



R&D Trends in Renewable Energy Markets

CTD Sevilla. 17th May 2018

Ignacio Láinez

EDPR

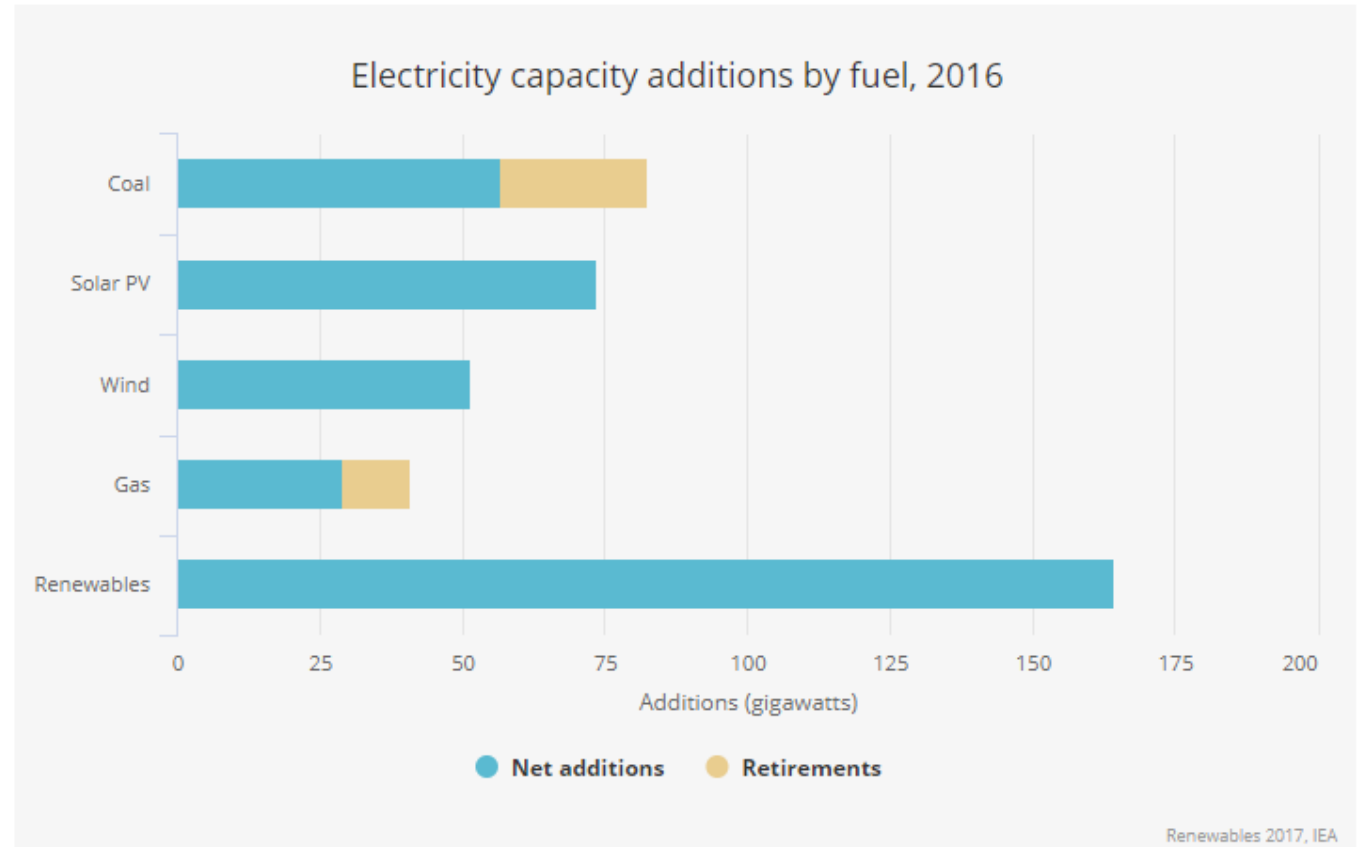
Energy Assessment Director

Renewable Market Overview. Leading Energy Supply Growth

Global primary energy demand is likely to grow by more than 30% over the next 20 years.

