



mais eficiência  
mais renováveis  
viva a energia inteligente  
menos CO2

O futuro está a nascer em Évora.  
Descubra a primeira metrópole portuguesa  
com rede inteligente de energia.



# Renewable Energies and Smart Grids

Antonio Vidigal,  
CEO , EDP Inovação

# EDP is a top 3 utility in Iberia, with a strong presence in Brazil and considerable investments in USA (ranked 2nd listed wind energy company)



## Portugal

**Generation capacity**  
9.0 GW

**Electricity distribution**  
46.5 TWh  
6.1 million customers

**Gas distribution**  
201 thousand customers

**Gas supply**  
119 thousand customers



## Brazil

**Generation capacity**  
1.7 GW

**Electricity distribution**  
24.4 TWh  
2.6 million customers

## Renewables

**Europe**  
Generation capacity  
2.9 GW  
Energy generated  
3.9 TWh

**U.S.A.**  
Generation capacity  
1.9 GW  
Energy generated  
3.9 TWh

## Spain

**Generation capacity**  
3.0 GW

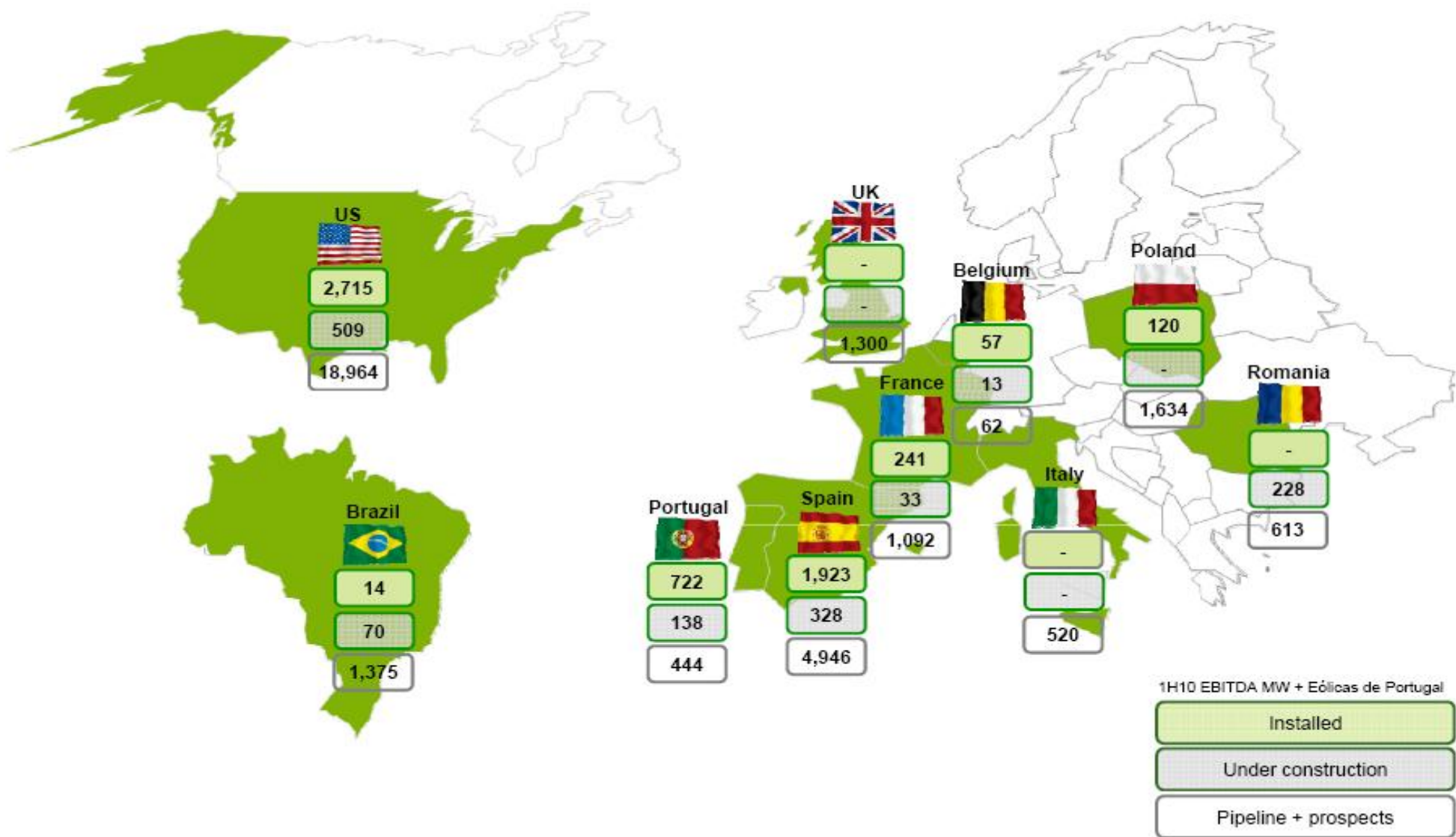
**Electricity distribution**  
9.7 TWh  
628 thousand customers

