

# Status of current EU policy proposals

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- "Climate Change is the greatest environmental challenge of the 21st century" – Tony Blair
- Besides **climate change - security of supply and economic competitiveness** constitute the three main challenges in the energy sector
- "**Carbon pricing** alone will not be sufficient to reduce emissions on the scale and pace required ... **deployment incentives** for low emission technologies should increase two to five times ... **public energy R&D funding** should double" – Stern Review
- An **active innovation policy** in the energy sector can become one of the most important pillars for fulfilling the Lisbon objective

# Renewable energy sources (RES)...

- *reduce CO<sub>2</sub> emissions*
- **decrease import dependency by diversifying sources of production**
- **create competitive industries with lead market potential.**

Recent policy developments in Europe ...

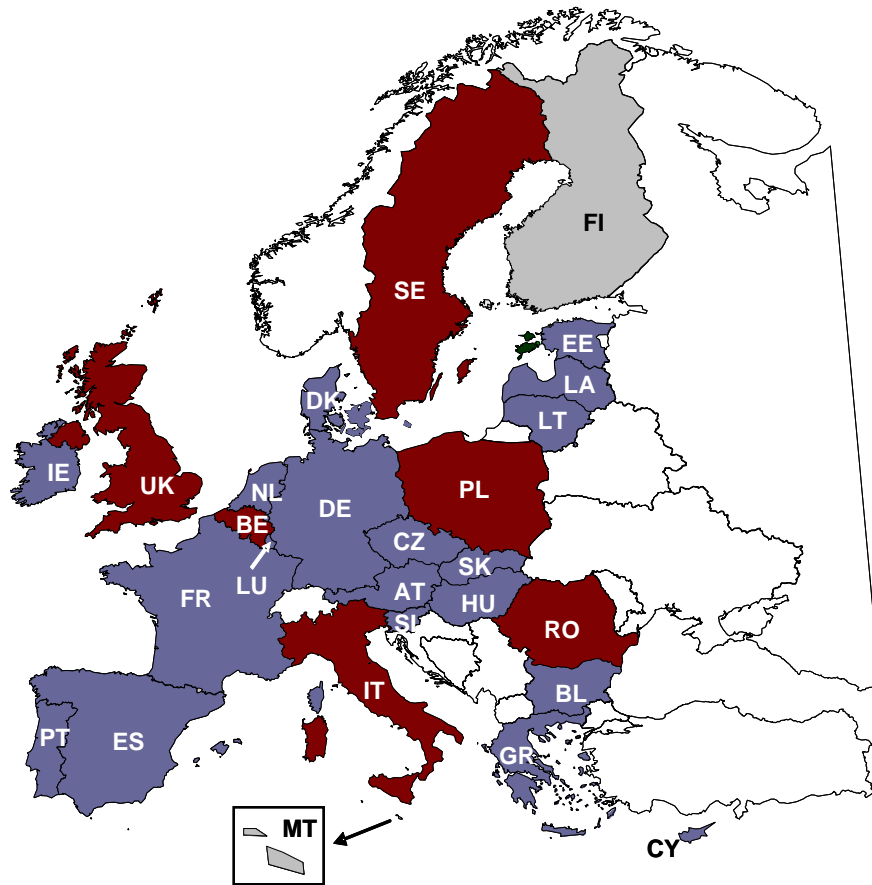
- 7 December 2005 & 23 January 2008 The Commission publishes evaluation of support schemes "**The support of electricity from renewable energy sources**"
- 10 January 2007 ... The Commission publishes the **Renewable Energy Road Map** (COM (2006) 848 final)
- 9 March 2007 ... The Council of the European Union agrees ...  
→ to increase **RES-share in EU energy mix** up to **20% by 2020**  
→ on **binding overall RES target for each Member State**  
→ **National targets** covering the *whole energy sector*.  
→ Minimum **10% biofuels** in each Member State.
- 23 January 2008 ... The Commission publishes the **Proposal of the new RES directive** ...  
*... the overall 20% target for RES was broken down into national RES targets for 2020 ...*

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# Main policy instruments used in EU Member States and their past success

# Dominating support schemes for RES-E in the EU



- Feed-in tariff system
- Quota obligation with Tradable Green Certificates (TGC)
- Tax incentives / Investment grants

19 EU countries use feed-in tariffs as main instrument

6 countries have implemented a quota obligation with TGCs



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## COMMISSION STAFF WORKING DOCUMENT