In this scenario, renewables are expected to play a key role within the energy sector that is the largest contributor to GHG emissions.

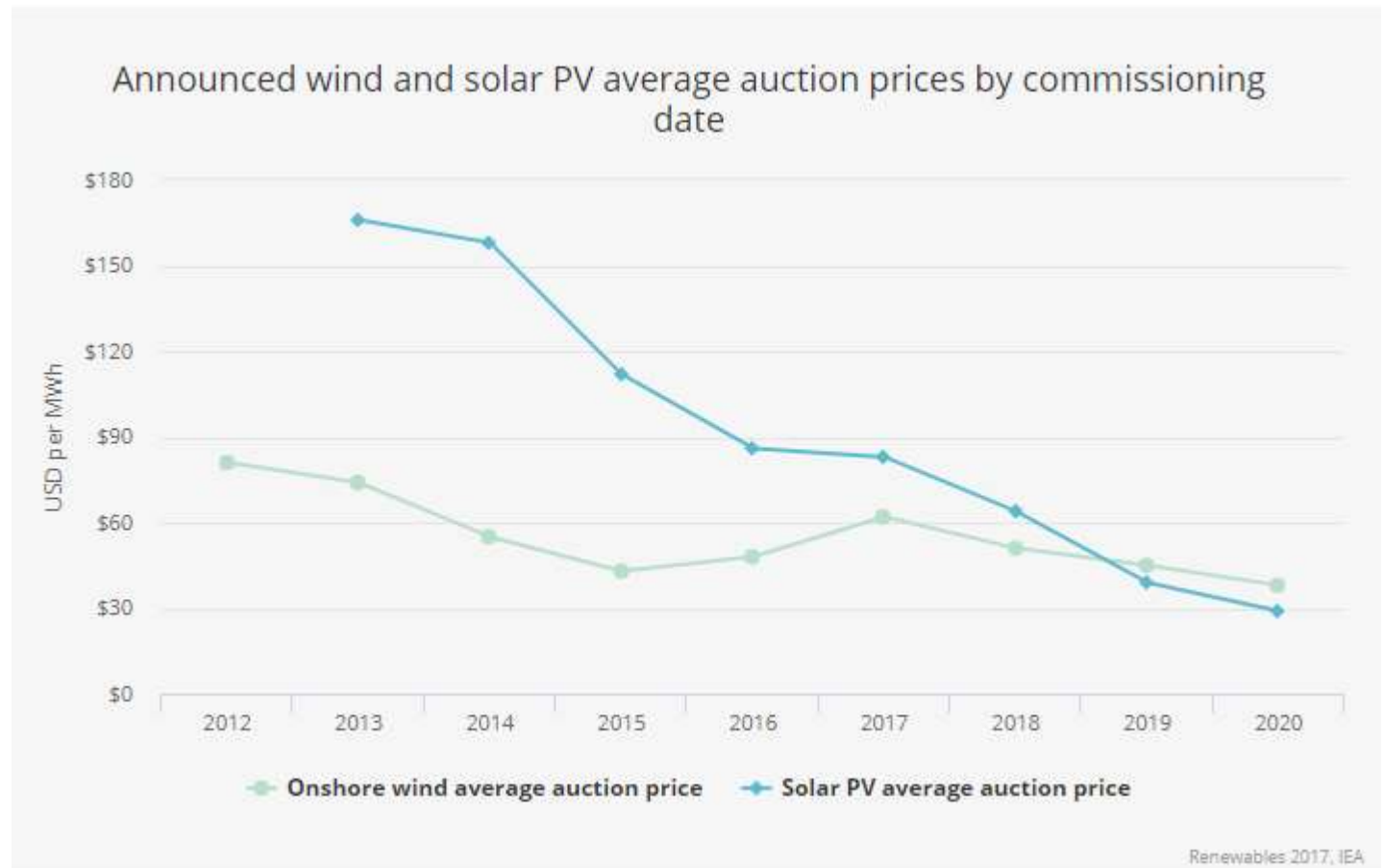
Renewable energy has proven to be a competitive source of energy, with a strong contribution to GDP (Gross Domestic Product) growth on top of mitigating the potential impacts in the economy that climate change would bring.



