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ITRE WORKSHOP - 13th March 2008
Opportunities for renewable energy development in Europe

Venue
European Parliament - Strasbourg

Room LOW S 4.4
9.00 – 12.00

Draft Programme

9:00 Welcome and opening – Rapporteur MEP Mr Claude TURMES

Part 1: RES Potentials and targets, new flexibility systems & efficient instruments

9:10 Presentation by **Mario Ragwitz**
Department Energy Technology and Energy Policy,
Fraunhofer Institute Systems and Innovation Research, Karlsruhe

9:20 Debate: questions and answers session

Part 2: RES Trading as an option

9:50 Presentation by **Andreas Löschel**
Department Environmental and Resource Economics, Environmental Management
ZEW Centre for European Economic Research, Mannheim

10:00 Debate: questions and answers session

Part 3: Biomass potentials and transformation strategies in the EU & policies for import

10:30 Presentation by **Francis Johnson**
Climate and Energy Programme
Stockholm Environment Institute

10:40 Debate: questions and answers session

Part 4: Addressing social and socio-economic impacts: biofuels sustainability criteria?

11:10 Presentation by **Charlotte Opal**
Roundtable on sustainable biofuels
Energy Centre of the Ecole Polytechnique Fédérale de Lausanne

11:20 Debate: questions and answers session

Conclusions

11: 50 Closing remarks – Rapporteur MEP Mr Claude Turmes and Shadow Rapporteurs

RES Potentials and targets, new flexibility systems & efficient instruments

Mario Ragwitz
Fraunhofer Institute Systems and Innovation Research

Gustav Resch
Energy Economics Group, Vienna University of Technology

ITRE WORKSHOP

Opportunities for renewable energy development in Europe

March 13th 2008

Renewable energy sources (RES)...

- ***reduce CO_2 emissions***
- **decrease import dependency** by **diversifying sources of production**
- **create competitive industries with lead market potential**.

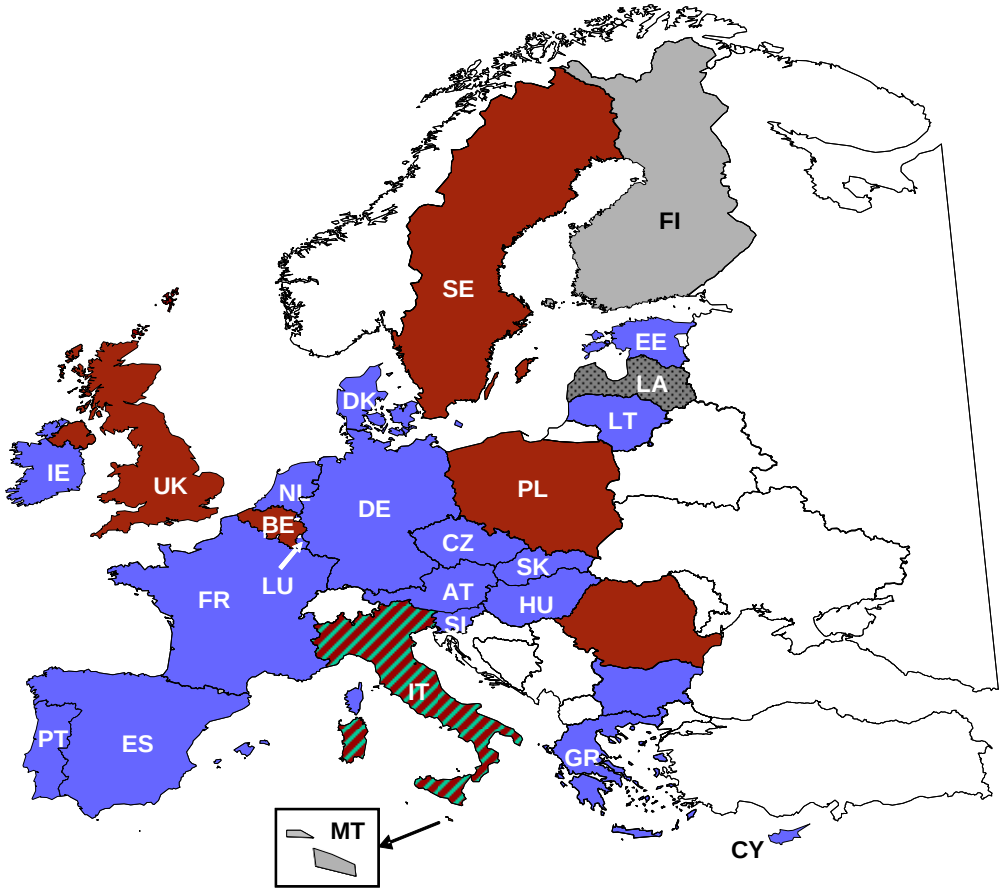
Recent policy developments in Europe ...

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 ...*

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

Dominating support schemes for RES-E in the EU



- Feed-in tariff
- Quota / TGC
- Feed-in tariff and Quota / TGC
- Tax incentives / Investment grants
- Other system

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

COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 23.1.2008
SEC(2008) 57

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."

Measuring the effectiveness of RES-E support

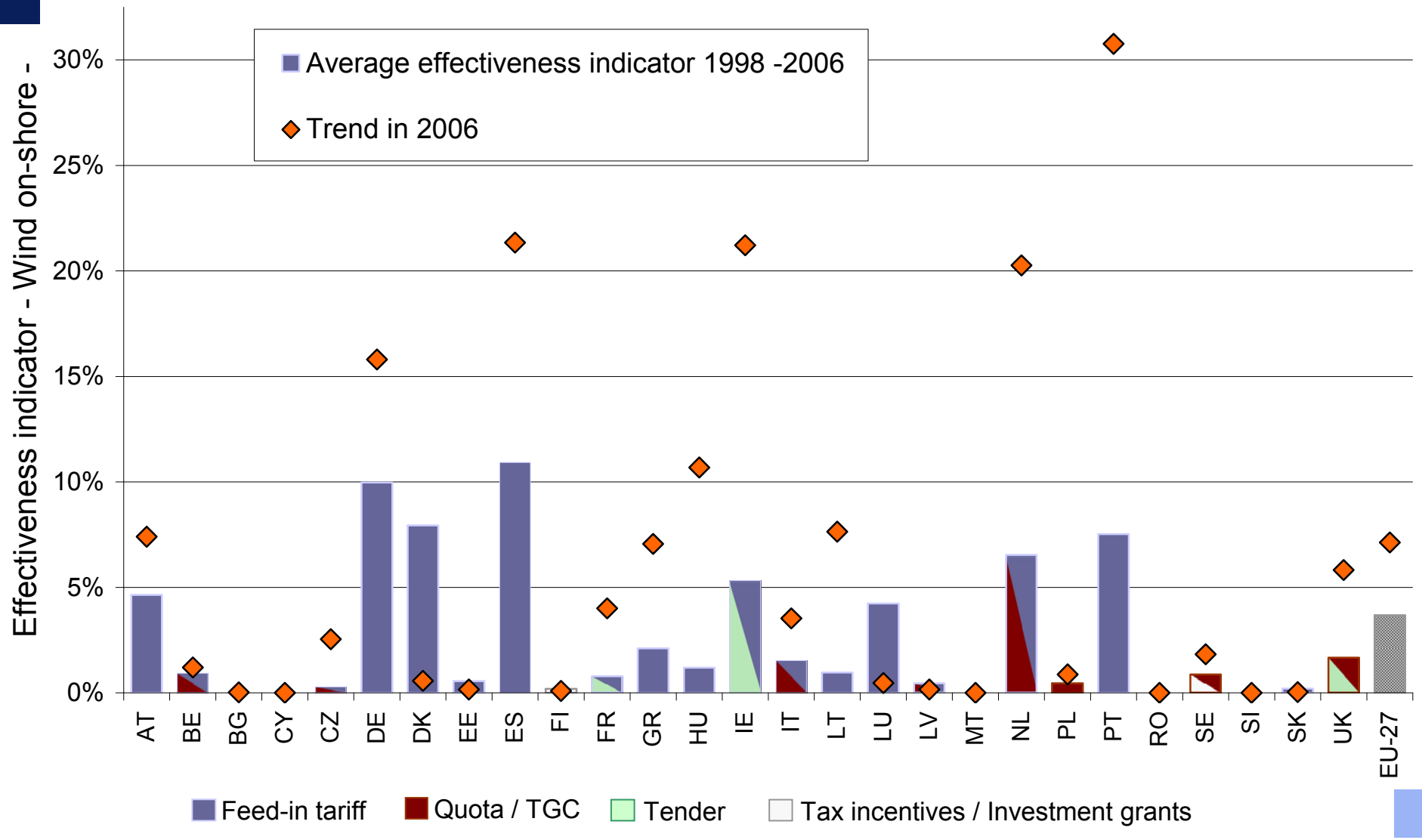
1. **Relative or absolute growth rates** are typically used to demonstrate the achievements of countries, however both measures are biased

2. Better measure to judge the performance is the **absolute growth 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

