EV Energy
Interreg Europe

European Union
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The Energy and Mobility Transition in Catalonia until 2030

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Outline

Energy Transition Experts Commission report

Other Energy Scenarios for Spain 2030

Case Study: Catalonia

Sustainable Mobility in the Energy Transition

Recommendations

ENERGY TRANSITION EXPERTS COMMISSION REPORT

Motivation of the report

International Compromises

- **Paris Agreement (December 2015) EU compromises to reduce CO_2 40% by 2030.**
- **EU Clean Energy Package sets new and more ambitious energy and environmental targets for 2030 (32%).**
- **Spain is bound to meet this targets by being part of the EU.**

A need of information to draft energy policy and regulation:

- **Prepare the integrated energy and climate plan required by the new European regulation.**
- **Draft the Spanish law of Climate Change**

The Report

- **In July 2017 Expert Commission has been created to analyse scenarios for energy transition for 2030.**
- **The commission was form by 14 members experts in the field of energy.**
- **There was 6 month period to deliver the report.**
- **The objective of the report was to built different scenarios of the energy mix allowing to achieve the EU targets for 2030 set at that moment**

The Committee of experts on energy transition surrender to Nadal its final report

Spain energy future

4/2/2018

The final report of the committee of experts and an executive summary can be accessed on the website of the ministry of energy

http://www6.mityc.es/aplicaciones/transicionenergetica/informe_cexpertos_20180402_veditado.pdf

The Report

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		Objetivos 2020		Objetivos 2030		Objetivos 2050
		Respecto a 1990	Respecto a 2005	Respecto a 1990	Respecto a 2005	Respecto a 1990
Emisiones GEI.	Sectores NO ETS.	-20%	-10% -10%	-40%	-30% -26%	Entre -80% y -95%
	Sectores ETS.		-21%		-43%	
Penetración de renovables sobre energía final.		**20%** (10% de origen renovable en transporte)		**27%**		**N/A.**
Eficiencia energética.		**20%** de ahorro respecto al tendencial de 1990		**27% (posibilidad de revisión a 30%)** de ahorro respecto al tendencial de 1990		**N/A.**
Interconexiones eléctricas.		**10%**		**15%**		**N/A.**

Power Sector Results

	DG Scenario 2030	ST Scenario 2030
Demand (TWh)	296	285
Peak Deamand (MW)	48.652	46.595
Installed Capacity (MW)	149.439	143.737
Nuclear	7.117	7.117
Coal	847	4.660
CC	24.560	24.560
Hidro	23.050	23.050
Wind	31.000	31.000
Solar PV	47.150	40.000
Termosolar	2.300	2.300
Other RES	2.550	2.550
CHP	8.500	8.500
Storage	2.358	0
Price CO2 (€/ton)	50	33
Interconnection (MW)		
ES-FR	5.000	5.000
ES-PT	4.200	4.200

x 10

Results

Electricity Demand

Final Energy Demand

Decoupling Energy & Growth

New Energy Mix RES & GAS

Scenarios analysed: from 1 to 5 Million EV by 2030

EU Targets 2030

? **CO_2 emissions**

RES

EE

OTHER ENERGY SCENARIOS FOR SPAIN 2030

Results Energy Scenarios 2030

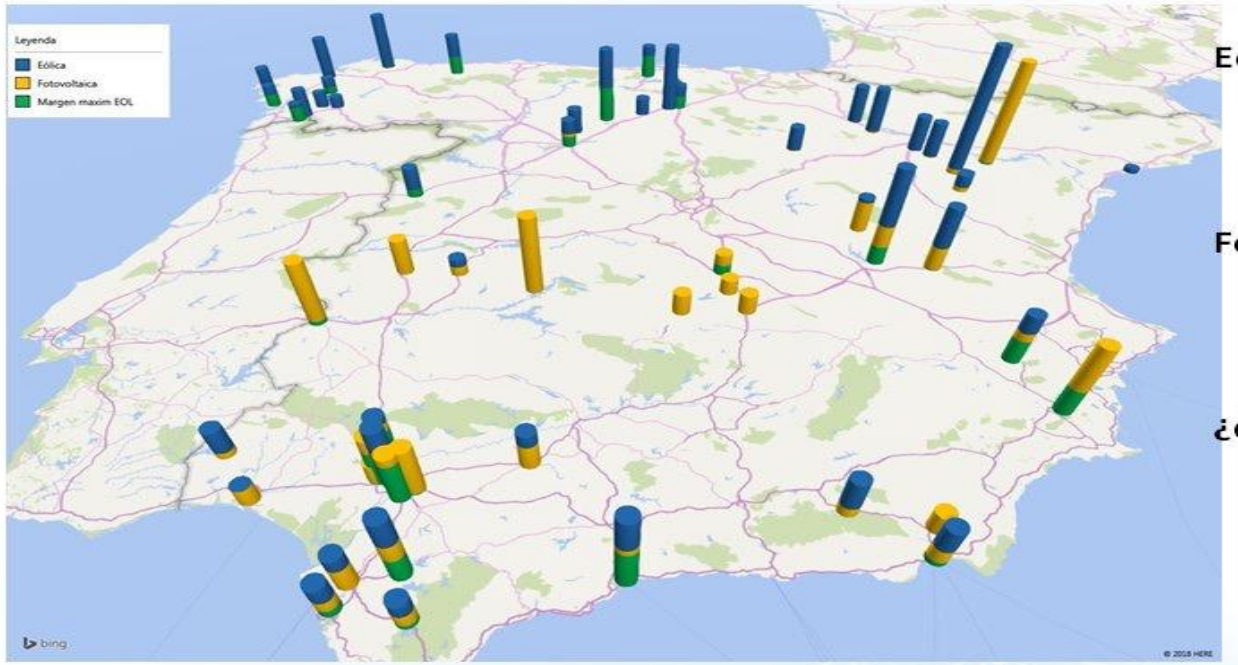
	Final Energy Demand (Mtoe)	Electricity Demand (TWh)	Installed Capacity (GW)
Expert Commission	79	300	150
CAPTE	77	301	n.d.
Deloitte	77-81	330	127-136
KPMG	83	n.d.	135
AEE	n.d.	327	130
FER	60	371	160
EfE	73	274	150
Current Situation (2017)	**85***	**268**	**104**

