PROPOSAL:

JUNE 2003

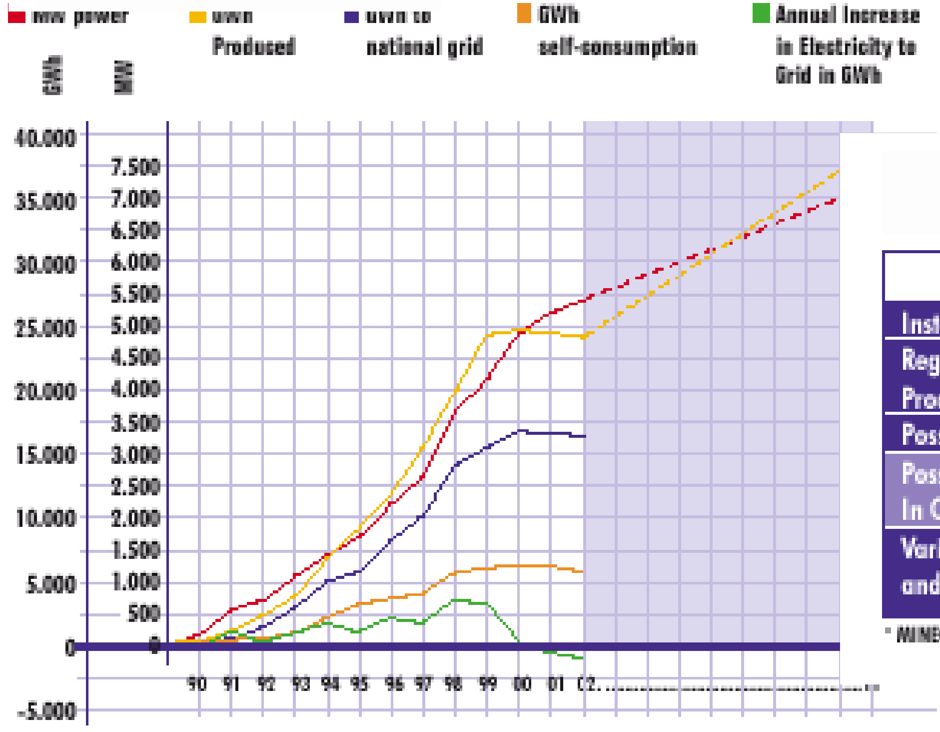
SPAIN - CHP IN THE CO_2 NATIONAL ALLOCATION PLAN

January 2004: International Workshop "Treatment of HE PG and CHP in National Allocation Plans"

JUNE 2003

INDEX

CHP IN SPAIN



* MINECO - "Electricity and Gas Sectors Planning" white paper

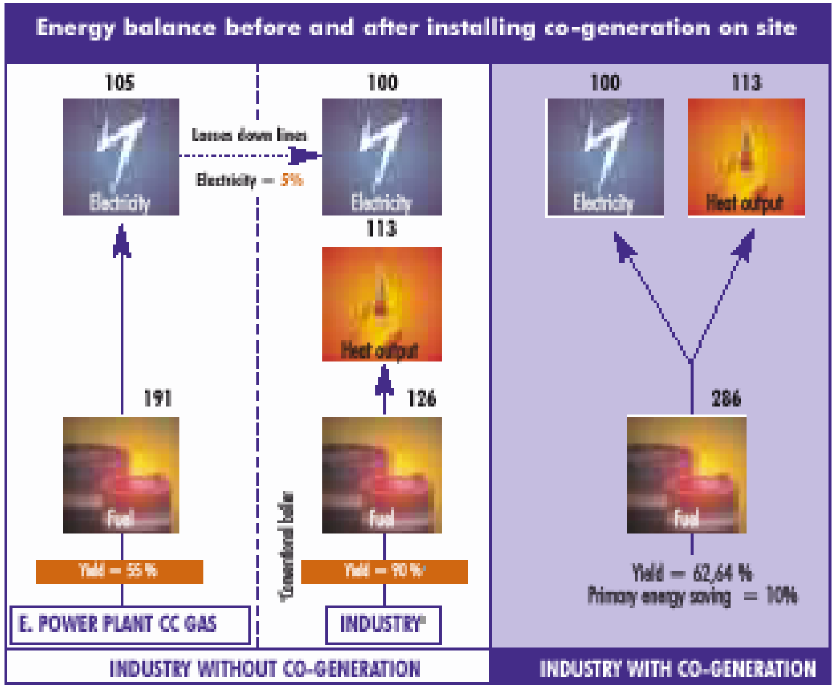
Possible Electricity Production through CHP in Spain 2002 & 2011

