



Benefits for Central and Eastern European (CEE) economies from the cooperation mechanisms in the RES-Directive

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Content

- Point of departure: success factors of current national policies
- The Directive proposal: targets and flexibility measures
- Impact of cooperation mechanisms on Central and Eastern European Economies

Renewable energy sources (RES)...

- **reduce CO₂ 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 ...*

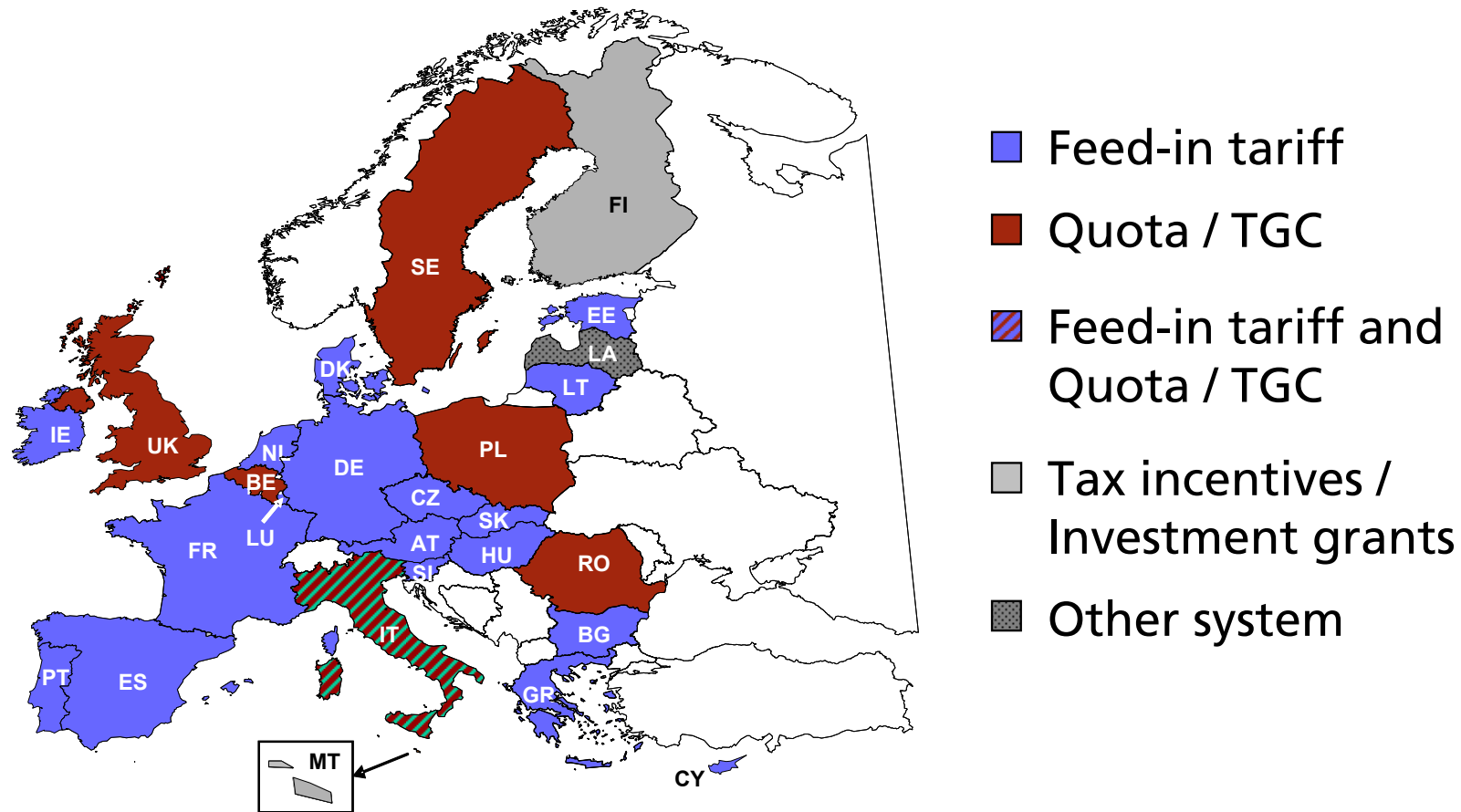


I. Point of departure

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



Dominating support schemes for RES-E in the EU



A clear majority of EU countries uses feed-in tariffs as main instrument
6 countries have implemented a quota obligation with TGCs



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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."