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

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

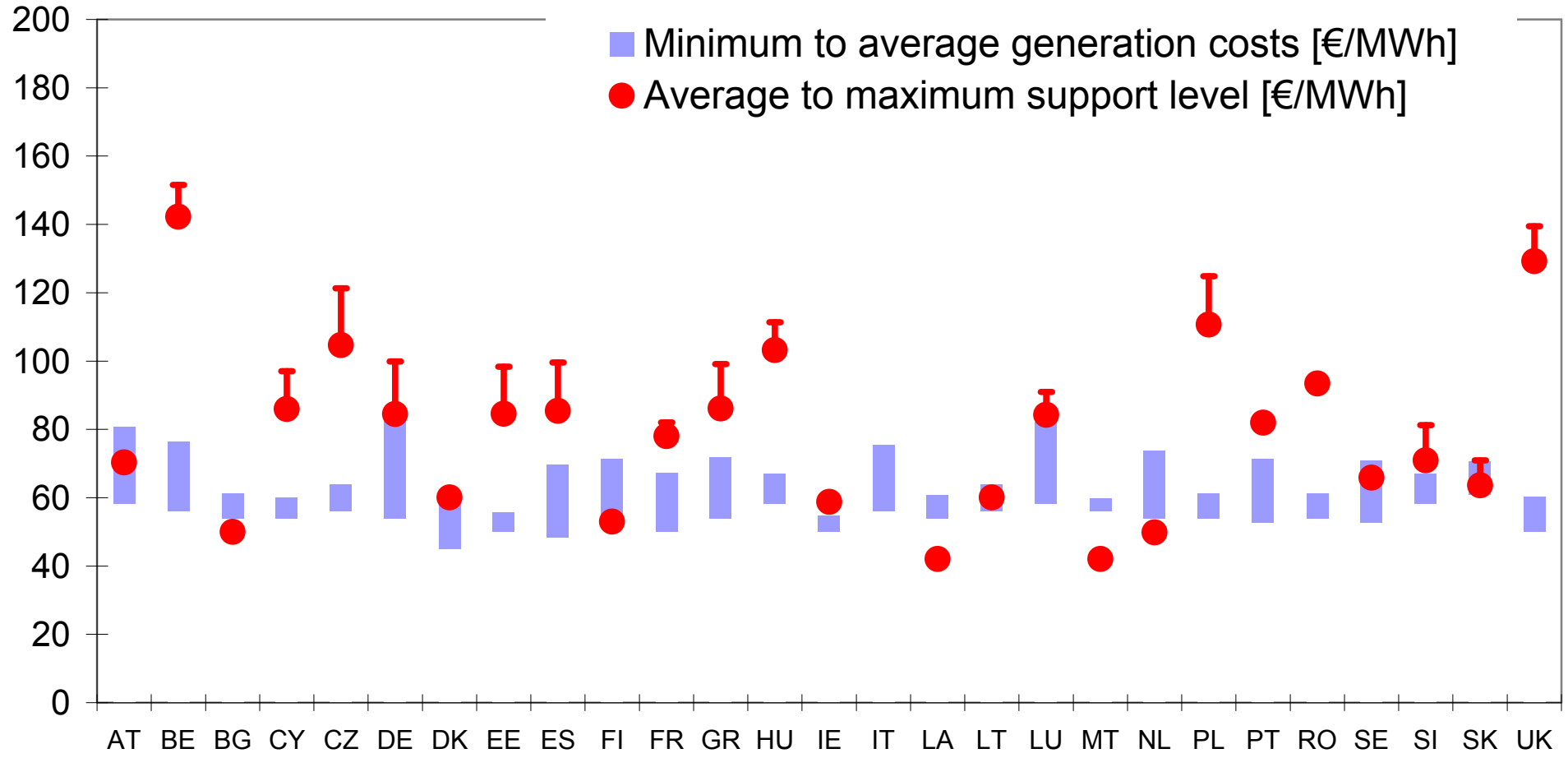
PT: payback time - 15 years

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

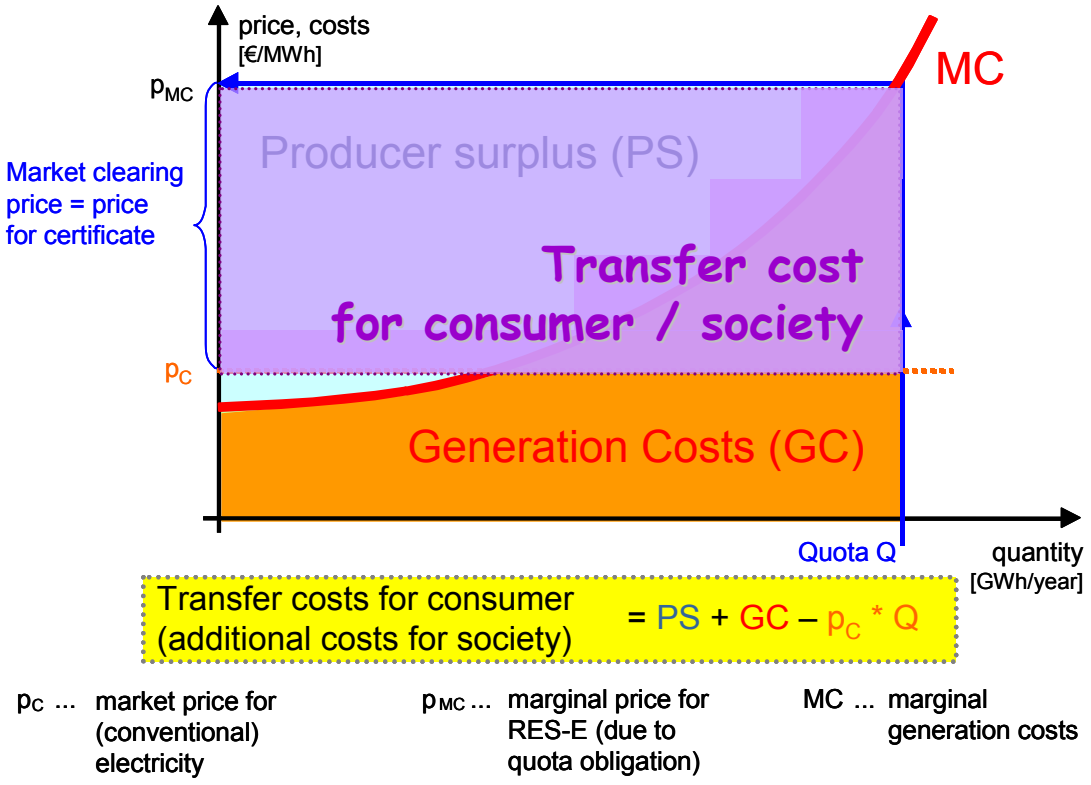
Support level vs. costs for wind on-shore in the EU



Core Objective – Creation of efficient policy schemes

Key criteria for efficient policy instruments

- Minimise generation costs
- Lower producer profits
- Reduce risk for investors



Future evolution of RES in the EU

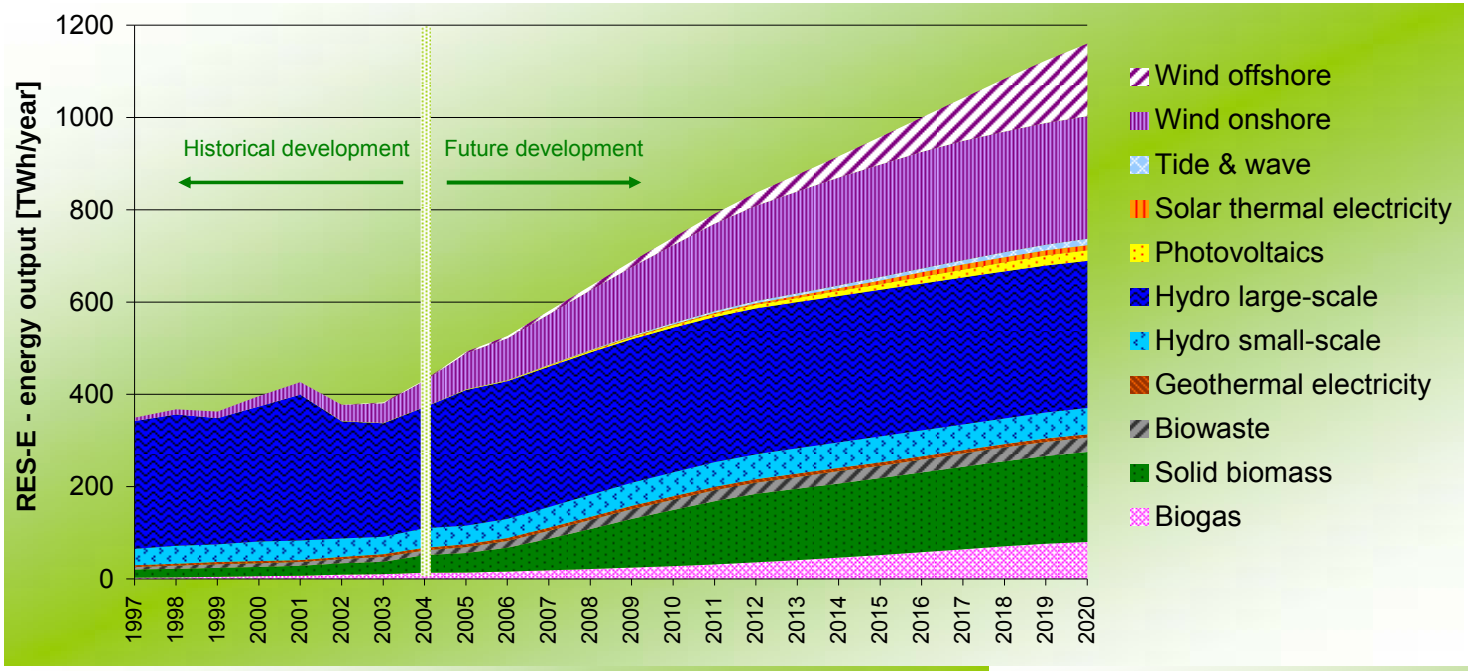
- MS potentials and targets -

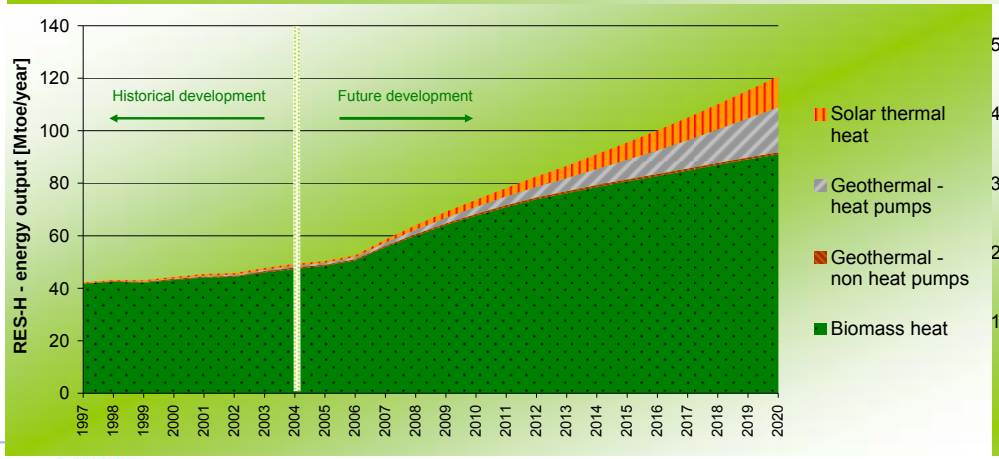
Future perspectives: a scenario on how to meet the challenge

