Background studies to the elaboration of the Renewable Energy Action Plan

Hugo Lucas
IDAE – Support to the Renewable Energy Directorate Department

MAIN GOALS OF THE EU & SPAIN

- **Renewable Energies**
  12% of primary energy consumption in 2010.

  White Paper, 1997

- **Electricity Production from RES**
  22% of electricity consumption in 2010. Spain 29,4%.

  Directive 2001/77/CE

- **Biofuels**
  2% of transport consumption in 2005 and 5.75% in 2010.

  Directive 2003/30/CE

THE RENEWABLE ENERGY PLAN (REP) 2005-2010

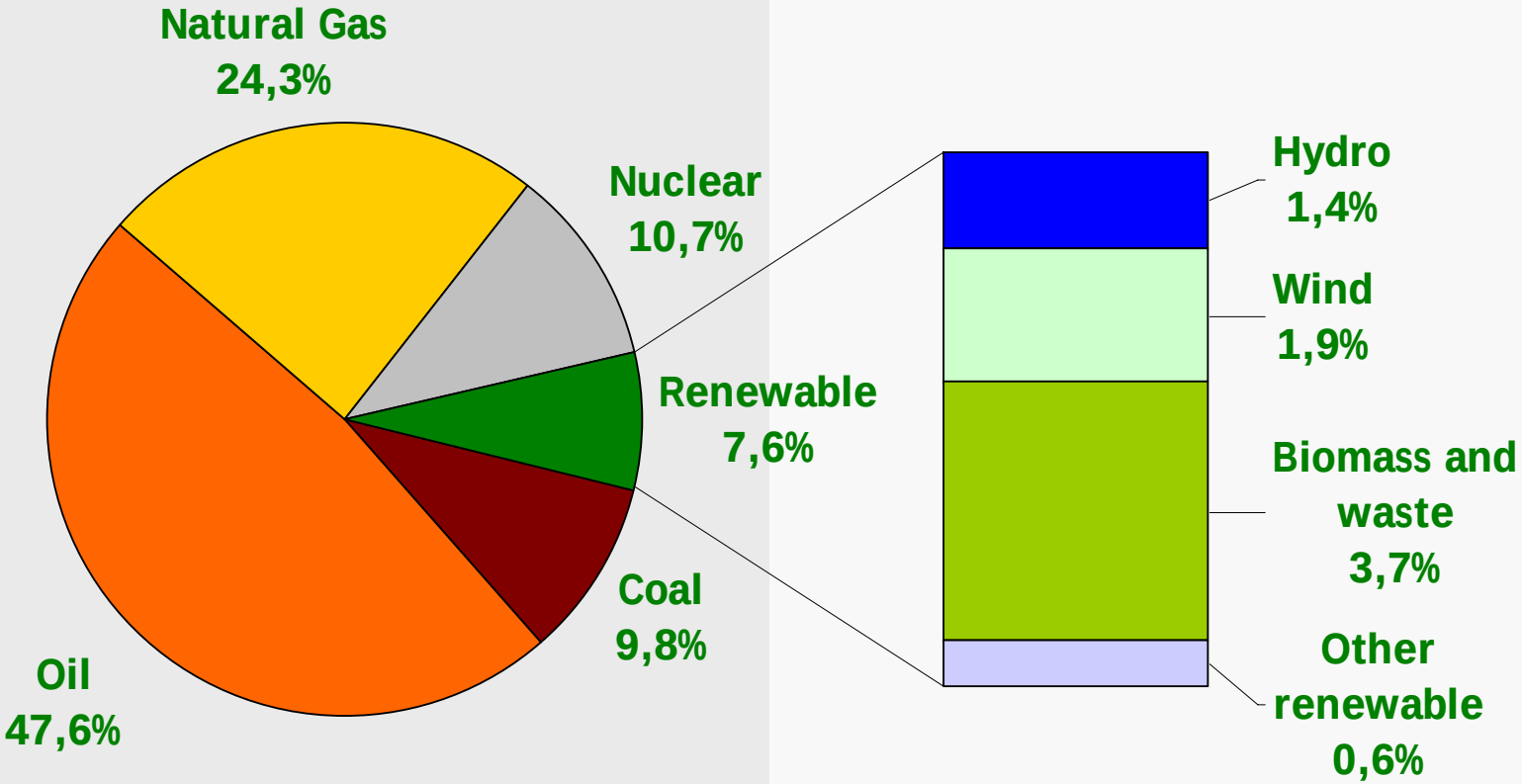
- **Targets of REP 2005-2010** in 2010 :
  - ✓ 12.1% of total energy consumption will come from RES;
  - ✓ Electricity generation from RES will represent 30.3% of electricity production;
  - ✓ Biofuels will correspond to 5.83% of diesel and petrol consumption in the transport sector.

