



# A EURELECTRIC Perspective on the Take-Off of PV Power

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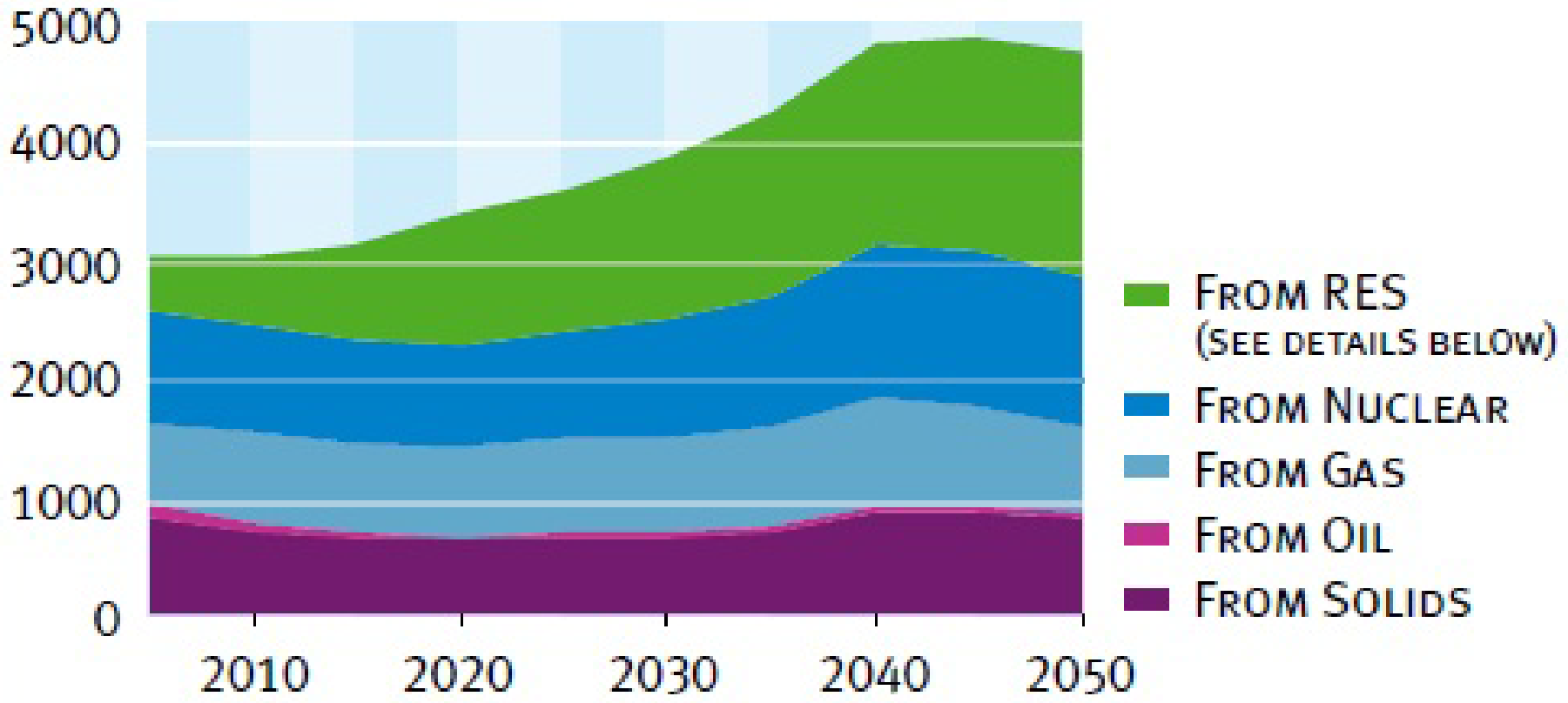
## ***Table of Content***

- 1. EURELECTRIC Views on the take-off of PV**
- 2. Fostering RES integration to both market and system**
- 3. The EURELECTRIC RES Action Plan**



1. EURELECTRIC's Power Choices Study (published in 2009), identifies that all low-carbon generation options will be needed

