Implementing the Kyoto Protocol: Capacity Challenges in Central and Eastern Europe

Acknowledgement text:

The authors thank Fiona Mullins of Environmental Resources Management, for her background research and writing, without which this report would not have been possible. We also are grateful to WRI's Dr. Elena Petkova for her invaluable contributions to this report. WRI's Jim Perkaus and Frances Seymour also provided valuable insights and suggestions, for which we are grateful. We are also grateful for the advice and guidance of Dr. Zsuzsanna Iványi, as well as other Regional Environmental Center staff who made significant contributions. We must also acknowledge our indebtedness to Center for Energy Efficiency - EnEffect (Bulgaria), Center for Transport and Energy (Czech Rep.), Center for Environmental Studies (Hungary), Institute for Sustainable Development (Poland), Terra Millennium III (Romania), Slovenian E-Forum (Slovenia), as well as to the survey respondents, who provided us with the insights that make up the core of this work. We are grateful for the comments, suggestions, and information provided by the Organization for Economic Cooperation and Development's Stéphane Willems and Diana Barbu, the Center for Clean Air Policy's Ellina Levina, and the U.S. EPA's Bill Irving and Jeremy Schreifels. We thank Carollyne Hutter for her careful editorial review and suggestions. We greatly appreciate the financial support provided by the Italian Ministry of Environment, Department for Global, Environment, International and Regional Conventions.

The information in the paper is drawn from surveys of countries currently participating in the joint program *Capacity for Climate Protection in Central and Eastern Europe* led by the Regional Environmental Center for Central and Eastern Europe and the World Resources Institute. Non-governmental organization (NGO) partners in each of these countries worked with staff in both government and non-governmental institutions to obtain responses to a survey that provided the basis for information presented in this report. Respondents included the following: staff of national statistical offices, national focal points for the UNFCCC Secretariat, members of National Commissions on Climate Change, staff of private companies, researchers at private environmental organizations, members of various ministries (including staff involved in national inventory preparation), and academics.

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Introduction

In December 1997, the third Conference of the Parties to the United Nations Framework Convention on Climate Change met in Kyoto, Japan to negotiate limits to greenhouse gas emissions. Two main features of the Kyoto Protocol, if it enters into force, are (1) legally binding commitments by Annex I[1] countries to collectively reduce GHG emissions by more than five percent below 1990 levels by 2008-12, and (2) a set of mechanisms—including international emissions trading and joint implementation—to help countries achieve their commitments at the lowest possible cost.

While not as high profile as the emission commitments and trading provisions, the Kyoto Protocol also contains critical provisions for emission monitoring, government reporting, and review of information. These functions are needed to ensure that countries are complying with the treaty's emission reduction commitments.

Specifically, Article 5 of the Protocol requires countries to develop a "national system" for estimating greenhouse gas emissions by sources and removals by sinks. Article 7 builds on the existing reporting obligations under the Climate Convention by requiring annual submissions of greenhouse gas inventories; more thorough but periodic national communications; and any "supplemental information" that may be required to demonstrate fulfillment of the Kyoto commitments. Finally, Article 8 requires countries to avail themselves to independent auditing and review by "expert review teams."

Furthermore, additional requirements are likely for countries that wish to participate in international emissions trading and joint implementation. Countries must establish registries to track emissions transfers and introduce regulations to enable participation in the Kyoto mechanisms.

Economies in transition, including the six Central and Eastern European (CEE) countries examined in this report, have identified the above issues as priority areas for capacity building.[2] , The challenge of building capacity in these areas is particularly daunting for CEE countries, whose limited resources are currently stretched in managing the transitions to a market economy and, for some, achieving the political objective of joining the European Union.

Official submissions by economies in transition to the Climate Convention Secretariat reflect that "Parties perceive capacity building not only as a process in which individuals and institutions increase their abilities and competencies to understand and deal with climate change . . . it is viewed as an investment in people, institutions, information and knowledge, and technologies . . . that together enable EIT Parties to fulfill their commitments under the Convention and the Kyoto

[1] Annex I includes 24 original OECD members, the European Union, and 14 countries with economies in transition.
[2] FCCC/SB/2000/INF.2, May 19, 2000, pg. 4-5.

Protocol."[3] Countries have identified major capacity building needs related to climate protection, including:[4]

1. Lack of information on and awareness of climate change issues;
2. Lack of regular opportunities to exchange information among other Parties;
3. Limited number of institutions, organizations, and experts involved and capable of carrying out the necessary research, analysis, estimates, projections, assessments, studies, and verification and monitoring in the area of climate change;
4. The relatively low priority of climate change as compared to the economic, social, and other more immediate issues faced by economies in transition.

From these general needs, more specific requirements emerge in the context of implementing the Kyoto Protocol, including improving the quality of greenhouse gas inventories and formulating policies to reduce emissions.[5]

CEE countries have already made substantial progress in building capacity to fulfill some Kyoto Protocol requirements, including their national systems for inventory preparation. Increasingly, they are making efforts to clearly identify institutional and regulatory gaps. This is especially important because CEE countries are, for the most part, in a unique position relative to other industrialized Parties. They have the potential to realize benefits from coupling strong domestic actions to reduce greenhouse gas emissions with participation in the Kyoto mechanisms.

First, emission levels are already far below base year emissions for most of the economies in transition (*See Table 1*). The decline in emissions is primarily a result of the severe economic recession in the early 1990s, and market reforms introduced over the last decade that have improved energy efficiency in some countries. Second, international emissions trading (IET) and joint implementation (JI) could help translate reduction opportunities into substantial economic,

Several factors create such opportunities. **Table 1: Greenhouse Gas Emission, Six CEE Countries**
Million Metric Tons of Carbon Dioxide Equivalent

Country (Base Year)	Base Year Emissions	1998	Change	KP Target 2008-12
Bulgaria (1988)	157,090	83,671	-46.7%	-8%
Czech Republic (1990)	189,837	147,777	-22.2%	-8%
Hungary (1985-87)	101,633	82,725	-18.6%	-6%
Poland (1988)	564,286	402,477	-28.7%	-6%
Romania (1989)	264,879	164,026*	-38.1%	-8%
Slovenia (1990)	19,212	n/a	n/a	-8%
Source: UNFCCC Greenhouse Gas Inventory Database. Available online at: http://62.225.2.23/. * Most recent available data for Romania is for 1994.				

[3] FCCC/SB/2000/INF.2, May 19, 2000, pg. 4-5.
[4] Submissions were submitted by EIT countries and compiled in a synthesis paper, FCCC/SB/2000/INF.2, May 19, 2000. Submissions were received from Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Poland, Romania, the Russian Federation, Slovenia, and the Ukraine.
[5] See Note 3 (FCCC/SB/2000/INF.2, May 19, 2000, p. 5).

environmental, and financial benefits. Combining strong domestic action with participation in the Kyoto mechanisms could deliver substantial benefits to CEE countries, including upgraded technological capacity; improved energy efficiency, better air quality and health, and financial flows from the West.

Recognizing the potential benefits of the Kyoto Protocol, along with the needed capacity improvements, is a first step toward forming strategies to enable CEE countries to meet their commitments. The next step is to move from these general priorities to specific, targeted actions to meet specific capacity needs. This paper provides a detailed analysis of capacity needs in six surveyed countries—Bulgaria, the Czech Republic, Hungary, Poland, Romania, and Slovenia—for establishing national systems and preparing supplementary information, and implementing the Kyoto mechanisms—the general priority areas identified above.

Section I of the paper outlines the specific elements of an implementation framework required for compliance with the Kyoto Protocol. This section also assesses the capacity each country has to perform these requirements, and ranks current capacity as high, medium, or low. **Section II** identifies the challenges and capacity deficits common to the six CEE countries surveyed for this report. In so doing, the section presents areas where countries can collaborate to meet common goals. **Section III** presents priority capacity needs by country. This section offers recommendations for country investment in specific areas and identifies where national political will and donor support is needed. The paper concludes with a review of regional progress, challenges, and next steps for national CEE governments and the international climate community.

The information in the paper is drawn from surveys of countries currently participating in the joint program *Capacity for Climate Protection in Central and Eastern Europe* led by the Regional Environmental Center for Central and Eastern Europe and the World Resources Institute. Nongovernmental organization (NGO) partners in each of these countries worked with staff in both government and nongovernment institutions to obtain responses to a survey (attached as **Appendix I**) that provided the basis for information presented in this report. Respondents included the following: staff of national statistical offices, national focal points for the UNFCCC Secretariat, members of National Commissions on Climate Change, staff of private companies, researchers at private environmental organizations, members of various ministries (including staff involved in national inventory preparation), and academics. **Appendix II** presents a matrix of the responses to the survey. A first attempt at mapping current international efforts to build capacity in the region and priority needs is provided in **Appendix III**.

The material in this paper reflects the views of the individuals who were interviewed and does not represent official government positions. Survey questions were based on the draft national systems guidelines document.[6]

[6] Report of the Subsidiary Body for Scientific and Technological Advice on Its Twelfth Session, 12-16 June 2000. FCCC/SBSTA/2000/5. Annex I. This Annex will be referred to repeatedly in this report as "UNFCCC draft guidelines on national systems." Available online at: http://www.unfccc.int/resource/docs/2000/sbsta/05.htm.

Box _: Report Findings

CEE countries need to make significant progress in implementing national systems for inventory compilation, management and reporting, and participation in the Kyoto mechanisms. Considerable capacity for implementing these national systems does exist in Bulgaria, the Czech Republic, Hungary, Poland, Romania and Slovenia. Researchers recently surveyed these six countries to assess compliance ability and capacity-building progress and challenges. However, there remain priority areas for capacity building in these countries, representing significant hurdles that should be met by joined, concerted efforts from the governments of these countries and the international climate community. Areas requiring significant capacity-building efforts include the following:

- **Building and Adjusting Legal and Institutional Frameworks**

In several of the surveyed countries, the responsibilities for carrying out key aspects of national inventory compilation and management are not clearly assigned; clarification of roles and obligations (accompanied by authorizing mandate and appropriate resources) is required. In some cases, the legal frameworks necessary to undertake several aspects of inventory management and mechanism participation are inadequate or missing altogether. In particular, a lack of legal access to emissions data (which are currently confidential) must be corrected by introducing, strengthening, or clarifying regulatory confidentiality provisions. These institutional and legal constraints represent barriers that must be overcome by national governments' political will, accompanied by guidance from the international community.

- **Strengthening the Ability to Collect and Use National Emissions Data**

All of the surveyed countries identified areas in which staff capacity would strongly benefit from expert assistance in establishing and using methodological best practices (e.g., calculation of emissions factors, evaluation of inventory uncertainty, quality control procedures, and establishment of a national registry). The international community should continue and increase its efforts to provide for the sharing of knowledge and expertise. Funding assistance for CEE staff attendance at IPCC expert meetings is crucial, as are the continuation and increase of regional, topic-specific forums for information and experience sharing.

- **Increasing Financial Resources**

The surveyed countries have invested considerable resources in creating the institutions and systems necessary for successful implementation of the UNFCCC and Kyoto Protocol. Nonetheless, current levels of government funding for carrying out the myriad responsibilities associated with compliance are inadequate. Strong, government-led reform processes, increased country investments in building capacity, and international aid are vital if the economies in transition are to meet their obligations under the climate convention.

I. Building a Kyoto Protocol Infrastructure[7]

Effective implementation of the Kyoto Protocol will require countries to build capacity in several important areas:

A) national systems for inventory preparation, management and reporting,

B) expert review, and

C) participation in the Kyoto mechanisms.

This section addresses these areas and includes assessments regarding each country's state of readiness and potential quality of implementation. Several elements of a Kyoto infrastructure build on existing requirements found in the Climate Convention, including greenhouse gas inventories, reporting, and in-depth reviews.

A) National Systems: Inventory Preparation, Management, and Reporting

Article 5 of the Kyoto Protocol requires each Annex I country to have a "national system" for greenhouse gas emission estimation in place no later than 2007. The Parties have since elaborated draft guidelines that state:

> "A national system includes all institutional, legal and procedural arrangements made within a Party included in Annex I to the Convention for estimating anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and for reporting and archiving inventory information."[8]

UNFCCC draft guidelines for national systems are heavily informed by the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*,[9] which emphasizes procedures to ensure that inventories are high quality and free of systematic bias.

Accordingly, the three important national systems elements include:

1. Inventory compilation,
2. Quality control, and
3. Information management.

These elements are central to assessing whether a country is in compliance with its greenhouse gas emissions obligations, and are examined in the following three subsections.

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[7] This section, and its accompanying tables, is based on background research and a white paper by Fiona Mullins.

[8] UNFCCC draft guidelines on national systems. See earlier footnote.

[9] *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, J Penman, D Kruger, I Galbally, T Hiraishi, B Nyenzi, S Emmanul, L Buendia, R Hoppaus, T Martinsen, J Meijer, K Miwa and K Tanabe (Eds), IPCC National Greenhouse Gas Inventories Programme. May 2000. Available online at: http://www.ipcc.ch/pub/guide.htm. Referred to as "IPCC good practice guidance."

Box __ summarizes the survey responses on national capacity to meet inventory preparation and management and reporting requirements. For each of the subtasks—estimating inventory uncertainty, compilation in common reporting format, application of general-inventory-level quality control, annual checks of data and calculations, facilitating expert review, and archiving—the respondents' assessments of potential performance quality is indicated.

