

Macroeconomic Impact of Wind Energy in Spain

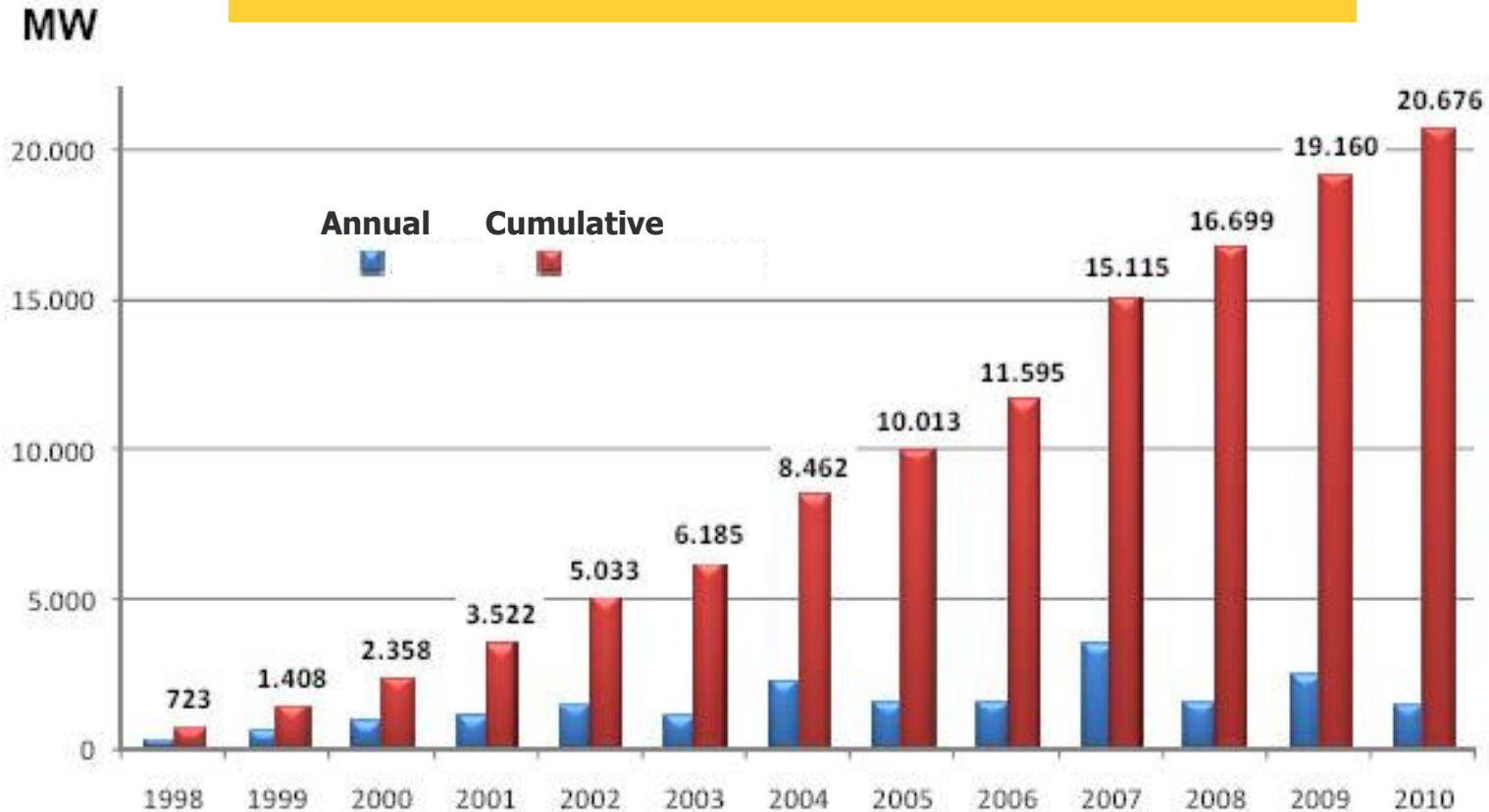
A New Roadmap to a Post-Fukushima Renewable Energy Future
Japan Renewable Energy Foundation
Tokyo, 13 September 2011