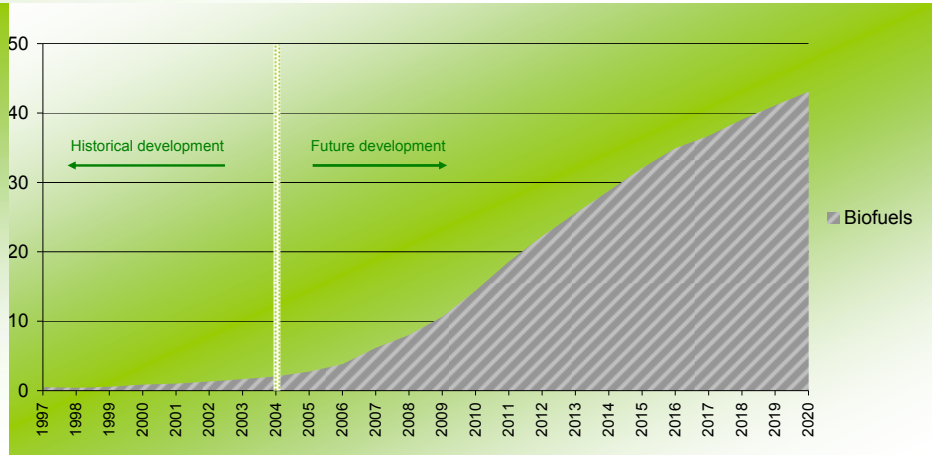
Green-X balanced scenario

Renewable Energy Roadmap
(European Commission, January 2007)
European Union

20% Renewable Energies by 2020

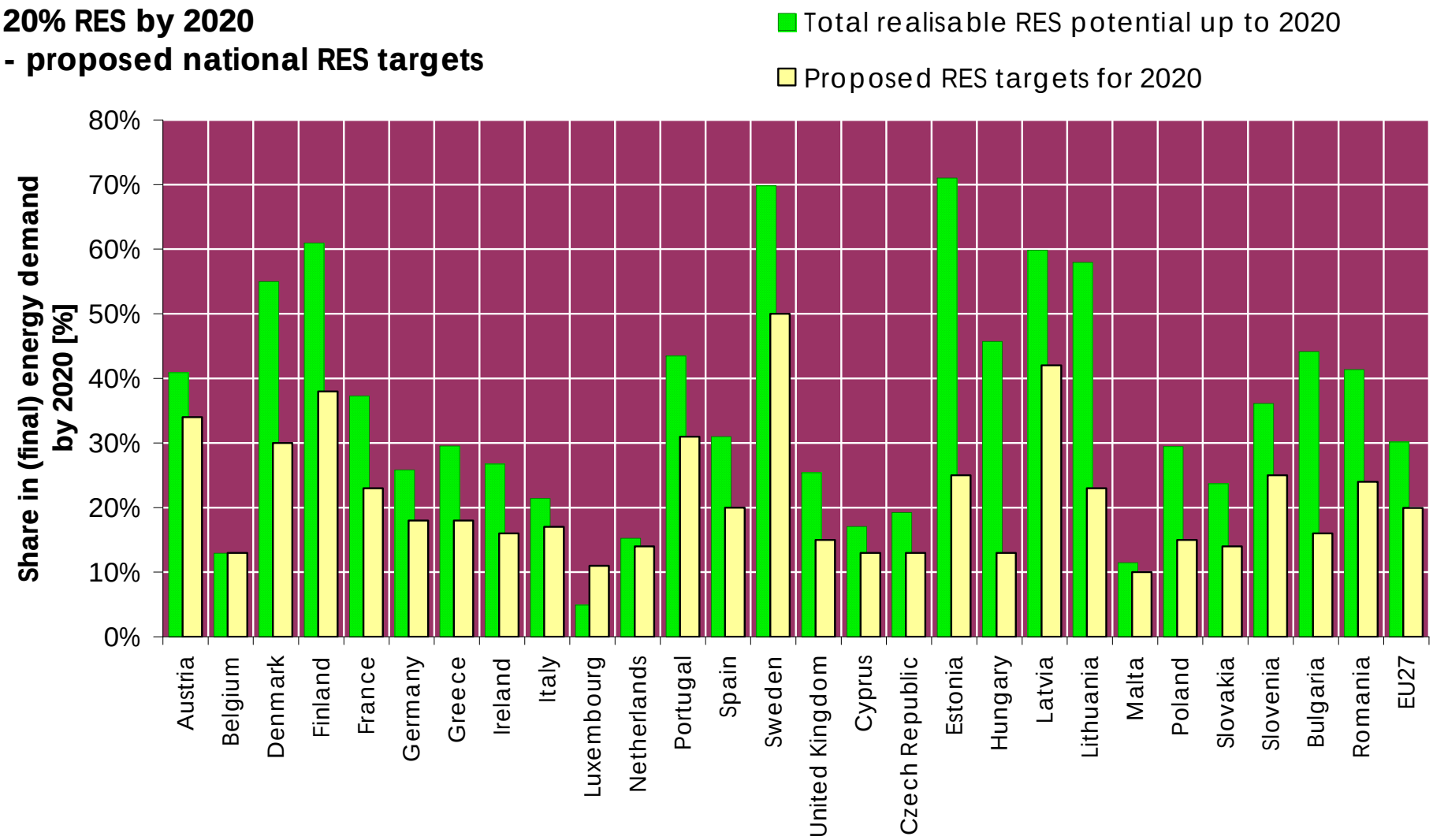






National RES targets for 2020 – the proposed definition

20% RES by 2020
- proposed national RES targets



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-weighting"-"first mover bonus"

Flexibility elements of the new proposal for a RES directive

- Discussion on GO trade -

Proposed RES directive: flexibility based 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

Proposed RES directive: flexibility based on GO trade

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

Proposed RES directive: flexibility based on GO trade

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))*

Proposed RES directive: flexibility based on GO trade

Case study of Unrestricted GO-trade by private parties

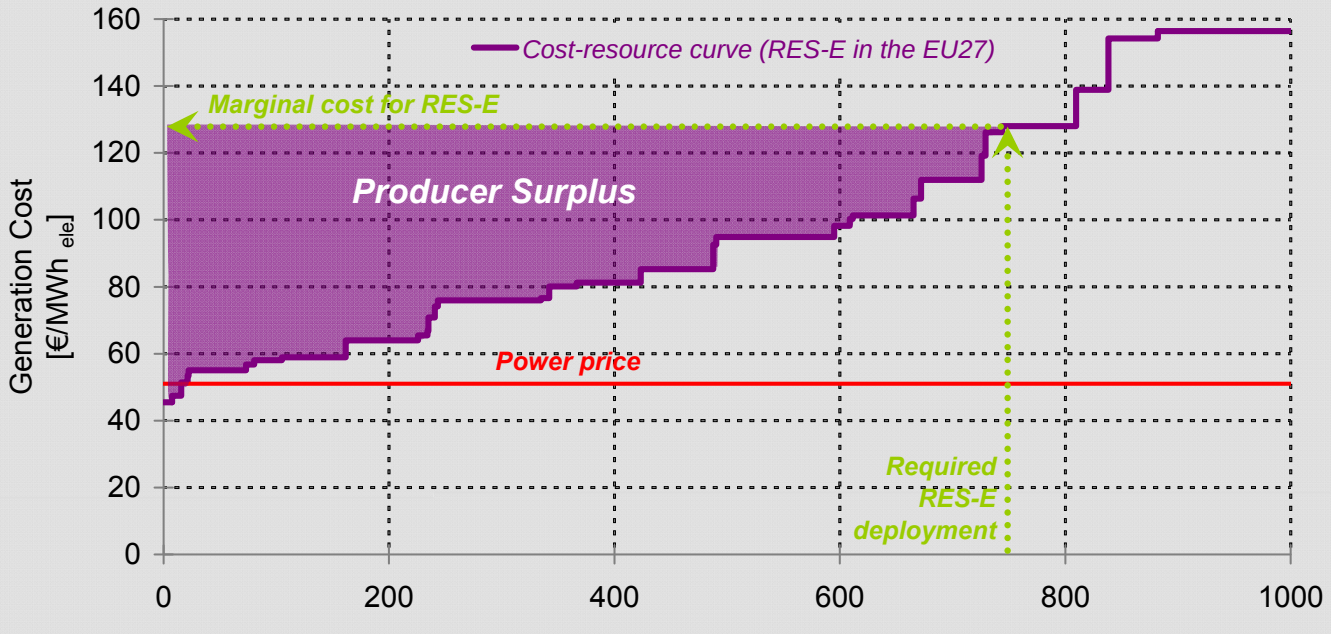
Critical issues of GO trade are discussed for the case of unrestricted trade by private parties, i.e. in the case that Member States are not able to effectively restrict trade

