

# *Photovoltaïque : quel soutien politique européen et national pour alimenter la planète en électricité solaire ?*



## **Impliqué depuis 26 ans pour le développement de l'énergie solaire en France**

**Enerplan regroupe la diversité des acteurs de la  
branche solaire française.**

**Association loi 1901, plus de 250 membres, nous  
travaillons pour :**

- Représenter la branche solaire en France**
- Structurer l'offre**
- Développer la demande**

## Impliqué depuis 26 ans pour le développement de l'énergie solaire en France

### Représenter les professionnels :

Représentation de la branche solaire française

### Structurer et organiser l'offre :

Sélection de systèmes ST domestiques :

Label ô solaire, marque collective de qualité

Co-fondateur de Qualit'énr, & co-gestion du réseau  
d'installateurs Qualisol et QualiPV :

15 000 entreprises (sept 09)

Coordination de l'initiative interprofessionnelle So Col pour  
généraliser l'eau chaude solaire collective

Participation à la mise en place de la plateforme  
interprofessionnelle PV & Bâtiment



## **Structurer et organiser l'offre (suite) :**

Réunions régulières de filière ST et PV  
Statistiques et analyse du marché

...

## **Développer la demande :**

Information, sensibilisation, communication

Organisation des Journées Européennes du solaire en France depuis 2008 (plus de 1 200 évènements en 09)

Création et mise à jour de l'Agenda Solaire à destination des collectivités locales (boîte à idées et outils)

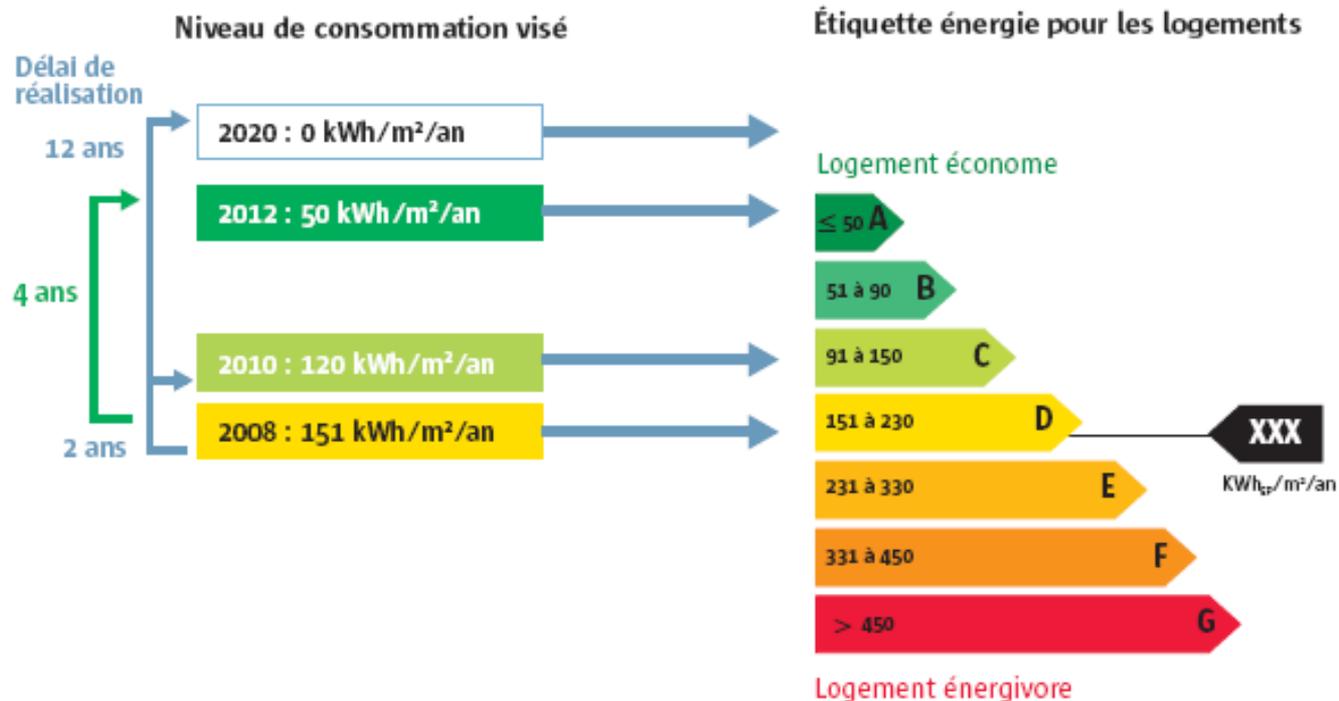
Organisation de la 1<sup>ère</sup> conférence des maires et élus pour le solaire en 2009

...

## **Les nouvelles mesures qui vont généraliser l'usage de l'énergie solaire :**

- **Directive européenne sur les énergies renouvelables « 20 % EnR 2020 »**  
**=> 23% pour la France**
- **Le bâtiment solaire au cœur du « Grenelle de l'Environnement »**

# Les technologies solaires, nécessaires pour les bâtiments performants :



# PV en France, un marché nouveau

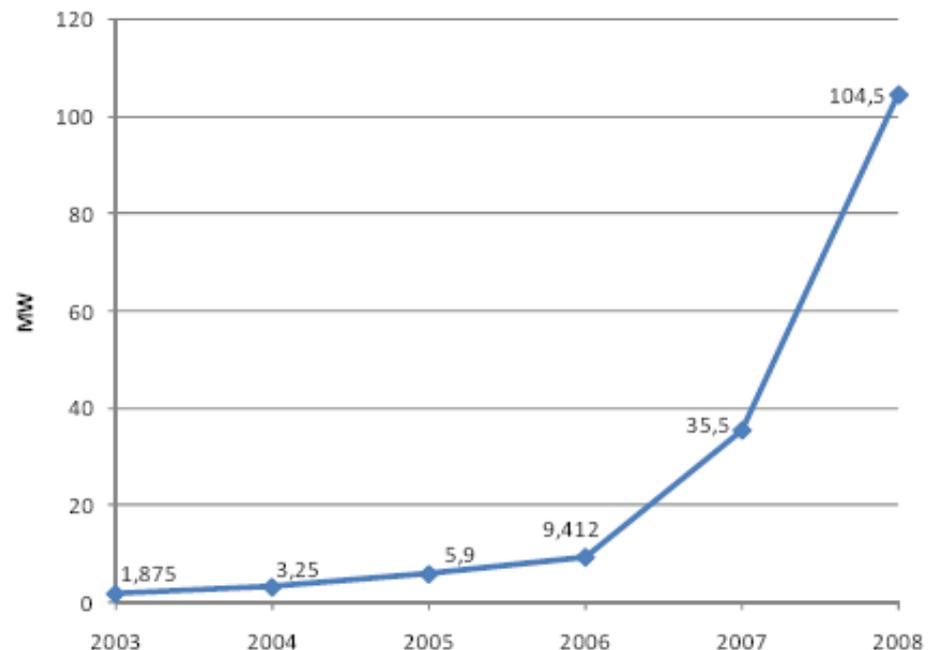
Démarrage du marché en 2006 (nouveau tarif achat attractif), pour la 1<sup>ère</sup> fois, plus de **10 MW** installés dans l'année.

**X3** en 2007 : **35 MW**

**X3** en 2008 : **105 MW**

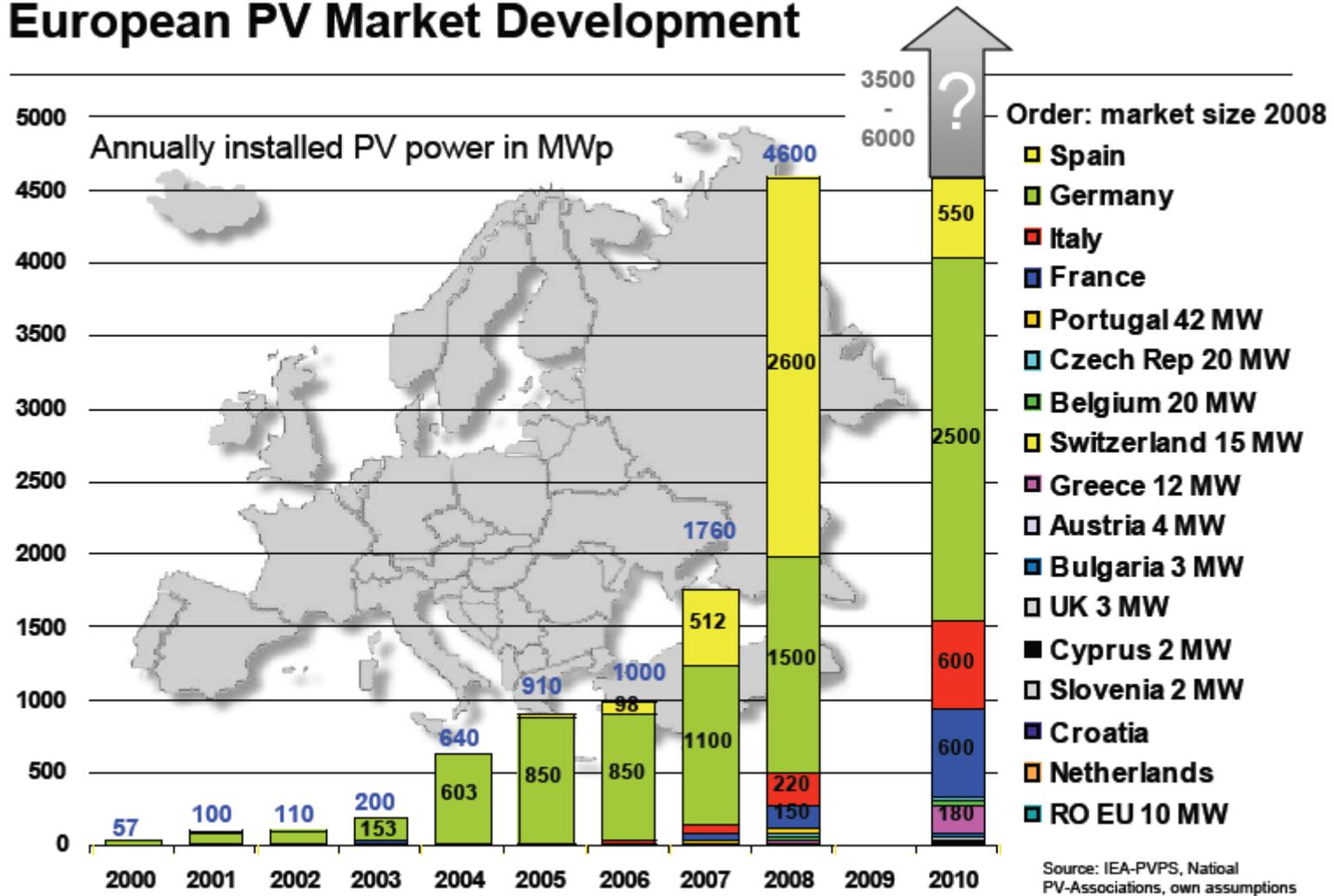
**X2 à 2,5** en 2009

**: 200 à 250 MW**



Tarifs d'achat du kWh PV en France	BIPV  Depuis 2006	Parcs solaires  Depuis 2006	BIPV "renforcé"  attendu pour 2010	BIPV "simplifié"  attendu pour 2010	Parcs solaires  attendu pour 2010
Tarif d'achat	60 c€/kWh (20 ans, ajusté sur l'inflation )	33 c€/kWh (20 ans, ajusté sur l'inflation )	60 c€/kWh (20 ans, ajusté sur l'inflation )	45 c€/kWh (20 ans, ajusté sur l'inflation )	33 c€/kWh (20 ans, ajusté sur l'inflation ) + ratio 1,2 fction ensoleillement P > 250 kW