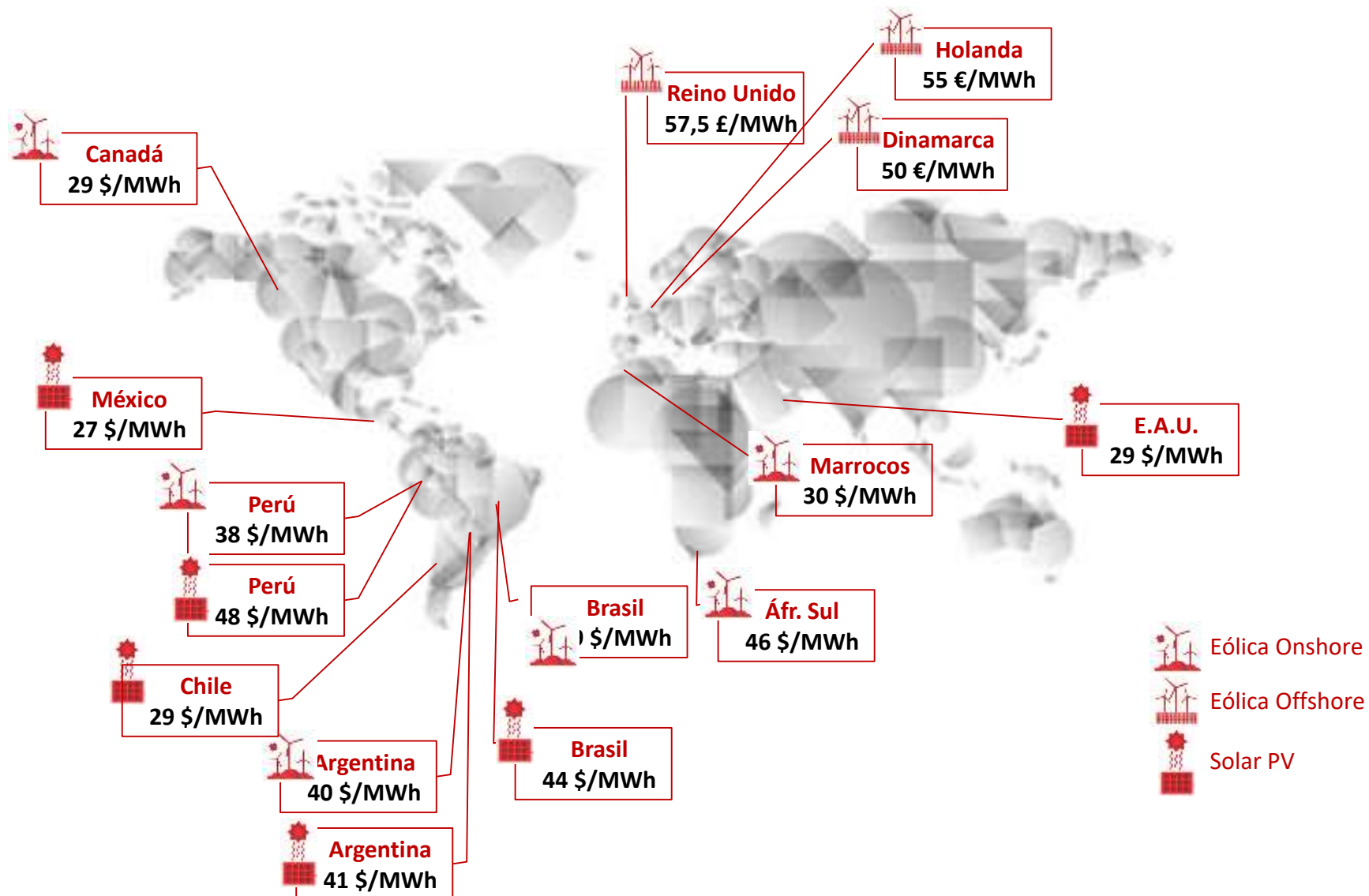
Growth is based on LCOE reduction.