- **New instruments as well as modifications of existing ones are included in relation with previous policy.**

RENEWABLE ENERGY PLAN (2005-2010)

TARGETS OF THE SPANISH RENEWABLE ENERGIES PLAN - 2005 - 2010						
	Situation in 2004			Target situation in 2010		
	Capacity (MW)	Production (GWh)	Producción (ktep)	Capacity (MW)	Production (GWh)	Production (ktep)
Electricity generation						
Hidro-electric (> 50 MW)	13.521	25.014	1.979	13.521	25.014	1.979
Hidro-electric (10 MWto 50 MW)	2.897	5.794	498	3.257	6.480	557
Hidro-electric (< 10 MW)	1.749	5.421	466	2.199	6.692	575
Biomass	344	2.193	680	2.039	14.015	5.138
biomass power plants	344	2.193	680	1.317	8.980	3.586
co-firing in coal plants	0	0	0	722	5.036	1.552
Municipal solid waste	189	1.223	395	189	1.223	395
Wind power	8.155	19.571	1.683	20.155	45.511	3.914
Solar photovoltaic	37	56	5	400	609	52
Biogas	141	825	267	235	1.417	455
Solar thermoelectric	_	_	_	500	1.298	509
TOTAL ELECTRICITY GENERATION	**27.033**	**60.097**	**5.973**	**42.495**	**102.259**	**13.574**
Thermal uses						
Biomass			3.487			4.070
Low temperature solar thermal			51			376
TOTAL THERMAL AREAS			**3.538**			**4.446**
TOTAL LIQUID BIOFUELS (transport)			**228**			**2.200**
TOTAL RENEWABLE ENERGIES			**9.739**			**20.220**
CONSUMPTION OF PRIMARY ENERGY (ktep) (Energy scenario: Tendency/REP)			**141.567**			**167.100**
Renewable energies / Primary energy (%)			**6,9%**			**12,1%**