## European PV Market Development





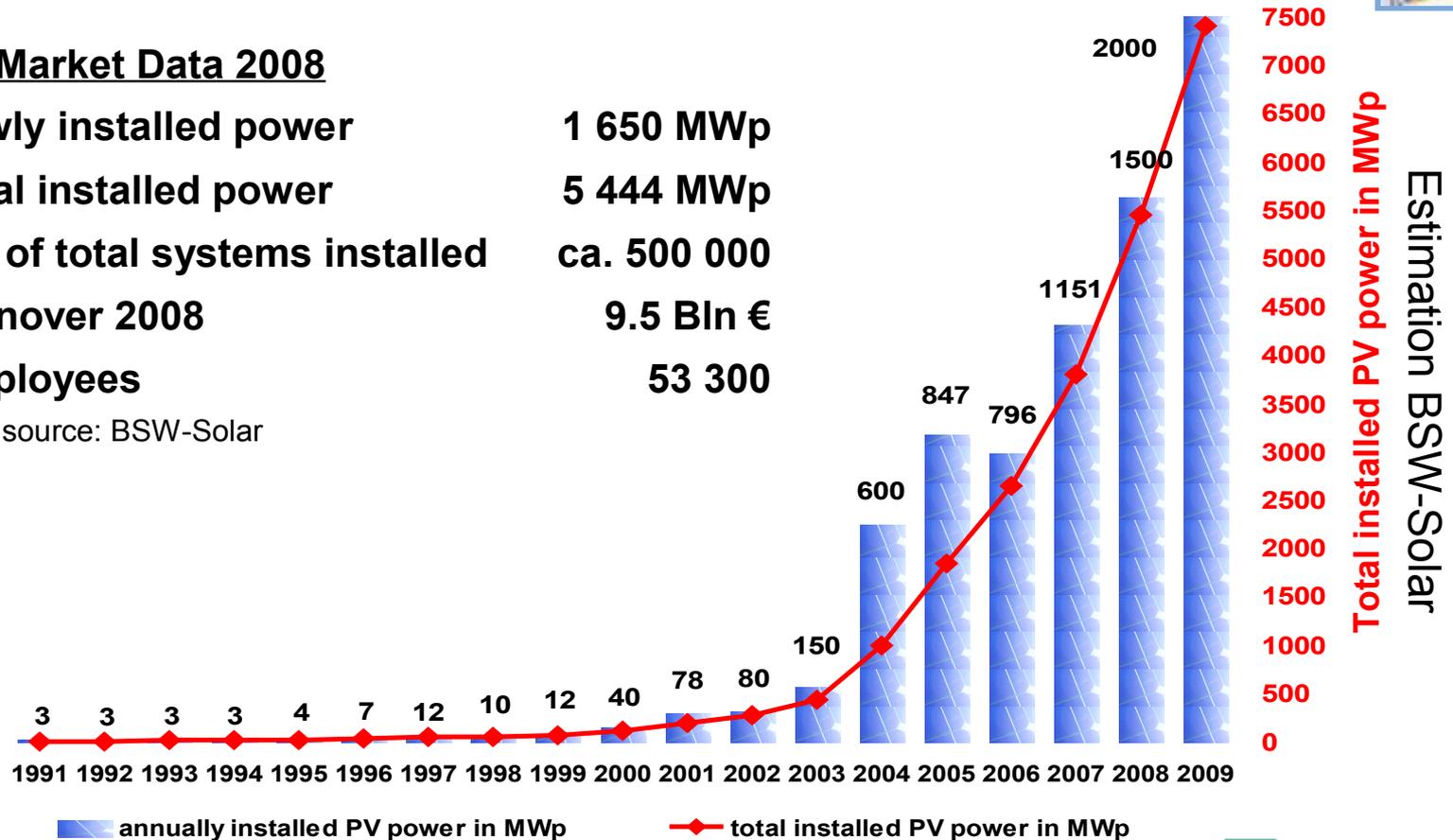
# Development of the German PV market



## PV Market Data 2008

Newly installed power	1 650 MWp
Total installed power	5 444 MWp
No. of total systems installed	ca. 500 000
Turnover 2008	9.5 Bln €
Employees	53 300

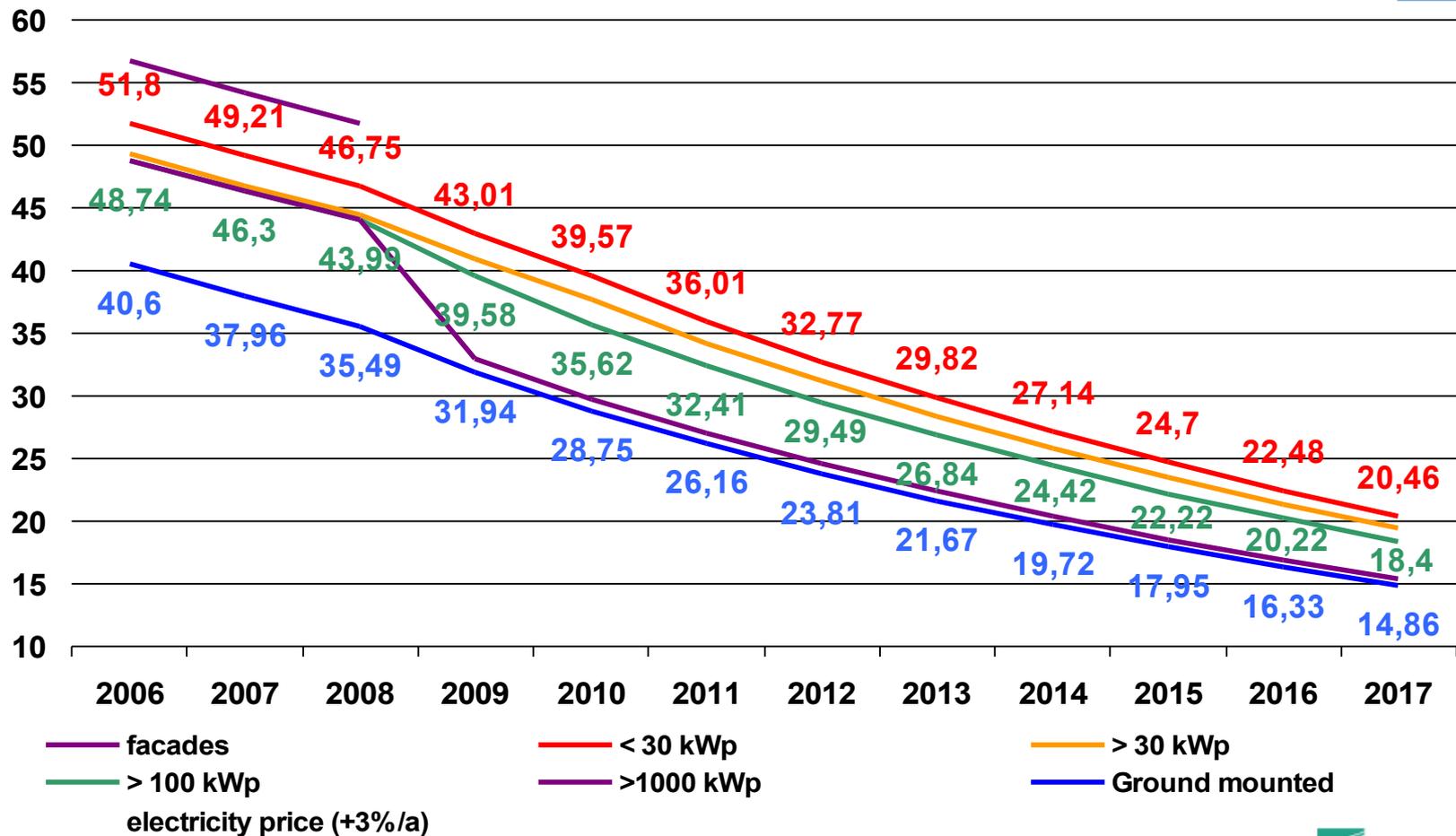
Data source: BSW-Solar



Estimation BSW-Solar  
Total installed PV power in MWp



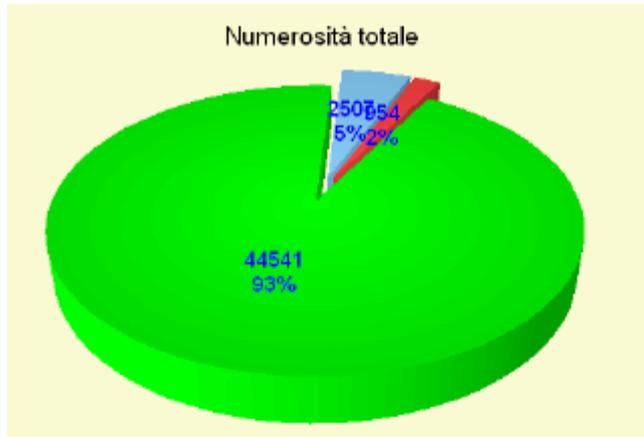
## Development of feed-in tariffs for PV within the German EEG



