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Losing the roadmap: renewable energy paralysis in Spain and its implications for the EU low carbon economy

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30

31 **ABSTRACT**

32 After many years at the forefront of renewable energy (RE) implementation both in Europe and
33 worldwide, Spain experienced a sudden transformation in 2012 to its RE development model in
34 which national government backing and financial incentives for renewables were removed,
35 throwing the RE sector into a paralysis which continues to the present day. This is in marked
36 contrast to the case of the other major European RE leader, Germany, where it has been argued that
37 RE implementation has produced a “regime shift” that has transformed the energy generation model
38 to a new resilient pathway. In this paper, key differences between Spanish regions are identified in
39 the way the RE implementation process has been carried out. The research brings these different
40 characteristics into focus and analyses the strengths and weaknesses of the RE implementation
41 process in each region. If stakeholders at all levels are empowered and motivated towards the
42 implementation process goal, it is less likely that a few, very powerful actors (e.g. multinational
43 energy companies or governments) can dominate the process, and thus systemic instability can be
44 reduced. In this way, lock-down situations like the current one can be avoided in future and a more
45 resilient system can be designed.

46

47 Keywords: Energy transition, Renewable energy, Resilience, Regional level, Power relations, Actor
48 dynamics

49

50

51

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- 53 • **Research Highlights**
- 54 • Spanish renewable energies (RE) implementation is analysed from the point of view of the
- 55 implementing actors.
- 56 • National level policy changes have paralysed RE development in Spain.
- 57 • The Spanish energy transformation has been implemented in a non-resilient way.
- 58 • There are substantial differences between the regions in the implementation of RE.
- 59 • Working at the regional level can help restart Spain's energy transformation.
- 60

61 **1. INTRODUCTION**

62 In the context of the growing political consensus about the seriousness of the threat posed by
63 Climate Change (CC), the transition to a low carbon economy in Europe for 2050 has become an
64 important priority for European member states. An essential step along this road is attainment of the
65 three key objectives for 2020: to reduce greenhouse gas emissions (GGE) by 20%, to obtain 20% of
66 final energy from renewable sources and to reduce by 20% the total energy consumption (EU 2011;
67 2014). In this context, development of Renewable Energies (RE) and the improvement of RE
68 implementation in the territory are of decisive importance.

69

70 In Spain, subject of the following study, power generation from RE sources has increased
71 spectacularly in recent decades. By 2012, Spain was a major European player in wind power, solar
72 thermal electricity (STE) and even in Solar Photovoltaic energy (PV) despite a slow start in
73 development and implementation of PV systems (Ruiz Romero et al 2012; del Rio and Unruh
74 2007). This large scale deployment of renewable energy systems in a relatively short period of time
75 has seen Spain frequently cited in the international media (BBC 2007; The Daily Telegraph 2008;
76 The Guardian 2009, 2014a, 2014b) as the poster child for successful promotion and implementation
77 of RE policies and European climate change mitigation. However, in 2012, the situation changed
78 dramatically. All subsidies for RE were removed by act of parliament (RD 1/2012). This has
79 resulted in the complete paralysis of new RE developments and a situation of considerable
80 uncertainty with respect to the future of RE in Spain. The country's ability to meet its medium term
81 (2020) and longer term (2050) climate change mitigation objectives, which in the very recent past
82 seemed assured, can now be seriously doubted.

83

84 This worrying situation has been covered by the international media (e.g. New York Times 2013,
85 2014), and is reported in European Union grey literature (e.g. Dreblow et al 2013) but does not
86 seem to have made its way into the specialist scientific literature. In this article, the situation is

87 analysed through a process of engagement with key stakeholders in the Spanish energy sector, an
88 approach that differs from previous approaches that have tended to report on the Spanish RE sector
89 objectively, without emphasis on stakeholder engagement, and from a national point of view, in
90 which regional differences in development of RE are treated as a reflection of the national context
91 or simply due to particular geographical circumstances (e.g. more wind, solar radiation etc.). In fact,
92 the picture across each of Spain's 17 autonomous regions¹ is startlingly different, with some regions
93 (e.g. Canary Islands) having great potential for RE development but low implementation and others
94 (e.g. Navarre) less obviously rich in natural resources for RE production but highly advanced in its
95 implementation.

96 Here, we argue that the picture is more complicated than is usually presented in the literature on RE
97 in Spain, and that the marked differences in development of RE across the Spanish regions strongly
98 reflects the different territorial, economic and administrative circumstances in each region. For this
99 reason, special attention is given in this paper to the nature of the implementation process in each
100 region and the different types of relationships that have been developed between the stakeholders
101 involved in the process.

102 The current state of RE development paralysis in Spain can be seen as an opportunity to reflect on
103 the previous actions undertaken at the different levels of governance and civil society. By
104 investigating the historical dynamics of the RE implementation process at the regional level, key
105 elements or milestones in the process (e.g. relationships between stakeholders, potential benefits
106 produced to the region or historical implementation trajectory) can be identified for each region,
107 and clear objectives can be defined. In this way the search can begin for a way to restart the process
108 without excessive reliance on national policy makers, top-down stimulus regimes, or multi-national
109 energy operators, all of which have played an important role in Spain's previous successes, but none
110 of which have been able to bring about a genuine and resilient transformation (regime shift) in the

¹ Spain's national territory also includes two autonomous cities on the African continent, Ceuta and Melilla. For reasons of size, these two Spanish dependencies were not considered in the present study.

111 nation's energy model, similar, for example, to Germany's *energiewende* (Strunz 2014).

112 **2. RESEARCH BACKGROUND**

113 *A multi-level energy policy in Spain*

114 In Spain, legislative responsibility for energy issues is shared between the National Government and
115 the Autonomous Communities (ACs). The national government maintains the legal authority to
116 define the basic framework, to coordinate the general planning of economic activity and to
117 authorize the electric installations where energy supply comes from inside one AC but is destined
118 for another AC. For their part, ACs have statutory authority over land planning, urban development
119 and promotion of economic development in the region in accordance with the objectives fixed by
120 the national economic policy. Finally, municipalities have responsibility for spatial planning. For
121 such major changes to the energy production system to be resilient² robust lines of communication
122 need to be established as well as an adequate balance of resources (financial, knowledge) and power
123 (policy instruments, power of veto) between the key stakeholders involved in the development
124 process at all levels.

125 *Renewable energy in Spain*

126 From the beginning of the 1990s, Spain saw a major RE boom, initially in wind power, which saw
127 a hundredfold increase in capacity between 1990 and 2003 (Espejo Marín 2004b). Solar Thermal
128 Electricity (STE) dramatically increased capacity after 2004, climbing from 2.2 MW in 2004 to a
129 total generating capacity of 1643.4 MW (Ruiz Romero et al 2012). Solar Photovoltaic energy
130 (hereafter PV) first appeared in Spain in the mid 1970s but was slower to develop, accelerating
131 dramatically after 2006-7 with 2708 MW installed by 2012 (Ruiz Romero et al 2012). Other types
132 of RE, such as biomass and geothermal energy are less well-developed in Spain. Following the
133 removal of subsidies, no new development of biomass energy is currently planned (ENDS waste

2 Walker et al. (2004) define resilience as “the capacity of a system to absorb disturbance and reorganize while undergoing change, so as to still retain essentially the same function, structure, identity, and feedbacks”.

134 and bioenergy 2014).

135 Two main contextual factors have supported the widespread development of RE in Spain: the high
136 level of external dependency on external energy sources (upwards of 75% according to World Bank
137 (2014)) and the favourable climatic conditions for RE production. These factors alone, however,
138 cannot account for the rapid successful diffusion of RE in Spain since 1990.

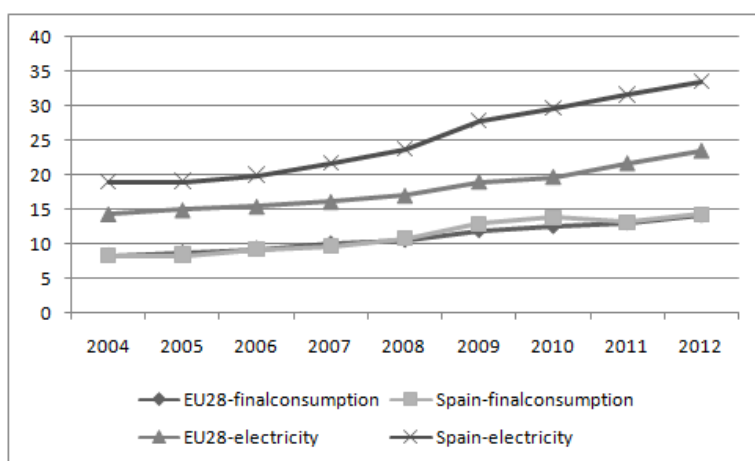
139 Most authors cite feed-in tariffs (FITs) (guaranteed minimum per unit energy price paid to
140 producers) as primarily responsible for the growth of the sector (e.g. Meyer 2003, Movila et al
141 2013, Dinçer 2011). Dinica (2008), however, is rightly sceptical about the role of FITs, pointing out
142 that the policy initially had an unattractive design for investors (Dinica 2008). The FIT explanation
143 also does not account for the slow diffusion of PV compared to wind energy, which only took off
144 around 2006-7 (see Ruiz-Romero et al 2012, p. 327), even though the FIT had been in place since
145 1998 (Movila et al 2013). Instead, Dinica (2008) emphasizes the role of Private-Public Partnerships
146 (PPPs), which encouraged groups of investors (typically regional governments, utilities companies
147 and manufacturers) to pool resources and risks. Rio and Unruh (2007) ascribe the impressive pace
148 of wind energy expansion between 1995 and 2004 (the period studied by these authors) to a variety
149 of factors, including falling manufacturing costs worldwide, technological improvements and
150 Spain's position as a world leader in key technologies (e.g. turbine manufacturing - commanding
151 16.4% of the market in 2002; Rio and Unruh 2007). The structure of the sector and the scale of
152 developments has also clearly played an important role. Both wind and solar developments have
153 tended to be large scale, implemented in a centralised fashion, an approach that has been
154 particularly favoured by the PPP model as well as the availability of land in Spain, the second
155 largest country in the European Union.