Plummeting costs for renewable energy technologies are making a global energy transition not only possible, but actually, less expensive than the alternative.

This is the reason why an increasingly number of private companies are opting for renewables to provide their energy needs, including some of the biggest worldwide as Apple, Ikea, Amazon, Wal-Mart and Lego



And it is happening everywhere



Fonte: BNEF, IEA, Enel

Who is EDPR?



EDPR is a global leader in the renewable energy sector

... and the world's fourth-largest wind energy producer. With a sound development pipeline, first class assets and market-leading operating capacity, EDPR has undergone exceptional development in recent years and is currently present in 12 markets

R&d Challenges

The maturity of both PV and Wind industry has been achieved, as far as they are a relevant player of the energy mix in many of the developed countries.

R&D efforts are driven by these three main vectors:

Continuous Effort On
Efficiency Of Operating
Assets

Continue On LCOE
Reduction Trends

CHALLENGES

Grid Integration To Assure
Sustainable Growth

R&D Challenges. *INCREASE EFFICIENCY OF OPERATING ASSETS*

- Sensors & Control Algorithm Improvement.



www.mitsubishielectric.com

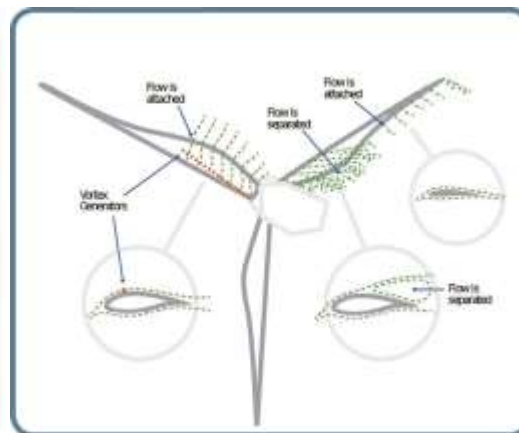
- Logistics and O&M Strategies.



- Aerodynamic Improvement.



