3.2	28.3	8.8
VI	Forestry	0.1	0.2	1.7	2.0	31.0	7 - 30
	Total	4.3	24.3	46.7	75.3	878.3	11.66

A brief summary of the various sectoral analyses are provided below:

Renewable Energy

7.02 Bulgaria has scarce water resources (2380 m^3 per capita annually). Due to the high elevation of some country areas the theoretical hydro-energy potential accounts to 24.6 GWh in an average flow year. The technical potential is about 57% of the theoretical potential. It is estimated to be 15 GWh. 89 hydro power plants (HPPs) are currently operating efficiently in the national power grid. HPPs' share of the total installed capacity is 16.6% and provides 5-7% of the country electricity production. The existing HPPs use 30% of the national technical potential. The small and micro HPPs proposed here are estimated to produce about 7 million tons of CO_2e emission reductions through 2020 at a total cost of about US$107 million.

Small HPPs : Forty dam sites with reservoirs and power plants with total capacity of 93 MW and annual electricity production of 520 GWh could be constructed with an average annual utilization of the installed capacities around 5590 hours. However, preliminary economic assessment of the projects shows that they considerably differ

with respect to their efficiency. In this connection, 14 HPPs are defined to be the most suitable cascade stages ("steps") for which construction is more probable and hence considered initial and of priority. These 14 HPPs are estimated to provide 43.5 MW capacity with annual production of about 252 GWh at a total investment cost of about US$56.2 million.

Micro HPPs : About 730 run-of-river micro-HPPs potentially exist with total capacity of about 212 MW. However, only 60 of them seem to have economic advantages. The expectation of their construction in the following 10-15 years represents an average optimistic program. If constructed these micro-HPPs would provide about 36 MW capacity with 128 GWh annual production at a total cost of about US$40.4 million.

Fuel Switch in households

7.03 Households could switch to natural gas from electricity for their energy requirements in select towns. In 2001 the average consumption of energy from a household was 32.3 GJ. About 85% of the energy is consumed for space heating, hot water preparation and cooking and only 4% are used for cooling. A considerable share of the energy consumed for space heating (30%) is electricity and only 0.7% is natural gas. About 41% of the energy consumed at households is electricity. Moreover, 63% of this electricity is used for heating. Half of the electricity in the country is consumed by households, which means that nearly 1/3 of the electricity in the country is consumed for heating in households. A reduction in consumption of electricity for heating could play decisive role for decrease of investments and emissions in the power sector. The high cost of electrical heating determines the use of electricity only in places where no alternative energy source is available. Establishing such an alternative energy source for heating could add significantly to reduction of electricity consumption and the GHG emissions related to it. Natural gas is the principal alternative of electricity in the households.

7.04 The barriers to such fuel switch are high prices for natural gas and the relatively large investments needed in gas appliances. For the households the lowest price is 368 BGN/1000 Nm^3 and the highest is 530 BGN, with an average price of 450 BGN/1000 Nm^3 (VAT excluded). In order to use natural gas, a household should spend about 3000 BGN (VAT included) on gas appliances. The average annual gas demand of one household is about 1200 Nm^3 and its total cost is 650 BGN per year (VAT included). If a household that consumes electricity for space heating preserves its life style, the annual savings from energy costs (in case fuel switching to natural gas is performed) would be about 600 BGN. This makes the measure unattractive to households, especially taking into account the low income level – about 7500 BGN per year before taxation per a household with two working members. In order to encourage fuel switching to natural gas at households, GIS could provide incentives such as subsidizing for purchasing of gas appliances or no-interest loans for purchasing such appliances.

7.05 It is expected that about 35,000 homes using electricity for all energy needs could be encouraged to switch to natural gas during the first phase. The emission reduction expected from these would be about one million tons during the 2008-12 period, but the financing costs to cover equipment purchase and annual gas purchase support is quite high at around US$50 million. Assuming that such support could be extended to cover an additional 35,000 homes,

the total emission reduction through 2020 could be about 3 million tons at a cost of about US$105 million.