Ramon Terrones
Regional Director Asia Pacific & Oceania
Gamesa Corporation



Spanish wind energy sector : stable and constant growth

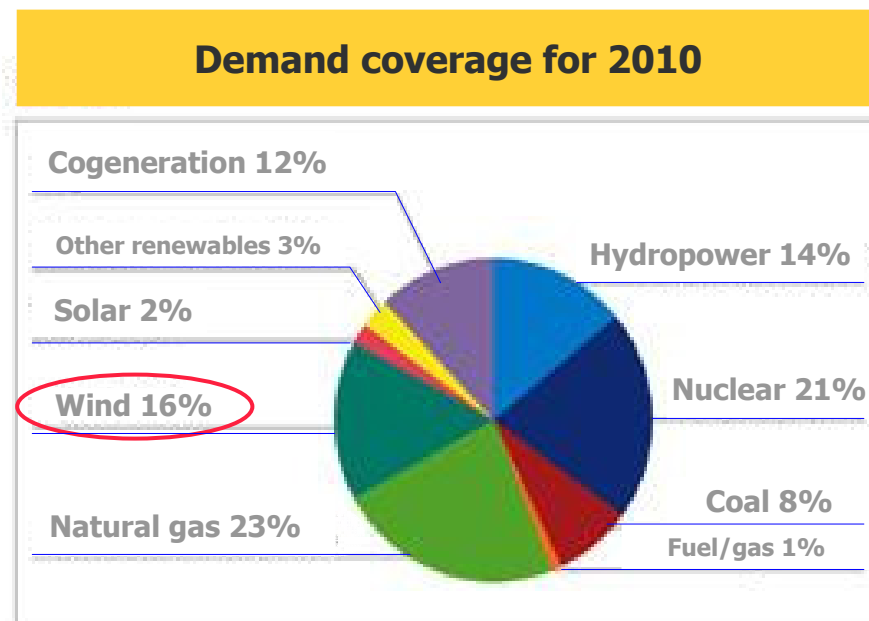
Wind Energy Capacity in Spain (1998-2010)



Source : AEE

Wind energy is the third technology of the Spanish power system

- Wind energy reached in 2010 an output of **40,702 GWh**, only overtaken by thermal gas combined cycle and nuclear
- In 2010 wind energy covered 16.4% of demand (vs 14.3% in 2009)
 - In March 2011 wind energy was the first technology of the system with 21% of production



