



PORTUGUESE INITIAL REPORT UNDER THE KYOTO PROTOCOL

Report to facilitate the calculation of the
assigned amount pursuant to Article 3,
paragraphs 7 and 8, of the Kyoto Protocol

Submission to the UNFCCC Secretariat

**Amadora
December 2006**

PORTUGUESE INITIAL REPORT

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1 INTRODUCTION

As Party to the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol, Portugal has the obligation to submit its Initial Report to the UNFCCC, prior to 1 January 2007. The legal basis of this report is decision 13/CMP.1 under the Kyoto Protocol (Modalities for the accounting of assigned amounts under Article 7, paragraph 4, of the Kyoto Protocol) in particular paragraphs 5 to 8 of the Annex to this decision. These modalities state that: "Each Party included in Annex I shall facilitate the calculation of its assigned amount pursuant to Article 3, paragraphs 7 and 8, for the commitment period and demonstrate its capacity to account for its emissions and assigned amount. To this end, each Party shall submit a report, in two parts, containing the information specified in paragraphs 7 and 8 below."

The Assigned Amount report is also required under Decision 280/2004/EC of the European Parliament and of the Council concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol and its implementing provisions - Commission Decision 166/2005/EC, which is in line with the "Modalities for accounting of Assigned Amounts under Article 7, paragraph 4 of the Kyoto Protocol".

This Report presents the information required in paragraphs 7 and 8 of the Annex to decision 13/CMP.1 and follows the order of requirements in these paragraphs. The complete inventories of anthropogenic emissions by sources and removals by sinks of greenhouse gases (GHG) not controlled by the Montreal Protocol are included in Annex I (National Inventory Report) and Annex II (Common Reporting Format tables).

According to Decision 13/CMP.1, the Initial Report is to consist of two parts:

Part one, shall contain the following information, or references to such information where it has been previously submitted to the secretariat of the UNFCCC:

- (a) complete inventories of anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol for all years from 1990, or another approved base year or period under Article 3, paragraph 5, to the most recent year available, prepared in accordance with Article 5, paragraph 2, and relevant decisions of the Conference of the Parties serving as the meeting of the Parties to the

Kyoto Protocol (COP/MOP), taking into account any relevant decisions of the Conference of the Parties (COP)

(b) identification of its selected base year for hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride in accordance with Article 3, paragraph 8

(c) the agreement under Article 4, where the Party has reached such an agreement to fulfill its commitments under Article 3 jointly with other Parties

(d) calculation of its assigned amount pursuant to Article 3, paragraphs 7 and 8, on the basis of its inventory of anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol.

Part two shall contain the following information, or references to such information where it has been previously submitted to the secretariat of the UNFCCC:

(a) calculation of its commitment period reserve in accordance with decision 11/CMP.1 (Modalities, rules and guidelines for emissions trading under Article 17 of the Kyoto Protocol)

(b) identification of its selection of single minimum values for tree crown cover, land area and tree height for use in accounting for its activities under Article 3, paragraphs 3 and 4, together with a justification of the consistency of those values with the information that has been historically reported to the Food and Agriculture Organization of the United Nations or other international bodies, and in the case of difference, an explanation of why and how such values were chosen, in accordance with decision 16/CMP.1 (Land use, land-use change and forestry)

(c) identification of its election of activities under Article 3, paragraph 4, for inclusion in its accounting for the first commitment period, together with information on how its national system under Article 5, paragraph 1, will identify land areas associated with the activities, in accordance with decision 15/CMP.1 (Land use, land-use change and forestry)

(d) identification of whether, for each activity under Article 3, paragraphs 3 and 4, it intends to account annually or for the entire commitment period

(e) a description of its national system in accordance with Article 5, paragraph 1, reported in accordance with the guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol

(f) a description of its national registry, reported in accordance with the guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol

2 PART 1

2.1 Complete inventories of anthropogenic emissions by sources and removals by sinks of greenhouse gases

As a Party to the United Nations Framework Convention on Climate Change (UNFCCC), Portugal is requested to provide each year an update of its inventory of emissions and removals of greenhouse gases not controlled by the Montreal Protocol, taking into account the adopted Reporting Guidelines on Annual Inventories (FCCC/SBSTA/2004/8). The Revised (1996) IPCC Guidelines for National Greenhouse Gas Inventories (IPCC,1997), the Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories (IPCC,2000) and the Good Practice Guidance for Land-Use, Land-Use Change and Forestry (IPCC, 2003) have been applied as far as possible.

The inventory submission consists of the Common Reporting Format Tables (CRF) and the National Inventory Report (NIR) in accordance with the reporting guidelines under the UNFCCC (FCCC/CP/2002/8). These are included in Annex I (NIR) and Annex II (CRF). The NIR should be consulted for a more detailed description of the methods, assumptions and activity data used in the 2006 Portuguese inventory data submission. In 15 April 2006 Portugal has submitted its inventory submission for 2006 (1990-2004). The values reproduced in table 1 which were considered in the determination of the assignment amount are an update of this submission.

The inventory submission includes estimates for the 6 greenhouse gases included in Annex A to the Kyoto Protocol: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFC), perfluorocarbons (PFC) and sulphur hexafluoride (SF₆), as well as estimates for indirect GHGs, including carbon monoxide (CO), nitrogen oxides (NO_x), and non-methane volatile organic compounds (NMVOC). Data are also reported for sulphur oxides (SO_x).

The inventory covers the whole Portuguese territory, i.e., mainland Portugal and the two Autonomous Regions of Madeira and Azores Islands. Includes also emissions from air traffic and navigation bunkers between all areas in national territory.

In 2004, total Portuguese GHG emissions without land-use, land-use change and forestry (LULUCF) were estimated at about 84.4 Mt CO₂eq, representing an increase of approximately

41% compared to 1990 levels. Under the EU burden-sharing agreement, Portugal is bind to limit its emissions to +27% compared to the 1990 level. Comparing the 1990-2004 growth with the linear target path from 1990 to 2010, Portuguese GHG emissions were, in 2004, 21.8 % above this target path.

In 2004, the largest emitted gas was CO₂, representing 77.9% of total GHGs emissions in global warming potential (GWP) weighted emissions.

Energy sector was by far the most important sector, accounting for 72% of total emissions in 2004, with an increase of 51.2% over the 1990-2004 period. Energy industries and transport were the two most important sources representing respectively 25.3% and 23.8% of total emissions. This reflects the country heavy dependence on fossil fuels for electricity generation (which growth followed the continuous increase of electricity demand) and transport sources. Transportation sources, which were largely dominated by road traffic, were one of the sectors that had been rising faster. In the period 1990-2004 these emissions increased 99.4%, due to the steady growth of the fleet of vehicle and road travel, in association with the increase in family income and the strong investment in road infrastructure in the country, during the 1990s. Indirectly, the increase in road traffic activity also contributed to the rise of emissions from fossil fuel storage, handling and distribution.