Measuring the effectiveness of RES-E support

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

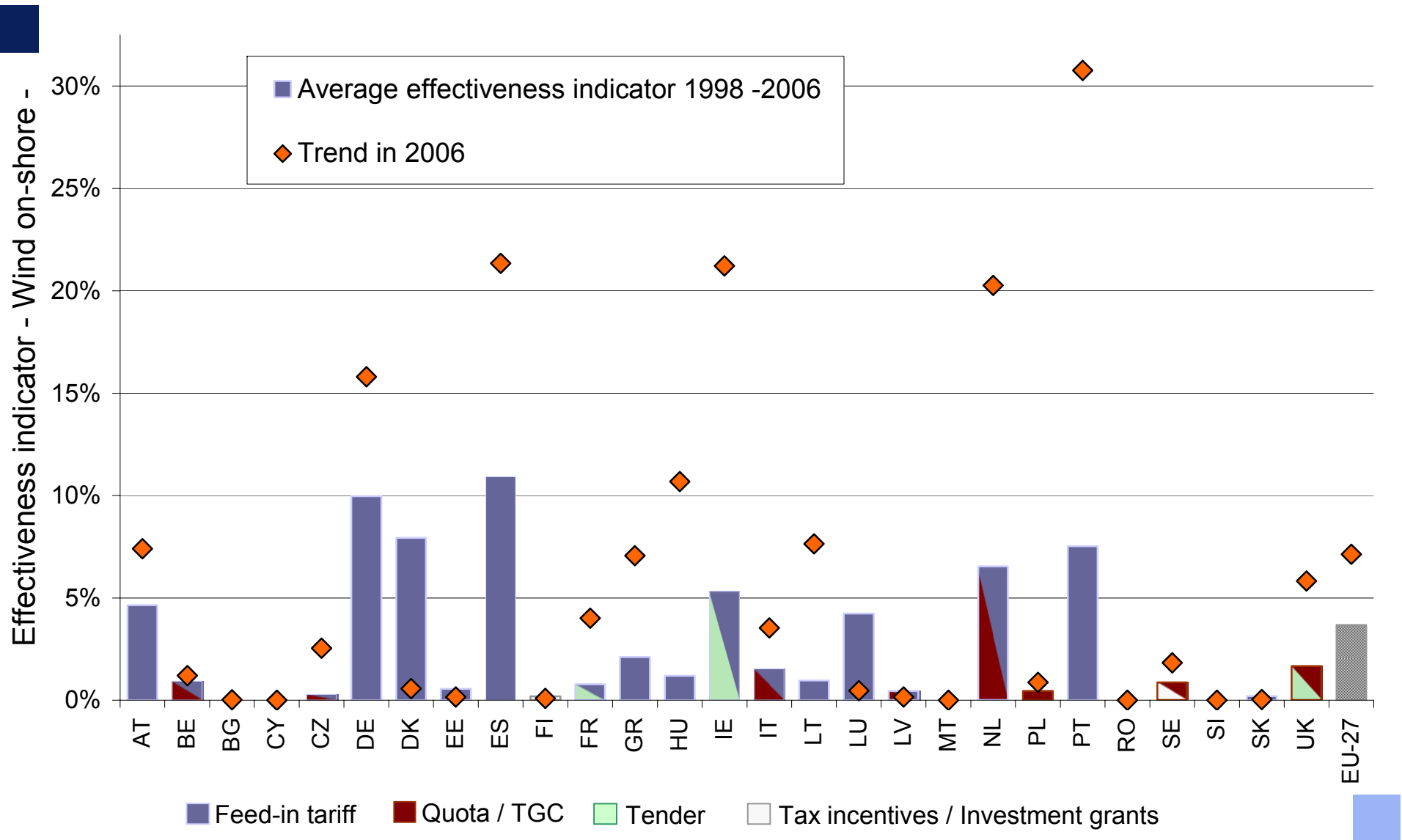
$$E_n^i = \frac{G_n^i - G_{n-1}^i}{ADD - POT_n^i}$$