Energy Efficiency

7.06 As previously noted, emission reductions through energy efficiency gains are significant in Bulgaria, but the usual barriers to realizing them exist. There are ongoing efforts to promote energy efficiency in all parts of the economy with financing support from the World Bank/Global Environment Facility (GEF) and expanding the scheme under the GIS would be appropriate. Energy efficiency in municipal building and street lighting, industry and other areas are covered.[24] In Bulgaria there are 262 municipalities, which are significant energy consumers. Energy consumption in municipalities covers the following main spheres: (a) buildings, which are municipal property: administrative centers, schools, cultural sites, sports facilities, medical and social care facilities; (b) public transport; and (c) public services: street lighting, water supply and sewerage. For this study only municipal buildings and street lighting has been analyzed.

Municipal Buildings: Based on audit data from 430 sites in 27 municipalities, the analysis suggests that an equivalent of about 44.22 GWh/year of energy (or about 80k tons of CO_2e) could be potentially saved through an investment of about US$7 million. Most savings come from avoided naphta, followed by natural gas and more efficient district heating.

Street Lighting: According to 1999 data provided by NEC, about one million luminaires are installed in street lighting systems in municipalities and about 90% of them use high-pressure mercury bulbs. The total installed capacity for street lighting in the country is 270 MW. At 3,800 hours mean annual operation of the street lighting systems, the total annual electricity consumption for street lighting would be about 1,026,000 MWh/year. In recent years projects for energy efficiency reconstruction of street lighting systems were implemented in part of the municipalities in the country. The experience from the projects implemented in EcoEnergy member-municipalities shows that in the event of replacement of the old luminaries by energy efficient ones the total installed capacity is diminished by 3 to 3.5 times. EnEffect's observations have revealed that to date about 160 MW of the total installed capacity for street lighting uses inefficient bulbs. Thus, the potential savings that could be realized through implementation of energy efficiency projects amount to 405 GWh/year and the total investment requirements are estimated at US$45 million.

Cogeneration and District Heating

7.07 District heating sector offers the most emission reductions and also the largest overall benefits to energy sector and the economy at large. The review indicated that about 50 million tons of CO2e through 2020 could be potentially realized for an investment cost of about US$512 million.

[24] Improving energy production, transmission and distribution have yet to be examined.

7.08 The district heating companies (DHC) are supplying about 18 % of the Bulgarian households and the commercial sector with heat. Some of the industrial enterprises have constructed own heat sources – small and medium size natural gas boilers. The total heat production for 2001 accounts for 108,261TJ, including 57,576TJ heat demand in the industry and 51,172TJ heat produced in DHC. This amount of heat production allows to produce about 25TWh electricity in cogeneration, if efficient combined heat and power production by natural gas turbines or motors is utilized. In 2001, the total electricity production in the country was 43.5TWh, including 5.8TWh electricity cogeneration. It is obvious that there exists significant additional potential for cogeneration. It is concentrated in the District Heating Plants and in the industrial enterprises. Some are burning natural gas for co-generation (TPP Sofia and TPP Plovdiv), others are burning natural gas for heat production only. Natural gas is burned in steam generation or water heating boilers. For DHCs, the recently developed natural gas combined cycle and cogeneration modules allow to increase the efficiency of cogeneration up to the level of 90 %. Seven of the district heating plants in the country could be extended by installation of gas turbines for electricity production and heat exchangers for heat utilization of the exhaust gases of district heating plants.

7.09 The industrial heat demand has decreased drastically during the transition period and is stabilized at the level of 57,000TJ. Significant part (17,500TJ) is situated in the chemical industry, where cogeneration is well utilized. The other industrial sectors (excluding chemical industry and metallurgy) consume 34,500TJ heat, and the main potential for cogeneration is identified in these enterprises. Dozens of enterprises in the food and drinks industry, paper industry, textile and other industries are expressing interest to replace the old oil and gas water heating boilers with modern cogeneration based on gas turbines and motors. The necessary investments are estimated to be 900 Euro per installed electrical kW. Based on typical heat demand of these enterprises (in the range from 5MW to 20MW and the peak load utilization from 4,500 to 8,000 hours), about 40MW of cogeneration capacity could be potentially introduced every year beginning from 2006 and till 2012.