Agriculture was the second most significant source of GHGs emissions (9.8% of total emissions). Waste and Industrial processes were, respectively, 9.4% and 8.4% of Portuguese emissions in 2004, recording an increase from 1990 to 2004 of approximately 53.5% (industrial processes) and 12.5% (waste). Solvent use was responsible for less than 1% of total emissions.

Estimates of emissions and sinks from land-use, land-use change and forestry category, show this category as a net emitter in 1990 (3.8 Mt CO₂ eq.) and a carbon sink in 2004 (-2.5 Mt CO₂ eq). In contrast to the trend, in 2003, this sector appears as a peak net emitter (8.2 Mt CO₂ eq), reporting the exceptional occurrences of forest fires.

The following table presents a complete time series of GHG inventories, per sector and per gas, between 1990 and 2004, as obtained in CRF reporter, table 10s5.

Table 1 – Greenhouse gases emissions from 1990 to 2004

GHGs SOURCE AND SINK CATEGORIES	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	CO ₂ equivalent (Gg)														
1. Energy	40 169	41 968	46 328	44 944	45 548	48 913	46 348	49 010	53 357	60 647	59 189	60 440	64 441	60 011	60 752
2. Industrial Processes	4 626	4 600	4 370	4 224	5 031	5 782	5 536	6 220	6 465	6 170	6 042	6 551	6 957	6 901	7 100
3. Solvent and Other Product Use	220	234	243	236	253	256	275	285	290	285	290	304	312	318	320
4. Agriculture	7 878	7 993	7 855	7 745	7 985	8 059	8 360	8 238	8 219	8 324	8 577	8 414	8 473	7 866	8 240
5. Land-Use Change and Forestry ⁽⁷⁾	3 818	2 753	486	-115	-1 260	-1 615	-3 100	-3 345	-3 894	-3 407	-3 796	-3 610	-4 138	8 209	-2 455
6. Waste	7 061	7 266	7 379	7 592	7 938	8 174	8 228	8 522	8 884	9 179	8 274	7 888	8 102	8 091	7 944
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

GHGs EMISSIONS	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
	CO ₂ equivalent (Gg)														
Net CO ₂ emissions/removals	47 015	47 668	49 727	47 760	47 849	51 330	47 093	50 174	54 217	61 420	59 820	61 311	64 974	72 200	63 141
CO ₂ emissions (without LUCF)	43 366	45 181	49 326	47 925	49 138	53 131	50 258	53 543	58 234	64 894	63 762	65 018	69 250	64 600	65 717
CH ₄	11 379	11 733	11 557	11 579	12 087	12 520	12 530	12 716	13 292	13 507	12 457	12 330	12 663	13 105	12 365
N ₂ O	5 377	5 412	5 374	5 282	5 554	5 706	6 003	6 003	5 755	6 174	6 154	6 169	6 291	5 784	6 033
HFCs	NA,NE,NO	NA,NE,NO	NA,NE,NO	1	2	10	19	33	53	92	139	172	214.30	301.25	357.73
PFCs	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NE,NO	NA,NO	NA,NO	NA,NO	NA,NO						
SF ₆	2	2	2	3	3	3	3	3	3	4	5	5	4.57	4.57	3.44
Total (with net CO₂ emis./removals)	63 772	64 815	66 661	64 624	65 495	69 569	65 647	68 930	73 321	81 198	78 575	79 986	84147	91395	81900
Total (without CO₂ from LULUCF)	60 123	62 328	66 260	64 790	66 784	71 370	68 812	72 299	77 337	84 671	82 517	83 693	88423	83795	84476
Total (without LULUCF)	59 953	62 061	66 175	64 739	66 755	71 184	68 747	72 275	77 215	84 605	82 371	83 596	88285	83187	84355

2.2 Identification of selected base-year for hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride in accordance with Article 3, paragraph 8 of the Kyoto Protocol

In accordance with Article 3, paragraph 8 of the Kyoto Protocol, Portugal has chosen 1995 as the base-year for the emissions of fluorinated gases (hydrofluorocarbons–HFCs; perfluorocarbons-PFCs and sulphur hexafluoride-SF₆).

2.3 Agreement under article 4 of the Kyoto Protocol

The Kyoto Protocol, under Article 4, provides the option for Parties to fulfil their commitments under Article 3 jointly, acting in the framework of and together with a regional economic integration organisation. Decision 2002/358/CE of the Council, of 25 April 2002, on the approval, on behalf of the European Community, of the Kyoto Protocol, and the joint compliance of their commitments under Article 3, paragraph 1 of the Kyoto Protocol (the joint fulfilment agreement) established quantified emission limitation and reduction commitments for the Community and its Member States for the first commitment period (2008 to 2012). These commitments define the Member States' assigned amount under the Kyoto Protocol.

Under the joint fulfilment agreement the quantified emission commitment for Portugal is 127%.

2.4 Calculation of the assigned amount pursuant to Article 3, paragraphs 7 and 8

The assigned amount for Portugal pursuant to Article 3 paragraphs 7 and 8 was calculated as described below:

Portugal Assigned Amount = (1990 emissions [except f-gases] + f-gas emissions in 1995 + 1990 deforestation emissions) x 5 x 1.27 [=386 956 503 t CO₂eq]

That is,		(t CO ₂ eq)
	1990 emissions [except f-gases]	59 951 633
+	1995 f-gases emissions	12 570
+	1990 emissions from deforestation (Article 3(7))	973 829
=		60 938 032
×	Commitment period (years)	5
×	Burden Sharing Agreement Targets	127%
=	Total	386 956 503

For the Land-use, land-use change and forestry (LULUCF) sector the inventory estimated a net source of CO₂ emissions in 1990. Therefore, and according to Article 3, paragraph 7, the determination of assigned amount includes the estimate of CO₂ emissions from deforestation in 1990.

3 PART 2

3.1 Calculation of the commitment period reserve in accordance with decision 11/CMP.1

The Annex to Decision 11/CMP.1 (paragraph 6) specifies that: "Each Party included in Annex I shall maintain, in its national registry, a commitment period reserve which should not drop below 90 per cent of the Party's assigned amount calculated pursuant to Article 3, paragraphs 7 and 8 of the Kyoto Protocol, or 100 per cent of five times its most recently reviewed inventory, whichever is lowest".