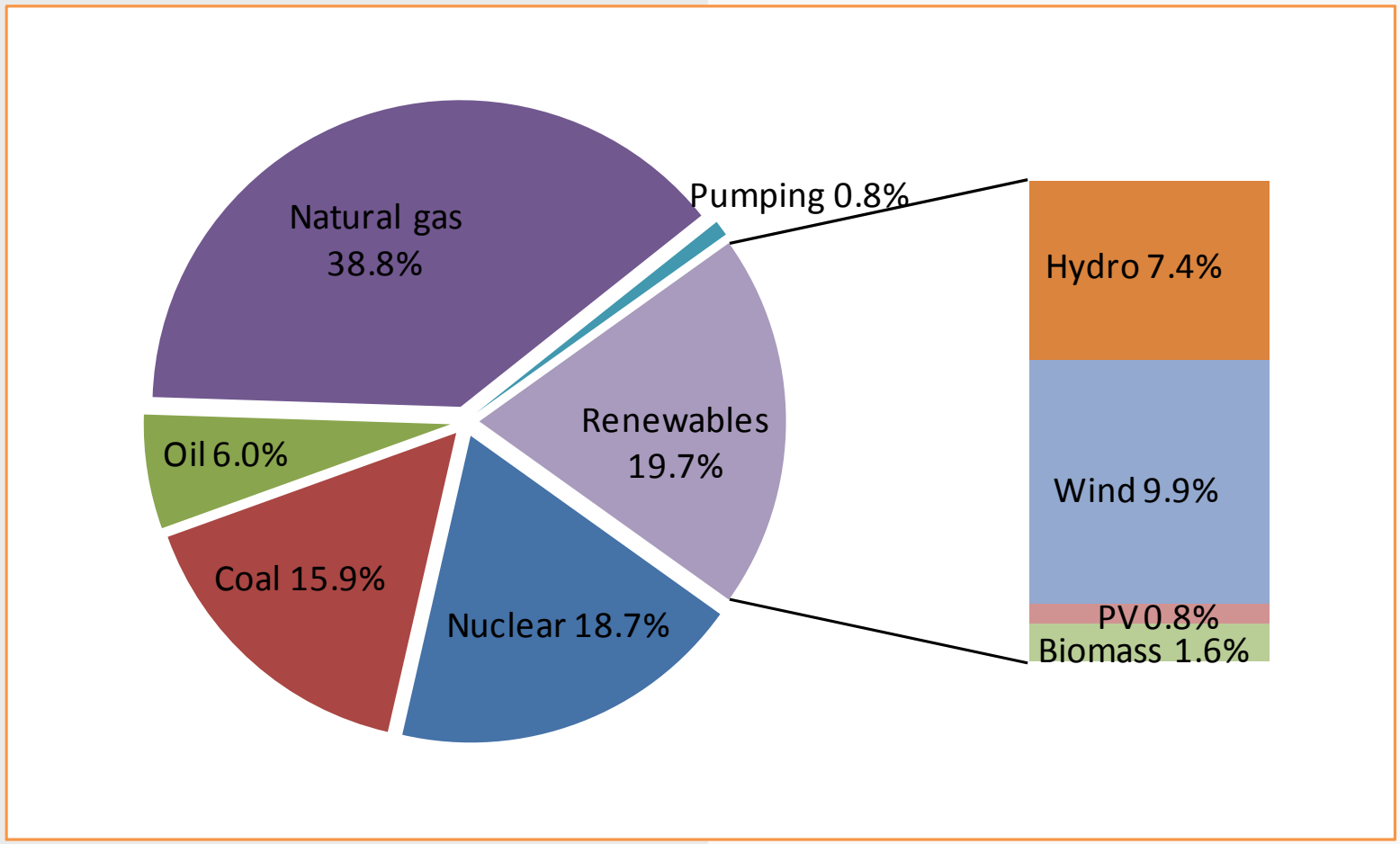
CONTRIBUTION OF RES TO PRIMARY ENERGY CONSUMPTION, 2008



Total Consumption : 142.078 ktoe
(Year 2007): 146.929 ktoe

RREE Consumption: 10.846 ktoe
(Year 2007): 10.254 ktoe

CONTRIBUTION OF RES TO ELECTRICITY GENERATION, 2008



Total Generation : 315 TWh

RREE Generation: 62,2 TWh

SPANISH RENAP 2020

The objectives in 2020 for Spain are the 10% of renewables in transport and 20% of the gross final energy consumption from RES.

The objectives in each energy use (electricity, heating & cooling, transport) but also the indicative objectives for each technology will be crucial to design policy.

In Spain the preliminary forecast studies suggest that to commit with the 20% goal will be necessary, besides the 10% of renewables in transport 40% of renewable electricity.

SPANISH RENAP 2020

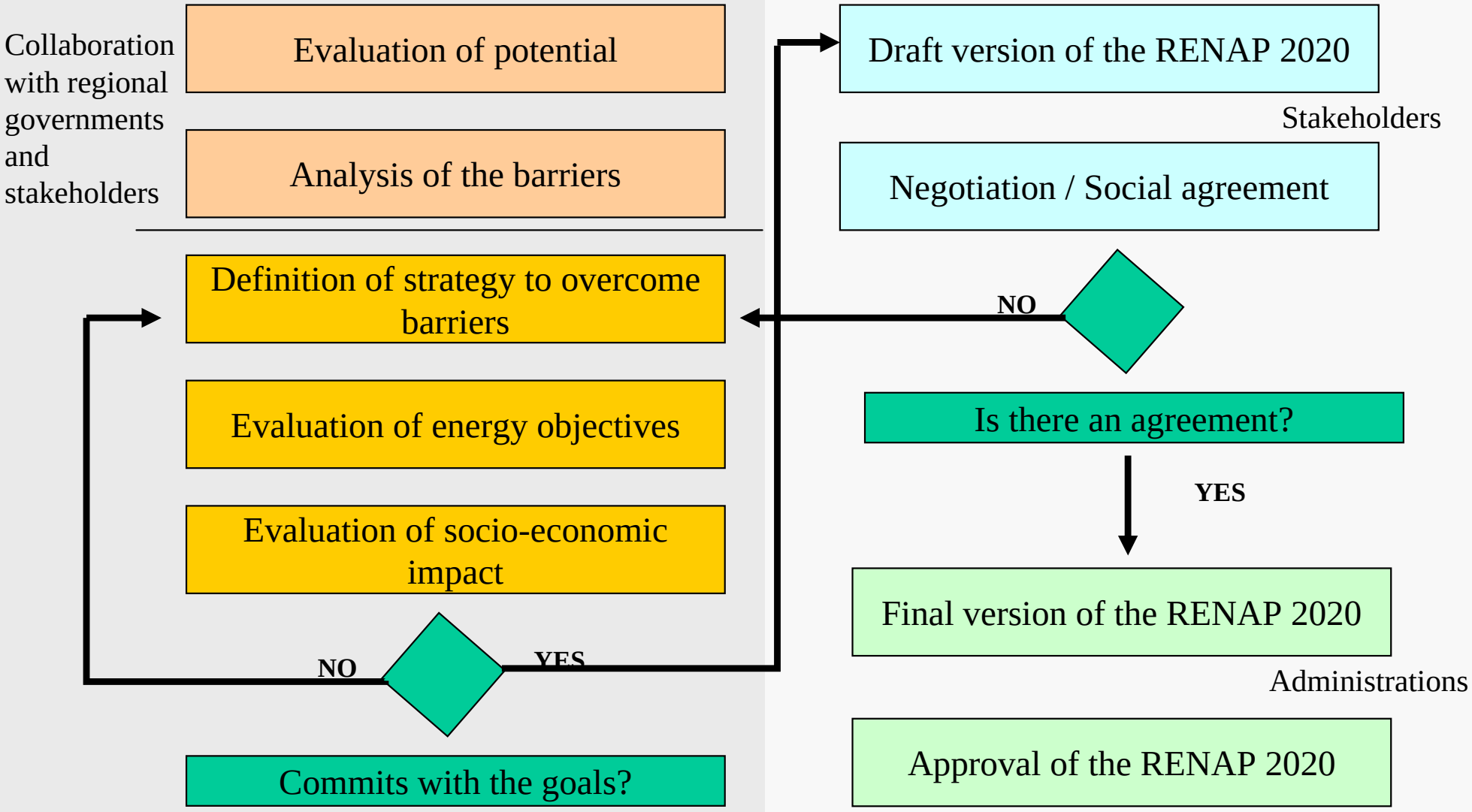
To commit with these ambitious targets we will need further development of technologies already consolidated as wind or biomass but also to introduce new ones as geothermal or ocean technologies.