**Gas supply**  
509 thousand customers

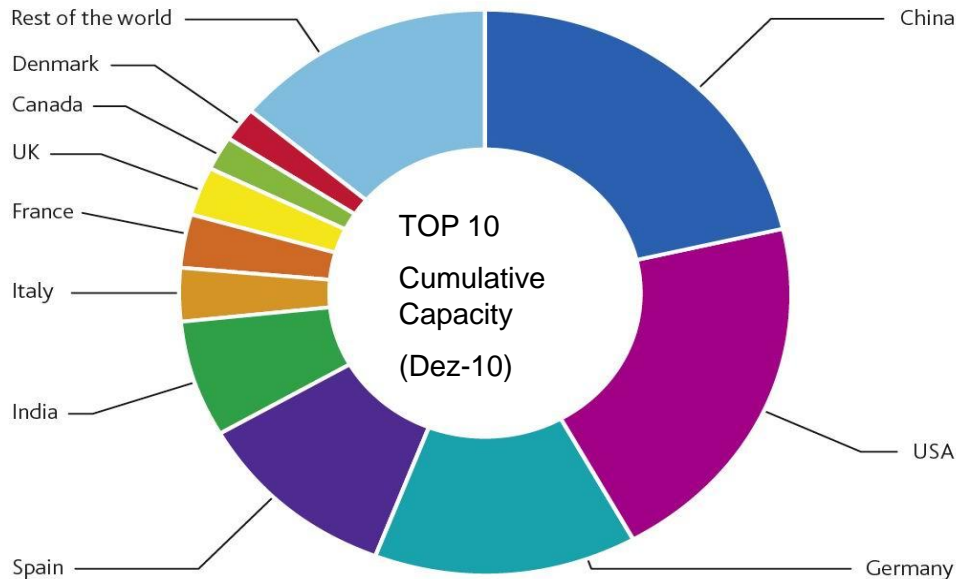


Note: 2009 figures

# EDP Renewables – End of 2010

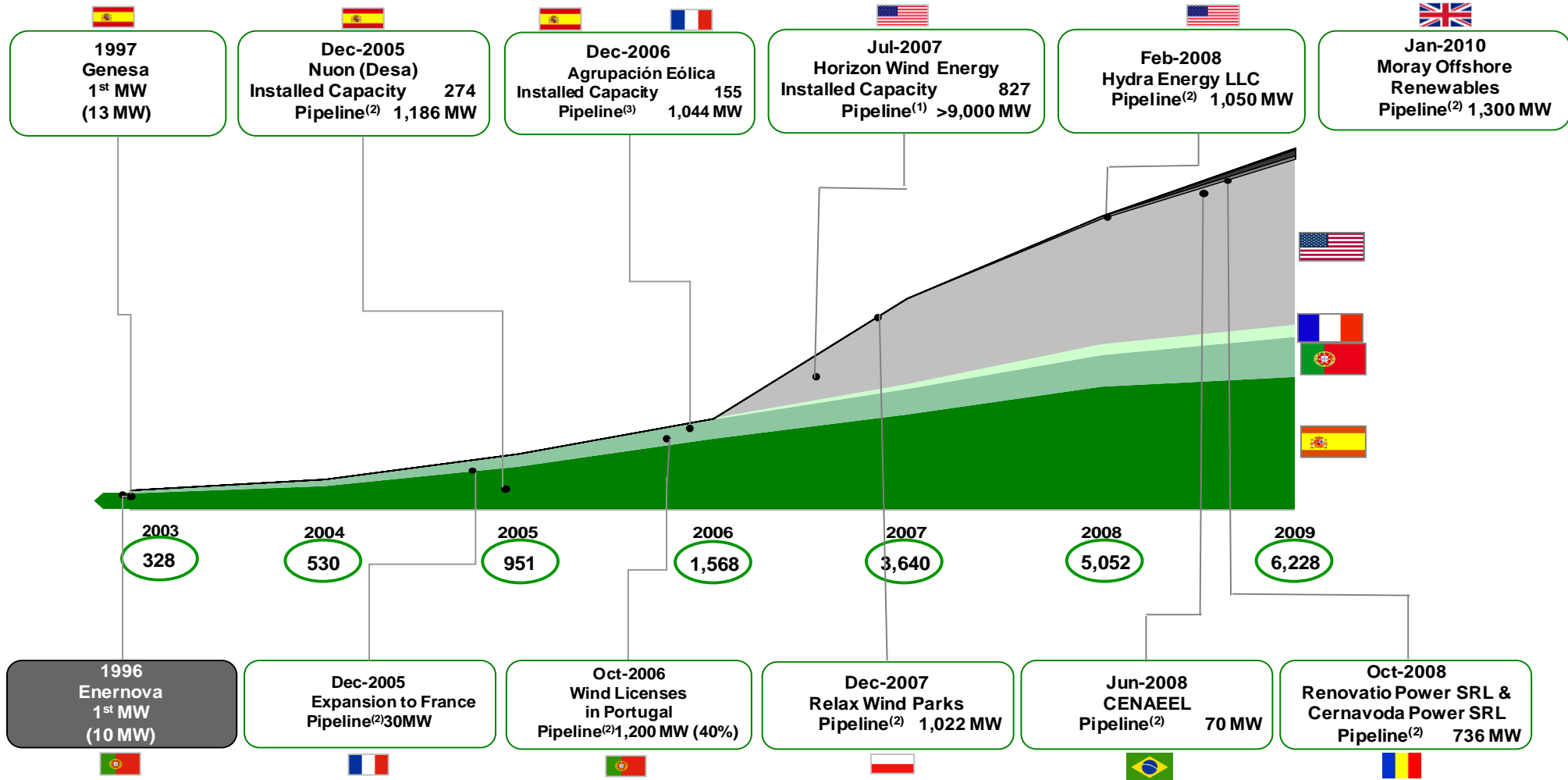


# World Wind Capacity – End of 2010



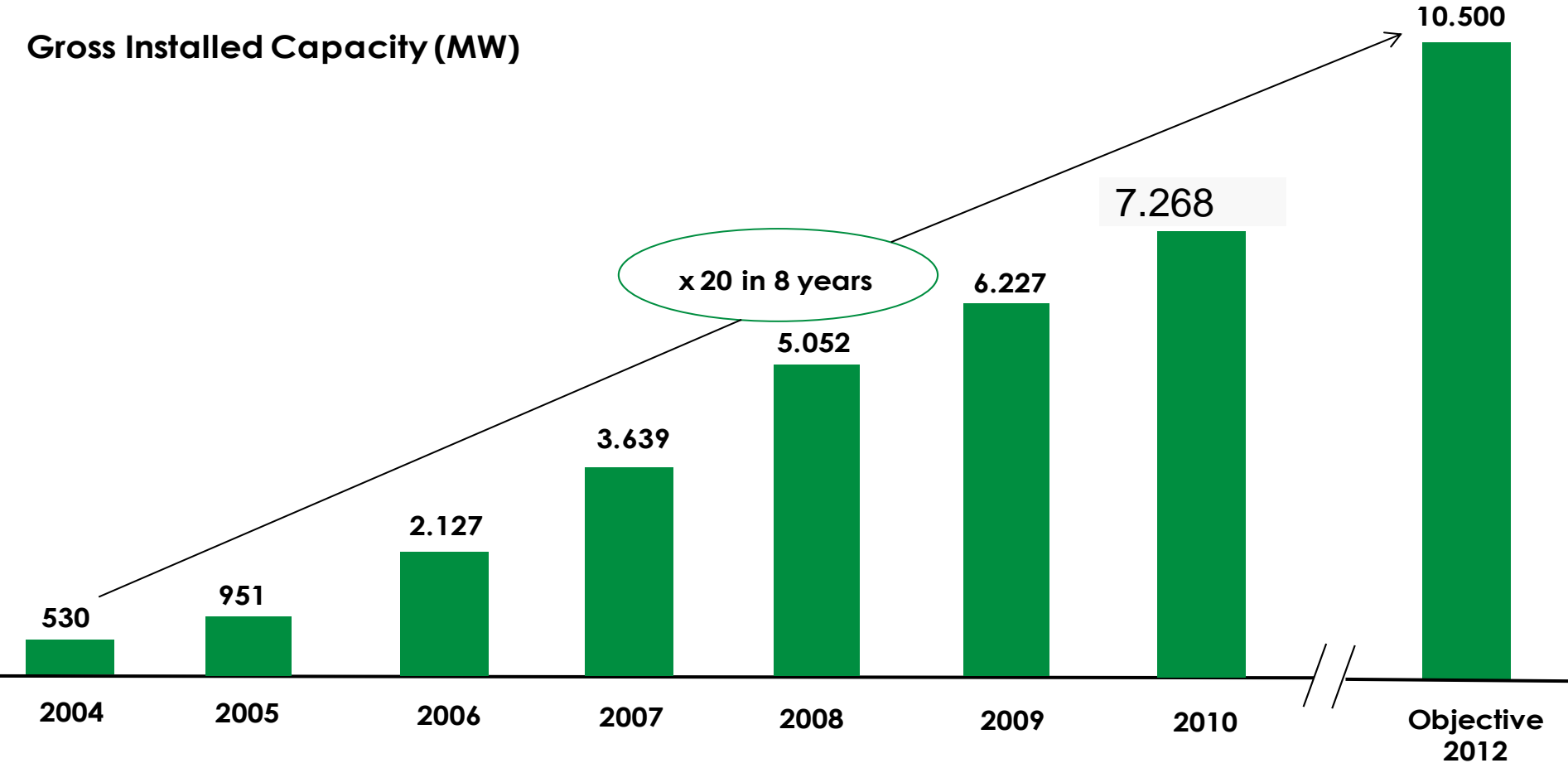
Country	MW	%
China	42,287	21.8
USA	40,180	20.7
Germany	27,214	14.0
Spain	20,676	10.6
India	13,065	6.7
Italy	5,797	3.0
France	5,660	2.9
UK	5,204	2.7
Canada	4,009	2.1
Denmark	3,752	1.9
Rest of the world	26,546	13.7
Portugal	3,702	1.9
<b>World Total</b>	<b>194,390</b>	<b>100</b>