- ►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



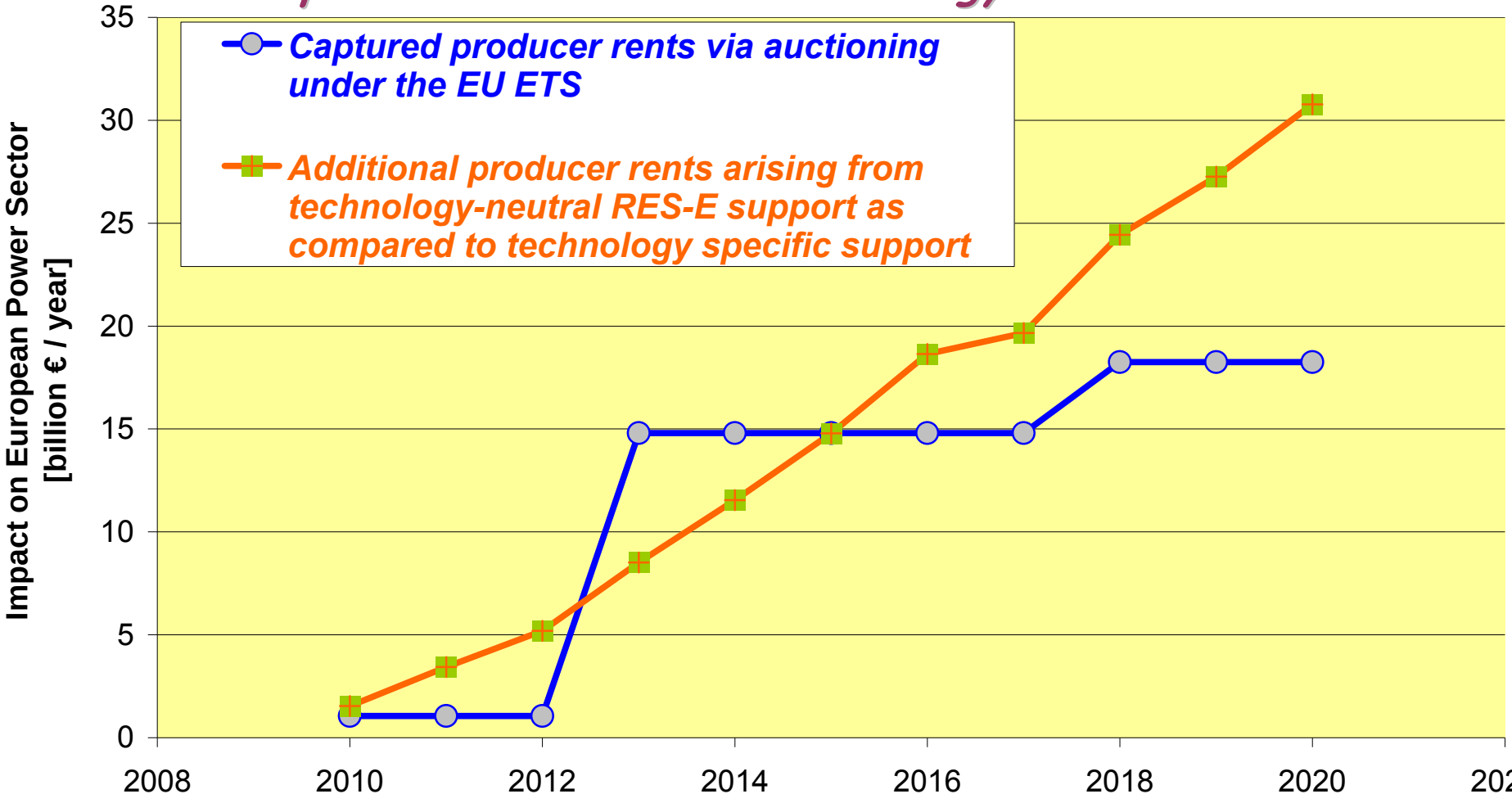
>> Source: Green-X database <<

►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)

Proposed RES directive: flexibility based on GO trade

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)]

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 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

►Conclusions

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!

Thank you for your attention

Contact

Mario Ragwitz

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On the path towards EU-wide harmonisation the following steps are suggested:

1. Set long term targets at EU level
2. Set correct framework conditions for conventional power markets **(full liberalisation)**
3. Diminish the key barriers for RES-E development **in each Member State**
4. Set minimum design criteria for support schemes **(generic and instrument specific)**
5. [Optionally: Start regional coordination of RES-E markets **e.g. Nordic TGC market, Feed-In Cooperation]**

Full EU-wide harmonisation only after successful completion of the above steps

Proposed RES directive
… GO trade

►Critical issue: **„Cross-border subsidies"**
… "sell-out" of low-cost RE potentials

►Net exporting countries would lose their low-cost RE potential. Their cost for achieving their RE target would increase.

►The cost for net importing countries would decrease.

→ ***Net exporting countries would cross-subsidize net importing countries.***

But: **benefits** for their local industries, GHG reduction, less air pollutant

In addition: The generated electricity still needs to be **integrated** into the power system of the exporting country (grid connection, reinforcement etc.) → integration cost, interconnectors needed?

Proposed RES directive
… GO trade

►Critical issue: *Time frame for trade*

„Cherry-picking" between support schemes

►If producers can choose the support system which pays the highest support every year, they undermine the long term concept of most European support systems.

►The Directive proposal aims to exclude such a situation based on article 8.2:

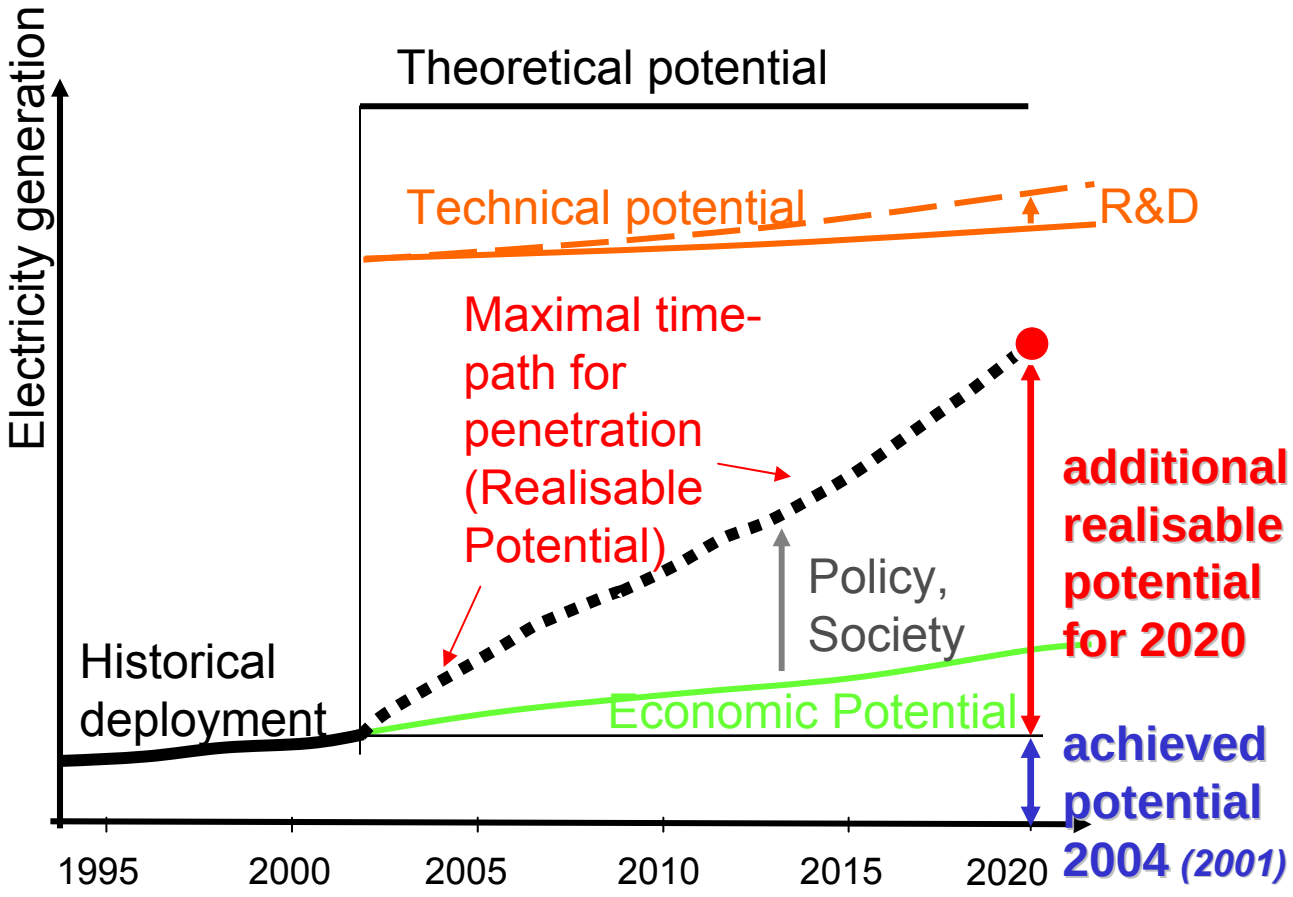
Where an operator has submitted one or more guarantees of origin to a competent body in accordance with paragraphs 1(a) or (b), the operator shall:

(a) request guarantees of origin, in accordance with Article 6(1), for all future production of renewable energy sources from the same installation;

(b) submit these guarantees of origin for cancellation to the same competent body.

Future potentials of RES-E in the EU

Definition of the (additional) realisable mid-term potential (up to 2020)



Definition of potential terms

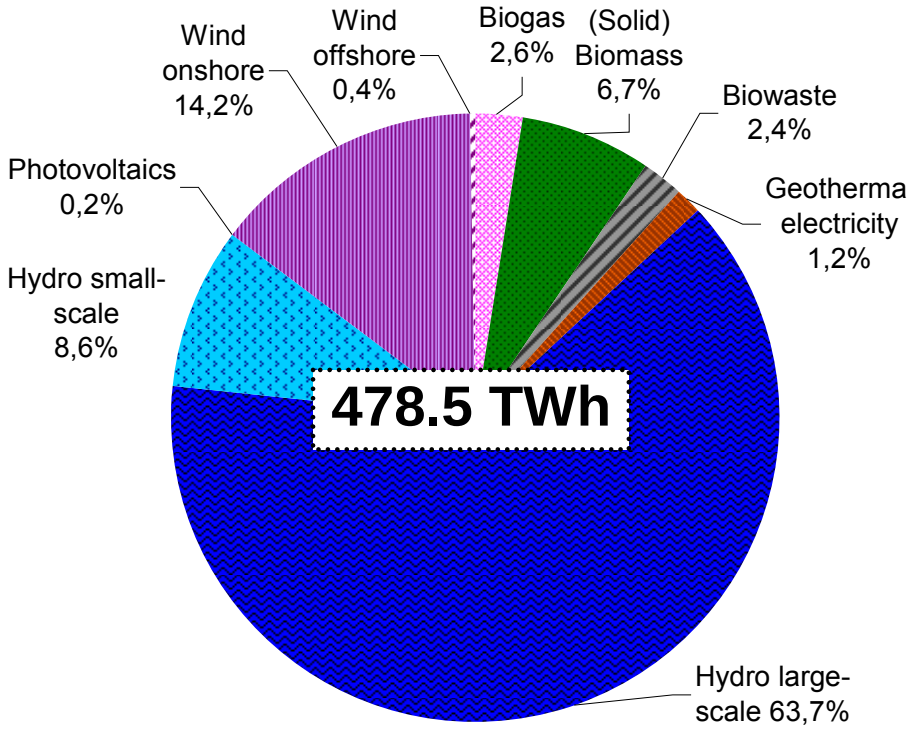
Theoretical potential ... based on the determination of the energy flow.