156 *The structure of the Spanish energy sector*

157 European directive 2009/28/CE establishes a common framework in the EU to promote energy
158 production coming from RE sources, and establishes specific mandatory goals for the different

159 countries, 20% in the case of Spain for 2020. From this indicator (Figure 1), it can be seen that
 160 Spain has increased from an 8,3% share in 2004 to a 14,1% share in 2012. Although this is an
 161 encouraging trajectory, there is still a long way to go if the goal of 20% by 2020 is to be achieved.
 162 Specifically, RE production in Spain has been mainly destined to electricity production where the
 163 development has been higher than the mean of the EU countries, increasing from 19% in 2004 to
 164 33,5% in 2012.

165 Figure 1: Indicator “Share of RE in gross final energy consumption” and indicator 2” Share of
 166 renewable energy in gross final energy consumption”

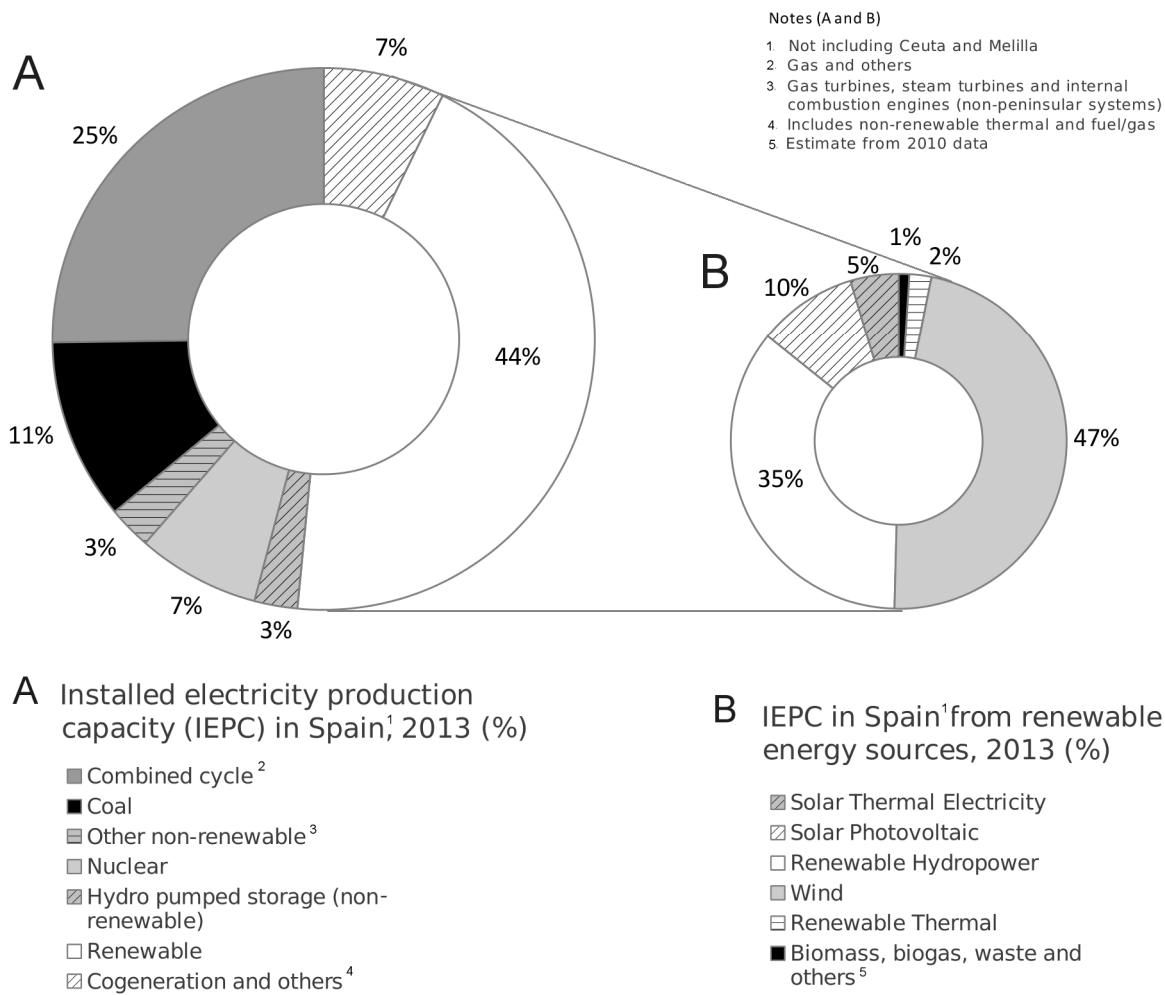


167
 168 Source: Own work, data from Eurostat 2014

169 Energy from renewable sources in Spain comes mainly from hydroelectricity and wind power.
 170 These two sources are the earliest forms of RE to be established on a large scale, and also have
 171 greater installed capacity (19803 MW and 22573 MW installed capacity respectively in 2012; REE
 172 2013). As can be seen in Figure 2, other RE sources such as PV, biomass, biogas or thermoelectric
 173 are minority sources in terms of energy production.

174

175 Figure 2: Structure of Spanish electricity production in 2013.



176

177 Source: Own work, data from REE 2014 and IDAE 2011

178 Both wind and solar energies have been deployed in every Spanish region, but the amount of energy

179 produced in each region varies widely (Table 1)

180

181 Table 1. Installed power capacity (MW) of wind and solar per region in Spain in 2012..

CCAA	Wind energy			Photovoltaic Solar		
	MW	W/inh	W/km2	MW	W/inh	W/km2
Andalusia	3233	382,6	36907,7	838	99,2	9566,5
Aragon	1797	1331,6	37657	164	121,5	3436,7
Canary Islands	145	129,5	19471,1	162	76,5	21753,9
Cantabria	35	58,9	6570,9	2	3,4	375,5
Castille and Leon	5597	2198,3	59399,2	485	190,5	5147,1
Castille-La Mancha	3784	1783,3	47620,3	906	427	11401,7
Catalonia	1284	169,6	40011,8	248	32,8	7728,1
Madrid	0	0	0	64	9,8	7972,4
Navarre	987	1531,3	94991,9	160	248,2	15398,9
Valencia	1193	232,6	51301,9	338	65,9	14534,8
Extremadura	0	0	0	539	486,4	12946
Galicia	3324	1195	112393,4	15	5,4	507,2
Balearic Islands	4	3,6	200,3	77	68,8	15425,7
The Rioja	448	1384,4	88796,4	85	262,7	16847,5
Basque Country	194	88,5	26831,4	27	12,3	3734,3
Asturias	434	402,8	40933,9	1	0,9	94,3
Murcia	263	178,4	23245,7	426	288,9	37652,8
TOTAL	22722	11070,4	686332,9	4537	2400,2	184523,4

182

183 Source: Own work, data from REE 2013 and INE 2014.

184 3. AIMS

185 In this paper, three key aims have been defined:

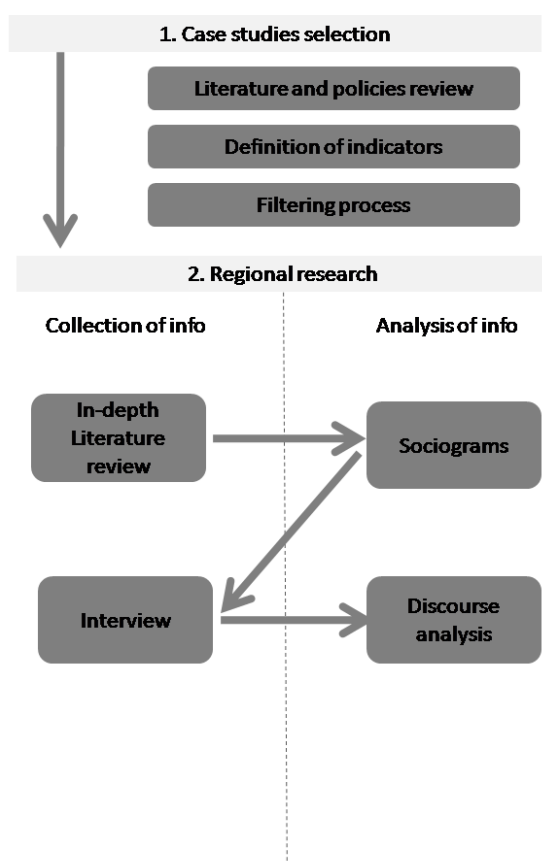
- 186 ▲ Analyse, though bibliographic study and participatory engagement with key stakeholders,
- 187 the current situation regarding RE development in Spain.
- 188 ▲ Examine key regional differences and demonstrate that these differences are not explained
- 189 only by territorial characteristics, but also by the composition of the stakeholder community
- 190 involved in RE implementation and the relationship between them at the regional level.
- 191 ▲ Search for key opportunities at the regional level to facilitate the emergence of a stable and
- 192 sustainable (economically, environmentally, socially) approach to RE implementation in

Spain.

4. METHODS

The methodological framework used in this research (see Figure 3) comprised two phases: 1) a national scale appraisal of the RE implementation process for all Spanish regions leading to selection of 6 Autonomous Communities for in depth-study and regional comparison, and 2) follow-up study in these 6 regions selected on the basis of the results from the first phase. The techniques employed for the study combined in-depth review of available bibliographic sources (published and unpublished, electronic and otherwise) and a variety of participatory research techniques.

Figure 3. Methodological approach



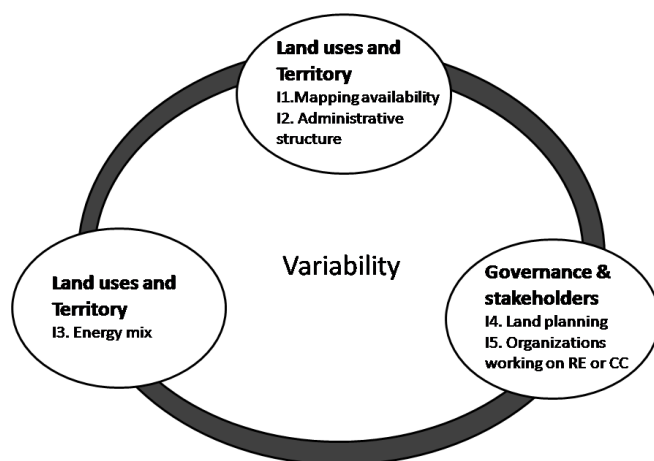
Source: Own work.