# Historical development of EDP wind activity



# EDP is the utility with faster growth in renewables. We are presently the 3rd World Operator of Wind Power.

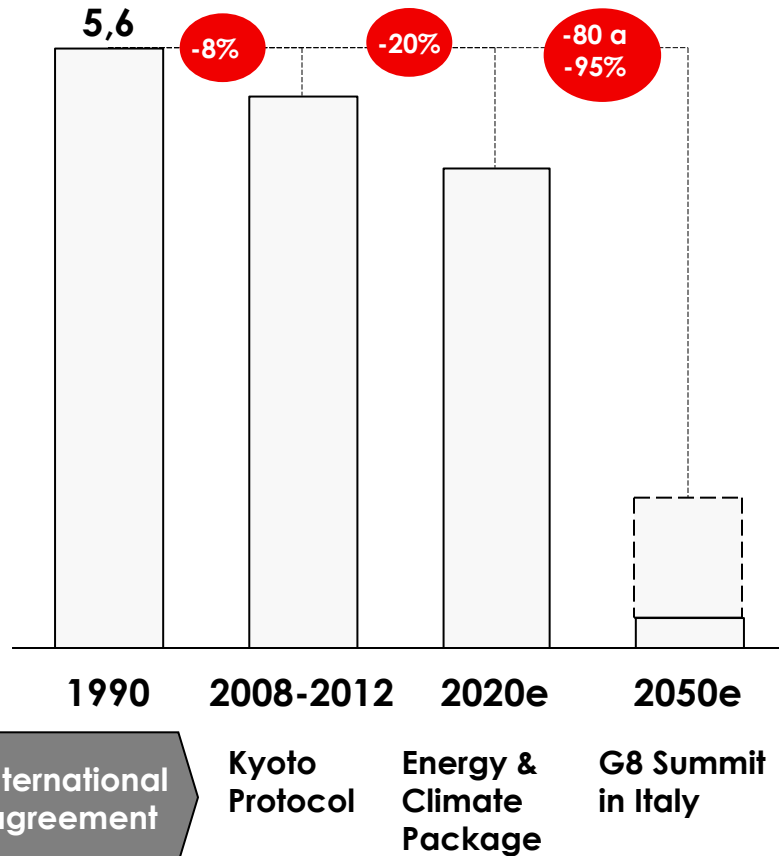
Gross Installed Capacity (MW)



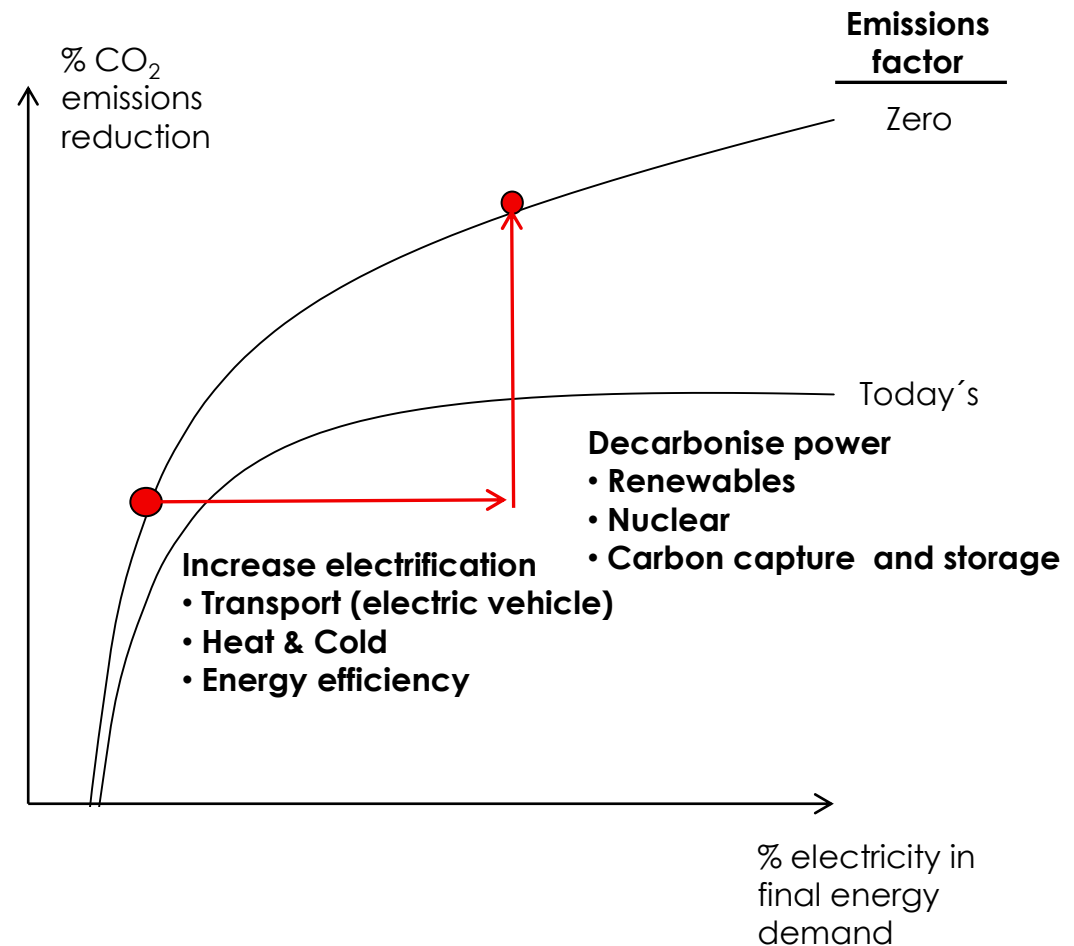
# The EU has set ambitious climate goals that can only be achieved by increasing electrification of demand and decarbonising the power sector

## Emissions targets in EU

GtCO<sub>2</sub>e



## Emissions reduction as a function of the share of electricity in final energy demand



## Kaya equation



The diagram shows the Kaya equation  $CO_2 = P \times S \times E \times C$  with arrows above each variable: two upward arrows above P and S, and two downward arrows above E and C. The background features a glowing sun rising over the horizon of the Earth.

