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"Lessons Learned from Promotion Strategies for Increasing the Share of Res-E"

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LESSONS LEARNED FROM PROMOTION STRATEGIES FOR INCREASING THE SHARE OF RES-E

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TRIEST, 16th January 2007

SURVEY

1. Introduction
2. Survey on policy strategies
3. Objectives of promotion strategies
4. A comparison of the success
5. Success criteria for Feed-in tariffs
6. Success criteria for TGC-based quotas
7. Investment subsidies
8. The issue of competition
9. Conclusions

1 INTRODUCTION

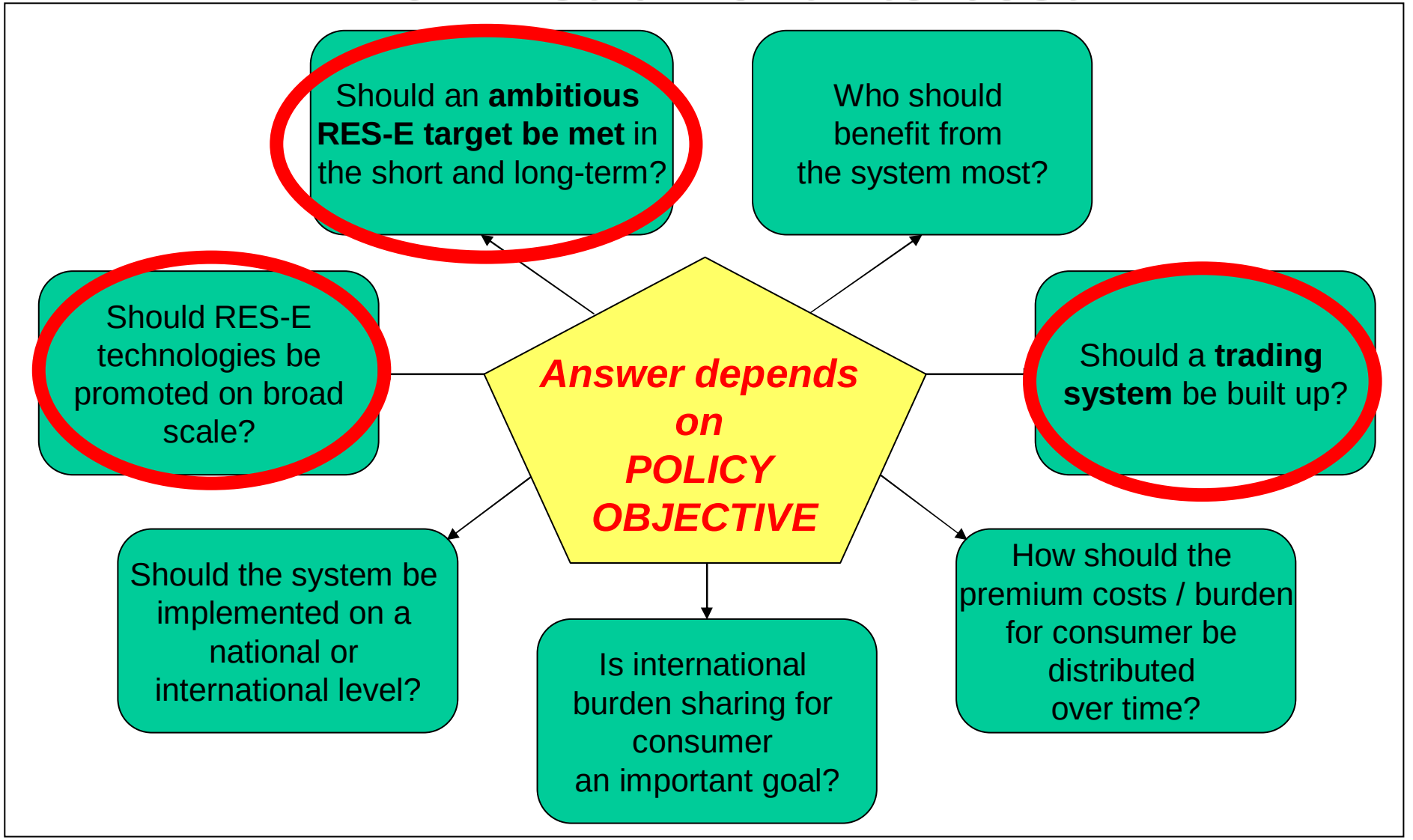
CORE MOTIVATION:

Policy targets for an INCREASE of RES-E!

(e.g. RES-E directive of the EC to increase the share of RES-E from 12% to 22% until 2010)

What is the problem?

Which instrument fits best?



INTRODUCTION

MAJOR PROBLEM:

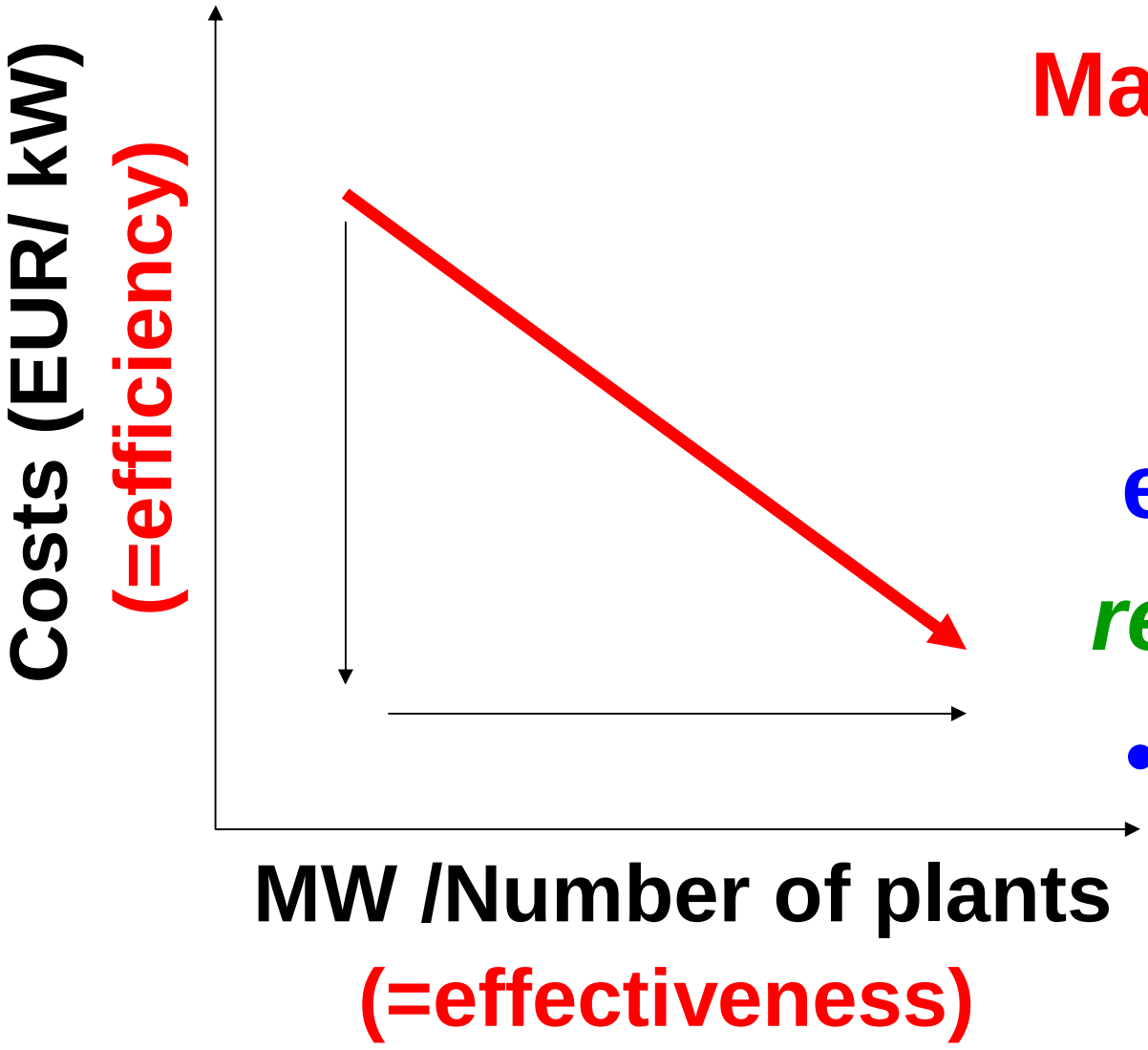
Correct design of promotion strategies

- with respect to:
- renewable targets
- Financial incentives
- Credibility for investors
- Transfer costs!

2. SURVEY ON POLICY STRATEGIES

		REGULATORY	VOLUNTARY
Capacity-driven strategies	Generation-based	• RPS • Quota-based TGCs	• National generation targets
	Investment focused	• Bidding/Tendering	• National installation or capacity targets
Price-driven strategies	Generation-based	• feed-in tariffs, • rate-based incentives • Net metering	• Green Power Marketing • Green tariffs • Solar stock exchange
	Investment focused	• Rebates • Soft loans • Tax incentives	• Contracting • Shareholder progr. • Contribution • Bidding
Other		–	• NGO-marketing • Selling green buildings • Retailer progr. • Financing • Public building prog.