Technical potential … based on technical boundary conditions (i.e. efficiencies of conversion technologies, overall technical limitations as e.g. the available land area to install wind turbines)

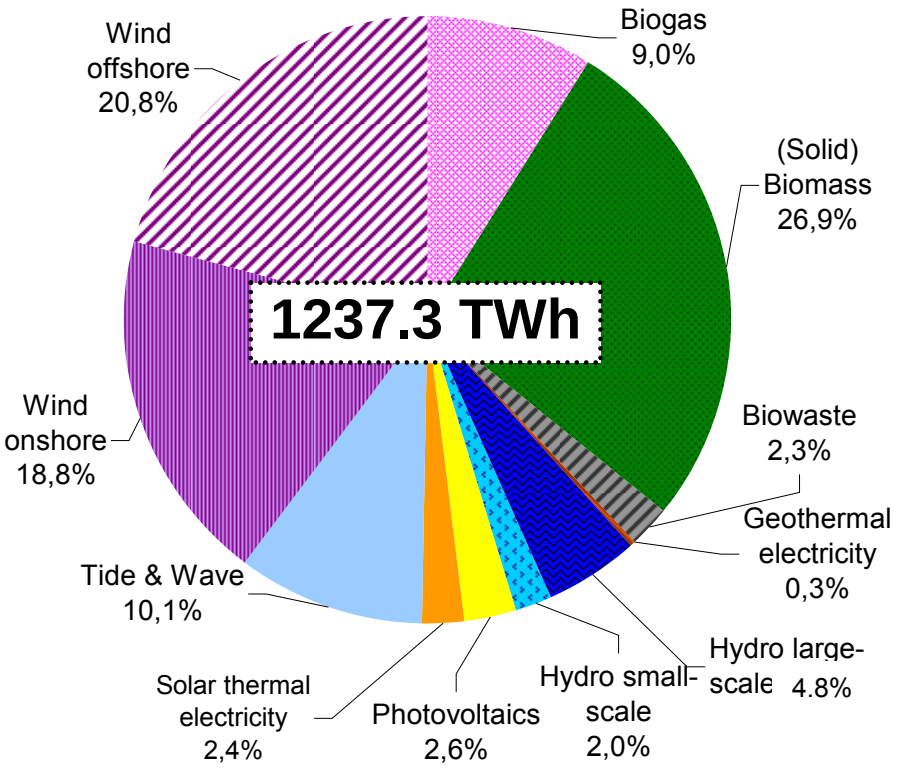
Realisable potential … The realisable potential represents the maximal achievable potential assuming that all existing barriers can be overcome and all driving forces are active.
Thereby, general parameters as e.g. market growth rates, planning constraints are taken into account in a dynamic context – i.e. the realisable potential has to refer to a certain year.

Mid-term realisable potential for RES-E in EU-27

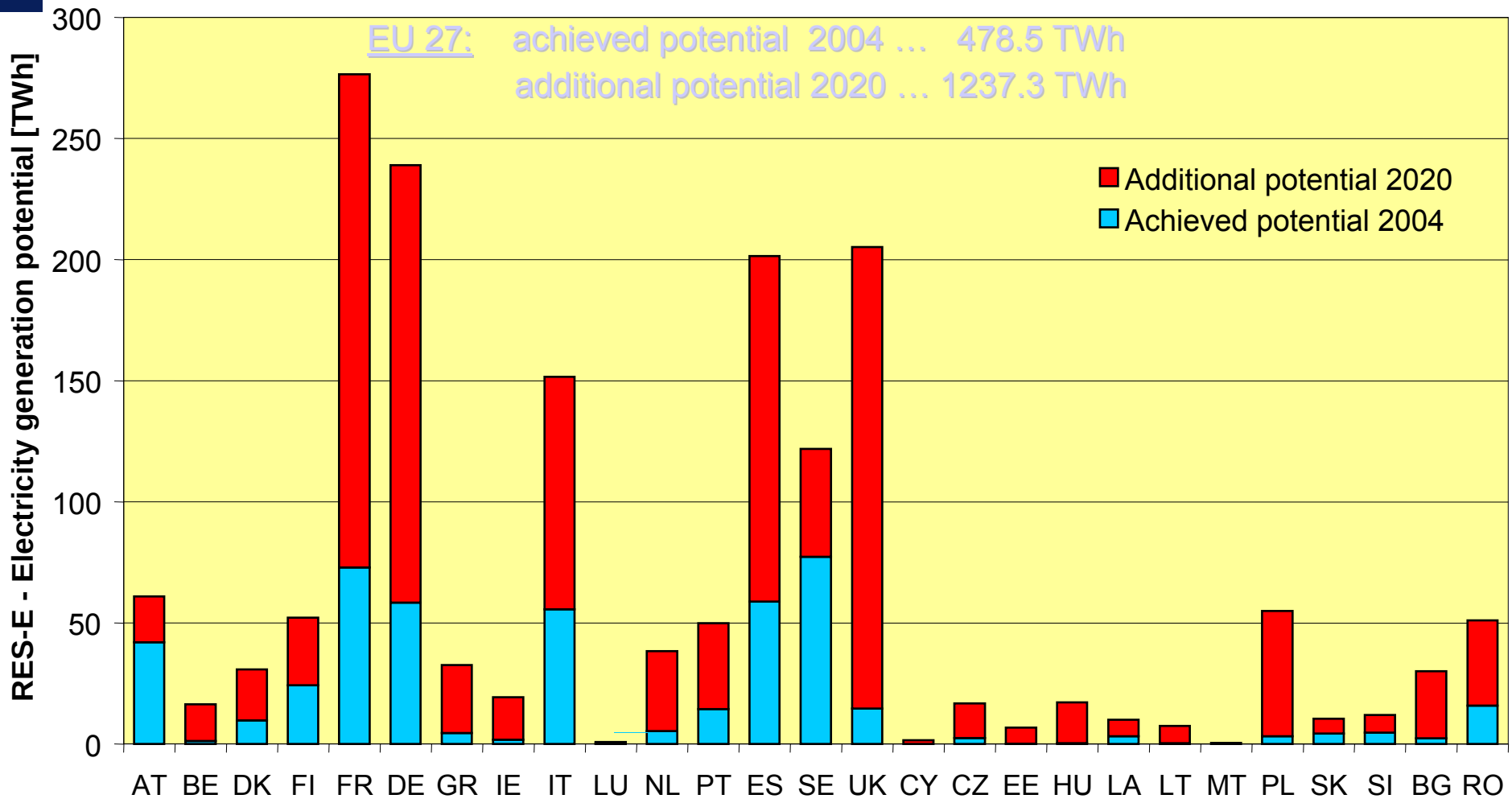
Achieved Potential
at the end of 2004



Additional Potential
up to 2020



Mid-term realisable potential for RES-E in EU-27



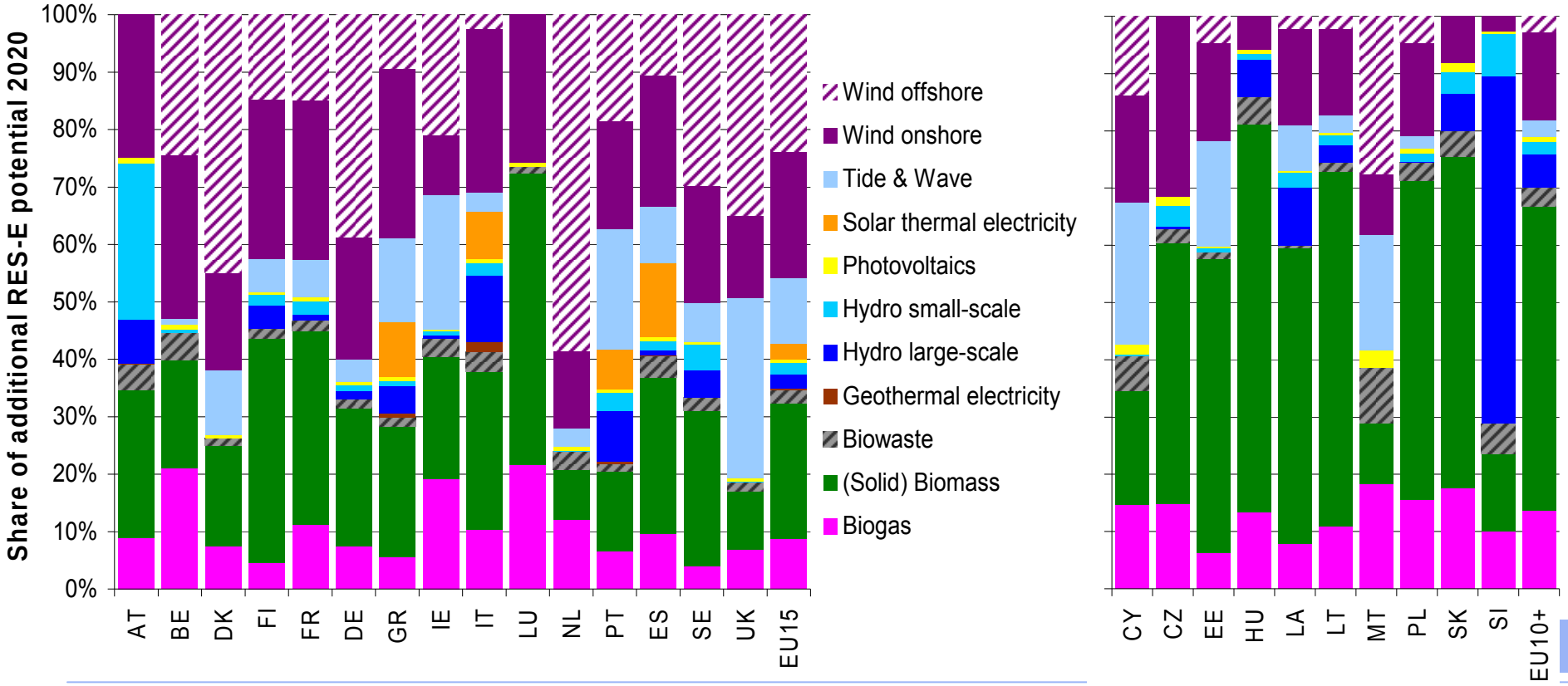
RES-E split of future potentials in Europe *(Additional potential up to 2020)*