$$CO_2 = P \times S \times E \times C$$

PEOPLE      SERVICES PER PERSON      ENERGY PER SERVICE      CO<sub>2</sub> PER UNIT ENERGY

# Smartgrids are key to meet both the existing and the new challenges faced by DSO's...

## Existing Challenges

## New Challenges

Quality of service



Distributed generation

Operational efficiency



# Smart grids



Energy Efficiency



Electric vehicle

# ...but represent an important change in paradigm in the way how utilities interact with their clients

Improved efficiency



Billing based on real time consumption

Electric vehicle charging network



In-home displays



Public lighting using LED technology



Network monitoring default detection



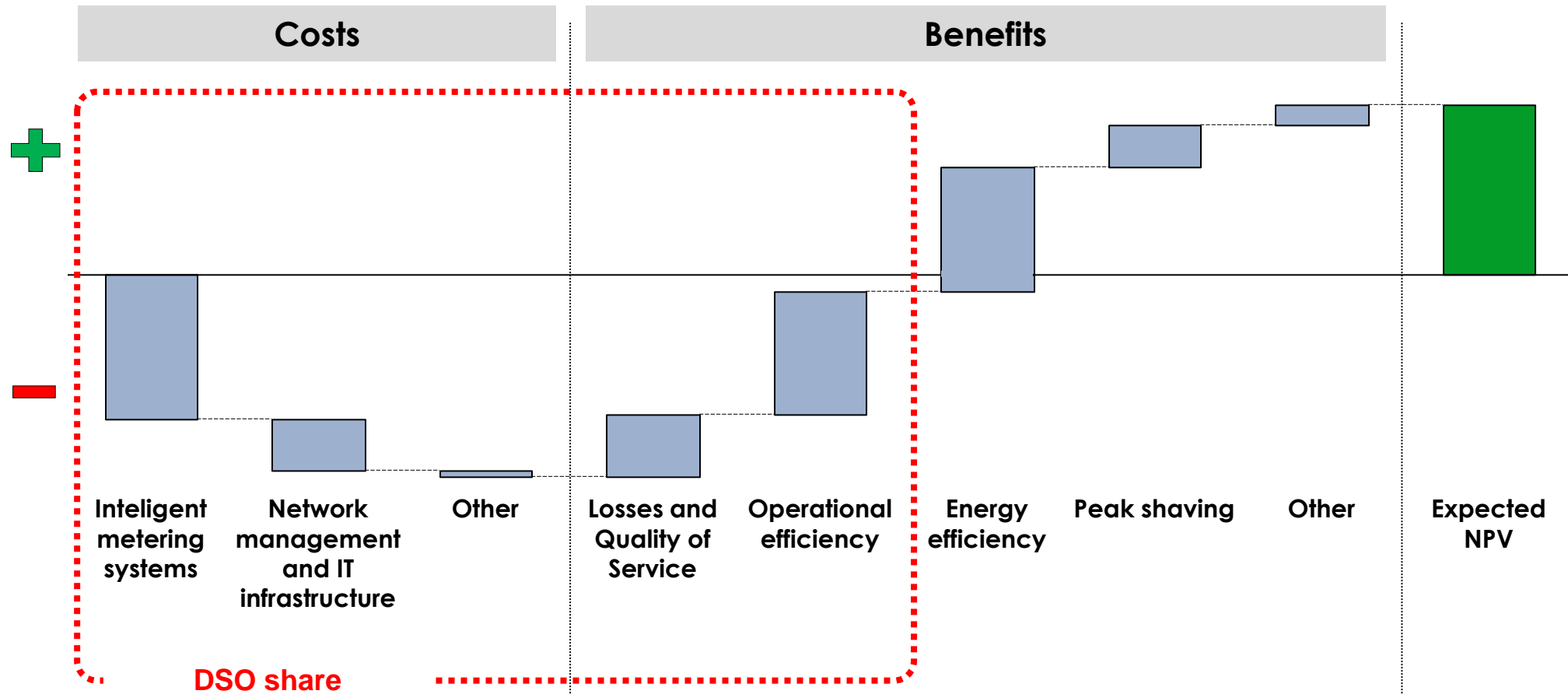
Connection to PC/PDA



Smartgrids project costs tend to be supported mostly by the DSO's while many of the benefits tend to be captured by other players (consumers, retailers, etc.)