Box__ Capacity to Meet Inventory Preparation and Management Requirements[10]

[Please note that H = high; M = medium; L = low]

LIKELY NATIONAL SYSTEMS REQUIREMENTS	**Already Doing This**			**Possible With Existing Capacity**			**High Quality Possible With Assistance**		**High Quality Possible By 2005**	
	Quality			***Expected quality***			***Likely***	***Not likely***	***likely***	***Not likely***
	H	**M**	**L**	**H**	**M**	**L**				
Estimate inventory uncertainty.		CZ PO HU	BU SI	PO	BU CZ HU	RO	BU HU CZ PO RO		BU* CZ RO SI	
Compile national inventory in accordance with the common reporting format.	HU PO	BU CZ	RO		BU CZ HU	RO	BU CZ HU RO SI		BU* CZ SI	RO
Apply general inventory level quality control (Tier 1).	PO	BU CZ	HU		BU CZ SI	HU RO	BU CZ RO HU		BU* CZ RO SI	
Annual checks of data and calculations related to identified key sources.	HU PO	BU CZ		HU	BU CZ	RO	BU CZ RO SI		BU* CZ SI	
Quality control (QC) procedures applied for (source category-specific Tier 2 QC):	PO		BU		BU	RO	BU HU RO SI		BU* SI	
i) Individual key emission source categories (i.e., the most important categories);										
ii) Emission source categories in which significant methodological and data revisions have taken place.	PO		BU		BU		BU HU RO SI		BU*	
Expert review: review of the inventory by personnel that have not been involved in its	PO	CZ SI	BU	HU	CZ RO	BU	BU HU**		BU* CZ	RO

[10] Adapted from a white paper on CEE Kyoto Protocol capacity by Fiona Mullins.

LIKELY NATIONAL SYSTEMS REQUIREMENTS	Already Doing This			Possible With Existing Capacity			High Quality Possible With Assistance		High Quality Possible By 2005	
	Quality			*Expected quality*			*Likely*	*Not likely*	*likely*	*Not likely*
	H	**M**	**L**	**H**	**M**	**L**				
development, preferably an independent third party.							CZ RO SI		SI	
Timely information on adjustments: inform the expert review team within four weeks whether your country accepts any adjustment that is made by the team.		BU PO				BU RO	BU RO SI		BU*	RO
Archiving: archive inventory information for each year (including documentation of quality assurance (QA) /quality control activities: Article 8 external review reports).	HU	BU CZ PO	RO SI	HU PO	BU PO	RO	BU CZ PO RO		BU* CZ	RO
Develop **confidentiality provisions** for any archived information that is confidential and provide access on that basis.	SI	BU PO	RO	PO	BU HU	RO	BU HU RO SI		BU* RO	
Response to **requests from review team**, including timely clarification of inventory and national system information.	PO	BU CZ HU	RO		BU CZ HU RO		BU CZ HU RO SI		BU* CZ	RO
Carry out **expert peer review** and/or audits as additional QA procedures.		CZ	BU PO	PO	CZ HU	BU RO	BU CZ HU RO SI		BU* CZ RO	

* with provided assistance. ** Under the question on "expert review" some respondents including Hungary answered concerning the in-depth review(IDR) process rather than independent national expert review.

1. INVENTORY COMPILATION

Protocol inventory requirements build on the Climate Convention reporting requirements. In fulfilling these requirements, the surveyed countries, as well as other Annex I Parties, have years of experience compiling and managing greenhouse gas emission inventories. The countries surveyed have all made great improvements in their inventory preparation since submitting their first national communications. Thus, existing experience provides a strong base of expertise. However, most countries still face difficulties.

Inventory compilation requires many steps as well as adherence to common methodologies (IPCC) and report formats (UNFCCC). In considering these, we examine survey responses

concerning national capacity for: collecting data, using emissions factors, following the inventory guidelines, reporting inventory emission estimates, updating the national inventory, and assigning institutional responsibility for inventory preparation.

Collecting Data Inventory compilation begins with collection of basic activity data, such as the amounts of various fuels consumed or extracted. Although different types of institutions are responsible for data collection within the countries surveyed, each country has a single national organization that is responsible for compiling national activity data.

In the Czech Republic, overall responsibility lies with the Czech Hydro-meteorological Institute (CHMI), which monitors and prepares statistical documents for the Ministry of the Environment. This is the least complex organizational structure of all the countries surveyed. Similarly, Hungary, Bulgaria, and Romania each have a single organization responsible for preparing national data. However, they also draw on other supplementary sources to provide local or sector specific information. Hungary's Institute for Environmental Management (KGI), Bulgaria's National Statistical Institute (NSI), and Romania's Research and Engineering Institute for Environment (ICIM) are the main organizations with national data collection duties in their respective countries.

Romania operates a two-step process for its data collection, with local environment agencies taking responsibility for collation of local level information. These data are reported to local environmental protection agencies and to the National Institute of Statistics and Economic Studies (INSEE). These institutes provide sectoral and national data to the institution (ICIM), which is responsible for compiling the inventory.

Of the countries surveyed, Poland has the most complex system of data collection. Because Poland's Main Statistical Office provides a central collection point for statistical data at a national level, compilation of the statistical data occurs at a single central location. However, 18 different institutions contribute to the collation of national statistical information. For some of the main sources of emissions, different institutions collect the activity data: the Aviation Institute in Warsaw (IL) prepares data on air transport; the Institute of Oil and Gas Research in Warsaw (IGNiG) collects and analyzes data on oil and gas extraction and use; and the Institute of Road Transport in Warsaw (ITS) is responsible for data on energy use in the transport sector. Several of these institutes gather similar information, although with slight differences in content.[11]

The main difficulties in data collection, which extend to some degree to all surveyed countries, include confidentiality, lack of regulatory authority, and institutional capacity. In Romania, the lack of a regulatory mandate and a general lack of transparency hinders institutions responsible for the collection of data. One of the primary difficulties is that private companies are not legally required to disclose the emissions information needed by the institutions that collect the data. Similarly, official institutions have a limited mandate to request or obtain data.

In Bulgaria, the activity data of the main emission sources (large monopolies) is protected as confidential under Bulgarian law. There is no single national institution vested with the

[11] For example, IGNiG and the Polish Oil and Gas Company in Warsaw (PGNiG) both compile information on the extraction and use of oil (the former collects and analyzes data on oil and gas extraction and use; the latter collects data on mining and use of oil, gas, coke-oven gas, and city gas.

responsibility for data collection of gases. The Bulgarians can obtain data from the national statistical institute, but are not yet able to obtain adequate bottom-up data at the plant level. Similarly, in Hungary, environmental inspectorates are not authorized to collect CO_2 data, because it is not classified as harmful. Data confidentiality problems also exist in Romania. Structural reform in these sectors further compounds these difficulties.

Other more specific problems plague one or more of the countries surveyed:

- lack of adequate equipment for data collection;
- breakdowns in the exchange and transfer of data within and among organizations;
- mismatches between the data collected and the data required by the IPCC methodology (Romania);
- differences in the methodologies used for data collection and data processing, resulting in variations in basic data and calculated indicators (Bulgaria);
- difficulty estimating specific gases, such as methane (Hungary);
- problems with data flow management, measurement hardware, and data collection procedures (Poland);
- data collection gaps (Slovenia);
- inconsistencies in data from different sources, such as agriculture, waste and land-use change and forestry (Bulgaria); and
- complications due to the transition to recording statistics in line with European requirements. Different EU reporting categories for emissions distorts time-series data, making it difficult to analyze trends.

Using emission factors Emission factors allow the activity data to be converted into actual greenhouse gas emission estimates. A wide variety of default emission factors are provided by the IPCC for those unable to calculate actual factors.

In most of the countries, the organizations responsible for emission factors are independent institutes, such as the Research Institute for Environmental Engineering (ICIM) in Romania, the Czech Hydro Meteorological Institute (CHMI), and the Institute for Environmental Management (KGI) in Hungary. In Bulgaria and Poland, the organizations that calculate emissions factors are separate from those that collect activity data. In Bulgaria, Energoproect (a scientific research institute in the energy field) calculates the emissions factors for the Ministry of Environment and Water. In Poland, a nongovernmental body, FEWE (Foundation for Energy Efficiency), calculates the emissions factors and also has full responsibility for ensuring the methodological integrity of the inventory, although other organizations also contribute to the calculations. In Slovenia, the Slovenian Institute of Energy, a professional nongovernment institute, carries out the calculation of emission factors.

All of the countries surveyed have the capacity to calculate some emission factors. Some respondents report success in improving the accuracy and availability of emissions reports (e.g., Bulgaria and Poland), as well as improvements in expertise in estimating emission factors. Yet concerns with data quality prevent some of the countries from estimating their own emission factors. For example, in Hungary IPCC default factors are used because of the lack of resources to address the complications associated with data interpretation, from the agriculture and transport sectors, among others.

Following the inventory guidelines The countries surveyed have inventory experts familiar with the inventory guidelines. The staff responsible for preparing the inventories are generally well aware of the UNFCCC inventory requirements, although owing to a lack of funding they have been unable to participate in the inventory-related meetings organized by the IPCC.
Since submitting their first national communications, all of the countries surveyed have made progress in improving their inventories. Some countries still require significant capacity development (e.g., Romania and Bulgaria) and expect to face difficulties in preparing good quality inventories for their third national communication.

Updating the national inventory Due to delays in publishing official data, all Annex I Parties experience considerable problems updating their inventories. Updating problems due to time lags were reported in Bulgaria, Czech Republic, Hungary, and Poland. Generally, these difficulties are exacerbated in EITs by funding and data collection capacity constraints, described above.

The Czech Republic, Poland, and Hungary have all updated their inventories annually, although for several years Hungary updated its inventory on a biennial basis to minimize costs. Romania's most recent annual update is currently delayed because of difficulties implementing the revised IPCC inventory guidelines. For the first time in 2000, Bulgaria has updated its national inventory for the years 1988, the base year, to 1995.

Timing of updates is another challenge faced by countries. Bulgaria, Slovenia, Poland, and Hungary do not appear to have the capacity to report the annual greenhouse gas inventory in November for the year prior to submission (a possible requirement under the Article 8 review process) because of time lags, while respondents in Romania and the Czech Republic believe that they do have such capacities. In Bulgaria, data from the National Statistical Institute are compiled with a time delay of about 21 months. In Slovenia, additional funds and training are needed if this is to be achieved.

Assigning institutional responsibility for inventory preparation UNFCCC draft guidelines state that "as part of its inventory planning, each Annex I Party shall designate a single national entity with overall authority for the national inventory."[12] Most of the surveyed countries have clear definitions of responsibility for the national inventory, with a single authority possessing overall responsibility.

In Bulgaria, Romania, Slovenia, and Hungary, the Environment Ministry is in charge of the inventory. The Polish Statistical Office (GUS) has overall responsibility for the Polish inventory. However, in Poland there are plans to make the Centre for Inventory of Emissions at the Environmental Protection Institute (IOS) responsible for the national inventory. The Czech Republic assigns responsibility for all aspects of preparation and coordination of its inventory to the Hydro-Meteorological Institute (CHMI).

Slovenia, however, has not yet decided which institution will be in charge of establishing the national system for emission monitoring, inventory preparation, and reporting. The two possibilities are the Hydro-Meteorological Institute and the Environmental Agency (to be established in the future). The Ministry of Environment and Spatial Planning's Hydro-Meteorological Institute is performing activities related to inventory preparation on a temporary basis. Slovenian state agencies are predominantly bodies with a low level of independence, which have restricted direct use of budget expenditures. Better distribution of tasks and responsibilities and improved organization of labor is needed in addition to extra financial support.

2. QUALITY CONTROL AND QUALITY ASSURANCE

As noted, the UNFCCC draft guidelines stress the importance of quality assurance and quality control.[13] Quality control (QC) is a system of routine technical activities to measure and control the quality of the inventory *as it is being developed*. QC includes activities such as accuracy checks on data acquisition and estimating uncertainties. Quality assurance (QA) activities, on the other hand, include a planned system of review procedures conducted by personnel *not* directly involved in the inventory.[14] Elements related to QA/QC, and the associated capacities of surveyed countries, are reviewed in this section.

[12] UNFCCC draft guidelines on national systems. See earlier footnote.
[13] As derived from IPCC good practice guidance.
[14] These definitions and examples are taken from the UNFCCC draft guidelines for national systems, cited above.

Data verification and quality control measures Some of the countries surveyed already have some form of verification and quality control for their inventories. Bulgaria carries out quality control on its energy-sector estimates, the most important emission source. Independent experts review estimates prepared by the Scientific Council of Energoproect. The estimates and the independent review are submitted to the High Environmental Council in the Ministry of Environment and Water (MoEW). Government staff from MoEW, the National Statistical Institute and independent national experts all review the estimates. Bulgarian respondents cited the need for an agreed methodology for evaluating of inventory uncertainties and for QA. However, the most difficult challenge, as note above, is the confidentiality provisions in Bulgaria that limit access by independent experts to the necessary data.

Polish quality assurance is evolving and will require increased staff capacity. Currently, quality assurance takes place during final approval of the inventory. A special committee, which was established by the Polish Ministry of the Environment, is responsible for this procedure. Poland conducts consultations and discussions throughout the preparation of the inventory and invites experts to give their opinion before final acceptance of the report.

Slovenia is unable to implement QC procedures without additional funding. Similarly, Hungary currently has the capacity to compile the inventory but not to develop any further QC systems, without additional financial resources.

Romania lacks the appropriate institutions and legal and regulatory frameworks required to apply QC measures. However, Romania does double-check its estimates using data from two different sources as a method of verification. Without additional administrative capacity and funding, Romania faces considerable difficulties in establishing QA procedures for any of the emission source categories. One way to increase capacity is through funding for attendance at IPCC workshops, a need shared by several surveyed countries.

Estimation of inventory uncertainty Estimating inventory uncertainty is a key QC component and the recent subject of a series of IPCC expert meetings. The Convention Parties have endorsed the resulting guidelines and recommend their use in inventory preparation.[15].

Implementing these guidelines in the surveyed countries will require additional funding and staff time, as well as sharing of relevant experiences across countries. Some respondents (e.g., Romania) cited assistance in increasing the accuracy of emissions estimation as a priority. In Poland, uncertainty estimates are carried out but additional assistance is needed to improve the quality of data in specific sectors, such as energy, industrial processes, waste, and sewage. The same general problems of lack of finance, staff time, and expertise make it difficult for inventory experts in these countries to assess the levels of uncertainty in the inventory.

Official approval processes In Romania, both the inventory and the national communication are sent to the National Commission on Climate Change (NCCC) for validation prior to submission to the UNFCCC. The High Environmental Council in the MoEW has to approve the Bulgarian inventory. The Council then decides which comments and suggestions to take into account and submits the final version of the inventory to the UNFCCC. In the Czech

[15] See FCCC/SBSTA/2000/5.

Republic, the Inter-Ministerial Commission on Climate Change plays a key role in approval of both the inventory and the national communication. In Hungary, the Commission on Sustainable Development receives the inventory for final review and approval, but this is not a formalized process.