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

$ADD - POT_n^i$ 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

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

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

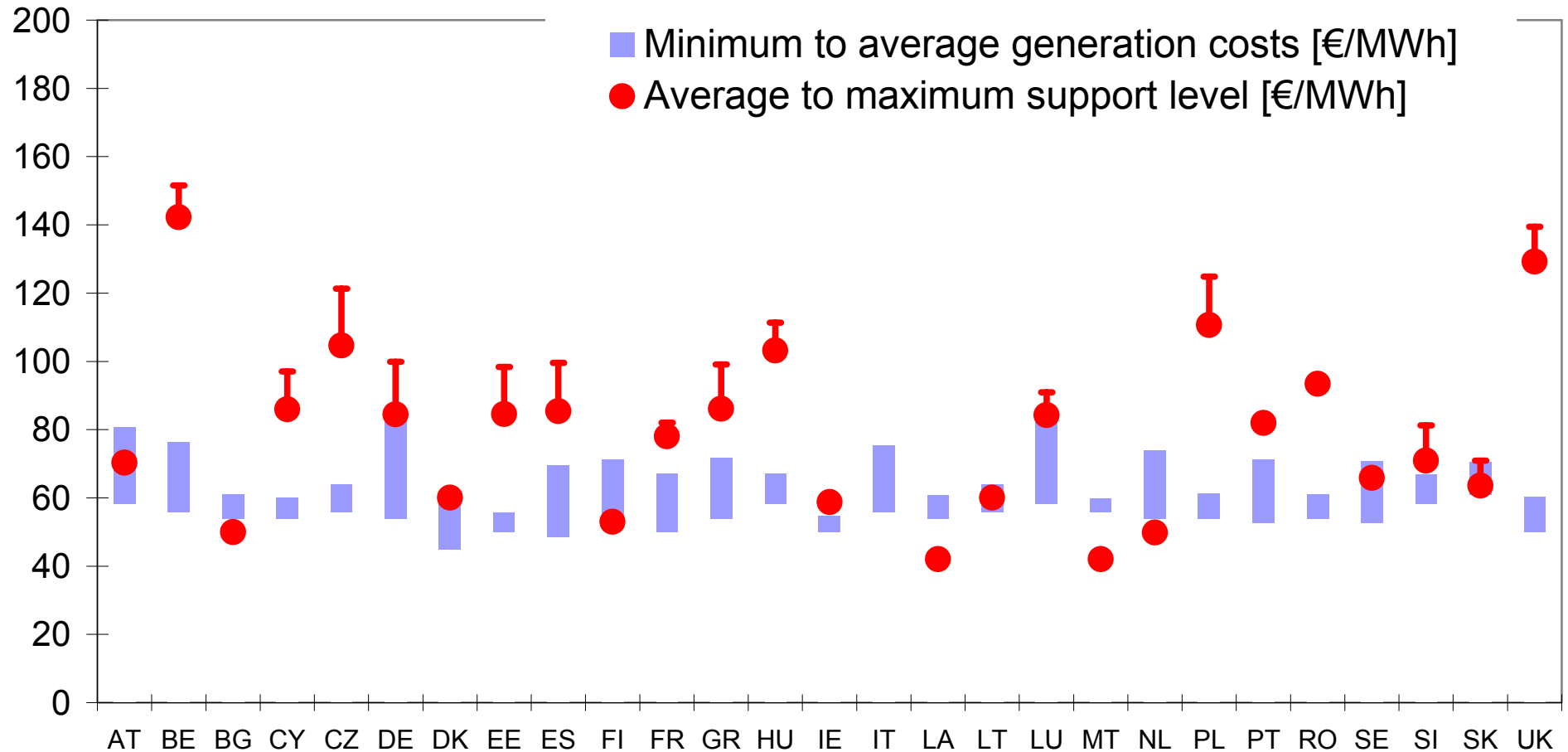
PT: payback time - 15 years

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



Indicators showing effectiveness and efficiency of policies

Central indicators for the political discussion

1. Effectiveness: Unbiased measure for the increase of generation capacity of a technology
2. Annuity of the investment as indicator for the economic efficiency of the support instrument

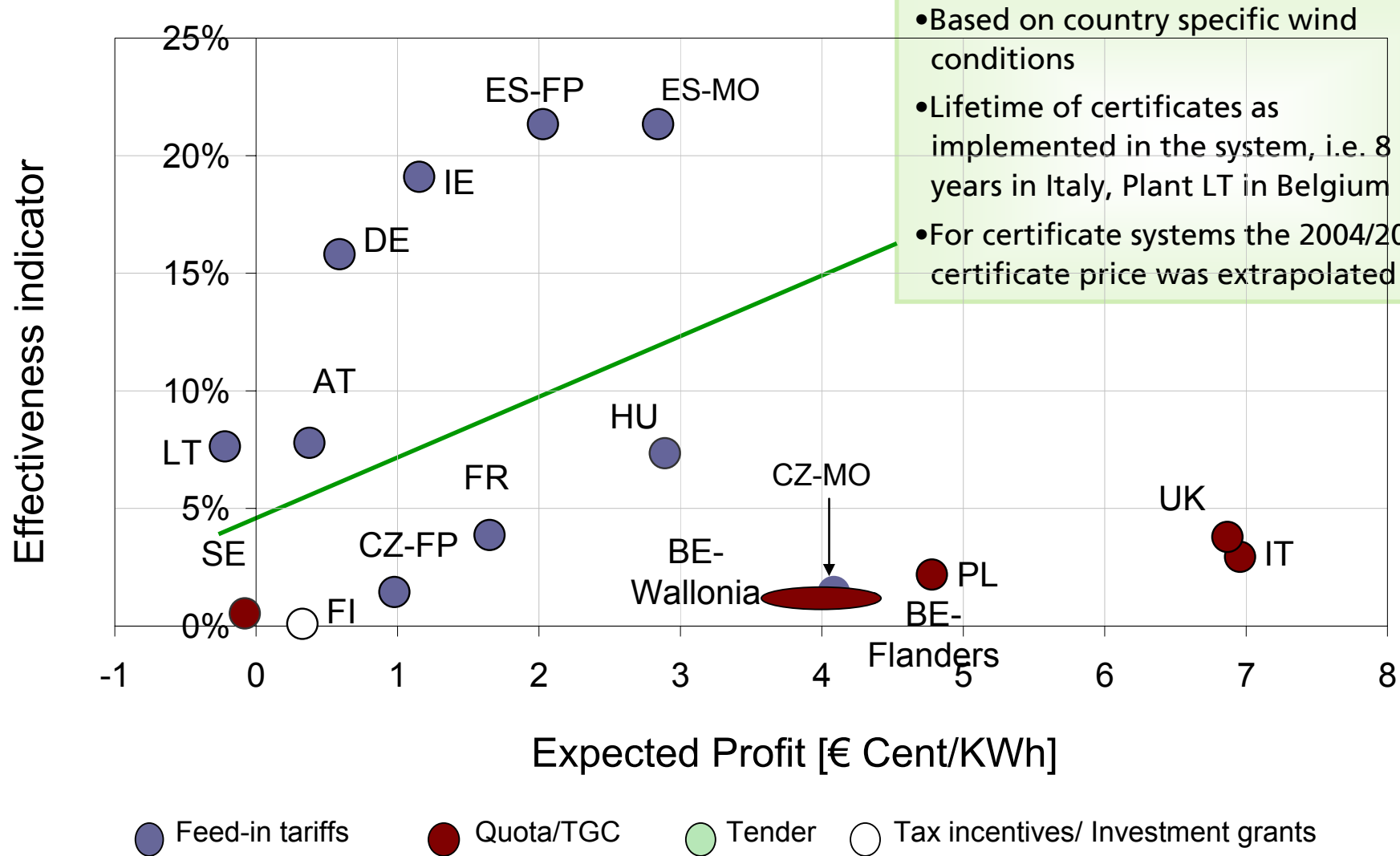
Thereby "annuity of the investment" takes account of:

- the duration of support
- country specific cost-resource conditions
- the interest rate in different countries

$$A = \frac{i}{(1 - (1 + i)^{-n})} * \sum_{t=1}^n \frac{\text{Cash Inflows}_t - \text{Cash Outflows}_t}{(1 + i)^t}$$

A= annuity; i=interest rate; t=year; n=technical lifetime

Correlating the annuity of the investment with the effectiveness indicator



Example of wind onshore in 2006

Efficiency of policy schemes from a consumers viewpoint

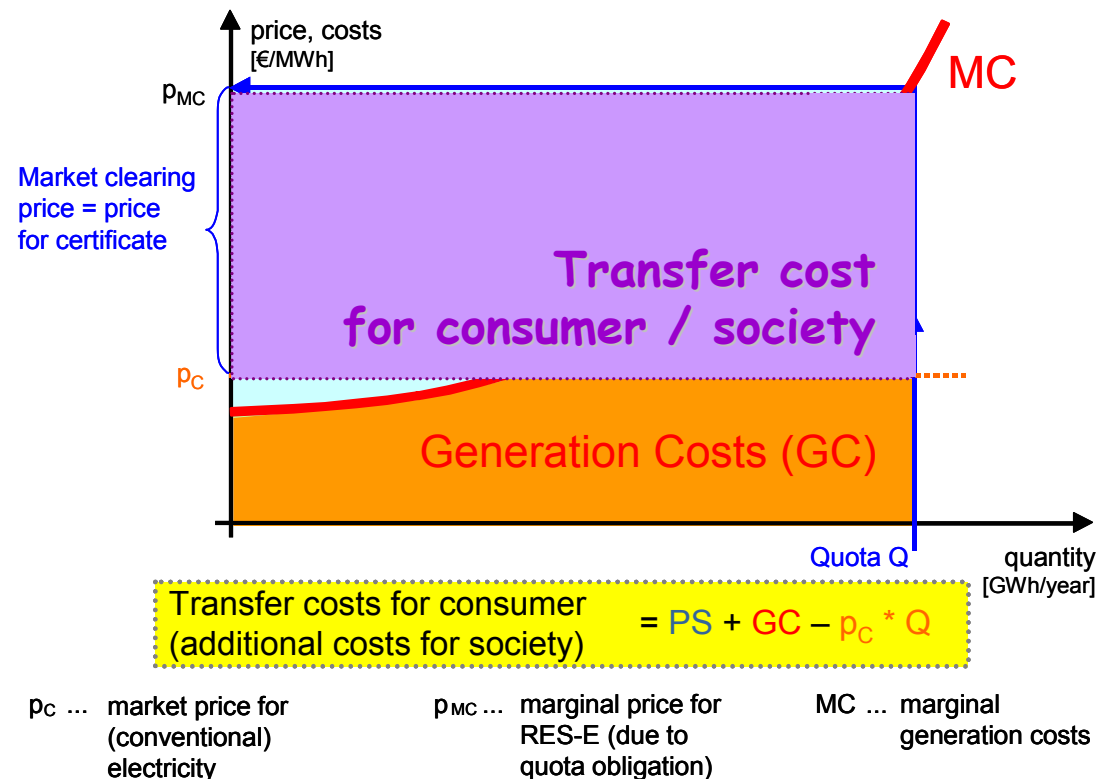
Key criteria for efficient policy instruments