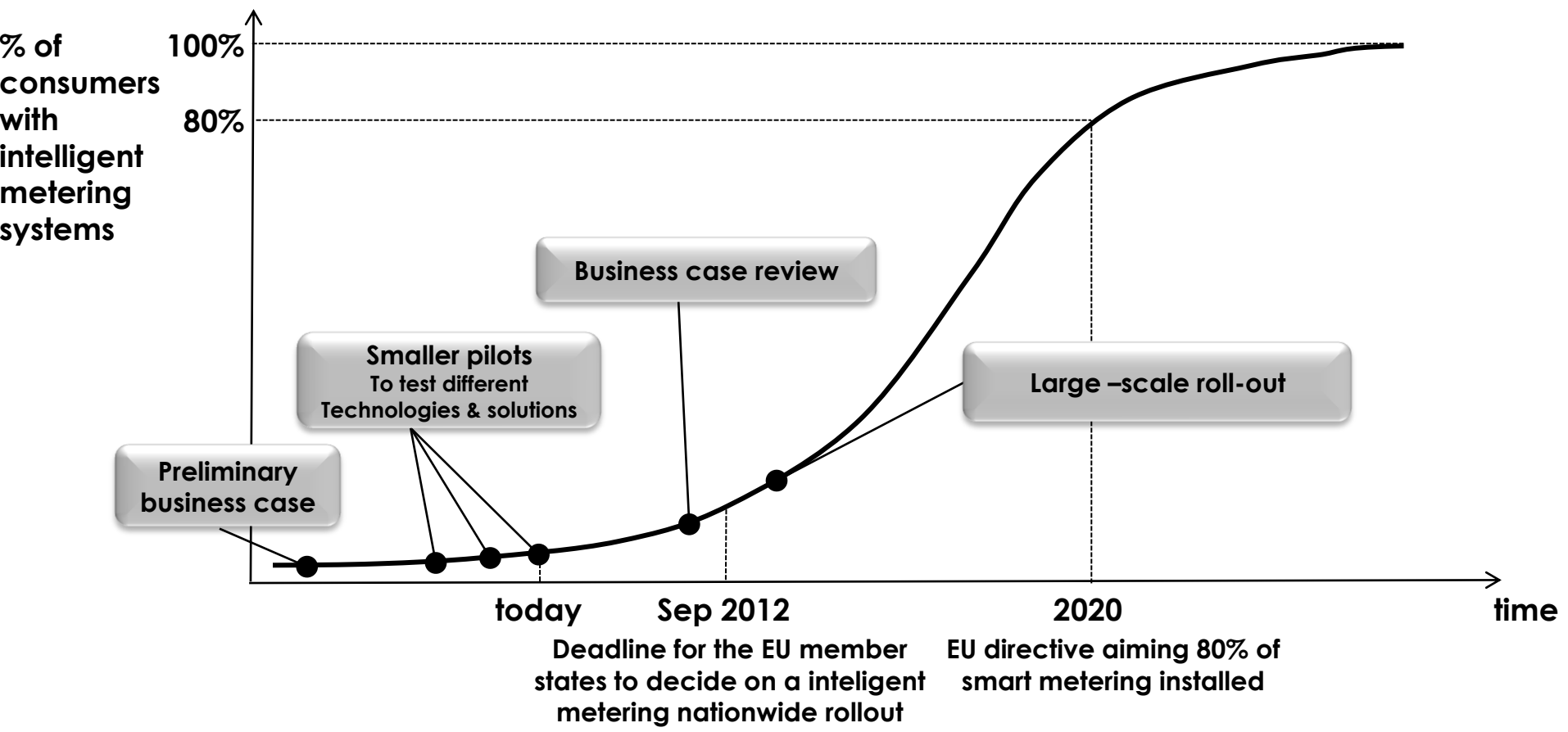
## SmartGrids project cost-benefit breakdown

ILUSTRATIVE



# There is a roadmap to be completed before large scale installation of smartgrids in all clients

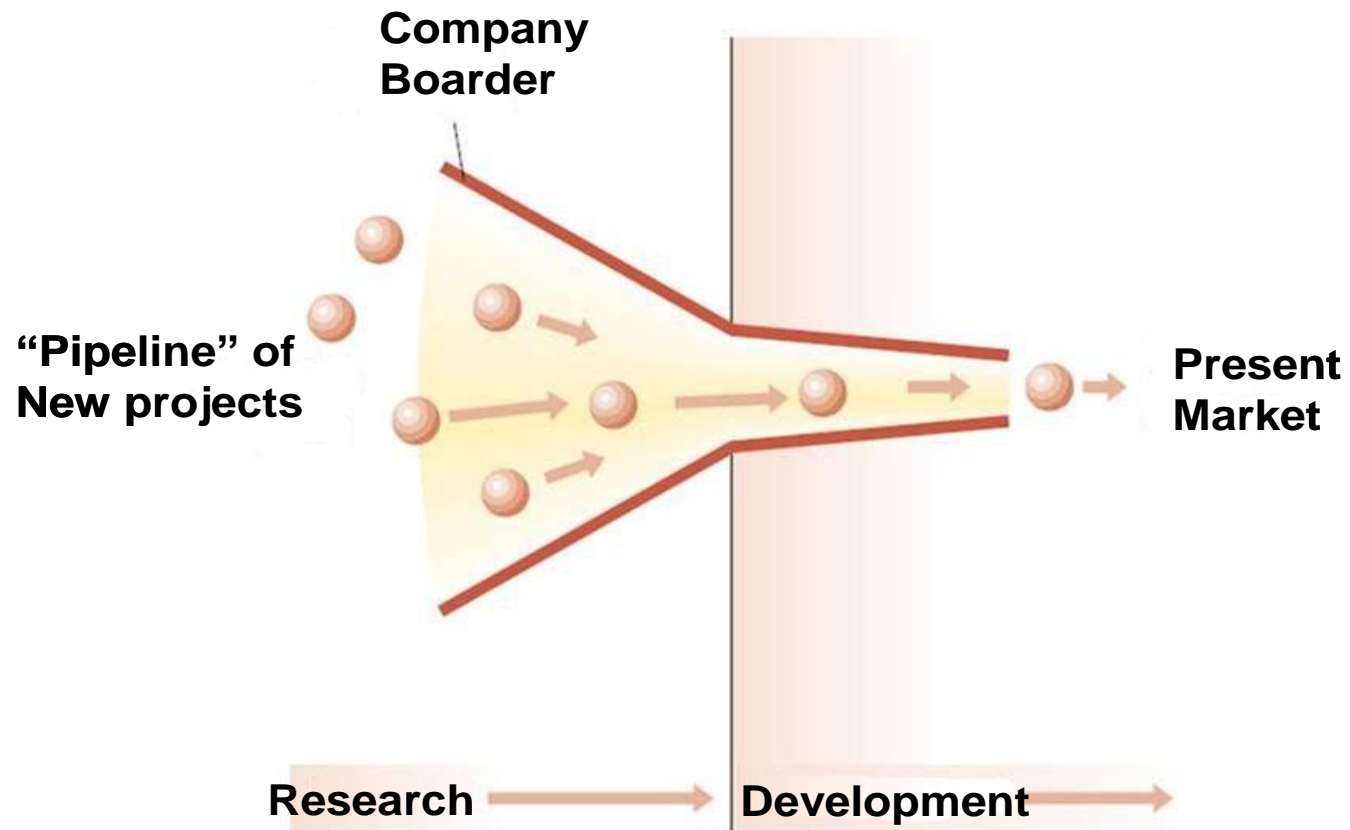
## Typical S-curve for new technology adoption