In Poland, an acceptance committee meeting takes place prior to submitting the inventory. The committee consists of experts nominated by the Ministry of Environment. It decides whether to approve or reject the report and may also request additional clarification on specific issues. Once the committee accepts the inventory, it is published and made available to the public.

In Slovenia, the inventory is sent to the following ministries for confirmation: the Ministry of Economic Affairs; the Ministry of Agriculture and Forestry; the Ministry of the Environment and Spatial Planning; and the Ministry of Transport and Communication. Prior to its submission to the UNFCCC secretariat, the National Committee for Climate Change Issues[16] revises the inventory.

Expert review Peer review by independent national experts is essential to an effective QA program. This, however, does not currently take place in most of the countries surveyed. Bulgaria and Poland conduct expert reviews, although Bulgaria's procedures are still at an early stage of development because many of the auditors are not yet experts in IPCC methodology. Slovenia and Hungary do not carry out expert reviews because of financial constraints.

Hungary, Slovenia, and Romania did not report any form of third-party or independent peer review of the inventory. Respondents in Hungary cited insufficient capacity for implementing quality assurance procedures, but believe that the costs of involving a third party in the process are will probably not be high and should not present an insurmountable difficulty in the future. The Czech Republic ensures that at least one person not involved in the inventory preparation regularly reviews its inventory.

The effective implementation of peer reviews is a possibility in all of the countries, but in some a lack of funding may limit the extent to which this is possible. Lack of expert staff with relevant experience is the main constraint for Bulgaria. Additional funding and assistance could help the overall development of a more comprehensive and structured system of peer review.

3. INFORMATION MANAGEMENT

The third key aspect of inventory compilation is information management. Archiving, and public accessibility of information are the main subtasks of information management.

[16] The National Committee consists of representatives of relevant ministries, business, and research institutions and NGO representatives. The Committee provides comments and suggestions on all documents related to climate change.

Archiving UNFCCC draft guidelines call on countries to "archive information for each year" in accordance with decisions taken by the Parties. This information needs to include activity data, emission factors, and documentation on methodologies and QA/QC procedures.[17]

Respondents in Poland and Bulgaria consider archiving to be satisfactory. In Bulgaria, all available data relating to the inventory is currently available, including all of the intermediate steps taken to calculate the estimates. Both the MoEW and the Executive Environmental Agency are responsible for retaining the archived information, and the information is expected to be made available on request.

In Poland, five different organizations are responsible for archiving data (FEWE, GUS, MS, NFOS and CIE-Information Center for Energy Sector) on an annual basis. The documented information is available in the form of printed reports and on computer files, but there is no single, central computer database. In Hungary, inventory data is archived in both electronic and printed format. Better hardware and software for storing the data and the allocation of responsibility to an individual within the appropriate institute would greatly improve the quality of archiving inventory information in Romania.

Public accessibility of information Some countries may require assistance in order to make inventory information comprehensively and widely available. Romania and Slovenia in particular cited the need for assistance. In Bulgaria, it is already possible to send information about the national inventory, the national communication, and the country's climate change activities to any interested party, organization, or person on request, by email or post. However, Bulgarian respondents consider international assistance extremely important for developing a systematic information-sharing system. In the Czech Republic, the improvement of reporting and information-sharing depends upon international assistance (e.g., funding, expertise) and national finance.

Box __ summarizes national capacity to meet various standards for information sharing and the anticipated quality levels with and without assistance.

[17] See UNFCCC draft guidelines on national systems, page 31.

Box __ Likely National Systems Requirements for Reporting and Information Sharing[18]

INVENTORY REPORTING and INFORMATION SHARING	Already Doing This			Possible With Existing Capacity			High Quality Possible With Assistance		High Quality Possible By 2005	
	Quality			*Expected quality*			*Likely*	*Not likely*	*Likely*	*Not likely*
	H	**M**	**L**	**H**	**M**	**L**				
Develop a national GHG website and make inventory information available on it, including the inventory report and data in the common reporting format.		CZ		PO	BU CZ HU	RO	BU CZ RO SI HU		BU CZ RO SI	
Make available the postal and electronic addresses of the national entity responsible for the inventory, and	HU		BU	SI PO HU	BU RO		BU RO		BU SI	RO
Make available to any interested party, organization, or person, the **information described in the present table** in either printed or electronic format, upon request.		CZ		PO	BU CZ	RO	BU HU CZ RO SI		BU CZ RO SI	

None of the countries surveyed has an official greenhouse gas website. Survey responses indicate that some countries may find it difficult to develop a website owing to a lack of funding or expertise.

Despite the lack of a specific website, several countries have set up Internet links to facilitate access to emissions information. Bulgaria has a link with the UNFCCC website where all of Bulgaria's official inventory and national communications information is available. In Hungary and Romania, the existing websites of the environmental ministries have links to some relevant information.

In all of the countries, providing contact information for the national entity responsible for the inventory is a small requirement that can be met within existing capacity.

B) Expert Review

National systems must, according to UNFCCC draft guidelines, "facilitate the review of information" submitted by Parties. Building on the Climate Convention requirements for review of information, Article 8 of the Protocol calls on "expert review teams" (ERTs) to review greenhouse gas inventories and other reported material. These in-depth reviews (IDRs) are

[18] Adapted from a white paper on CEE Kyoto Protocol capacity by Fiona Mullins.

facilitated by the UNFCCC Secretariat and are available to all Parties and the public upon completion. The following section analyzes national capacity for hosting reviews and responding to requests from review teams.

Capacity for hosting reviews There are no set criteria for the type of capacity that is needed for hosting a review. In general, in-depth reviews (IDR) undertaken under the Climate Convention work well when there is a central person who is familiar with the national communications process and the UNFCCC requirements. This person needs to have the time and authority to coordinate the review and to ensure that all topics can be covered while the review team is in the country.

Each country is different, but an IDR typically involves one week of meetings between the five to six member review team (made up of experts from other countries and a staff member of the UNFCCC Secretariat) and staff of the institutions involved in preparing the inventory and national communication. The host country coordinator needs to have the mandate, along with sufficient authority, to arrange the participation of staff from other government departments and independent institutions involved in preparing the inventory and the national communications. Business and environmental non-government institutions are also usually invited to provide their views to the review team. The coordinator has to address questions from the review team both before and after the visit, forwarding the questions to the relevant expert when necessary. The coordinator should ensure that a response is made to the Secretariat within a reasonable time frame.

Bulgaria, Romania, and the Czech Republic believe that they have the capacity to host at least one in-country review during the 2008-2012 commitment period. A respondent in Bulgaria remarked that the schedule of the expert review visits must be announced well in advance. Bulgaria, the Czech Republic, Poland and Hungary[19] also consider that they have the capacity to host additional in-country visits, if recommended by the review team.

It has not been decided yet whether Slovenia will host during the commitment period or any additional country visits, should the review team recommended this. Funds would be needed to ensure that appropriate staff were available to support these reviews.

Response to requests from the in-depth review team Article 8 is also likely to require that the review team's questions are answered, with additional information provided within agreed time limits. At any stage in the review process, the Secretariat or ERT may raise questions to the Party. Bulgaria, Hungary, and Poland believe that this would not pose problems and Romania does not report any particular difficulties in this area. In Slovenia, responses to requests from the review team and expert peer review will be possible, with assistance, but the time frame for these activities has not yet been determined because of lack of staff and funds. However, additional funds, and in some cases additional training, may be needed to allow questions from the review team to be answered, or additional information provided, within agreed time limits (e.g., in Slovenia and Romania). Stronger commitments from the relevant ministries would improve capacity to respond to review questions promptly.

Article 8 may also require Parties to correct problems that are identified within agreed time limits in consultation with the expert review team. Bulgaria, Hungary, and Romania confirm their

[19] Hungary is prepared to host additional visits only if the need is "reasonably established."

ability to fulfill this requirement. Romania has not experienced many questions from the review teams to date and so there has been no reason to develop specific response procedures.

C. Infrastructure and Regulations for Participation in the Kyoto Mechanisms

Market-based regulatory approaches have large potential to improve environmental performance and reduce compliance costs.[20] The Kyoto Protocol contains several such mechanisms, including international emissions trading (IET) and joint implementation (JI).[21] EITs have strong incentives to participate in JI and CDM. Successful participation could result in the generation of revenue, as well as the introduction of new, more efficient technologies. Policymakers in the surveyed countries recognize these potential benefits. According to respondents, all of the countries surveyed are planning to participate in JI, and most are planning to participate in IET.

But Parties will likely be required to demonstrate adherence with UNFCCC provisions in order to be eligible for participation in the Kyoto mechanisms. For example, the initial privilege to participate in IET may be made contingent upon the achievement of working national systems for inventory compilation, management, and reporting, as detailed in the preceding sections. For JI, the Protocol already provides some direction on this issue. According to Article 6.4, if the compliance of a Party is found to be questionable, the Party acquiring JI credits *cannot* use them to fulfill its obligations until the question of compliance is resolved. Whatever specific eligibility requirements are decided upon for each mechanism, these issues underscore the great importance of effective national infrastructure.

As with the demonstration of compliance with commitments, participation in the Kyoto Mechanisms will depend on the existence of regulatory and institutional frameworks. The following section reviews the objectives of the frameworks likely to be required. After the review of objectives is a more detailed look at the specific elements of infrastructure (e.g., registries) and regulation, and the preparation and capacity levels of the surveyed countries for meeting these likely requirements.

[20] For background, a good selection of papers is available from the OECD on market-based mechanisms for climate change. See http://www.oecd.org/env/cc/freedocs.htm#emis. In the context of EITs, see http://www.rec.org/climate/index.html.

[21] On JI, see *Making Joint Implementation Work: Lessons From Central and Eastern Europe*, Elena Petkova And Kevin A. Baumert (Washington DC: World Resources Institute, 2000). See http://www.wri.org/cdm/pdf/ji_note.pdf.

1. Objectives of Kyoto Mechanism Frameworks

National frameworks for the Kyoto Mechanisms will serve several objectives. Governments will use them to support domestic emissions trading and joint implementation programs. The mechanism frameworks will also support international trading by the government and companies. In addition, they will provide the information to the international community required for compliance assessment under the Kyoto Protocol. National frameworks for international and domestic trading will be closely interrelated and in many cases the functions required for domestic and international trading will be exactly the same.

To support entity participation in the Kyoto Mechanisms, Parties will need the following:

- baseline-setting processes for joint implementation projects;
- regulatory frameworks for gathering emissions data from entities and projects;
- entity and project-reporting requirements;
- monitoring, verification, and enforcement processes; and
- national registries that track government and entity transactions and that provide information for entity and national compliance assessment.

Estimating emissions from projects will require expert judgment in many cases. This will be a major undertaking for government departments. For JI, it is likely that specialist agencies will be accredited to validate projects, verify baselines, and certify emission reductions. Government departments will need to define the extent to which they authorize projects, baselines, and emission reductions, and to require certain methodologies to be used (although internationally accepted methods are likely to be available).

Countries are likely to implement different domestic emissions trading systems, depending on their institutional capacity and policies. While some harmonization among these systems will be needed (e.g., registries and definition of tradable units), Parties will retain the scope to set up the national infrastructure most appropriate to their circumstances.

2. Elements for Participation in the Mechanism

The remainder of this section will examine the specific elements and capacities likely to be prerequisites for successful participation in the Kyoto mechanisms. The major infrastructural requirement—national registries—will be reviewed first, and followed by an analysis of the regulatory frameworks necessary for entity and project participation. Both sections also detail the reported national capacity to complete and operate these frameworks.

A) National Registries

Submissions to the UNFCCC on registries (summarized in Box __) make it clear that the main purpose of registries is to record and track the initial assigned amount[22] and any adjustments from transfers and acquisitions.

Box __ ***Excerpts from Parties' Submissions on National Registries***

National registries:

The main purpose of registries is to record and track the initial assigned amount and any adjustments from transfers and acquisitions (EU and umbrella).

A registry must be in the form of a compatible computer database (umbrella), a standard electronic reporting format (Canada), a computerized accounting system (EU), or computer databases (Costa Rica) to ensure accurate accounting of assigned amount and to track changes to the Party's assigned amount.

The format of the databases should be internationally compatible.

National registries must include accounts for legal entities (umbrella and EU).

Each unit must be held in only one account in one national registry (umbrella and EU).

Transactions must be "instantaneous" (umbrella) or "near real time" i.e., within one working day (EU).

Registries should be publicly accessible-including minimum data elements, e.g., account holdings, name, and address of account reps (EU, umbrella, Costa Rica, India).

Transactions should be dated and records of each transaction should be kept (umbrella, EU, Costa Rica).

An agency (government or private) must be identified that is responsible for the registry in each Party (umbrella, EU, Costa Rica).

There must be unique serial numbers for each unit of assigned amount (umbrella, EU).

Note: Names in parenthesis pertain to countries making the submission to the UNFCCC Secretariat. "Umbrella" includes countries such as United States, Canada, Australia, New Zealand, Norway, Japan, and Russia.

To ensure that the market functions smoothly, registries will need to:

- record assigned amounts held by legal entities;
- record transfers and acquisitions;
- make transfers between accounts quickly; and

[22] According to Article 3 of the Protocol, Annex I countries are "assigned" an amount of emissions that they are allowed to emit during the 2008-2012 period. Poland's initial assigned amount, for example, is its base year emissions (1988), multiplied by five (for the five year commitment period), multiplied by 0.94 (since Poland has a 6 percent reduction requirement).

- provide a publicly accessible interface that allows anyone to query and view non-confidential information.

The information needed to account for the changes to assigned amount and to assess compliance will come from national registries. This information will include the total assigned amount in the national registry at the start of the year, any transfers and acquisitions, any units retired during the year, and the total assigned amount in national registry at year-end.

National registries will have to be compatible, but not necessarily uniform. A national registry could be a simple searchable database, using a database tool, such as Microsoft Access, or it could be a more complex interactive Web-based system. The registries need to be effective, simple (non-bureaucratic), and transparent, allowing third-party inspection to be sure that trading is occurring without fraud or mistakes. There is strong support for registries to be publicly accessible. Registry data is the likely source of some of the "supplemental information" called for under Article 7 that countries will be required to report. Box __ summarizes that information, and the surveyed countries' predicted provision quality levels, based on current capacity and capacity with assistance.