- *Minimise generation costs*
- *Lower producer profits*

Technology specific

Instruments have clear

advantages



General conclusions on past experiences

- Not the **expected profit** but the **potential risk** determines the effectiveness!
- A **stable planning** is important to create a sound investment climate and to lower social costs as a result of lower risk premium.
- **Technology specific instruments** are superior to technology neutral instruments by helping to reduce the policy costs and to support a larger technology portfolio.
- Administrative barriers can have a significant impact on the effectiveness of an instrument.
- **Effective instruments for RES-E support are frequently economically efficient as well!**



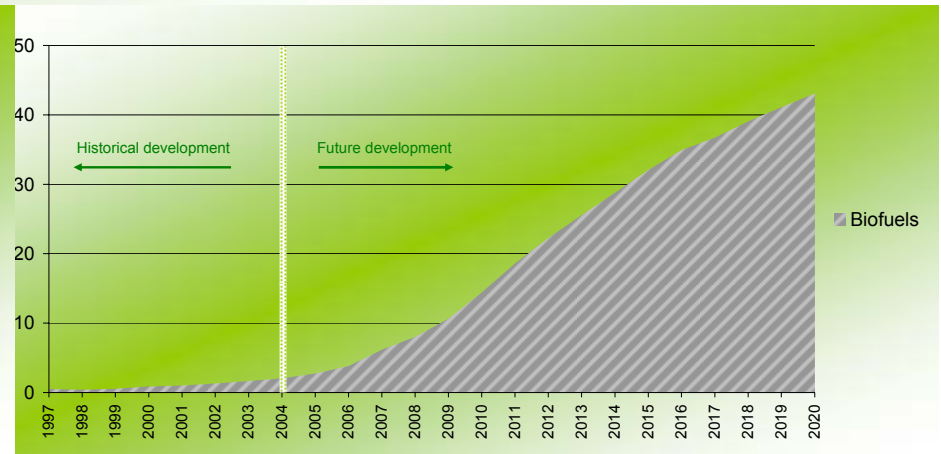
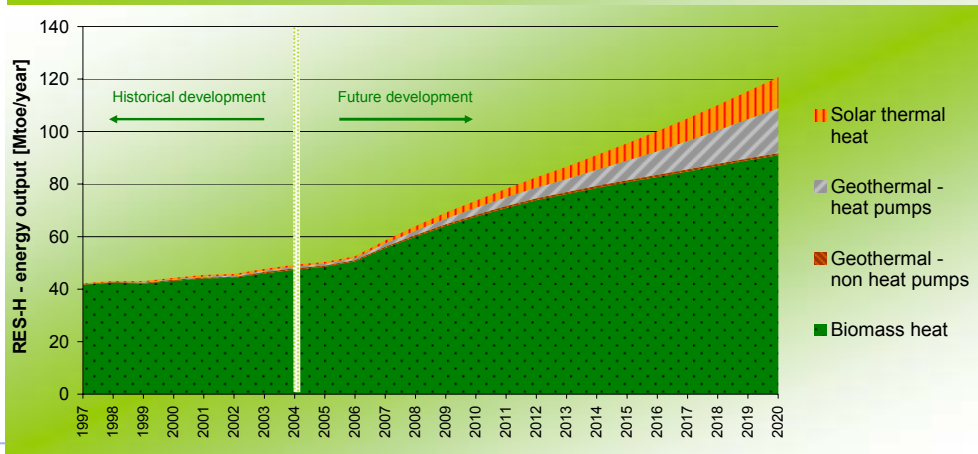
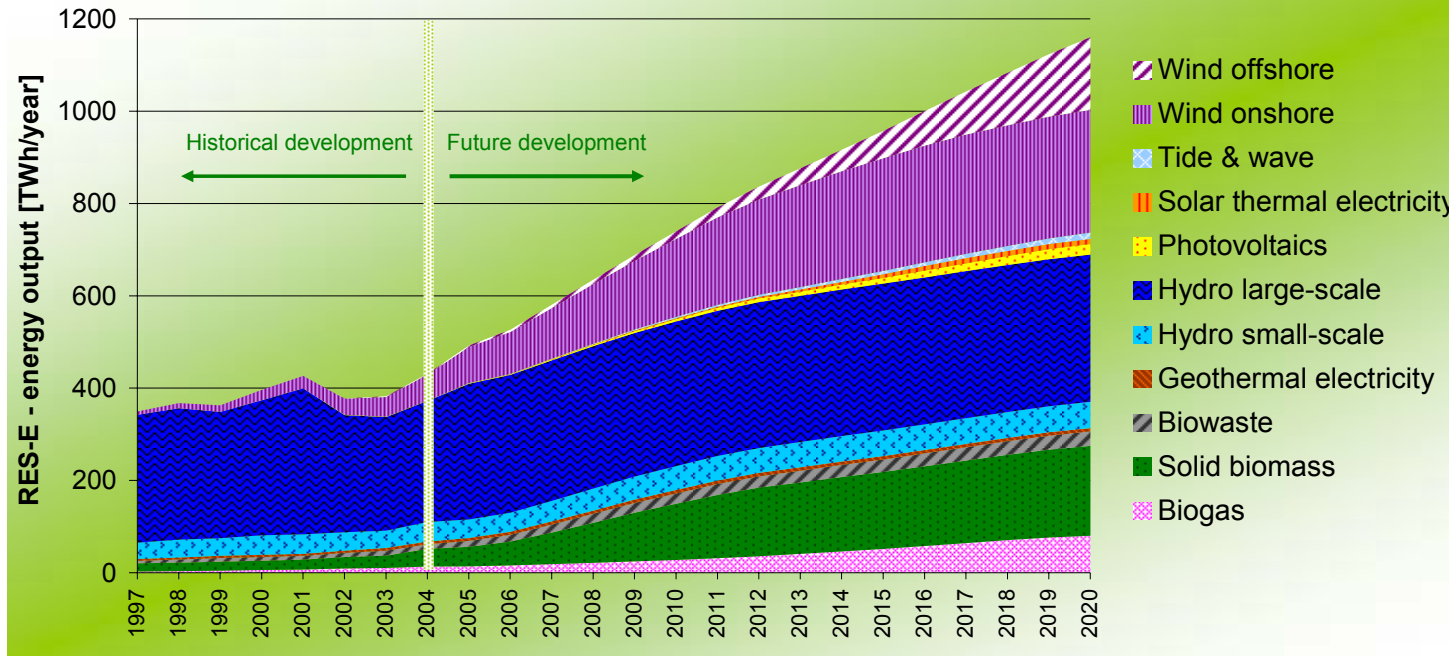
II. The Directive proposal: 2020-targets and flexibility measures