Standardisation projects and forums

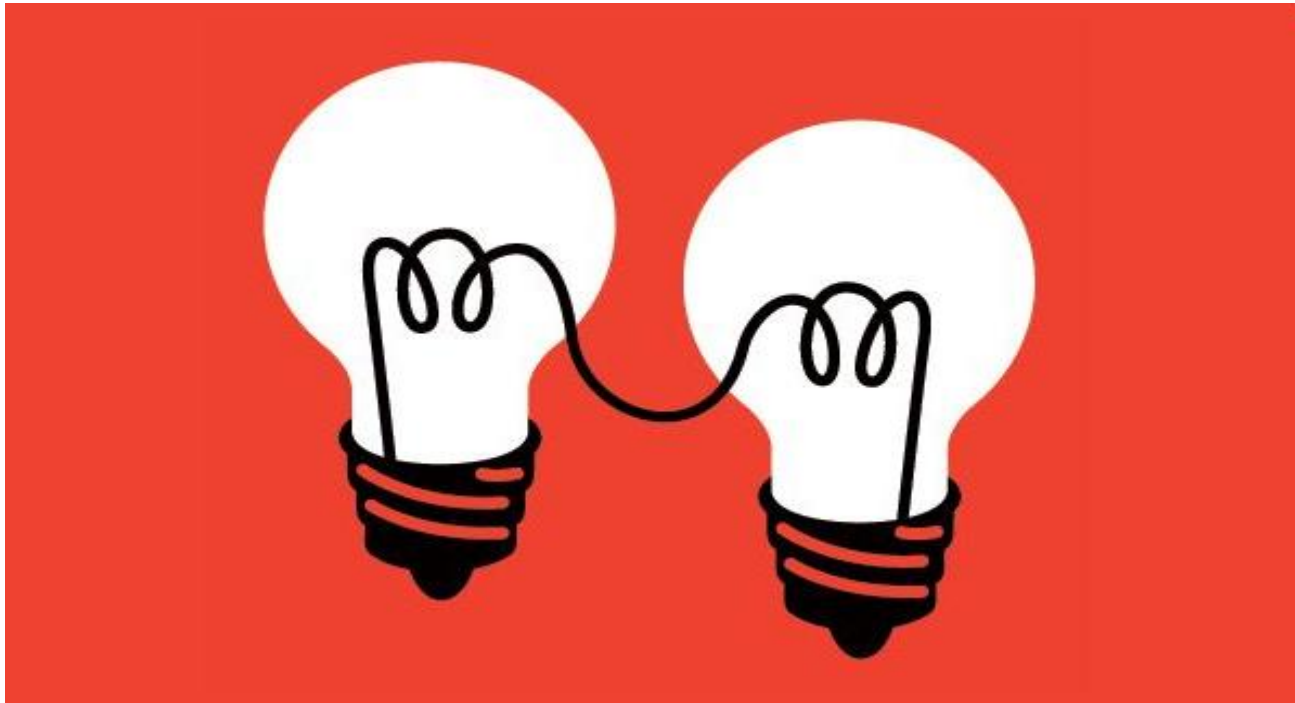
Build internal knowledge on the solution