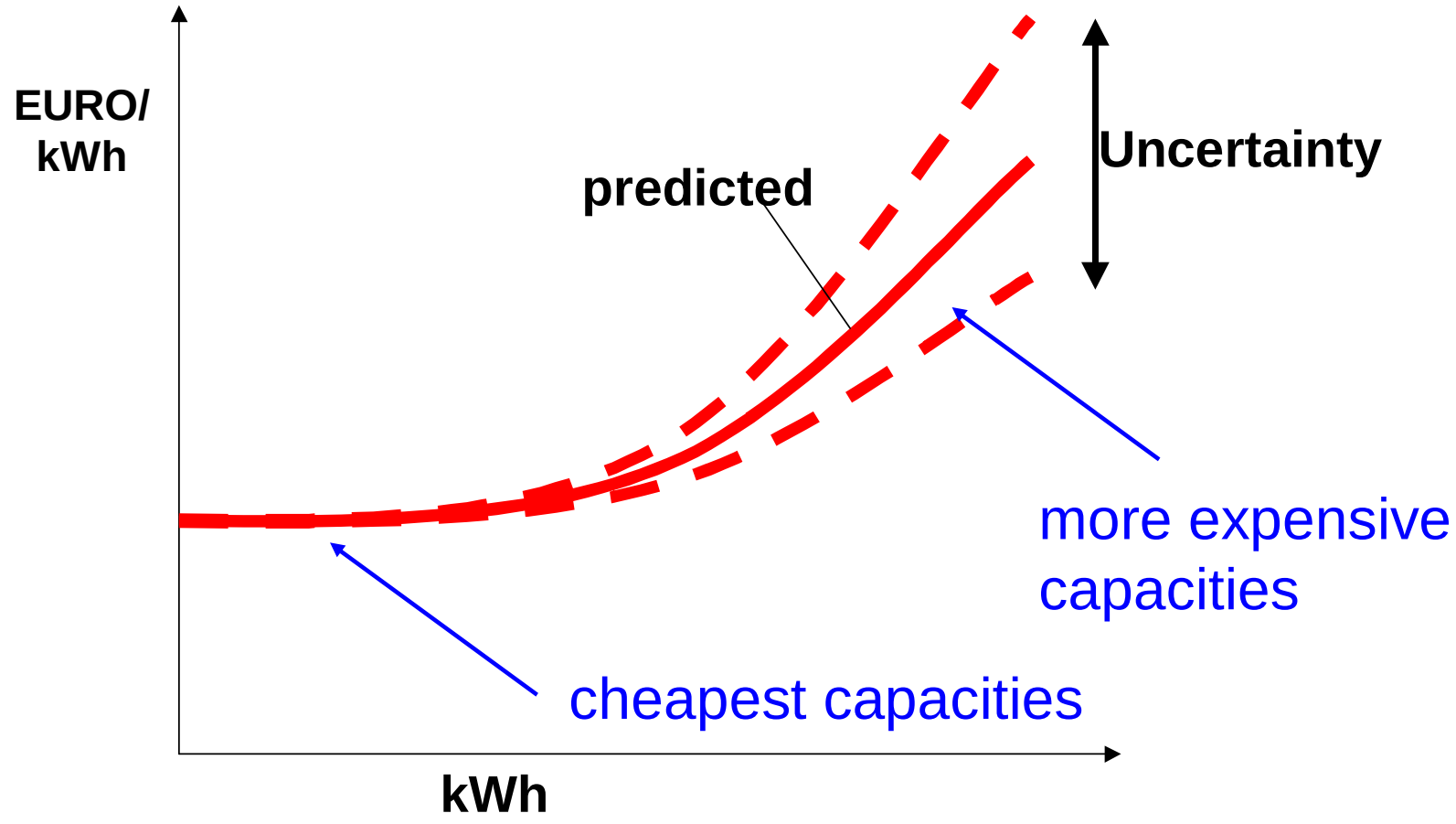
3. REQUIREMENTS TO SUCCESSFUL STRATEGIES



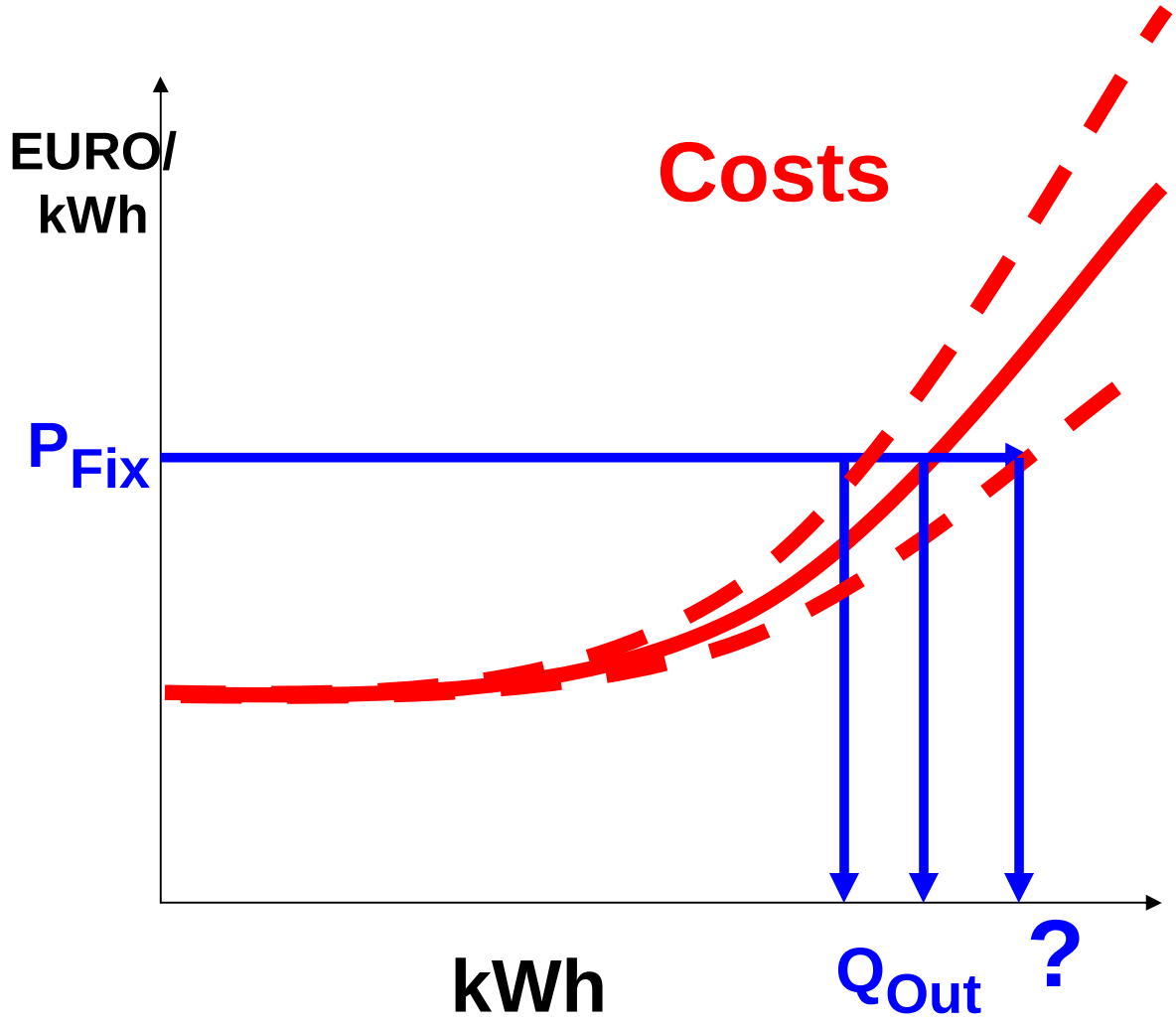
Major objectives:

- **increase the amount of electricity from *renewables* and**
- **reduce costs!**

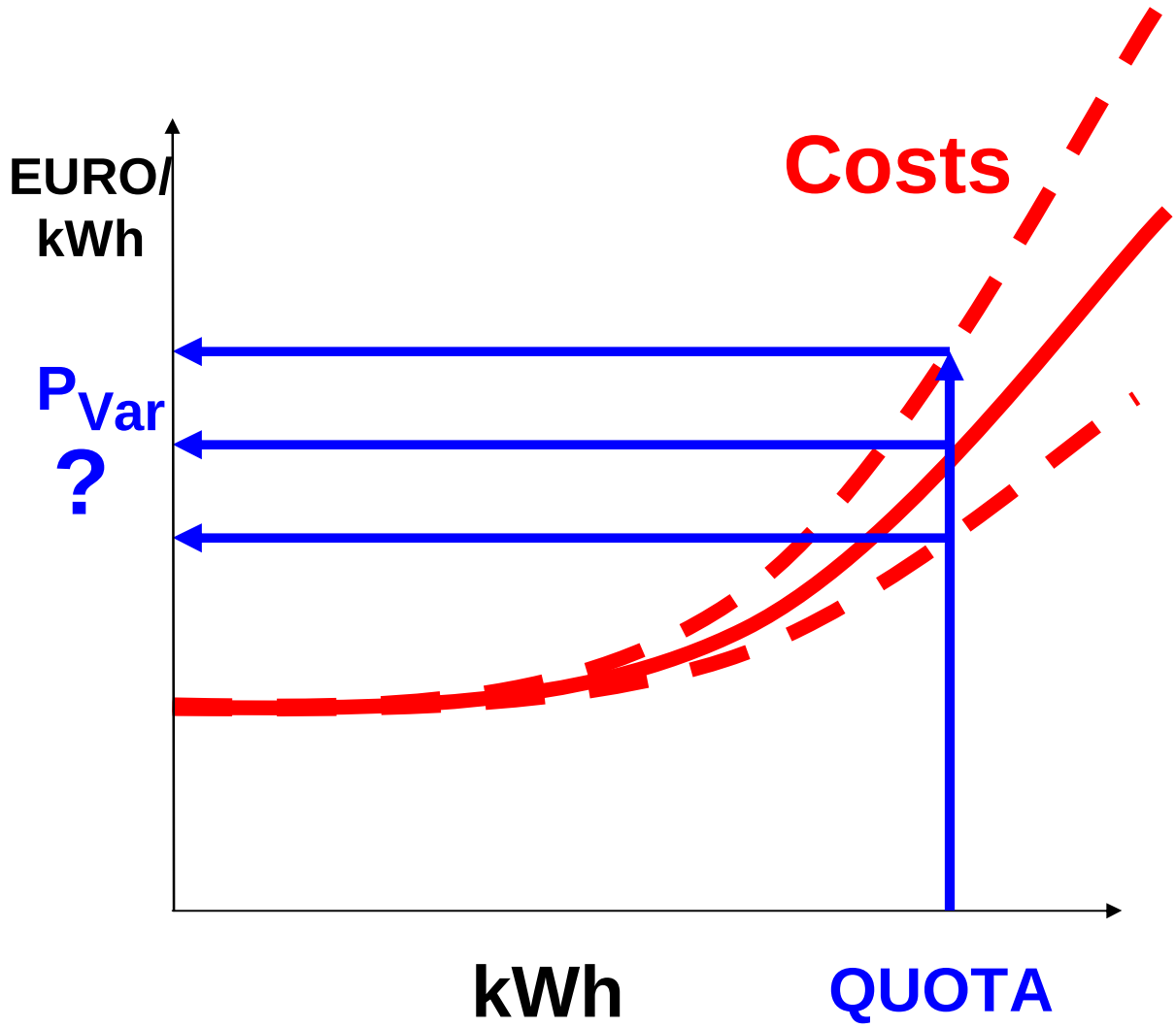
STATIC COST RESOURCE CURVES



HOW FEED-IN TARIFFS WORK



HOW QUOTA-BASED TRADABLE GREEN CERTIFICATES WORK



All regulatory promotion strategies -- Quota-based TGC systems, Feed-in tariff systems, rebates -- create

artificial markets

and cause

transfer costs (additional costs)