EU-15

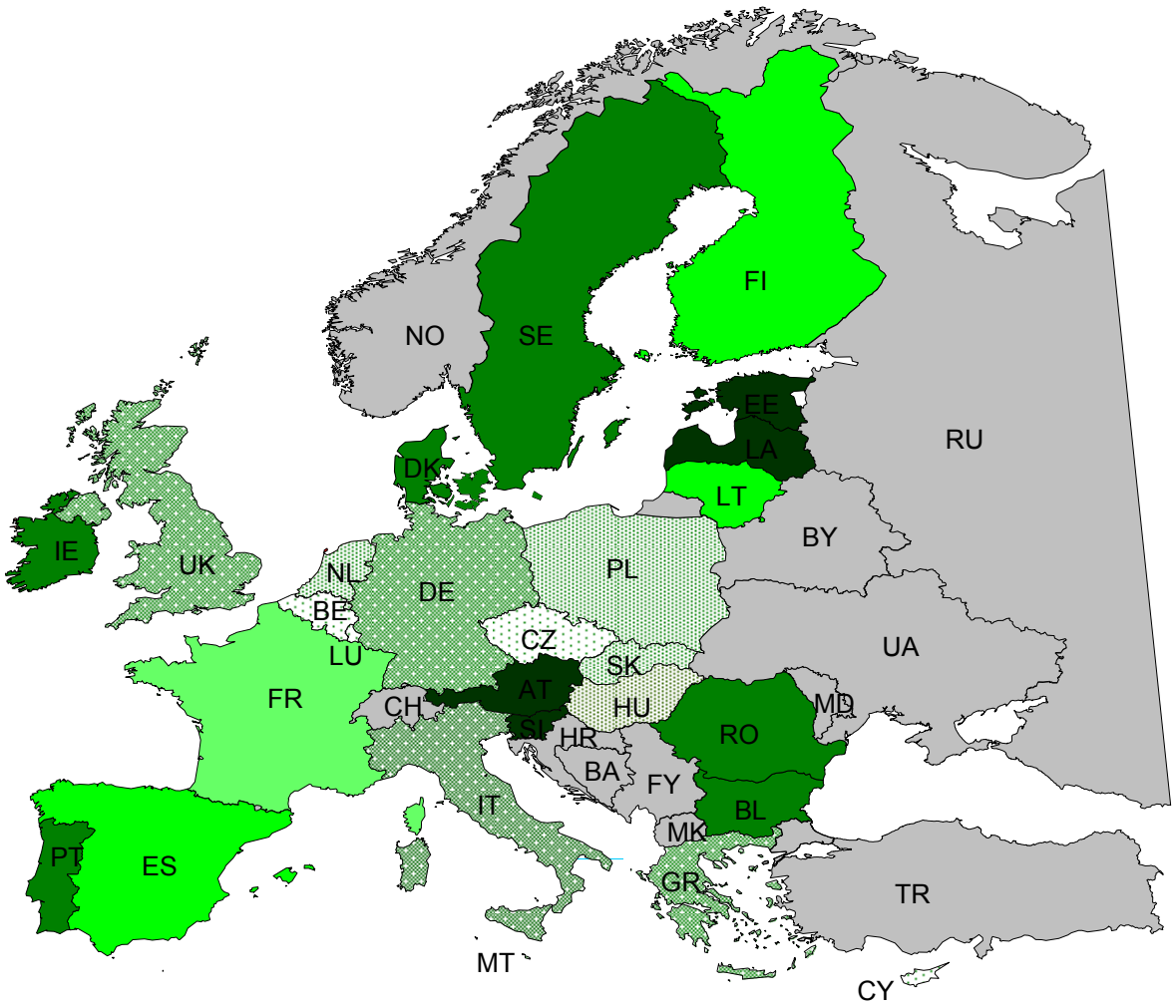
Dominating RES-E technologies:

Wind on- & offshore, Biomass, ... Biogas, Wave & tidal

EU-10+



Mid-term realisable potential for RES-E on country level related to consumption



Share of total RES-E potential on gross electricity consumption 2020 (BAU scenario-Energy and Transport Outlook)

- > 70%
- 60-70%
- 50-60 %
- 40-50%
- 30-40%
- 20-30%
- 10-20%
- < 10%

Conclusions

- Not the expected profit but the potential risk determines the effectiveness!
- The effectiveness of various RES-E support schemes largely depends on the maturity and the credibility of the system.
- A stable planning is important to create a sound investment climate.
- Administrative barriers can hamper the effectiveness of generally very powerful policy schemes.
- Effective instruments for RES-E support are frequently economically efficient as well!

RES Trading as an Option

Dr. Andreas Löschel

Head of Department "Environmental and Resource Economics"
Centre for European Economic Research (ZEW)
Mannheim, Germany

ITRE Committee, European Parliament, Strasbourg, 13th March 2008



Why Promoting Renewable Energies?

Economic justification for market intervention

- Emission externality
- Technology (knowledge spillovers)
- Bounded foresight (market barriers for specific infant industries, dynamic efficiency)
- Security or Dependency "Externality"
- Strategic industrial policy / general economic policy (economic development, jobs, export markets)

Economic (price or quantity based) instruments provide least cost solutions → reduce other market failures

Efficiency of RES-E Promotion Schemes

- Main strategies to promote RES-E in Europe:
  - Feed-in tariff systems with differentiated (technology-specific) tariffs
  - Quota obligations with trade in exchangeable quotas (EQ)

Feed-in tariffs	Quota obligations
+ Flexibility (easily adjustable, locations, technologies, project size) + Low risk for investors + Serves additional targets (techn., industrial / regional policy goals) - Demands „well informed“ regulation (technologies, costs, potentials) - Danger of over-funding - Potentially high excess costs (inefficiencies)	+ Little information needed for regulation + De-centralized mechanism (leaving technology choice unregulated) => effective and efficient (min. costs) + competition among producers - Risk and uncertainties about future (price, volume, market development) - „Tough“ environment for infant technologies - Negative experiences in terms of efficiency and effectiveness

Main criteria for comparing FIT and EQ

- Environmental effectiveness: new installed RES capacity
  - Economic incentive: cover costs and risks
  - Investment securitisation: long-term contract, credible
- Economic efficiency and equity
  - Control of collective costs: technology costs and politically accessible potential

    Short term efficiency: low cost, mature technology

    Long term efficiency: costs might increase since expensive technologies not progressed when needed

Empirical evidence

- Large literature on causal links between RES diffusion and variation of design and strength of governm. policy (feed in tariffs (FIT): Germany, Spain, Denmark, exchangable Quotas (EQ): UK, Italy)
- but, influence of instruments (FIT, EQ) difficult to isolate from other factors contributing to RES development
  - ⊖ planning permission procedures, commitment, recovery of connexion costs by grid operators
  - ⊕ benefits from other support measure, e.g. investment subsidies, tax credits, EcoTax exemption
- No proof of intrinsic performance of the instruments

Prices and Quantities

Reasons for bad experience with RES Trading?

- Theory: FiT & EQ Trading somewhat equivalent…
  - … if perfect information
  - … if quota credibly enforced

  } Both not the case

- Practice: Quota not reached / insufficient investment
  - Uncertainty attached to RES Trading requires higher rents
  - Individual technologies not even cheaper (e.g. wind)
  - buy out price
- Remedies for future RES Trading?

RES Trading in the Energy Package

Framework Directive: Promoting use of renewables

- Target: 20% in 2020 as compared to 8.5% (15% in electricity) today
- Targets for individual member states
- Trade in guarantees of origin (GoOs)
  - Member state level
  - Private level
- "Successful" support schemes should be allowed to continue

RES Trading in the Energy Package

Who is trading?

- Member States
  - No direct interference with national support schemes /
  - Technology specific rents defined by member states
  - Efficient effort-sharing between member states possible…
    - … if (1) MS regime efficient
    - … if (2) quotas are credibly enforced
    - … if (3) “trade” among member states efficient (more: renegotiation)
- Producers
  - Less flexibility of MS concerning the technologies
  - Possibly high rents to producers of cheap green energy
  - Higher compatibility with the EU internal market
  - In principle more cost minimizing potential
    - … if (1) MS credibly enforce the quota

Incentives: RES Trading or FiT

Producers: FiT / Member States: RES Trading

- Static: Difference between cost and FiT
- Dynamic: Development of better technology will lower cost, but also lower FiT – less incentive,
  BUT: Certainty due to fix FiT for very long time, very high (and expensive) investment incentive

Producers: RES Trading

- Static: Difference between cost and RES price
  (uncertain! BUT: large part of uncertainty stems from not-credible enforcement of the quota, NOT technology uncertainty)
- Dynamic: Development of better technology will lower RES-price, this lowers the incentive,
  BUT a long term increasing quota will contribute to an increasing incentive over time

Potential Problems

- Main advantage (cost minimizing) of RES Trade only materializes IF quota credibly enforced or sufficiently sanctioned

- If RES Trade happens among producers
  - Paradigm-shift?
  - Little influence of member states on the RES technology portfolio

- If RES Trade happens at MS level
  - Trade among MS is hardly a “market”, will it produce the right price signal?
  - How are the different price signals at MS-level transported into the individual member-state-schemes?
  - Efficient implementation within the member state?

Biomass Potentials and transformation strategies in the EU and policies for import