# We are getting away from closed innovation ...

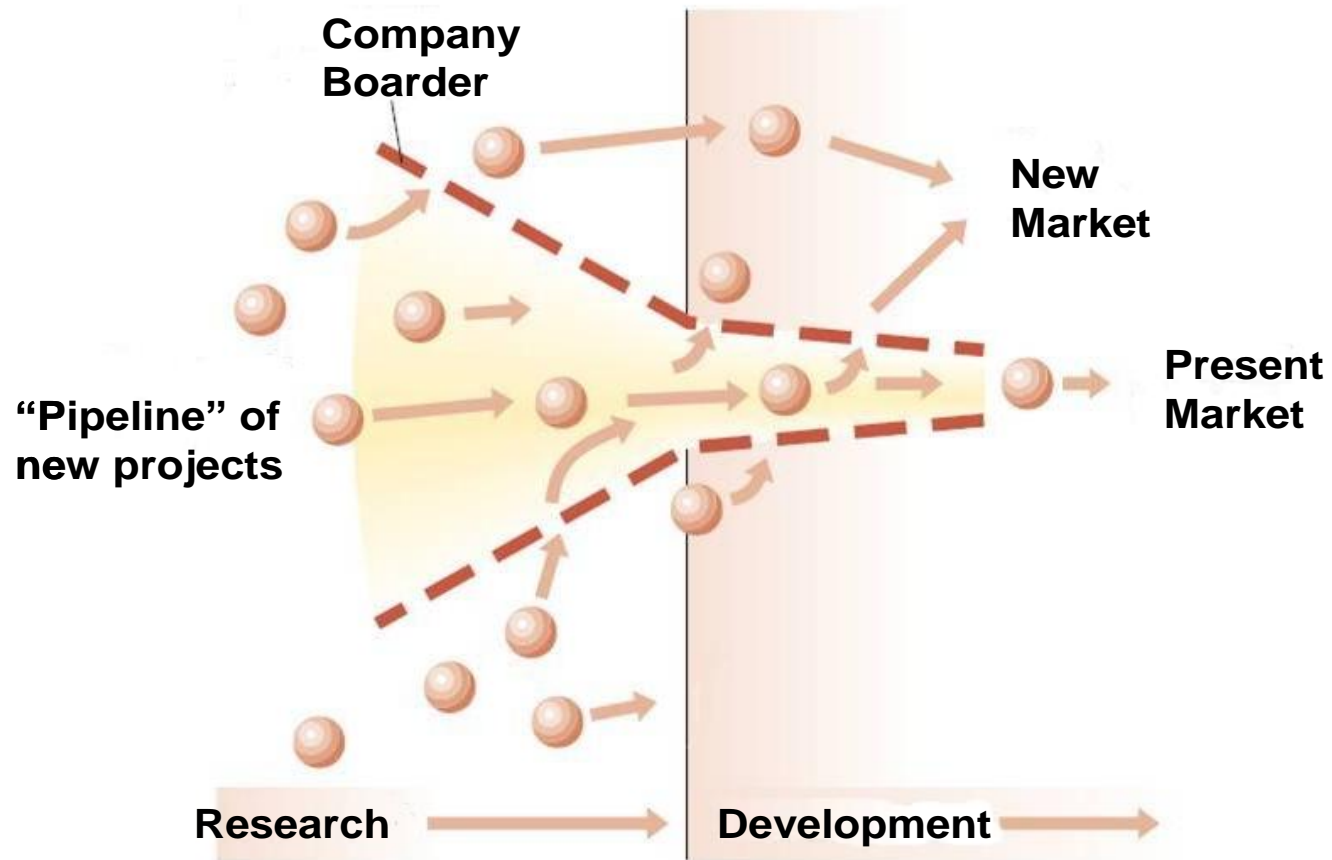


# The fear of “not invented here”

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... into open innovation ...



We have launched a co-creation site .

**co-creation**

search...

home innovation challenges assets

edp  
inovação

### open innovation

To EDP Inovação, the best ideas do not have to arise within the company.

You may have the innovative idea we are looking for.

**Theme of the quarter:**  
TEMA DO TRIMESTRE.

[More information »](#)

### challenges

We believe that the best solutions to internal problems may come from outside the company.

If you like challenges, do not hesitate. Enter, send your proposals and participate in the discussion forums.

[More information »](#)

### assets

The Energy Sector is experiencing a revolution.

EDP Inovação, as well as other companies inside EDP Group, is actively participating in all this movements. Actually, we have ongoing projects, ranging from the electric mobility to smart grids, with special focus on cleantech production.

## Welcome!

If you have a creative and innovative idea, whether concerning a new technology or a business proposal, EDP Inovação invites you to join this co-creation platform. This website is open to everyone and it will allow you and your company to interact with us and other members of this community.

## Co-creation

During these last few years there has been a shift in the in the way successful corporations innovate.

Previously, companies relied solely on their own R&D departments to develop new technologies and innovative procedures. However, this "in-house innovation" model has been challenged recently as several successful companies have systematically innovated by finding ideas, concepts or technologies outside their traditional boundaries.

[More information »](#)

## Community

Co-create is exchange ideas, share knowledge and work together. To support this collaborative activity, nothing better than a social network platform. Here, you will find people and companies, discussing and working on relevant themes to the Energy Sector, namely:

- Smart Grids
- Electric Mobility
- Offshore Energy
- Solar Energy

## Login

Username

Password

[forgot your password »](#)

[Sign in »](#)

Are you new to co-creation?

[Sign up »](#)

## News

### EDP Richard Branson Prize

Wayenergy is the winner project of the "Prémio Inovação ..."

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### EDP is number one

EDP recognised as world's number 1 in Dow Jones Sustainability ...

[More »](#)

[More news »](#)

# EDP implemented in 2010 an innovative pilot smartgrids project in Évora Municipality (InovCity) with 30.000 consumers



## Mission

- The **InovCity project** is an **innovative smartgrids project** aimed at improving the electrical distribution grid while **reducing operating costs, fostering energy efficiency and enhancing environmental sustainability**

## Objectives

- The installation of a smartgrids solution in Évora Municipality in up to **30.000 consumers** by February 2011
- A group of selected **customers will benefit from the installation of new products and services** developed on top of the infrastructure allowing them to be more active and to take more control about their energy consumption

## Project differentiation drivers

- Represents a **real contribution to the EU 20-20-20 goals** and is fully aligned with the **Lisbon Agenda**, enhancing a more competitive and innovative Europe
- InovGrid is on **cutting-edge of technology** regarding SmartGrids
- **It's an internationally recognised project**, chosen as **1 of 15 smartgrids case-study projects among 200 European projects**
- **Act as an enabler of new technologies** such as: LED public lighting, the electric vehicle and renewables
- Has a clear **goal to enhance consumer awareness and participation** as key to achieve European energy goals

# InovCity Évora, Portugal

You are invited!



Visit us at:

[www.inovcity.pt](http://www.inovcity.pt)