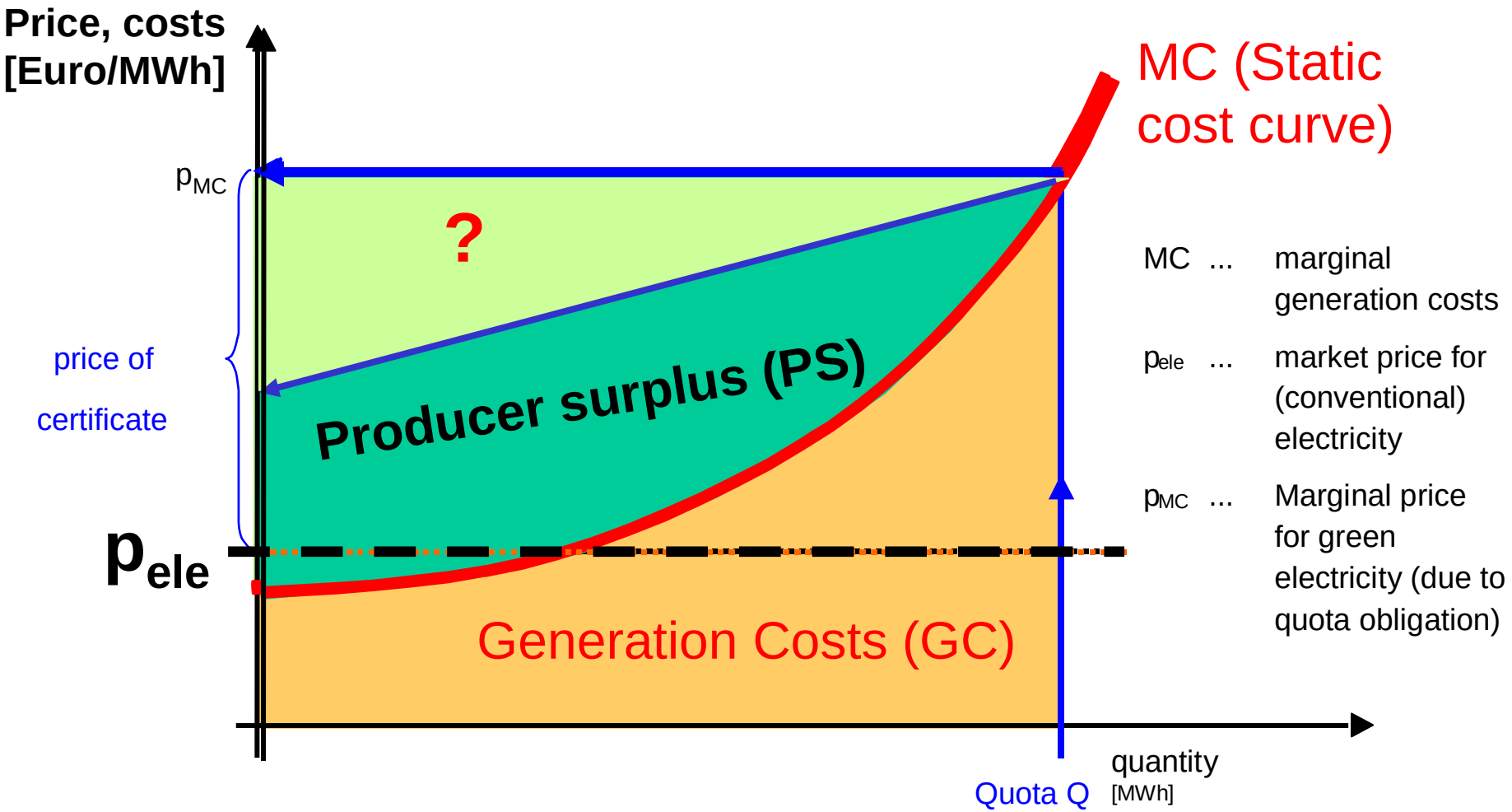
Why is it important to minimize these additional costs?

These additional costs have finally to be paid by the final customers

(regardless which promotion scheme is chosen)

Method of approach

Minimise additional costs for consumers = Producer Surplus + Generation costs - Revenues electricity market



The lower the costs are which have finally to be paid by final customers

the higher will be public acceptance

the larger will be the amount of additional electricity generated from RES.

The simulation tool *Green-X*

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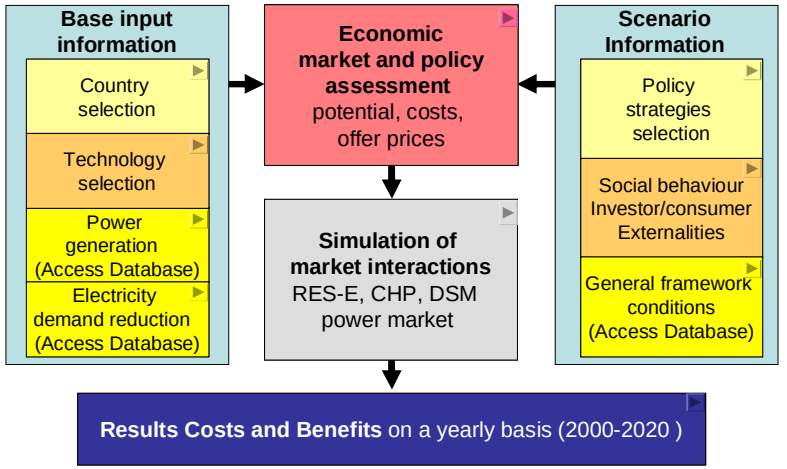
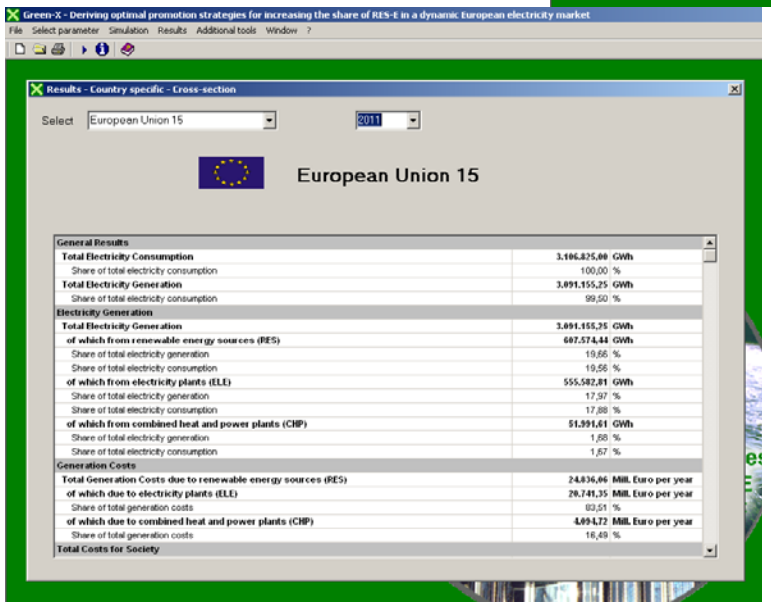
EU-Project ***Green-X***

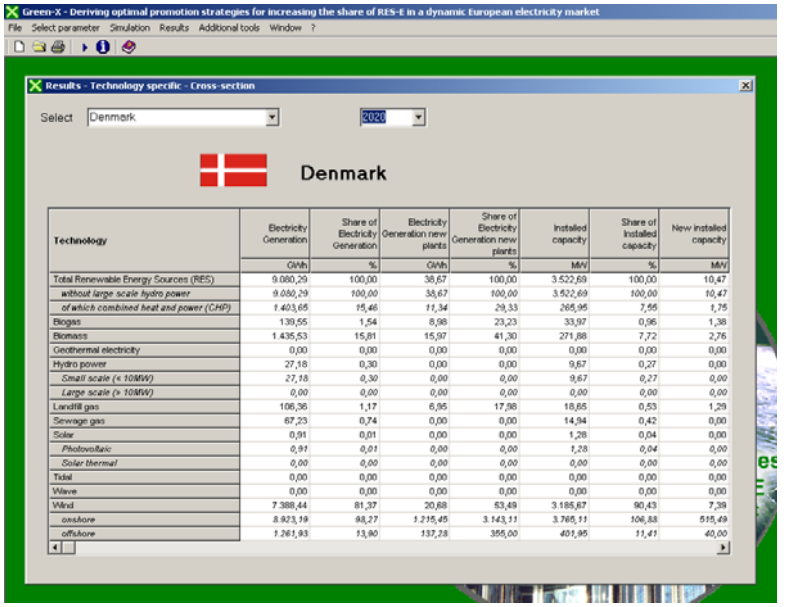
DG Research

Web: ***www.green-x.at***

The toolbox Green-X







The simulation tool *Green-X*

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EU-Project *Green-X*

DG Research

Web: ***www.green-x.at***

GREEN-X allows…

… to simulate various policy strategies for the promotion of RES-E in a dynamic framework on a national or international level *(considering DS-effects)*

(Current: EU-25, end 2006: EU28, future: EU 39???)