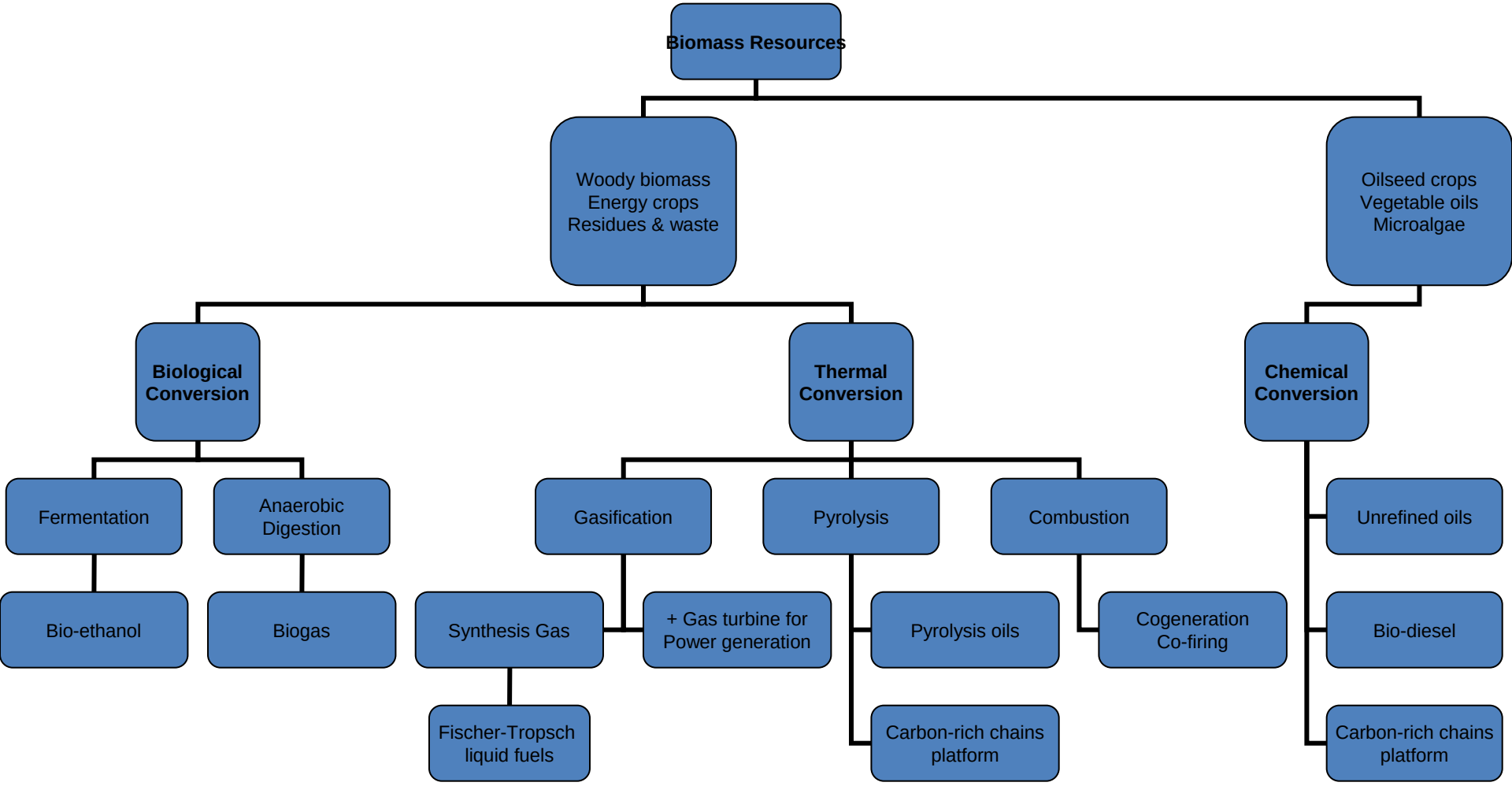
European Parliament workshop

Opportunities for Renewable Energy Development in Europe

13 March 2008

Francis X. Johnson, Research Fellow,
Energy and Climate,
Stockholm Environment Institute

Alternative Pathways for Biomass Conversion



RE/Biomass Policy Instruments in MS as of 2007

	Feed-in tariff	Renewable Portfolio and/or fuels standard	Capital subsidies, grants, rebates	Investment & other tax credits	Energy or sales tax, VAT reduction	Tradable RE Certificates	Energy Production payments, tax credits	Public Investment, loans, financing	Public competitive bidding or procurement	Biofuel Blending Mandates	Biofuels tax exemptions
Austria	1		1	1		1		1			
Belgium		1	1		1	1					1
Bulgaria											
Cyprus	1		1								
Czech	1		1	1	1	1					
Denmark	1				1	1		1	1		
Estonia	1				1						
Finland			1		1	1	1				
France	1		1	1	1	1		1	1		1
Germany	1		1	1	1			1		1	***
Greece	1		1	1				1			1
Hungary	1				1	1		1			
Ireland	1		1	1		1			1	1	1
Italy	1	1	1	1		1					1
Latvia	1							1	1		
Lithuania	1		1	1				1			1
Luxembourg	1		1	1							
Malta	1				1						
Netherlands	1		1	1		1	1				
Poland		1	1		1			1	1		
Portugal	1		1	1	1						
Romania					1						
Slovakia	1			1				1			
Slovenia	1							1			1
Spain	1		1	1				1			1
Sweden		1	1	1	1	1	1		1		1
UK		1	1		1	1				1	1
Total	**20**	5	**18**	**14**	**14**	12	3	12	6	3	10

Energy-Environment-Development driving forces for bioenergy

- Rural development - creation of sustainable livelihoods
- Relieving resource pressures and stresses
- Socioeconomics of urbanisation and migration
- Energy security: local – regional – global
- Rural health issues - indoor air
- Urban health issues - air quality
- future competitiveness of agro-industries
- Kyoto Annex 1 countries seeking carbon credits
- Developing countries looking for foreign investment through Clean Development Mechanism (CDM)
- Dependence on fossil fuels in increasingly volatile market
- Reduced vulnerability of farmers through diversification

The Role of modern bioenergy

Modern bioenergy will play a leading role in the global transition to clean and sustainable energy due to two decisive advantages over other renewables:

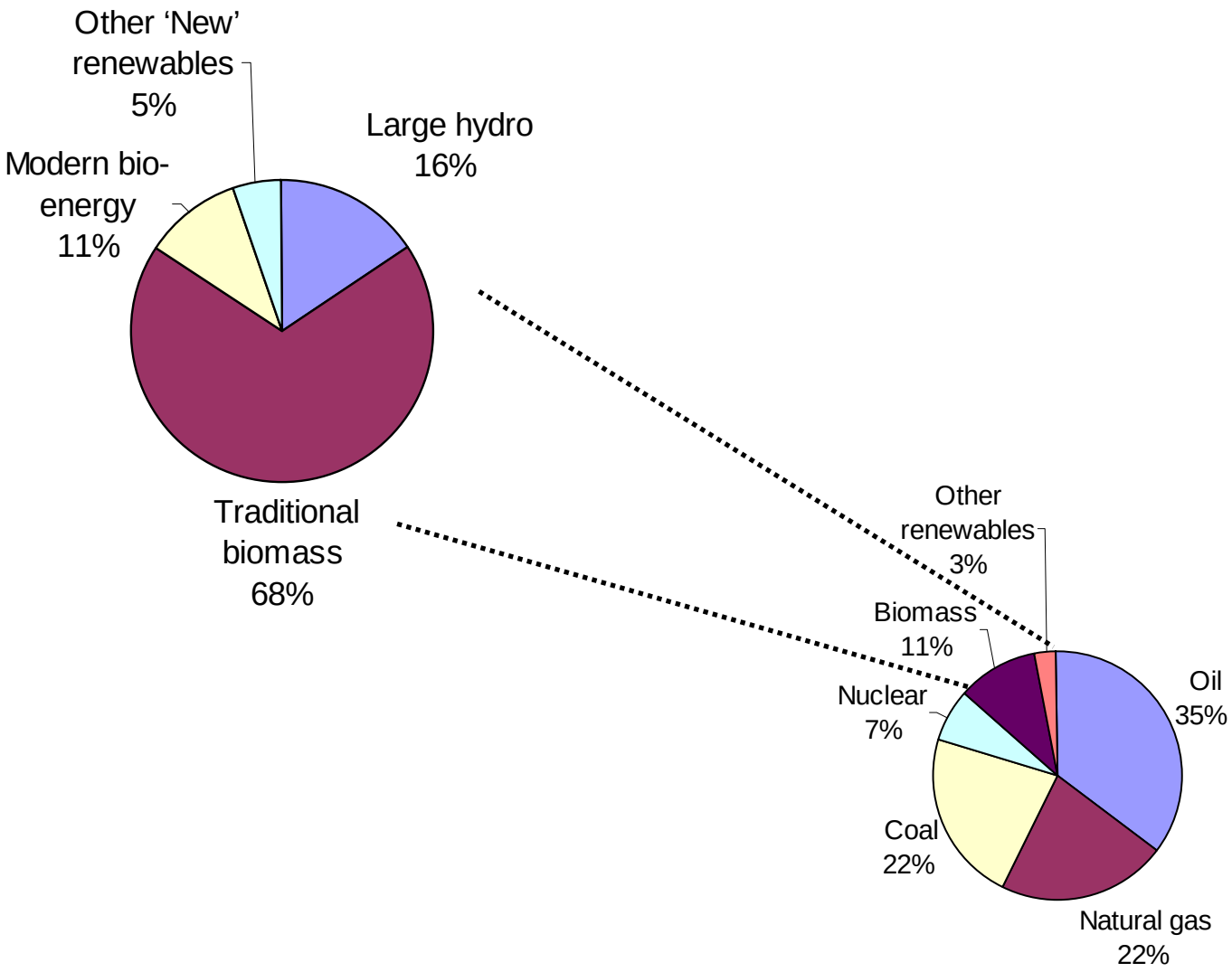
(1) Biomass is stored energy. Like fossil fuels, it can be drawn on at any time, in sharp contrast to daily or seasonally intermittent solar, wind, and small hydro sources, whose contributions are all constrained by the high costs of energy storage.

(2) Biomass can produce all forms of energy, i.e. energy carriers, for modern economies: electricity, gas, liquid fuels, and heat. Solar, wind, wave and hydro are limited to electricity and in some cases heat.

Modern bioenergy has several other advantages over other energy resources:

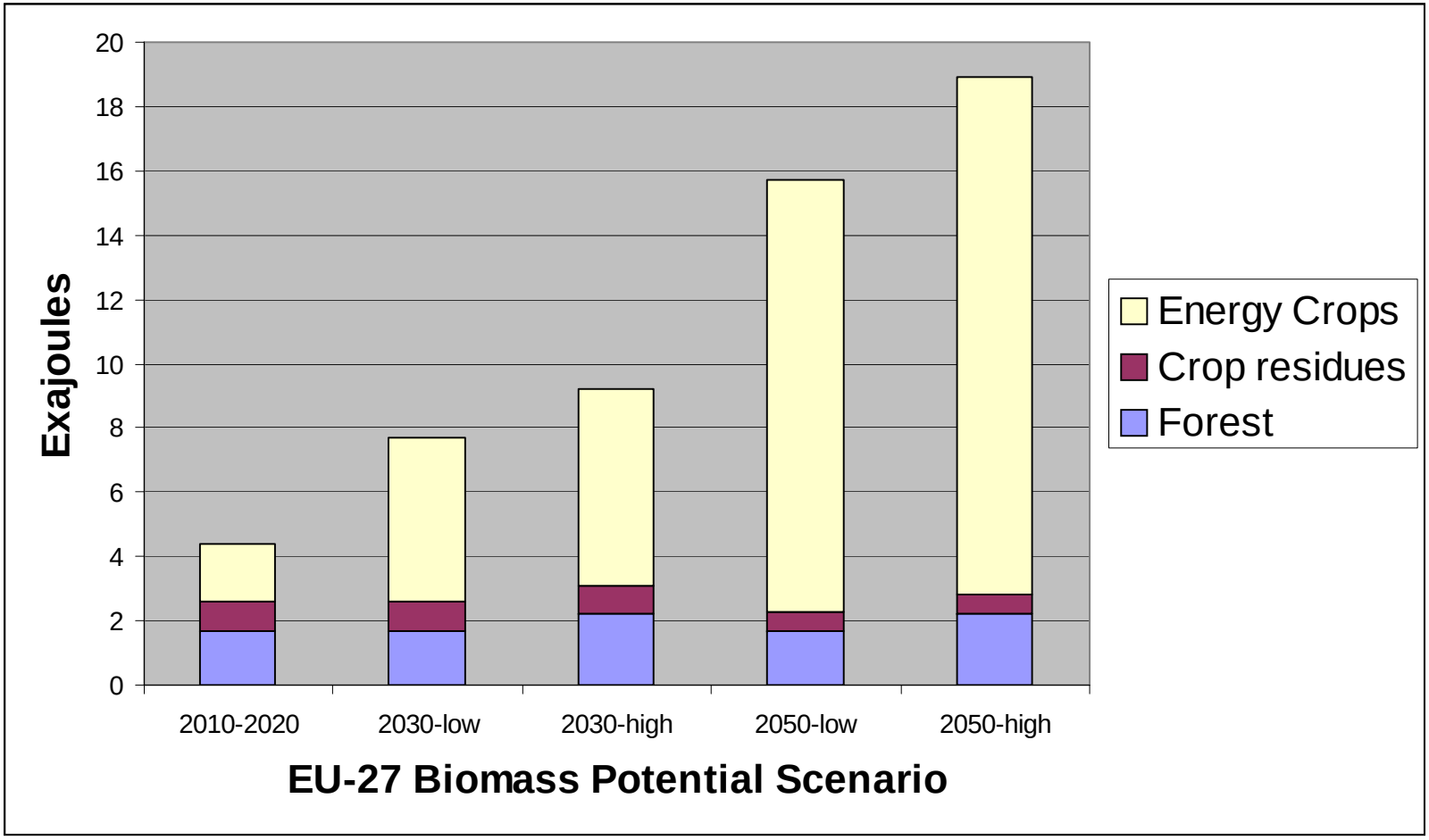
- provides rural jobs and income to people who grow or harvest the bioenergy resources; bioenergy is more labour-intensive than other energy resources;
- increases profitability in the agriculture, food-processing and forestry sectors. Biomass residues and wastes--often with substantial disposal costs--can instead be converted to energy for sale or for internal use to reduce energy bills;
- helps to restore degraded lands. Growing trees, shrubs or grasses can reverse damage to soils, with energy production and sales as a valuable bonus;

