

Elena Cedrola

Associate Professor of Management and International Marketing

University of Macerata

THE INDUSTRY OF RENEWABLE ENERGIES: THE BEHAVIOR OF EUROPEAN AND CHINESE FIRMS



This project is funded by the European Union
under the Marie Curie Action's IRSES



Renewable energies

- **Hydroelectric energy**
- **Wind energy**
- **Solar energy**
- **Geothermal energy**
- **Biomass**
- **Marine energy**



Renewable energies

- **Hydroelectric energy**
- **Wind energy**
- **Solar energy**
- **Geothermal energy**
- **Biomass**
- **Marine energy**

The pros:

Inexhaustible
Non-polluting
Accessible to all

The cons:

Less competitive
compared to fossil fuels



Low efficiency
Discontinuities and
territorial dispersion of
sources
Onerousness of
investments

The development of renewable sources is highly dependent on national regulations. In renewable energy they derive directly by European regulations

European legislation

- **White paper 1997**
- **Directive 2001/77/CE**
- **Directive 2003/30/CE**

Overall objective

from 5.4% to 12% by 2010

Electricity

from 14% to 22% by 2010
(after 2004 → 21%)

Transport (biofuels)

from 0.7% to 2% by 2005 and
5.75% by 2010

Package "climate and energy" of 2008 (Strategy 20 20 20)

- 20% of greenhouse gas emissions
- 20% share of renewable energy
- 20% energy consumption



▪ **Directive
2009/28/CE**

Amount of energy produced from renewable energy sources in 2005 and mandatory quota for 2020

Austria	23.30%
Belgium	2.20%
Bulgaria	9.40%
Cyprus	2.90%
Czech Republic	5.00%
Denmark	15.40%
Estonia	17.10%
Finland	28.50%
France	10.30%
Germany	5.80%
Greece	6.90%
Hungary	4.30%
Ireland	3.10%
Italy	5.20%
Latvia	34.90%

Lithuania	15.00%
Luxembourg	0.90%
Malta	0.00%
Netherlands	2.40%
Poland	7.20%
Portugal	20.50%
Romania	16.50%
Slovak Republic	6.70%
Slovenia	16.00%
Spain	8.70%
Sweden	38.90%
United Kingdom	1.30%

Source: European Commission, Directive 2009/28/CE, p. 46

Energy Journals	
Renewable and Sustainable Energy Reviews	11
Renewable Energy	2
Renewable Energy World	1
Energy Policy	8
Electric Perspectives	1
Marketing and Management Journals	
Long Range Planning	1
Journal of Public Policy and Marketing	1
Psychology and Marketing	1
Journal of Business Research	1
Consultants	
KPMG	1
PWC	1
The Boston Consulting Group	1
Accenture	2
Booz&co	1
Althesys	1
McKinsey and Company	1

Business models in the industry of renewable energies: a review of the literature

Scientific Laboratories	
IBM Institute for Business Value Publication	1
Solar Electric Power Association (SEPA) Publication	1
A.T. Kearney Report	1
National Renewable Energy Laboratory	2
Ceres Report	1
Cambridge University Press	1
EnergyLab	1
IEFE	1
Environmental Energy Technologies Division Ernest Orlando Lawrence Berkeley National Laboratory	1

Total amount of articles: 45
Published from 2008: 33



Fonte: Adapted from Richter M, *Utilities' business models for renewable energy: A review*, Renewable and Sustainable Energy Reviews, 2012. p. 2486