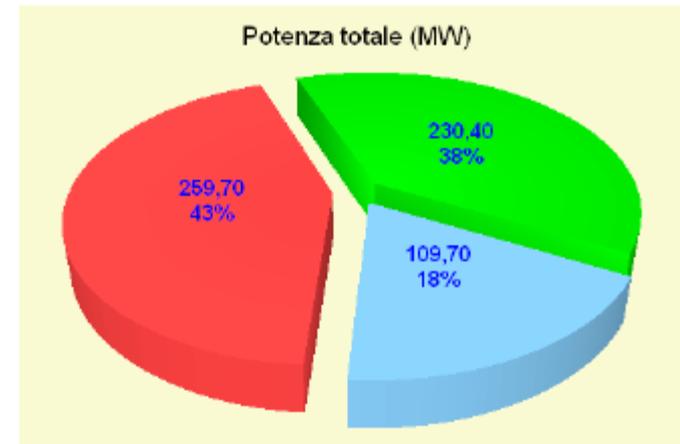


## Marché italien

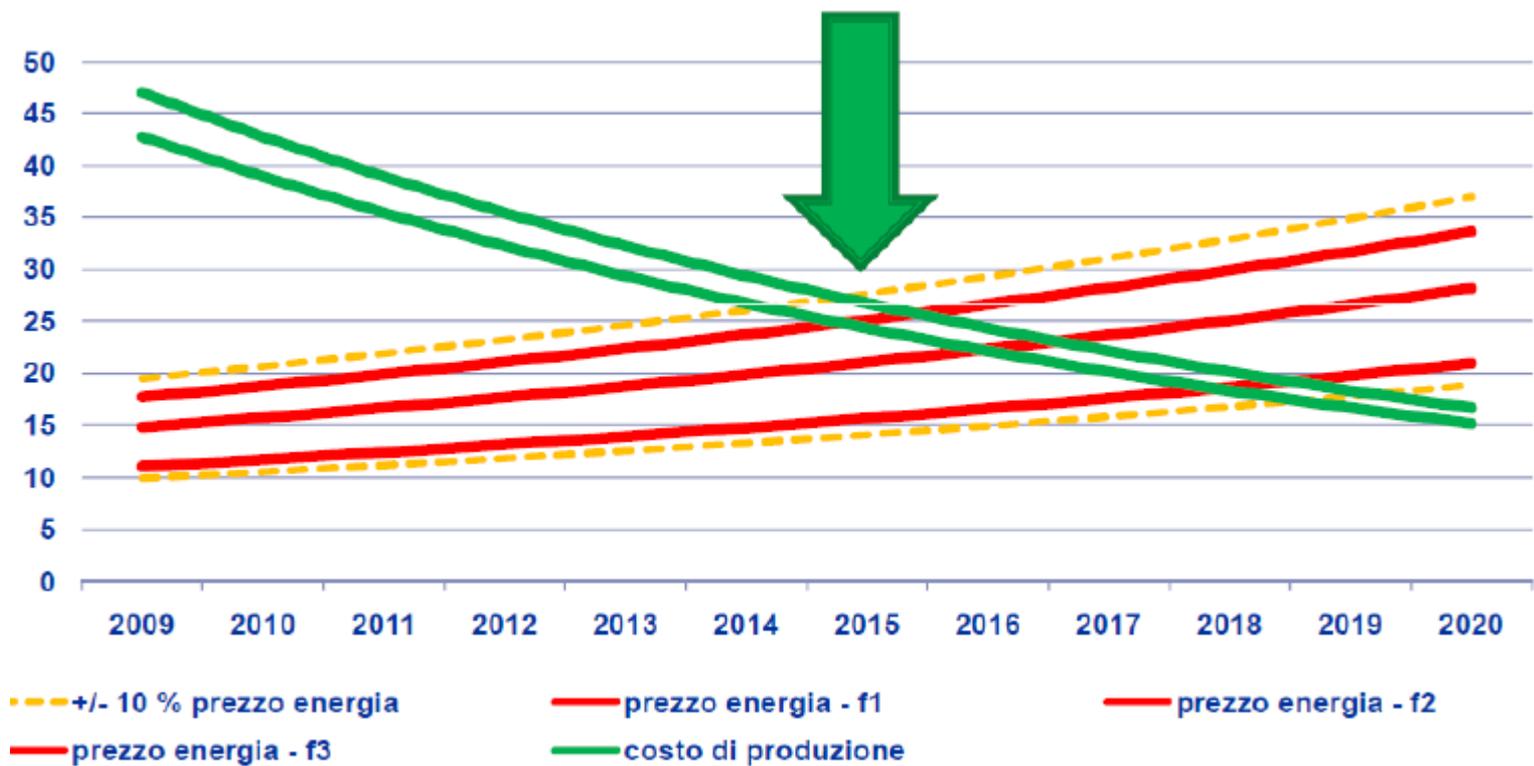
- About **616 MWp** - **50.000** PV plants connected (09/2009)
- **93%** PV plants below 20 kWp
- About **200 MWp** installed since January 2009
- Expected cumulative power to reach **1 GW** by end 2009.



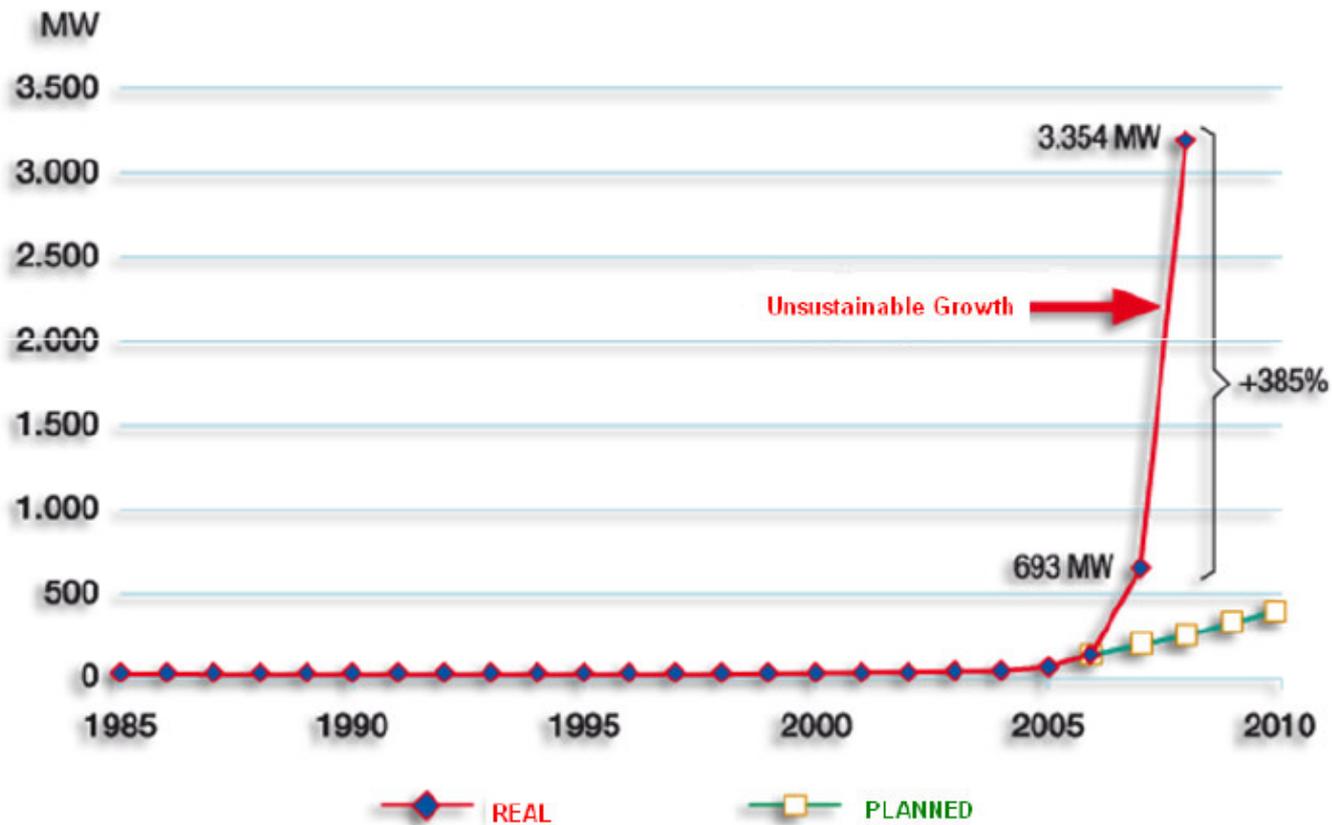
- Fino a 20 kW
- Da 20 a 50 kW
- Oltre 50 kW



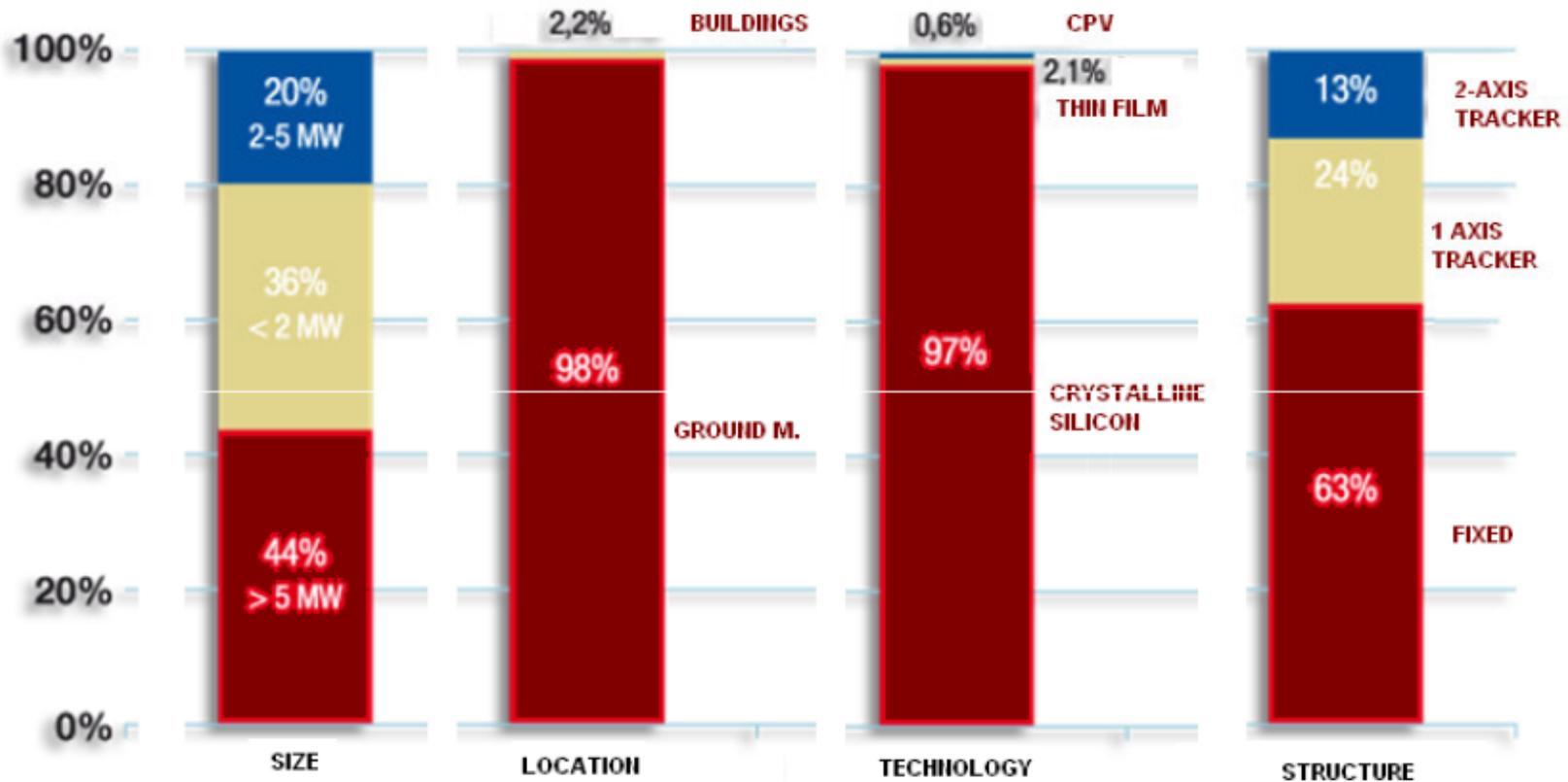
Marché italien : vers la parité réseau (apósé toiture <200 kW)



