



# Tracking progress in Portugal

Is Portugal's experience useful to others?

Gonçalo Cavalheiro  
Mitigation Partnership Summer School  
Hanoi, 27<sup>th</sup> August 2013

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## THIS PRESENTATION

*Tracking progress over time: has consistency been maintained in the estimation of GHG emissions in the past 20 years?*

*Have emission projections provided a solid basis for policy decisions?*

*How has Portugal tracked progress?*

- GHG Inventory*
- Emissions projections*
- Policies and Measures*

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*Policies and Measures*

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## TRACKING PROGRESS IN PORTUGAL

**Estimate of 1990 energy emissions in 1994 (NC1): 42Mt**

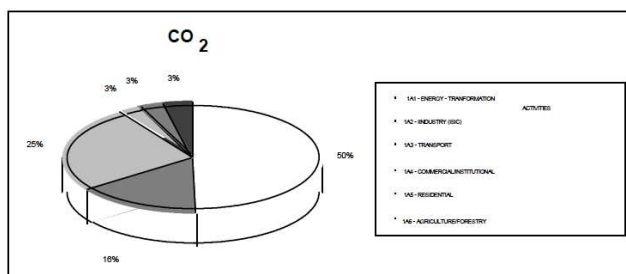


Figure 3.9 - Emissions of CO<sub>2</sub> caused by combustion processes

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## TRACKING PROGRESS IN PORTUGAL

Estimate of 1990 energy emissions in 1997 (NC2): 47Mt

CATEGORY	(Gg)						
	CO2	CH4	N2O	NOx	CO	NM VOC	GWP
Total N. Emissions and Removals	49 689	827.0	14.10	372.4	1 192.0	294.4	71 583
1 All Energy	47 154	18.3	2.07	367.9	1 158.5	183.7	48 205
1A Fuel Combustion Activities	46 953	15.0	2.07	367.9	1 158.5	122.2	47 932
1B Fugitive Fuel Emission	201	3.4	na	na	na	61.5	272
2 Industrial Processes	3 421	0.4	1.94	4.5	32.9	17.7	4 053
3 Solvent and other Product Use	266	na	na	na	na	85.2	266
4 Agriculture	ne	194.8	7.16	ne	ne	ne	6 389
5 Land-Use Change & Forestry	-1 152	na	na	na	na	na	-1 152
6 Waste	0,00	613.5	2.93	0.0	0.6	7.8	13 823
7 Other	0	0.0	0.00	0.0	0.0	0.0	0
INTERNATIONAL BUNKERS	1 850	1.7	0.04	30.1	2.3	0.1	1 897

Source: Institute of Meteorology

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## TRACKING PROGRESS IN PORTUGAL

Estimate of 1990 energy emissions in 2003 (NC3): 41Mt

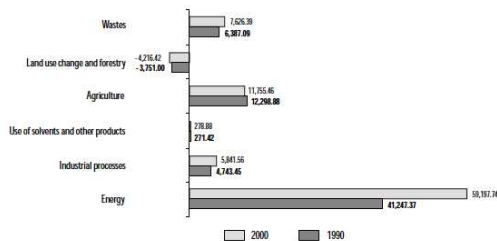


Figure 54 – GHG emissions in Portugal by sector (Kt CO<sub>2</sub> eq.)

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## TRACKING PROGRESS IN PORTUGAL

Estimate of 1990 energy emissions in 2006 (NC4) – first with national system under KP (SNIERPA) recently in place: ~40Mt

*Diga*

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> <sup>(1)</sup>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Total
	CO <sub>2</sub> equivalent (Gg)						
Total (Net Emissions) <sup>(1)</sup>	46.425,70	11.379,78	5.378,56	0,00	0,00	1,82	63.185,86
1. Energy	39.087,12	564,93	519,85				40.171,90

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## TRACKING PROGRESS IN PORTUGAL

Estimate of 1990 energy emissions in 2010 (NC5): ~40Mt

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub> <sup>(1)</sup>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs <sup>(2)</sup>	PFCs <sup>(2)</sup>	SF <sub>6</sub> <sup>(2)</sup>	Total
	CO <sub>2</sub> equivalent (Gg)						
Total (Net Emissions) <sup>(1)</sup>	44.949,37	10.257,43	5.605,41	NA,NE,NO	NA,NE,NO	NA,NE,NO	60.812,21
1. Energy	39.318,33	581,65	522,14				40.422,12