### **The support of electricity from renewable energy sources**

*"This report presents an updated review of the performance of support schemes using the same indicators presented in the 2005 report. It finds that, as in 2005, well-adapted feed in tariff regimes are generally the most efficient and effective support schemes for promoting renewable electricity."*

Indicator used: **absolute growth of normalised generation as ratio of the additional potential**

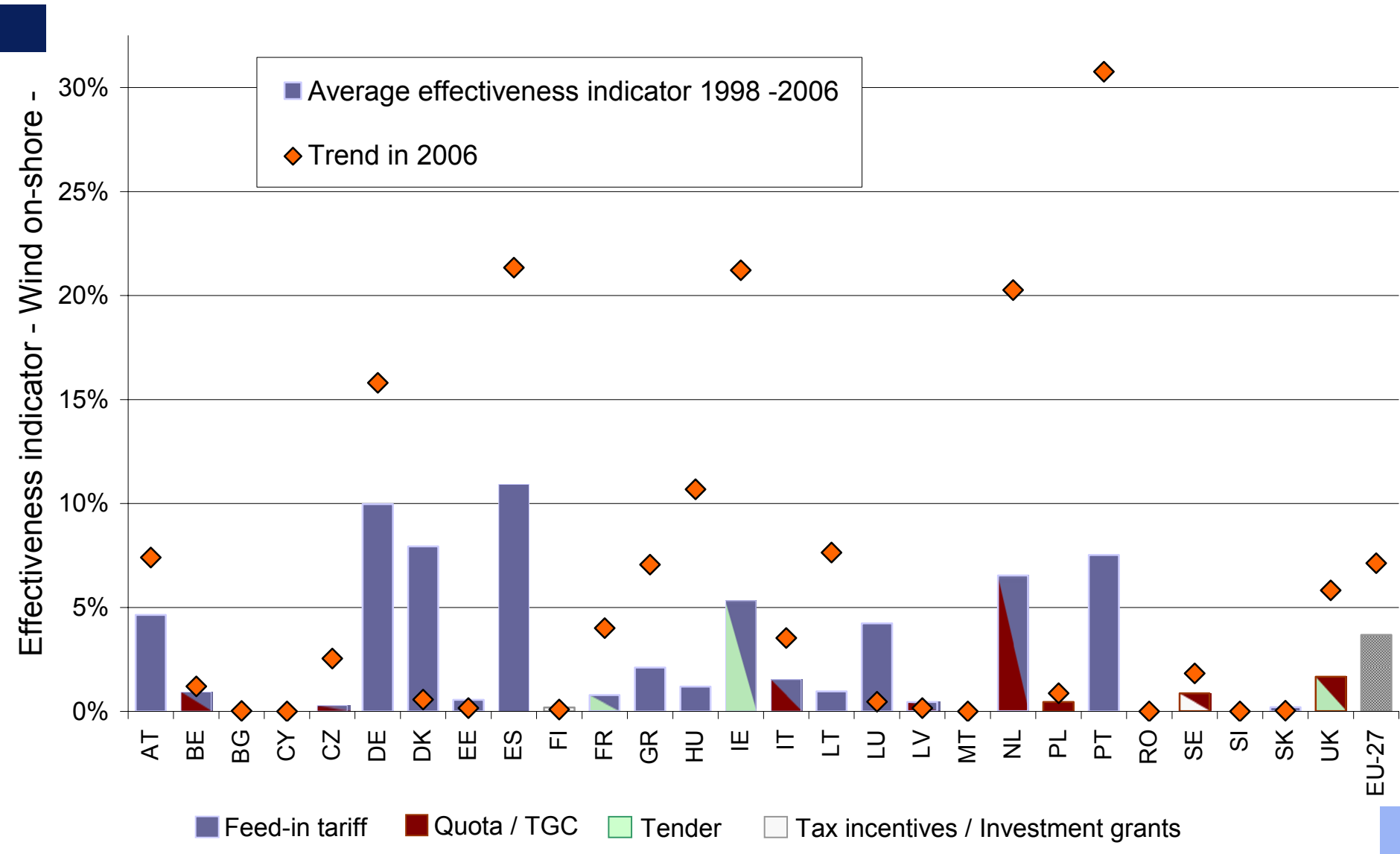
$$E_n^i = \frac{G_n^i - G_{n-1}^i}{\text{ADD} - \text{POT}_n^i}$$

$E_n^i$  Effectiveness indicator for RES technology  $i$  for the year  $n$

$G_n^i$  Existing electricity generation potential by RES technology  $i$  in year  $n$

$\text{ADD} - \text{POT}_n^i$  Additional generation potential of RES technology  $i$  in year  $n$  until 2020