Business models for renewable energies firms

- **Customer-side business models**
- **Utility-side business models**

Customer-side business models

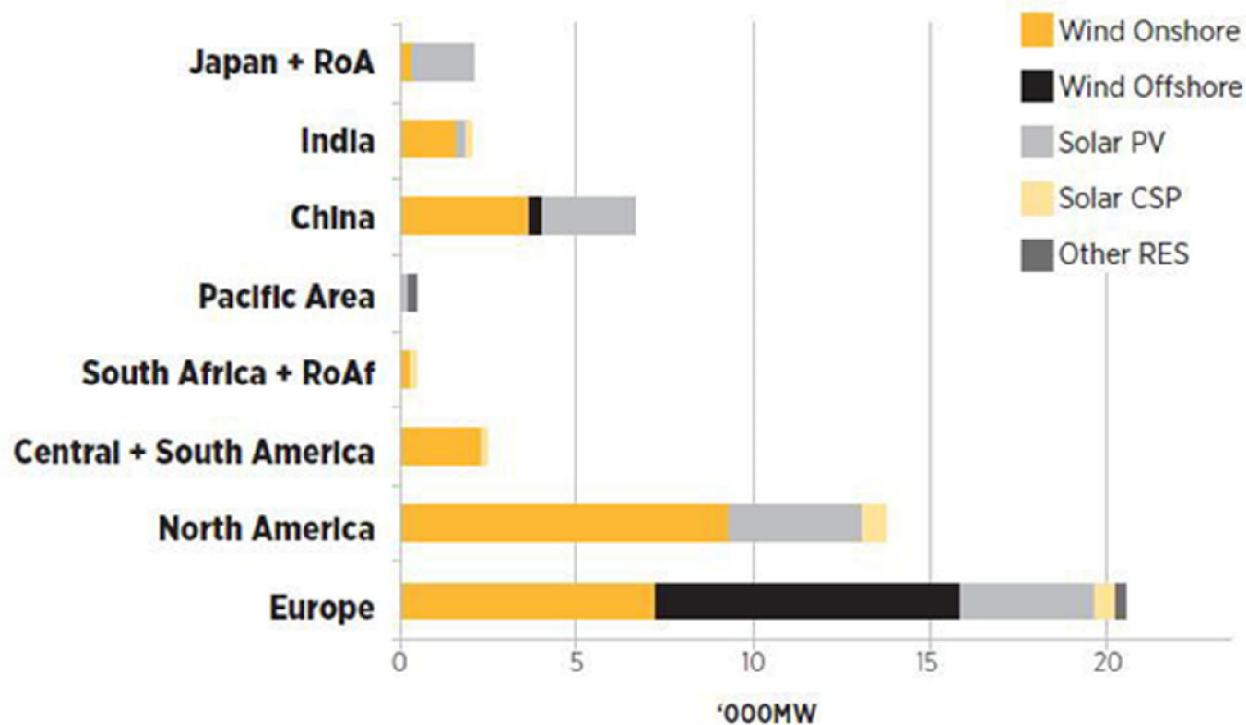
- Key resources: installed at consumers
- Value proposition: set of products and services that create value for the customer (consulting, financing, installation, operation, maintenance and warranty)
- Key activities: large companies cover the entire value chain - small and medium enterprises often focus on distribution and retail

Utility-side business models

- Key resource: large firms
 - Value proposition: generation and supply of energy (only the quality changes, not the business model)
News:
 - partnership between small business ex. Trianel German cooperative group
 - JV between suppliers and project developers ex. The German Juwi).
 - Key activities: large companies cover the entire value chain - small and medium enterprises often focus on distribution and retail
-

Geographical distribution of investments in renewable energy in 2011

Geographical distribution



Main European players in energy production



Companies found in the survey

	Total	Hidroelectric	Wind	Geothermal	Solar	Biomass	Marine
Italy	191	14%	37%	35%	84%	38%	0%
United Kingdom	197	11%	34%	46%	82%	38%	8%
Bulgaria	96	7%	25%	4%	83%	20%	1%
Romania	91	27%	46%	9%	76%	36%	0%
Spain	103	7%	39%	4%	63%	42%	4%
France	71	30%	38%	15%	63%	39%	17%

Economic planning - Five-year plans

1° - 9°

- 1953 - 2000
- Objectives: industrial restructuring, growth only quantitative, Soviet-style

10°

- 2001 - 2005
- Objectives: increase quality of life and economic growth
New: welfare of society is considered important