Box__ Supplementary Information Requirements for National Registries[23]

Type of Supplementary Information	Possible with Existing Capacity	High Quality Possible with Assistance	High Quality Unlikely to be Possible by 2005
Supplementary registry information: Total assigned amount held in its national registry at the start of the year [i.e., serial numbers of assigned amount units (AAUs), emission reduction units (ERUs), and certified emission reductions (CERs)]; Serial numbers of AAUs, ERUs, and CERs transferred to or acquired from another Party's national registry and identification of the acquiring Party(ies); Assigned Amount held in national registry at the end of the year; and Serial numbers of any AAUs, ERUs, and CERs that have been moved into the Party's retirement account.	**L** (BU) (CZ) (RO) **M** (PO)	**H** (BU) (RO) (SI) (PO) (HU) **M** (CZ)	**H** (BU) (CZ) (RO) (PO)

[23] Adapted from a white paper on CEE Kyoto Protocol capacity by Fiona Mullins.

Some countries are already considering the most appropriate institutions for maintaining the registry. For example, in Bulgaria a unit at the MoEW is considered to be the most appropriate agency to do so. It is also possible that the existing Executive Environmental Agency, under the MoEW, could be authorized to maintain a registry. The Czech Republic envisages that its Hydro-Meteorological Institute will fulfill this task. In Poland, either NFOS or MS is likely to be selected. According to a governmental resolution in Hungary, the agency that will have responsibility for maintaining the national registry will be decided by 30 June 2001. The most appropriate agency is likely to be the Hungarian Energy Efficiency Agency (HEEA). There is currently no single institute within Romania that has the capacity to fulfill this role.

Slovenia has not yet decided which agency would be most appropriate to maintain a national registry and track changes in assigned amount. Possibilities include establishing an office for the Kyoto Mechanisms or the upgrading of existing systems for collection of CO_2 tax into a national registry system (the current system for collection of CO_2 tax maintains data on all fossil fuel use in order to track the legal entities that are eligible for CO_2 tax exemption). A database could be made available through EIONET (a project of the European Environmental Agency). Slovenian respondents believe that their country will require assistance to provide the supplementary information needed from a registry.

Although Hungary is intending to incorporate registry development into its 2002 budget, for many countries financial constraints are a significant problem. Another difficulty in Romania, Bulgaria, the Czech Republic, and Hungary is a shortage of qualified personnel or lack of experience with registry development. In addition to these problems, Romania's weak legal and institutional framework may hinder establishment of a national registry. Slovenia is also likely to experience institutional difficulties.

B) Capacity for Entity and Project Participation

Successful participation in the Kyoto mechanisms will require specific capacities, including for authorizing which domestic "legal entities" can participate and under what conditions, setting project baselines and entity emissions targets, and monitoring and enforcing emission limits.

Authorizing legal entities The Kyoto Protocol envisions the participation of the private sector in JI and IET. However, because governments, not companies, are responsible for treaty adherence, private entities participation must be authorized and regulated by governments.

Many of the respondents had views on the likely outcome of decisions regarding authorizing entities in their country to participate in emissions trading. However, no official decisions on this issue have as yet been made in any of the countries surveyed. Bulgaria and the Czech Republic both consider it likely that they will authorize legal entity participation. Bulgaria envisages the MoEW being responsible for authorizing legal entities. The Inter-Ministerial Committee for Climate Change of Bulgaria will probably decide on the procedures for authorizing legal entities.

In Hungary, some enterprises could potentially be involved in big emission reduction projects. A governmental institution will provide the "rules of the game" (probably the HEEA) and authorize legal (and operational) entities. New laws will be needed to regulate firms.

The process in Romania is at such an early stage that decisions on legal entity participation are not yet envisaged. The Ministry of Waters, Forest, and Environmental Protection, the National

Commission on Climate Change, or the Unit for Implementation of the Kyoto Protocol Mechanisms could take responsibility for authorizing legal entities. A change in the legal framework is needed in Romania to facilitate institutional, regulatory arrangements for participation by entities in the Kyoto Mechanisms.

Slovenia has not yet decided whether to authorize legal entities to participate in the Kyoto Mechanisms, whether the government or a designated agency will set baselines or set obligations on entities to limit their greenhouse gas emissions, or how the legal entities will be included in a process. However, relevant state officials and policymakers are aware of the importance of establishing a system that will assure compliance with Kyoto Protocol obligations.

Setting baselines and entity emission targets To enable private sector participation in JI and IET, national governments will have to set emission targets for entities, allocate emission permits, (and issue or auction a limited amount of permits) and approve baselines for JI projects.

Domestic or international emissions trading are derived from government imposed environmental obligations—responsibilities to limit emissions to a specific level within a specific time period. Governments issue tradable licenses, or permits, that authorize the holder to emit a certain amount of greenhouse gases (e.g., one ton of CO_2 equivalent) during that time period.[24] Entities that reduce their emissions below this level can sell excess emission permits. Those that find it too expensive to reduce their emissions can buy emission permits from other firms in order to comply with their emission constraint. JI projects, on the other hand, must establish a baseline, or reference case, against which emission reductions can be assessed. Credits are likely to be issued in proportion to a project's emission reductions.

Any leniency in setting entity emissions targets or project baselines will create domestic distortions because other sectors of the economy will have to do more for the country to meet its national target. Overly tough emission constraints or project baselines will increase the cost of compliance for the entities or projects on which they are imposed. It is, therefore, important for governments to set realistic and fair emission targets and project baselines.

Frameworks for setting entity emission constraints and project baselines are essential for those countries that wish to allow entity and project participation in emission trading and joint implementation (whether domestic, international, or both). The "national system" for setting entity emissions constraints is often a negotiation between the government (e.g., industry, environment and finance ministries) and industry associations, or large individual companies.

The cost burden of negotiating emission constraints is high at the beginning, but once the emission constraints have been agreed upon they should not need to be renegotiated very often. Ideally, entity emission constraints should remain the same for a decade or two to allow industry to plan its investment and maintenance cost-effectively. The cost burden for setting project baselines is likely to be lower than for setting entity emission constraints initially, but will remain fairly constant. Although the process will become smoother over time as experience with setting project baselines is gained, this increased ease could be offset by increased applications for project baselines, if the program is successful.

[24] For the 2008-2012 period, those permits are likely to derive from a country's assigned amount, as stipulated in Article 3 and Annex B of the Protocol.

CEE countries face many difficulties regarding setting emission constraints. Romania lacks experience in emission registration and has no local companies or experts currently able to make calculations related to JI projects. Respondents in Hungary identified an extensive list of challenges, including the following: lack of human capacity; difficulties with collecting data; disagreement over institutional responsibility; lack of awareness of the importance of public-government partnerships; and difficulty in finding the appropriate balance between encouraging companies to set up JI projects and restricting JI activity to ensure that only real emission reductions are sold.

Bulgaria states that new legislation will be needed before it can set baselines and emission targets. There are some NGOs and a limited number of companies that have the capacity to develop baselines for certain energy and energy efficiency projects in Bulgaria. Slovenia, like others, has not yet made any decisions about who will be responsible for setting baselines or obligations.

In Hungary, the state currently has a supervisory role and cannot set obligations on entities. Thus, at least in the near term, the focus will probably be on JI projects. There are currently insufficient financial and human resources to facilitate project participation. For JI projects in Hungary, one respondent envisioned having the host and donor prepare a feasibility study (including baselines). These entities would submit their study to an operational entity (akin to bodies envisioned for the CDM), which will control the project. The Hungarian Energy Efficiency Agency might carry out both emissions monitoring and entity authorization.

Countries are also likely to be required to report JI project information internationally. Box __ summarizes existing capacity of the countries surveyed to provide this information.

Box __ ***Supplementary Information Requirements for Article 6 Projects***[25]

Type of Supplementary Information	Possible with Existing Capacity	High Quality Possible with Assistance	High Quality Unlikely to be Possible by 2005
Information related to Article 6 projects, including baseline and emission reduction calculation methods for each project.	**M** (BU) (PO) **L** (CZ) (RO)	**H** (BU) (RO) (HU) **M** (CZ)	**H** (BU) (RO) (PO) **M** (CZ)

Slovenia will require assistance to provide other supplementary information related to Kyoto mechanisms (e.g., baseline, calculation methods for projects).

Regulating entity emission limits The regulatory framework for domestic emissions trading will need to include monitoring, reporting, and compliance assessments.

[25] Adapted from a white paper on CEE Kyoto Protocol capacity by Fiona Mullins.

In emissions trading systems, monitoring and reporting of emission sources is needed to ensure that every increase in emissions above an emission constraint in one company is matched by a corresponding decrease in emissions elsewhere. The entities authorized to meet their commitments through emissions trading tend to be those entities that are most easily monitored. For large stationary sources of emissions, the national systems for monitoring emissions are no more complex than systems that exist for monitoring compliance with obligations for other pollutants, such as SO_2 and NO_x. However, new regulations are required stipulating the data that must be collected and reported by the entity, the measurement equipment that should be used (if measurements are feasible), and verification processes. Finally, emissions trading systems must have an ending date, where accounts are reconciled and regulators can determine whether the participating entities are complying with their emission targets. At this time, all participating entities must hold permits that are equal to, or in excess of, their actual greenhouse gas emissions. Well designed systems will impose financial or other penalties to non-complying entities to ensure environmental integrity and a reliable trading market.

JI will also require monitoring and reporting. To streamline the system, accredited third-party verifiers could be used for checking the emissions data from projects, since each project may have special circumstances to take into account that require expert judgment.

In Bulgaria, the government can exercise control over both public and private companies within the energy and industrial sector (including the chemical industry, metallurgy, and construction materials). The existing laws in Bulgaria related to environmental and air protection provide a good basis for enforcing obligations on legal entities with stationary emitting sources. Capacity building will be needed to amend the existing Bulgarian laws and coordinate among the ministries and agencies responsible for specific sectors.

In Romania, the regional environment and water inspectorates can monitor and control entity emission limits. The government of Romania also reports that it has the technical capacity to enforce obligations. The Ministry of Water, Forests and Environmental Protection, or other governmental agencies could carry out monitoring and enforcement. However, the inadequacy of the present legislation is an impediment to entity and project participation in the Kyoto Protocol. The first step should, therefore, be having the present legislation match EU policy.

In Hungary, the network of inspectorates for environment and nature conservation will need to be strengthened (financially and technically) for it to continuously monitor and assess the self-reporting by entities. Changes in regulation will be needed: for example, the inspectorates do not control CO_2 emissions because the emissions are not classified as harmful.

II. Common Regional Capacity Needs

Many of the capacity needs described in Section I are common to the countries surveyed, as well as other economies in transition. This section offers a regional summary of the current ability and common capacity needs in the surveyed countries for implementing national systems for inventories (preparation, reporting, and review) and for the Kyoto Mechanisms.

A) National Systems: Inventory Preparation, Management, and Reporting

All of the countries surveyed have improved their inventories since submitting their first national communications and continue to improve them over time. Preparing inventories and national communications and in-depth review visits over the second half of the 1990s has fostered this progress. The surveyed countries have inventory experts with a great deal of experience in preparing and updating their national inventory to meet UNFCCC reporting obligations. Most countries have continuity in key staff involved. It is clear that progress has already been made on preparing inventories according to the common reporting format.

All of the surveyed countries face difficulties, to varying degrees, in the areas of data collection, estimating inventory uncertainty, using QA/QC systems, and establishing confidentiality provisions for entity-level and monopoly data. Several of these inventory-related difficulties stem from inadequate **legal frameworks**. Regulators must be vested with the necessary authority to collect inventory data. Legal provisions must be established that define what data is publicly accessible and what is to be kept confidential by regulators. Such frameworks are inadequate in all EIT countries—a problem that will take sustained effort over time to address.

Institutional frameworks must also be improved. According to the respondents, all of the countries have a single government ministry that has overall responsibility for the national inventory. However, inventory-related institutions in several countries have unclear mandates and responsibilities, leading in some cases to duplication of efforts and time delays. Typically, the inventory depends on data from different organizations, and a range of independent institutions prepare the inventory estimates, making consistency and timeliness of the data a problem. Clear distribution of tasks and responsibilities and improved organization of labor, could significantly improve capacity for national systems. If governments placed a higher priority on increasing internal staff capacity, redistributing tasks and responsibilities within ministries and national institutions, and aligning mandates with the treaty commitments (e.g., to ensure coverage of all relevant sectors and gases), some of the problems could be solved internally. However, the surveyed CEE and other EIT governments clearly have far fewer resources than other Annex I Parties and have to address many problems raised by the transition process. Funding and expert assistance could assist the overall development of institutions and national systems for inventory preparation, quality control, and reporting.

Human resource constraints were also reported in all surveyed countries. Staff shortages and lack of training contribute to difficulties with inventory preparation. These difficulties include both lack of administrative capacity and an overall lack of staff with the appropriate skills (for example, in the energy, agriculture, and LUCF sectors in the Czech Republic). As a result of these constraints, all surveyed countries need funding for attendance at IPCC expert meetings. This will increase inventory expertise on such questions as methods for estimating uncertainty.

Clearly, several of the above difficulties are linked to funding issues. **Inconsistencies of funding**, as well as **insufficient funding levels**, are the biggest problems reported in the survey responses. Without adequate and consistent funding from year-to-year, it is extremely difficult to provide the staff training and equipment needed for efficient production of emission inventories. With the exception of the Czech Republic, funding levels are reported to suffer wide fluctuations from year-to-year for all of the countries. Lack of equipment and software is another frequently cited difficulty that is associated with financial constraints. In some cases, this results in the

omission of important data. More reliable funding could also improve the timely provision of national statistics (thereby reducing inventory delays), speed the development of national GHG websites, and support regional information and experience sharing among CEE countries.

B) Expert Review

All of the countries surveyed have already hosted at least one, and in some cases two, IDR country visits. The IDR process under the UNFCCC provides a solid foundation of experience on which to build the review process under the Kyoto Protocol. Most of the countries would be able to host at least one IDR visit during the commitment period, but concern was expressed regarding resource constraints should too many visits be required. Generally, addressing the capacity deficits related to inventories and information management will also better equip countries to host in-country reviews.