Waste Management

7.10 All cities in the country are provided with landfill sites. The typical amount of waste to be disposed at regional landfill sites varies between 50,000 and 100,000 ton per year. The Governmental policy is to close down small landfills and to focus on larger, regional landfill sites. In the future, these regional waste disposal sites will play an essential role in Bulgaria's waste policy. At present, controlled extraction of landfill gas does not occur in Bulgaria. The future solid waste disposal sites (SWDS) will be located near the cities and will be managed in a modern way. During the period 1998-2001 the quantities of solid urban waste collected at the municipal landfills vary in the range between 498 kg/inhabitant/year and 518 kg/inhabitant/year. The rate of accumulation of waste reaches its highest value in the year 2000, when generation of 3,318 thousand tons of solid urban waste was reported for 1,190 settlements, inhabited by 78.6% of the total population of the country. According to the National Statistical Institute (NSI) data 99.6% of the waste collected in the course of the year have been deposited in landfills. By 31 December 2001 the number of landfills servicing human settlements with organized waste collection and transportation was 663 and a total of 3.2 million tons of solid urban waste has been deposited in them. As compared to 1997 the quantity of generated solid urban waste has diminished by 12%.

7.11 Organic component in municipal solid waste (MSW) is estimated around 40% and as a result of anaerobic and aerobic dissolution, the released methane could be captured and energy generated. Based on analysis, it is estimated that about 43 MW of capacity could be potentially installed in various sites at an investment cost of about US$28 million. The energy from these facilities are expected to generate about 3.2 million tons of CO2e through 2020.

Forestry

7.12 In Bulgaria, there are many forest-related carbon offset opportunities. The carbon offsets in the expansion of forest areas and in promoting fuel switch options may be favored by AAU purchasers for green investment schemes. However, improvement in forest management such as thinning operations, increasing the average volume of standing stock and forest fire prevention are useful for climate mitigation. Green investment schemes, unlike JI projects, do not require baseline comparison. Therefore, to maximize carbon-related benefits in Bulgaria (i.e. both from JI and green investment schemes), efforts should be made to channel AAU funding in forest management and other forest-related areas that produce more difficult to quantify ERs. In addition, green investment schemes do not require that the area was not forested on December 31, 1989 (a requirement under the Kyoto Protocol for JI projects). Therefore, efforts should be made to channel AAU funding in reforestation of sites deforested or degraded after December 31, 1989.

7.13 Forest lands occupy some 3.9 million ha. or 35% of the country, mainly situated in the mountain regions. They have a key role for economic growth, from a main source of livelihood for the population and play a critical role for biodiversity conservation, watershed protection, climate change mitigation. Bulgarian forests have suffered extensive fire damage with 133,000 ha burnt between 1991 and 2001. Reasons for this increase are seen in the agricultural restructuring process, climate warming, insufficient thinning rates and fire prevention measures. Less than 2% of fires are due to natural causes. Fires have mainly affected relatively young coniferous plantations that are most susceptible to fire, but also mature stands including some broadleaved species. Non-realized thinning volumes amount to about 2.8 million m3 due to a combination of (a) budget constraints, (b) lack of roads and (c) lack of availability and proximity to markets for small round-wood. The yearly reforestation rate has decreased from 50,000 ha (average from 1950 – 70) to about 10,000 ha in the 1990s, due to severe budget limitation.

7.14 Afforestation: About 10,000 ha of burnt area could easily be identified and afforested as a co-financed or parallel financed with the Bank project from proceeds from the sale of Bulgarian AAUs. The estimated average afforestation cost is approximately €1,000 per ha. In addition, the annual operating costs for the first five years of afforestation is approximately €100 per ha. After the fifth year, the operating costs for afforestation activities are minimal. Therefore the afforestation cost for 10,000 ha would be €10 million and the operating costs for first five years would be €5 million, totaling €15 million for the afforestation effort. Assuming a variety of trees native to Bulgaria, the average carbon offset from 10,000 ha of afforestation activities for a 12-year time period, which corresponds to the end of the second commitment period of the Kyoto Protocol (2017), would be about 480,000 tons of CO_2 assuming an average sequestration rate of 4 t CO_2e per ha and year (600,000 t CO_2 before 2020). This is equivalent to €25 or about US$30/t CO_2 based on a project lifetime of 20 years.