# Effectiveness for wind on-shore in the period 1998-2006 in EU-27



# Support level and country specific costs

## 1. Long run marginal costs of different technologies based on

$$C = C_{VARIABLE} + \frac{C_{FIX}}{q_{el}} = \left( C_{FUEL} + \frac{C_{O\&M}}{H} * 1000 \right) + \frac{1000 * I * CRF}{H}$$

$$CRF = \frac{z * (1 + z)^{PT}}{[(1 + z)^{PT} - 1]}$$

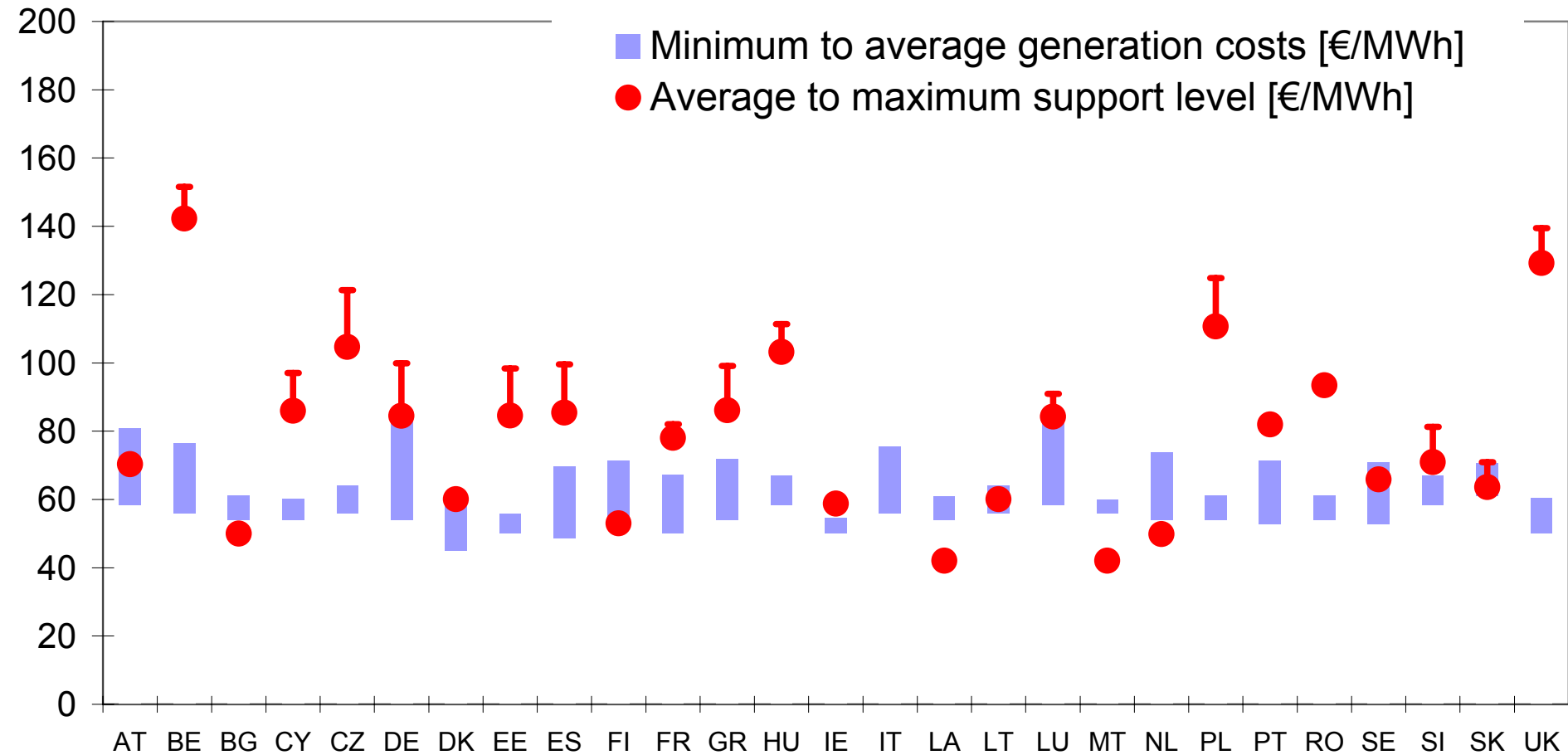
PT: payback time - 15 years

Z: interest rate - 6.5%