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**



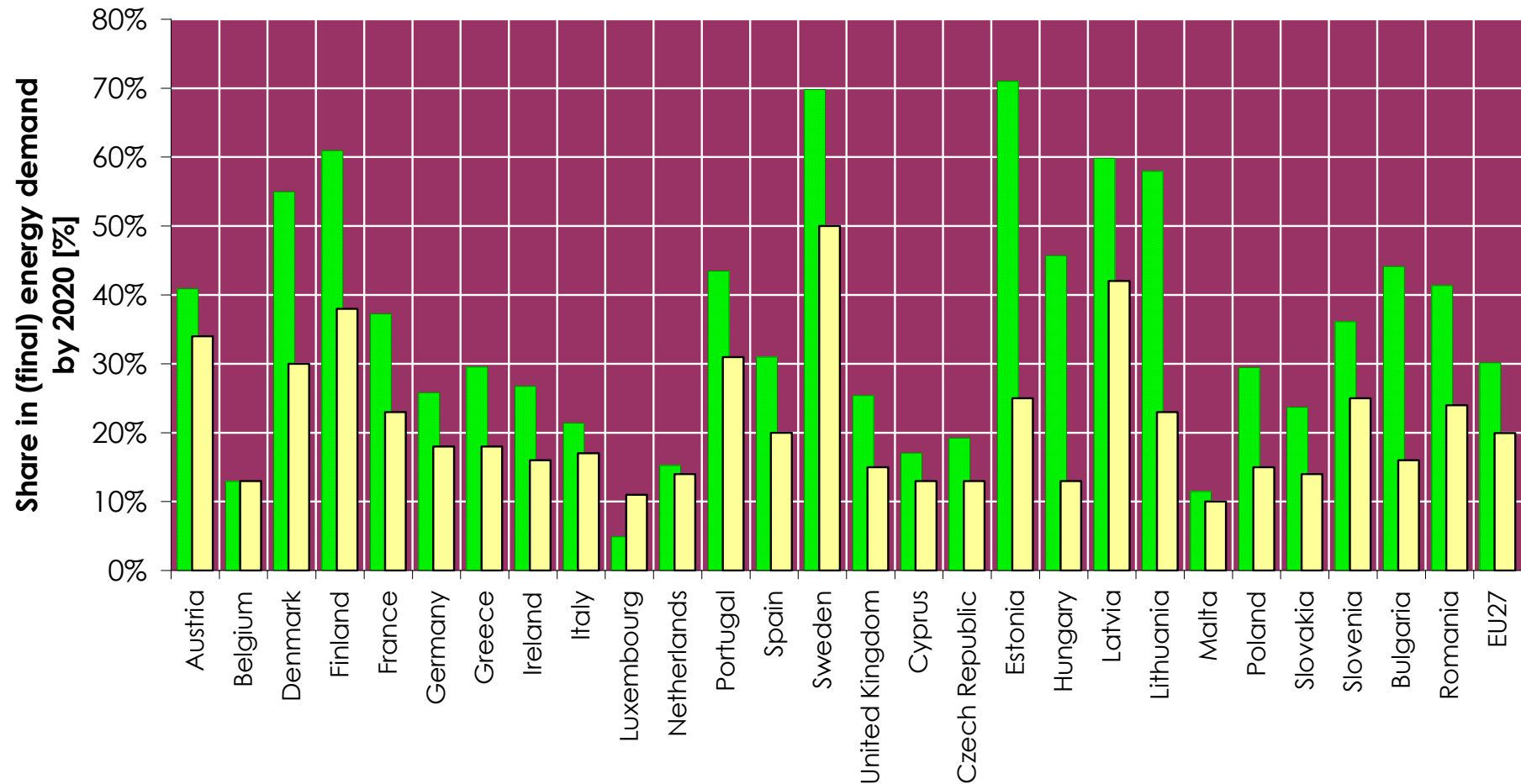
National RES targets for 2020 - the proposed definition

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

Proposed RES Directive: flexibility for target compliance

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 (2-8 bn €/a according to Directive impact assessment).