	Year 2002	Year 2011
Installed Power rating MW	5.443	7.100*
Registered/forecast Electricity Production in CHP*	22.980	38.000*
Possible N° Working Hours	6.000	6.000
Possible Electricity Production In CHP in Gwh/year	32.658	42.600
Variance between Production Capacity and registered/forecast Production Gwh/year	9.678	4.600

* MINECO - "Electricity and Gas Sectors Planning" white paper

- CHP in SPAIN: 5.443 MWe installed. 10,58 % (2002) share in electricity demand (22.980 GWh)
- **Actual capacity** not producing (~32 %) due to uneconomic operative conditions.
- Ministry Economic Affairs (Official Planning Period 2002-2011): Provision 65 % Increase in CHP Production considering only 30 % increased capacity. Further possible potential for 2011~up to 9.000 MW according to industrial sectors, (MINECO: 7.100 MW)

CHP AND HOW IT CONTRIBUTES TO REDUCING CO_2 EMISSIONS



CHP Benefits

- It saves primary energy and contributes to improving efficiency, as it is the most effective way of producing both electricity and heat.
- It reduces energy losses throughout the national grid and improves the quality of our electricity supply. As electricity generation is de-centralised and nearer to consumption points, it avoids losses and investment in electricity transport and distribution systems, thereby improving the quality of the service overall.
- It contributes to improving the energy efficiency, productivity and quality of the electrical supply in those industries to which it is linked, thereby avoiding downtime due to electricity cuts or blackouts.

The installation of a CHP plant on an industrial site is unique from the point of view of CO_2 emissions in that it increases local emissions while reducing the overall emissions associated with the industry on site:

CHP AND HOW IT CONTRIBUTES TO REDUCING CO_2 EMISSIONS

CO_2 Emissions reductions with Co-generation in Spain

	Año 2002	Año 2011**
Power rating MW	5.443	7.100
Total output - GWh/year	22.980	38.000
CO2 Emissions* saving - million tons/year	10,111	?

*Basis:

Average emission rates (2002) from Mainstream Non-nuclear power stations = 773 Kg CO_2/MWhe

Average saving (2002) per MWhe generated with co-generation compared to average for non-nuclear power stations = 0,440 Ton CO_2/MWhe