## Marché espagnol



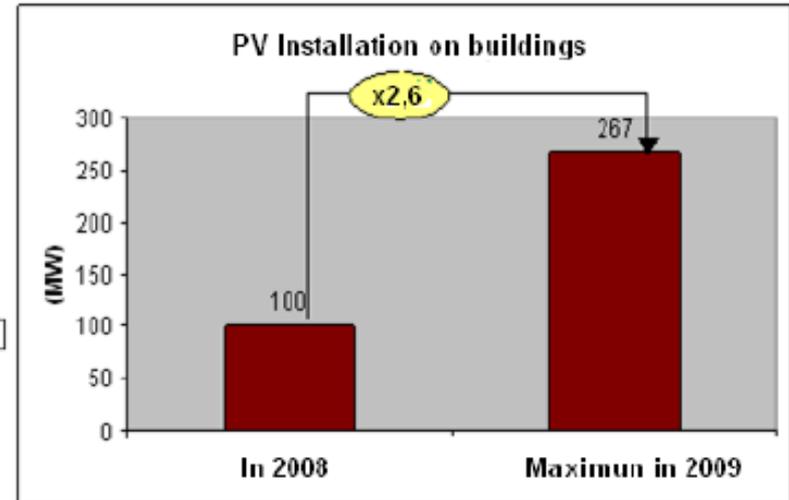
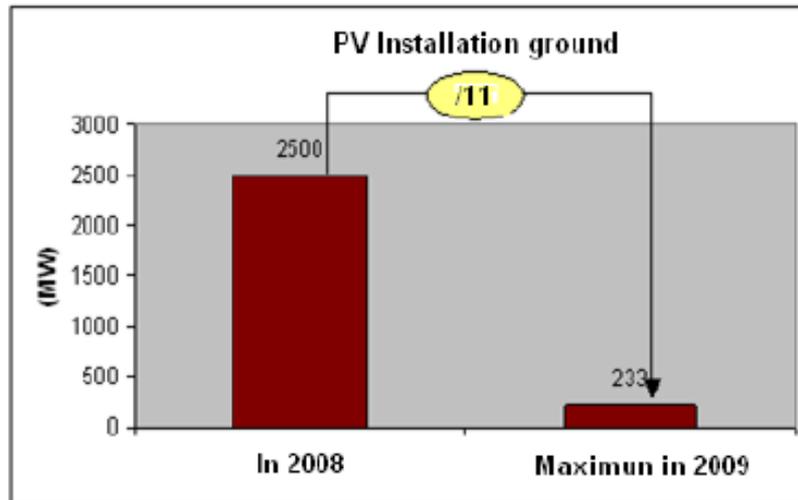
## Marché espagnol : 2500 MW en 2008



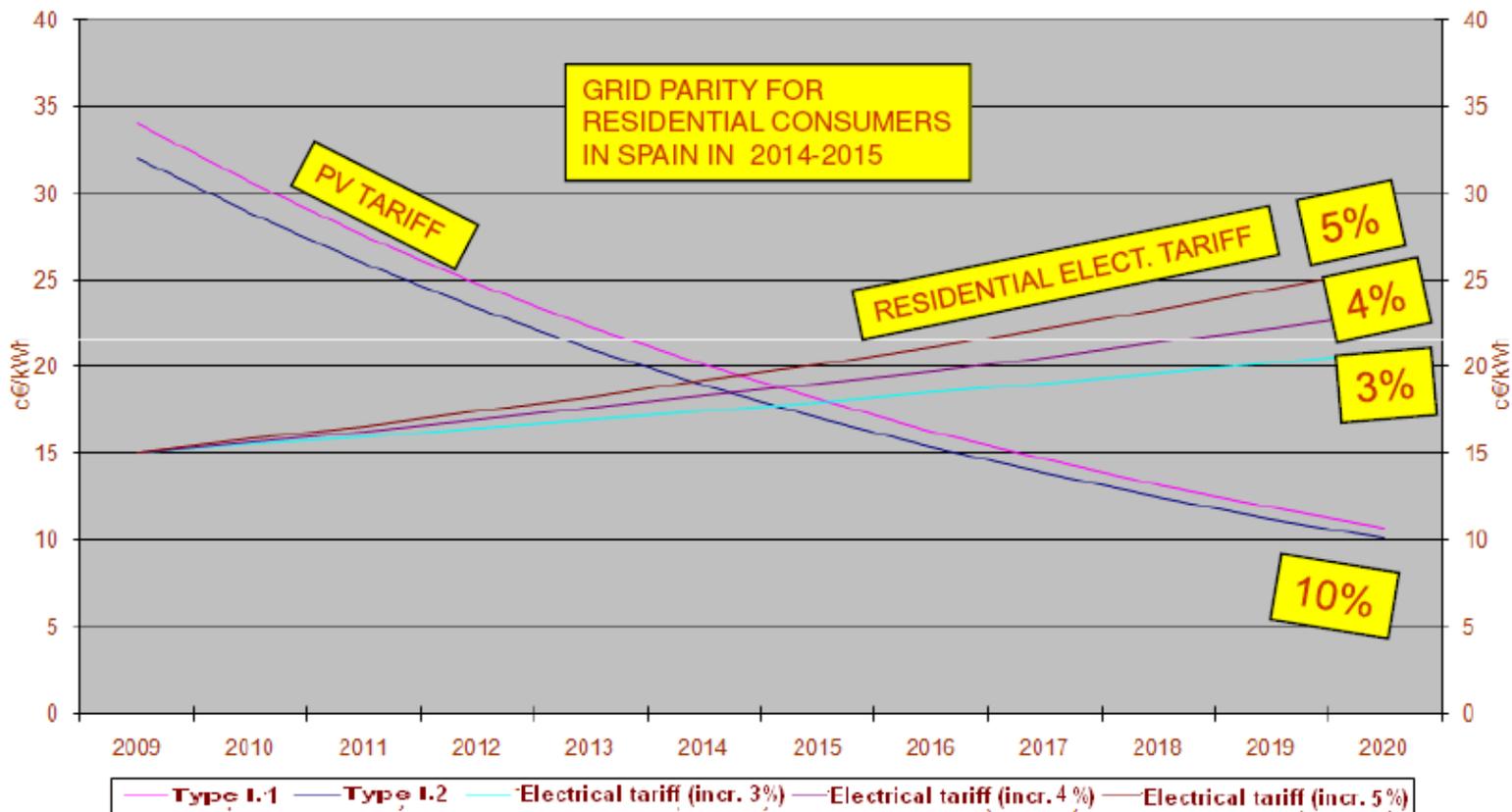
Marché espagnol : 250 à 300 MW en 2009 sur les 500 autorisés



### IN Spain, transition favourable to PV in buildings

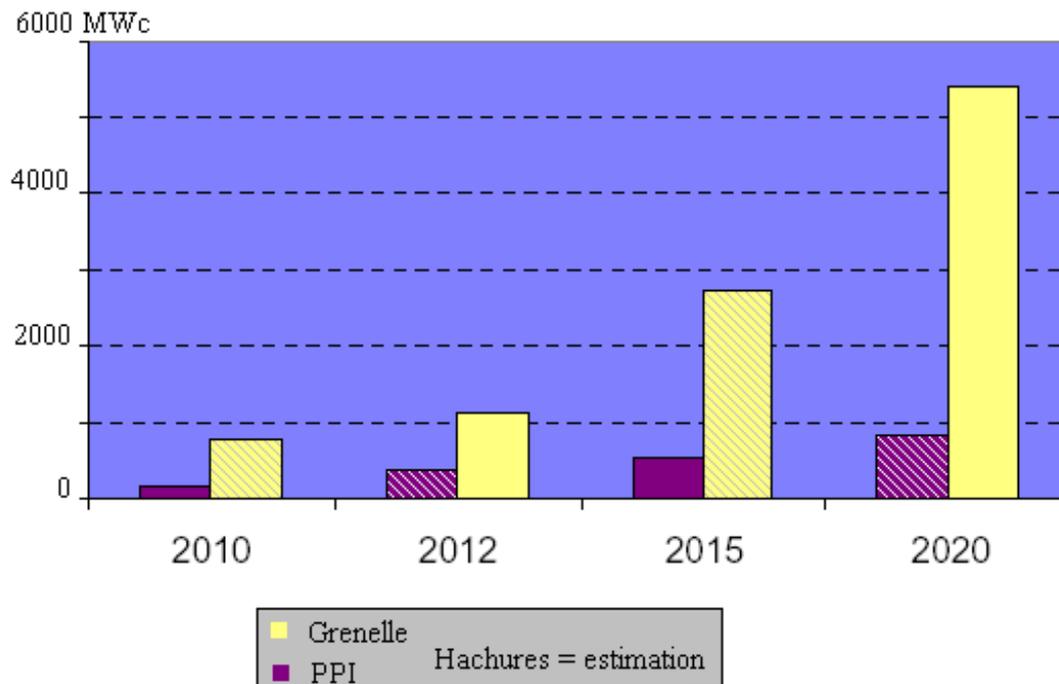


## Marché espagnol : vers la parité réseau



# PV : 1 % e-Fr demande d'ici 2020 (5,4 GWc) Nouvelle ambition du Grenelle pour le PV

*Parc photovoltaïque selon les objectifs du Grenelle et de la PPI 2010/2015*



Source: Grenelle Comop 10 - 2008

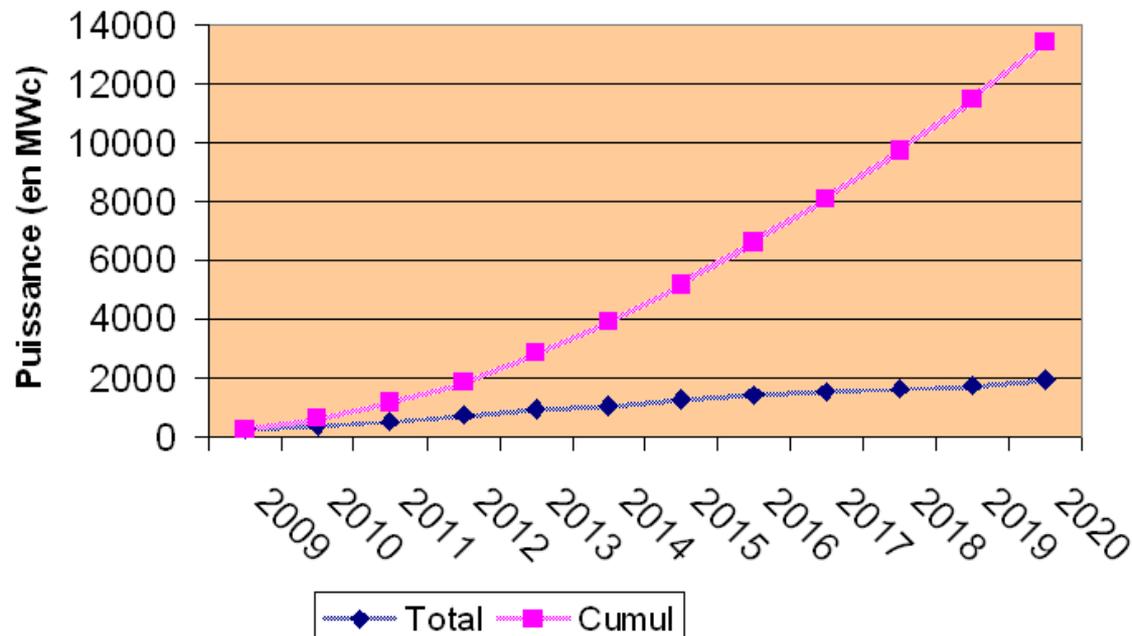
## **En France, avec politique efficacité bâti (BBC, BEPOS) + PV**