205 4.1 Selection of case study regions

206 The objective of this step was to create a subsample of Spanish ACs, since resources were not
207 available for detailed study of all 17 regions. At the same time, to ensure representativeness of the
208 subsample, it was important to capture the great diversity in experiences of RE implementation
209 across the regions. Firstly a detailed search of available information from internet sources, grey
210 literature and academic publications was undertaken, detailing the principal RE sources for each of
211 17 autonomous communities in Spain, the overall energy balance, and the state of the art in terms of
212 policy directives and drivers, as far as was possible to discern from these sources. Likely
213 availability or accessibility of data was also considered.

214 Subsequently, a filtering process was initiated on the basis of the information obtained in the rapid
215 appraisal. This involved development of a series of indicators in relation with three different criteria
216 intended to maximise the diversity of regions selected and ensure feasibility for study, 1)
217 availability of cartography and type of AC (single province, multiple provinces or island); 2)
218 Energy mix; 3) Existence of an autonomous energy plan (EP) and organisations working in the
219 region on CC and RE.

220 Figure 4. Indicators used for the case studies selection.



221

222 Source: Own work.

223 Table 2. Responses to indicators I1-I5. I1. Mapping availability: indicator takes value 1 if there is
 224 cartographic information on RE infrastructures available by internet, even if it is not available for
 225 download and value 0 if there is not. I2. Administrative structure: indicator takes value I if it is an
 226 insular autonomous community, value M if it is a peninsular mono-provincial autonomous
 227 community and value P if it is a peninsular pluri-provincial autonomous community. I3. Energy
 228 mix: number of different RE sources for electricity production. I4. Energy Planning: indicator takes
 229 value EP when a regional energy plan is currently in force, G when a regional energy plan focused
 230 on a specific RE is currently in force and O when there is no operative regional energy plan. I5.
 231 Organizations: existence of organizations with publications or research activities related to RE at
 232 the studied region (including magazines, bulletins and other types of grey literature)

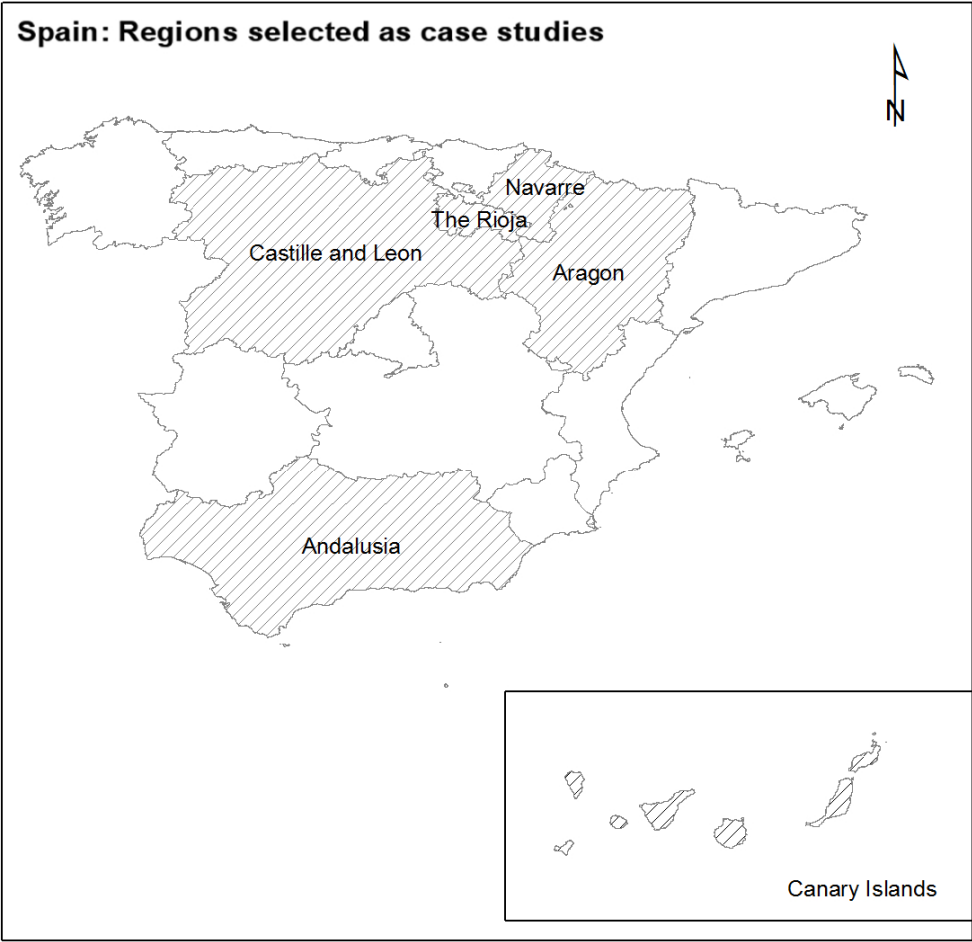
	I1	I2	I3	I4	I5
Andalusia	X	P	6	EP	X
Aragon	X	P	5	EP	X
Canary Islands	-	I	4	EP	X
Cantabria	-	M	4	EP	-
Castille and Leon	X	P	5	EP	-
Castille – La Mancha	-	P	6	G	X
Catalonia	-	P	6	EP	X
Madrid	-	M	5	EP	-
Navarre	-	M	5	EP	-
Valencia	-	P	5	G - Wind energy	-
Extremadura	-	P	6	EP	X
Galicia	-	P	6	EP	X
Balearic Islands	-	I	4	EP	-
The Rioja	-	M	4	0	-
Basque Country	-	P	6	EP	x
Asturias	-	M	5	0	-
Murcia	-	M	6	EP	-

233

234 As lack of cartographic information relating to renewable energy might pose a problem for further
235 analysis in complementary studies focusing on territorial aspects, the first decision to be taken was
236 the selection of the three autonomous regions where cartographic information relating to RE was
237 available: Andalusia, Aragon and Castile-and-Leon. Furthermore, by selecting these regions it was
238 also possible to satisfy the variability criteria for indicator 3 Energy mix, as these three regions
239 contained a wide range of RE types. In order to obtain the full range of variability for indicator 2
240 Administrative structure, The Canary Islands, Navarre and The Rioja were selected, which also
241 provides the full range of variability for indicators 4 and 5.

242 Even though there are of course other possible combinations of regions that would also ensure
243 variability of the indicators, the selection that has been made is considered to be representative of
244 the range of different situations likely to be encountered in Spain.

245 Figure 5: Spain and the 6 case study regions referred to in this paper



247 **4.2 Case studies**

248 The methodological framework employed for the participatory process was based on participatory
249 approaches typically used under Participatory Action Research (PAR) (e.g. Castellanet and Jordan
250 2002; Guzman et al 2013). In particular, three tools taken from PAR were used: semi-structured
251 interviews for the collection of information and sociograms and discourse analysis for the
252 subsequent analysis phase.

253 ***Semi-structured Interviews***

254 The case study phase was initiated with an in-depth review of the policies and stakeholder
255 communities identified in the first phase of this study. On the basis of this, a semi-structured
256 interview pro-forma was prepared (Appendix A). The interviews were structured around a series of
257 'open questions', to allow for a more flexible and nuanced response than is possible through closed
258 questions. At a national level and for each region, two stakeholders were selected. Both national and
259 regional level stakeholders were contacted to carry out an open but structured telephone interview.
260 Some stakeholders did not wish to participate; these individuals were substituted by other, related,
261 stakeholders where possible.

262 Interviews lasted about 50 minutes each and covered four main issues: RE current situation and
263 tendencies, regional policies, stakeholders involved in the process and cartography availability
264 (necessary for understanding the extent of RE implementation at the level of the region). 10
265 interviews were carried out in total, at least one per region, and one at the national level (Table 3)

266

267 Table 3. Stakeholders Interviewed, institutions and spheres of action.
 268

Region	Institution name	Sphere
National Level	IDAE – Energy Department, National Government	Administration/Quangos
Andalusia	APREAN	Business/Implementation
Andalusia	AEA (Andalusian Energy Agency)	Administration/Quangos
Aragon	Energy Planning Dept, Regional Government	Administration/Quangos
Aragon	CIRCE	Scientific
	Land Planning Observatory, Regional Government	
Navarre		Administration/Quangos
Navarre	Energy Department, Regional Government	Administration/Quangos
Castille -and- Leon	Valladolid University	Scientific
Canary Islands	ITER	Business/Implementation
		Environmental/Social
The Rioja	Friends of the Earth	Organizations

269

270 The information collected through both literature review and interviews was analysed by two
 271 further techniques: *sociograms*; to understand which stakeholders are involved in the RE policy
 272 implementation process both at national and regional level and *discourse analysis*; to organize this
 273 information structurally and compare the information from the different interviews.

274 ***Sociograms***

275 The objective of a sociogram is to establish the social relations that exist between groups,
 276 institutions, or individuals through graphical representations, to illuminate the trusts, misgivings or
 277 connections that could be of interest at a given time in a specific sectoral or territorial community
 278 (Villasante, 2006).

279 The first task undertaken was to identify and map the main national and regional stakeholders.
 280 These sociograms were constructed based on information derived from both written sources and
 281 semi-structured interviews: one sociogram was developed at national level and 6 at regional level,
 282 one for each Autonomous Community selected for more detailed study. To do this, graphical
 283 representations of stakeholders were compiled using overlapping circles (Venn diagrams). In order

284 to analyze the results of this research, different constellations present at the sociograms are expected
285 to have an effect on the future possibilities for RE reactivation in Spain.

286 For analysis of the sociograms, the following assumptions and general considerations are relevant:

287 *1) Overlaps:* The existence of overlaps which represent spaces of common work between different
288 spheres of action implies a more participatory development process in which communication and
289 information exchange between each sphere is stronger. Two of these overlaps seem to be of special
290 importance: a) the link between business and administration, which is important for investor
291 confidence, and b) the link between business and civil society, which ensures widespread diffusion
292 of the RE implementation process throughout all sectors of society, not just amongst the elite.
293 Strong links between organisations as a result of these overlaps may imply a higher level of
294 resilience.

295 *2) The role of the regional administration:* The regional government is important in the RE
296 implementation process. It can act simply as another stakeholder, or it may choose to play a leading
297 role. When it chooses the second option, it is linked to the other spheres of action.