## POWER CHOICES - POWER GENERATION (TWH NET)

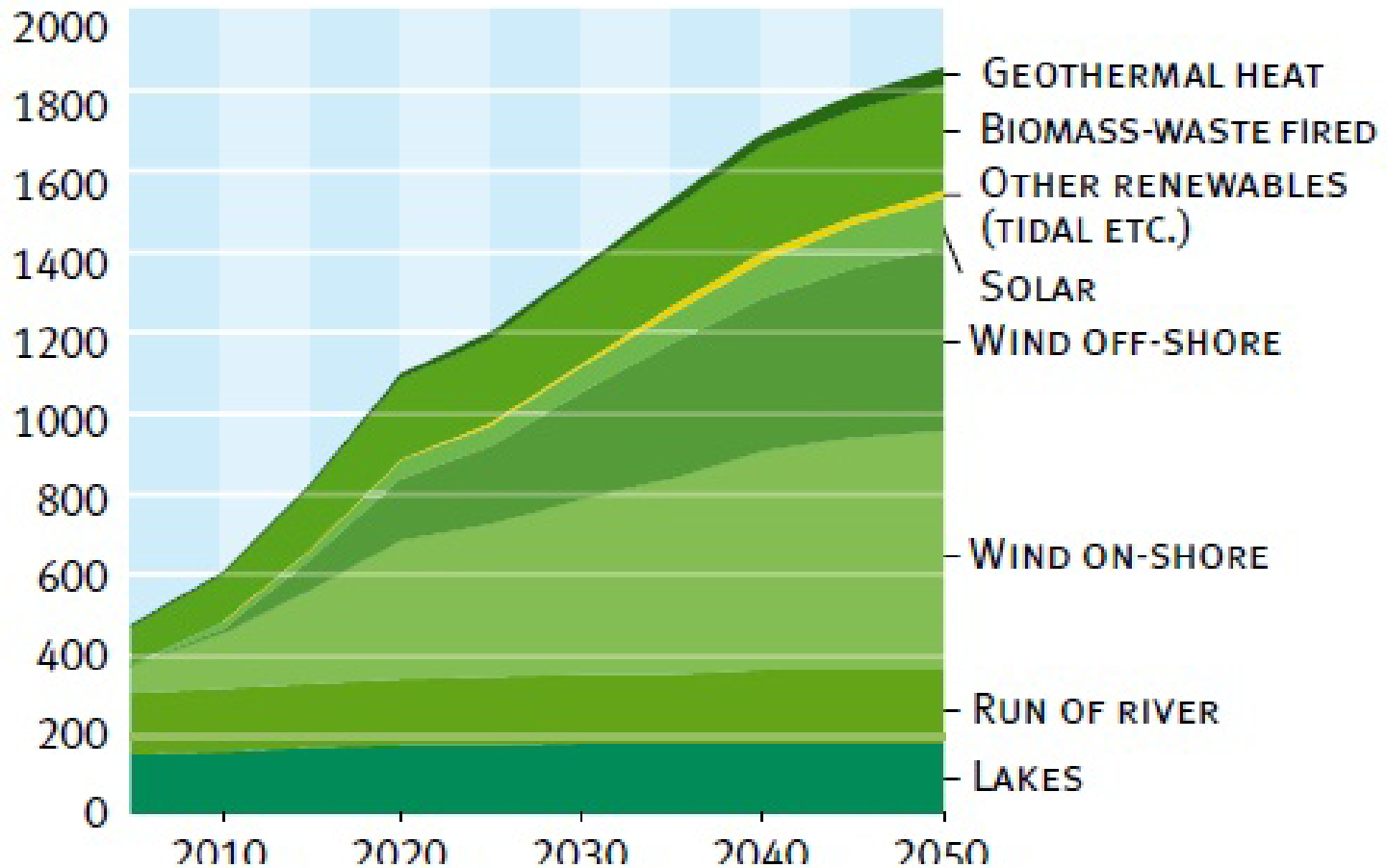




1.