RE-heat is growing not fast enough. A new promotional framework is needed (new fiscal measures?, FIT-H?).

Also to continue the improvement of the electricity mechanism to bring RE technologies closer to be competitive with conventional. Monitoring and improvement if needed of the biofuel mandatory scheme.

It is also needed to continue the effort on R&D.

SPANISH RENAP 2020



BACKGROUND STUDIES

Studies must commit if possible with the following characteristics:

- **To be able to have access to them through the internet.**
- **When dealing with spatial distribution it will be required to be able to work with then using Geographical Information System software.**
- **Homogenous criteria in the results for the different studies.**

Studies related with the different RE-technologies should respond at least to the following questions:

- **Potential**
- **Barriers**
- **State of the art of the technology**
- **Actual cost**
- **Forecast of the evolution of the technology and its cost.**

BACKGROUND STUDIES

BIOFUELS

nº	Background study		
5	Evaluation of the residual raw materials to produce liquid biofuels	Feb-09	Aug-09
6	LCA of GHGs for the Spanish biofuel routes	Feb-09	Aug-09

RESIDUES, BIOGAS & BIOMASS

7	RDF potential	Feb-09	Nov-09
8	Biogas potential	Feb-09	Aug-09
9	Agricultural biomass potential	Nov-08	
10	Forestry biomass potential	Jan-09	Dec-09
11	Coordination and programming of a software for the biomass potential	Jan-09	Dec-09

BACKGROUND STUDIES

HYDRO, GEOTHERMAL & OCEAN

12	Evaluation of the potential environmental and technical available for pumping		
13	Geothermal potential		
14	Waves potential		

SOLAR

15	Renewables in the Technical Building Code		
16	Potential of solar cooling		
17	Potential of solar technologies for industrial heating	Apr-09	Mar-10
18	Concentrated Solar Power potential		

WIND

19	Wind potential	Apr-08	Jul-10

BACKGROUND STUDIES

GENERAL STUDIES

1	GIS software and Environmental Impact Assessment	May-09	May-10
2	Technological evolution forecast for each technology to 2020, including cost		
3	Electricity network planning guidelines to commit with the 2020 goals		
4	Social & economical impact		

CONCLUSIONS AND POSSIBLE DISCUSSION ISSUES

It is a very important success the approval of a mandatory Renewable Energy National Action Plan with minimum common information.

It will be a very important exercises to have accurate statistical information, and qualitative analysis of the REs policies.

But in the short term and looking ahead to the elaboration of the NAP we have some worries:

Difficulty to predict the behave of private actors:

- **Imports of biomass resources, liquid & solid biofuels;**
- **investment in district heating and cooling infrastructure;**
- **cooperation mechanism.**

Strategic Environmental Assessment.

Deadlines: Six months earlier estimations.

Thank you for your attention

www.idae.es

hlucas@idae.es