Vattenfall



smartblade



edp renováveis



R&D Challenges

CONTINUE ON LCOE REDUCTION TRENDS

- Value chain optimization
 - Capex
 - Opex
- Offshore Wind

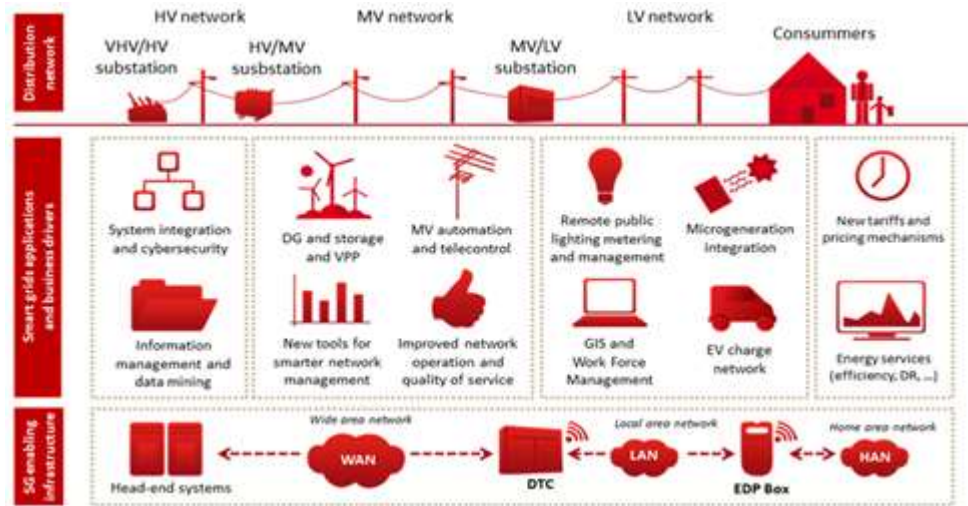


<http://www.seajacks.com/offshore-wind-solutions/>

R&D Challenges

GRID INTEGRATION TO ASSURE SUSTAINABLE GROWTH

- Smart Cities



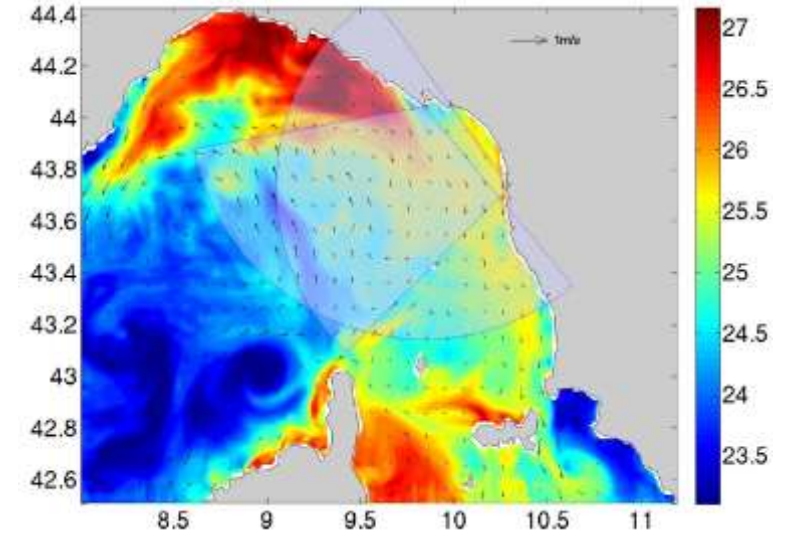
InovGrid Project - EDP Distribuição (Portugal)

- Batteries

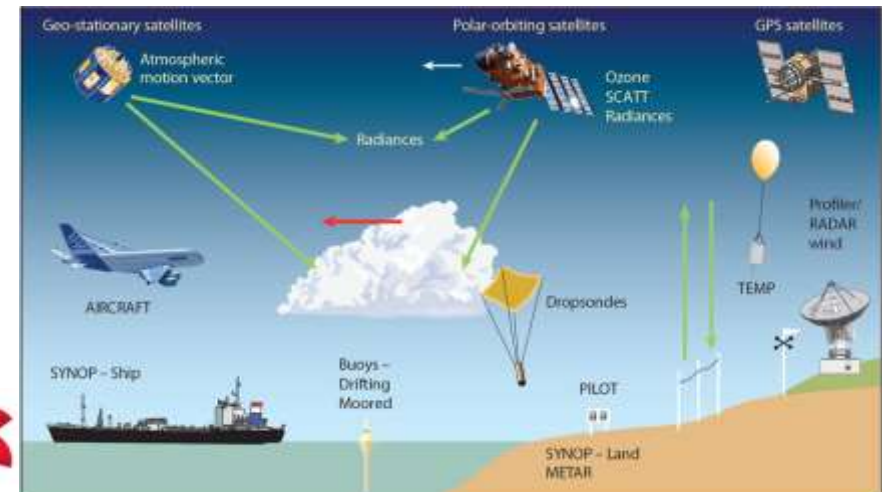


AEP Photo Neoen
<http://edmontonsun.com>

- Meteorological Data Assimilation and Integration into Business process



www.data-assimilation.net
www.ecwmf.it



THANKS

ilainez@edpr.com

Av.Montes Sierra 36 2ª planta

41007 Sevilla