Therefore the Commitment Period Reserve (CPR) for Portugal was calculated as:

Either

- 90% of Portugal's assigned amount

Assigned Amount - 386 956 503 t CO₂eq

$$\text{CPR} = 386\,956\,503 \text{ t CO}_2\text{eq} \times 0.90 = 348\,260\,853 \text{ ton CO}_2\text{eq}$$

or

- 100% of five times its most recently reviewed inventory (2003)

Emissions estimates in 2003 (submission 2005) - 81 157 010 t CO₂eq

$$\text{CPR} = 81\,157\,010 \text{ t CO}_2\text{eq} \times 5 = 405\,785\,052\,010 \text{ t CO}_2\text{eq}$$

The commitment period reserve for Portugal is therefore 348 260 853 t CO₂eq.

3.2 Identification of Portugal's selection of single minimum values for tree crown cover, land area and tree height for use in accounting under Article 3, paragraphs 3 and 4 of the Kyoto Protocol

Portugal has selected the following minimum values for the forest definition for reporting under Article 3, paragraphs 3 (afforestation, reforestation and deforestation) and 4 (forest management, cropland management, grazing land management and revegetation) the following:

- Minimum area: 1 ha
- Minimum width: 20 m
- Tree crown cover: 10%
- Minimum tree height: 5 m

The selected threshold value for minimum area (1ha) is higher than the value used by Portugal in its national forest Inventory reported to the Food and Agriculture Organisation of the United Nations (FAO), 0.5ha. The decision for a higher area size (1ha) is due to the fact that this is the most detailed information available from the national cartography of land-use and forest areas for 1990. Also, the National Forest Inventory is based on limited plotting and does not allow the identification of all individual areas.

3.3 Identification of Portugal's election of activities under Article 3, paragraph 4 for inclusion in its accounting for the first commitment period

Portugal elects as additional activities under Article 3, paragraph 4 of the Kyoto Protocol, forest management, cropland management and grazing land management, in the accounting of emissions and removals for the first commitment period.

3.4 Accounting of activities under Article 3, paragraphs 3 and 4 of the Kyoto Protocol

Portugal intends to account for emissions and removals from each activity under Article 3, paragraphs 3 and 4 of the Kyoto Protocol at the end of the commitment period, rather than annually.

3.5 Description of the national system in accordance with Article 5, paragraph 1 of the Kyoto Protocol

3.5.1 National System for the Estimation of Emissions by Sources and Removals by Sinks of Air Pollutants

The National Inventory System of Emissions by Sources and Removals by Sinks of Air Pollutants - SNIERPA¹ contains a set of legal, institutional and procedural arrangements that aim at ensuring the accurate estimation of emissions by sources and removals by sinks of air pollutants, as well as the communication and archiving of all relevant information.

The principal objective of the system is to prepare in a timely fashion the inventory of air pollutants (INERPA²), in accordance with the directives defined at international and European Community (EC) levels, in order to make easier and more cost-effective the tasks of inventory planning, implementation and management.

The implementation of the SNIERPA is a response to two commitments made at the international and EC levels:

- in the context of the Convention and of the Kyoto Protocol, the Decision 19/CMP.1 - Guidelines for national systems for the estimation of anthropogenic greenhouse gas emissions by sources and removals by sinks - under Article 5(1) of the Kyoto Protocol, which mandates the implementation of a national system until the 1st January 2007;

¹ Sistema Nacional de Inventário de Emissões por Fontes e Remoção por Sumidouros de Poluentes Atmosféricos

² National Inventory of Emissions by Sources and Removals by Sinks of Air Pollutants

- at the EC level, Decision 280/2004/EC of the European Parliament and of the Council, of 11 February, on the creation of a mechanism for monitoring EC greenhouse gases (GHG) emissions and for implementing the Kyoto Protocol, which anticipates the implementation of a national system by 31st December 2005.

For the sake of efficiency, the Portuguese national system, has been broadened to include a wider group of air pollutants than just GHG not covered by the Montreal Protocol, allowing for improvements in information quality, as well as an optimisation of human and material resources applied to the preparation of the inventory.

3.5.2 Contact information of the Single National Entity

The entity with overall responsibility for the Portuguese inventory system is the Institute for the Environment (Instituto do Ambiente). The Institute for the Environment has also been appointed as the Single National Entity.

Single National Entity	Institute for the Environment
Contact Person	Filomena Boavida
Department	Direcção de Serviços para as Estratégias e Programas Ambientais (Department of Environmental Strategies & Programmes)
Address	Rua da Murgueira, 9/9A, 2610-124 Amadora, Portugal
Email	filomena.boavida@iambiente.pt
Phone	+351 21 472 83 82
Fax	+ 351 21 471 90 74
Website	http://www.iambiente.pt

3.5.3 General description on the National System

The Portuguese National System was established through Council of Ministers Resolution 68/2005 of 17 March 2005, which defines the framework of the system and the entities relevant for its implementation, based on the principle of institutional cooperation, and

considering that the clear allocation of responsibilities is essential to ensure that inventory takes place within the defined deadlines.

The National System (SNIERPA) is composed of three technical instruments:

- a Methodological Development Program (PDM) which main objective is the identification and planning of methodological improvements regarding:
 - activity data;
 - country specific emission factors;
 - country specific parameters;
- a Quality Assurance and Control System (QA/QC) which main purpose is to endow the INERPA with a verification conjunct of procedures which guarantee the accuracy, transparency, consistency, completeness, representativeness and liability of emissions estimates and
- an integrated information technology (IT) system for SNIERPA's management (SIGA) that put in place an automatic system of management, collecting and archiving data.

The diagram below illustrates the connections between the different elements of the SNIERPA.