7.15 Fuel Switch to biomass: Regarding bio-mass use in energy production, assessments show that there is tremendous scope to utilize fuel-wood from forests, industrial waste wood, or agricultural residues for heating or combined heat and power plants. A preliminary assessment shows that there are 23 municipalities in regions with high potential for additional wood production. About 435 buildings in these municipalities have been identified to have local boilers using liquid fuel. If these public buildings were to be heated at a comfortable level, which is 20% higher than the current energy usage, the annual energy need for these buildings would amount to 144,205 MWh. A program for fuel switch for these buildings would lead to the utilization of 129,785 MWh of energy (at 90% of the heat demand) produced from wood biomass, which results in 34,263 tones of CO_2 (emission factor for LFO 0.264t/MWh). The equipment cost[25] to organize an independent fuel wood supply is about US$80,000 and the investment cost for 2,000 kW of boiler system is US$200,000, i.e. a cost of per project of about US$140 per installed kW. The implementation of the fuel switch would reduce annual emission of 34,263 tones of CO_2 due to the reduction in fuel oil consumption by 129,785 MWh. The total investment cost of the fuel switch project is estimated at US$8.8 million. This is equivalent to US$13/t CO_2.

7.16 Forest Fire Management: Better forest fire prevention and management would avoid carbon emissions into the atmosphere. Fire prevention and management involves the following items: purchase of fire-fighting trucks; provision of mobile radio and communication equipment to facilitate fire detection and co-ordination of fire fighting activities; construction, erection and equipping of watch towers to improve fire detection; supply of protective clothing, hand tools, back pumps and trail bikes to assist fire fighters; provision of training in fire fighting and integrated fire management control; community education and awareness campaign; development of a fire danger rating and early warning system; and fire study tours in the Mediterranean region. Based on estimates by consultants, emissions of 46,000 t CO_2 could be saved per annum over the project life (20 years) if fires were better managed on an area of around 416,000 ha for a cost of US$ 6.55 million, which represents a unit cost of about US$7 per t CO_2.

Range of Greening Potential

7.17 The above review indicates that the realistic potential for GIS in Bulgaria would be in the range of 50 to 60 million tons of CO2e through 2020. This could be higher if supporting policies (e.g. energy pricing for energy efficiency) are in place and sufficient private capital could be mobilized for attractive projects. Nearly 50% of the emission reductions could be realized before the end of the first commitment period if timely investments are undertaken in an appropriate mix among the above sectors. This also points to a first tranche sale of AAUs for GoB in an amount of around 25 million tons, which are delivered every year during 2008-12 as per agreement(s) reached with buyer(s). The emission reductions that could be achieved before 2012 and the cost-effectiveness (investment cost per ton of CO2e) suggest that district heat & cogeneration, waste management and energy efficiency measures are priority for allocating funds.

[25] Two chainsaws, agricultural wheel tractor, mobile chipping machine, trailer 30 m^3, sky-line system. This equipment could supply one municipality with chipped wood for a boiler with installed capacity of 2,000kW, or two neighboring municipalities with similar installed capacity of boiler systems.

Financing Plan Options

7.18 While detailed breakdown of the costs and phasing of all candidate investments are not available, it could be assumed that about 60% of the total investment requirements indicated above would be necessary to finance projects in all sectors. This amounts to about US$500 million for all sectors or about $350 million in the above mentioned priority sectors. Based on resource mobilization from the sale of AAUs in the first tranche (i.e. 25 million tons), options for planning financing of the GIS could be as follows:

Possible Financing Plan Options (all figures in US$ million, except AAU price)

AAU sale price	**$4 / AAU**	**$5 / AAU**	**$6 / AAU**	**$7 / AAU**
Mobilization from AAU sales	100	125	150	175
GIS management and soft greening needs (2005 – 2020)	10	10	10	10
Remaining funds	90	115	140	165
Priority Investment Needs	350	350	350	350
Additional Financing Needed	260	235	210	185
Counterpart funds (30%)	105	105	105	105
Financing Gap	**155**	**130**	**105**	**80**

7.19. The financing gap could be filled from several sources such as IFIs and/or additional fund mobilization through capital market transactions (e.g. issuance of bonds, commercial bank loans, etc). For revenue earning projects and for projects with private sector participation, counterpart financing can also be increased to 30 or 35%. The AAU sale proceeds certainly offer opportunities for GoB to leverage, either at project level or at the GIS fund level itself. As an illustration, financing of district heat and cogeneration projects using leverage concept is provided in Annex. In addition to ERs, readiness for implementation and leveraging of funds should be the foremost criteria in supporting specific projects under the GIS.