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## TRACKING PROGRESS IN PORTUGAL

Estimate of 1990 energy emissions in 2013 (CRF): ~41Mt

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	NO <sub>x</sub>	CO	NM VOC	SO <sub>2</sub>
Total Energy	40 609,2	27,2	1,4	243,4	803,9	189,8	310,4

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*Policies and Measures*

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## TRACKING PROGRESS IN PORTUGAL

### Emissions projections for 2000 in 1994 (NC1): 54Mt

Table 5.1  
Projections for the emission of CO<sub>2</sub> caused by combustion (Category 1A) - (10<sup>9</sup>g)

Categories	1990	1995	2000
1A - COMBUSTION	38 686	46 024	54 274
1A1 - ENERGY-TRANSFORMATION ACTIVITIES	19 386	21 180	24 308
1A2 - INDUSTRY	6 079	7 143	8 911
1A3 - TRANSPORT	9 946	13 389	16 140
1A4 - COMMERCIAL-INSTITUTIONAL	1 045	1 273	1 404
1A5 - RESIDENTIAL	891	1 085	1 196
1A6 - AGRICULTURE-FORESTRY	1 338	1 953	2 315

Source: Institute of Meteorology  
Growth rates supplied by the Directorate General for Energy (DGE)

### Actual Emissions in 2000 (CRF 2003 submission): ~58Mt

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	NO <sub>x</sub>	CO	NMVOC	SO <sub>2</sub>
Total Energy	57 944,17	29,45	3,10	(Gg)	397,39	1 014,52	219,24
							275,47

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## TRACKING PROGRESS IN PORTUGAL

### Total emissions projections for 2010 in 2003 (NC3): 99-95Mta

	Inventories		High-end Scenario				Low-end Scenario			
	1990	2000	2010	2020	% increase relative to 1990	2010	2020	% increase relative to 1990	2010	2020
1. Energy (combustion and leaks)	41.25	59.20	79.2	91.2	92.1	121.2	74.8	83.9	81.3	103.5
1.1. Energy supply	16.21	22.91	26.5	30.3	62.7	87.1	24.4	26.2	46.5	61.7
1.2. Industry and construction	8.90	10.18	15.1	17.7	69.9	99.4	14.2	15.6	60.1	75.3
1.3. Transport (w/o bunker fuels)	11.41	20.20	29.3	33.4	156.7	192.8	28.5	32.8	149.6	187.3
1.4. Other sectors	4.72	5.90	8.3	9.8	75.1	106.6	8.0	9.3	68.6	97.5
2. Industrial processes	4.74	5.84	5.9	6.9	25.2	45.9	5.8	6.6	22.4	38.5
3. Solvents and other products	0.27	0.28	0.3	0.3	2.7	2.7	0.3	0.3	2.7	2.7
4. Agriculture	12.30	11.76	12.2	12.7	-0.7	3.2	12.2	12.7	-0.7	3.2
5. Changes in land use and forestry (LUCF)	-3.75	-4.22	n.a	n.a			n.a	n.a		
6. Waste and others	6.39	7.63	2.1	2.1	-67.9	67.9	2.1	2.1	-67.9	-67.9
<b>Total (without LUCF)</b>	<b>64.95</b>	<b>84.70</b>	<b>99.7</b>	<b>113.2</b>	<b>53.5</b>	<b>74.3</b>	<b>95.1</b>	<b>105.5</b>	<b>46.5</b>	
<b>Projections (without LUCF)</b>			High-end Scenario				Low-end Scenario			
Kyoto target (-27% in 2010)	<b>64.95</b>		<b>82.5</b>		<b>(+27%)</b>		<b>82.5</b>		<b>(+27%)</b>	
Reduction effort (Mt CO <sub>2</sub> eq)			<b>17.2</b>				<b>12.6</b>			

n.a - not available

(Source: FPNAC Measures and Impacts, Nov. 2002, CEII/DAFCC-UM)

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## TRACKING PROGRESS IN PORTUGAL

Total emissions projections for 2010 in 2010 (NC4): 85Mt

Table 36. GHG historic emissions and projections.