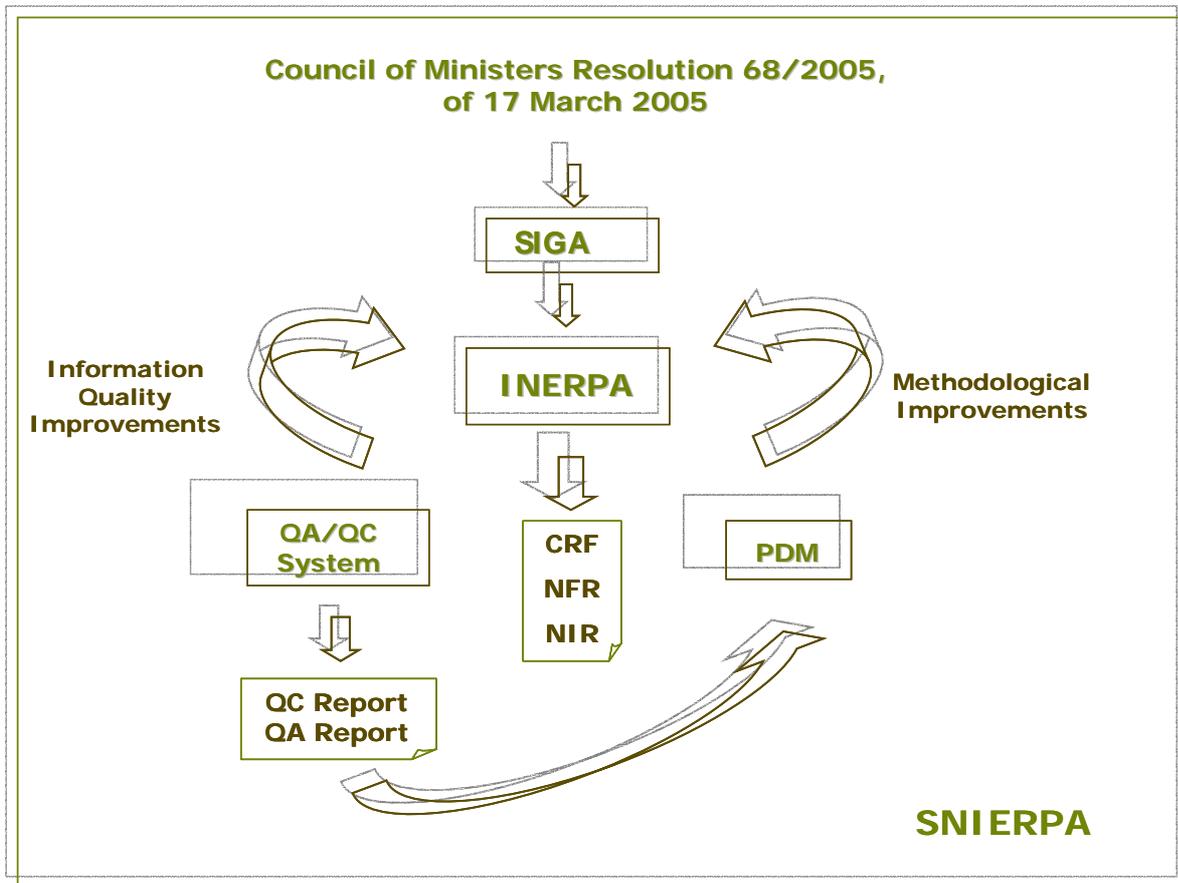


Figure 1. Connections between different elements of the SNIERPA.

3.5.4 Institutional arrangements

The Council of Ministers Resolution 68/2005 of 17 March that establishes the National System, defines the entities relevant for its implementation, based on the principle of institutional cooperation, and considering that the clear allocation of responsibilities is essential to ensure that inventory takes place within the defined deadlines.

3.5.4.1 Institutional structure

Three levels allowing for the differentiation between the different types of entities according to their various responsibilities were defined. Thus,

- the Single Responsible Entity is the Institute for the Environment (IA), being responsible for: overall coordination, elaboration and updating of the National Inventory of Emissions by Sources and Removals by Sinks of Air Pollutants (INERPA); the

inventory's approval, after consulting the Focal Points and the involved entities; and its submission to EC and international bodies to which Portugal is associated, in the several communication and information formats, thus ensuring compliance with the adopted requirements and directives;

- the sectoral Focal Points work with IA in the preparation of INERPA, and are responsible for fostering intra and inter-sectoral cooperation to ensure a more efficient use of resources; and
- the involved entities are public or private entities which generate or hold information which is relevant to the INERPA, and which actions are subordinate to the Focal Points or directly to the Responsible Body.

The following table lists the main focal points and involved entities, by sector of activity.

Sector of Activity	Focal Point	Involved Entities
National Statistics ³	National Statistics Institute	
Environment Statistics ⁴	Institute for the Environment	
Energy Statistics	Directorate-General for Geology and Energy	
Energy:		
Industry and civil construction.....	Directorate-General for the Enterprise	
Transport.....		
Road.....	Environmental Auditor of the Ministry of Public Works, Transport and Communications and Directorate-General for Driver Licensing	Studies and Planning Office of the Institute of Portugal's Roads, Directorate-General of Land and Water Transport
Rail.....	Environmental Auditor of the Ministry of Public Works, Transport and Communications	Studies and Planning Office, National Institute of Rail Transport, "Comboios de Portugal", National Railway Network
Aviation.....	Environmental Auditor of the Ministry of Public Works, Transport and Communications	Studies and Planning Office, National Civil Aviation Institute
Sea.....	Environmental Auditor of the Ministry of Public Works, Transport and Communications	Studies and Planning Office, Port and Sea Transport Institute, Port Administration
Fugitive Emissions from Fossil Fuels.....	Directorate General for Geology and Energy	
Industrial Processes	Directorate-General for Enterprise	
Solvent Use and Other Products.....	Directorate-General for Enterprise	
Agriculture	Environmental Auditor of the Ministry for Agriculture, Fisheries and Forestry	Zootechnical Station Rebello da Silva Agro-Chemical Laboratory
Forestry and Land Use Change		
Forestry	Directorate-General of Forestry	
Land Use Change.....	Portuguese Geographical Institute	
Waste		
Disposal/incineration of waste	Institute for Waste Management	
Wastewater.....	Water Institute	Directorate-General for Health

³ Transversal to all sectors of activity.

⁴ Relevant data obtained from the implementation of the Directives on Large Combustion Plants and on Integrated Pollution Prevention and Control.

3.5.4.2 Institutional competences

Single Responsible Entity competencies

The competencies of the Single Responsible Entity can be divided in three groups:

a) Planning, which includes:

- establishing the tasks assigned to the Involved Entities regarding information collection, data collection and/or management, assumptions, recommended emission factors, methodologies and other relevant aspects, and defining the obligations, methodologies and international guidelines that should determine the scope of the studies;
- identifying the base information, activity levels and/or parameters, to be supplied by each Focal Point and/or Involved Entity, necessary to the elaboration of the National Inventory of Emissions by Sources and Removals by Sinks of Air Pollutants (INERPA), by activity sector and/or emission source;
- establishing the procedures of information sharing between the Responsible Entity, Focal Point and/or Involved Entities;
- establishing a yearly work schedule;
- ensuring quality of the INERPA to allow and guarantee the transparency, coherency comparativeness, completeness and accuracy of the information to be submitted, mainly:
 - > create periodically and monitoring the implementation of a Methodological Development Programme (PDM) and
 - > create periodically and monitor the implementation of a Quality Assurance and Quality Control Programme (QA/QC);

b) Preparation, which includes:

- emission estimation;
- identification of priority emission sources;

- quantification of uncertainties associated to emission estimates;
- ensuring data coherence and consistency;
- ensuring the compliance of established deadlines;
- reporting emissions according to the various formats;
- facilitating the differentiated access to information by the Involved Parties and the general public;
- application of Quality Control procedures.

c) Management, which includes:

- maintaining a complete archive with all information used on previously submitted reports, to enable the verification of emission calculations;
- facilitating the access to that information and responding promptly to issues presented by competent community and international organizations;
- ensuring public access to information.

