



Gobierno de Navarra
Departamento de Industria y Tecnología,
Comercio y Trabajo



“Navarra: Reaping the fruit of a sustainable energy policy”

“Energy for the Periphery”
1º CRPM energy conference.
DG Industry & Commerce
Government of Navarra, Spain.
5, 6 October 2006



Navarra: Leader for renewal energies in Europe.



- 600.200 people
- 10.391 Km²
- 119,6/100 Rent E-25

Potencia Eólica Noviembre 2003



14% (693,2 MW)
DEL TOTAL ESPAÑOL

2,5% DEL TOTAL MUNDIAL





Energy Navarra Program

Goals:

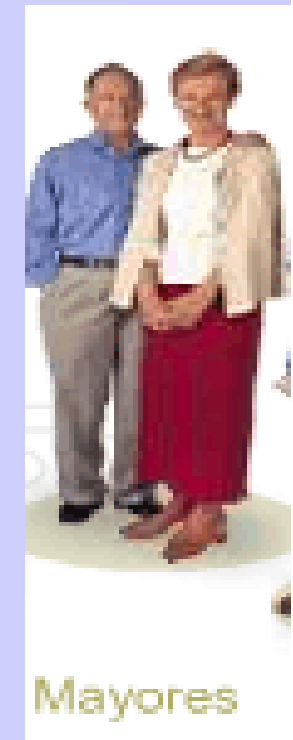
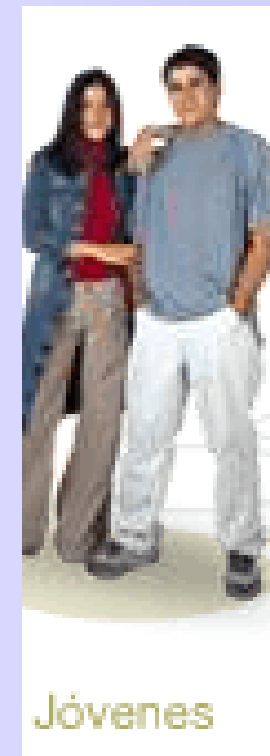
- Reducing our external dependency.
- To foster energy saving and efficiency.
- Favor the best usage of renewable energy resources, and making them compatible with the environment.
- Expand the energy transport and distribution network in order to reach the balanced development of the territory.
- To contribute to optimize the national energy menu reaching our compromises with EU and Kioto.