H: Full load hours

## 2. Support level in different countries – levelised to a uniform duration of the instrument given by the lifetime

# Support level vs. costs for wind on-shore in the EU



***Future evolution of RES in the EU***  
***- MS potentials and targets -***

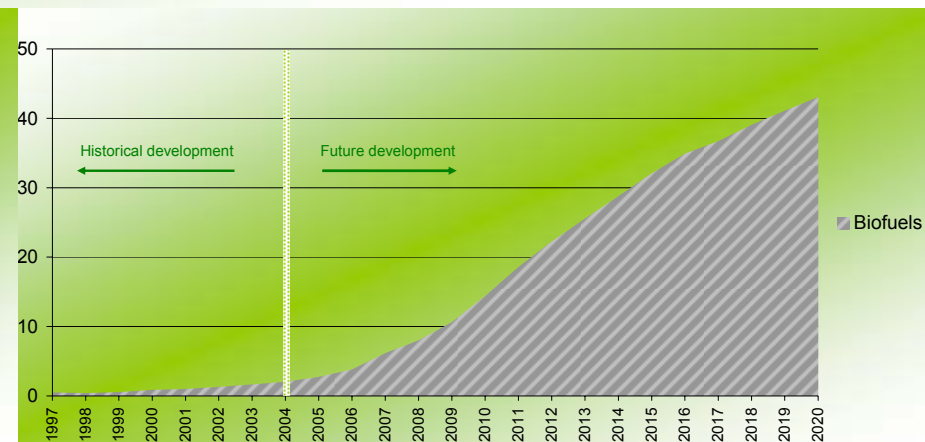
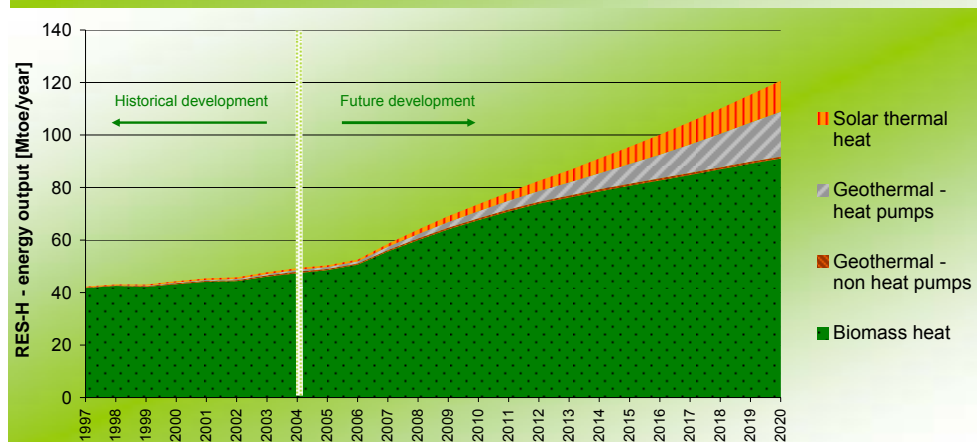
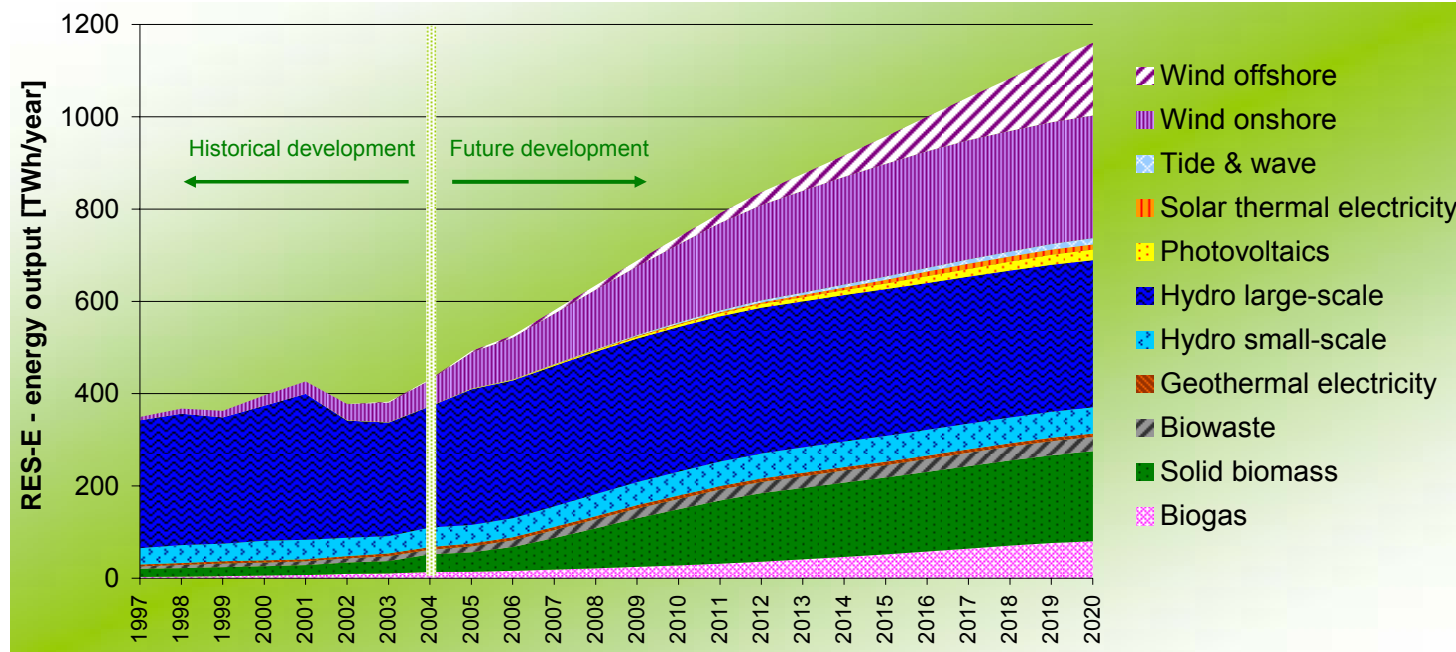
# Future perspectives: a scenario on how to meet the challenge