Source : REE

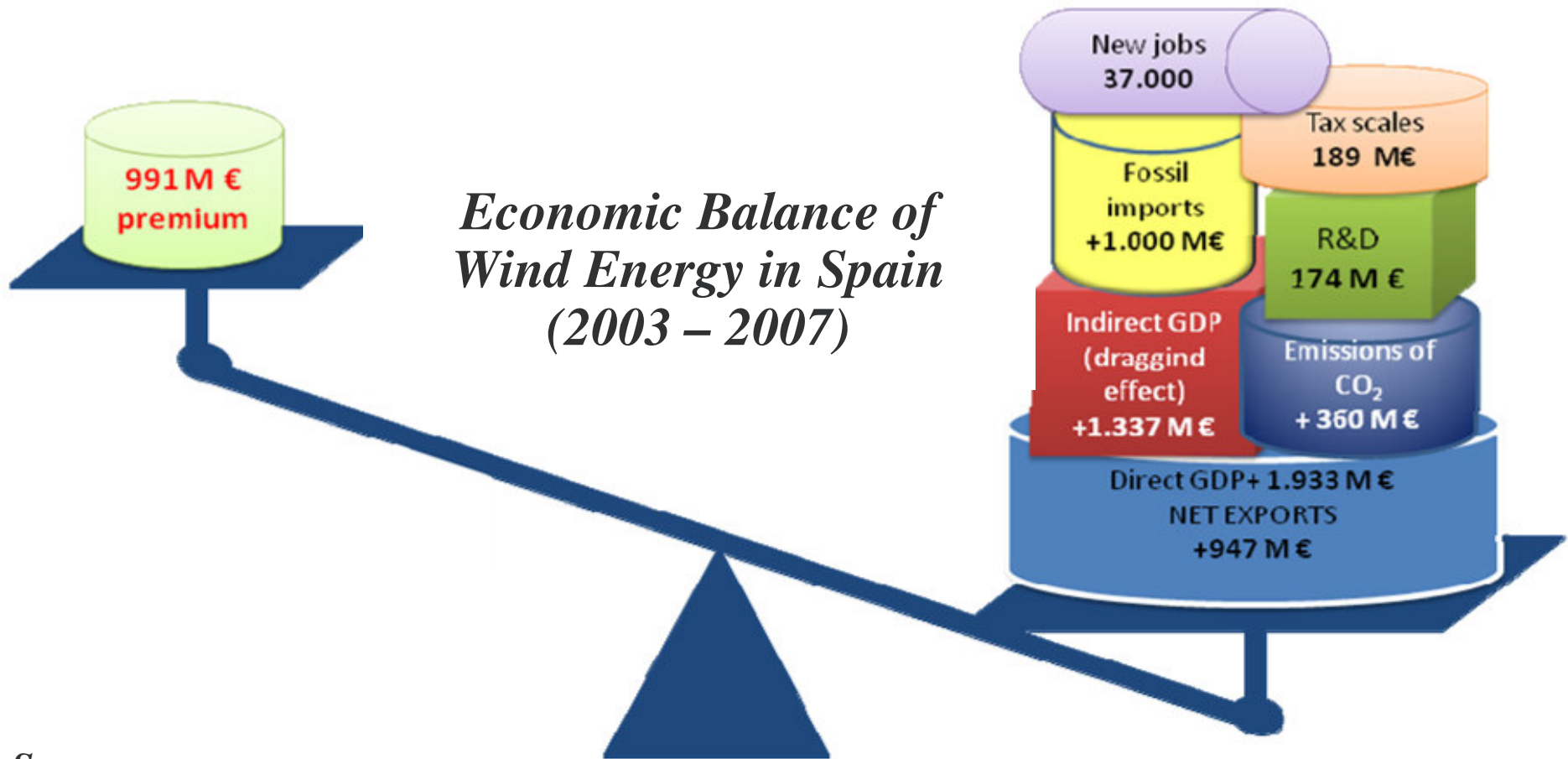
In 2010 wind energy reached several production records in Spain

- On 9 November 2010 wind energy reached a new record with **53%** of demand coverage (3H35am).
- This wind record must be added up to the wind energy production high reached the same day : **14,962 MW** of simultaneous power in operation
- And a new daily wind production record with **315,298 MWh**

Highlighting the strength of the Spanish electrical grid with normal functioning at the highest peaks of wind energy penetration