*2015

Energy Mix 2030

Electricty Generation Mix (GW)	Nuclear	Gas	Coal	Hydro	Wind	Solar	CHP	Others	TOTAL
Expert Commission	7,1	24,5	0,8	23	31	49,3	8,5	5	149,2
Deloitte	7	25	0		89		5	10	136
KPMG	7	30	1	20	42	26	5	3	134
AEE	7,5	28,1	4	20,4	40	25		2	127
EfE	7,1	38	4	16,8	34	36,6	5,7	4,6	146,8
Current Situation	**7,1**	**26,6**	**10**	**20,3**	**23,1**	**4,6**	**5,8**	**3,9**	**101,4**

Generación prevista (permisos de acceso y conexión)



Eólica prevista:

15,4GW

Fotovoltaica prevista:

14,6GW

¿distribuida?

28% RdD
72% RdT

CASE STUDY: CATALONIA

CATALONIA - SITUATION

Variable	Spain	Catalunya	Implications
Total Energy Demand (kTep)	85.874 (2016) ** 87.739 (2015) 83.525 (2014)	12.991 (2014) ****	High energy dependence (above the European average) → weak points in the economy (as we see now with the volatility of the price of the petroleum).
Total Electricity Consumption (TWh)	253 (2017) * (+1,3% s/2016)	46,5 (2016) ***	Catalonia consumes around 15.5% of final energy (2014), 18% of electricity (2016), but contributes 20% of GDP
Electricity/Final energy consumption (%)	24,6% (2016) **	27,2% (2014) ****	Importance of Non-ETS sectors
Nuclear (%)	21,5% (2017) *	53,6% (2015) ****	Greater urgency (30-40 years old)
REN/electricity	33,3% * (40,8% 2016)	17,4% (2015) ****	The path to go 100%REN is much more intense

CATALONIA - SITUATION

Variable	Spain	Catalunya	Implications
Peak Demand (GW)	41,4 (18 Jan 17) *	8,5	More adjusted capacity
Capacity (GW)	99,3 (31 des 17) *	12,8 (2015) ****	Impact of Nuclear
Non REN/REN (GW)	62 / 38 (2017) *	8,8 / 4 (2015) ****	50% REN in CAT is Hydraulic (1/3 ESP)
% energy locally produced	>100% *	88% (2015) **** 92,8% (2016) ***	Minimum objective to maintain security of supply (at risk without nuclear)
Interconnections (GWh, %)	9.220 (3,6%) *	- 387,5 (-12%)	Catalonia is currently dependent on imports of electricity and has a level of interconnections (France, Iberian Peninsula) higher in% than the whole of the State (semi-island)
Emissions gCO_2/kWh	260 (2017) *	101 (2016) *****	Maintaining this low level implies replacing nuclear by REN. There is some margin to increase if it is triggered on non-ETS sectors

* http://www.ree.es/sites/default/files/downloadable/avance_informe_sistema_electrico_2017_v3.pdf
** http://www.minetad.gob.es/energia/balances/Balances/LibrosEnergia/energia-espana-2016.pdf
*** http://www.ree.es/sites/default/files/11_PUBLICACIONES/Documentos/InformesSistemaElectrico/2016/inf_sis_elec_ree_2016.pdf
**** http://economia.gencat.cat/ca/70_ambits_actuacio/economia_catalana/trets/008-energia/consum-energia-final/
***** http://icaen.gencat.cat/web/.content/30_Plans_programes/38_PacteNacional/arxius/PresentacioDocumentBasesSessioRetorn.pdf

CATALONIA – LEGAL FRAMEWORK

- Climate Change Law - Llei de Canvi Climàtic 16/2017 de l'1 d'agost

  http://canviclimatic.gencat.cat/ca/politiques/politiques_catalanes/Llei-del-canvi-climatic/