## Green-X balanced scenario

## Renewable Energy Roadmap

(European Commission, January 2007)  
European Union

**20% Renewable Energies by 2020**



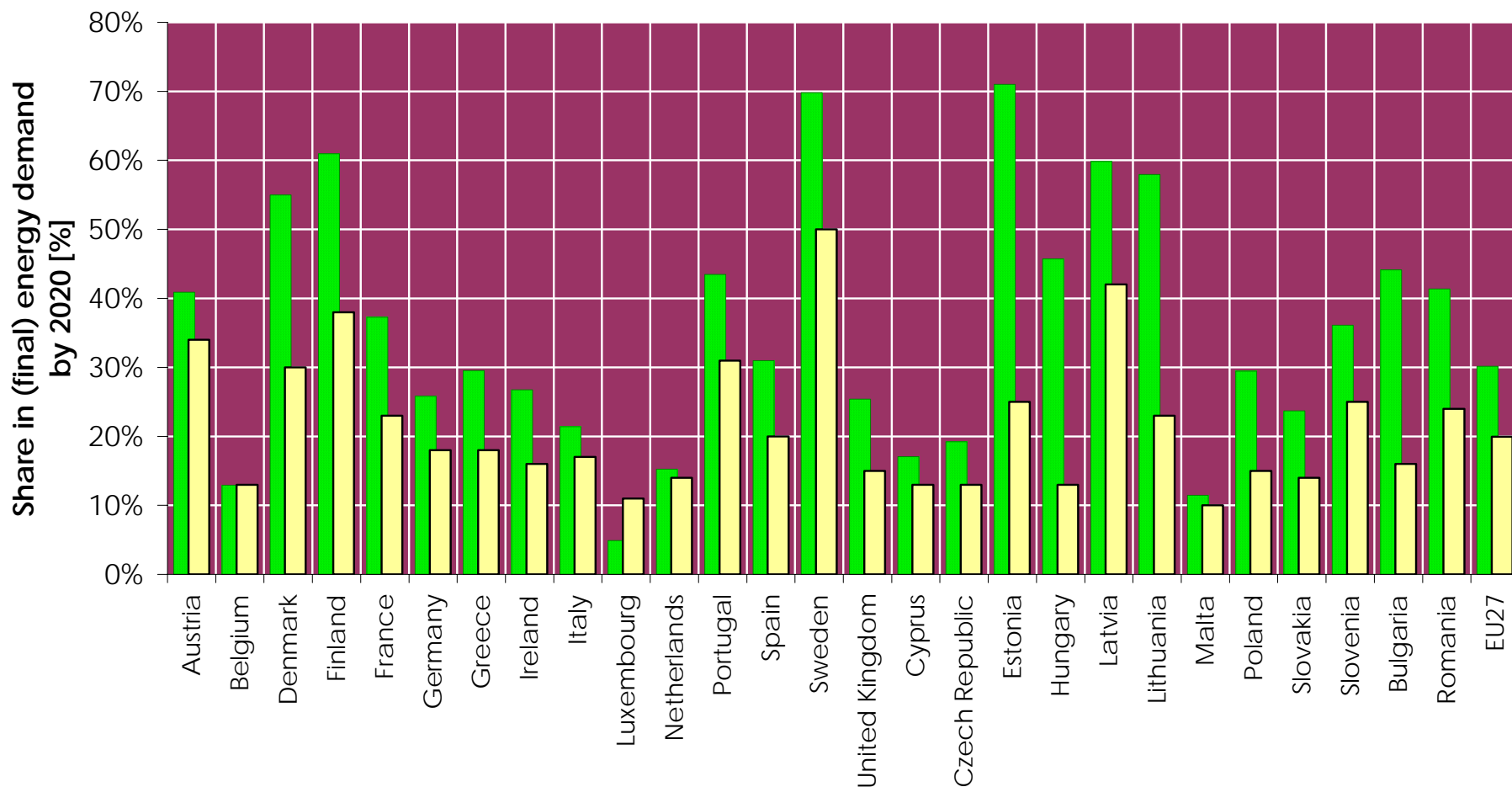
# National RES targets for 2020 - the proposed definition