Sectors	1990	2005	2007	2010		2020		Var 2020/2005	
				(Gg CO <sub>2</sub> e)		(Gg CO <sub>2</sub> e)		(%)	
				WEM	WAM	WEM	WAM	WEM	WAM
Energy Industries	16 010	24 952	19 914	23 233	23 953	28 422	29 487	12	15
Industries and Construction	9 267	10 370	10 860	9 066	8 817	10 893	9 217	5	-13
Transport	10 149	19 861	19 500	22 132	21 184	22 617	21 570	12	8
Other sectors <sup>82</sup>	4 610	7 067	5 645	7 173	7 182	6 970	6 442	-1	-1
Other	104	73	73	0	0	0	0	-100	-100
Fugitive emissions	281	1 541	1 590	280	291	457	387	-237	-298
Industry	4 611	7 802	8 589	8 714	8 646	11 103	9 646	30	19
Solvent	220	332	346	328	328	338	338	2	2
Agriculture	8 088	8 081	7 638	8 715	8 715	7 984	7 984	-1	-1
LULUCF	1 543	-1 994	-2 324	-3355	-4655	NA	NA	NA	NA
Waste	5 928	7 151	7 685	6 154	6 154	5 679	5 679	-26	-26
Total (with LULUCF)	60 812	87 230	79 517	82 441	80 615	94 463	90 750	8	4
Total (Without LULUCF)	59 269	87 230	81 841	85 796	85 270	94 463	90 750	8	4

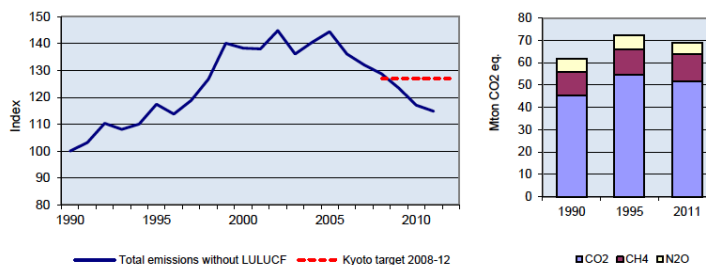
Source: CECAC, 2009

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## TRACKING PROGRESS IN PORTUGAL

Actual emissions in 2011 –w/out LULUCF (NIR 2013): ~70Mt



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## WHAT HAVE WE LEARNED FROM THESE NUMBERS?

- That tracking ex-post emissions has been a rather successful and consistent exercise
- That estimating emissions projections has been a complete failure.
- **Big problem: policy planning and decisions are made based on emissions projections.**

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**Emissions projections**

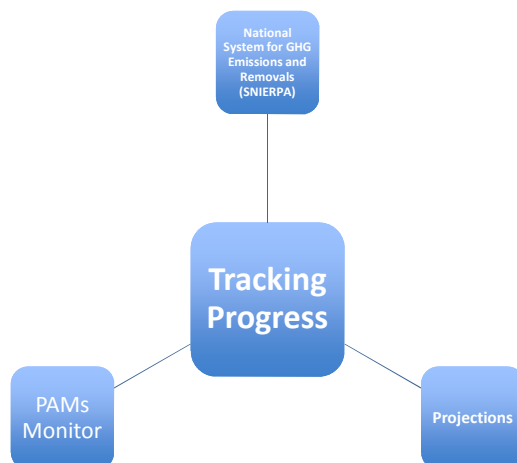
**Policies and Measures**

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## HOW DO WE ACTUALLY TRACK PROGRESS IN PORTUGAL?

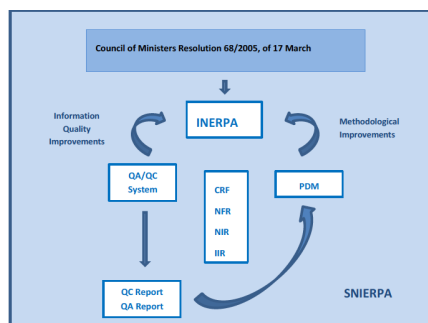


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## SNIERPA

- National system according to KP rules (art. 5.1)
- Establishes (by law) a set of institutional responsibilities (who is responsible for the provision of data, who is responsible for the estimation of emissions...)
- Determines a QA/QC and a methodological development programme.