Proposed RES Directive: flexibility for target compliance

Besides the possible benefits of flexibility there are also risks:

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 of up to 30 bn €/a and fails to support technology portfolio

Proposed RES Directive: flexibility based on GO trade

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

Bilateral agreements at government level

Joined project based investments authorised by Member States

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

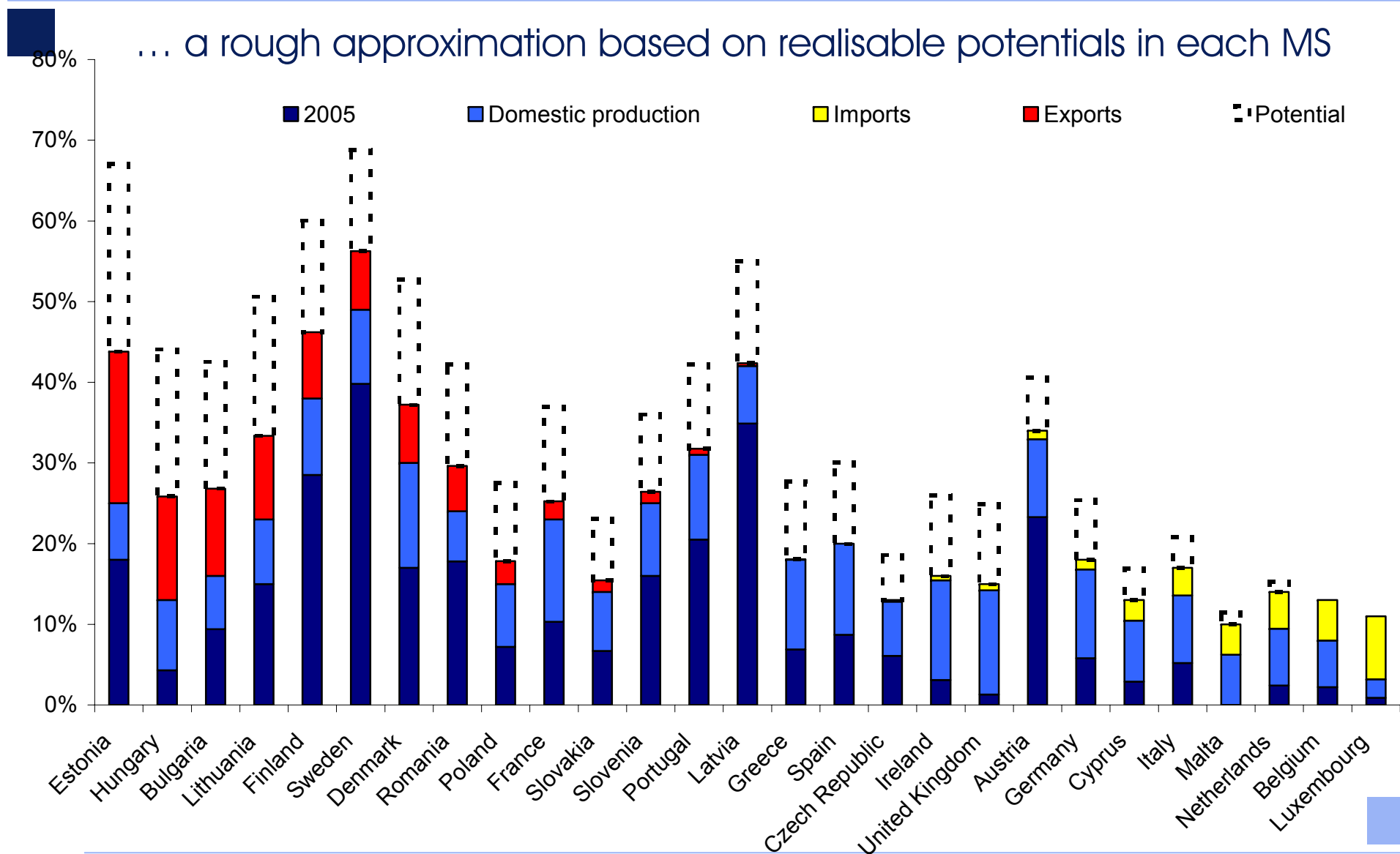
national governments have the information to deliver necessary regime for planning, grid access, balancing and congestion management