20% RES by 2020

- proposed national RES targets

■ Total realisable RES potential up to 2020

■ Proposed RES targets for 2020



How the European Commission set the targets ... „FLAT RATE“ & „GDP-Variation“

... i.e.:  $RES\text{-target}_{2020} = RES_{2005\%} + 50\% * RES_{NEW\%} + 50\% * "RES_{NEW\%} GDP\text{-weighting}" - "first mover bonus"$

***Flexibility elements of the new  
proposal for a RES directive  
- Discussion on GO trade -***

In order to give MS a maximum of flexibility for reaching their targets different options for trade of guarantees of origin are foreseen

### Main Challenges:

- ▶ National governments need national targets and action plans to deliver necessary regime for planning, grid access, balancing and congestion management
- ▶ Investment risk to be minimised in a potentially complex policy environment
- ▶ One support price creates potentially large windfall profits and fails to support technology portfolio

### *Rationale for flexibility between Member States*

- ▶ Renewable energy potentials are distributed unevenly across Europe.
  - ▶ A trading option could help MS with low RE potential to achieve their targets at lower societal cost (**depending on the trade design**).
  - ▶ Potentially, this could lead to lower overall costs for reaching the European 2020 targets (up to 8 bn €/a according to Directive impact assessment).
  - ▶ Using standardised GOs for trade and disclosure may avoid double counting and double selling of RE.

### Implementation of GO trade in the Directive proposal

- ▶ Directive aims to open the opportunity for both private party trade as well as MS trade
- ▶ The default option is private participant trade according to art. 8.1 (b), 8.2 and 9.3
- ▶ MS may restrict private participant trade using "prior authorisation" based on art. 9.2 - it is however unclear, whether such restrictions will be effectively possible under EU law
- ▶ Trade between MS is possible based on art. 8.1 (a) and 9.1 - only between MS, which have reached their interim targets

### Provisions to restrict private party GO trade in the Directive proposal:

Member States can **restrict transfers** (inbound or outbound) on the grounds of "**secure and balanced energy supply**" or to protect "**the environmental objectives of their support scheme**"; they can also restrict outbound transfers to ensure that they can meet the indicative trajectory and achieve their target; (*Art. 9(2)*)