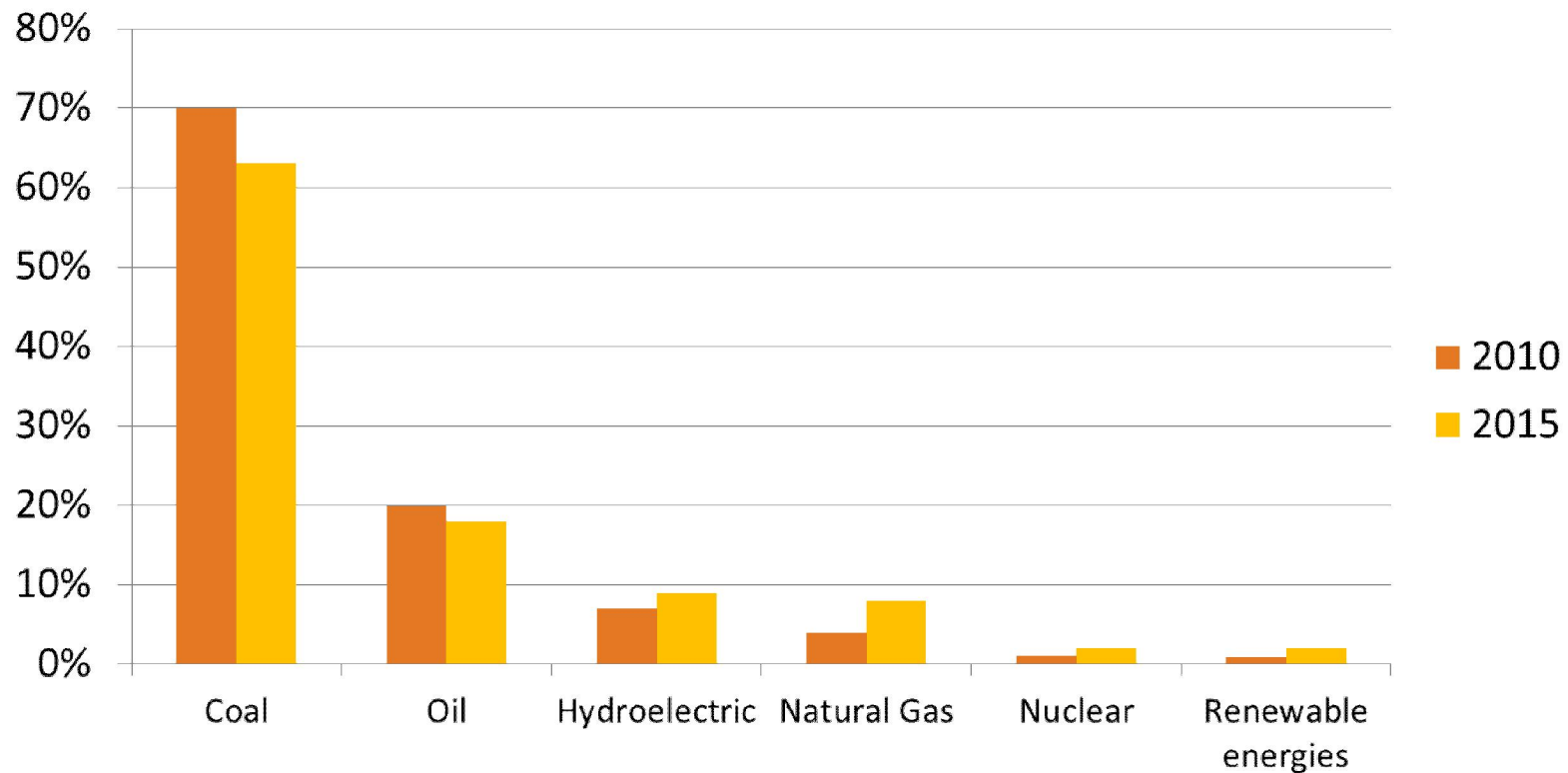
11°

- 2006 - 2010
- Objectives: creation of a harmonious society- 小康社会 Xiǎokāng shèhuì
- New: strategic objectives, from plan to plan, improving health and environment

12°

- 2011 - 2015
- Objectives: Sustainable Development
- New: abandoning of the principle of "growth at all costs" - economic restructuring, social equality, environmental protection
- Environment: strengthening environmental protection, emissions control, strengthening R & D and cooperation
- Energy: energy efficiency (38% - 2015), renewable energy share (11.5% - 2015), reducing energy consumption (-16% compared to 2010)

China energy targets 2010-2015



Source: APCO analysis, http://apcoworldwide.com/content/PDFs/Chinas_12th_Five-Year_Plan.pdf

Target renewabele energies (2010-2015)	2010	2015	Growth(%)
Energy generation (GW)	251.97	430	11.3
Hydroelectric	213.4	310	7.8
Wind	31	100	26.4
Solar - Photovoltaic	0.9	10	61.9
Biomass	6.67	10	8.4
Heat supply			
Biogas (milion m ³)	160	25	- 31
Solar collector (milion m ²)	168	300	12.3
Geothermal (Mtoe)	5	10	14.9
Bio-liquids			
Ethanol (milion tons)	1.8	5	22.7
Bio-diesel (milion tons)	0.5	1	14.9
Total energy production (Mtoe)	230	350	8.8

15