Source : REE

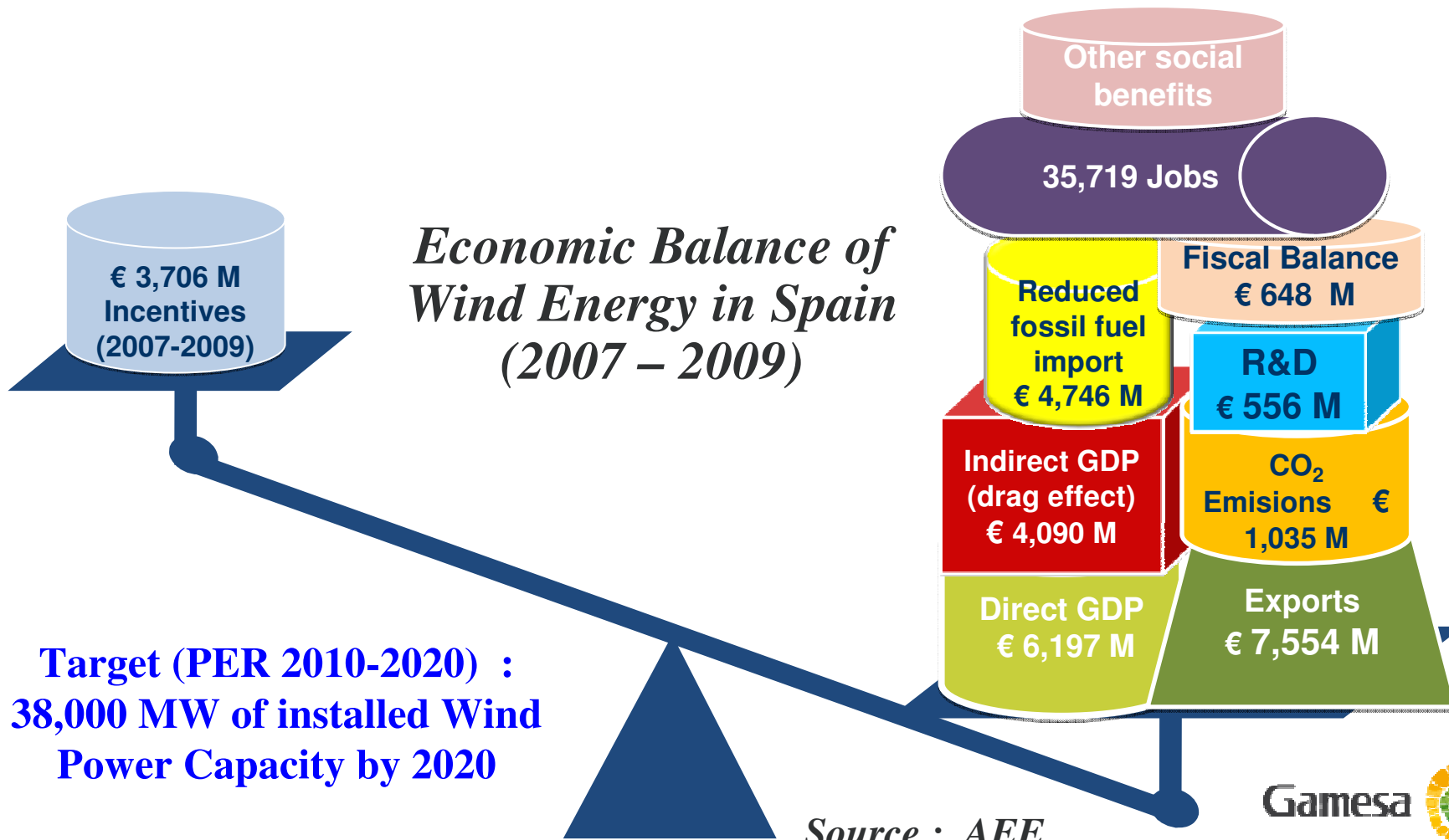
The benefits of wind energy in Spain: macroeconomic, environmental and social returns



Source :

*“Macroeconomic Study on the impact of the Wind Energy sector in Spain”,
Deloitte Consulting (2008)*