# On PV Solar Output

## POWER CHOICES - POWER GENERATION FROM RES IN TWH





GW NET	2011-2030	2030-2050	TOTAL	2011-2030	2030-2050	TOTAL
POWER CHOICES : CAPACITY EXPANSION			BASELINE 2009 : CAPACITY EXPANSION			
Nuclear	83.3	113.6	196.9	85.7	98.4	184.1
Solids w/o CCS	46.0	4.0	50.0	64.4	37.7	102.1
Solids with CCS	61.9	48.4	110.3	35.0	23.6	58.6
Gas/Oil w/o CCS	90.1	110.4	200.4	136.0	270.9	406.9
Gas/Oil with CCS	1.0	79.6	80.6	0.1	2.3	2.4
Hydro	12.2	5.1	17.3	12.0	5.3	17.4
Wind onshore	139.8	200.2	340.0	108.6	129.8	238.3
Wind offshore	82.0	91.8	173.8	79.0	60.4	139.5
Solar	65.0	134.3	199.3	61.1	90.7	151.7
Biomass	35.3	37.2	72.5	30.0	39.1	69.1
Tidal. Geothermal	6.6	10.9	17.6	6.0	6.0	12.0

Table 10: Power Generation Investment



1.

## A perspective on the take-off of PV

- PV is evolving towards a generation asset (from a niche market to industrial scale)

E.g. : highest share of new built capacities in 2010 (after gas to power)

- Getting increased attention by EURELECTRIC Members
- PV – as all RES technologies – should compete on a level playing field with other power generation technologies



2

## RES need to be brought into the market

Support for renewable generation should only be through specific and transparent market based mechanisms, not through indirect subsidies that distort the market equilibrium.

This means:

- Renewable generators should be responsible for selling their own production in the market (i.e. not via the TSO): just like all other generators
- Renewable generators should be required to schedule, nominate and balance: just like all other generators
- Renewable generators should offer positive\negative bids and offers into balancing and reserve markets rather than being pure “must run”: just like all other generators
- Support mechanisms should mainly take the form: “market price + premium/certificate value” rather than feed in tariffs





## Where are we coming from? Recommendations of EURELECTRIC work on RES Integration

- **HARDWARE:** TSOs investments urgent (RES connection, Cross-border capacity, internal bottlenecks, offshore supergrid, etc)
  - Grid investments and grid operation will become more and more regional: → a new approach to system operation is needed
- **SMARTWARE:** DSO investments will play an important role (smart meters and grids, etc.) to enhance active participation of demand
- **SOFTWARE:** Well functioning Cross-border Intraday and Balancing markets are urgently needed to give the market the right flexibility tools
- **MARKET RULES:**
  - Need for level playing field (e.g. balancing responsibility) between RES and other technologies
  - Remove price regulation (wholesale and retail) to give the right price signals to generators and consumers
  - Harmonization of support schemes + progressive phase out after 2020