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- System build to monitor implementation of measures adopted to meet KP target

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- Monitoring PAMs

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**– Detailed information about each single PAM**

**Ficha de Medida** - **MRe2** - **Novo Plano de Expansão do Sistema Electroprodutor**

Sector: **Oficina de Energia**  
 Ponto Focal: **Divisão Geral de Energia e Geologia (DGEG)**  
 Categoria: **Medida de Eficiência Energética**

**Metas**  
 Metas centrais de ciclo combinado a gás natural (CCGN) com um consumo específico de 0,158 m<sup>3</sup>/kWh para os dois primeiros grupos (Central do Ribatejo) e 0,158 m<sup>3</sup>/kWh para os grupos seguintes em vez de 0,175 m<sup>3</sup>/kWh.

METAS	UNIDADE	ANO				
		2008	2009	2010	2011	2012
<b>Meta [08-12] (Principal)</b>						
Consumo específico das novas centrais de ciclo combinado a gás natural (CCGN), de acordo com a RCM n.º 104/2006, de 23 de Agosto.	m <sup>3</sup> /kWh	0,158	0,158	0,158	0,158	0,158

**Previsões Anuais Obrigatórias de Registo: Anual** - **Plano de Medida: Multi Período**

VARIÁVEL DE IMPACTO	UNIDADE	ANO				
		2008	2009	2010	2011	2012
Consumo específico das novas centrais, de ciclo combinado a gás natural (CCGN).	m <sup>3</sup> /kWh	0,158	0,158	0,158	0,158	0,158

**INDICADORES DE EXECUÇÃO**

INDICADOR DE EXECUÇÃO (Principal)	UNIDADE	ANO				
		2008	2009	2010	2011	2012
Rácio entre o consumo específico das novas centrais de ciclo combinado a gás natural (CCGN) e a meta [08-12].	%	100,00	100,00	100,00	100,00	100,00

**DESVIO ÀS METAS**

DESVIO À META (Principal)	UNIDADE	ANO				
		2008	2009	2010	2011	2012
Diferencial entre o consumo específico das novas centrais de ciclo combinado a gás natural (CCGN) e a meta [08-12].	m <sup>3</sup> /kWh	0,000	0,000	0,000	0,000	0,000

**IMPACTE NA EFICÁCIA AMBIENTAL**

IMPACTE (De acordo com a meta)	UNIDADE	ANO				
		2008	2009	2010	2011	2012
Impacte (De acordo com a meta) face ao potencial de redução de emissões de GEE.	Gg CO <sub>2</sub> e	0,00	0,00	0,00	0,00	0,00

**Período de Cumprimento 2 [08-12]**: 0,00

**Observações Gerais**

Esta medida foi concebida com o intuito de promover o funcionamento das novas Centrais de Ciclo Combinado a Gás Natural (CCGN). O comportamento da emissão em funcionamento das novas CCGN será aferido através da medida ANE0203. Baseado em Previsões de Novas Centrais de Ciclo Combinado a Gás Natural.

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**– Detailed information about acquisition of carbon credits**

**Fundo Português de Carbono**  
**Actividade Desenvolvida**

O Fundo Português de Carbono, criado pelo Decreto-Lei n.º 71/2006, de 24 de Março, tem como objectivo contribuir, de forma suplementar, para o cumprimento nacional do Protocolo de Quioto, através da aquisição de unidades de cumprimento ao abrigo dos mecanismos previstos no Protocolo de Quioto e da promoção da redução adicional de emissões de gases com efeito de estufa, através de projectos domésticos. As Unidades de Cumprimento permitem suprir o défice de cumprimento que possa subsistir com a aplicação (i) das Políticas e Medidas consideradas pelo PNAIC (RCM 104/2006 e RCM 1/2008), e (ii) do Plano Nacional de Atribuição de Licenças de Emissão 2008-2012 (PNALE II).