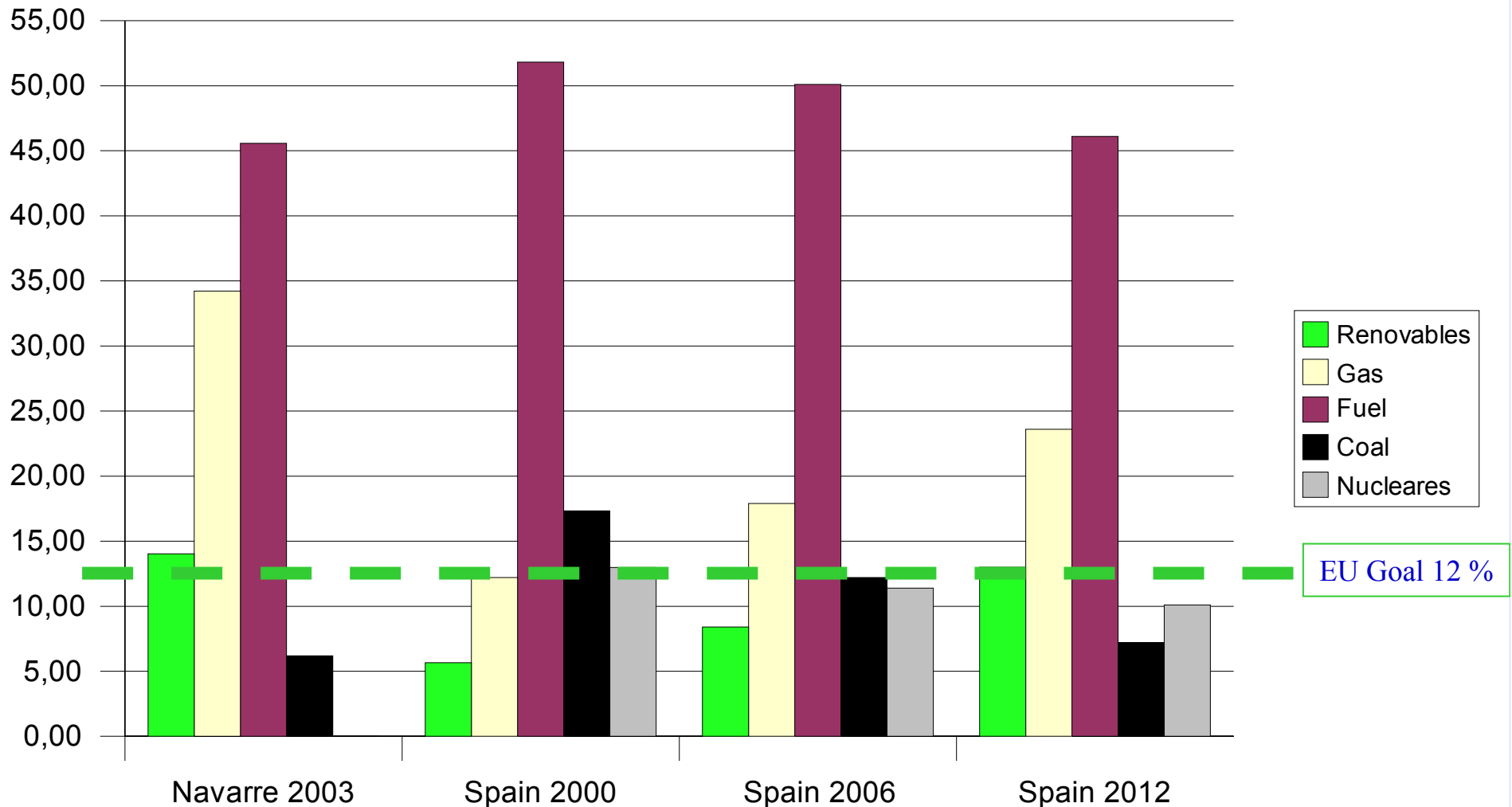
Social & Economic Goals

- Developing the current energy cluster.
- Promoting new companies and employs.
- Fostering the most advanced technologies in renewable energy and efficiency





Current sources of the energy in Navarra. Comparison between Spanish and European Goals in renewable energies





Collateral benefits until now:

- 40 companies created.
- 1600 direct jobs and over 2400 indirect jobs created. Nearly 1,5 % of people in employment.
- Know How and technologies developed.
- Higher employment levels and a new sources of income in depressed areas.
- Improvement of the environment. Over 10.7 million T of CO2 non emitted into the atmosphere between 1995 and 2003.



Wind Power:

Currently:

- **16 Locations**
- **31 Parks**
- **912 MW**
- **48 %** of Navarra's electrical consumption

Goals:

- **1400 MW en 2010**





Small hydroelectric centrals:

Currently:

- **111**
 - 40 in the North
 - 71 in the South
- **157 MW**
- **10 %** of Navarra's electrical consumption

Goals:

- **255 MW in 2010**





Large hydroelectric centrals:

Currently:

- **El Berbel's water reservoir**
19,6 MW

Goals 2010:

- **Berbel – 19,6 MW**
- **Navarre Channel**
50 MW
- **Itoiz**
30 MW





Biomass Energy:

Currently

- **Sangüesa's Plant**
 - 160.000 T/year
(straw)
 - 25 MW

Biomass potential:
835.721 T / year
319611 Toe / year

Goals:

- 40 MW before 2010





Biodiesel

Currently:

Caparroso's Plant:

- 30.625 Toes
- 35.000 T/year

Goal:

2010 Caparroso's Plant:

- 61.250 Toes
- 70.000 T/year





Solar Photovoltaic Energy (2005):

	kWp.	People	Wp./cap.
Spain	38.696	43 million	0,90
Germany	794.000	82 million	9,68
NAVARRA	14.041	585.000	23,40



Currently

- **Tudela's Farm**
 - 1,2 MW
 - 60.000 m²
- **10 Solar Farms in different villages**
 - 14,13 MW

Goal:

- **30 MW before 2010**





Thermo solar energy

Currently

18.080 m²

Goals 2010:

89.878 m²

10 MW

4.025 Toes





Waste management:

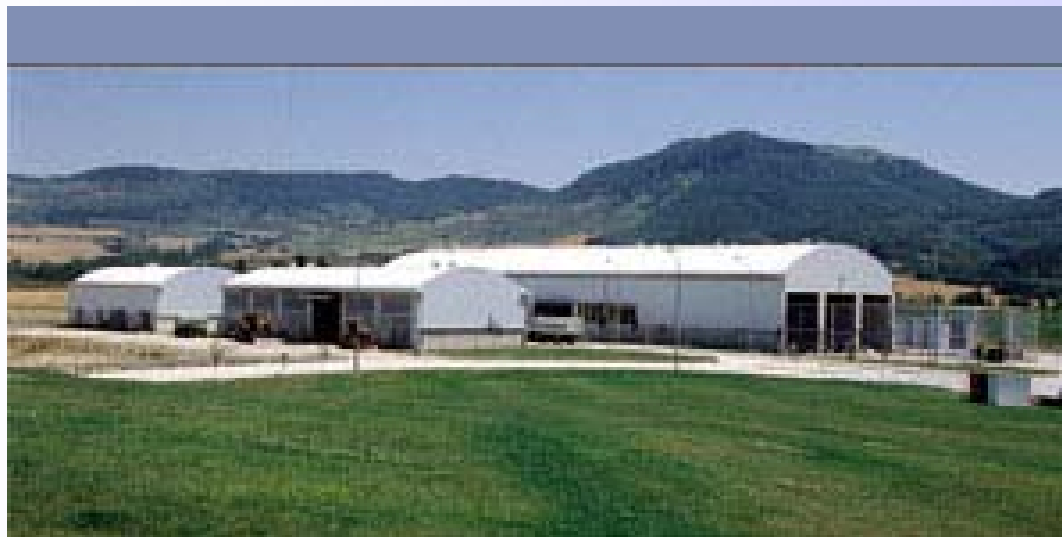
Currently:

- **Góngora: 0,75 MW**
- **Arazuri: 0,85 MW**

Goal before 2010:

- **Góngora: 0,75 MW**
- **Arazuri: 2,85 MW (2006)**
- **Ribera: 1,75 MW (2006)**

Production 4.816 toe





Cogeneration:

Currently

- **31 Installations**
- **118 MW**

Goals

- **148 MW before 2010**





Double Cycle:

Currently:

- **2 Centrals of 400 MW from 2003 in Castejón. 800 MW**

Goal:

- **Increase the capacity of these two Centrals to the double before 2010 . 1600 MW**

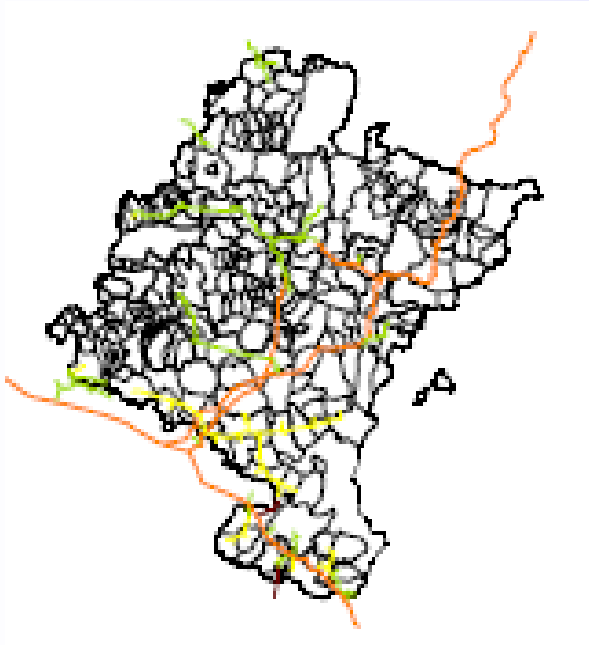




Gas Network:

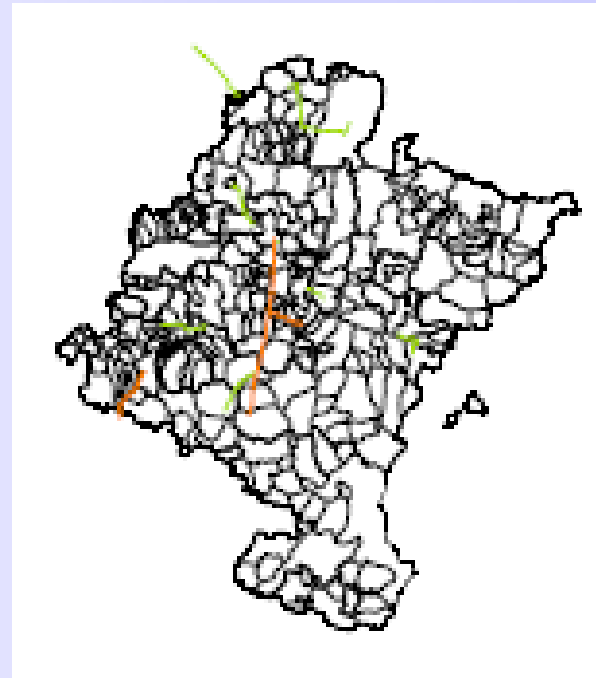
Currently:

- **24 %** of Navarra's electrical consumption
 - **Domestic Use**
 - 112.000 users
 - 75 % Coverage
 - **Industrial use**



Goals:

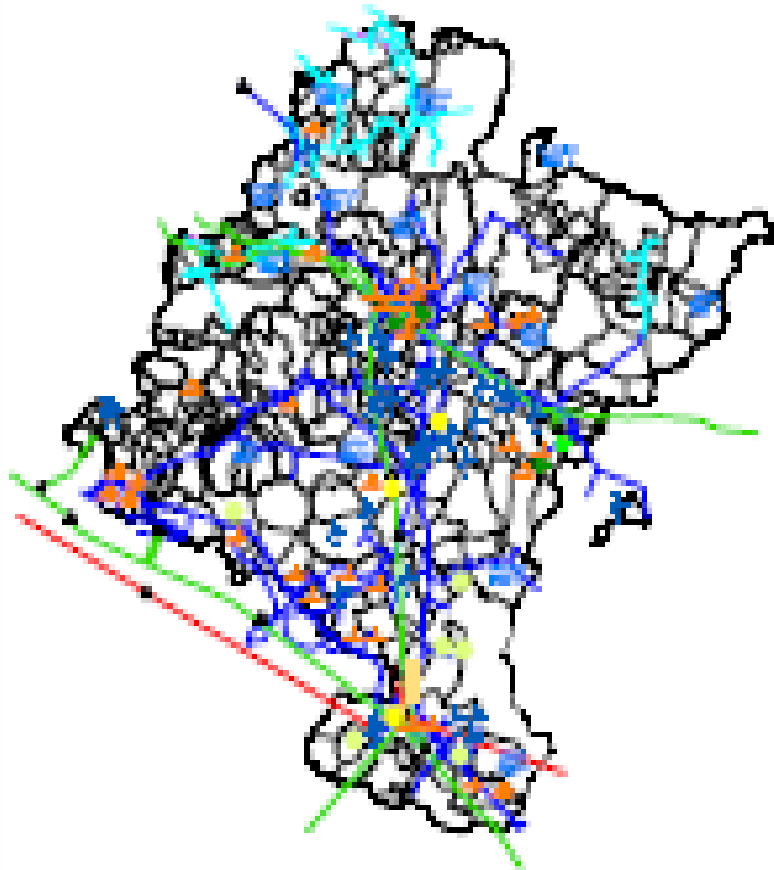
- **30 %** of Navarra's electrical consumption
 - **85 % Coverage of Domestic usage**
 - **New pipes before 2010:**