C) Infrastructure and Regulations for Participation in the Kyoto Mechanisms

National infrastructure and regulation requirements for the Kyoto Mechanisms will be as crucial as accurate inventories for compliance assessment, since transactions under the mechanisms will alter Annex I Parties' assigned amounts.

Compared to the requirements for national inventories, there is less understanding of Kyoto Mechanism requirements among the surveyed countries. There were many comments in the survey responses that indicated lack of capacity when the skills seem likely to exist, for example, for establishing registries (perhaps using another country's registry as a model).

All of the countries appear to be taking steps towards using the JI model for participation in the Kyoto Mechanisms. Some Memoranda of Understanding with future buyers of emission reductions (such as the Dutch government) are already in place and establishment of JI offices is well underway.

There appears to be far less comfort in the countries surveyed with the institutions, legislation, and processes involved in authorizing entities to participate in International Emissions Trading (IET). In contrast with progress on JI, it appears that these countries have not yet decided how or even whether they will proceed with entity authorization for IET, although it is already clear to them which sectors are likely candidates for participation in emissions trading (i.e., energy and industry). However, this has to be considered in the context of the negotiations on the Mechanisms. Most Annex I Parties will not seriously consider processes for entity participation until the Kyoto Mechanisms rules have been clarified.

As with inventory-related requirements, financial constraints, shortage of qualified personnel, and inadequate legal and institutional frameworks could hamper the establishment of a national registry and other likely JI and IET eligibility requirements. With respect to the authorization of "legal entities," no formal decisions have been made yet in any of the countries. Most of the countries surveyed do not feel that they have adequate capacity for setting baselines and obligations on entities to limit their greenhouse gas emissions.

III. Country Specific Capacity Needs

Following is a presentation of priority capacity needs on a country-by-country basis. By analyzing how well each country is able to meet the national system and Kyoto mechanism requirements discussed in Section I, this section offers the authors' recommendations for investment in specific areas. The authors identify where national political will is required to address issues, and where donor support is needed.

Bulgaria Survey responses for Bulgaria indicate experience in emissions data collection and inventory preparation and reporting. But Bulgaria faces significant institutional, human resource, knowledge, and financial capacity restraints. Table _ below provides a summary analysis of these capacity barriers, based on the most significant challenges to compliance and participation, as identified by the survey respondents.

Building a Kyoto Protocol Infrastructure Capacity Needs: **Bulgaria**		
Institutional Capacity	Human Resource Development	Knowledge, Information, and Methodologies
Compiling the National Inventory		
No national institution for collection of information on the less common GHGs, PFCs, HFCs, SF6. Limited regulatory mandate leads to lack of business disclosure—data confidential by law. Lack of overall administrative capacity. Difficulties in gathering data. Labs and equipment needed.	Shortage of staff, more regular training needed. Need for participation in IPCC meetings, training.	Methodologies, data vary within and among institutions. No available data in disaggregation level. Long delay in data availability. Resources needed for experiments, field tests, establishment of emission factors for new gasses. Reliance on IPCC default factors.
Quality Assurance and Quality Control		
International assistance needed to strengthen review response.	Permanent expert personnel needed. International experience sharing needed. Reviewers need training in IPCC methodologies.	Methodology needed for quality activity data, uncertainty evaluation. Quality control measures have not been applied. Review process in place, but of low quality.
Information Management		

No current experience in confidentiality regulation, assistance needed to define provisions. No current GHG website, due to limited resources.	No current experience in expert peer review, assistance needed.	
Systems to Support Participation in Kyoto Mechanisms		
Currently no national registry center or institutional experience. Existing legislation without capacity to set baselines at project level.	Staff lack capacity, experience in registry cost estimation.	

Although Bulgaria has had success in data collection, further improvements in inventory preparation are hindered by weaknesses at the institutional level. Limited administrative capacity is a significant constraint. Like the other surveyed countries, Bulgaria lacks necessary equipment for data collection. In addition, there is no mandate for the collection of information on less common gases (PFCs, HFCs, SF6). A weak regulatory mandate currently leads to lack of business disclosure, as data are confidential by law. The country needs legal and institutional arrangements to ensure the timely distribution of information.

Staff capacity for obtaining source-specific emissions is developed for the energy sector and for industry, but further capacity building is needed for the other sources (i.e., agriculture, LUCF and waste sectors). The Ministry of Environment and Water—which would benefit from developing internal staff capacity and expertise in the processes of managing inventory preparation, reporting, and assuring verification and quality control—has difficulties in raising the necessary funding. Continued and increased support is needed to broaden and increase institutional capacity and strengthen institutional planning for new requirements, guidelines, and methodologies.

Bulgaria, as with most of the surveyed countries, reports delays in data availability and difficulty in obtaining disaggregated information. In addition, resources are needed to conduct the experiments and field tests necessary to establish emission factors for new gases. Both the data and methodologies used vary within and among institutions, decreasing inventory accuracy. This indicates a need for strengthened staff capacity (knowledge) as well as political action to ensure timely publication of national statistical data.

The survey responses also indicate that institutional capacity building is required to support Bulgarian participation in the Kyoto mechanisms. Existing legislation does not allow for the setting of baselines at project level. Respondents indicated that foreign assistance would be instrumental in supporting institutional and legislative changes, establishing institutional systems for project preparation, and creating a national registry.

Additional resources are also needed to take advantage of IPCC training opportunities. A problem exists with the continuity of the inventory-related activities, as there is a need for a permanent inventory staff that could operate on a stable basis in the field of inventory development and improvement. Such a team could be also responsible for emission reduction certification, if needed, at a future stage of implementation of the Kyoto Protocol.

The respondents strongly urged international support to assist Bulgaria in creating the necessary methodological frameworks for QA/QC, and for establishing a national registry.

Recommendations The Bulgarian government, and members of the international climate community, can take specific steps to increase Bulgaria's capacity for compliance with the UNFCCC and Kyoto Protocol and for participation in the Kyoto mechanisms.

Specific steps that the Bulgarian government can take to increase capacity for compliance and participation include the following:

- passing legislation that requires business disclosure of emissions data (with appropriate confidentiality provisions);
- increasing staffing levels and assigning government institutions more active roles in inventory compilation and reporting, and quality control;
- ensuring timely publication of national emissions statistics, made available at disaggregated level;
- Incorporation of less common gases into data collection systems.

Bulgaria would benefit from international provision of:

- Expert assistance in creating appropriate legislative and regulatory frameworks, especially confidentiality provisions;
- Expert assistance in the establishment and use of methodological best practices (e.g., emissions factors, uncertainty evaluation, peer review, and quality control procedures);
- Guidance in the creation of a national registry;
- Financial assistance for the purchase of data collection equipment; and
- Financial assistance for staff to take advantage of IPCC training opportunities.

The Czech Republic Survey responses for the Czech Republic indicate capacity to estimate and report greenhouse gas emission inventories, to report national communications, and to facilitate review processes. The Czech Republic faces institutional, human resource, and financial capacity restraints. Table _ below provides a summary analysis of these restraints, based on the most significant challenges to compliance and participation as identified by the survey respondents.

Building a Kyoto Protocol Infrastructure Capacity Needs: **Czech Republic**		
Institutional Capacity	Human Resource Development	Knowledge, Information, and Methodologies
Compiling the National Inventory		
Institutional responsibilities not systematically defined. Limited regulatory mandate to obtain industrial data. More resources needed for research and implementation of key source emission factors.	Shortage of technical and human resources for collection of activity data. Need for participation in IPCC meetings. Capacity and training needed in UNFCCC common reporting format.	Extent and quality of data not systematically defined. Delay in data availability, which diminishes capacity.
Information Management		
Improvement in reporting and information sharing dependent upon assistance in building expertise.		
Systems to Support Participation in Kyoto Mechanisms		
No estimation of costs to build registry.	Shortage of technical, financial, and human resources for building registry.	

The Czech Hydrometeorological Institute (CHMI) is responsible for overall data collection and analysis, inventory preparation, and communication. Survey responses from the CHMI and the Ministry of Environment indicate that strengthening and defining a framework of institutional responsibilities will allow improvements in emission factor calculations and information reporting and sharing. This may also help solve the common problem of a significant delay in data availability.

As with most of the surveyed countries, the Czech Republic reported a lack of skilled staff for collecting activity data. In addition, resources are needed to provide training in UNFCCC common reporting format and to allow staff to participate in IPCC meetings.

Recommendations The Czech government, and members of the international climate community, can take specific steps to increase the Czech Republic's capacity for compliance with the UNFCCC and Kyoto Protocol and for participation in the Kyoto mechanisms.

Actions at the government level might include the following:

- passing legislation that requires business disclosure of emissions data (with appropriate confidentiality provisions);
- systematically defining institutional responsibilities for national inventory compilation and quality control;
- increasing staff numbers and financial resource levels for the collection of activity and sector emissions data; and
- ensuring timely publication of national emissions statistics.

The Czech Republic would benefit from international provision of:

- Expert assistance in creating appropriate legislative and regulatory frameworks, especially confidentiality provisions;
- Expert assistance in the establishment and use of best practices for reporting, information sharing, and use of UNFCCC common reporting format;
- Guidance and financial assistance for the creation of a national registry; and
- Financial assistance for staff to take advantage of IPCC training opportunities.

Hungary Survey responses indicate that institutional changes have allowed increasing transparency in aspects of inventory preparation and that significant capacity exists for the estimation and reporting of greenhouse gas emissions, reporting and national communications, and facilitation of review processes. However, there are many significant institutional, human resource, knowledge, and financial capacity restraints facing Hungary. A summary analysis of these capacity barriers, based on survey responses is presented in Table _ below.

Building a Kyoto Protocol Infrastructure Capacity Needs: **Hungary**		
Institutional Capacity	Human Resource Development	Knowledge, Information, and Methodologies
Compiling the National Inventory		
Limited regulatory mandate to collect data leads to reliance upon voluntary company "confession." Recommends delaying, resetting final submission date. Inspectorates not authorized to collect CO_2 data.	Limited staff capacity in collection of data and calculating factors.	Two-year lag in data availability. Tendency to resort to use of IPCC default numbers. Only energy-related factors currently calculated. Current methane emissions estimates "very uncertain."

Quality Assurance and Quality Control		
No current system for verification of data. Comprehensive updating, compilation and checks not currently feasible. No authorized organization in charge of approving inventory.	Lack of current staff capacity.	Quality of source data is limited.
Information Management		
Currently no GHG inventory website. No confidentiality provisions currently in use.	Staff needs assistance to develop confidentiality provisions; separate GHG site.	
Systems to Support Participation in Kyoto Mechanisms		
Lacking clear strategy for registry; institutional disagreements. No estimation of costs to build registry. Agencies need to be established to register international accounts and monitor emissions. State has supervisory role, but currently cannot set obligations—clear regulations needed for project participation.	Lack of current staff capacity for establishing/ maintaining registry.	Lack of awareness of importance of public-government partnerships. Anticipated difficulty in collecting creditable data.

The Hungarian Ministry of Environment faces the difficulty of a limited mandate to obtain data, compounded by the lack of clarity regarding the confidentiality of emissions data and by a reliance on voluntary reporting by companies. Likewise, environmental inspectorates are not authorized to collect CO_2 data, as it is not regarded as a harmful substance. There is currently a long delay in providing national statistical data, and uncertainty in data quality. Respondents cited staff capacity as a limiting factor for data collection and verification, emissions factor

calculation, the development of confidentiality provisions, and the establishment of a national registry.

Limited financial resources at the institutional level (Ministry of Environment) impede necessary capacity building and strengthening of legal and institutional frameworks. Yet not all difficulties can be attributed solely to a lack of financial resources. Third-party review, a cost-effective means of quality assurance, is not currently used. The need for institutional capacity is also reported as a significant barrier to participation in the Kyoto Mechanisms. Hungary's current institutional frameworks do not include a clear strategy for registry establishment and for the setting of obligations and regulations for project participation.

Recommendations The Hungarian government, and members of the international climate community, can take specific steps to increase Hungary's capacity for compliance with the UNFCCC and Kyoto Protocol and for participation in the Kyoto mechanisms.

Specific steps that the Hungarian government can take to increase capacity for compliance and participation include the following:

- passing legislation that requires business disclosure of emissions data (with appropriate confidentiality provisions);
- passing legislation mandating the collection of CO_2 data;
- establishing quality assurance and control procedures and authorize an appropriate institution to be in charge of approving the national inventory;
- forming a cohesive strategy for participation in the Kyoto mechanisms, including establishing new institutions (or adjusting the mandates of existing institutions) to be responsible for the creation of a national registry, registration of international accounts, and monitoring of emissions;
- creating a legislative framework that addresses the requirements of Kyoto mechanism participation (particularly regarding the regulations needed for project preparation, the setting of obligations, and project-level baselines);
- increasing staffing levels and prioritizing the improved collection of emissions data (particularly methane) and calculation of emissions factors;
- institutionalizing the use of third-party inventory reviews as a means of quality assurance; and
- ensuring timely publication of national emissions statistics.

Hungary would benefit from international provision of:

- Expert assistance in creating appropriate legislative and regulatory frameworks, especially including confidentiality provisions and regulations for Kyoto mechanism project participation;
- Expert assistance in the establishment and use of methodological best practices (e.g., methane emissions data collection, calculation of emissions factors, data verification, quality assurance and control procedures, and inventory approval processes);
- Guidance in the creation of a national registry; and

- Financial assistance for staff to take advantage of IPCC training opportunities.

Poland Survey responses for Poland indicate long experience in emissions data collection and inventory preparation and reporting. Polish experts actively cooperate with international organizations and are able to provide technical assistance to other countries. Nonetheless, Poland does face institutional, human resource, knowledge, and financial capacity restraints. Table _ below provides a summary analysis of these capacity barriers, based on the most significant challenges to compliance and participation identified by the survey respondents.