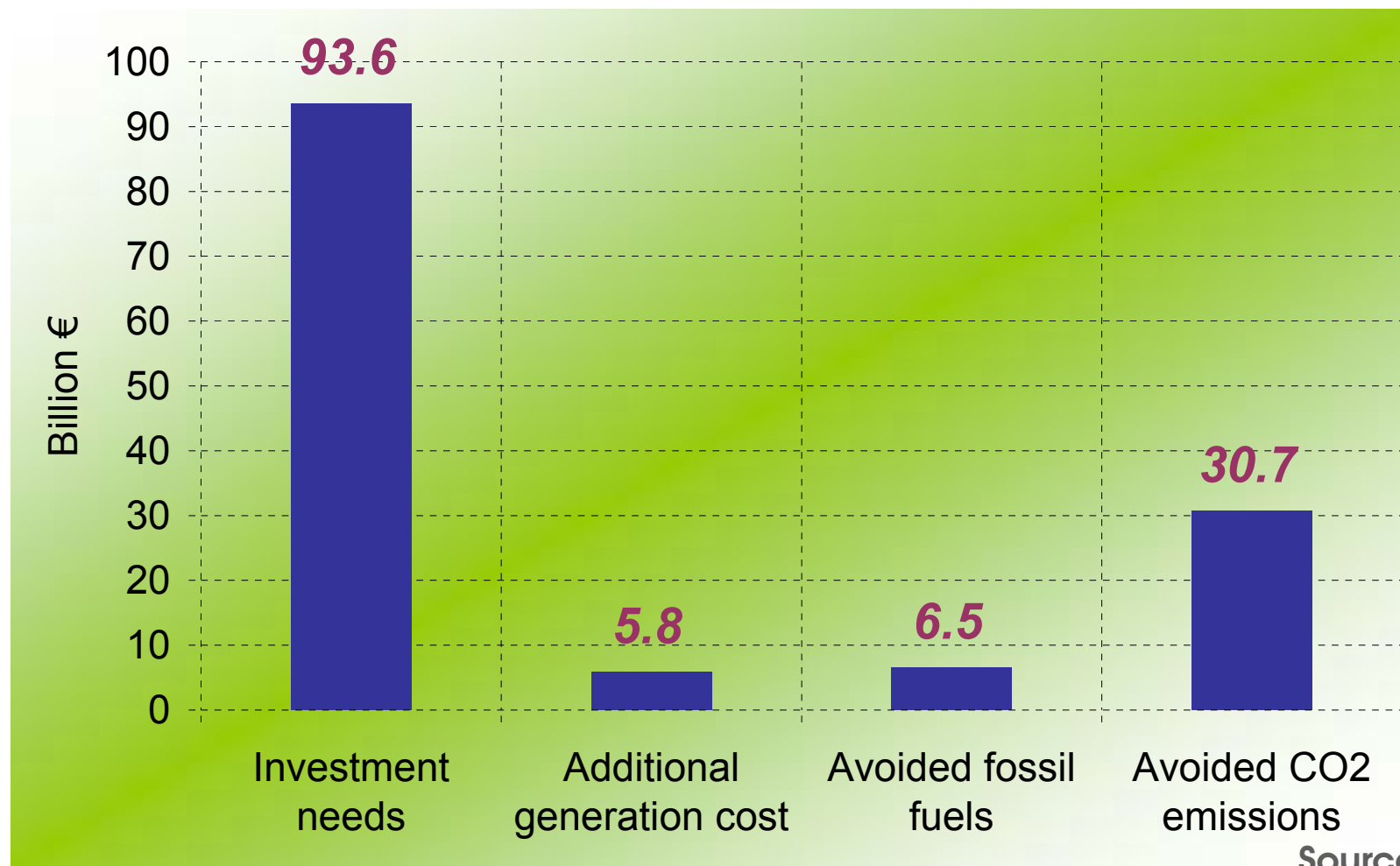
III. Impacts for CEE countries

Who are the importers / exporters?

... a rough approximation based on realisable potentials in each MS



Key figures on costs and benefits in New Member States



Key indicators on costs & benefits ... referring to target achievement
Cumulative (2006 to 2020) figures - referring to NEW RES plants (installed 2006 to 2020)

Potential Benefits for CEE economies from cooperation mechanism

Central and Eastern European countries generally belong to the group of exporting countries under the Directive proposal

It is likely that ca. 20% of the additional generation until 2020 would be "exported" based on government agreements

In this way RES will be generated in CEE countries, whereas a substantial part of support is from importing countries → additional investments (ca. 1 billion €/a) create additional benefits in CEE countries

Resulting energy economic benefits have positive impacts on GDP and employment in New Member States - exact level will depend on the actual implementation details of MS transfers and on the competitiveness of key manufacturing industries

Potential Benefits for CEE economies from cooperation mechanism

Exporting countries could obtain assistance from importing countries when designing their regime for planning, grid access, balancing and congestion management

Creating a favorable investment climate will help to create economies of scale in exporting countries.

Larger markets increase the changes for building a domestic manufacturing industry for RES plants in exporting countries

→ Cooperation mechanisms creates an accelerator effect for macro-economic development caused by renewables

→ Cooperation mechanisms can help to turn investments into RES projects into industrial development



Thank you for your attention

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