### Case study of Unrestricted GO-trade by private parties

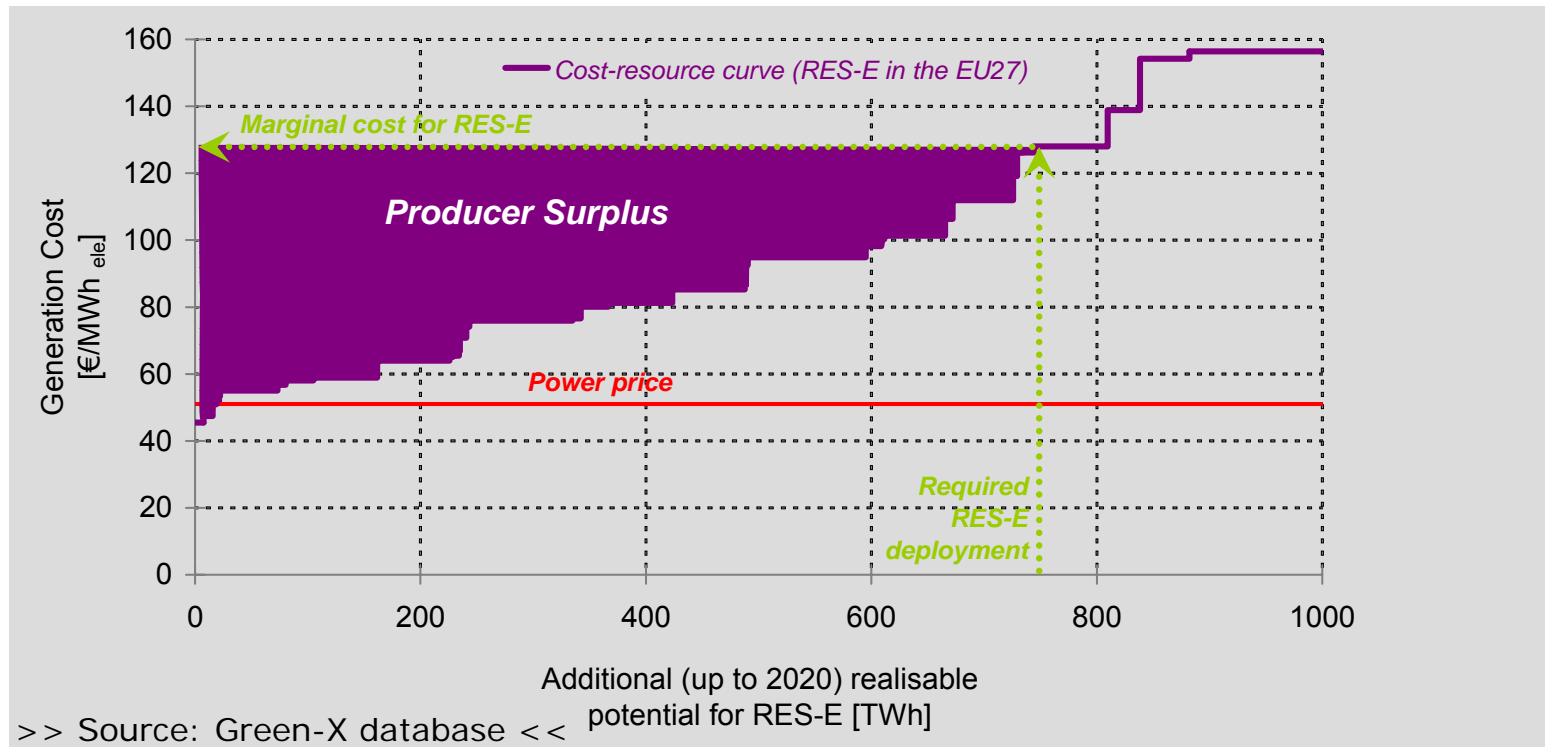
Critical issues of GO trade are discussed for the case of unrestricted trade by private parties, i.e. in the case that Member States are not able to effectively restrict trade

- ▶ RES-E producers can choose to sell their RES-E domestically or to governments and utilities in other MS
  - ▶ RES-E producers can participate in the support scheme of another MS, if they have not received support in their own country
- ▶ No further specification

*Note: This is the most extreme case; alternative trade designs may limit critical effects.*