298 *3) The organization level of the business sector:* As provider of the key financial resources, the
299 business sector also has the potential to play a leading role. If this sector is highly organised around
300 RE, this is likely to be positive for the further development of RE in the region.

301 *4) Isolation of some spheres of action:* The involvement of all spheres of action in the RE
302 implementation process would contribute to a more complex and dynamic social network around
303 RE. This is likely to increase the chance that the whole stakeholder community would resist the
304 imposed destruction of the system by a single actor, and instead, when the system suffers a shock,
305 try to generate different options for the future.

306 ***Discourse analysis***

307 Following the interviews, discourse analysis was carried out to understand stakeholder perspectives

308 on key themes that emerged from the previous research and interviews, for example:

309 *Historical trajectory:* In some ACs, there has been a high level of involvement of the regional
310 stakeholders in the RE development process, something that seemed to be associated with a higher
311 economic benefit received by the region.

312 *Speed of deployment.* Slower development facilitates the involvement of civil society in the process
313 and therefore may increase the stability of the new system.

314 *Conflicts:* Conflicts may be unavoidable initially when a new system is implemented, however, the
315 existence of measures to overcome such conflicts is highly regionally dependent. Regions where
316 conflicts have been successfully overcome may offer valuable lessons for future implementation.

317 *Perspective about the future:* When stakeholders are already thinking optimistically about the future
318 and generating new ideas to achieve it, doing so successfully is likely to be easier.

319

320 **5. RESULTS**

321 **5.1 Sociograms: understanding stakeholder communities involved in implementation of** 322 **RE**

323 *National level*

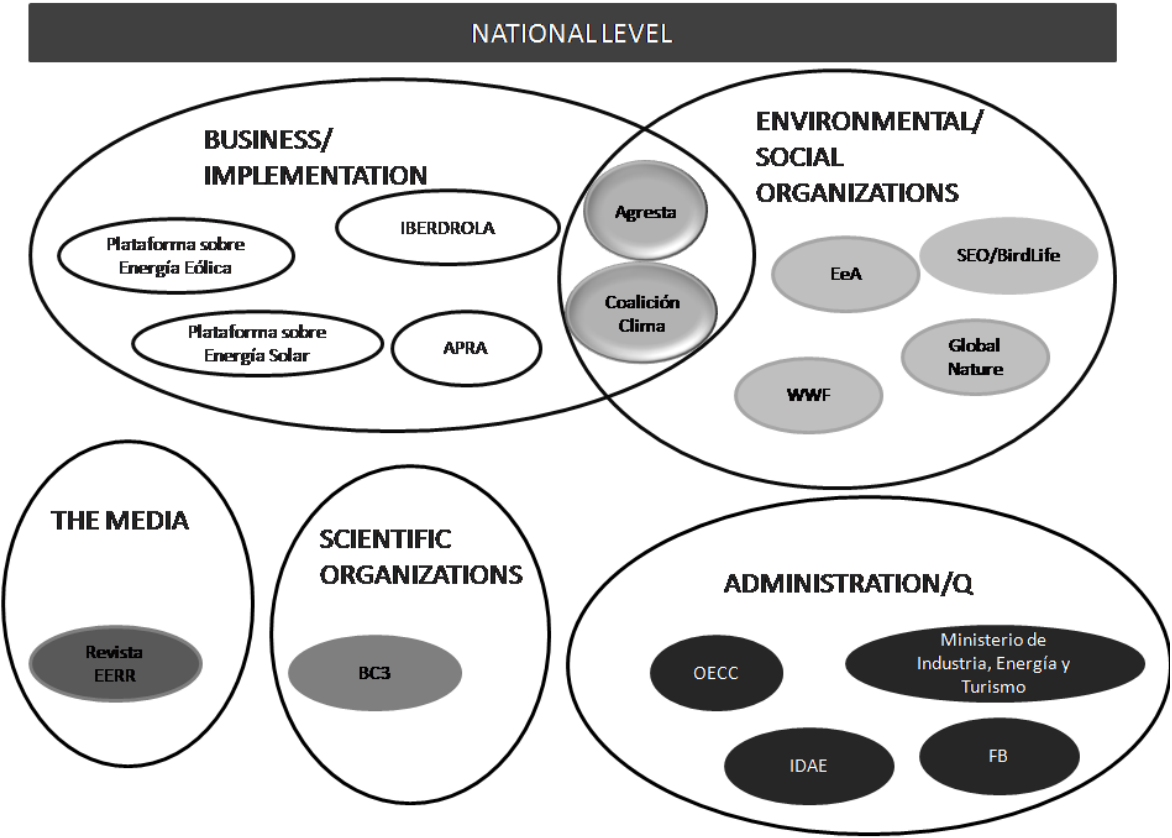
324 5 different spheres of action were defined at national level (Figure 6). These spheres of action were
325 maintained for the analysis of the regional stakeholders:

326 ♣ Business/Implementation: Business and other stakeholders involved in the start up of RE
327 infrastructures in the states or regions selected for the case studies.

328 ♣ Environmental/Social Organizations: Environmental and social Non-Governmental
329 Organizations (NGOs) with a branch in the case study regions, that have an active agenda in
330 relation with RE and/or CC.

- 331 ▲ Scientific Organizations: Universities and research centres working on RE and/or CC.
- 332 ▲ Administration/Q: National level government departments in charge of Renewable Energy
- 333 and Climate Change issues and other quasi-governmental organizations (Quangos) that are
- 334 dependencies of the government.
- 335 ▲ Media: Trade journals, newspapers, radio, etc with a special focus on Renewable Energy and
- 336 working at the regional level.

337 Figure 6: National level sociogram



338

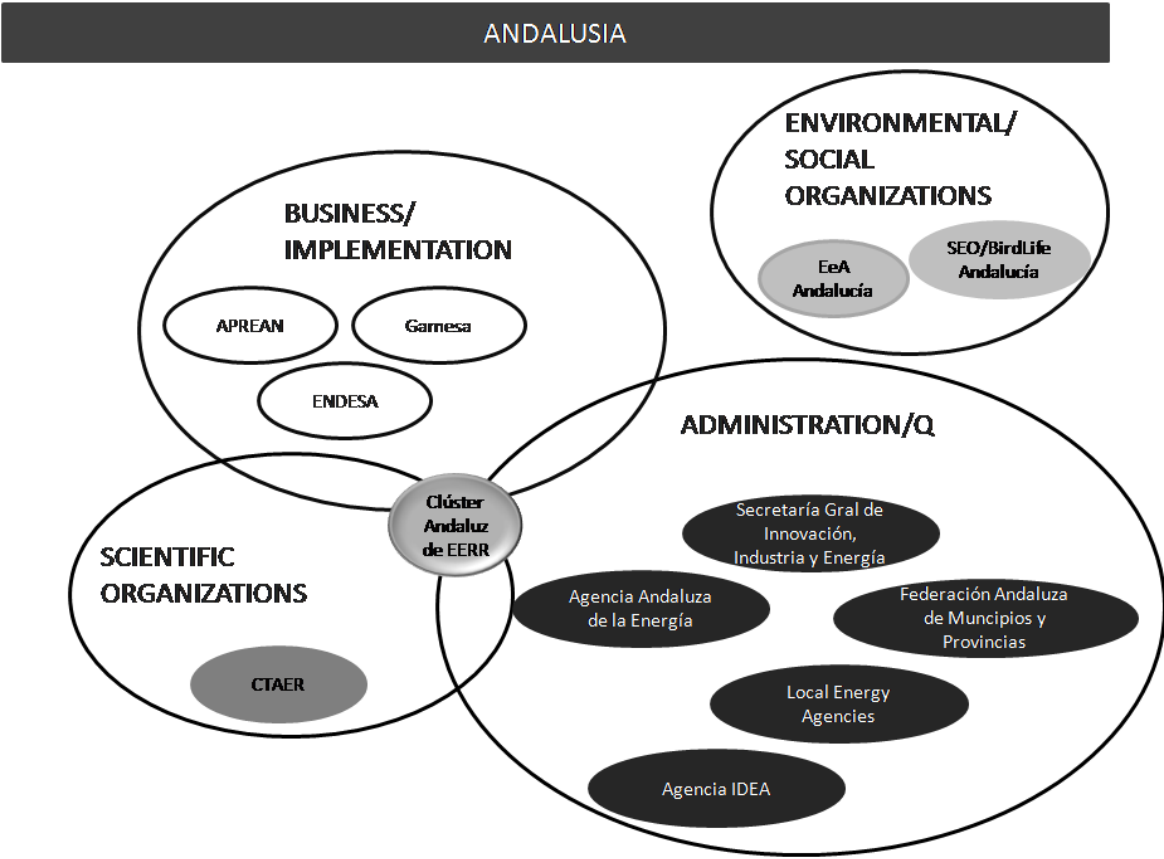
339 *Regional level*

340 The general spheres of action defined at national level were also relevant for classification of the

341 organisations at the regional level. The results for each AC are presented as follows:

342 **Andalusia**

343 Figure 7: Regional level sociogram for Andalusia



344

345 In Andalusia (Figure 7), three different spheres of action come together in the form of the
346 Andalusian Cluster for Renewable Energies (CAEERR). This umbrella organisation provides
347 businesses the opportunity of working together with local government organisations such as the
348 Malaga municipal energy agency, and the provincial energy agencies for Cordoba and Granada
349 (though it is interesting to note that the Andalusian government itself is not represented; CAEERR,
350 2014) This would seem to offer a good way of strengthening investor confidence through direct
351 contact with policy makers. The cluster's stated aims relate principally to improving communication
352 and lobby power. The inclusion of scientific organizations in the cluster like CIEMAT (a national
353 technology centre), and the Pablo Olavide University in Seville, potentially offers access to cutting
354 edge of RE research and development.