Focal Points Competencies

A Focal Point is responsible for cooperating with the Single Responsible Entity to promote and secure deadline compliance and the established INERPA objectives. Consequently, the Focal Point must guarantee a special follow-up in the execution of the assigned tasks to the Involved Entities, within their scope of work.

Specific Focal Point competencies include:

- compiling information from each Involved Entities according to their scope of work and delivering that information to the Single Responsible Entity within the established deadlines;
- ensuring, in coordination with the Single Responsible Entity, the suitability, credibility and representativeness of the information used to estimate emissions for each sector;

- coordinating, together with the Single Responsible Entity, all tasks aiming at improving emission estimates for each sector, or identification of relevant emission sources, and in particular the periodic preparation and monitoring of Methodological Development Programmes and Quality Assurance and Quality Control Program;
- cooperating with the Single Responsible Entity in the National Inventory Reports;
- ensuring funding for the development of its tasks in the National Inventory;
- collaborating with the Single Responsible Entity and Involved Entities in ensuring funding for studies that identify, select and develop methodologies to be used, particularly the development of emission or parameter factors.

Involved Entities Competencies

Although the competencies of Involved Entities are defined in the Council of Ministers Resolution 68/2005 of 17 March. Each entity defines specific responsibilities, directly with the Single Responsible Entity or with the Focal Point. This was deemed necessary as it would be difficult to comprise the various contributions from different entities for the INERPA based on a generic description of competencies.

Thus, in general terms, the routine competencies of the Involved Entities are as follows:

- collect the necessary base information for assigned subcategories of sources/removal by sinks;
- implement Quality Control procedures and report their application during the collection and management of data relevant for the INERPA;
- provide in due time the necessary base information for the assigned activity or emission sources to the Focal Point or Single Responsible Entity.

The Involved Entities are also responsible, when required, for collaborating with the Single Responsible Entity and Focal Points in the following activities:

- development and monitoring of the Control and Quality Assurance Program; in particular, providing information regarding data collection, collection and management of base information, and Quality Control and Assurance procedures;
- selection of experts for participation in external audits;
- implementation and monitoring of the Methodological Development Program; in particular, identifying, selecting and developing methodologies to be used in emission factors as well as in the collection of activity data that best reflect the national case;
- development of the National Inventory Report (NIR);
- providing responses to issues brought up by the competent, community and international evaluation teams of the National Inventory.

Involved Entities are also responsible for funding their assigned tasks and collaborate with the Responsible Entity, Focal Points, and other Involved Entities in ensuring funding for other tasks that aim at increasing the inventory accuracy, credibility, completeness and transparency.

3.5.4.3 Procedures for the official consideration and approval

The Single Responsible Entity (Institute for the Environment) is responsible for the final approval of the INERPA after consulting with Focal Points and, eventually, with Involved Entities according to:

- the Single Responsible Entity submits the provisory version of the INERPA at least 30 days before the deadline of the submission to the European Union
- the Focal Points have 10 working days to respond with comments and proposals including any comments for the Involved Entities
- the Single Responsible Entity in coordination with the Focal Points elaborates the final version of INERPA

3.5.5 Planning

Two instruments of the SNIERPA ensure technical and methodological accuracy, completeness and reliability of the inventory: the Methodological Development Program (PDM) and the Quality Assurance and Control System (QA/QC).

The PDM aims at identifying and defining a calendar for the application of methodological developments to the emissions estimates from the different categories of sources and sinks defined in the INERPA, by engaging experts in the inventory preparation process. It is a fundamental instrument in the planning of activities with all relevant entities.

The purpose of the QA/QC System is to provide a set of verification (basic and technical) procedures to ensure the accuracy, completeness, transparency, reliability and representativeness of the emissions inventory.

The QA/QC System consists of the Programme of Quality Control and Assurance and the Manual of Quality Control and Assurance. The first defines the calendar for the application of general procedures (QC1), the specific procedures for each source sub-category (QC2) and the quality assurance procedures (QA) listed in the manual. The various procedures listed on the manual have been drawn on the basis of the IPCC Good Practice Guide (GPG) guidelines and adapted to the specific characteristics of the Portuguese INERPA preparation.

QC1 procedures are organized by checklists which include: basic checks on the accuracy of data acquisition processes (e.g. transcription errors); checks on calculation procedures, data and parameters; cross-checking for consistency of data which is common across categories; verification of the National Inventory Report (NIR) and the Common Report Format (CRF) tables. Documentation and archiving procedures enable data handling for inventory recalculation.

QC2 procedures include technical verifications of the emissions factors and the activity data, and comparisons of the results obtained from different sources.

Finally, QA consists of a system of procedures to review parameters, activity data and emissions factors, as well as to validate the methodologies applied; this system is run by agents not directly involved in the development and compilation of INERPA.

Formal reports are produced following QC and QA procedures and made available for consultation.

The complete implementation of these two instruments is important in ensuring that the national system is effectively implemented in the context of the Kyoto Protocol.

An annual working calendar was defined in the context of the national system, providing main moments of the process along a year. The following table shows the annual calendar that was defined and approved by the Focal Points.

National Inventory (INERPA) planning: annual Calendar.

Date	Task
15 th of May	Beginning of works: meeting of working group of SNIERPA
30 th of June	Deadline for Focal Points and Involved Entities send the Data
15 th of October	Meeting of working group of SNIERPA
30 th of November	Deadline for Single National Entity send CRF (Common Report Format) and NFR (Nomenclature For Reporting) for Focal Points and Involved Entities for comments
[10 days after] December	Deadline for Focal Points and Involved Entities send comments to CRF and NFR
31 th of December	Deadline for sending NFR to European Union
15 th of January	Deadline for sending CRF and draft NIR to European Union
15 th of February	Deadline for sending NFR to UNECE (LRTAP)
1 th of March	Deadline for application of QC (tier 1 and 2) procedures to CRF and NFR
15 th of March	Deadline for the application of QC (tier 1) procedures to NIR Deadline for sending the final version of CRF and NIR to European Union
15 th of April	Deadline for sending CRF and NIR to UNFCCC
1 th of May	Deadline for the application of QA procedures to the Inventory

3.5.6 Data collection

The following table shows by each IPCC Category which entities give data for the annual elaboration of the National Inventory. The entities mentioned are covered in the framework of the National System described above. In the National Inventory Report is possible to find more detailed information concerned with applied methodologies for emissions calculations and emissions factors.