Building a Kyoto Protocol Infrastructure Capacity Needs: **Poland**		
Institutional Capacity	Human Resource Development	Knowledge, Information, and Methodologies
Compiling the National Inventory		
Despite consistent improvement in data collection, continued problems with data collection, measurement, management, hardware. Difficulties caused by printing cycle of statistical publications.		Delay in data availability. Data for some sources (landfills, sewage) not entirely dependable. Hardware acquisition needed.
Quality Assurance and Quality Control		
	Funding needed for IPCC workshop attendance.	Technical assistance needed for improved quality of uncertainty estimates. Official statistics quality needs to be improved in specific sectors (energy, waste, industrial processes). Financial assistance would be valuable in field of statistical data collection.
Information Management		
Data is archived, but not in a single database. Procedures of access to confidential data need elaboration, revision. Currently no GHG inventory website (capacity does exist for		

creation).		
Systems to Support Participation in Kyoto Mechanisms		
No institutional estimation made of costs to build registry.		

Respondents indicate that while there have been consistent improvements in data collection, typical problems with measurement, management, and hardware indicate an area in which Poland would benefit from building further capacity. The surveys indicate a need for both financial and technical assistance for statistical data collection. The printing cycle of statistical publications complicates data management, as does the lack of a single, central database for archiving purposes. In addition, the revision (and elaboration) of regulations regarding access to confidential data is necessary to improve the institutional framework for information management.

A lack of funding, especially for emissions research and factor calculation, constrains methodological capacity in Poland. Although the core team responsible for preparing national inventories is knowledgeable about UNFCCC requirements and IPCC guidelines, Poland would benefit from additional financial resources to train staff at IPCC workshops.

Recommendations To increase Poland's capacity for compliance with the UNFCCC and Kyoto Protocol and for participation in the Kyoto mechanisms, there are specific steps that Polish government, and members of the international climate community, can take.

Actions needed at the government level include the following:

- continuing to invest in hardware and staff capacity for data collection, measurement and management, with an aim to improve quality of emissions data for landfills, sewage, and industrial processes;
- ensuring timely publication of national emissions statistics;
- revising legislation and regulations regarding access to confidential monopoly and entity-level emissions information;
- issuing a mandate for single database archive of emissions data to be created in appropriate institution;
- constructing national GHG inventory website; and
- creating a strategy and budget for the construction of a national registry.

Poland would benefit from international provision of:

- Expert assistance for the revision of regulations regarding confidentiality of emissions data;
- Expert and financial assistance for better use of methodological best practices for statistical data and emissions factor calculation and uncertainty evaluation;
- Guidance in the creation of a national registry; and
- Financial assistance for staff to take advantage of IPCC training opportunities.

Romania Romanian survey responses report that a core team possesses significant knowledge regarding the requirements and challenges of implementing the Kyoto Protocol. However, Romania faces major institutional, human resource, knowledge, and financial capacity restraints. Table _ below provides a summary analysis of these restraints.

Building a Kyoto Protocol Infrastructure Capacity Needs: **Romania**		
Institutional Capacity	Human Resource Development	Knowledge, Information, and Methodologies
Compiling the National Inventory		
Lack of administrative capacity, transparency, regulatory framework (e.g., no regulation regarding data confidentiality), adequate equipment. Annual updating not taking place (because of revisions in IPCC guidelines). Critical institutional funding problems.	Shortage of trained staff, adequate equipment for data collection. Frequent personnel turnover and discontinuity of preparation hinder emission factor calculation.	Inventory not compiled in accordance with common format. Mismatch between data collected and data needed for IPCC methodology. Reliance on IPCC default factors, activity data, because much domestic data missing. Lag in data availability. Lack in real measurement for the energy sector.
Quality Assurance and Quality Control		
Lack of processes for quality control—major administrative changes needed. Currently no assessment of inventory uncertainty.	Lack of trained personnel, hardware, software to apply quality control measures.	
Information Management		
New legislative framework is necessary, currently all information confidential. Allocation of archiving responsibility needed within appropriate institution. Currently no GHG inventory website. Need for increased capacity for	Additional staff capacity, hardware and software required to carry out quality archiving. Need for increased staff capacity for electronic and print information provision.	

electronic and print information provision.		
Systems to Support Participation in Kyoto Mechanisms		
Inadequate legal and institutional framework for establishing registry. No current agency able to maintain registry, no estimation of costs to build registry have been made.	Lack of staff experience in emission registration, registry development.	

The Romanian institutions charged with compiling the national inventory, managing information, and creating systems for participation in the Kyoto mechanisms are severely hampered by a number of difficulties. The lack of administrative capacity, transparency, and adequate regulatory framework (currently all information is confidential) impede most aspects of compliance and participation. This is compounded by insufficient funding levels that fluctuate yearly. As a result of these difficulties, annual updating is problematic, and assessment of inventory uncertainty is not undertaken. Surveys indicate that revising the current legal framework to approximate international policy—an area requiring high political prioritization—is crucial for the facilitation of Romania's future participation in the Kyoto mechanisms.

Romanian institutions have an inadequate supply of data collection equipment, a shortage of trained staff, and frequent personnel turnover. The staff responsible for inventory preparation are also charged with fulfilling other obligations; hence, the inventory is a "supplemental duty." These human resource capacity deficits have led to correlating gaps in knowledge, available information, and methodological practice. Currently, the Romanian inventory is not compiled in accordance with IPCC specifications. Financing constraints also impede training and acquisition of vital skills.

Recommendations The Romanian government, and members of the international climate community, need to take specific steps to increase Romania's capacity for compliance with the UNFCCC and Kyoto Protocol and for participation in the Kyoto mechanisms.

Specific steps that the Romanian government can take to increase capacity for compliance and participation include the following:

- passing legislation that mandates and regulates business disclosure of emissions data (confidentiality provisions);
- creating a institutional and legal framework and processes for inventory quality assurance and control;
- creating a legislative framework that addresses the requirements of Kyoto mechanism participation;
- increasing staffing levels to increase administrative capacity;

- increasing resources (including salaries, training, data collection equipment, equipment for provision of information in electronic, and print format) available to staff tasked with all aspects of national inventory compilation, management, and reporting;
- ensuring timely publication of national emissions statistics; and
- allocating responsibility for archiving data to an appropriate institution.

Romania would greatly benefit from international provision of:

- Expert assistance in creating appropriate legislative and regulatory frameworks, especially including confidentiality provisions;
- Expert assistance in the establishment and use of methodological best practices (e.g., data collection, calculation of emissions factors, inventory uncertainty evaluation, peer review, and quality control procedures);
- Guidance in the necessary legal and institutional frameworks required for the creation of a national registry;
- Financial assistance for the purchase of equipment, software, and associated training for factor calculation, quality control measures, archiving, and inventory information provision (electronic and print);
- Financial assistance for staff to take advantage of IPCC training opportunities.

Slovenia In Slovenia only a few government employees currently work on activities related to the UNFCCC and Kyoto Protocol. Survey responses indicate that work currently being carried out for UNFCCC compliance is in preliminary stages. Systems for national inventory compilation and communication are not yet firmly established. As continuity of work is not yet in place, analysis of institutional, human resource, and knowledge capacity needs must be considered preliminary. Table _ below provides a summary analysis of these capacity barriers, based on the most significant challenges to compliance and participation as identified by the survey respondents.

Building a Kyoto Protocol Infrastructure Capacity Needs: **Slovenia**		
Institutional Capacity	Human Resource Development	Knowledge, Information, and Methodologies
Compiling the National Inventory		
Experience limited, continuity of work not yet established; Institutions have not set long-term obligations or financial schemes for preparation. System of monitoring and reporting not in place yet; no clear allocation of responsibility.	Lack of extensive experience, training needed.	Difficulties in data collection. Delay in data availability. Capacity needed to calculate local emission factors. National inventories not compiled in common format.
Quality Assurance and Quality Control		
Expert reviews not currently	Additional staff and	Staff need to learn how to use

carried out because of lack of funding. Not decided whether Slovenia will host in-depth reviews during commitment period.	training needed. IPCC workshop attendance needed to help assure quality.	methodology.
Information Management		
Current data archiving quality needs improvement. Currently no GHG inventory website. Need for increased capacity for electronic and print information provision.		
Systems to Support Participation in Kyoto Mechanisms		
Proper agency to establish registry not yet determined. No estimation of costs to build registry. Process for authorizing legal entities has not been determined. Process for setting baselines or obligations has not been determined.		Proper data model needs to be defined.

Slovenian institutions have yet to set long-term obligations and financial structures for national inventory preparation. There is no clear allocation of responsibility for (the creation of systems for) monitoring and reporting. A lack of funding has hampered the creation and implementation of a system for expert reviews. And while Slovenia intends to participate in the Kyoto mechanisms, the current legal and institutional framework is considered inadequate. Respondents reported that international expertise and funding assistance are important for future strengthening of institutional capacity.

Survey respondents indicated that although there are relatively few staff members working on climate issues, the number of staff members does not necessarily need to be dramatically increased. Rather, the major capacity restraint is one of lack of training and expertise. Slovenia would benefit from financial resources to train staff at IPCC workshops. Survey respondents characterized human resource capacity as "potential," but in need of funding and training to learn methodology, annually update inventories, implement quality assurance measures, and conduct and host expert reviews.

Slovenia faces difficulties in data collection, as well as the common regional problem of significant delays in publication of statistical data. A lack of funding for emissions research

(particularly factor calculation) constrains methodological capacity; both financial and technical assistance would be valuable.

Recommendations The Slovenian government, and members of the international climate community, can take specific steps to increase Slovenia's capacity for compliance with the UNFCCC and Kyoto Protocol and for participation in the Kyoto mechanisms.

Potential actions at the government level include the following:

- Making a long-term political commitment to fulfilling the Kyoto Protocol obligations;
- Allocating responsibility for monitoring and reporting GHG emissions;
- Creating a legislative framework that addresses the requirements of Kyoto mechanism participation;
- Increasing funding levels to allow for staff training, emissions and factor calculation research, the creation and implementation of systems for expert review, and the improvement of archiving quality;
- Ensuring timely publication of national emissions statistics, made available at disaggregated level; and
- Creating a national GHG website.

Slovenia would benefit from international provision of:

- Expert and financial assistance in the establishment and use of methodological best practices (e.g., calculation of emissions factors, uncertainty evaluation, expert review, and quality control procedures);
- Expert assistance in creating appropriate legislative and regulatory frameworks, especially including regulations for Kyoto mechanism project participation;
- Guidance in the creation of a national registry; and
- Financial assistance for staff to take advantage of IPCC training opportunities.

Conclusion

This report has attempted to detail the progress of six Central and Eastern European countries—Bulgaria, the Czech Republic, Hungary, Poland, Romania, and Slovenia—in building the infrastructure needed to implement the Kyoto Protocol of the United Nations Framework Convention on Climate Change. Upon ratification (and entry into force) of the Kyoto Protocol, these countries (and all Annex I Parties) will face legally binding commitments to reduce emissions to targeted levels. Although significant progress has been made by all countries and preliminary indications suggest that CEE Parties will be able to reach their targeted emission reduction levels, it is less clear that they will be able to comply with other Protocol provisions and participate in the Kyoto mechanisms.

The problems and challenges identified in this report are not confined to the survey countries, or even to EITs. All Parties to the Convention face implementation challenges, especially if they seek to participate fully in the Kyoto mechanisms. However, CEE countries, still undergoing

economic and political reform processes that place extra burden on their institutions, have less resources available to meet these challenges of compliance.

There is a considerable range of current capacities among the surveyed countries. Although one country is just beginning its efforts to address its commitments, several others show sophisticated knowledge and advanced institutional arrangements. Yet, there are several significant problems common to all six countries: building and adjusting legal and institutional frameworks; strengthening the ability to collect, manage, and report national emissions inventories; and increasing human and financial resources. Concerted efforts from both national governments and the international climate community can help countries over these hurdles. Given the common relevance of these priority areas, countries, donors, and international experts should work together and share common experience regarding national inventory quality assurance and control procedures, legal confidentiality provisions for emissions data, and the creation of national registries for emissions trading.

Many of the difficulties identified by the surveyed experts can be resolved by national legal and institutional reform. But successful reform will depend upon the strength of local, national, and international constituencies. Reform can, and should, be supported by donors willing to target investment towards the preparation for such reform.

APPENDIX I: Survey

Survey on Capacity for National Systems for the Kyoto Protocol (Article 5, 7 and 8)

INSTITUTION …….

DATE OF SURVEY …….

Background Information

This survey seeks to assess the capacity of 6 Annex I Parties that are undergoing the process of transition to a market economy to meet likely Kyoto Protocol requirements for Articles 5, 7, and 8. This survey is part of the Regional Environment Centre's program on Capacity for Climate Protection in Central and Eastern European Countries. The countries that are included in this phase of the program are Bulgaria, Czech Republic, Hungary, Poland, Romania, and Slovenia.

This survey examines the current state of preparedness of these countries for meeting the key Kyoto Protocol requirements that have been indicated to date. The focus of the survey is on national systems requirements for emission inventories and systems related to the Kyoto Mechanisms. The survey covers:

- Capacity to estimate and report greenhouse gas emissions (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) from all sources, and sinks);
- Capacity to report in national communications reporting;
- Capacity to facilitate and participate in review processes; and
- Domestic systems that may be needed for the Kyoto Mechanisms.

The information from this survey will form the basis of a background paper that will be released at UNFCCC COP6. CEE negotiators may use this paper in consultations related to UNFCCC negotiations and to inform OECD/IEA Annex I Expert Group work on these issues.

This survey is designed to complement and build on other exercises related to capacity building for Articles 5, 7, and 8. UNFCCC submissions on capacity building (FCCC/SB/2000/INF.7), the UNDP/GEF survey on capacity needs, and the OECD survey on these issues have been compiled and used to inform the survey design. The summaries of existing information on capacity needs can be made available to survey respondents as background information.

CURRENT EXPERIENCE

Question 1

1a) Which institutions are involved in inventory preparation?

In the table below, please name the institutions for each key source/sector and for each function.

	Energy[1]	Industrial Processes	Agriculture	LUCF[2]	Waste
a) Institutions involved in activity data collection.					
b) Institutions involved in calculating emission factors.					
c) Institutions involved in preparing the inventory emission estimates.					
d) Institutions involved in reporting the inventory emission estimates.					