THE „POLICY“ TRACK OF EEG EU PROJECTS

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1999 2001 2003 2005 2007

theoretical modeling

ELGREEN

GREEN-X

TRACK:
GREEN-NET

OPTRES

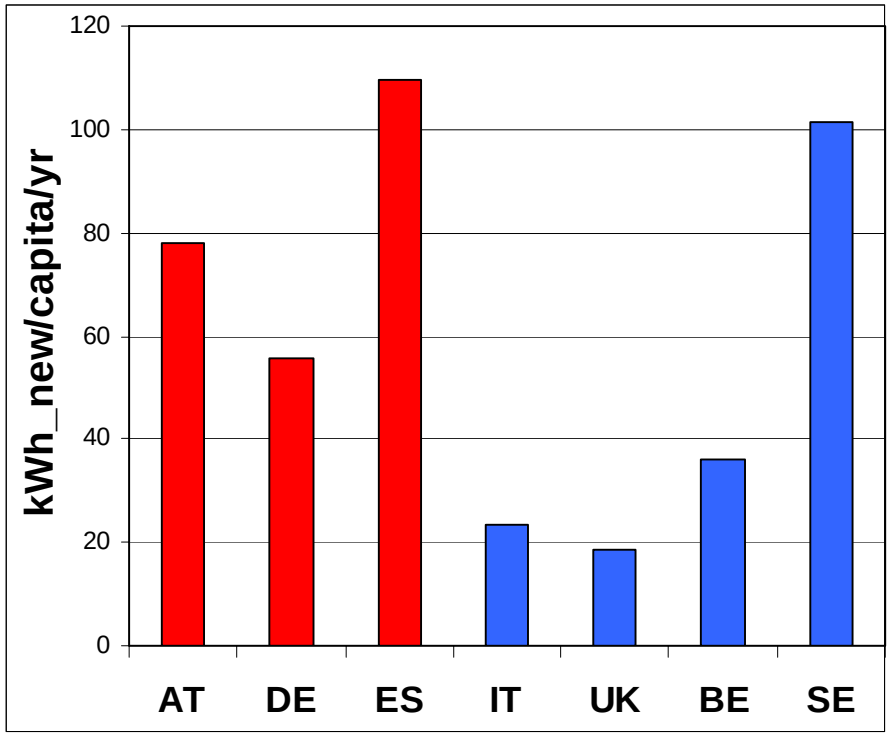
PROG-RES

FUTURES-E

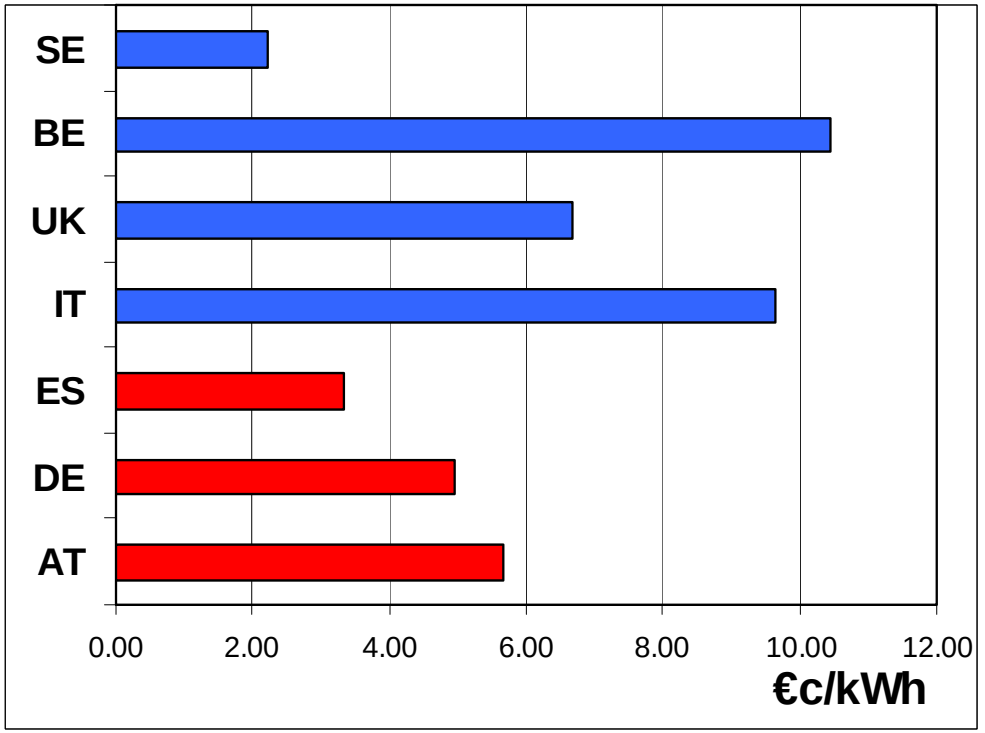
empirical application

4. LESSONS LEARNED: COMPARISON OF STRATEGIES

Effectiveness:

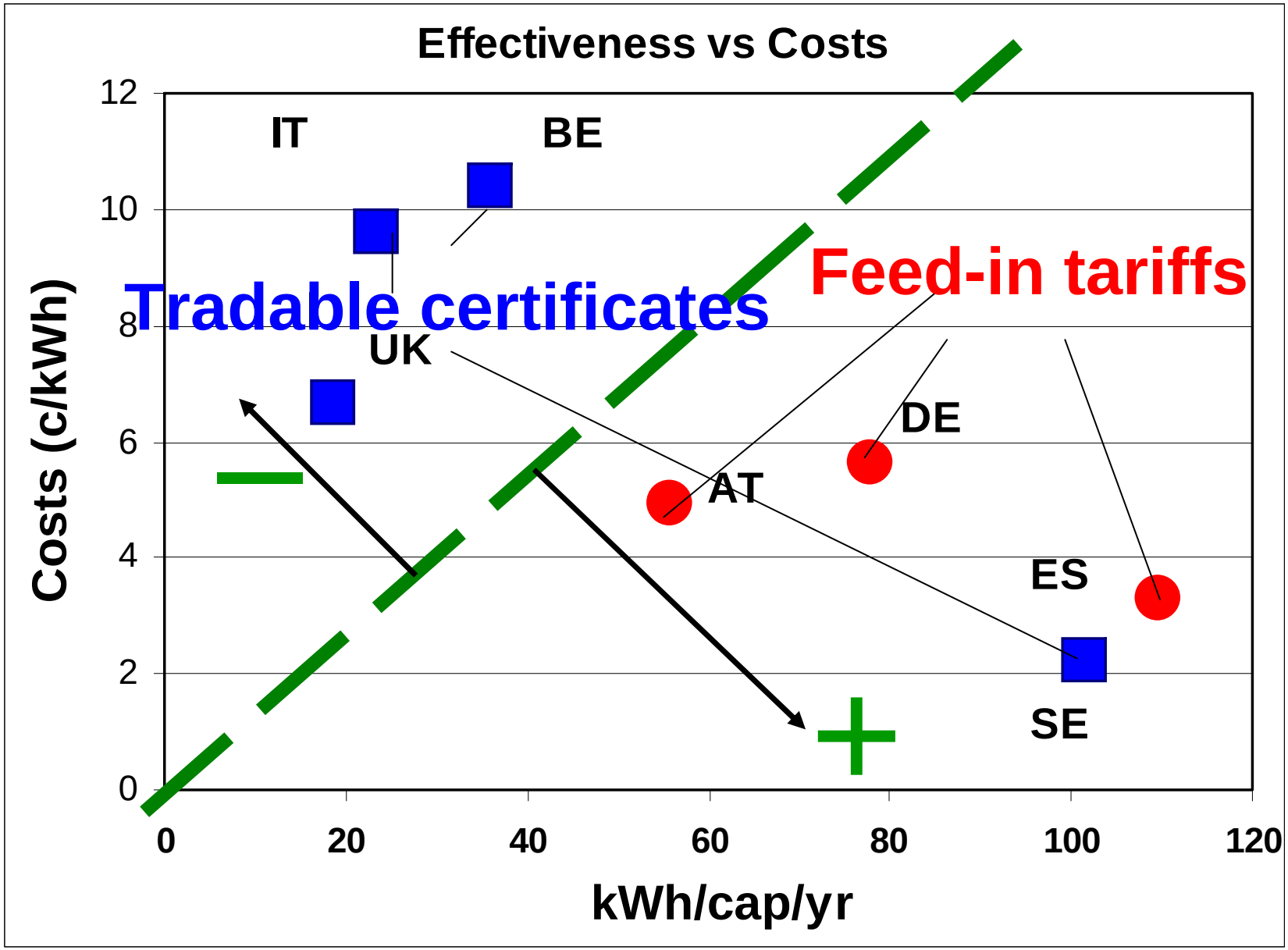


Costs:

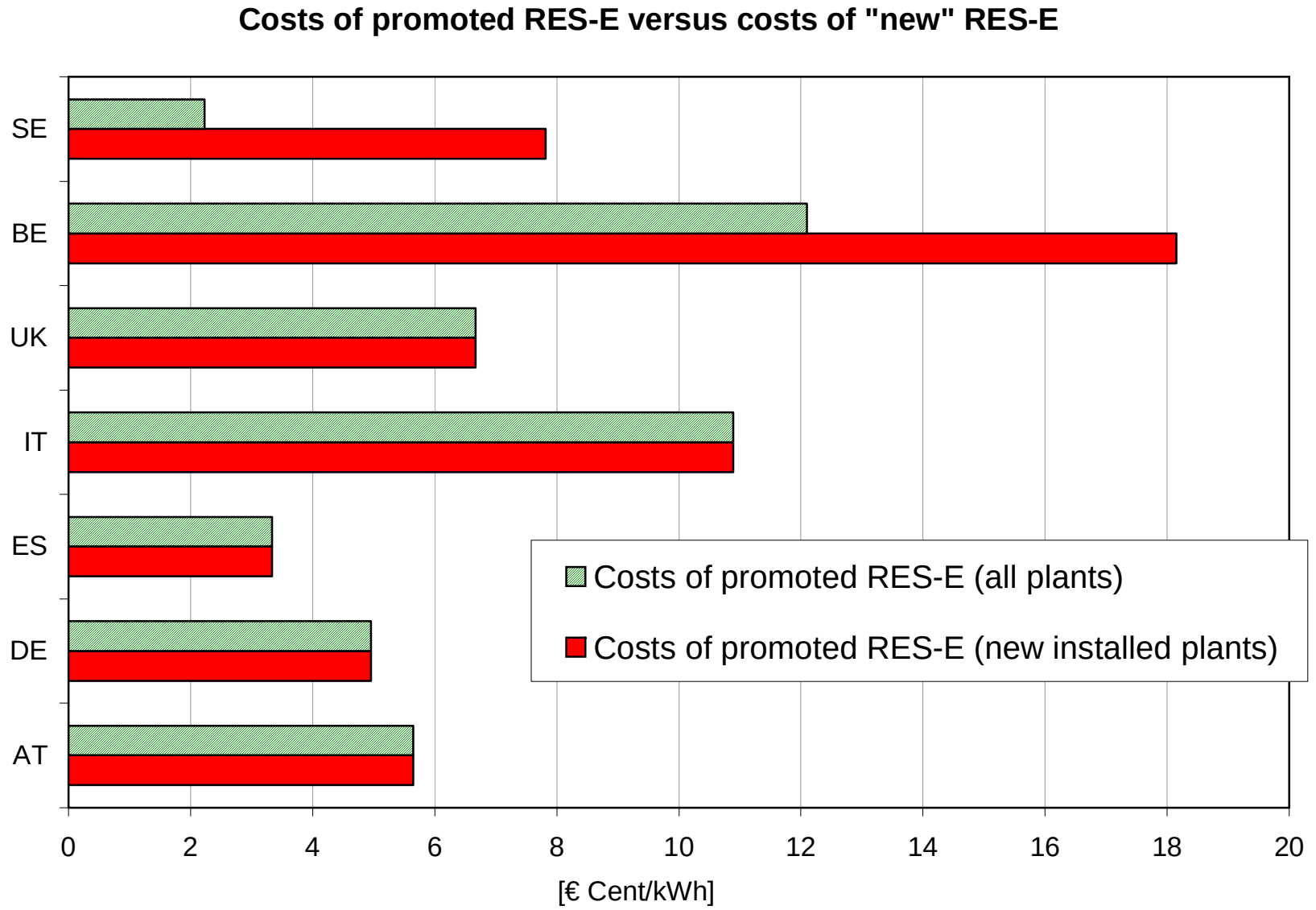


(2000-2004)