**Pénétration PV dans le neuf de 4% en 2009,  
18% en 2013, 45% en 2015, 70% en 2020  
+ 2 % en rénovation**

**Enerplan démontre potentiel PV dans Bât. :  
3 % e-Fr demande d'ici 2020 (13,4 GWc)**

## 3 % e-Fr demande d'ici 2020 (13,4 GWc)

**Croissance du marché photovoltaïque sur le bâtiment neuf et existant**



Source : Enerplan 2008

**Potentiel Epia**  
pour la France  
en 2020 : entre  
20 et 60 GWc

**Potentiel AIE**  
pour la France  
en 2020 : 18  
GWc

# **L'EPIA confirme un potentiel PV de 12 % de l'e-EU demande en 2020 :**

**350 GWc installés en Europe en 2020,  
tenant en compte l'effet "parité réseau"**

# SET FOR 2020

Solar Photovoltaic Electricity:  
**A mainstream power source in Europe by 2020**



# **Enerplan, pour le développement de l'énergie solaire en France**

**Ensemble, développer un secteur porteur  
d'avenir**

**[www.enerplan.asso.fr](http://www.enerplan.asso.fr)**

**Rdv lors des JES 2010 – 3 au 9 mai 2010**



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## EXECUTIVE SUMMARY



✂ **Demonstrate the true potential of PV**

✂ **Commissioned by EPIA to the strategic consultancy A.T. Kearney**

✂ **Most comprehensive study to date on the future of photovoltaic electricity generation in Europe**

- Interviews with 100 people in industry, research, utilities, regulatory agencies, governments...
- Covers EU 27 + Norway and Turkey

✂ **Unrivalled combination of facts, figures and analysis**

✂ **Fully endorsed by the PV Industry**

✂ **PV could cover as much as 12% of EU electricity demand by 2020, an achievable and highly desirable target.**

✂ **Achieving 12% penetration by 2020 will require:**

- **Temporary policy driven support environment** during its pre-competitive phase
- **Evolution of the electrical system:** « Paradigm Shift »

✂ **Boosting PV has a huge societal value:**

- Global Climate Change
- Energy Security of Supply
- EU Sustainability goals
- Economic competitiveness

✂ **Boosting PV is an Investment - not a cost - yielding huge economic benefits to European Society**

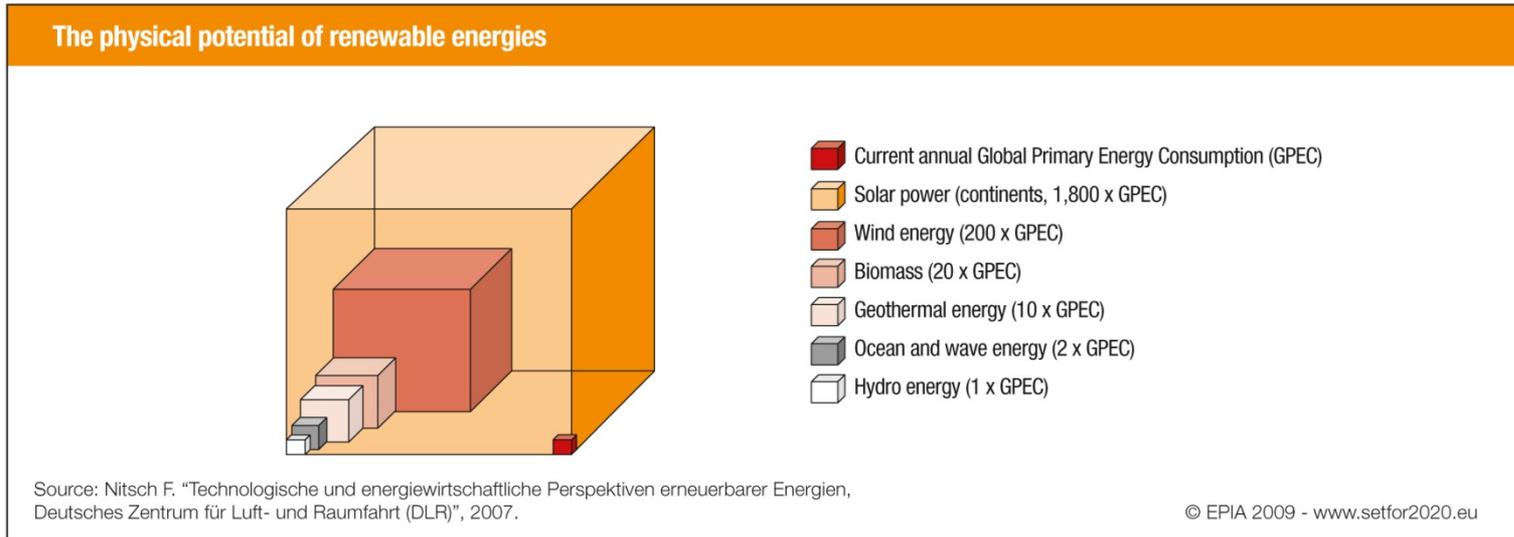
✂ **The more ambitious the deployment, the more profitable the investment.**