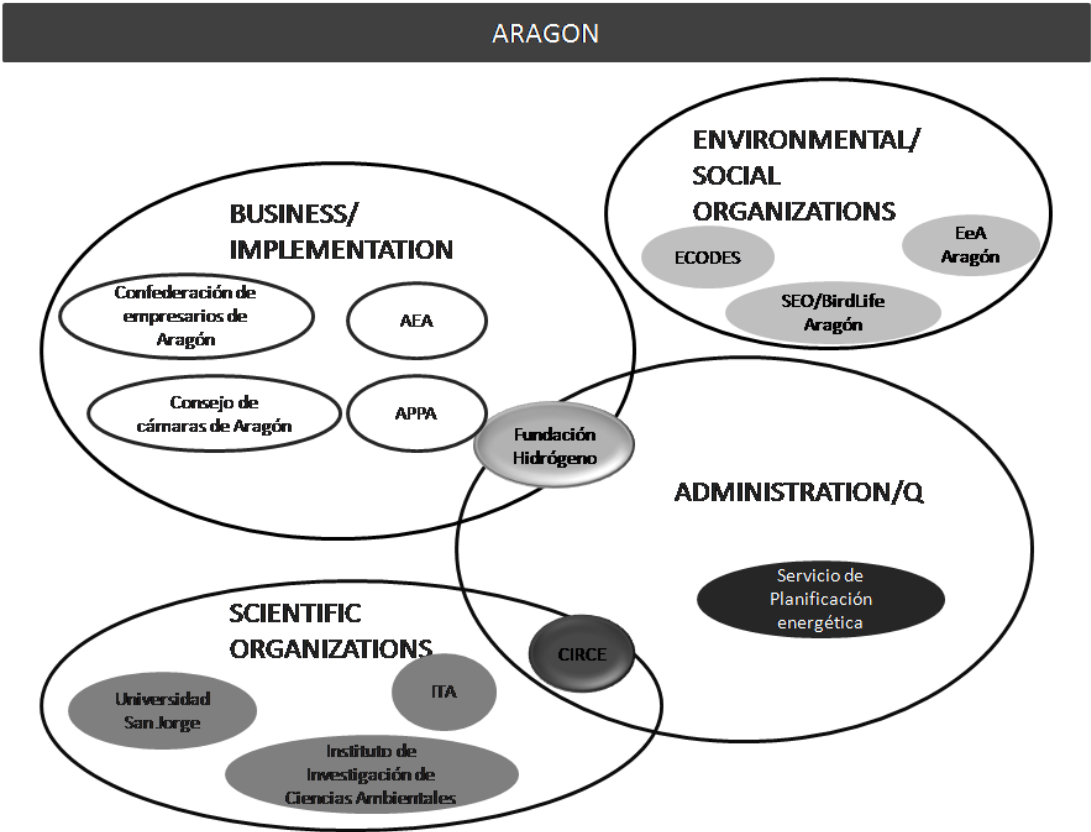
355 The RE business sector in Andalusia is organized under APREAN, in which small/medium

enterprises (SMEs) are included. There is a high number of large firms present in Andalusia which may play a prominent role in influencing policy decisions.

On the other hand, environmental and social organisations with interest in RE development are isolated, which may indicate a low level of civil society participation in the RE development process in Andalusia, something that is likely to decrease the resilience of the energy transformation.

Aragon

Figure 8: Regional level sociogram for Aragon



In Aragon (Figure 8), no common work space exists similar to CAEERR in Andalusia. However, there are two trans-sphere organizations that can play an important role moving the spheres of action closer together: The Hydrogen Foundation (Fundación Hidrógeno) combines tasks from both the Administration and Business spheres, and the research centre for energy resources and energy

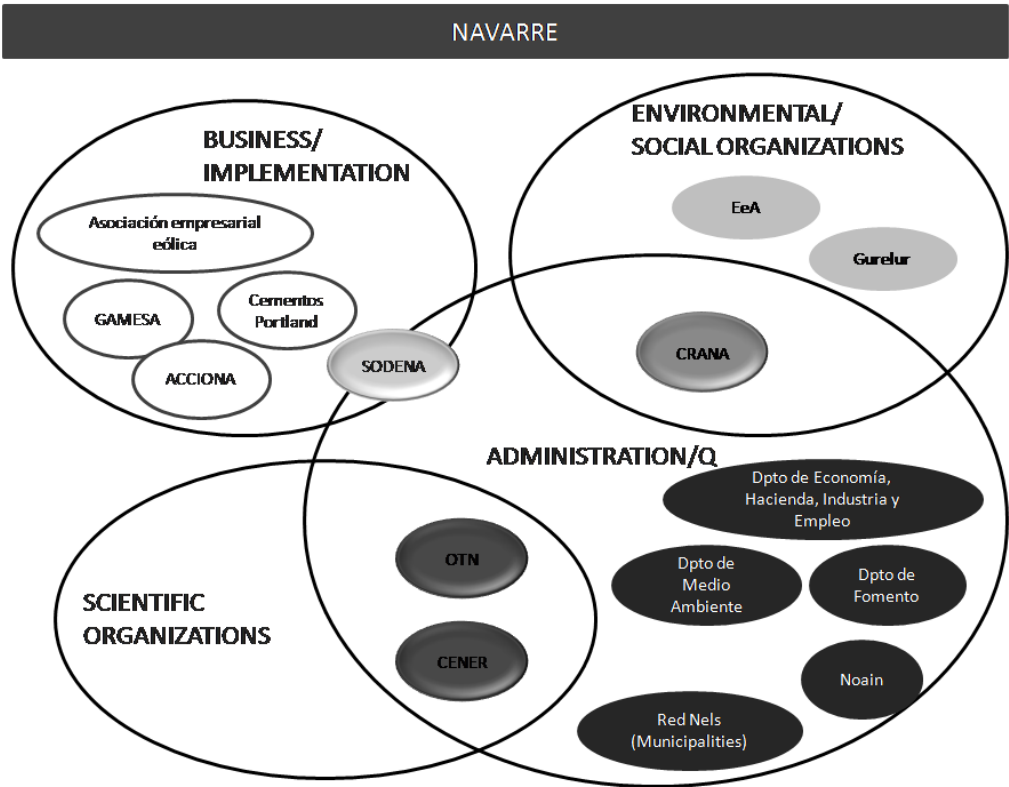
369 consumption (CIRCE), that combines tasks from both the Scientific Organizations and
370 Administration spheres.

371 The regional RE business sector comprises various organizations such as AEA (The association of
372 wind energy businesses in Aragon), and APPA (the Renewable Energy Producers Association,
373 which operates at a national scale but has regional representation in Aragon).

374 Finally, it can be seen that environmental and social organizations are also isolated in Aragon,
375 which is likely to decrease the resilience of the process.

376 **Navarre**

377 Figure 9: Regional level sociogram for Navarre



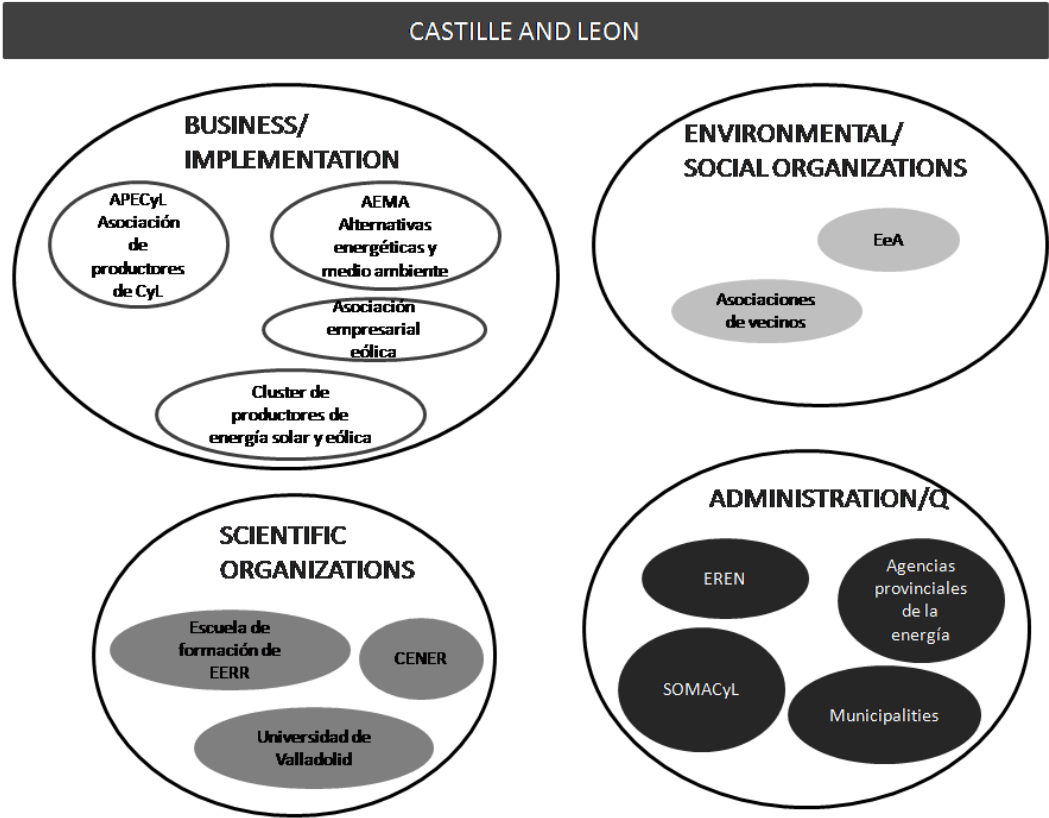
378
379 The main point to be made about the Navarre sociogram (Figure 9) is the high level of participation
380 of the regional public sector in the rest of the spheres of action, especially the existence of
381 organizations that link the Administration with all of the other spheres. This is unique amongst the 6

382 regions studied in this research. Since there is no single workspace that is common to all the sphere
383 of action, this factor is clearly highly significant to the RE development process in Navarre.

384 The business sphere is robust and well-organized. Several very large businesses such as Acciona,
385 Gamesa and Cementos Portland are present in the sector in Navarre, something that is likely to be
386 influential in determining future RE implementation.