1. Emissions from stationary and mobile fuel combustion, including fugitive fuel emissions.

2. Land Use Change and Forestry.

1b) Are the responsibilities of the institutions listed in the table above clear? Please elaborate on responsibilities for each category of institution a) to d) from the table above.

a) Institutions involved in activity data collection.

b) Institutions involved in calculating emission factors.

c) Institutions involved in preparing the inventory emission estimates.

d) Institutions involved in reporting the inventory emission estimates.

1c) Is there a central entity that is clearly responsible for the overall inventory? Yes/No

If so, please name it.

1d) Please describe any difficulties and/or success stories that these institutions have experienced in carrying out their functions for each category of institution a) to d) from the table above.

a) Institutions involved in activity data collection.

b) Institutions involved in calculating emission factors.

c) Institutions involved in preparing the inventory emission estimates.

d) Institutions involved in reporting the inventory emission estimates.

1e) Does the staff preparing the inventories change frequently? Are there wide fluctuations in the funding levels for inventory preparation from year to year? Is the staff developing the national inventory generally knowledgeable about UNFCCC inventory requirements? Please elaborate.

Question 2.

Does the government have problems producing annual emissions inventory according to existing reporting requirements (i.e., the 1996 revised IPCC inventory guidelines)?

In the table below, please mark the key source/sector for which there are difficulties providing inventory information. In the space below the table, please describe any difficulties, such as lack of regulatory mandate to obtain data, unclear responsibilities, time delays, lack of staff with appropriate skills, resources, time, or lack of equipment in the space below the table.

Question	Sector[1]				
	Energy[2]	Industrial processes	Agriculture	LUCF[3]	Waste
a) Is capacity for activity data collection sufficient?					
b) Is capacity for calculating emission factors (rather than using IPCC default) sufficient?					
c) Is capacity for preparing the inventory emission estimates					

sufficient?					

[1.] Please add other columns if necessary (e.g., for solvents). Refer to the IPCC reporting instructions for inventories (www.ipcc.ch).

[2.] Emissions from stationary and mobile fuel combustion, including fugitive fuel emissions.

[3.] Land Use Change and Forestry.

Please explain the major difficulties here (use as much space as necessary for your responses).

Question 3

3a) At what time intervals is the national inventory updated?

3b) How long is the time delay between actual emissions and availability of activity data to the people in charge of inventory preparation for each key source/sector?

	Energy[1]	Industrial Processes	Agriculture	LUCF[2]	Waste
Time lag (months).					

[1.] Emissions from stationary and mobile fuel combustion, including fugitive fuel emissions.

[2.] Land Use Change and Forestry.

Question 4

4a) What data verification and quality control measures are carried out to ensure the accuracy of your country's greenhouse gas emission inventory?

4b) Is there a third party or independent peer review of the inventory before submission to the Secretariat? Please describe the current quality assurance process.

4c) Do you foresee any difficulties in establishing quality assurance objectives and processes for activity data, emission factors, and inventory methodologies? Please specify these difficulties.

Question 5

5a) Is there a central/designated agency responsible for national communications reporting? Please name it.

5b) For each sector, please name the agency or agencies that are involved in preparation of information on policies and measures and emission projections for the national communication in the table below (e.g., experts, scientific institutes, ministries, and intraministerial bodies).

	Policies and Measures	Projections
Energy		
Transport		
Industry		
Domestic		
Services/Commercial		
Agriculture		
Waste		

5c) Please note the key difficulties that were raised in the most recent UNFCCC in-depth review of your countries' national communication.

[NGOs should provide the list of key difficulties from the IDR report to assist the respondents.]

How can these difficulties be addressed in future national communications?

Question 6

6a) Please describe the official approval processes for the **inventory** prior to its submission (e.g., cabinet committee, interministerial committee for climate change).

6b) Please describe the official approval processes for the **national communication** prior to its submission (e.g., cabinet committee, interministerial committee for climate change) and any difficulties with this (e.g., time frame for approval, low priority given to the issue).

Inventory Functions

Question 7

Which of the following inventory preparation functions can your country meet? Please summarize national capacity to meet them in the table below.

Inventory Preparation and Reporting Functions	**Already Doing this Quality : H/M/L**	**Possible with Existing Capacity: Expected Quality H/M/L**	**High Quality Possible with Assistance**	**High Quality Unlikely to be Possible by 2005**
a) Estimate inventory uncertainty.				
b) Compile the national inventory: in accordance with the common reporting format.				
c) Apply general-inventory-level quality control (Tier 1).				
d) Annual checks of data and calculations related to identified key sources.				
e) Apply quality control (source category-specific tier 2 QC) procedures for: i) Individual key emission source categories (i.e., the most important categories);				
ii) Emission source categories in which significant methodological and data revisions have taken place.				
f) Expert review: review of the inventory by personnel that have not been involved in its development, preferably an independent third party.				

Inventory Preparation and Reporting Functions	Already Doing this Quality : H/M/L	Possible with Existing Capacity: Expected Quality H/M/L	High Quality Possible with Assistance	High Quality Unlikely to be Possible by 2005
g) Timely information on adjustments: inform the expert review team within four weeks whether your country accepts any adjustment that is made by the expert review team.				

Please explain your answers for items a) to g), detailing the capacity that already exists, the institutions that are responsible for each function, and any difficulties, particularly whether international assistance may be required and what type of assistance (e.g., funding, expertise). Please use as much space as necessary for your responses.

7a)

7b)

7c)

7d)

7e)

7f)

7g)

Question 8

Which of the following inventory management functions can your country meet? Please summarize national capacity to meet them in the table below.

Inventory Management	**Already Doing this** **Quality: H/M/L**	**Possible with Existing Capacity:** **Expected Quality H/M/L**	**High Quality Possible with Assistance**	**High Quality Unlikely to be Possible by 2005**
a) Archiving: archive inventory information for each year, (including documentation of quality assurance/quality control activities: Article 8 external review reports).				
b) Develop confidentiality provisions: for any archived information that is confidential and provide access on that basis.				
c) Response to requests from review team: including timely clarification of inventory and national system information.				
d) Carry out **expert peer review** and/or audits as additional QA procedures.				

Please explain your answers for items a) to d), detailing the capacity that already exists, the institutions that are responsible for each function, and any difficulties, particularly whether international assistance may be required and what type of assistance (e.g., funding, expertise). Please use as much space as necessary for your responses.

8a)

8b)

8c)

8d)

Question 9

Which of the following reporting and information sharing functions can your country meet? Please summarize national capacity to meet them in the table below.

Inventory Reporting and Information Sharing	**Already doing this Quality: H/M/L**	**Possible with Existing Capacity: Expected Quality H/M/L**	**High Quality Possible with Assistance**	**High Quality Unlikely to be Possible by 2005**
a) Develop a national GHG website and make inventory information available on it, including the inventory report and data in the common reporting format;				
b) Make available the postal and electronic addresses of the national entity responsible for the inventory; and				
c) M**ake available** to any interested party, organization or person, the **information described in paragraph a)** of this table in either printed or electronic format, upon request.				

Please explain your answers for items a) to c), detailing the capacity that already exists, the institutions that are responsible for each function, and any difficulties, particularly whether international assistance may be required and what type of assistance (e.g., funding, expertise). Please use as much space as necessary for your responses.

9a)

9b)

9c)

ARTICLE 7.1 and 7.2

Supplementary Information

Question 10

Which of the following supplementary information could your country provide? Please summarize national capacity to provide this information in the table below.

Supplementary Information	Possible with Existing Capacity: Expected Quality H/M/L	High Quality Possible with Assistance	High Quality Unlikely to be Possible by 2005
supplementary registry information: Total assigned amount held in its national registry at the start of the year [i.e., serial numbers of assigned amount units (AAUs), emission reduction units (ERUs), and certified emission reductions (CERs)]; Serial numbers of AAUs, ERUs, and CERs transferred to or acquired from another Party's national registry and identification of the acquiring Party(ies); Assigned amount held in national registry at the end of the year; and Serial numbers of any AAUs, ERUs, and CERs that have been moved into the Party's retirement account.			
Other supplementary information related to Kyoto Mechanisms: Information related to Article 6 projects—including baseline and emission reduction calculation methods for each project.			

Functions to Support Participation in Kyoto Mechanisms

Question 11

This question focuses on capacity to maintain a national registry and track changes in assigned amount as a result of transfers and acquisitions. (A registry is a database of information on transfers and acquisitions by the Party and by entities. It could be a simple searchable database e.g., using Microsoft Access, or a more complex interactive Web based system.

a) Is the country planning to participate in International Emissions Trading, Joint Implementation, and the Clean Development Mechanism?

b) Which agency/ies would be most appropriate to maintain a registry?

c) Is the country planning to build a national registry system? Has it already estimated associated costs and identified revenues or allocated a budget to build the system?

d) Please specify any difficulties that are envisaged with establishing and maintaining a national registry.

Question 12

This question focuses on capacity for entity and project participation in the Kyoto Mechanisms (should the country choose to authorize this).

a) Does the country expect to authorize "legal entities" to participate in the Kyoto Mechanisms?

b) Does the government or a designated agency have the capacity to set baselines or set obligations on entities (e.g., firms) to limit their greenhouse gas emissions, as well as to monitor entity emissions:

At the project level? – please specify which sectors.

At the entity level (i.e., companies)? – please specify types of firm

(e.g., sector, size).
Which agency/ies would fulfil this function?

Please specify any difficulties that you foresee with the institutional, regulatory arrangements for entity and project participation.

c) Does the government or a designated agency have the technical capacity to enforce obligations placed on entities (e.g., firms) to limit their greenhouse gas emissions?

Please specify types of firm (e.g., sector, size).

Which agency/ies would fulfil this function?

Please specify any potential difficulties.

d) How will your country authorize legal entities?

Which agency/ies could be responsible for this?

Article 8

Question 13

Does your country have capacity to:

a) Report the annual GHG inventory in November for the year prior to submission?

Please elaborate any potential difficulties.

b) Host at least one in-country review during the commitment period, in conjunction with the in-country visit for its national communication review?

Please elaborate any potential difficulties.

c) Host additional in-country visits if recommended by the review team in accordance with the guidance below and with the consent of the Party concerned?

Please elaborate any potential difficulties.

d) Answer questions that the review team or the Secretariat may raise for the Party, or provide additional information within agreed time limits at any stage in the review process?

Please elaborate any potential difficulties.

e) Correct identified problems within agreed time limits in consultation with the expert review team?

Please elaborate any potential difficulties.

APPENDIX II: Capacity Building Efforts

There are currently a number of on-going efforts being carried out to provide regional and country-specific capacity-building support to the Annex I Central and Eastern European Economies in Transition for implementing specific UNFCCC elements of national systems for inventory preparation and participation in the Kyoto mechanisms. The following summary of such activities represents a preliminary attempt to capture the scope of such endeavors, how they address identified capacity deficits, and where further or new activities are called for. It is the hope of the authors that this compilation will, with assistance from implementing agencies and recipient countries, be updated and used to strategically target future capacity building work.

EIT Parties have identified the following as critical areas for capacity building:

- Establishing national systems for the estimation of GHG emissions;
- Preparing supplementary information for the purposes of ensuring compliance with Article 3 of the Kyoto Protocol;
- Implementing mechanisms: JI projects and emissions trading[26].

The UNFCCC Secretariat received (prior to its May 9, 2000 publication) 15 submissions that comprised the note, *Capacity Building: Submissions from Relevant Intergovernmental Organizations on their Capacity-building Activities*. The following summaries are based on selected submissions to the note and on project summaries provided by agency officers. The first group, global initiatives, reports on activities planned or taking place in multiple countries worldwide. These summaries provide relatively less information on the specific or potential impacts in the six countries surveyed, but do represent activities likely benefit the climate agendas of the CEE Annex I Parties. The second group of activity summaries, regional initiatives, reports on work being carried out specifically in CEE. More detailed project information in this group includes information on capacity building related to the needs identified by the Parties in their submissions to the UNFCCC and the needs reviewed in this report.

Global Initiatives

United Nations Department of Economic and Social Affairs (DESA)

As part of its Global Energy Efficiency Programme, UN DESA reports on one on-going project and on planned activity, both of which potentially address CEE capacity needs.

The **Energy Standards and Labeling Programme**, expected to run from May 2000 to December 2001, is a $1.6 million global project. Taking place in Poland, as well as in selected countries in Asia, the Middle East, and Central America, the program supports activities to provide:

- Training and support for setting and enforcing energy standards'

[26] These critical areas form the basis of a *Framework for Capacity Building in Countries with Economies in Transition,* circulated at the thirteenth session of SBSTA, in Lyon on September 11-15, 2000. See FCCC/SB/2000/CRP.9?Rev.1, September 12, 2000.

- Dissemination of tools and information, including an Energy Standards Guidebook, and a Web-based information toolkit.

Although the available information on the Energy Standards and Labeling Programme information did not indicate the specific capacity needs it will address, the program may aid countries in assessing (and perhaps lowering) energy sector specific emissions.

The **Global Initiative on Transport Emissions** is planned to take place from June 2000 to December 20003. The $4 million World Bank-funded program is also global in scope, with plans to implement two main activities:

- Transport Emissions Knowledge Initiative (emission data and indicators);
- Partnership for Vehicle and Fuels Technology Modernization (cleaner technology transfer).

It is unclear, based on available information, which countries will take part in the Global Initiative on Transport Emissions. However, the Transport Emission Knowledge Initiative may result in increased capacity to acquire accurate emissions data (in the transport sector), calculate emissions factors, and, in the case of the Partnership for Vehicle and Fuels Technology Modernization, decrease national emissions.

Food and Agriculture Organization of the United Nations (FAO)

The FAO has established an Interdepartmental ad hoc Working Group on Climate and has reviewed the areas in which the FAO mandate is directly relevant to current international climate discussions. The following areas of work are specifically relevant within the FAO mandate:

- Assessment of the agricultural sources of greenhouse gases;
- Formulation of programs and policies which can reduce emissions and assist countries in complying with UNFCCCC and Kyoto Protocol commitments;
- Collection and maintenance of relevant datasets.

The FAO identified for itself useful roles in:

- Formulating appropriate agricultural statistical methods to enable the COP to verify compliance with commitments;
- Standardizing observation techniques and data exchange;
- Formulating regional and national policies.