## PV POTENTIAL



### ✂ Unlimited power from the sun



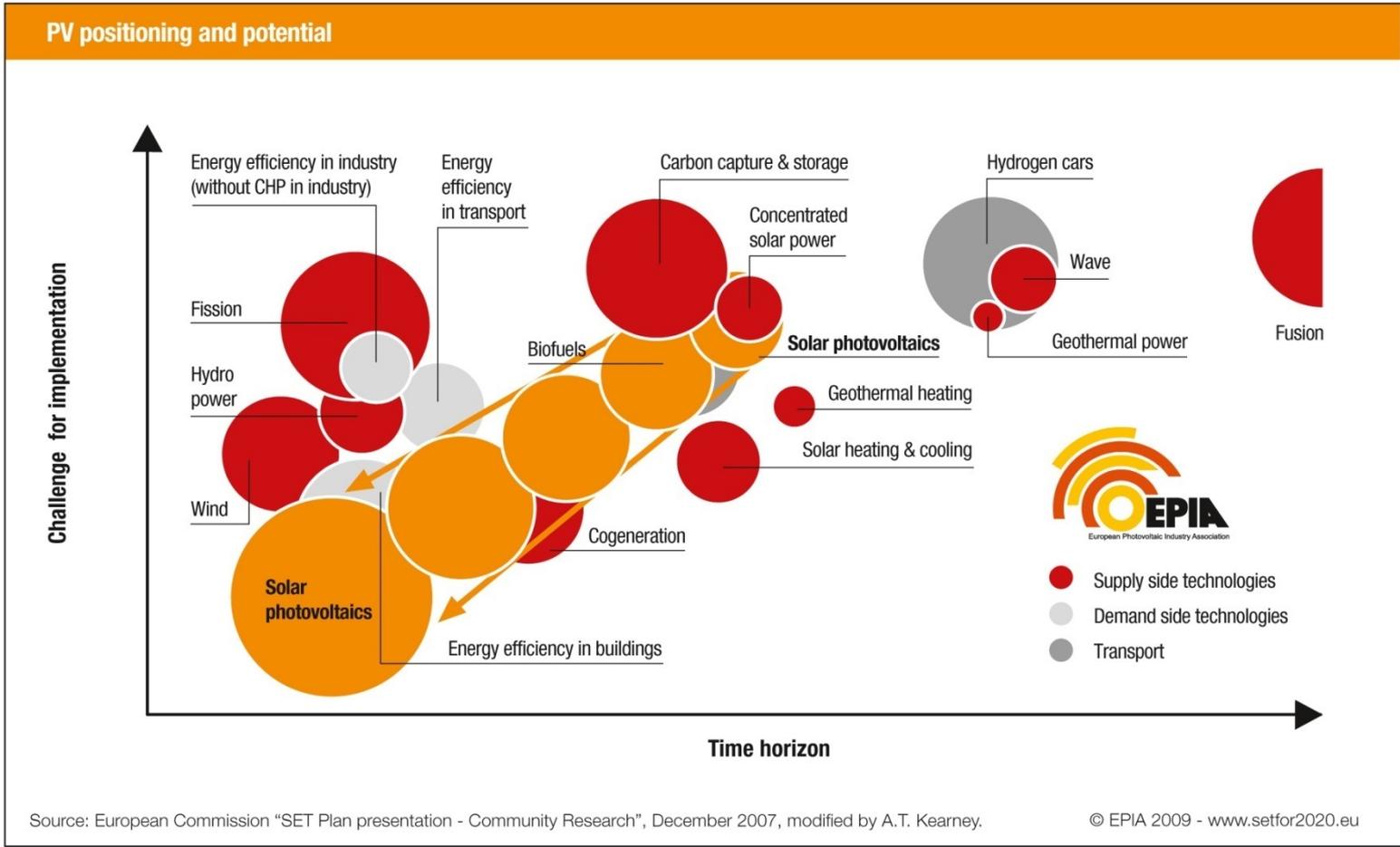
### ✂ Excellent environmental footprint

### ✂ Distributed power generation

### ✂ Seamless integration in highly dense urban environments

### ✂ No material, environmental or industrial limitations

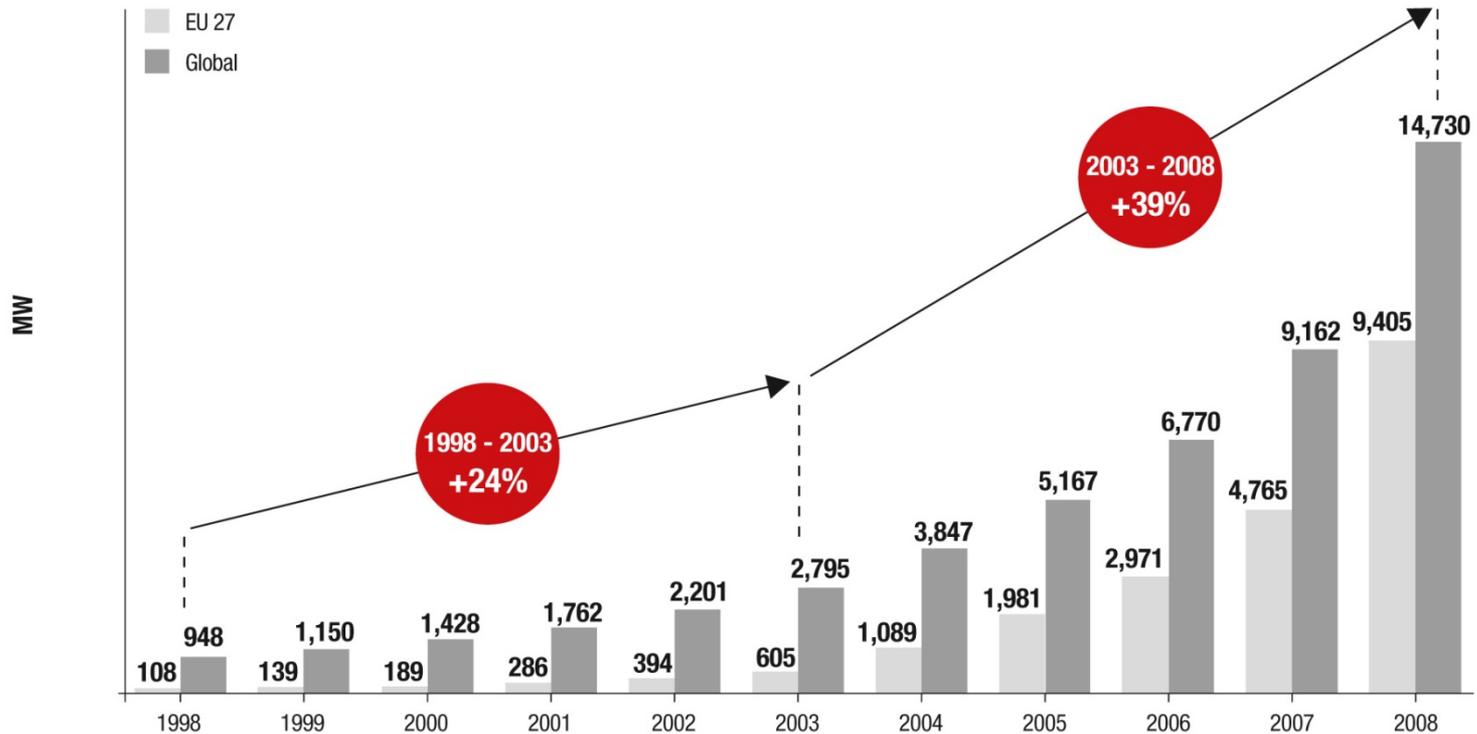
### ✂ Quick ramp up capability



Source: European Commission "SET Plan presentation - Community Research", December 2007, modified by A.T. Kearney.

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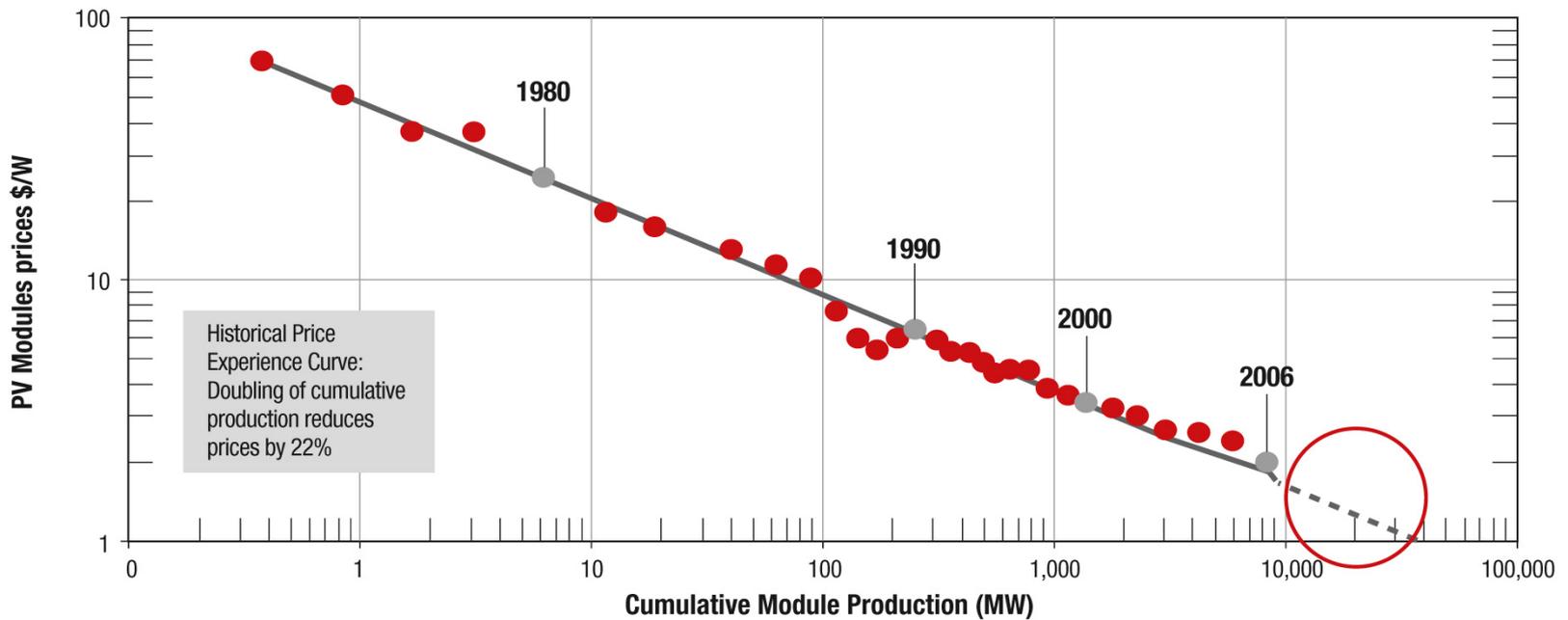
Cumulative installed PV capacity in EU 27 and in the world



Sources: EPIA « Global Market Outlook for Photovoltaics until 2013 », 2009 - A.T. Kearney analysis.

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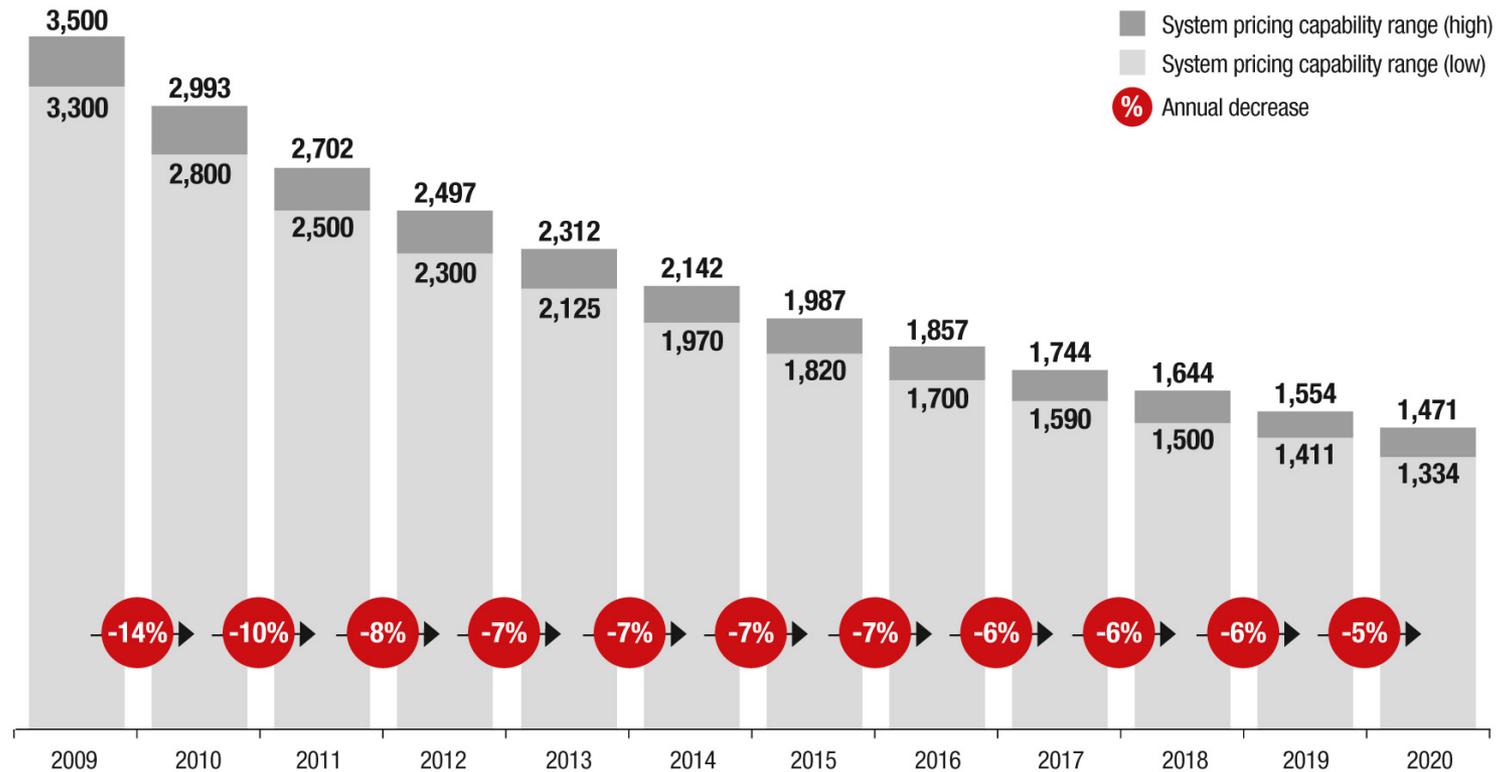
Photovoltaic module price experience curve since 1976 (\$/W)



Sources: EU Joint Research Centre - EIA - National Renewable Energy Laboratory - A.T. Kearney analysis.

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Pricing capability range for larger systems (2008 €/kW)



Sources: National Renewable Energy Laboratory - A.T.Kearney analysis.