387 **Castille-and-Leon**

388 Figure 10: Regional level sociogram for Castille-and-Leon



389

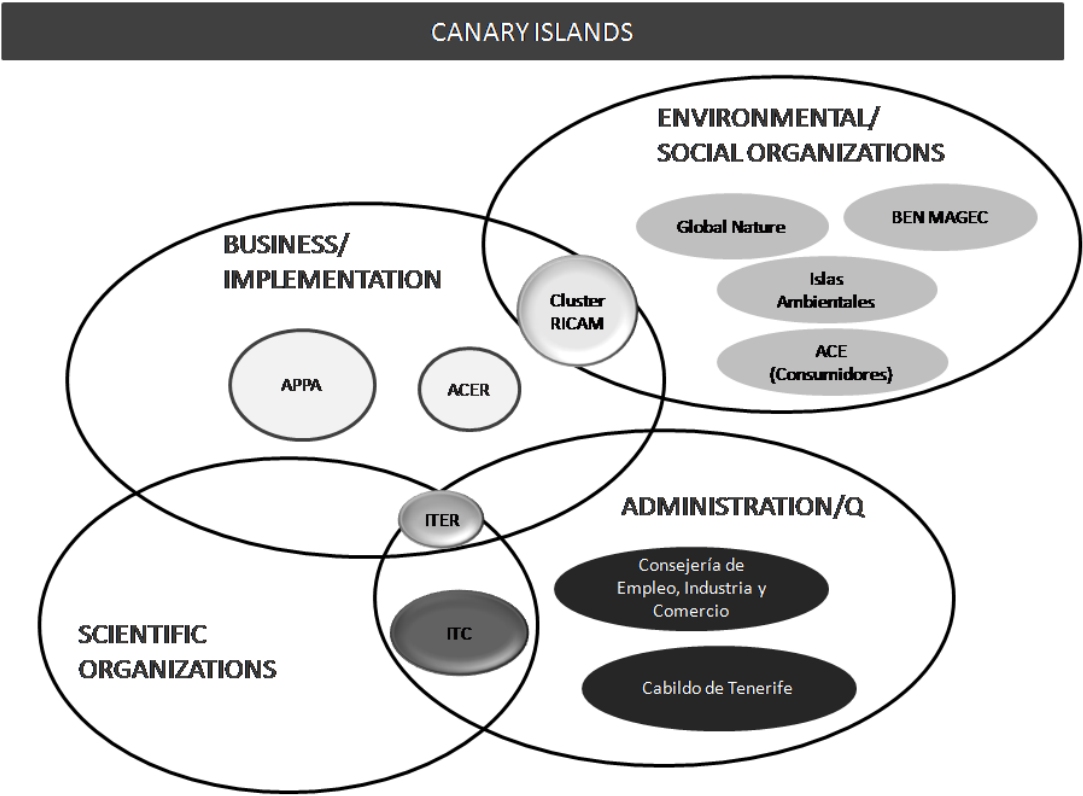
390 Castile and Leon (Figure 10) stands out because of the absence of any relationship between the four
391 spheres of action considered, there is neither a common workspace between spheres nor any trans-
392 sphere organization.

393 Looking at the regional business sector, it is highly organized, with three different organizations
394 active in the RE sector; the Castile and Leon wind energy producers association (APECyL), the

395 wind energy business association (AEE), and the cluster of solar and wind producers.

396 **Canary Islands**

397 Figure 11: Regional level sociogram for Canary Islands



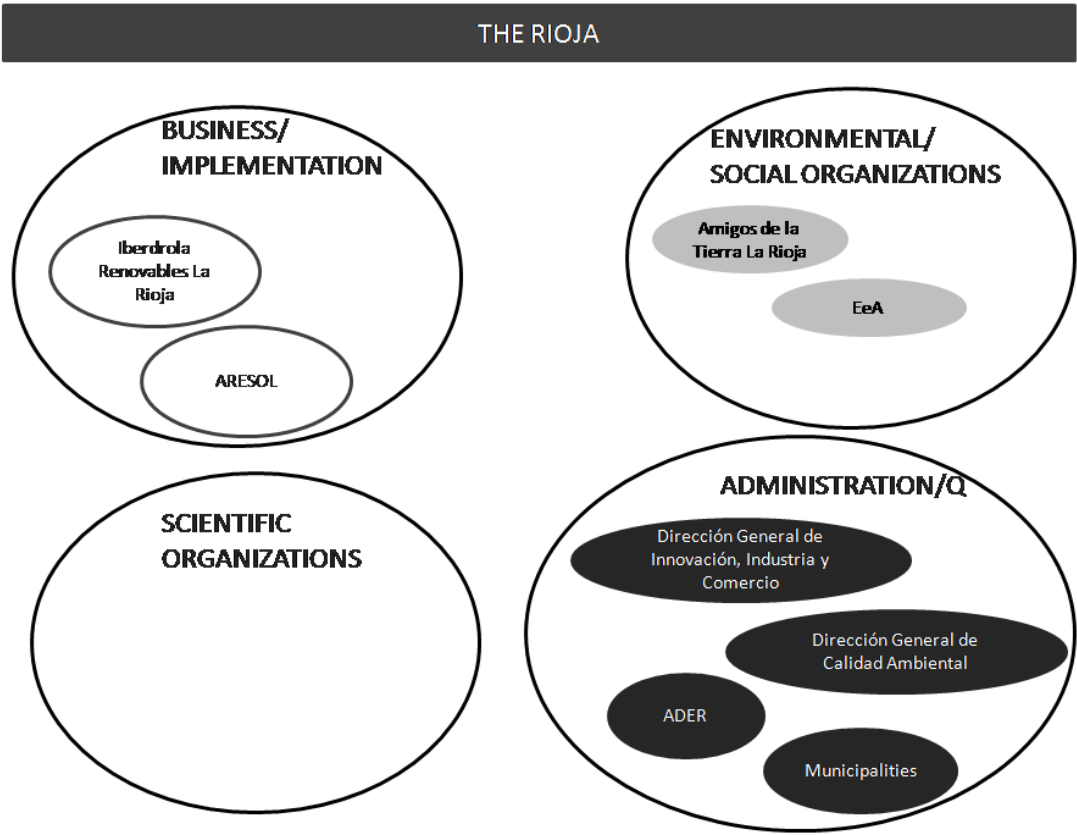
398

399 The Canary Islands (Figure 11) is the only region where there is a common workspace between the
400 business sphere and civil society (environmental and social organizations), called Cluster RICAM.

401 Additionally, there is a high level of involvement from the regional government with other spheres,
402 both Business and Scientific organizations. The two entities that cross these domains, ITER and
403 ITC, play a leading role in the RE development process.

404 Finally, the high level of organization of the business sector is also noteworthy, with two different
405 associations in operation: APPA (the renewable energy producers association, with regional
406 representation in the Canary Islands) and ACER (the Canary Islands association for renewable
407 energies).

409 Figure 12: Regional level sociogram for The Rioja



410

411 In The Rioja (Figure 12), only factors likely to be restrictive for further RE development were
412 found. The four spheres of action considered are isolated, with neither a common workspace nor
413 any trans-sphere organization.

414 In addition, there is no organization that represents the collective interests of the regional RE
415 business sector, and no specifically dedicated scientific organisation.

416 **5.2 Discourse analysis: results of telephone interviews**

417 Verbatim results from telephone interviews with stakeholders are presented for each theme in Tables
418 4, 5, and 6. The results are summaries of stakeholders' verbatim responses in translation except
419 where interpretation was needed to clarify the meaning of the response.

420

421 *The current situation and the RE development process in the past*

422 Stakeholder responses for this theme are presented in Table 4. A number of points can be made.

423 Firstly, respect to past RE development, national level factors such as subsidies and electricity grid

424 were given greater weight by interviewees in all ACs studied. Stakeholders were able to inform

425 about the significant difference between the development of wind and solar energy. Wind energy

426 was the first to be implemented, and its development was quite slow in every region analysed. In

427 the case of solar energy, stakeholders noted very little development prior to the year 2000;

428 nevertheless its expansion through the Spanish territory was spectacularly fast, much more so than

429 in the case of wind energy. Despite the fact that most of the factors influencing RE development in

430 the past are quite similar between regions, it is notable that the Canary Islands would receive greater

431 economic benefit from the implementation of RE than other ACs studied, due to the special

432 characteristics of its electricity grid.

433

434

435 Table 4. Results from telephone interviews with stakeholders about the current situation and the
 436 past RE development process.

National level	
	<p>Wind energy has evolved very gradually, but has been strongly developed since the year 2000. For PV energy, 2007 was a turning point due to the regulatory framework RE development has entailed both a regulatory framework combined with technological breakthroughs. “Poor legislation” implemented by the previous government. January RD 1/2012</p>
Andalusia	
	<p>Wind energy begun to be profitable in the 90s. PV energy was rapidly developed between 2007 and 2010 due to increase in subsidies. With elimination of subsidies in 2012 development ceased. Both stakeholders agree on the fact that regional administration is supporting RE development in the region, but under the current national legislation further development would be quite difficult.</p>
Aragon	
	<p>Wind energy infrastructures were the first type of RE to be implemented. Wind energy implementation process was slower than in the case of solar PV. PV took off in 2004-2005, and specially between 2007 and 2010. When the national legislation framework changed, Aragon was less prepared than the other CA. Electricity network capacity is the key element impeding the development of RE in Aragon.</p>
Canary Islands	
	<p>Limited by the size of the territory and the nature of electricity supply and distribution (6 independent electricity networks) Much more advantage could be taken of this important and renewable resource. Land planning for energy infrastructures is now being prepared. Bureaucracy was a key factor in delaying the development of solar energy when legislation was favourable. Announcement of tendering processes has been very conflictive (due to corruption and Environmental Assessments) Red Eléctrica has recently modified its energy distribution planning. Since 2012 situation is uncertain. The price paid [for energy] has gone down. A Working Group (Ministry and Regional authorities) has been created to analyse the specific situation of Canary Islands in relation to energy prices.</p>
Castille and Leon	
	<p>Wind energy implemented everywhere in the region since 2000. In 1999 a regional plan drawn up for wind with the objective of achieving 7000MW. Now, it is producing 5200MW. At present, development is slower. Solar PV was developed between 2008 and 2010. Before and after this interval only small local investors.</p>
Navarre	
	<p>A semi public business (EHN) had a big impact in the regional wind energy development. High level of public acceptance. CENER (Research on RE) was created in 2000 and CENIFER (education on RE) in 2003.</p>
The Rioja	
	<p>Ecological values in the AC have been negatively impacted (“destroyed”) by RE infrastructures. Factors influencing RE development are mainly subsidies and electricity network capacity.</p>

437

438 *Conflicts related to the RE implementation process.*

439 Stakeholder responses for this topic are presented in Table 5. Conflicts highlighted by stakeholders
440 can be grouped as follows:

441 a) conflicts related to ecosystem modification and landscape impacts due to RE installations. These
442 are either related to visual landscape concerns, especially at regional boundaries (e.g. between
443 Castille-and-Leon and Cantabria) where policies differ, or direct environmental impacts. Conflicts
444 over direct environmental impacts have occurred between environmentalists' groups and regional
445 authorities, most notably in The Rioja but also other areas (e.g. Navarre);

446 b) conflicts related to the distribution of economic benefits of RE implementation

447 c) conflicts related to policy and competence issues such as division between stakeholders of the
448 same sector (e.g. one environmentalist group, Friends of the Earth, supports RE, while another,
449 Ecologistas en Acción, opposes them), serious opposition to national government policy by regions
450 (even of the same political party) or difficulties in contract adjudication (corruption) identified in
451 some regions (e.g. Canarias).