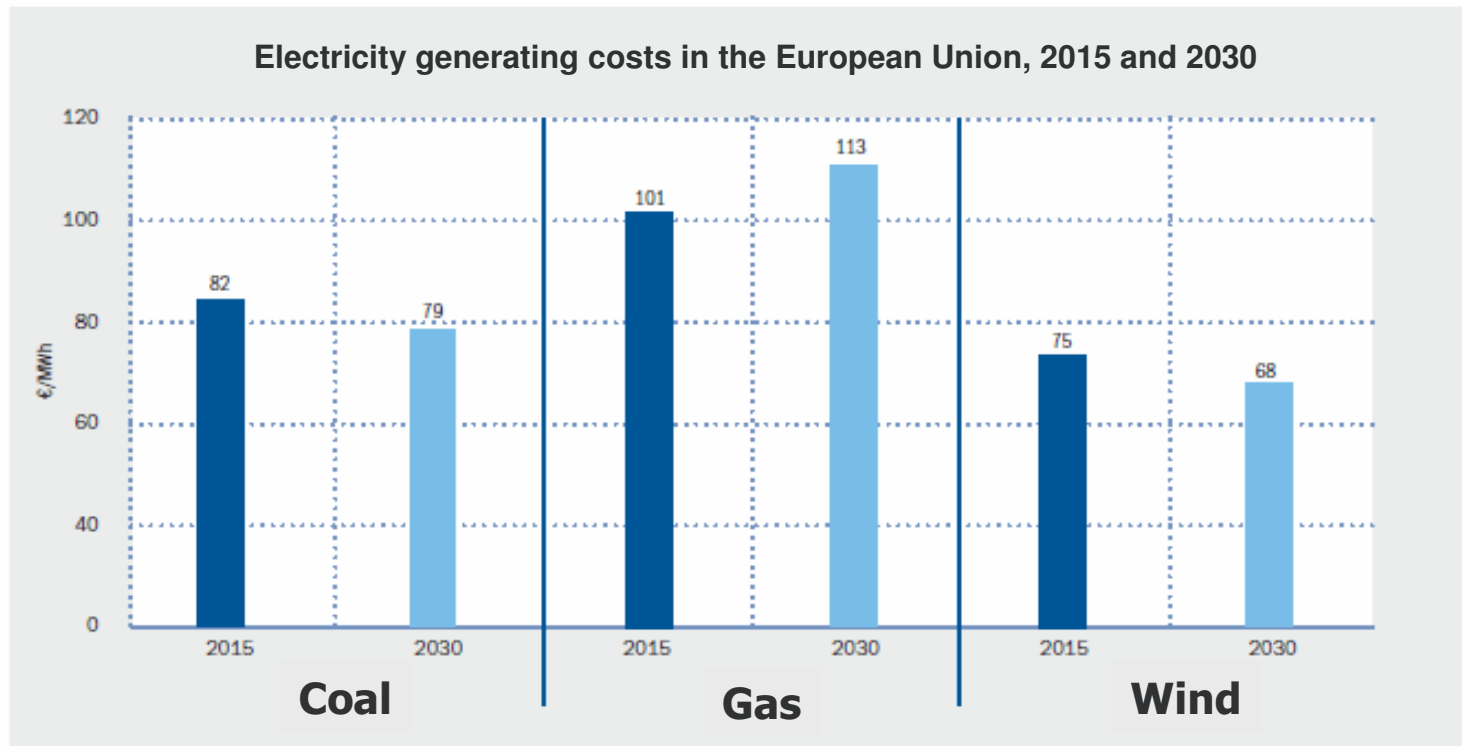
The benefits of wind energy in Spain: macroeconomic, environmental and social returns



Source : AEE



Economic certainty: downward stability in the cost of wind energy



€/ \$ Exchange rate: 0.73

Source: IEA World Energy Outlook 2008

Wind Energy has reached grid parity in Spain and other European countries, and it is one of the most competitive technologies for electricity production



Keys of the Spanish success

- Great political and social consensus
- Perception of modernity and positive environmental image
- Proper regulatory and tariff system
- Close collaboration between grid operator and industry
- Current Status (end 2010)
 - 4th country in installed power in the world (second in the EU): **20,676 MW**
 - 1st country in EU in wind power generation: **42,700 GWh**
 - 2nd country in the world in wind power penetration: **16.4%**
 - Spanish companies have **9,200 MW** installed abroad

Acknowledgements and contact address

AEE : Asociación Empresarial Eólica
<http://www.aeeolica.org/en/>

REE : Red Eléctrica de España
<http://www.ree.es/ingles/home.asp>

GAMESA : Gamesa Corporación Tecnológica
<http://www.gamesacorp/en/>

Ramon Terrones
Regional Director Asia Pacific & Oceania
Singapore
rterrones@gamesacorp.com





“The nation that leads the clean energy economy will be the nation that leads the global economy”

Barack Obama
State of the Union address, January 27, 2010