As noted in chapter 5, if GoB is not able to leverage these funds through additional borrowing, then it could select all those projects that have cost effectiveness close to the price of AAU. For example, if price of AAU is $7, then projects under forest fire management, waste management, energy efficiency and DH cogeneration could be ranked and selected to provide the maximum possible emission reduction potential through 2020. It is expected that project sponsors or implementing entities would still provide counterpart funds of about 30%. For lower than $7 for AAU, obviously further screening would have to be made.

VIII. AAU Sale-Purchase Transaction

8.01 The right to trade AAUs under the terms of the Kyoto Protocol resides in the "Parties", i.e. the sovereign governments. Private sector entities can only participate in the trade if they are appropriately authorized. Consequently, an AAU sale transaction involves sovereign government(s) as purchaser(s) and the Bulgarian State as the seller. Special and ad hoc procedures may be required to plan and execute an AAU sale transaction[26].

8.02 As a general rule, competitive procedures available under Bulgarian law (*Law on State Ownership, Regulation on the Implementation of the Law on State Ownership*) in respect of the management and disposal of state's title in ownership aim to ensure transparency and efficiency of the procedures to protect the interest of the state. Consistent with such objectives, Bulgaria could establish suitable procedures to enable a sale transaction of AAUs involving another sovereign state as buyer. Since sovereign buyers may not engage in competitive bidding per se, the process and procedures would have to accommodate direct negotiations with one or more purchasing governments. Also, since it is likely that certain governments may have preferences for directing their funds to specific sectors, projects or programs, the process would have to allow for adequate flexibility to conclude such contracts with different buyers on the basis of one GIS.

Some of the key actions required in this regard are the following:

a) Review legal framework/regulations as well as any precedents involving sovereign parties in a sale transaction and develop procedures for AAU sale transaction. In particular, the review should examine how a forward sale contract can be executed (i.e. current disbursements against future delivery of AAUs).

b) Identify and contact likely buyer(s) and establish general framework for AAU sale transaction and define an appropriate GIS with sufficient details (e.g. candidate projects, timing/phasing, costs and financing, emission reductions schedule, implementing agencies/parties, consistency with applicable regulations such as State Aid rules under the EU, etc.).

c) Prepare and finalize an "Information Memorandum" for consideration by buyers of Bulgaria's GIS and circulate it along with a "request for proposal (rfp)" on the offer of certain volume of AAUs. The package would have to include monitoring and reporting procedures on the implementation of GIS, including any proposals for additional capital mobilization and risk mitigation to specific parties (e.g. commercial lenders to GIS).

d) Discuss/negotiate with each buyer on the rfp and conclude final agreements.

It is clear that before these steps are initiated, Bulgaria would need to address and resolve many issues concerning the architecture of the GIS, including institutional framework.

[26] New Zealand conducted a tender in the Fall of 2003 offering 4 million tons of emission units involving eligible projects implemented in New Zealand. For details, please see http//www.climatechange.govt.nz

IX. Summary and Next Steps

9.01 Bulgaria's interest to implement a GIS seems feasible as the country has adequate surplus AAUs. Sectoral development plans indicate greening potential of about 50 million tons over 2005-20 period and the more promising sectors are cogeneration in district heating, energy efficiency, forestry and waste management from the point of view of cost efficiency, while some candidate projects in other sectors such as renewable energy would also be feasible. A GIS focused on these sectors to maximize emission reductions prior to 2012 could be developed and candidate projects evaluated further. As the study indicates, a GIS with total investment requirements of about $350 million could be defined as a first phase to be implemented by both public and private sectors. Bulgaria could hence consider selling 25 million tons of AAUs to part finance the first phase of GIS and use the proceeds also to leverage additional financing from bi-, multi-lateral and capital markets as appropriate. Price range of $4 to $7 per ton of AAU seems plausible, and a median price around $5 or $6 per ton could be realized based on current market indications.

9.02 Bulgaria would be the first country to establish a GIS of such a scale if timely decisions are made to proceed accordingly. More importantly, although there would not be much lessons or experience to rely upon, with a smaller initial transaction and a well prepared GIS that mitigates risks, Bulgaria could set bench marks for other countries to follow. A forward sale contract where Bulgaria could receive adequate upfront payment to begin implementation of a GIS, while the defined amounts of AAUs are delivered during the 2008-12 period, is proposed. Bulgaria is certainly well placed – also as a accession country – to proceed with an AAU sale transaction sooner rather than later.