DESIGNAÇÃO	UNIDADE	ANO					± 2008-12
		2008	2009	2010	2011	2012	
Dotação Orçamental Prevista	ME	159,00	60,00	60,00	45,00	30,00	354,00
Dotação Orçamental Efectiva	ME	56,99	45,56	49,80			152,35
Desvio Orçamental	ME	-102,01	-14,44	-10,20			-201,65
	%	35,84	75,93	83,00			43,04
Comprometido	ME	67,43	59,08				126,51
Executado	ME	38,20	30,27				68,47
Taxa de Execução Orçamental	%	67,03	66,44				44,94
Meta de Aquisição de Unidades de Cumprimento	ME CO <sub>2</sub> e	2,76	4,29	0,55			7,60
Unidades de Cumprimento Contratadas	ME CO <sub>2</sub> e	2,76	4,29	0,55			7,60
Unidades de Cumprimento Recebidas	ME CO <sub>2</sub> e	0,00	2,29	3,03	0,08	0,95	6,35
Taxa de Execução Operacional	%	100,00	100,00	100,00			100,00

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## PROJECTIONS

- **Ad hoc teams, lead by consultants (including universities and research centers) with the active participation of key stakeholders (both public and private).**

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## EVALUATION OF THE PT PROGRESS TRACKING SYSTEM: 2012 IN COUNTRY REVIEW REPORT (GHG INVENTORY AND SNIERPA)

196. The ERT concludes that the inventory submission of Portugal has generally been prepared and reported in accordance with the UNFCCC reporting guidelines. The inventory submission is complete and the Party has submitted a complete set of CRF tables for the years 1990–2010 and an NIR; these are complete in terms of geographical coverage, years and sectors, as well as mostly complete in terms of categories and gases. Some GHG

198. The Party's inventory is mostly in line with the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF. Whereas the energy and industrial processes sectors are generally transparent and only a few issues were identified, a relatively large number of transparency-related issues were identified for the agriculture sector. Some parts of the NIR have not been updated. The key category analysis performed by the Party for some sectors (i.e. the agriculture sector) is based on an inappropriate level of disaggregation. Portugal has not provided an uncertainty analysis for the KP-LULUCF activities and the uncertainty estimates for some categories do not appear to be reasonable. Furthermore, the Party has not fully implemented its verification and QA/QC activities.

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## EVALUATION OF THE PT PROGRESS TRACKING SYSTEM: 2012 IN COUNTRY REVIEW REPORT (GHG INVENTORY AND SNIERPA)

addition, the ERT identified issues with regard to the accuracy of the estimation of removals from afforestation and reforestation activities and emissions from deforestation activities under Article 3, paragraph 3, of the Kyoto Protocol, owing to:

203. The national system generally continues to perform its required functions as set out in the annex to decision 19/CMP.1; however, the ERT identified issues related to: the implementation of QA/QC activities; the institutional arrangements for sectoral data collection; the inventory improvement plan; the archiving of inventory-related information; and the official approval of the inventory. During the review, in response to the list of potential problems and further questions raised by the ERT during the review week, Portugal addressed these issues.

207. No questions of implementation were identified by the ERT during the review.

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## EVALUATION OF THE PT PROGRESS TRACKING SYSTEM: 2010 NC IN-COUNTRY REVIEW (PROJECTIONS)

– **No material findings/recommendations.**

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## ANSWERING OUR INITIAL QUESTIONS

***Tracking progress over time: has consistency been maintained in the estimation of GHG emissions in the past 20 years?***

- *Very much so.*

***Have emission projections provided a solid basis for policy decisions?***

- *Emissions projections have not accurately foreseen actual emissions, thus potentially misleading the decision makers.*

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**INÉS MOURÃO**  
Partner

[imourao@caos.com.pt](mailto:imourao@caos.com.pt)  
Tlm (+351) 91 001 12 90

[caos.com.pt](http://caos.com.pt)

Rua Vieira Lusitano, n.º 24 1.º Dt.  
1070-28 Lisboa - Portugal



**GONCALO CAVALHEIRO**  
Partner

[gcavalheiro@caos.com.pt](mailto:gcavalheiro@caos.com.pt)  
Tlm (+351) 91 711 11 58

[caos.com.pt](http://caos.com.pt)

Rua Vieira Lusitano, n.º 24 1.º Dt.  
1070-28 Lisboa - Portugal