452

453 When RE installations were first developed on a large scale, some conflicts did emerge, mainly
454 associated with the environmental impacts of these infrastructures. Many of these conflicts seem
455 now to have been overcome. Conflicts in some areas remain, for example, in Navarre, due to
456 excessive development of RE infrastructures (large scale wind) and in The Rioja, where
457 environmentalists felt that environmental concerns had not been taken into account in RE
458 development planning.

459 At present, coastal regions (Canary Islands and Andalusia in this research) face conflicts related to
460 the offshore RE development.

461 At other regions such as Aragon and Castille-and-Leon, conflicts were not identified inside the
462 region itself, rather with neighbouring regions, due to visual impacts on landscape.

463

464 Table 5. Results from telephone interviews with stakeholders about conflicts related to the RE
 465 implementation process.

National level	

Andalusia	
	Stakeholder felt that RE-related conflicts have been overcome. Conflicts highlighted in the past: landscape, with environmental groups (impacts on birds) and with other groups such as hunters. Conflicts currently in existence: offshore
Aragon	
	There were conflicts in the beginning, 10 or 12 years ago. Nowadays, main conflicts are with the neighbouring regions.
Canary Islands	
	With the environmentalists' groups. These groups have big impact in the region.
Castille and Leon	
	No major conflicts. Wind: Some conflicts with the neighbouring CA (i.e.. Cantabria) over landscape (visual impact) Also conflicts relating to the distribution of the economic benefits: services for the whole municipality or for those areas located next to RELF?
Navarre	
	OTN: No conflicts associated with RE in Navarre. There were some in the first years: landscape impacts, impacts on birds and path construction. Government: Some conflicts with environmentalists' groups due to the excessive wind energy development and impacts on birds.
The Rioja	
	There have been some conflicts with hunters' associations, but not many. Conflicts with the environmentalist group interviewed due to the environmental impacts and the lack of environmental planning.

466

467 *Future opportunities for further RE development.*

468 Stakeholder responses for this theme are presented in Table 6. The perception of the opportunities
 469 for the RE sector in the future could determine the actions of the main stakeholders at the present
 470 time. Although all the regional stakeholders interviewed agree on the fact that the future of the RE
 471 sector is highly dependent on the decisions taken at the national level, and the present situation of
 472 paralysis was generally regarded as negative, most regional stakeholders seemed to share an
 473 optimistic vision of the future for RE development. A stakeholder interviewed for the Canary
 474 Islands offered a series of recommendations (Table 6) to bring the moratorium situation to an end
 475 and stimulate further RE development.

476 Table 6. Results from telephone interviews with stakeholders about Future opportunities for further
 477 RE development.

National level	
	There is a question mark over the future of RE due to the economic crisis and fall in the consumption on energy. Since 2012, no new RE systems implemented because they cannot compete on price with conventional sources. “Spain has already achieved its target of 20% of energy consumption coming from RE sources”. [this assertion is not supported by official statistics, see Figure 1]
Andalusia	
	RE has a future due to its basis on natural resources and has social support and regional authority support. Future is conditioned by legislation at national level. Optimistic due to the national and international agreements that are in place.
Aragon	
	Optimistic. Currently stalled, as a result of prevailing circumstances. The only risk could be the emergence of a new more competitive energy source.
Canary Islands	
	In the short term, dark future due to the economic crisis. Solar PV: Risk for small business from bankruptcy. RE on the buildings will probably be developed in the medium term. In order to stimulate RE development It will be necessary to work on costs, net balance legislation for private individuals and bringing the national moratorium to an end.
Castille and Leon	
	Optimistic because Castille and Leon is a big and depopulated territory and much of this area could be dedicated to RE production.
Navarre	
	Optimistic, because RE is considered as strategic sector for regional economy. In the near future it is complicated because of the economic circumstances and national legislation is no longer promoting RE.
The Rioja	
	RE development is likely to be blocked for the next 5 years with only some small projects with private investment implemented.

478

479 **5.3 Limitations of the study**

480 Due to the complexity of the information solicited, the decision was taken to carry out a few in-
 481 depth interviews, rather than a larger quantity of less detailed interviews. For this reason, the
 482 number of stakeholders interviewed was relatively small (10). This has the disadvantage that highly
 483 personal or unrepresentative views of one or two stakeholders could lead to significant bias in the
 484 results of the interviews. To mitigate against this, care has been taken to present interviewees
 485 statements verbatim (Tables 4, 5 and 6) as far as possible and to use them to infer general
 486 tendencies rather than take them at face value. For example, while one interviewee from the Rioja

487 region referred to the “destruction of ecological values” (the stakeholder's own words) associated
488 with RE development, this is regarded only as evidence for conflict between stakeholders, since the
489 alleged environmental damage is something the researchers were unable to independently verify. It
490 is also important to stress that the work presented in this paper does not rely exclusively on the
491 results of interviews; rather, they are used to support researchers' analysis of the literature and vice-
492 versa. In addition. the sociogram approach reinforces the interview process by situating
493 stakeholders in their context relative to the whole community of actors.

494 **6. DISCUSSION**

496 As the research presented here has shown, the RE implementation process has been quite different
497 in each region, in fact, that no two ACs are alike. The marked difference in RE implementation
498 success stories evidenced by comparing, for example, Navarre, with the adjacent Rioja region, is
499 due precisely to these regional differences in the implementation process, above all, the
500 configuration of the most important players in RE identified in the sociograms, the business
501 community, the regional administrations, scientific organisations and civil society. The different
502 characteristics of each regional implementation process determine where new developments will
503 take place and what form they will take. Understanding this information could help policy makers
504 to cure the RE paralysis that Spain is currently experiencing.

505

506 **6.1 The structure of Spanish RE policy implementation**

507 **1. Stakeholders from different administrative levels have different, and opposing, perspectives**

508 Currently, stakeholders coming from the national and regional levels hold polarized views of the
509 current situation regarding RE in Spain. At the regional level, stakeholders argue for the recovery
510 of the RE support system whereas at the national level, stakeholders defend the current RE
511 moratorium legislation arguing that such a step was necessary to reduce state expenditure . This

polarization seems to be linked to the different administrative responsibilities between National legislators and the different Autonomous Communities, rather than pure political ideology, since these highly polarized viewpoints were observed even where the regional authority belongs to the same party as the National Government (e.g. in Castille-and-Leon). Some authors (e.g. Pérez & Ramos Real 2008) also highlight problems of bureaucracy and coordination between regional and national administrations.

518

2. Regional level stakeholders are optimistic about future RE development, yet reliant on key national level actors.

The general optimism about the future for the sector expressed by regional stakeholders rests on the international Climate Change mitigation agreements signed by Spain, on the high level of social acceptance that these types of energy production have found in most parts of Spain, and on the high dependence that Spain has from energy produced abroad (e.g. natural gas imported from Algeria). This positive and optimistic outlook about RE development in Spain seems to be at odds with the need for a constant political will to support RE that stakeholders identified as essential to further RE development.

528

3. Powerful actors can sabotage the system simply by removal of key elements.

The main argument used by national institutions to paralyse the previous model of support for RE development is the high cost of the subsidies to the public purse and the necessity of limiting public expenditure. However, in order to obtain the expected benefits from development of RE sources, it would be necessary to maintain the public support that was promised, since the sudden withdrawal of the subsidy regime affects investor confidence and could cause a stampede of investment capital away from RE, as in fact seems to have happened. Indeed, the stable legislative conditions and the careful handling of investor confidence are frequently cited reasons (Dinica 2008, Couture and

537 Gagnon 2009, Ruiz Romero et al 2012, Espejo Marín and García Marín 2012) for the success of RE
538 development in Spain. This is so widely known that it seems plausible that policy makers have
539 deliberately crashed the system, possibly on behalf of, or with the collusion of some insiders. Large
540 energy companies, with parallel investments in non-renewable energy sources, may have exerted a
541 powerful lobby pressure to obtain this result. Given the seriousness of the Climate Change threat,
542 the power and influence of these companies is a major concern and something that needs to be
543 addressed at a European level. Clearly, that a few powerful actors can sabotage the system by
544 removal of some key pieces indicates that the RE implementation process is non-resilient.

545

546 **4. European level policy makers are not openly critical of a national energy policy that does**
547 **not comply with EU objectives on Climate Change**

548 Spain has not yet achieved the EU “road map” 2020 objectives in relation to the production of
549 energy through RE. Withdrawal of the subsidy regime and destabilisation of the entire RE
550 implementation process seems an unlikely way to advance towards these objectives. It is
551 remarkable that what effectively amounts to an abrupt withdrawal from a key EU Climate Change
552 commitment by such an important member state (the EU's fifth largest economy) has not brought
553 louder criticism from EU policy makers. This may suggest that the actions of the Spanish
554 government have found support on some level inside the EU itself.

555

556 **5. Changes to the production-consumption ratio of the energy system has far-reaching**
557 **consequences**

558 Spain currently produces and has commercial commitments for more energy than it needs, due to the
559 decline in energy consumption that has accompanied the economic crisis (Fundación Energías
560 Renovables 2014). As a result, if the proportion of RE in the total energy mix is to be increased, it
561 would be necessary to close down existing non-RE plants. This is the explanation for the apparently

surprising observation made by the representative of the government of Aragon, that a growth in energy demand is a prerequisite for further RE development. This demonstrates how easily stakeholders can become fixed on achieving the European road map objectives without considering the wider aims for the policy. Development of the RE sector has been seen as an economic opportunity and stakeholders at all levels are paying much more attention to RE development than to the reduction of energy consumption. This could become an important obstacle in achieving a low carbon economy.