9.03 Bulgaria is also competing with other Central and Eastern European countries that are potential AAU sellers. The World Bank's discussions have indicated that sovereign buyers would look for well structured proposals for their AAU purchases. The study has examined three options for a GIS fund structure and reviewed the implications for GIS implementation, inter-ministerial coordination, capital mobilization, risk mitigation & management, and fiduciary obligations. GIS fund needs managerial capacity to administer one or several funds, to identify eligible projects and to supervise their implementation.

9.04 Bulgaria's successful experiment with debt-for-swap program under a bi-lateral arrangement with the Swiss government provides comfort that may be absent in other neighboring countries. The National Trust EcoFund which implemented this program has gathered reasonable experience in project identification, appraisal, financing and so forth, that lessons could be drawn from it. Further, this fund could be an important part of the GIS implementation framework. Establishment of a long term GIS fund entity to manage and implement the GIS is recommended. The selection of an option for the institutional structure for such a GIS fund should be based on the ability to meet and manage the complex tasks involved in a AAU-sale backed GIS implementation. Bulgaria has necessary legal framework and precedence to help design a GIS fund structure that meets also buyer(s)' requirements. Involvement of an experienced fund manager for GIS fund is recommended.

9.06 The transactions involving Assigned Amount Units impact Bulgaria's sovereign climate change obligations. The establishment of a GIS requires important decisions on the use and allocation of AAUs for Joint Implementation (under Article 6 Kyoto Protocol), AAU trades (under Article 17 Kyoto Protocol), and for national reserve. Following Bulgaria's accession to the EU, the EU Emissions Trading Scheme would require further decisions on the use of AAUs under such scheme. The implementation of a GIS adds further responsibilities in coordinating with various ministries. These are new functions and responsibilities and adequate capacity needs to be developed in a timely manner. Since coordination is critical for fulfilling these functions and responsibilities, the study recommends establishment of a central AAU Management Unit. Since the Ministry of Environment & Waters (MoEW) is responsible for representing and ensuring Bulgaria's obligations under the UN Framework Convention on Climate Change (UNFCCC), and since a critical mass and knowledge base exists in this Ministry, we recommend that such a central unit be established under the direction and responsibility of MoEW. Bulgaria could finance the management of GIS and the central AAU Management Unit from the proceeds of the AAU sale, and an outlay of about US$10 million over 15 years to cover these costs, including capacity building and awareness campaigns, is proposed as 'soft' greening activities.

9.07 However, there are important gaps in the legal frameworks in Bulgaria for regulating and concluding AAU transactions and establishing a GIS fund as they relate to the Kyoto Protocol which still has to enter into force. A thorough review of these is needed once preliminary decisions have been made on the nature and scope of GIS fund. The report provides preliminary recommendations on the scope for such legal review.

9.08 Undertaking a first tranche of sale of AAUs will help Bulgaria in dealing with intricate national and international issues in a still untested area. Bulgaria should solicit and confirm interest from several potential buyers as a first step and then proceed to define the legal, institutional and commercial aspects that meet the requirements of buyers. An inter-ministerial committee comprising representatives from key ministries with leadership from the Prime Minister would be a good set-up to undertake these tasks. Such a committee should include, at a minimum, representatives from MoEW, Ministry of Energy, Ministry of Finance and Ministry of Justice, and MoEW seems to be well placed to coordinate and act as secretariat for the committee. A working group could be formed from the committee to carry out designated tasks and report to the inter-ministerial committee for further actions/decisions.

9.09 Many activities leading up to concluding a first sale transaction could be undertaken in parallel under the direction of the committee. If requested by GoB, the World Bank would help Bulgaria further as appropriate in this regard. The Bank's assistance could include: (a) non-lending services such as analytical and advisory services to help establish a GIS and carry out a successful AAU sale transaction; (b) consideration of lending for specific sector(s)/project(s) in the GIS; (c) risk cover through the Bank Group's partial risk guarantee instrument(s); and (d) capacity building Technical Assistance support for stakeholders in the GIS in Bulgaria.