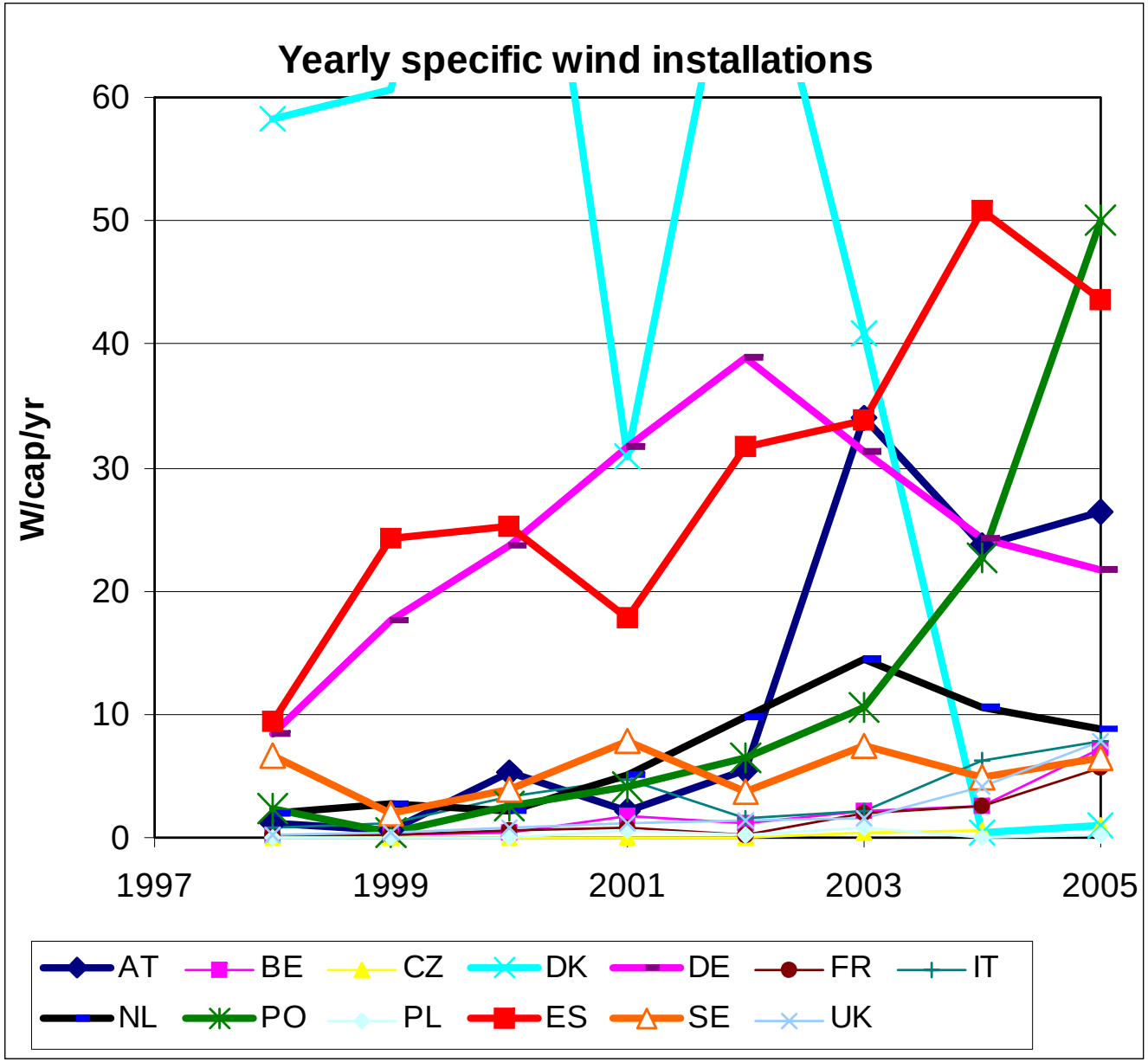
EFFECTIVENESS VS COST



Costs of promoted kWh vs costs of new kWh

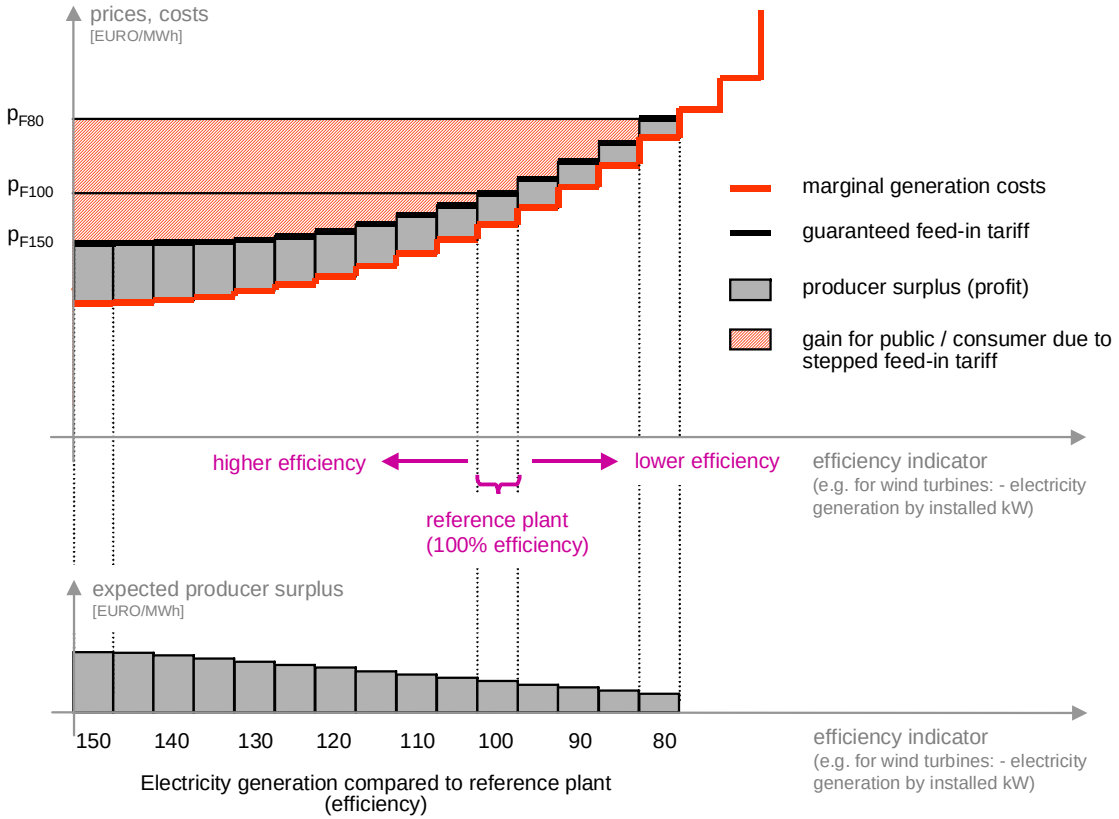


WIND: INSTALLATIONS PER YEAR



5. SUCCESS CRITERIA FOR FIT‘s

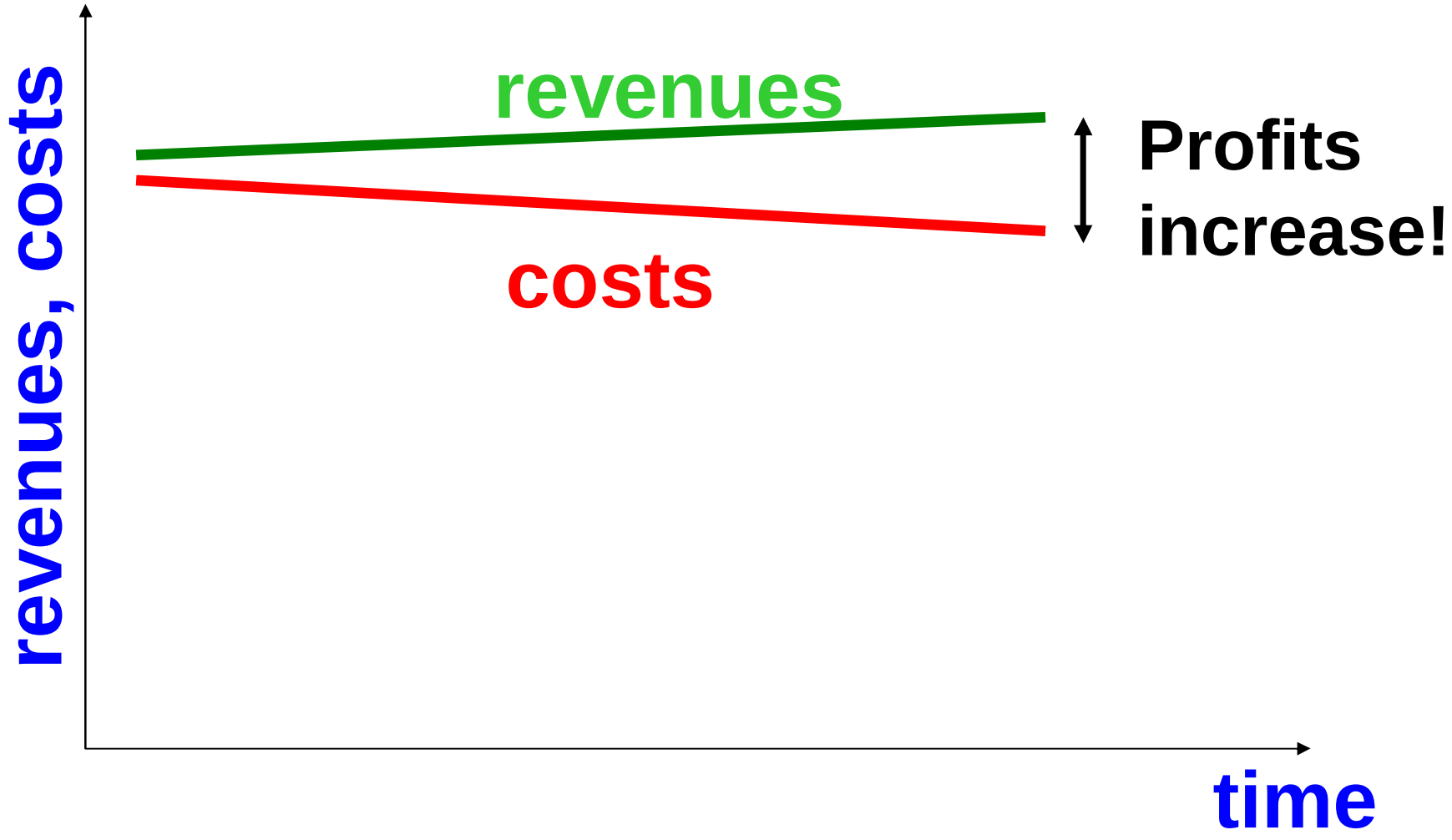
1 Use a stepped FIT and calculate starting values carefully