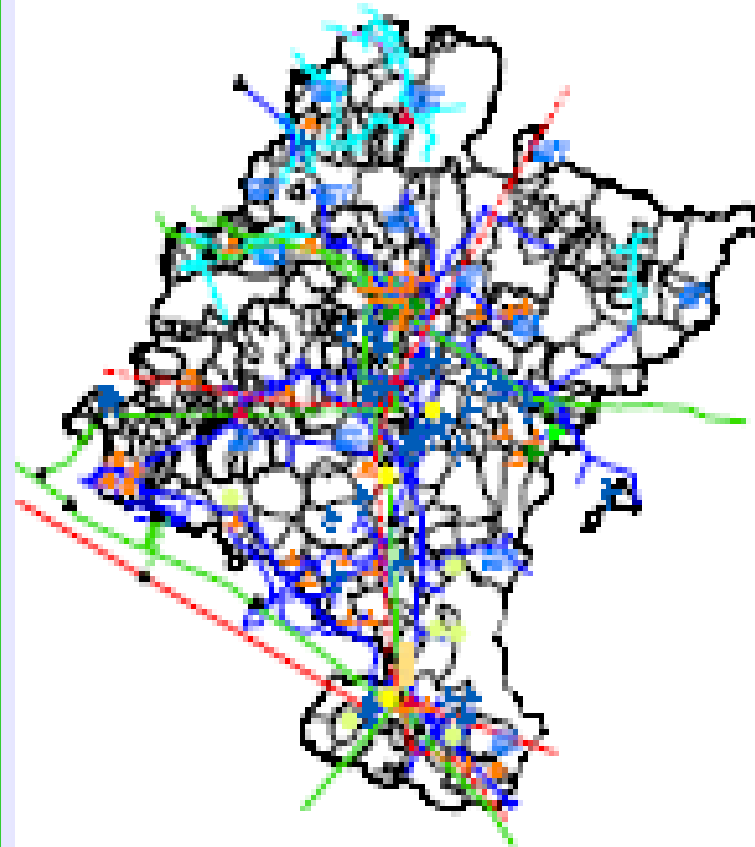


Electric grid:

Current:



Before 2010:





Cener:



- **125 scientists & engineers**
- **4 Fields:**
 - Wind power
 - Solar energy
 - Biomass energy
 - Bioclimatic architecture



Signature of the agreement between Cener and the Danish Company DNV for certification of wind generators in Spain



R&D Navarre Annual Effort (2006) in RES

<i>R&D fields</i>	<i>Researches</i>	<i>Budget 06 m€</i>
<i>Solar</i>	<i>25</i>	<i>2434</i>
<i>Bio Diesel</i>	<i>40</i>	<i>2191</i>
<i>Teaching</i>	<i>5</i>	<i>44</i>
<i>Wind</i>	<i>115</i>	<i>15667</i>
<i>Bio Architecture</i>	<i>13</i>	<i>1787</i>
<i>TOTAL</i>	<i>198</i>	<i>22123</i>



CENIFER:

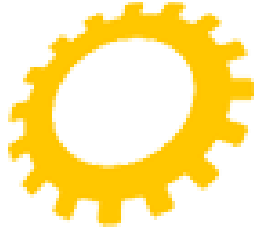
- **12 full time teachers**
- **8 workshops, training rooms.**
- **1.200 in company training hours**
- **Courses:**
 - Up keep of bioclimatic buildings
 - Efficient energy maintenance of industries
 - Master in Renewable Energies (2.000h)





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Environmental resources Navarra Centre



Centro de Recursos Ambientales de Navarra



AL21 Red NELS
Red Navarra de Entidades Locales
hacia la Sostenibilidad





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