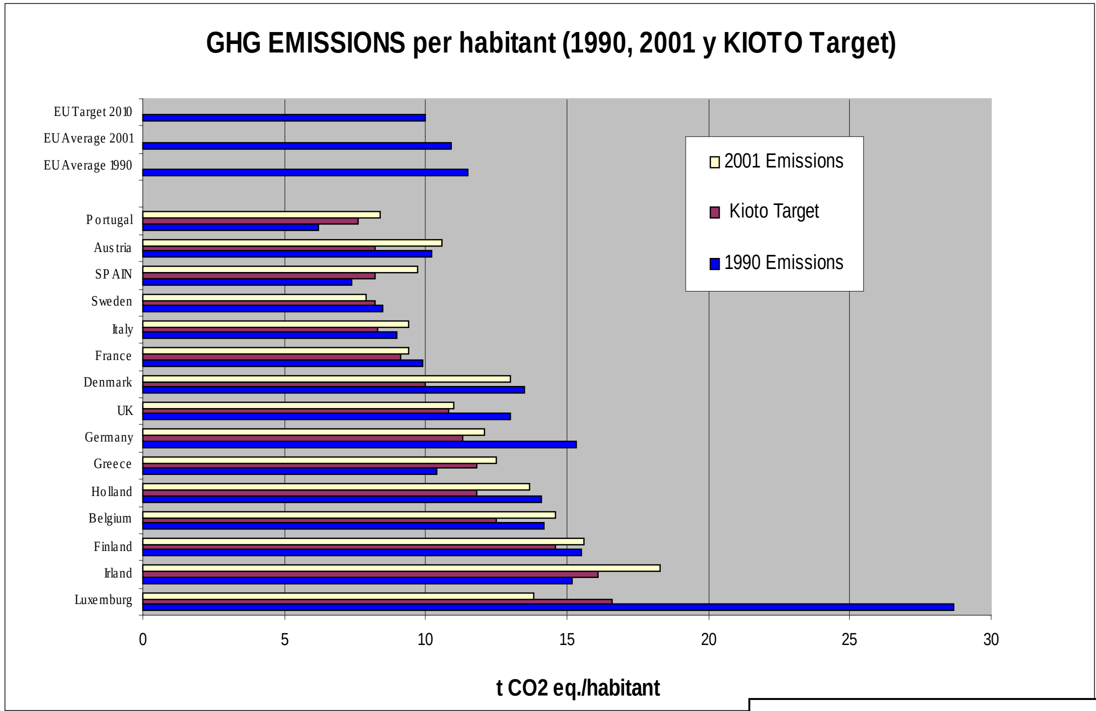
Saving is calculated as the difference between the average emission from Mainstream non-nuclear power stations and emission levels attributed to electricity produced by co-generation, based on a fuel composition of 80% natural gas and 20% fuel oil. Down-line losses are estimated at 5% and emission attributable to the heat output from co-generation is calculated on the basis of its equivalent emission rate using conventional generation methods at 90% efficiency.

** MINECO - "Electricity and Gas Sectors Planning" white paper

- If Spain's present co-generation facilities were to shut down, the national CO_2 emission rate would go up by over 3%.
- In 2002, had the necessary policies and steps been implemented to favour electricity production by co-generation, the national CO_2 emission index would have been reduced by nearly 2%.
- If installed co-generation capacity as planned by MINECO were to be carried out by the year 2011 and full production encouraged, 20% of Spain's national effort to reduce CO_2 emissions in the period 2001-2011 in order to comply with Kioto, estimated as a net reduction of 46 million tons of CO_2, could be achieved just by the contribution of co-generation (see Calculations Page 5)

SPAIN KIOTO´S TARGET

- 1990+15%
- Present Situation (2002): 1990+ 38% !!



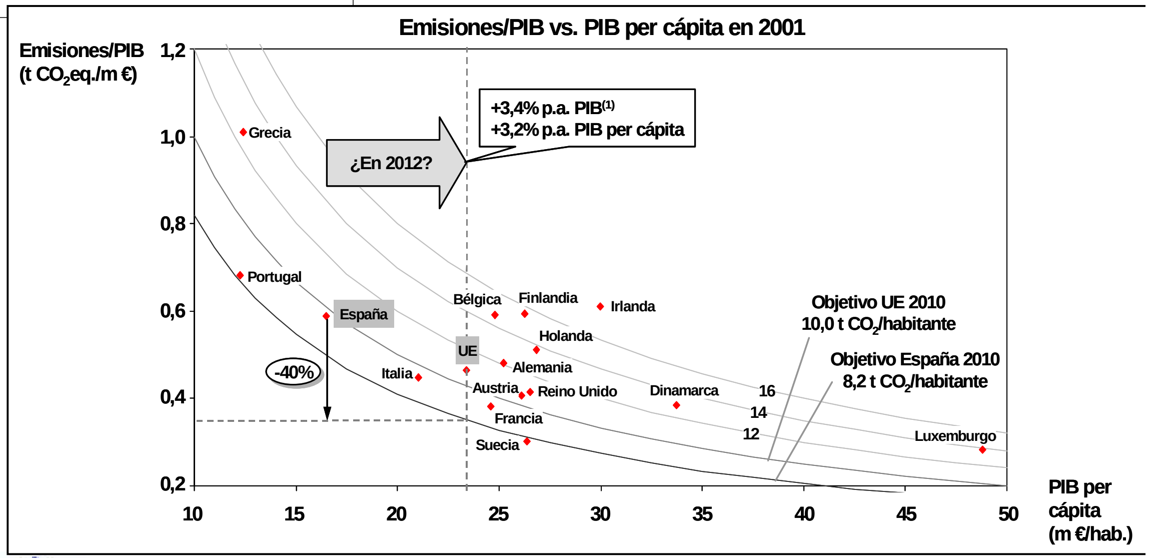
Could national situation determine non recognition of Spanish CHP contribution ?