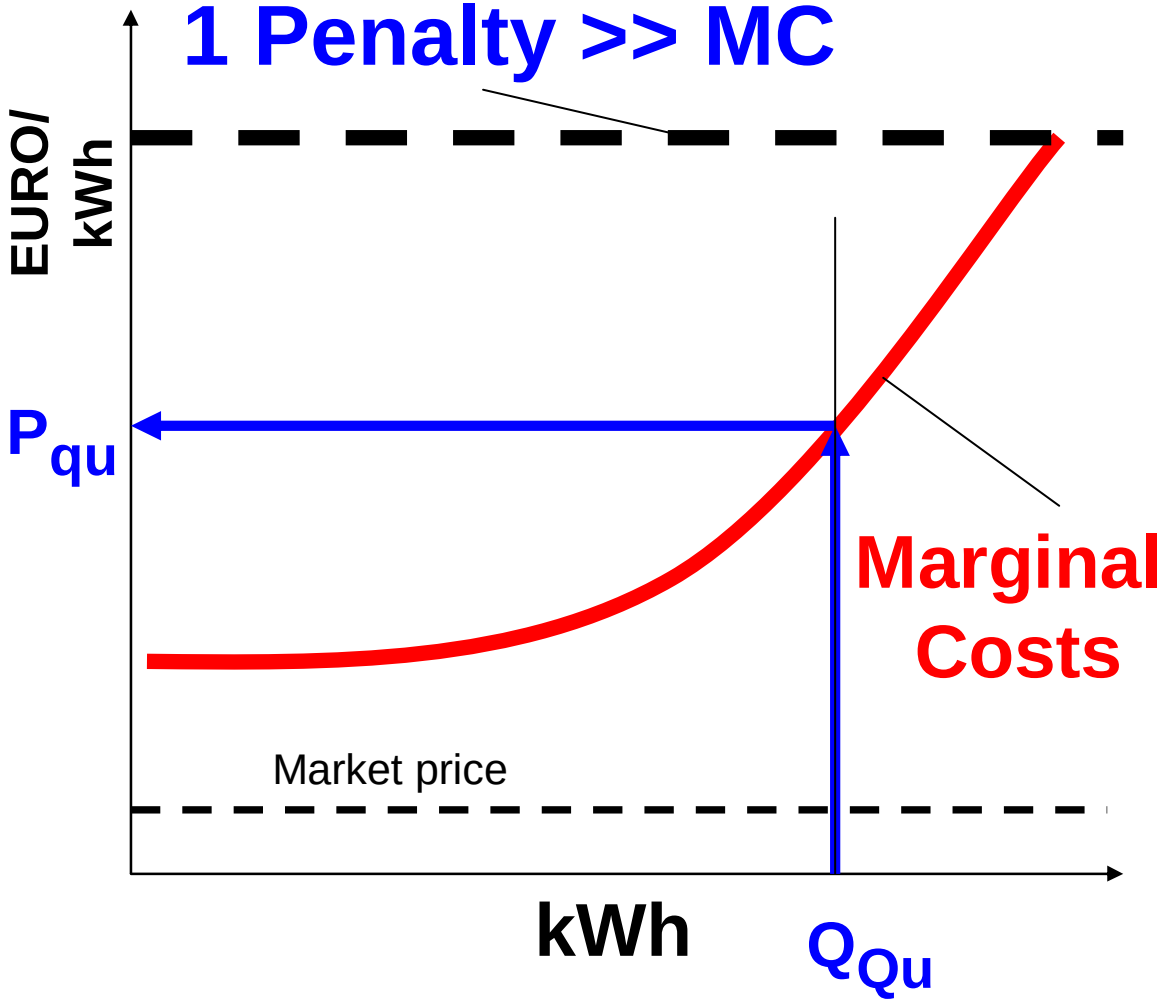
2 Decrease over time!

3 Realistic time frame

EMPIRICAL PROBLEM OF FITs: The example of wind



6. SUCCESS CRITERIA FOR QUOTA-BASED TGC‘s



2 Ensure long-term planning horizon!

3 Focus on new plants

MAJOR PITFALLS FOR QUOTA-BASED TGC's

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1 Market is to small:

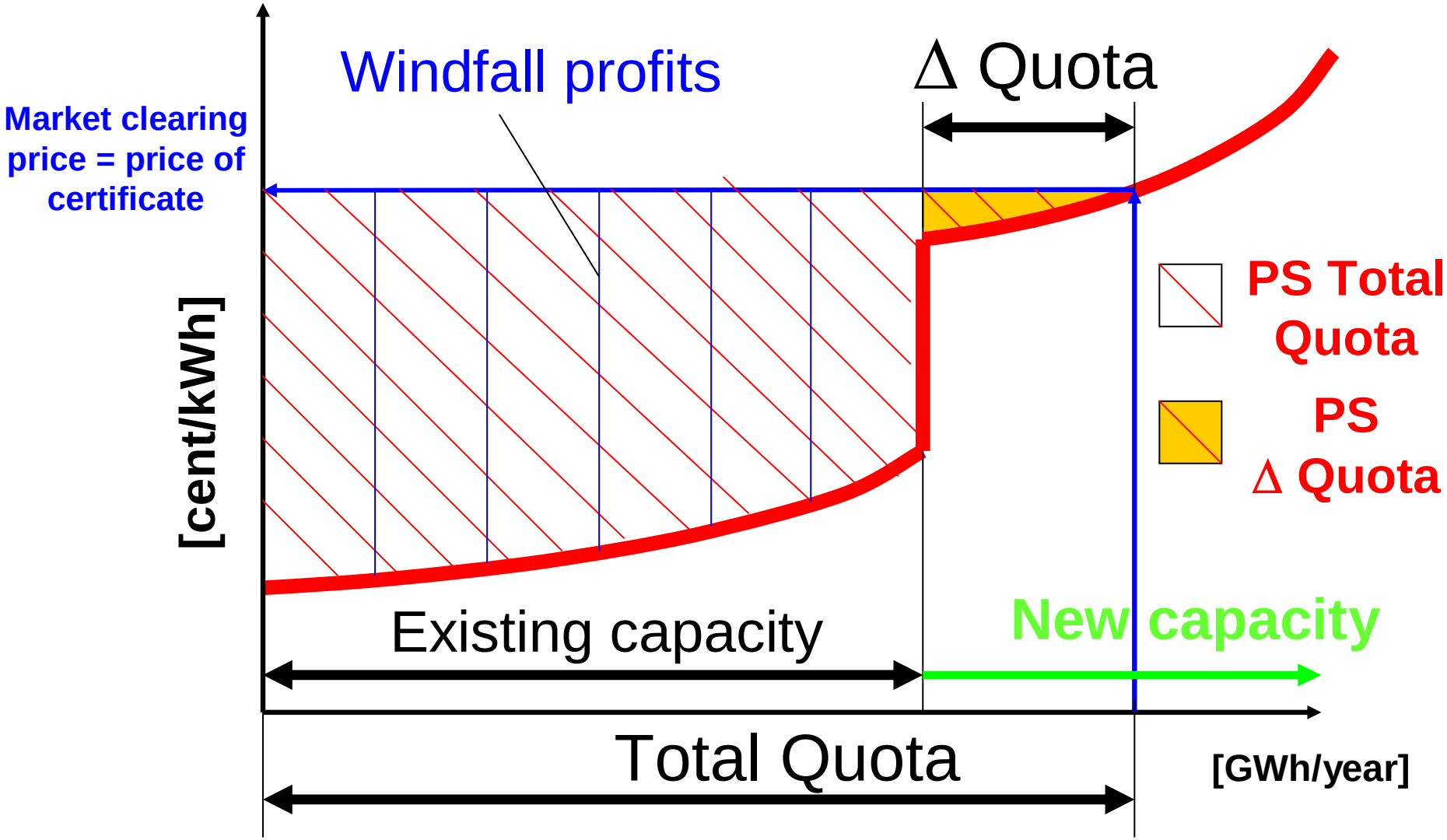
e.g. in a small country for one technology with very limited potential -> Non-Liquid because every single plant is known (e.g Flanders (BE))

2 Windfall profits for existing capacities (e.g Flanders (BE), Sweden)

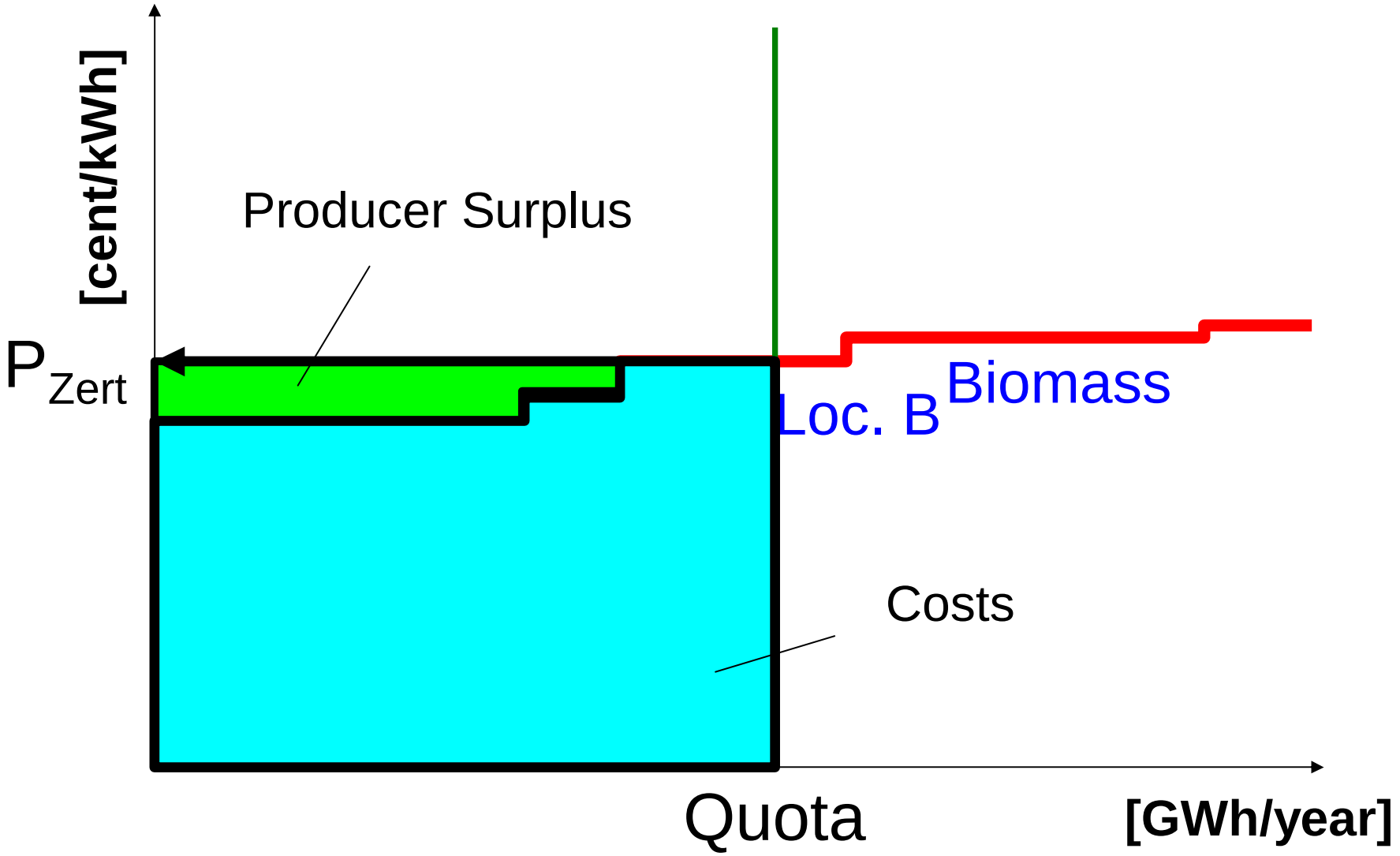
3 Penalty is to low (e.g. UK)