6.2 Perspectives from the regional level

As the sociogram exercise shows, there are important differences in the **configuration of stakeholder communities** across regions. In fact, a wide diversity of situations exists, which can be approximately grouped as follows: a) The Canary Islands and Navarre, with well-established links across spheres of action, common workspaces between civil society and business and active participation of the regional administration; b) large regions such as Andalusia or Aragon where communication routes between stakeholders from different spheres of action do exist, but the RE implementation process has been mainly driven by big business. However, the high level of communication and involvement of the regional government in RE gives these two regions good potential to move to a resilient implementation structure with higher stakeholder involvement across spheres. Next, c) Castille-and-Leon, a very large region with no relationship between stakeholders from different spheres of action where, even though RE development has been quite important in recent decades, it has not been translated into strong links between civil society and the RE sector. Here RE development has been driven by big business and, consequently, further development is not expected until economic conditions improve or national policy becomes more favourable. Finally, d) The Rioja is a small region where a close relationship between stakeholders might be expected, but no such relationship was detected. Further development of the sector seems unlikely

587 unless this situation changes.

588

589 By looking in detail at the **conflicts** that have occurred between stakeholders over the last three
590 decades of RE development in Spain, it is possible to identify future areas of disagreement and
591 define strategies that avoid or minimize possible conflicts. Most stakeholders interviewed perceive
592 conflicts related to the deployment of RE infrastructures as a problem that has already been
593 overcome. Two explanations for this fact can be found, firstly, that citizens' opposition tends to be
594 stronger when people feel that changes can still be avoided. Another possibility is that different
595 stances have become closer and opposing parties have reached a compromise through information
596 sharing and negotiation. This may explain why protests against wind energy deployment due to
597 ecosystem impacts (on birds in particular) have become less vociferous, while opposition to newer
598 technologies such as off shore wind energy has come to the fore.

599 With this in mind, the Canary Islands and Andalusia would be expected to face problems in the
600 future related to off shore energy development. However, both these regions have experience from
601 previous phases of development that might allow serious conflicts to be avoided by adopting more
602 integrative and participatory strategies.

603 **Stakeholders' perception of the future.** One important element that emerged through the
604 discourse analysis is the claim by the interviewee at national government level that Spain has
605 already achieved its objectives for 2020. As shown earlier in this paper (see Figure 1 and Figure 2),
606 these objectives have been achieved for electricity only; achieving 20% of total final energy from
607 RE, as required by international commitments, is still some way off. As Späth and Rohrer (2010)
608 have noted, the dissemination of this idea amongst the population can easily dilute the social
609 support for further public investment on RE in Spain and therefore jeopardise the attainment of a
610 low carbon economy.

611 At the regional level, stakeholder discourse has shown how the regions are dealing with the new

612 situation. The Canary Islands interviewee seemed to have made a deeper analysis than some other
613 stakeholders for ways to improve the currently rather low level of RE development in this region.

614 The strong links observed between different stakeholder groups is probably at least partly
615 responsible for the successful uptake of RE in some regions – for instance, linkages are strongest in
616 Navarre, which has been a clear leader in RE implementation in Spain. This assertion is supported
617 by the analysis of authors such as Dinica (2008) and Rio and Unruh (2007) who have emphasized
618 the key role played by partnerships between private sector groups like energy producers and turbine
619 manufacturers and public bodies like the regional administrations. However, some exceptions can
620 be identified. In Canary Islands, our research identified a common workspace between the business
621 sphere and civil society, a high level of involvement from the regional government with other
622 spheres of action, and an apparently well-organized business sector. Yet in this region, RE diffusion
623 has been disappointing. Conversely, in Castille and Leon, which has seen very strong development
624 of both wind energy and solar PV, the different spheres of action were found to be unconnected.

625 The reason for this apparent discrepancy, as noted by stakeholders interviewed in these regions
626 (Table 4) is probably one of infrastructure. Canary Islands is an archipelago almost 1000 km away
627 from the Spanish mainland, comprising 7 islands and 6 different electricity networks. Castille and
628 Leon, a vast territory occupying the northern half of the Spanish *meseta* and linking the Spanish
629 capital with the Northern regions like Asturias, Cantabria and the Basque Country, is by contrast,
630 well served by the main peninsular electricity grid. It seems likely that the logistical, infrastructural
631 and administrative complications implicit in the management of a variety of insular networks has
632 exerted an important brake on RE development in Canary Islands. Additionally, in Castille and
633 Leon, the business sector was notably well-organised – strong impetus seems to have been achieved
634 for RE development relying only on standard formal relationships with public institutions (applying
635 for planning permission and subsidies). Clearly, it is also possible that relationships between public
636 and private sector groups do exist in Castille and Leon, but that the stakeholders interviewed were

637 unaware, or not at liberty to publicly declare them.

638 **7. POLICY RECOMMENDATIONS**

639 Further to the analysis given in the preceding sections, we provide a series of policy
640 recommendations that we hope may allow the strong progress made by Spain before 2012 toward a
641 transition to clean energy to be restarted in the near future.

642 *Regional level*

643 Overall, the main policy goal at regional level should be to encourage more of the key actors in the
644 RE sector to build links and work together. Common workspaces to facilitate this, like the
645 CAEERR in Andalusia, could be established in other ACs, particularly in Castille-and-Leon and
646 The Rioja. In Andalusia and in Aragon, which, along with Navarre, are in a strong position to
647 develop RE further, policy should be directed at enhancing the involvement of civil society in
648 renewables. Bottom-up initiatives like crowdfunding solar panel installations (successful in the
649 Netherlands), promotion of citizen-business partnership schemes and public awareness campaigns
650 could help build public confidence and increase knowledge transfer. Navarre is likely to need little
651 additional help beyond the clarification of the legislative framework that seems a precondition for
652 further development anywhere in Spain (see below).

653 Regions characterized by a more interlinked stakeholder network may be open to a more resilient
654 and participative structure for future RE development. Small community-based projects could offer
655 a way forward here, provided that these are not used as a fig-leaf to cover up the abandonment of
656 the wider goals by the responsible authorities. However, as noted by the stakeholder interviewed in
657 the Canary Islands, RE is currently very unattractive to small investors and private individuals,
658 removing the cost disadvantages and allowing householders to sell energy generated back to the
659 grid would be an important step forward. It is not certain that this could be easily accomplished at a
660 regional level without national support. The Canary Islands has strong potential to further develop

661 RE, as a number of important requirements converge in this region, for example, a solid base of
662 social support for RE, and the strong engagement of the regional administration. Such development
663 would represent an excellent economic opportunity for the region (Marrero & Ramos Real 2010)
664 due to its extreme isolation from the Spanish mainland and the low development of RE up to the
665 present moment. Unfortunately, some rationalisation or improvement of the Canary Islands
666 electricity infrastructure is probably necessary first. In regions like Castille-and-Leon or The Rioja,
667 where RE has been developed, but without the involvement of regional businesses, the regional
668 government or other regional stakeholders, are not expected to see much further development in the
669 sector unless subsidies are reinstated and economic conditions improve. The developments seen in
670 these regions have been mostly driven by big business and are much more dependent on national
671 level decisions.

672 *National level*

673 Clearly, while the national administration remains opposed to further development of RE, little
674 action is likely to be taken to promote it. So the key priority at the national level should be to
675 abolish the draft law RD/2012/1 and related decrees whose only purpose seems to be to block
676 further progress in the sector. If this can be achieved, other national level policy objectives can
677 follow. These could include support for small investors and private consumers as well as the
678 establishment of a national conflict resolution process to look into diverse concerns related to RE
679 implementation, including environmental impacts (visual and direct impacts, both onshore and
680 offshore), disagreements about the share of profits of RE between communities, landowners, private
681 companies and local authorities, and legal/political issues like problems caused by legislative
682 instability.

683 *European level*

684 Since the paralysis of RE development in Spain puts the country at serious risk of failing to achieve
685 its European Climate Change commitments to 2020 and 2050, the fact that this abrupt change of

686 direction has passed entirely unremarked at European level suggests a level of tacit agreement
687 within the EU. Invoking the Subsidiarity Principle (the lowest competent authority is always that
688 best placed to take decisions) is a poor excuse for allowing national decisions to take precedence on
689 an issue of global concern like Climate Change. In reality, slashing subsidies to RE probably seems
690 reasonable to EU policy makers firmly wedded to the idea of deficit reduction at all costs. Since
691 other EU member states are in the process of adopting similar strategies that are highly
692 unfavourable to RE development (e.g. the UK), it seems necessary for European institutions to take
693 a firmer line on the energy policy adopted by member states where this policy clearly jeopardises
694 previously agreed targets. However, strong intervention may not be desirable - recent events in
695 Greece have shown an interventionist EU at its draconian worst. Perhaps the best that can be hoped
696 for from policymakers in Brussels is some gentle encouragement for national policies that promote
697 the transition to clean energy at the same time as offering struggling European economies a way out
698 of recession. We believe that the continued development of RE is one such opportunity.

699 If the EU cannot be expected to intervene directly in respect to member states' national policy (and
700 we believe it cannot), this does not mean to say that nothing can be done. One key area where
701 European policymakers can, and should, step in, relates to the power of the large energy companies.
702 The Spanish government's decision to paralyse RE development is very likely strongly related to a
703 loss of interest in RE development, and even direct lobbying against it, by the large energy
704 companies. The economic crisis which Europe, and particularly southern member states, have been
705 suffering since 2007, has led to falling energy demand across the entire EU, hitting energy
706 companies' profits. Under such a scenario, and taking into account that RE has reduced the cost of
707 energy to the consumer, it is easy to see why Big Energy might have lost interest in investing in
708 European RE. EU policymakers need to seriously consider whether a completely liberalised energy
709 market is really in the best interests of its citizens, and whether the lobbying power of Big Energy
710 ought to be curtailed.

711 **8. CONCLUDING REMARKS**

712 In order to comply with the international Climate Change commitments set down in the EU
713 roadmap, regional characteristics and civil society support for the RE sector are likely to play a key
714 role. Some regions have developed particular characteristics that may make them more likely to
715 progress with RE developments adverse economic situation, intensive lobbying by the energy
716 giants, and the (probably related) unfavourable government policy. It may be possible to increase
717 system resilience and reduce the vulnerability of the energy transition to system shocks by building
718 on the experiences of these regions. However, if progress is to be made at the required speed, a
719 change of direction at the national level is also required.

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724

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