SPAIN COULD NEED 2012 ALLOWANCES/CREDITS ≈ 80-100 CO2 MILLION (1% of GDP?)

SPAIN KIOTO´S TARGET

- 1990+15%
- Situation (2002): 1990+ 38% !!

Kioto ⇔Spanish Industry Sustainable Development?



CHP IN THE CO_2 GAS EMISSION ALLOWANCE TRADING DIRECTIVE

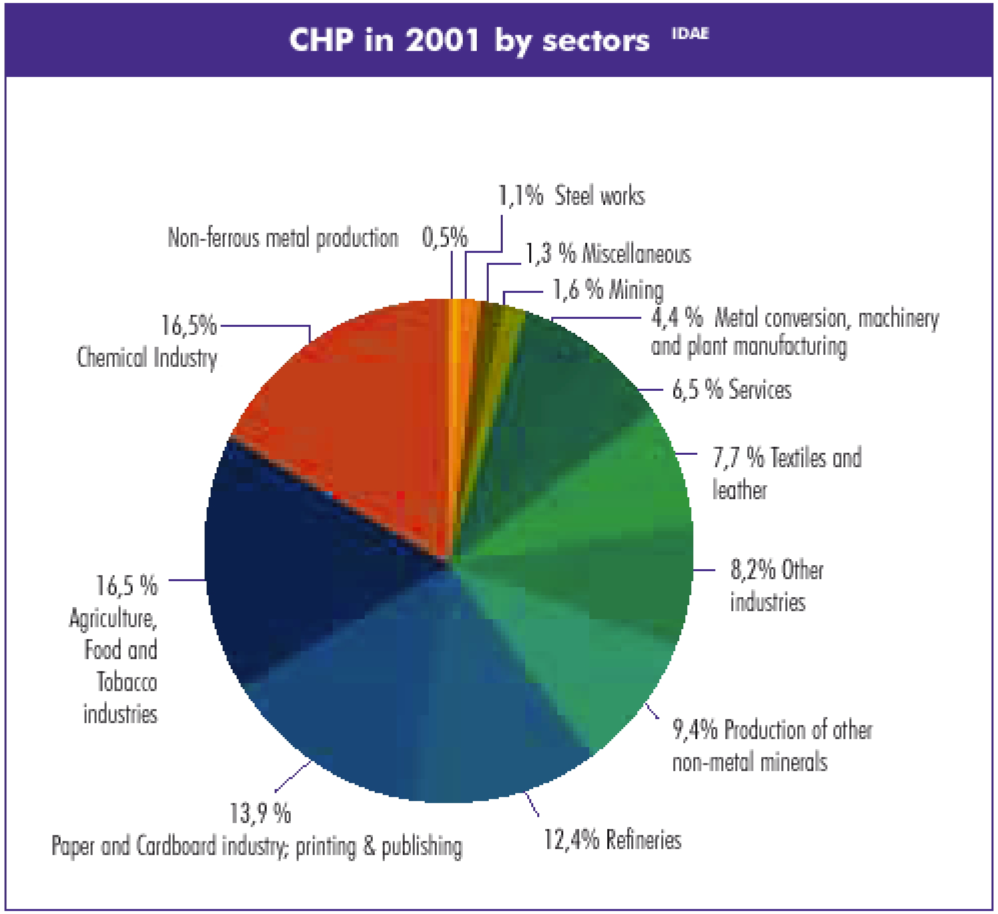
(19a) This Directive will encourage the use of more energy efficient technologies, including combined heat and power technology, producing less emissions per unit of output, while Directive 2003/–/EC [of – concerning the promotion of CHP] 1 will specifically promote combined heat and power technology. (Amendment 31) *Consolidated V*

The Gas Emission Allowance Trading Directive includes co-generation plants on two accounts:

- Combustion plants with a nominal thermal power rating of over 20 MW (thermal)
- Co-generation facilities associated with an industrial activity listed in Annexe 1 (refineries, pulp & paper, ceramics, etc.)