Starting in 1999, the FAO has implemented the **Role of LU and LUCF Activities for Climate Change Mitigation** project at the global, regional, and national level. Designed to promote the active participation of forestry and agriculture agencies in climate change discussion, the program conducts policy development and awareness raising activities and prepares specialized studies in key areas of interest.

Available information does not list the countries currently active in the program. The program may increase country capacity to acquire quality emissions data and calculate accurate factors for the LUCF sector.

United Nations Institute for Training and Research (UNITAR)

Since 1998, UNITAR has used its **Programme of Training for the Application of International Environmental Law: Capacity Building Activities related to Climate Change** to offer training, research, policy development, and awareness raising regarding international UNFCCC obligations. The program targets government officials, with the ultimate objective of helping Parties to implement their international obligations by assisting in the identification of national legal gaps, obligations, and implementation needs. The training program consists of correspondence instruction complemented by five-day workshops.

UNITAR's program description does not indicate which countries are taking part. Given the general description of its instruction topics, the program may address the CEE EIT need to build or adjust legal and institutional frameworks, especially legal confidentiality provisions for emissions data.

Regional Initiatives

World Bank

Begun in 1997 with support from Switzerland (and later Germany, Australia, Finland, and Canada), the World Bank's on-going **Program of National CDM/JI Strategy Studies (NSS Program)** is a $6 million national and global initiative designed to provide capacity building assistance to JI/CDM host countries. Activities include country studies, strategy and policy development, awareness raising, and developing institutional frameworks. Specific activities are designed with the aim of:

- Compiling or updating of national greenhouse gas inventory,
- Identifying and addressing CDM barriers, and assessing legal, regulatory, and institutional needs to overcome these barriers,
- Developing national strategy regarding the CDM/JI, and
- Establishing a pipeline of potential CDM/JI projects.

As of May 2000, the program had completed activities in the Czech Republic and Slovakia, and was preparing studies for Hungary and Romania. The NSS program addresses the CEE EIT needs for increased capacity for national inventory compilation, management and reporting, and the creation of the national frameworks and regulations necessary for emissions trading.

Organisation for Economic Cooperation and Development (OECD)

Annex I Expert Group (AIXG)

The Annex I Expert Group is an ad hoc group of government officials from environment, energy, and foreign affairs ministries from countries that are listed in Annex I to the UNFCCC and those that have acceded to Annex I commitments. The OECD and International Energy Agency (IEA) carry out analytical work for this Group, both to support national climate change policy

development and to support Annex I countries in the UNFCCC negotiations. The AIXG's work includes the following: analyzing policy; advising on options to advance the Kyoto Mechanisms; monitoring, reporting, and reviewing approaches to ensure compliance; and assessing progress under the Convention and the Kyoto Protocol.

An important part of the Annex I Expert Group's work is to support Annex I transition countries in their efforts to address climate change, by providing an opportunity for exchange among government officials and national experts, and by providing information and raising public awareness of climate change. Because transition countries are part of the Annex I Expert Group, all of the Group's work reflects their concerns. Two government delegates from each transition country receive financial support to attend Annex I Expert Group meetings. In addition, the Annex I Expert Group holds workshops and seminars in transition countries to raise public awareness and to enable more transition country participants to attend. For example, in 1995, in a joint effort with the Polish Ministry of Environmental Protection, Natural Resources and Forestry, the U.S. Country Studies Program, and the U.S. EPA**,** the AIXG sponsored a workshop entitled "Methods for Assessing GHG Mitigation for Countries with Economies in Transition." A Workshop entitled "International GHG Emission Trading" was held in Szentendre, Hungary, in April 1997. Participants included Annex I delegates, industry representatives, environmental nongovernmental organizations, and academics.

In May 2000, the AIXG held a workshop in Bratislava, Slovakia, to identify the capacity building needs of EIT countries, with particular emphasis on activities under Articles 5, 6, 7, and 17 of the Kyoto Protocol. Building on the results of a survey of EIT governments, the workshop had three sections:

1. Perspectives and issues: capacity needs related to reporting emissions, to identifying, approving, and accepting JI projects, and to emissions trading;
2. National systems for inventory preparation: assessing the policy, resource, and management developments that are likely to be required to establish national systems for inventory preparation;
3. The Kyoto mechanisms: outlining EIT experience with "activities implemented jointly," JI/ET issues, general functions of national systems for emissions monitoring.

In response to the issues raised at the May 2000 workshop, and in recognition of the necessity that the international climate community provide a coordinated capacity-building response to the needs of EIT countries, the AIXG is currently implementing a new project: **Supporting countries with Economies in Transition in implementing the Kyoto Protocol.** The project has two specific objectives:

1. To provide targeted analyses of existing initiatives, experiences, and practices in selected EIT countries for implementing the Kyoto Protocol. This would be undertaken through a series of case studies;
2. To exchange information among countries on existing and new efforts to implement the Kyoto Protocol and on capacity building needs. This would be done through a series of roundtables and the setting up of a dedicated website.

The work under this project aims to cover the main aspects of the Kyoto Protocol domestic implementation process. Priority areas include the following:

- Systems for the development of national inventories and GHG projections[27];
- National registry systems;
- Domestic institutions and procedures for JI, including project registration procedures, national guidelines on baselines and monitoring, rules for issuing emissions reduction units (ERUs);
- Domestic institutions and procedures for emissions trading (including emission permit allocation, market rules, and national guidelines for monitoring, as well as verification and enforcement systems);
- Other policies and measures (e.g., through a sectoral approach), possibly drawing on the existing work within the AIXG on domestic policies and measures.

The project will produce the following products:

1. Case studies

The bulk of the work is undertaken through a series of case studies, drafted in cooperation with EIT countries. The studies take as a starting point existing initiatives, experiences, or practices with respect to implementing the Climate Convention/Kyoto Protocol in the priority areas identified above.

Each case study will focus on a specific issue within one (or possibly two) of the above mentioned priority areas, identified by the target country as being relevant to national circumstances. The outline of each case study would comprise:

- A review of relevant national circumstances, in particular with respect to the development of climate change strategies;
- A clear description of the country's initiative, experience, or practice;
- An evaluation of the country's initiative, experience, and practice, identifying successful and less successful elements;
- Recommendations for next steps, including suggestions for capacity-building efforts that might be necessary to take additional action.

2. AIXG Roundtables

As part of this project, specific (one-day) roundtables would be held at future AIXG meetings. They would provide an opportunity for the participants to discuss key results from the case studies and to exchange information and to share experiences on implementing strategies in EIT countries, including capacity-building programs.

3. Dedicated Website

A dedicated website will be developed to allow for a widespread and timely dissemination of information, as well as for efficient communication with the targeted audience (EIT representatives and international community). The website will provide:

- Links to all documents resulting from this project (analytical papers, case study reports, proceedings of the roundtables);
- Links to a database for country-specific contact information of the main climate change players in the target countries;

[27] In collaboration with UNITAR and UNFCCC.

- An email discussion list to support information exchange among AIXG delegates and selected EIT experts. Unlike the main website, access to the discussion list would be restricted. The discussion could be moderated, depending on the frequency of the postings.

The website will serve as a testing instrument until COP7. Further development will depend on additional funding and commitment from the EIT countries to maintain and improve its content.

4. **Possible Follow-up Activities**

Additional project activities may include the following:

- Translation of products into local languages for distribution among policymakers and stakeholders in targeted countries;
- Presentation of results at seminars organized by EIT governments for in-country dissemination, as well as at international conferences and workshops
- Linkage of results to next steps under UNFCCC process for EIT capacity building.

It is hoped that the targeted analyses of the project will help participating countries improve their implementation strategies and needs assessments, and that the exchange of information will help encourage good practices.

The Center for Clean Air Policy (CCAP)

CCAP is a nonprofit think tank, specializing in energy and environmental policy. CCAP works with governments of several Eastern European countries to assist them in developing climate change strategies and enhance their understanding of emissions trading. Currently, CCAP is working with Slovakia, Poland, the Czech Republic, and Ukraine. Although only Poland and the Czech Republic were included in the capacity needs survey presented in this report, CCAP's activities in Slovakia and Ukraine provide information and analysis that is relevant throughout the region. Even though specific plans have not been made to expand the scope of these projects outside of the above-listed countries, should other countries express interest (and donor support be evident) CCAP may begin similar programs in other CEE EITs.

Slovakia With support from the United States Environmental Protection Agency, CCAP is currently assisting the Slovakian Ministry of Environment in designing a domestic CO_2 trading system. This work includes analysis of Slovakia GHG emissions data, sectoral analysis of emissions, identification of participating sectors in emissions trading, establishment of sectoral CO_2 caps, development of recommendations for allowances allocation methods, and assistance with the trading system design. In addition to conducting analysis and preparing policy recommendations, the project has organized two workshops with the Slovak government and industry representatives. The project has also organized a study tour to the United States for five Slovak climate change stakeholders. Future activities include the following:

- Developing recommendations on allocation methods, monitoring, reporting and verification requirements, enforcement mechanisms, CO_2 trading system design and implementation, and GHG data systems improvements;
- Conducting a third stakeholder workshop with representatives of the government, industry, NGOs, and academia to discuss the results of analysis;

- Work directly with key industries to enhance their understanding of emissions trading; and
- Provide assistance to the Ministry of Environment in developing trading rules and regulations

Poland In Poland, CCAP is working to enhance the Polish government's understanding of emissions trading and joint implementation and it is assisting the government in building the necessary expertise and institutional framework. In partnership with the Polish National Fund for Environmental Protection and Water Management, CCAP has accomplished a number of tasks, including:

- Conducted analysis of Polish energy consumption and GHG data;
- Developed GHG projections by sector for 2000-12;
- Organized workshops on JI, climate change strategy, and domestic trading;
- Identified and prepared preliminary caps for five industrial sectors for inclusion in a possible domestic CO_2 trading system.

Future project activities include:

- Conducting an educational workshop for industry representatives to discuss challenges and opportunities pertaining to climate change mitigation efforts;
- Conducting a round-table meeting with industry representatives to present monitoring and reporting guidelines;
- Meeting with government representatives to discuss emissions trading design issues;
- Developing policy papers making recommendations on emissions trading system design.

Czech Republic CCAP is launching a new technical assistance program to help the government of the Czech Republic develop a domestic GHG trading system. The goals for the project, in addition to the creation of a domestic GHG cap and trade system, are to build capacity for analyzing and designing emissions trading programs, and to analyze and demonstrate to stakeholders how a domestic GHG cap and trade regime can be integrated with an international JI and trading strategy.

The activities to be carried out in this project will build on the lessons and methodology developed from CCAP's similar efforts in Slovakia and Poland.

United States Country Studies Program

Begun in 1993, the U.S. Country Studies Program (USCSP) provides financial and technical assistance to developing and transition countries for climate change studies. The program provides technical assistance to countries through workshops, guidance documents, analytical tools, and consultations with technical experts.

The objectives of the program are to assist countries as they:

- Establish processes for developing and implementing national policies and measures, including formulation of national communications;
- Develop information to further national and international discussions; and
- Support principles and objectives of the U.N. Framework Convention on Climate Change.

The participating countries are developing inventories of their anthropogenic emissions of greenhouse gases, assessing their vulnerabilities to climate change, evaluating response strategies for mitigating and adapting to climate change, formulating national climate change action plans, and performing technology assessments.

In response to requests for financial and technical support from developing and transition countries, the U.S. Government initiated an activity to assist countries with the development of their climate change action plans. Support for National Action Plans (SNAP) built on the current U.S. Country Studies Program, which supports climate change country studies in 56 developing and transition countries. SNAP provides financial and technical assistance to help countries use the results of their climate change country studies and to develop action plans for implementing a portfolio of mitigation and adaptation measures. Eighteen countries, including Bulgaria, the Czech Republic, Hungary, Poland, and Romania participated in the SNAP phase of the USCSP. The objectives of the SNAP phase are:

- To assist countries in preparing climate change action plans that may form the basis for their national communications:
- To promote diffusion of mitigation and adaptation technologies by assisting countries with assessments of needs and opportunities for technology exchange and diffusion; and
- To enhance support for the objectives and principles of the Framework Convention on Climate Change.

Capacity for Climate Protection in Central and Eastern Europe Project

The Regional Environmental Center for Central and Eastern Europe (REC) and the World Resources Institute (WRI) have formed a partnership to address climate policy issues in Central and Eastern Europe (CEE). The primary goal of this partnership is to help Annex I CEE EITs to 1) find less emission intensive development paths and 2) create policy and institutional environments to support compliance with the UN Framework Convention on Climate Change and the Kyoto Protocol. In support of these overarching goals, WRI and REC have created the Capacity for Climate Protection Project, which has the following specific objectives:

- Build a constituency for policy and institutional reform in Annex I EITs to meet the commitments and respond to the opportunities of the climate convention;
- Build the infrastructure for more active participation by EIT countries in the global climate policy process;
- Provide information on development options and institutional needs.

The Capacity for Climate Protection Project undertakes activities in the following areas:

- Providing analysis and information for decisions;
- Involving CEE NGOs in policy analysis and outreach;
- Promoting dialogues among governments, businesses, and NGOs within the countries;
- Informing and influencing discussions at the COPs;
- Facilitating information exchange at the regional and global level; and

- Increasing understanding of the institutional needs of the countries in transition for emissions reporting, implementation of flexibility mechanisms, and good practices on policies and measures for UNFCCC implementation.

The project also supports an Advisory Board of decisionmakers from CEE, the EU, and the United States to share successes and identify steps that their governments can undertake to implement flexibility mechanisms and achieve compliance.

The project's regional approach seeks to provide information to all EITs in CEE. It is expected that this will increase understanding of the opportunities under the climate convention and will increase compliance with commitments. However, the principal work is targeted towards six countries (Bulgaria, the Czech Republic, Hungary, Poland, Romania, and Slovenia).

WRI, the REC, and regional partners have published a series of papers, available on the project website (http://www.rec.org/climate/index.html). These papers include analyses of regional Activities Implemented Jointly (AIJ) experience and the opportunities presented to CEE EITs by the Climate Convention and Kyoto Protocol.

APPENDIX III: Matrix of Survey Responses