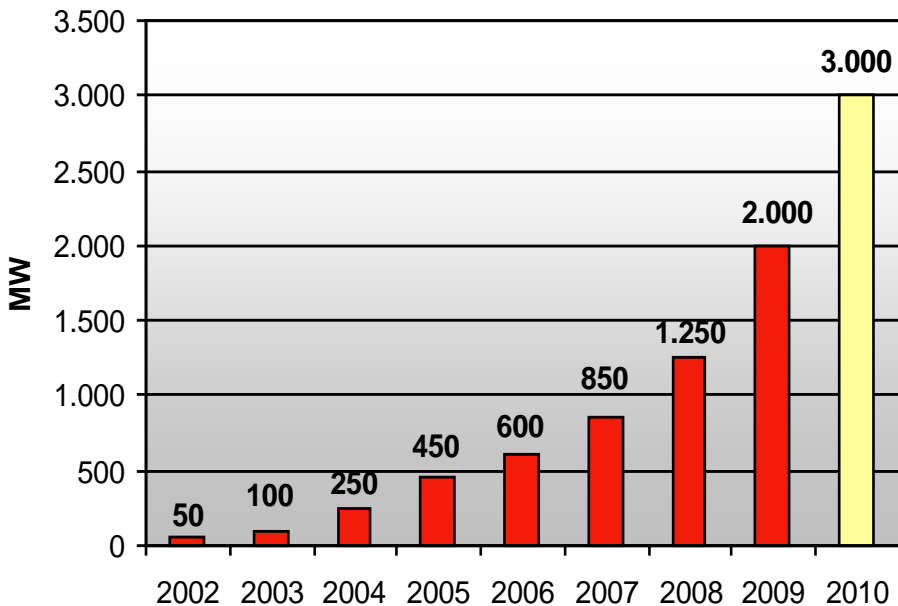
2

## PV integration as a policy challenge for DSOs

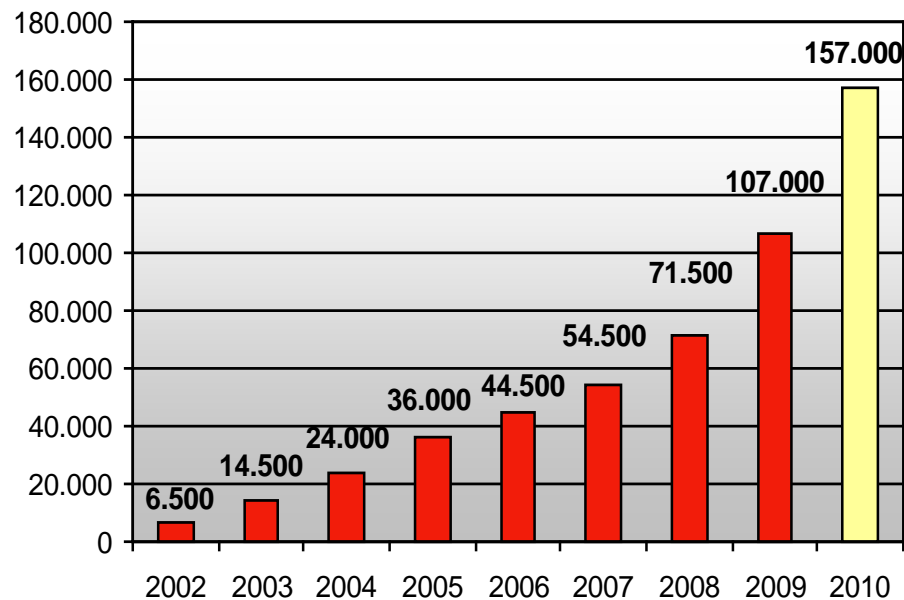
Compared to 853 GW of total installed capacity in the EU, the PV share is still quite slow (22.5 GW in 2010). So why is it a challenge for DSOs?

A high concentration of PV panels in specific distribution grid areas evolves towards a technical and regulatory challenge for some DSOs (see below example of E.On Bayern)

Installed Capacity



Installation numbers





2

## To connect RES, DSOs are mainly following a “fit and forget approach”

This approach entails heavy investments in additional distribution lines in order to make distribution grids “fit” for a large intake of RES electricity:



i.e. investments in network development & reinforcement at MV & LV levels (additional lines/larger lines, transformers, switches, breakers, relays,...)

The cost due to the increased number of RES installations to be connected to the grid is increasing dramatically and results in some areas, in over-sizing the distribution grid to avoid congestion during few periods of strong wind or sunshine

Alternatively, DSOs could also follow the “smart grids approach”