## PV COMPETITIVENESS

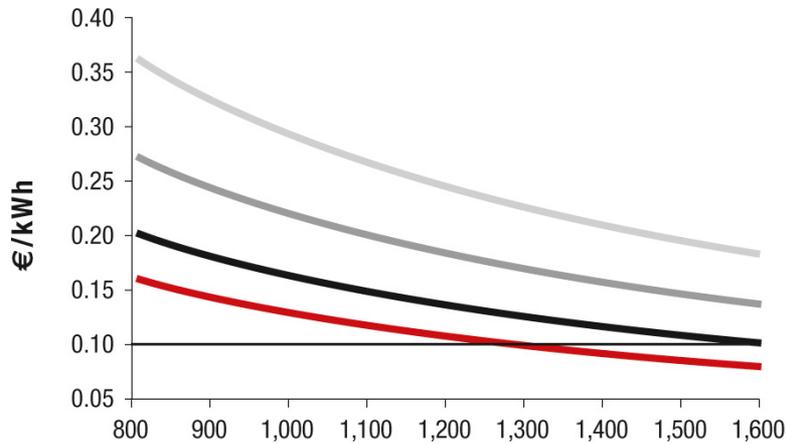


# TARGET COSTS OF BELOW 10 €/KWH OF PV GENERATED ELECTRICITY BY 2020 FOR INDUSTRIAL SYSTEMS AND BELOW 15 €/KWH FOR RESIDENTIAL SYSTEMS CAN BE REACHED

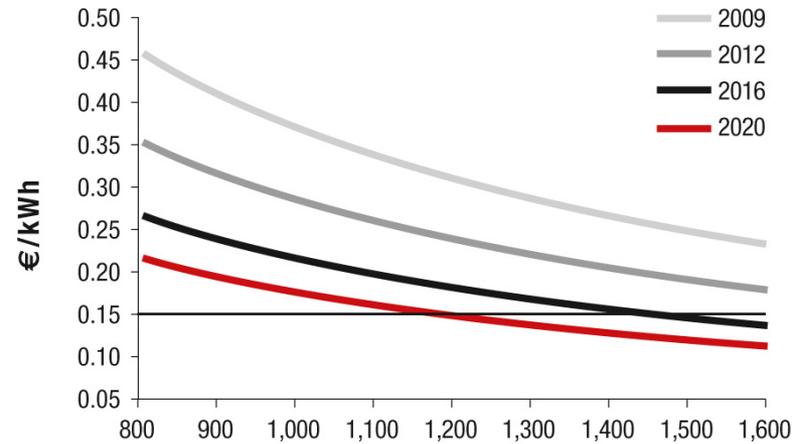
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## Evolution of PV levelised cost of electricity (depending on operating hours)

**Industrial systems**



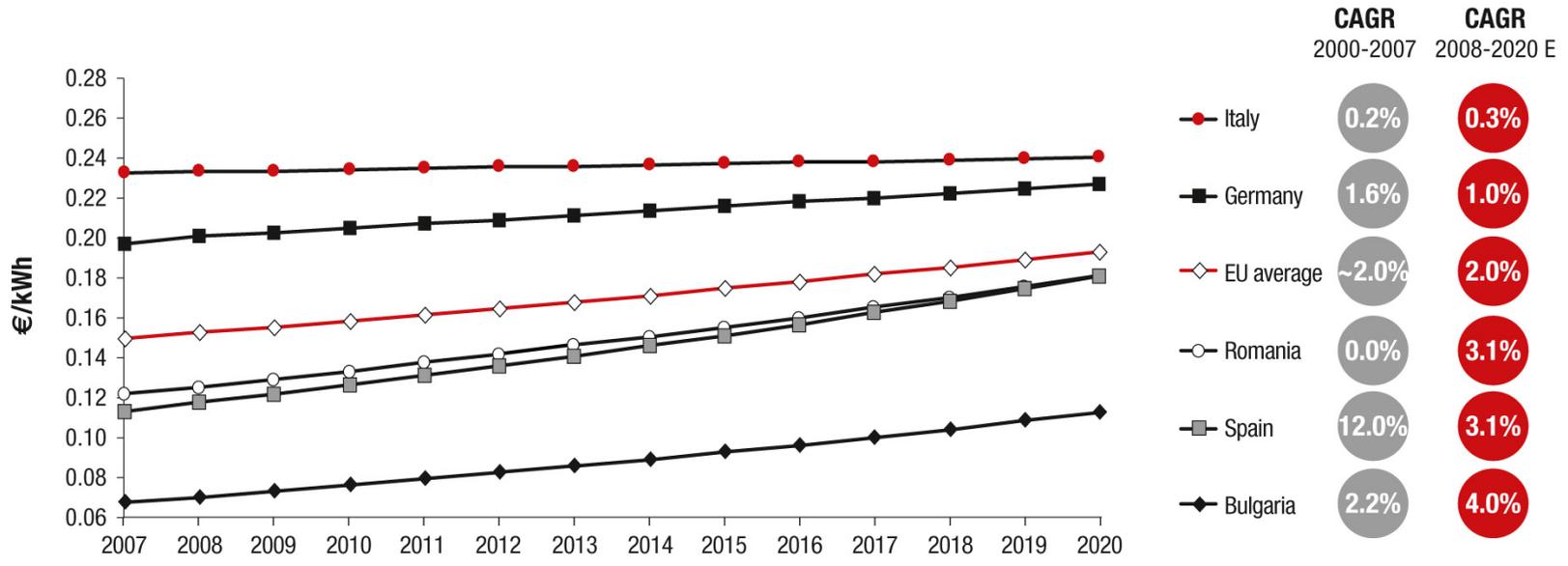
**Residential systems**



Sources: National Renewable Energy Laboratory; A.T. Kearney analysis.

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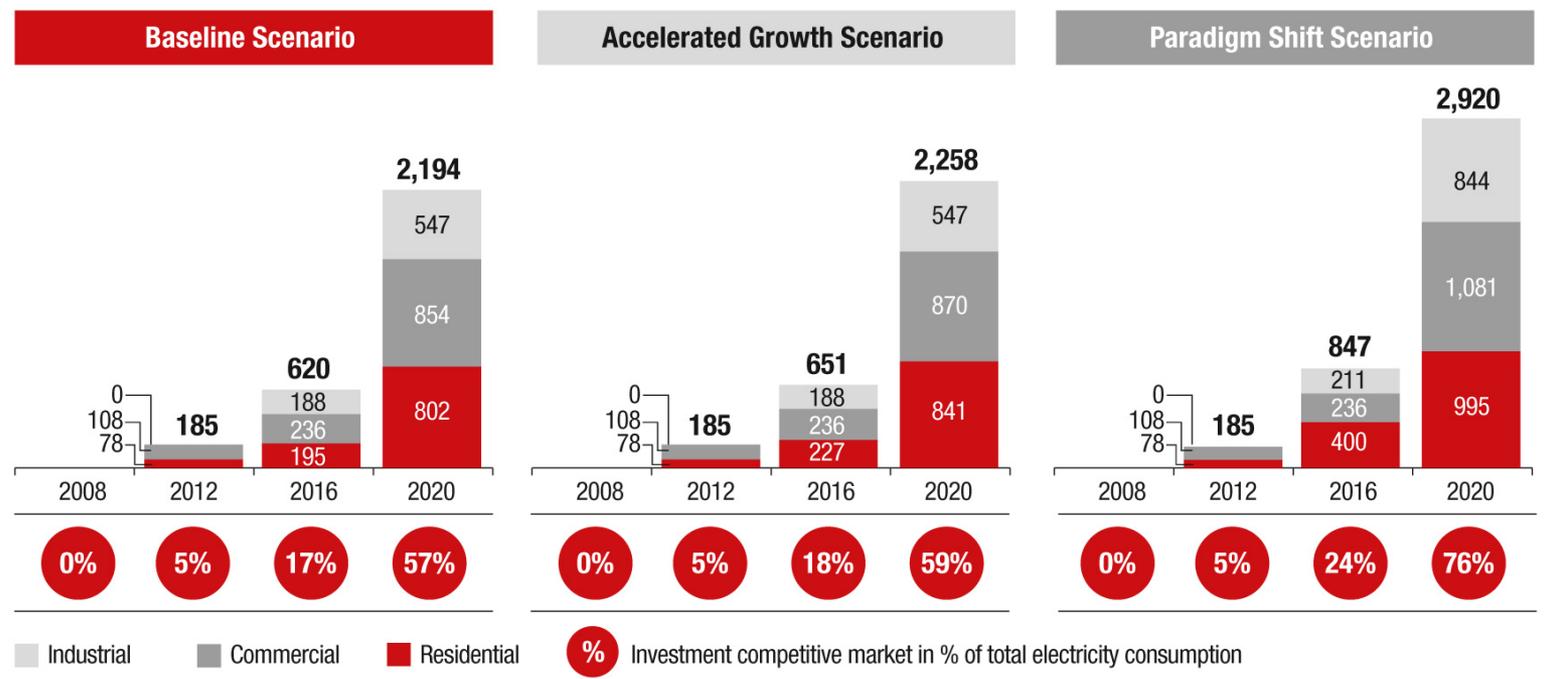
### Forecast evolution of electricity prices in real terms



Sources: Eurostat Data Portal - IEA - A.T. Kearney analysis.

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## Evolution of the investment competitive end-user market for PV (TWh of final energy consumption in Europe)



Sources: Eurostat Data Portal - EU Joint Research Centre Photovoltaic GIS - Interviews - A.T. Kearney analysis.

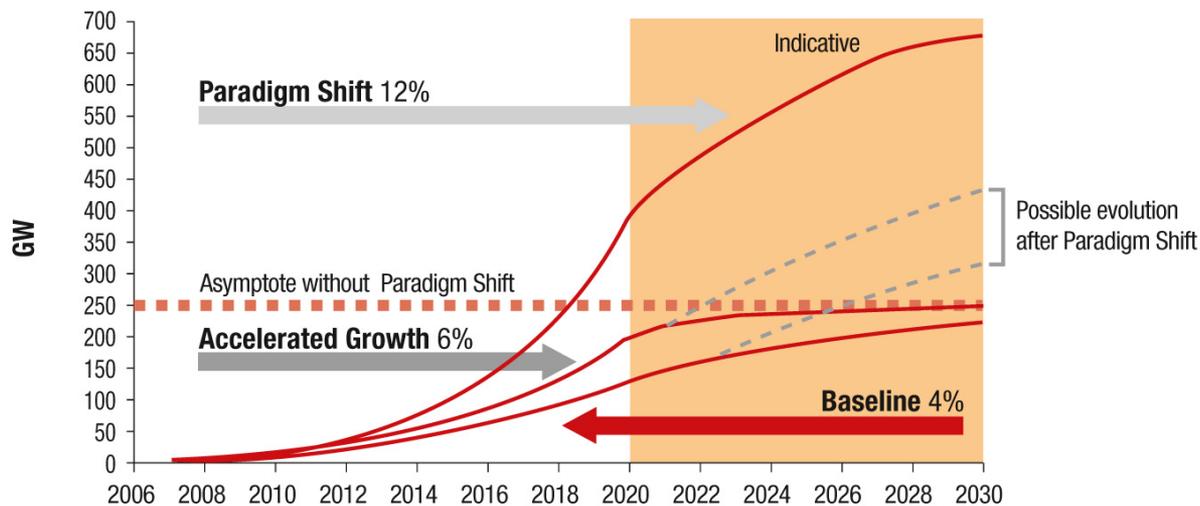


## THE 12% PARADIGM SHIFT SCENARIO



# PV CAN CONTRIBUTE AS MUCH AS 12% OF EU ELECTRICITY DEMAND BY 2020

## PV deployment Scenarios in Europe 27, Norway and Turkey



**Paradigm Shift Scenario**  
12% of electricity demand by 2020

**Accelerated Growth Scenario**  
6% of electricity demand by 2020

**Baseline Scenario**  
4% of electricity demand by 2020

Sources: EPIA - EU DG TREN "European Energy and Transport: trends to 2030, update 2007" - Eurostat Data Portal - EU Joint Research Centre Photovoltaic Geographical Information System - A.T. Kearney analysis.