-About ~40% CHP installed power is in included ET Directive Sectors. (≈ 250 Plants)

- Over 70% of CHP plants included.



Key Issues

- Business Entity/Society of CHP plant.
- Difficult to determine included CHP plants under combustion concept > 20 MW (t)

ASOCIACIÓN DE AUTOGENERADORES DE ENERGÍA ELÉCTRICA · ACC ASSOCIACIÓ CATALANA DE COGENERADORS · ASCER · HISPALYT · ASPAPEL · AOP · VOL · consejointertextilespañol · feique · FIAB

SPAIN'S NATIONAL EMISSION ALLOWANCE ALLOCATION PLAN AND CHP

PROPOSAL:

The sectors and associations undersigning this document hereby request that the Administration take the following steps when considering Co-generation within the National Allocation Plan:

1. Separate treatment of Co-generation activities within the National Allocation Plan as an independent activity included in the Emission Allowance Scheme.

2. Allocation of emission allowances for Co-generation should be based on the independent allocation of two different products: allocation for heat production and allocation for electricity generation.

ALL CHP required data to implement NAP proposal actually available under Spanish legislation.

- Installations National Register.
- Annual Reporting (electricity production, useful heat, efficiency, fuel input, etc.).

SPAIN'S NATIONAL EMISSION ALLOWANCE ALLOCATION PLAN AND CHP

Allowances allocated to useful heat output
+
Allowances allocated to electricity generation
=
Allowances to be granted to Co-generation

[Useful Heat output (MWh) /0.9]
*
Emission factor fuel used (Ton CO_2/MWh thermal)
=
Allowance granted to useful Heat Output

Electricity generation (MWh) * Prevented loss-to-grid factor
*
Emission Benchmark (Ton CO_2/Mwh electricity)
=
Allowance granted to Electricity

The previous formula is equivalent to allocating to useful heat output from co-generation the same CO_2 emission allowances as for heat output from conventional high-yield boilers, as per the terms of the formula in force in the current Royal Decree 2818/98 on Co-generation.

Avoided down-line loss factor = 1 + % of prevented losses
Electricity emission benchmark (Ton CO2/Mwh electricity) = 0,538

Determining and comparing emission benchmark for electricity in Co-generation

- The emission index proposed for Co-generated electricity of 0.538 Ton CO_2/Mwh electricity was obtained as the average of two scenarios depicted by the National Energy Commission in its "Framework Report on Demand …2002", which placed specific emission levels for the national combustion-based electricity production network for 2006 at 0.6204 or 0.455 Ton CO_2/Mwh electricity, based on the two scenarios with new combined cycles.
- There exists a clear difference between the proposed factor for co-generated electricity of 0.538 Ton CO_2/Mwh electricity and the established ratio for 2002 in Spain's heat-based electricity generation system of 0.773 Ton CO_2/Mwh electricity; i.e. to produce the same kWh of electricity, the co-generation sector requests an allowance level 27%

FURTHER KEY ISSUES AFTER PROPOSAL JUNE 2003

- Compatible with COM 2003/830, COGEN´s positions, other European CHP treatments…
- Situation of National GHG Inventory: useless nowadays for CHP allocation.
- First CHP Industrial Alliance Official meeting with NAP Authorities: Next 3rd february 2004.
- National General Election March 2004 (uncertain Authority)
- Industrial Sectors individual position on definition 20 MWt installation.
- New entrants: similar conditions than existing CHP.
- Ownership of allowances.

Thanks for you attention. Questions ?

http://www.autogeneradores.com/