Innovative Solutions for Sustainability Sustainable growth,

Sustainable growth, Building the green economy

OECD Conference Higher Education in Cities and Regions - For Stronger, Cleaner and Fairer Regions 10-11 February 2011

Ana R. Diaz Vazquez



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Innovative Solutions for Sustainability

Technology development as driven of sustainable growth in Energy and Environment



Concentrating solar power

Abengoa has the only two commercial tower plants worldwide, and it is developing the largest trough plant in the world. **Abengoa Solar is clearly one of the main players worldwide in this field**.

Smart Grid and energy efficiency

The smart grids that Abengoa develops through Telvent optimize energetic consumption. **Telvent** is one of the international leaders in this kind of technology.





Biomass as energetic source

Abengoa Bioenergy has developed **pioneering R&D projects in this field**, ready to be converted in industrial projects. The biggest pilot plants of cellulosic ethanol

Hydrogen as a energy carrier

Through Hynergreen Abengoa develops hydrogen reformers, **being one of the world leaders in this kind of technology**.





Desalination and integral water cycle

Befesa is a **world leader in desalination and water treatment**, with unique technological capacities, including the integration of renewable energy

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- 100 M€ invested in R&D in 2010, ca. 2.5% of sales
- >900 people in R&D&i
- >80 R&D projects initiated every year
- Collaborations with reputed research centers such as NREL (US), DLR (Germany) and CIEMAT (Spain)
- Grants received, mainly from US Department of Energy and European Commission

- World pioneer in CSP solar technologies
- World leader in development of 2nd generation (biomass) bioethanol
- Advances in hydrogen, energy efficiency and other incipient renewable energies
- 9th Spanish company by R&D investment, according to the European Commission (1)

(1) 2010 Report

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Solúcar Platform



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ABENGOA SOLAR

With the sun... we produce thermoelectric and photovoltaic electric energy

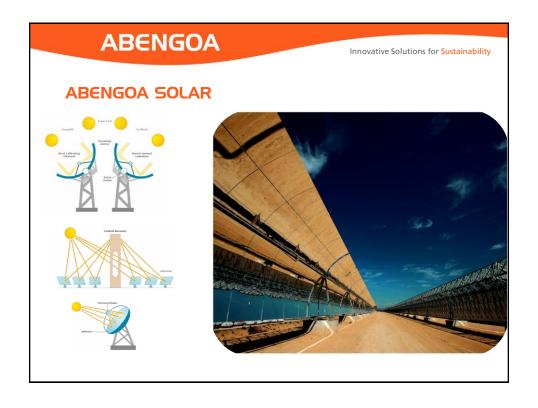
Leader in power generation plants from solar energy, with a plan to develop hundreds of MW of clean energy in coming years

- Largest under construction plant in the world, USA (Solana, 280 MW)
- Largest under construction plant in Arab Emirates (Shams-1, 100 MW)
- First and second commercial CSP Tower in the world in operation (PS10, 11 MW and PS20 20 MW).
- First hybrid technology plant in the world in Argelia (ISCC, 150 MW)
- Leader in multi-technology promotion (CSP: tower, Dish Stirling and CCP; PV: conventional silicon, Thin Film, LCPV v HCPV).
- Leader in multi-technology R&D, participating in five projects with the DoE(final investment more than 15M\$), and a project with the CENIT (investment: 22 M€).



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ABENGOA Innovative Solutions for Sustainability The Sustainability plan for Andalucía will consist in: ❖ Build 2000 MW in new plants ✓ Electricity for 1,000,000 with pioneer technology in the homes market √ 1,200,000 tons of CO₂ ❖ Accelerate the construction of savings plants already planned ✓ Creation of more than Promote solar research and 13,000 new jobs development in Andalucía Create auxiliary industry to provide key elements