IPCC Category	IPCC Category	Data Sources
1A – Energy, Fuel Combustion	1A1 – Energy Industry	<ul style="list-style-type: none"> > Directorate-General for Geology and Energy: Energy Balances > National Statistics Institute > Institute for the Environment: EPER;LCP
	1A2 – Manufacturing Industries and Construction	<ul style="list-style-type: none"> > Directorate-General for Geology and Energy: Energy Balances > Institute for the Environment: EPER;LCP > Unit Plants: CIMPOR;SECIL
	1A3 – Transport	<ul style="list-style-type: none"> > Environmental Audit of the Ministry of Public Works, Transports and Communications > Directorate-General for Geology and Energy: Energy Balance > National Statistics Institute > Directorate-General for Driver Licensing > Port and Sea Transport Institute > National Civil Aviation Institute > Road Institute
	1A4 – Other Sources	<ul style="list-style-type: none"> > Directorate-General for Geology and Energy: Energy Balances
1B – Fugitive Emissions from Fuels		<ul style="list-style-type: none"> > Directorate-General for Geology and Energy: Energy Balances > Unit Plants: GALPENERGIA
2 – Industrial Processes	2A – Mineral Products	<ul style="list-style-type: none"> > Directorate-General for Geology and Energy: Energy Balances > Institute for the Environment > Portuguese Association of Producers of Bitumen Materials > Technology Centre for Ceramics and Glass > Unit Plants: CIMPOR;SECIL
	2B – Chemical Industry	<ul style="list-style-type: none"> > Directorate-General for Geology and Energy: Energy Balances > Institute for the Environment: EPER;LCP > National Statistics Institute
	2C – metal production	<ul style="list-style-type: none"> > Directorate-General for Geology and Energy: Energy Balances > Institute for the Environment: EPER;LCP > National Statistics Institute
	2D – Other production	<ul style="list-style-type: none"> > Directorate-General for Geology and Energy: Energy Balances > Institute for the Environment: EPER;LCP > CELPA (Paper Industry Association)

IPCC Category	IPCC Category	Data Sources
	2F – Consumption of Halocarbons and SF ₆	<ul style="list-style-type: none"> > Directorate-General for Enterprise > National Statistics Institute > Data from Industry Importers > National Electric Grid (REN) > Electricity Companies (EDP) > Directorate-General for Driver Licensing > APIRAC
3 – Solvent and Other Product Use		<ul style="list-style-type: none"> > Directorate-General for Geology and Energy: Energy Balances > National Statistics Institute > Directorate-General for Enterprise
4 – Agriculture		<ul style="list-style-type: none"> > Environmental Audit of the Ministry of Agriculture, Rural Development and Fisheries > Directorate-General of Forestry > National Statistics Institute (Agriculture Survey) > LQARS
5 – Land Use Change and Forestry		<ul style="list-style-type: none"> > Directorate-General of Forestry > Portuguese Geographical Institute > Institute for the Environment
6 - Waste	6A – Solid Waste Disposal on Land	<ul style="list-style-type: none"> > Institute for Waste Management > National Statistics Institute
	6B - Wastewater Handling	<ul style="list-style-type: none"> > National Institute for Water > National Statistics Institute
	6C – Waste Incineration	<ul style="list-style-type: none"> > Institute for Waste Management > Data from Incineration Units > Unit Plants: LIPOR, VALORSUL

3.5.7 Data Archiving and Management

All inventory calculation and reporting rely in a set of different Excel spreadsheet workbooks which had been developed in order that all information and calculations occur automatically. The information received from the several data suppliers is stored in its original format (paper or magnetic). A copy of this information is converted into the working workbooks, where data is further processed, linkage made and calculations performed, maintaining hence the integrity of the original data sources.

The informatics system has been developed to answer to the various international obligations

and national needs. At present, the different demands refer to: UNFCCC (CRF format); UNECE/CLRTAP (NFR format); LCP Directive (NFR format); as well as national needs such as the State of Environment Reports. There is independency between emission calculations and the required structure necessary for each obligation which allow flexibility in the inventory.

Backup is done periodically. In what refers to the maintenance of the annual inventory documentation, the information is archived in a way that enables each inventory estimate to be fully documented and reproduced if necessary. When major changes are done in methodology and emission factors, older spreadsheets are frozen and work restarts with copies of those spreadsheets, making a clear reference to the period when they were used.

The restructuring of all the inventory system is under study and discussion. An Integrated IT System for the Management of SNIERPA (SIGA) is currently under consideration, with the view of endowing the national system with the capacity to archive and manage all the information necessary for the preparation of INERPA, including activity data, intermediate calculation parameters and emission factors, justification for the use of a given methodology, deadlines for submission of data and the identification of contacts for each body and Focal Point.

SIGA will be the reference for all involved in the preparation of INERPA, further to its role in information dissemination to the wider public. It will also perform simple functions such as sending reminders to the Focal Points and to the involved entities on upcoming deadlines for information's submission.

3.5.8 Key Source identification

Key Source analysis of the inventory was based on a tier 1 (level and trend assessment) and tier 2 (level and trend assessments with uncertainty analysis) approaches. Both approaches have been applied in two steps: without and with the LULUCF sector.

3.5.9 Uncertainty analysis

Uncertainty in results of the GHG inventory of emissions results from natural variability of emission processes, incomplete knowledge of emission sources and definition, errors and gaps in data collection and statistical information, incorrect determination and choice of emission factors and parameter due to errors in original monitoring data, reference studies and expert judgement.

A tier 1 methodology was used to estimate total uncertainty for the inventory, for one individual year and also the uncertainty in trend. The uncertainty analysis was performed only for the direct GHG: CO₂, CH₄, N₂O, HFC and SF₆, considering all emissions in CO₂ equivalent (CO₂e).

3.5.10 National System and article 3.3 and 3.4

The Focal Points involved, through the Portuguese National System (SNIERPA), in the process of defining the methodology for the identification of the areas and calculation of emissions/removals associated with activities of the articles 3.3 and 3.4 are the Institute for the Environment (IA), the Environmental Audit from de Ministry of the Agriculture, Rural Development and Fisheries (AA-MADRP), the Forest's General Directorate (DGRF), the Portuguese Geographical Institute (IGP) and the National Statistics Institute (INE).