**3.**

## **RESAP : 13 projects covering the full electricity value chain**

### **1. Networks & DSM**

**Planning of future grid infrastructure**

**Regulation for Smart Grids**

**Role of flexible loads & storage**

### **2. Generation impact**

**Investment climate for RES**

**Requirements for flexible back-up capacity**

**Role of biomass**

### **3. Wholesale markets**

**Impact on wholesale electricity & carbon markets**

**Possible need of reviewing market design**

**Urgent need of Cross-border intra-day and balancing markets**

### **4. Competitive & sustainable RES**

**Analysis of Member states' NAPs**

**Harnessing EU synergies: cooperation mechanisms**

**How best to foster R&D of RES technologies**

**Life cycle analysis of RES technologies**

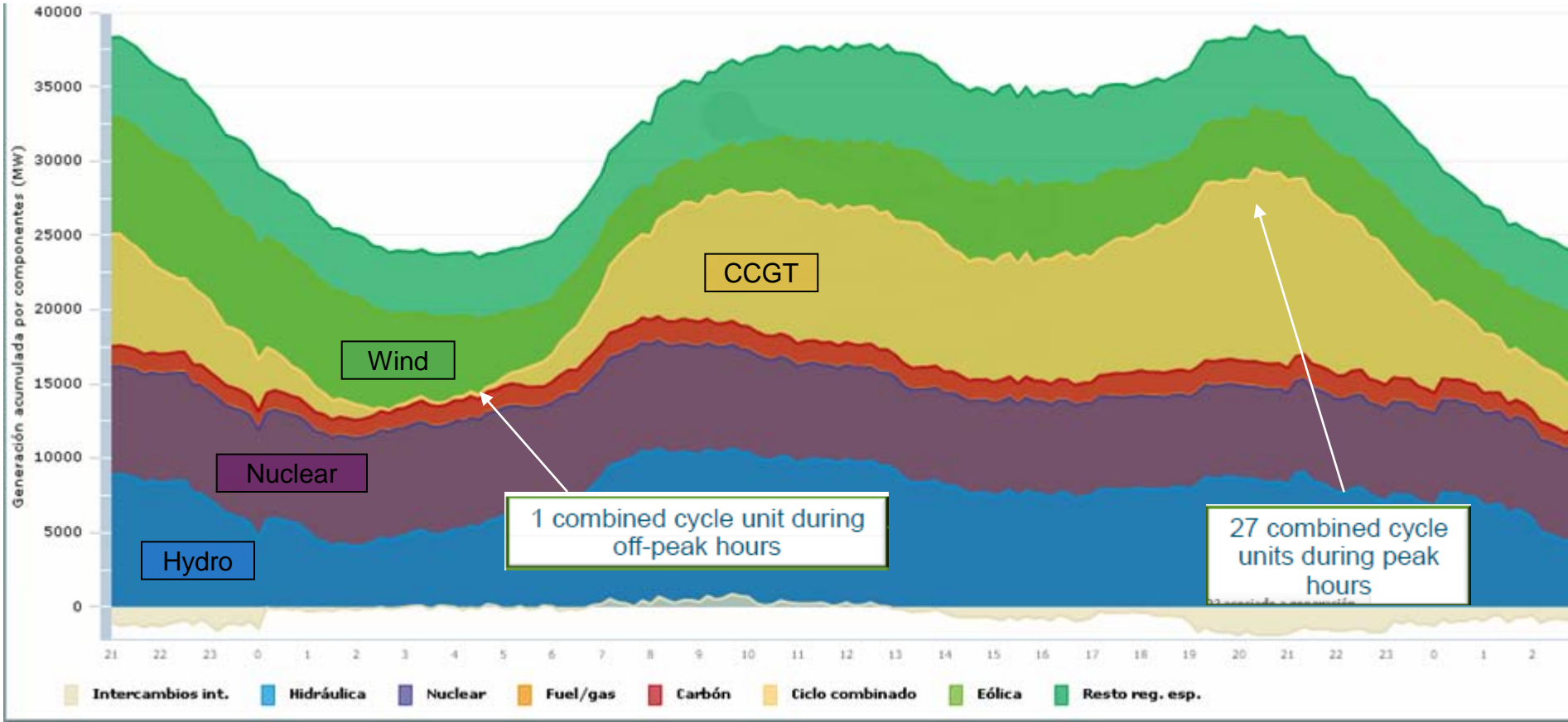
**Comprehensive strategy and recommendations on the role and contribution of RES for EU energy policy goals in 2020 time horizon**



3.

# Managing flexibility..

Example from the Spanish system – 3<sup>rd</sup> March 2010



Source: data from Red Eléctrica de España (REE), figure elaborated by Endesa



**3. A system approach to managing variability needed for the continued growth of renewables in Europe**

**GENERATION**

Flexible and back-up capacity,  
incl storage

**MARKET**

Increased market integration,  
improved day-ahead markets

**DEMAND SIDE**

Smart grids and flexible loads

**TRANSMISSION**

Increased transmission  
capacities



3.

## A European approach on policy and markets will secure that renewables enables sustainability, security of supply and competitiveness

- RES Policies must be coherent with other European Energy & Climate policies, making ETS a more important driver of RES investments in the future
- Integrated electricity market together with a reinforced grid is key for accommodating a high share of RES in the most cost efficient way
- To facilitate an EU biomass market, and ensure sustainability of imports, common EU biomass sustainability criteria are needed







3.

## **EURELECTRIC RES Action Plan Conference, Brussels 10 November 2011**

**YES to RES!**



## EURELECTRIC VIEWS ON DEMAND-SIDE PARTICIPATION

- ▶ INVOLVING CUSTOMERS
- ▶ IMPROVING MARKETS
- ▶ ENHANCING NETWORK OPERATION



**The Report  
“EURELECTRIC Views  
on Demand  
Side Participation:  
Involving Customers,  
Improving Markets,  
Enhancing Network  
Operation” is now  
available on our  
website under  
[www.eurelectric.org](http://www.eurelectric.org)**

**Thank you for your attention !**