- National Agreement - Pacte nacional per la Transició Energètica

  http://icaen.gencat.cat/ca/plans_programes/transicio_energetica/

- Climate Plan Barcelona - Pla de canvi climàtic Barcelona

  http://ajuntament.barcelona.cat/ecologiaurbana/ca/serveis/la-ciutat-funciona/manteniment-de-l-espai-public/gestio-energetica-de-la-ciutat/planificacio-energetica/pla-de-l-energia

- The 2030 Agenda: Transform Catalonia, Improve the World

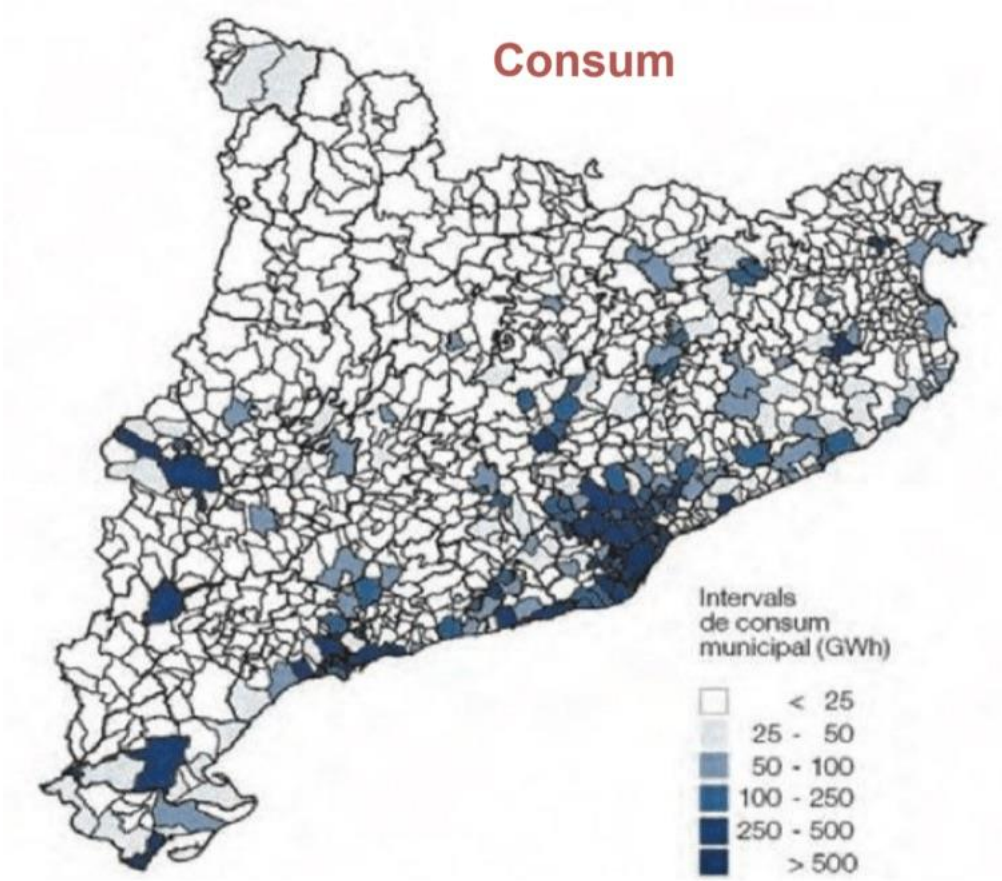
  http://cads.gencat.cat/web/.content/Documents/Informes/2016/Agenda_2030_CAT/CADS-Report_3_2016_The-2030-Agenda_Transform-Catalonia_Improve-the-World.pdf

CATALONIA - GOALS

- GHG reduction from the 1990s: 40% to 2030, 65% in 2040 and 100% in 2050
- Reduction of diffuse emissions of 32% in 2030 compared to 2005.
- Nuclear phase out: 2027 (replacing nuclear for combined cycles would mean that the CO2 emissions in Catalonia will be increased by almost 25%).
- 27% of final energy consumption with renewables by 2030 and 50% of the electricity system of renewable origin in 2030, as indicated by the Climate Change Law. (32%)
- CO2: €30 in 2025.
- Demand reduction: 30% by 2030.
- 30% of new vehicles are electric in 2025.
- Priority objective: Distributed Generation and active role of the consumer
- Energy policy competences and regulation adapted to national requirements

SUSTAINABLE MOBILITY IN THE ENERGY TRANSITION

MULTIPLE “MOBILITY CHALLENGES”



- Cities (people, goods, services)
- Rural (services in Cities)
- International (France, Iberian Peninsula)
- Products (train)
- Air
- Maritime

Some recommendations

- **Sectorial policies adapted lo local conditions (rural, cities, …)**
- **Design an efficient grid access tariff that will favour the use of the EV**
- **Bring enough resources to implement policies at local level (role of cities)**
- **Public support to CO_2 free emissions mobility**
- **Implement CO_2 tax (intensive, progressive)**
- **Diesel tax on the same level than other gasoline**
- **Appropriate environment to foster R&D (tax credit incentive…)**

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Thank you!