These entities have agreed that the methods described below are the appropriate for the fulfilment of the additional information reporting obligations under Article 7.1 of the Kyoto Protocol dictated by the Article 3.3 and Article 3.4 (reforestation and forestry management, as well as activities such as cropland management and grassland management) considering the existing information and the cost/benefit ratio in terms of Kyoto's obligations fulfilment.

Other experts involved are the Superior Agronomy Institute (ISA), the Superior Technical Institute (IST), Évora University (UEv), National Institute for Intervention and Cropland Guarantee (INGA) and Rebelo da Silva's Laboratory. They contributed with expertise and advice on the availability of the necessary information.

3.5.10.1 Forest Management and Article 3.3 Activities

- In Portugal the 1990 Land Use Map (COS'90) is available with 1 ha resolution; this cartography will be improved and used to determine land use coverage in that year;
- Portugal will produce COS'05 (2005) which will be used to assess the forest⁵, agriculture and grazing land area in the beginning of the first commitment period (2008) and to identify the afforested/reforested and deforested areas between 1990 and the beginning of the commitment period, which will be classified under the scope of Article 3.3;

⁵ In accordance with the definition of agriculture under Forest Management

- Considering the need to warrant that the time period is appropriate to gather, interpret and handle the base data (aerial photography) and to economize on resources and guarantee the consistency with the Forest National Inventory (IFN), the data collection on land use during the commitment period must be anticipated. Therefore, a new COS will be produced during the late 2010, what will allow the results to be available in 2013. The comparison of these with COS'05 will permit the determination of the changes in Forest Management activities, ARD during the commitment period, and other land use changes related to 3.4 activities on the first commitment period;
- Data gathered through IFN 2005 will be used to characterize forest areas in terms of biomass, age of trees and tree fellings or forest fires in previous years. The information that will be gathered on the subsequent IFNs may be used to assess the changes in biomass during the first commitment period;
- The annual work of DGRF which intends to detect forest fires through satellite images, will be used to identify the burnt areas, during the commitment period. It was considered that the minimal area of 5 ha does not cause significant errors on the evaluation, once the extension of the burnt areas is majority considerably bigger;
- The tree fellings assessment can be done using data from IFN 2005, through growing models and subsequent IFNs or, eventually and if necessary, using data from an IGP project also based on detailed satellite image;
- Biomass in forest areas and annual increments will be assessed in detail using data from the IFN 2005, subsequent exercises, and biomass models per specie and region. These models are being developed in collaboration with DGRF and ISA.

3.5.10.2 Cropland Management and Grassland Management

The assessment of carbon change will cover all cropland and grazing land areas in Portugal, but using differentiated methodological detail.

Areas with specific cropland management or grassland management practises (no-tillage or biodiverse pastures)

- The identification of the areas with cropland or grassland management activities that are expected to have significant impacts on carbon storage, will use the data base from

the INGA, which manages the Agro-Environmental subsidies. The areas are georeferenced;

- The determination of the changes on land use and practises in these areas will be done with the information from INGA, available since 1995 (assuming that it represents 1990) and, eventually, through the overlapping with COS'90, on the cases of lack of data for specific areas on INGA database,
- The soil carbon content will be available through results of the IST's Extensity project (biodiverse pastures) or UEv (no-tillage), complemented, if necessary, with data from Rebelo da Silva's Laboratory (soil analysis) or others.

Other cropland or grassland Areas

- These areas will be identified using COS (1990, 2005 and in subsequent year during the first commitment period). The cropland and grassland areas with specific management activities (based on INGA's database) will be subtracted from the national total identified on COS, to avoid double-counting;
- The soil carbon content will be determined through the parameterisation by soil type and land use, using studies made by Rebelo da Silva's Laboratory in the context of the International Programme under the UNECE Convention on Long-range Transboundary Air Pollution and its actualisation (georeferenced samples).

3.5.10.3 Methodology's Test

During the first semester of 2007 the proposed methodology will be tested for validation. For that, a pilot area was selected. This test aims at identifying potential new data needs as well as at correcting errors that have not been anticipated.

3.5.11 Next Steps

In 2007 the Institute for Environment (The Single National Entity) is planning to undertake a revision of the Quality Control procedures (tier 1 and 2) as also the Archiving procedures. This was a finding necessity of the National System internal review, undertaken in 2006 by the technical staff associated with the annual elaboration of the National Inventory.

3.6 Description of the national registry in accordance with the guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol

Instituto do Ambiente (IA) is the Competent Authority and the Registry Administrator of the Portuguese National Emission Allowances Registry (RPLE - Registo Português de Licenças de Emissão). To fulfil its obligations, IA has constituted a team for setting-up, operating and maintaining the RPLE. A significant part of this effort was outsourced to a specialized IT services company, namely, and since 2004, eChiron, Gestão de Software, SA.

Thus, RPLE is structured as follows: IA, which is responsible for administrative and organizational aspects; e-Chiron, which is responsible for all technical aspects; the RPLE uses SERINGAS as application software.

The Portuguese National Emissions Registry (RPLE - Registo Português de Licenças de Emissão), in operation since November 2005 in accordance to the Regulation (CE) n.º 2216/2004, of 21 December, will be the basis for the national registry defined in the Kyoto Protocol. Further information is given below, in accordance with the guidelines set down in the Annex, point II, section "E. National Registries" of the Decision 15/CMP.1.

RPLE has been supported by the SERINGAS software, developed by *Caisse de Dépôts et Consignation*, and in use in several European countries. IA has acquired a license from *Caisse des Dépôts et Consignations* and is an active member of the SERINGAS users group and has participated in the Steering and Technical meeting where the several evolutions of this software are decided.