While the PV Industry is **committed to achieve fast cost reductions** that will accelerate competitiveness of PV, achieving 12% penetration will require additional framework conditions:

**3. Temporary policy-driven support environment enabling fast deployment of PV**

- Well designed Support Schemes (FITs)
- Removal of administrative and regulatory barriers to PV deployment

**4. Electrical System to accommodate high penetration of intermittent RES such as PV**

- Flexibility in electricity generation portfolio
- Smart grids, allowing demand-side management
- Time-of-use billing, net metering
- Distributed storage
- Virtual Power Plants



## BENEFITS TO SOCIETY



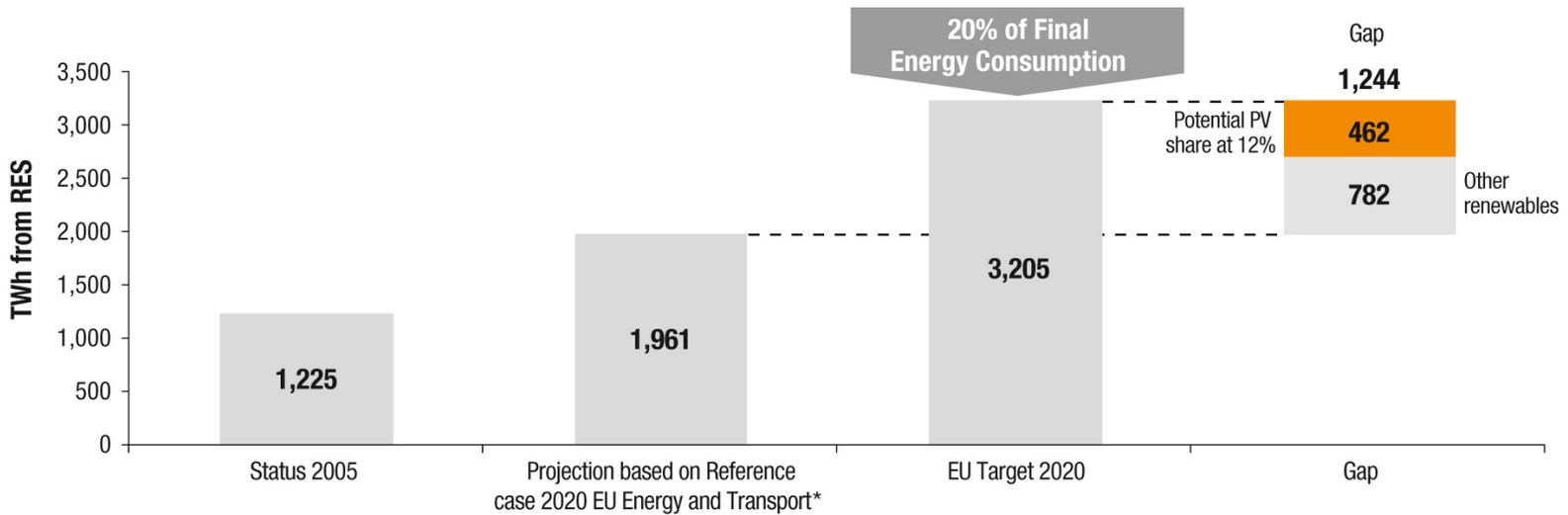


## BENEFITS TO SOCIETY

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- ✂ **Global Climate Change**
- ✂ **Energy Security of Supply**
- ✂ **EU Sustainability objectives**
- ✂ **Economic competitiveness**
- ✂ **Net positive economic return to EU Society**

### PV EU 27 policy target for total final energy consumption vs. likely RES Scenario

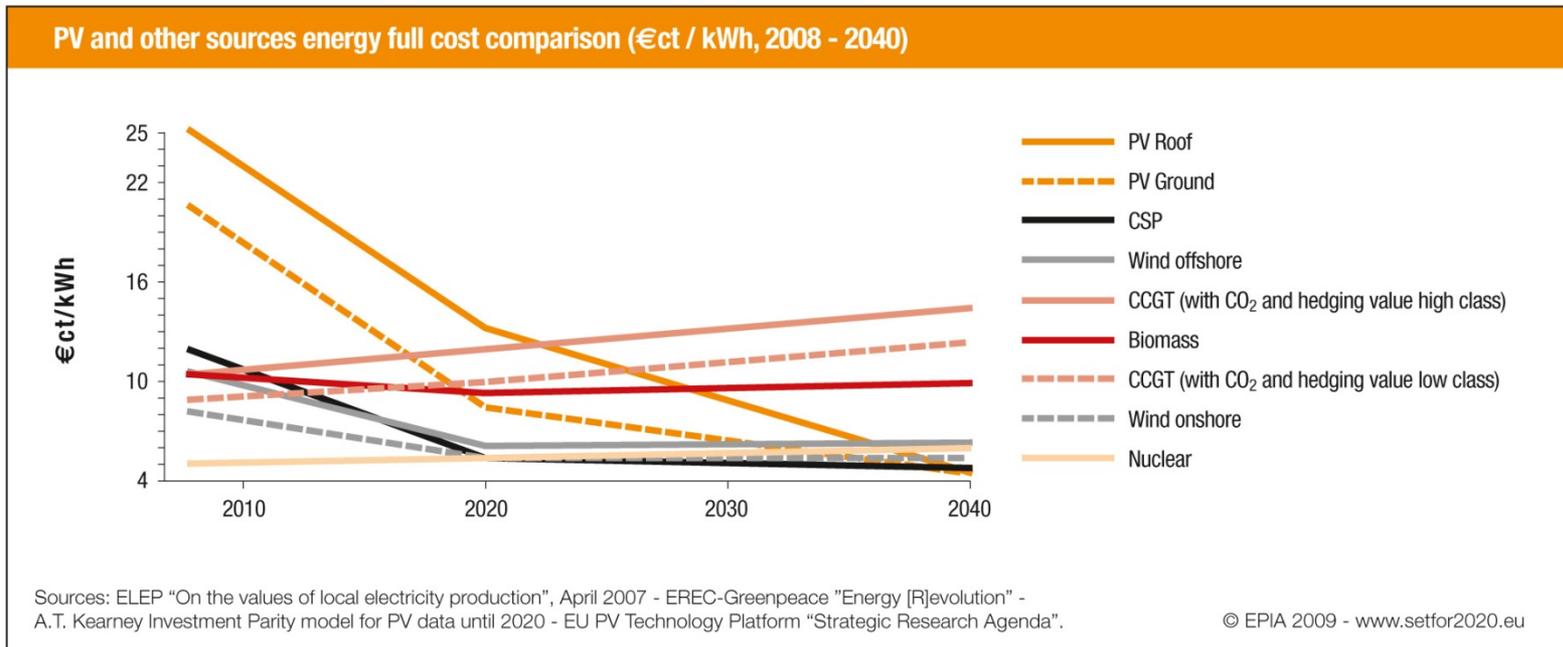


\* These projections include 75 TWh or "Solar and other RES" which make up a portion of the overall PV share.

Sources: EREC "Renewable Energy Technology Roadmap" - EU DG TREN "European Energy and Transport: trends to 2030, update 2007".

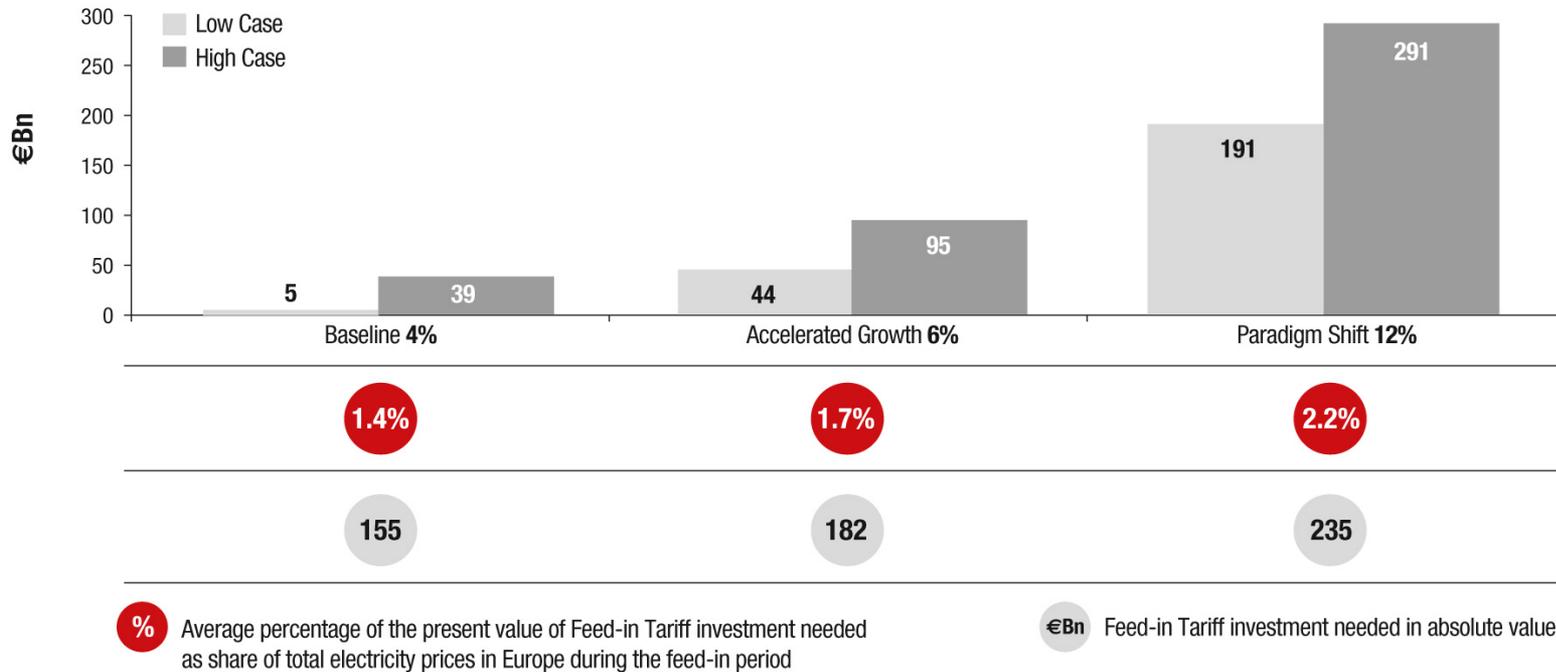
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- Long term energy competitiveness



- Consolidating European technology leadership
- Developing a sustainable Industry with huge job creation

## Indicative net present benefit from PV deployment





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**THE COURSE OF THE SOLAR AGE IS BEING SET TODAY**





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**FOR MORE INFORMATION**

[WWW.SETFOR2020.EU](http://WWW.SETFOR2020.EU)

[WWW.EPIA.ORG](http://WWW.EPIA.ORG)