# Proposed RES directive: flexibility based on GO trade

## Case study of Unrestricted GO-trade by private parties

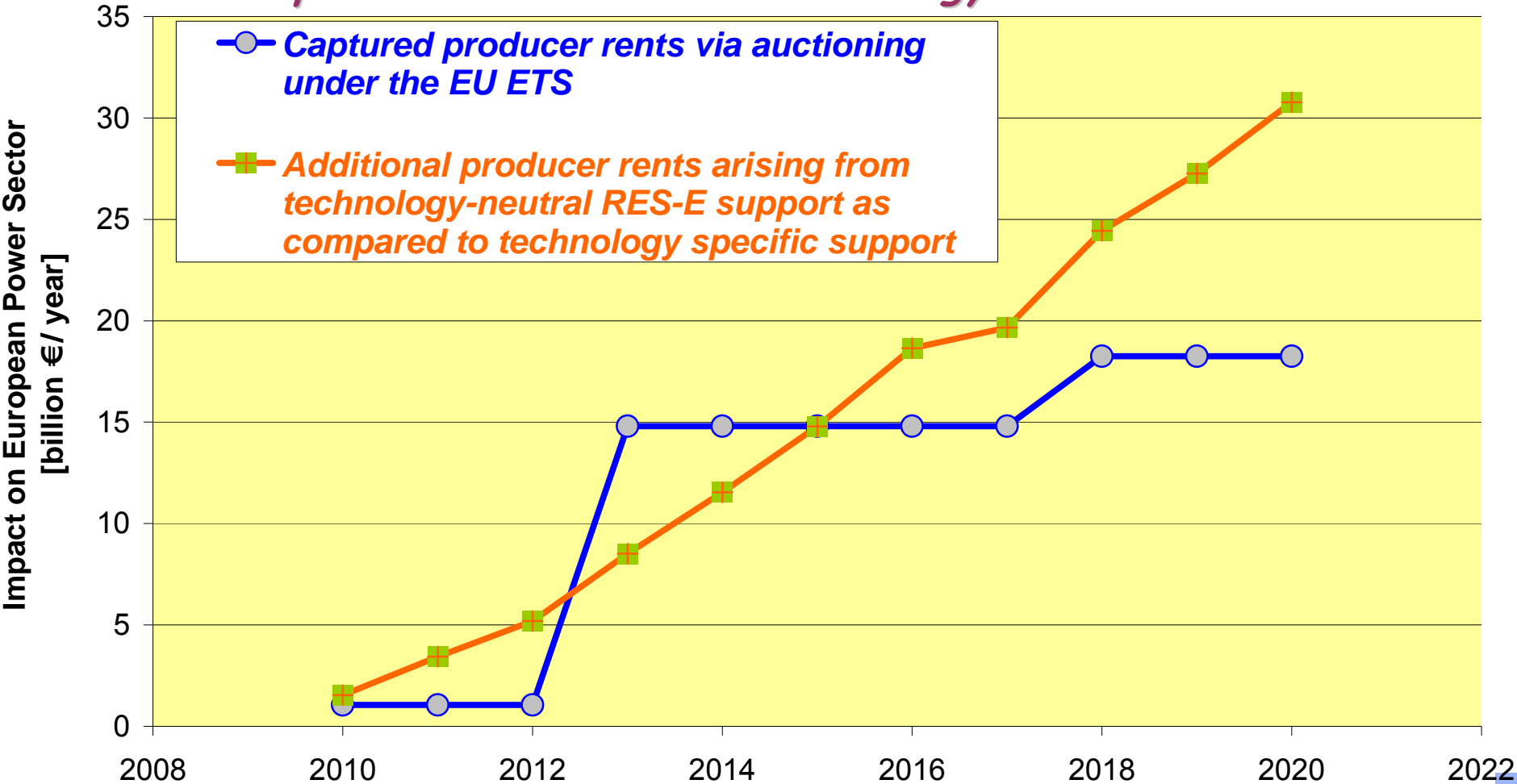


► A uniform European GO price for all RES-E would be set by the marginal price of the most expensive technology sold.

→ high producer surplus („windfall profits”)  
for low cost RES-E options

## Proposed RES directive: flexibility based on GO trade

*Comparison of captured producer rents via auctioning in EU ETS with increased producer rents due to technology neutral GO trade*



**High public transfer cost may arise (high consumer expenditures)**

### Overall economic efficiency: quantitative figures

+: higher cost-effectiveness from the static viewpoint with regard to generation cost ... static least cost allocation of RES-E potentials all over Europe!

*[2020: -3 ... 8 billion € (EU27)]*

-: decreased dynamic efficiency!

... delayed deployment of innovative RES-E options

*→ only at higher cost applicable when needed in the long-run!*

-: decreased efficiency with regard to public cost (i.e. transfer cost for consumer) ... high producer profits may lead to a dramatic increase of consumer expenditures

*[2020: ... up to +30 billion € (EU25)]*

In order to tap potential efficiency gains but avoid large windfall profits flexibility should be implemented between Member States for example by

*Bilateral agreements*

*Project based investments authorised by Member States*

In this case currently functioning national support systems will not be undermined and

national governments have the information to deliver necessary regime for planning, grid access, balancing and congestion management

#### GO-trade at company / private level ...

- **Effective** trade restriction (Import / Export) for private trade are necessary!
- **Technology-specification of support is highly recommended**, but difficult to realise if private trade becomes the default case!

#### In general ...

- **(Unrestricted) private trade = hidden harmonisation!**
  - A public debate on pro's and con's as well as with regard to the choice of support instrument (TGC/GO vs. Premium-FITs) is needed!
- **Remove of non-economic barriers** for an accelerated RE deployment is necessary in order to assure the achieving of the 20% target at low public cost!
- **GO-trade at Member State level is preferential** → offers increased flexibility and contributes to a low cost solution!

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Thank you for your attention

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