The Portuguese Registry of GHG emissions and assigned amounts is currently supported by the SERINGAS software (v2.72). The upgrade to SERINGAS v2.95 is expected during January 2007. Since SERINGAS v2.95 does not fully meet Kyoto protocol requirements and UNFCCC Secretariat specifications, software changes will be required for the 1st Kyoto period 2008-2012. In early January, the Environmental Institute is expected to decide, if it goes on using SERINGAS software (v4.0 will meet all Kyoto specifications) or if it will adopt another existing software. In either case, IA has planned a smooth transition between the current software and the new one.

a) Name and contact information of the registry administrator designated by the Party to maintain the national registry

Registry Administrator: Instituto do Ambiente (Institute for the Environment)
Address: Rua da Murgueira, 9/9A, 2610-124 Amadora, Portugal
Telephone: +351 21 472 82 00
Fax: + 351 21 471 90 74
Website: <http://www.iambiente.pt>
e-mail: rpleadmin@iambiente.pt
Contact person: Clara Lopes: clara.lopes@iambiente.pt
Pedro Faria: pedro.faria@iambiente.pt

b) Names of the other Parties with which the Party cooperates by maintaining their national registries in a consolidated system

Company name: e-Chiron, Gestão de Aplicações de Software, S.A.
Address: Edifício Premium
Alameda Fernão Lopes, nº 16 – 10º
1495-190 Algés

c) Description of the database structure and capacity of the national registry

The current registry production infra-structure includes 2 dedicated web servers (with node balancing), 2 dedicated database servers and an external storage area network. At each functional level (web server and database server), each server is prepared to answer alone to any request in the case of failure of the other server. This dedicated production infra-structure is hosted at a top level datacentre with strict access control and redundant power supply, communications and air conditioning.

To increase the registry reliability and resilience as well as data safety, an independent backup system exists at another datacentre. This backup system is composed by a single computer which is prepared to be operational within a few hours of any major failure of the production system. A full copy of the database is transferred daily from the production environment to the backup environment.

An external team with both IT and environmental competence has been contracted to help support the Portuguese Registry Administration.

This infra-structure serves the present needs of the Portuguese Registry and has the expansion capacity needed to meet future demands. SERINGAS, the current registry software, uses MS SQLserver and MS IIS, but another database management software and webserver software may be used during 2008-2012, if IA decides to adopt a different registry software.

d) Description of how the national registry conforms to the technical standards for data exchange between registry systems for the purpose of ensuring the accurate, transparent and efficient exchange of data between national registries, the clean development mechanism registry and the transaction log (decision 19/CP.7, paragraph 1);

The Registry is operational since November 2005. Currently, the data exchange between the Portuguese Registry and the community international transaction log (CITL) is ensured by SERINGAS software (agent module). This software has been accredited by the European Commission, who evaluated how it conformed to technical standards for transactions between registries. The Portuguese installation has also been submitted to tests by the EC. It comprises with the specifications set out in Regulation (CE) 2216/2004, 21 December, and thus it is expected also to comprise with the functional requirements of ITL, namely performing issuance, conversion, external transfer, (voluntary) cancellation, retirement and reconciliation processes using XML messages and web-services as specified in V1.0 of the UN DES document.

SERINGAS v3.0 will meet the DES v1.1 released by the UNFCCC Secretariat. The SERINGAS development team has planned tests in early January to evaluate the software in relation to the functional and technical requirements of the ITL. The SERINGAS development team has been working in close contact with the ITL administrator and development team.

If IA decides to adopt another software, IA will require its software provider to work in close contact with the ITL administrator and development team and to perform the necessary tests in order to ensure that the software complies with DES v1.1 released by the UNFCCC Secretariat.

e) Description of the procedures employed in the national registry to minimize discrepancies in the issuance, transfer, acquisition, cancellation and retirement of ERUs, CERs, AAUs and/or RMUs, and of the steps taken to terminate transactions where a discrepancy is notified and to correct problems in the event of a failure to terminate the transactions;

The National Registry software being evaluated by IA (SERINGAS and others) includes a number of validations to minimize the discrepancies in the registry transactions and rules to terminate them whenever a discrepancy is identified, according to Regulation 2216/2004, of 21 December. This set of rules will be having in consideration the DES issued by the UNFCC Secretariat.

Moreover, all transactions performed by the Portuguese Registry are verified by CITL and a reconciliation process is run daily to identify potentials discrepancies. It is expected that a similar reconciliation process will be put in place, being that this is dependent of what will be required by UNFCCC.

In cases the reconciliation process does not proceed to its end, a manual intervention is done, followed by a new reconciliation process.

f) Overview of security measures employed in the national registry to prevent unauthorized manipulations and to prevent operator error and of how these measures are kept up to date;

The Portuguese Registry interface is made available through https protocol. An SSL digital certificates provides authentication and encryption power for secure online transactions. The access to the Portuguese Registry is controlled by username and password.

An account holder needs to sign a contract with Portuguese Registry to be granted access the registry. By signing this contract, the account holder becomes aware of its obligations towards the registry, including the ones regarding security issues, and assumes the responsibility for fair use of the registry.

The number of persons with administration privileges is kept to a minimum and all are under a strict confidentiality agreement. Written procedures are in place to ensure a common and tested way of dealing with all issues regarding the registry maintenance.

g) List of the information publicly accessible by means of the user interface to the national registry;

At the moment, the Portuguese Registry public interface does not offer any public information. During 2005 and 2006 information on the accounts was available through the CITL website, which presents the following public information on the Portuguese Registry: 1) a list of opened accounts with detailed information on account name, account type, commitment period and authorized representatives' data and 2) a list of allocated, verified and surrendered allowances per installation for each past year of the current commitment period.

The software to be used by the Portuguese Registry from 2008 onwards (SERINGAS v2.95+ or other) is expected to offer publicly accessible information required under the COP/MOP decisions and as specified by the UNFCCC Secretariat.

h) Internet address of the interface to its national registry;

<https://rple.iambiente.pt>

i) Description of measures taken to safeguard, maintain and recover data in order to ensure the integrity of data storage and the recovery of registry services in the event of a disaster;

The backup policy in place at the moment determines that the data storage is saved daily to an external storage device and that on a weekly basis the tapes containing the data are stored in a physical location different from the location of the production environment. In parallel an daily off-site backup is performed to the backup environment hosted at another datacentre.

j) Results of any test procedures that might be available or developed with the aim of testing the performance, procedures and security measures of the national registry undertaken pursuant to the provisions of decision 19/CP.7 relating to the technical standards for data exchange between registry systems.

SERINGAS software has been tested by the European Commission. Before going into production, the current installation of SERINGAS v2.7.2 in Portugal has also been tested and approved by the EC in April 2005.

Within the implementation project of the software that will support the Portuguese National Registry from 2008 onwards, a complete and detailed test plan will be completed which will check the specifications described in Annex H of the DES 1.1 and will include any other tests required by the UNFCC Secretariat. In addition, other tests will be carried out to check all Kyoto Protocol functionality requirements, and the performance of RPLE against other national registers, as well as the CITL and, if possible, the CDM register.

Annex 1

National Inventory Report (revised compared to the report submitted to UNFCCC in April 2006).



Annex 2

Common reporting format tables (revised compared to the tables submitted to UNFCCC in April 2006).