4 Planning horizon to short (e.g. UK 2003, Italy)

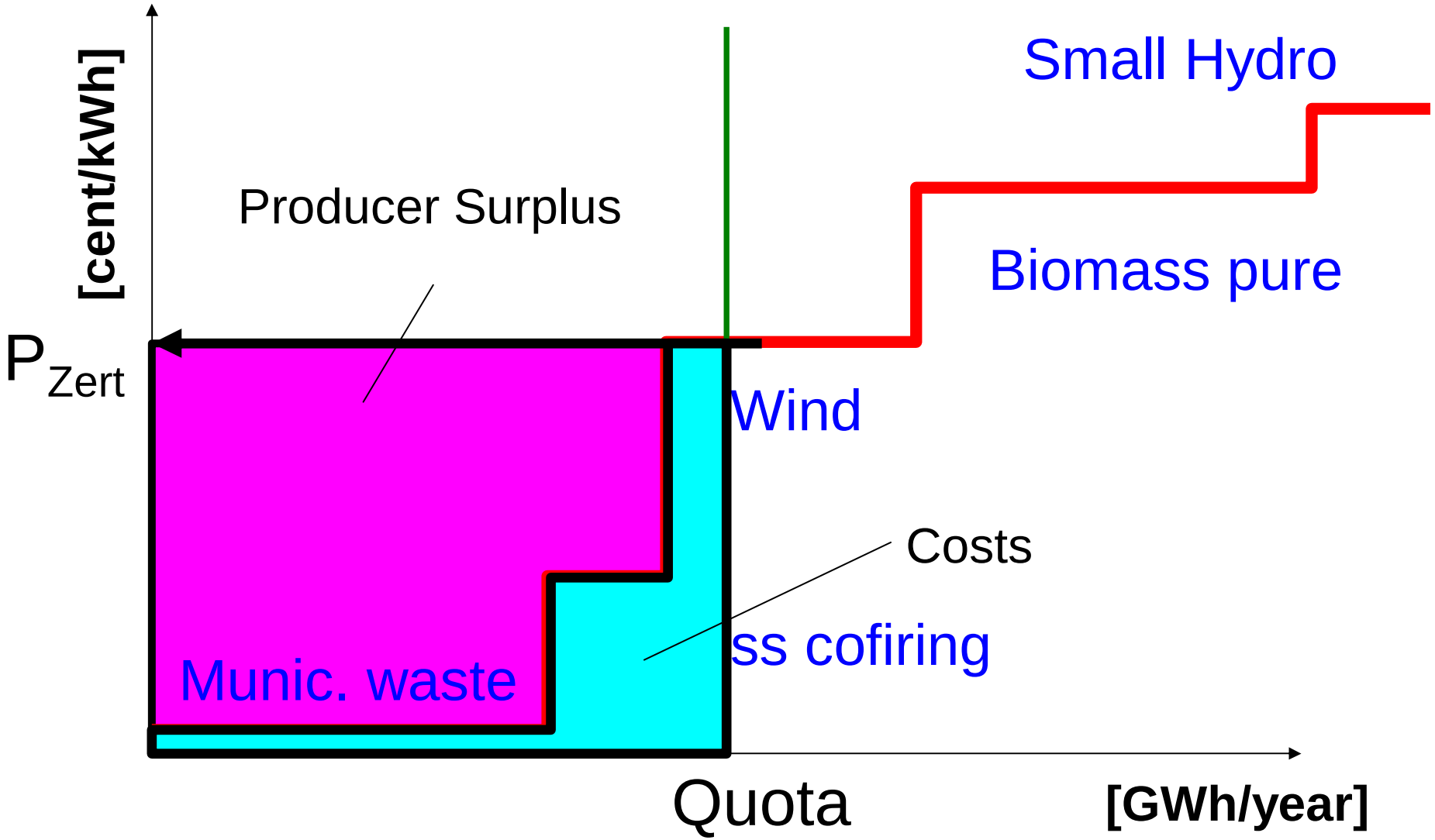
QUOTA: EXISTING VS NEW CAPACITY



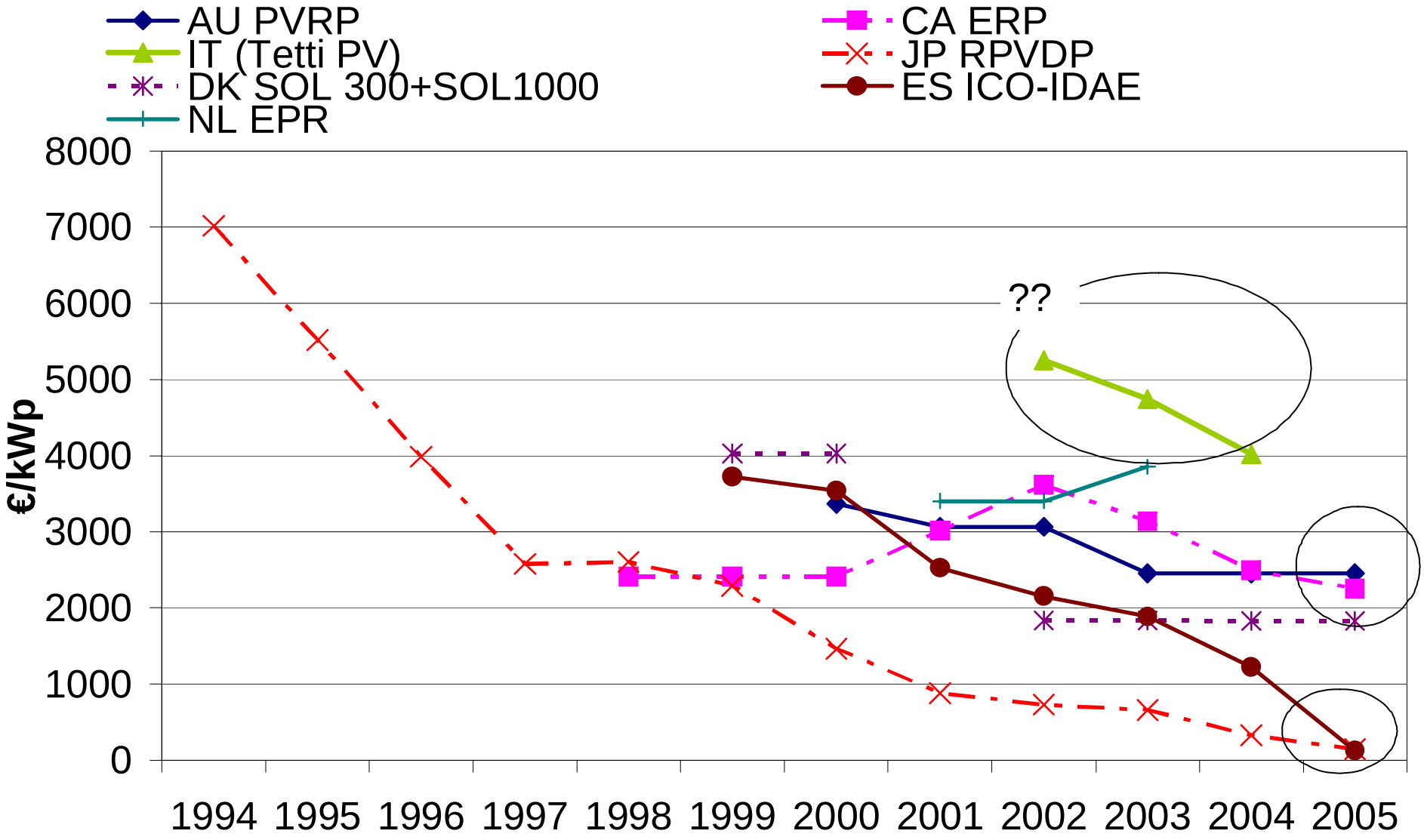
IMPACT OF THE SHAPE OF THE COST CURVE



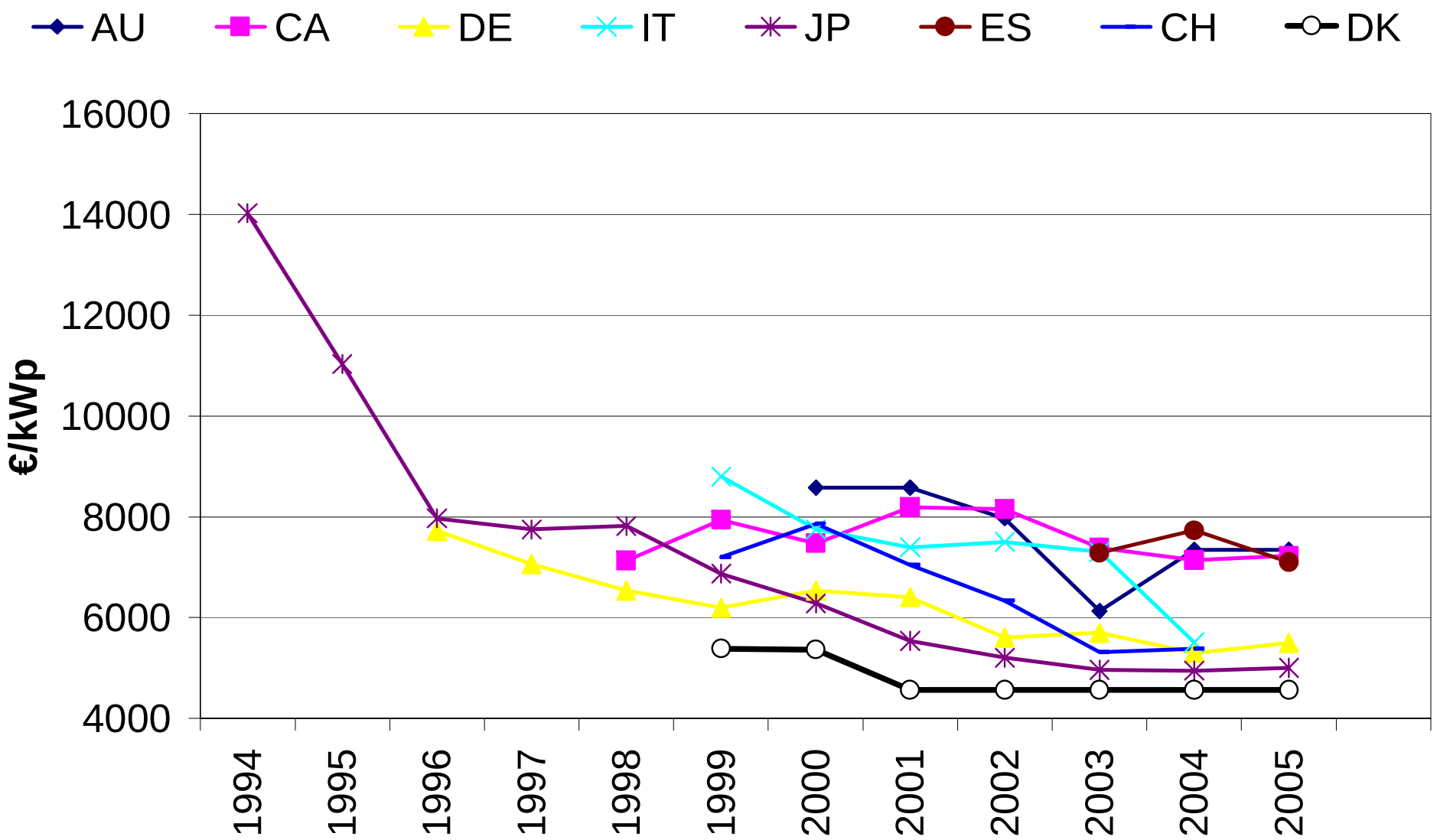
IMPACT OF THE SHAPE OF THE COST CURVE



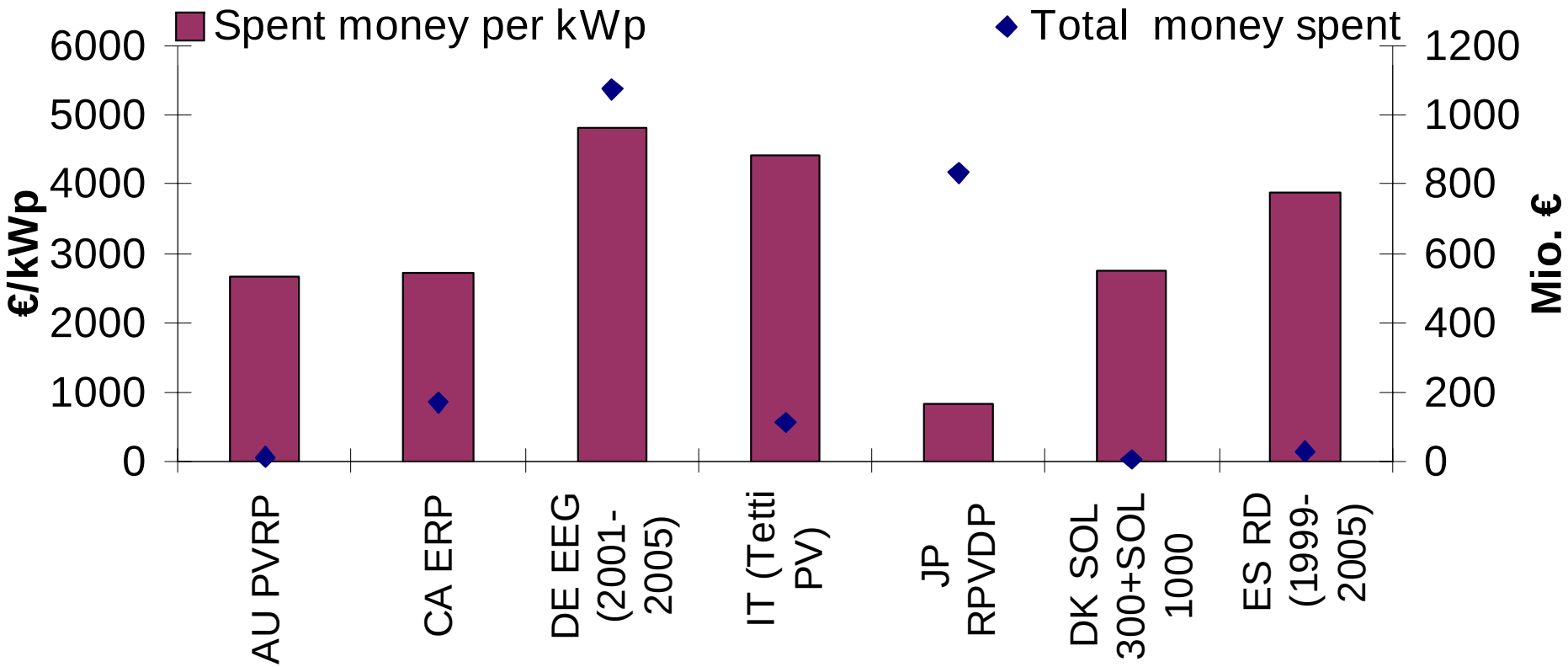
7.INVESTMENT SUBSIDIES FOR PV



COST DEVELOPMENT FOR PV



PUBLIC MONEY SPENT FOR PV



8. COMPETITION?

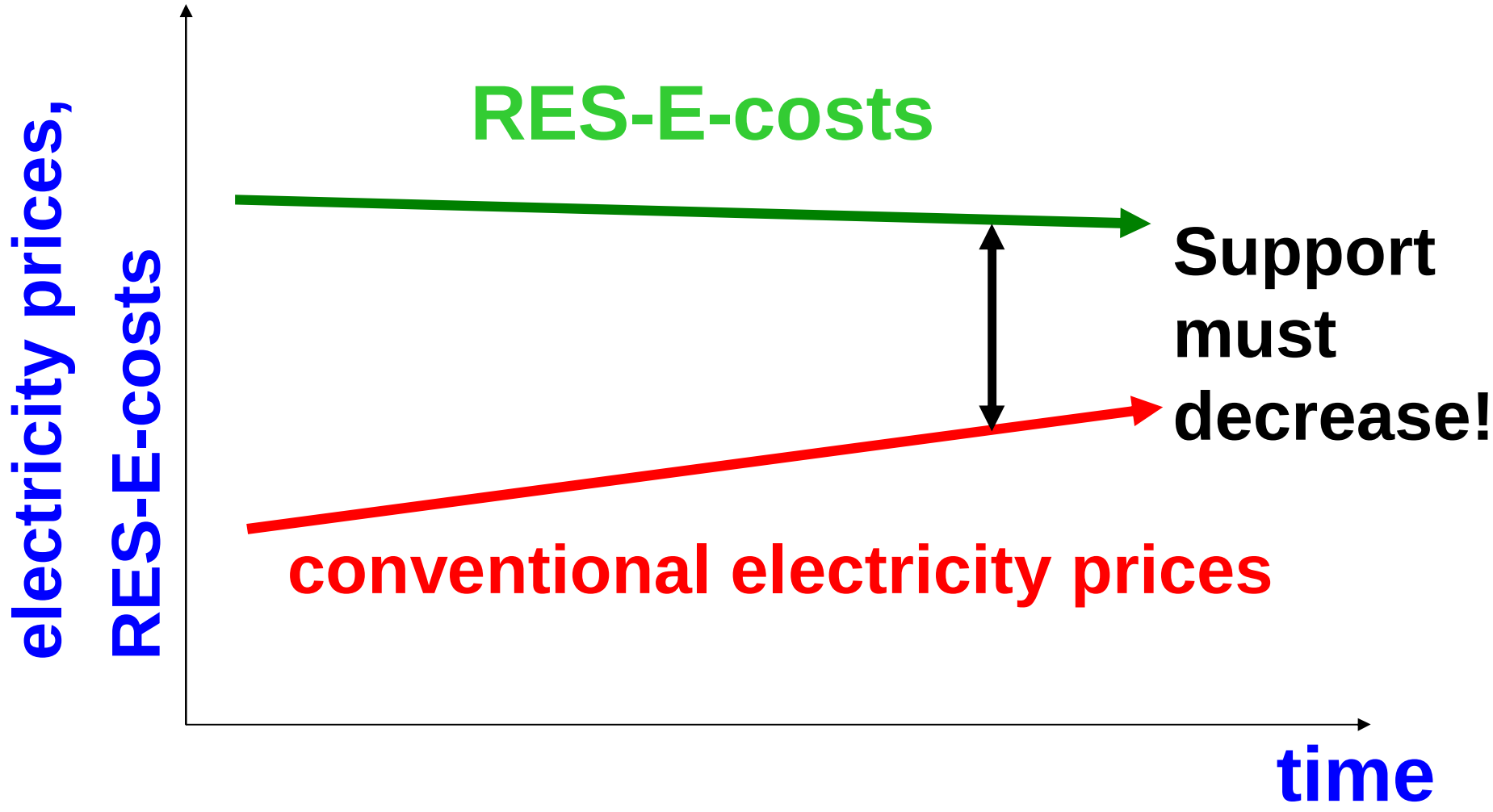
- **Competition among manufacturers exist**
- **Most important argument for TGCs: it is assumed that they foster competition between generators**
- **Objective of competition -> competitive prices**
- **competitive prices:**
  Prices = marginal costs (of generation)
- **Currently:**
  certificate prices > average feed-in-tariffs
- **No indicator for real competition in TGC markets!**
- **-> Utilities are in favour of TGC because they can make more money in TGC markets !**

9. CONCLUSIONS (1)

- **No “One size fits all” approach!**
- **Careful design of a strategies:**
  by far the most important success criteria!
- **There should be a clear focus on NEW capacities!**
- **To ensure significant RES-E deployment in the long-term, it is essential to promote a broad portfolio of different technologies**
- **For FIT: Consider „learning“ by a dynamic component!**
- **Ensure credibility of the system! Avoid „stop-and-go“ approaches**

IMPROVE THE CURRENT SYSTEMS!

DYNAMICS FOR FIT AND INVESTMENT SUBSIDIES IMPORTANT!



8. CONCLUSIONS (2)

- **Instead of harmonisation: Stimulate/Foster competition between promotion schemes/between countries: Which system/where provides new RES-E capacities at lowest costs for society?**
- **Exchange lessons learned for improvement of strategy design!**
- **Currently, for feeding electricity into the grid a well-designed (dynamic) FIT provides a certain deployment of RES-e fastest and at lowest costs for society**
- **However, for sustainable policy -> parallel focus on demand-side conservation of high priority!**

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