Global energy consumption



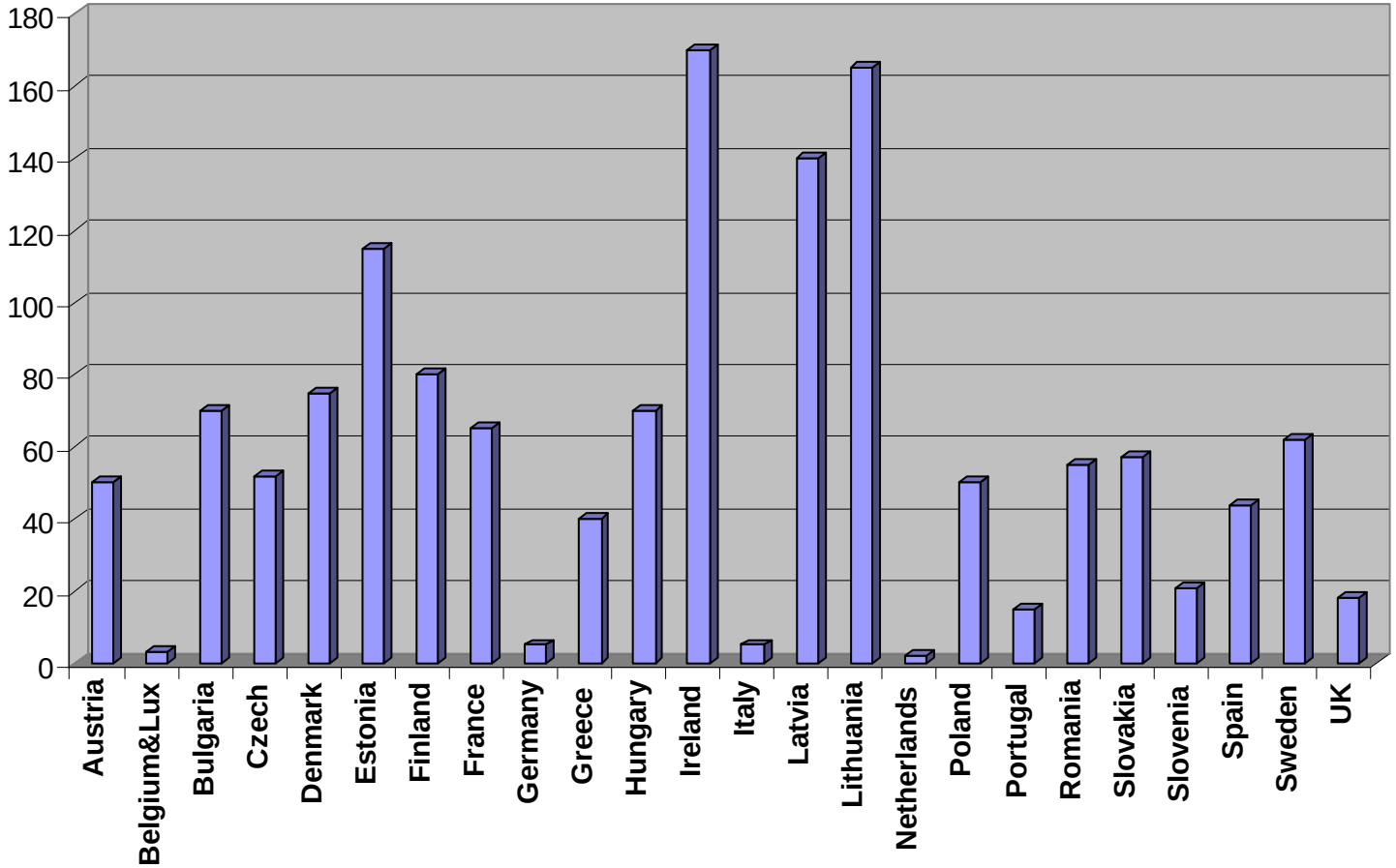
Source: UNDP World Energy Assessment, 2004

Estimate of EU-27 biomass potential for different timeframes and yields



Source: Ericsson and Nilsson, 2004

Estimate of biomass long-term (2050) potential by Member State (GJ/capita)



Source: Ericsson and Nilsson, 2004

How much land is needed for energy crops?:

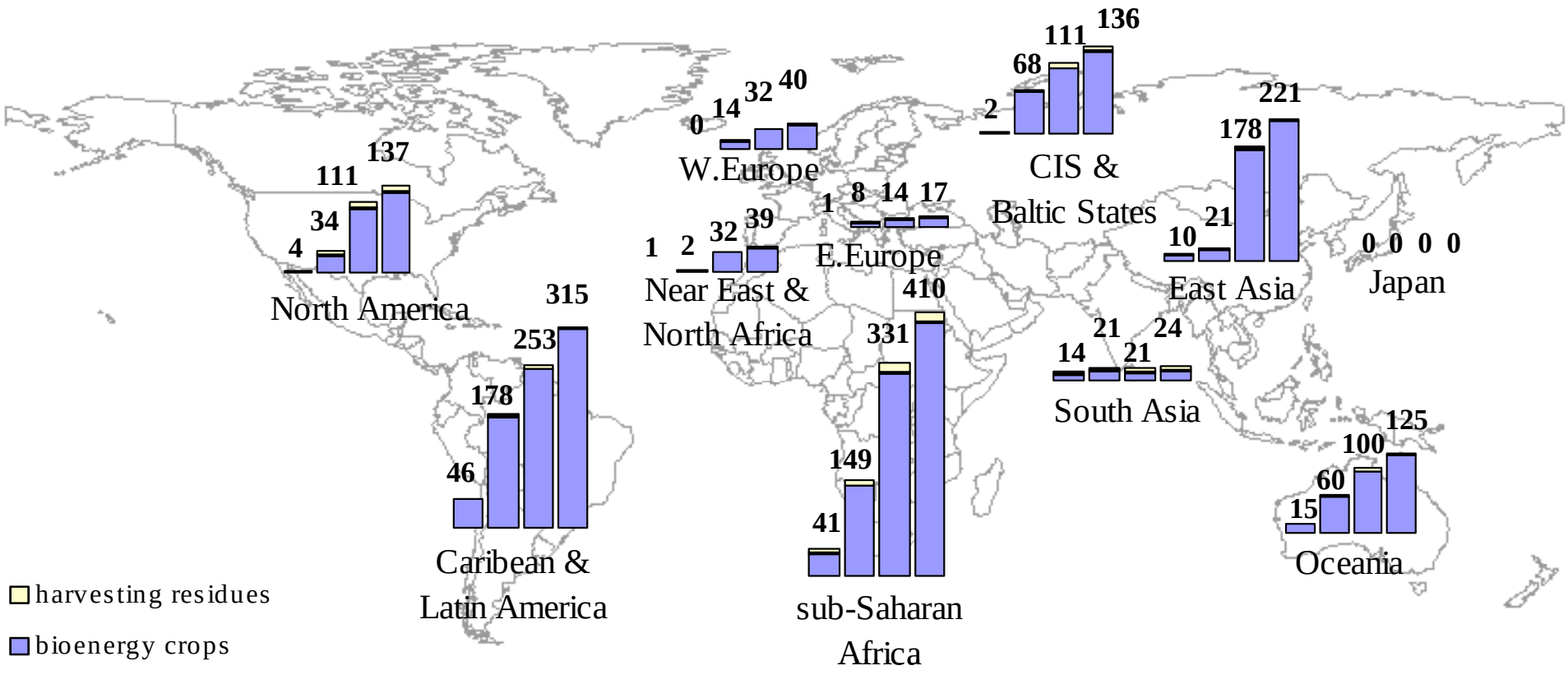
- 108 Mha arable land in EU-27; 0.222 ha/capita
- Assume 0.18 Utilised ha/capita for food
- About 21 Mha would be available in near-term

Now assume yields will converge in long-term:

- Assume 0.14 Utilised ha/capita for food
- Set-aside land would increase
- About 40 Mha would be available

By comparison, Brazil uses about 6 Mha to produce sugar AND ethanol; Tropical biomass is on average 5 x more productive than temperate biomass

Bio-energy production potential in 2050 for different scenarios



Source: E. Smeets, A. Faaij, I. Lewandowski – March 2004
A quickscan of global bio-energy potentials to 2050: analysis of the regional availability of biomass resources for export in relation to underlying factors, Copernicus Institute - Utrecht University, NWS-E-2004-109.

Intensity of agricultural cultivation remains low in most world regions

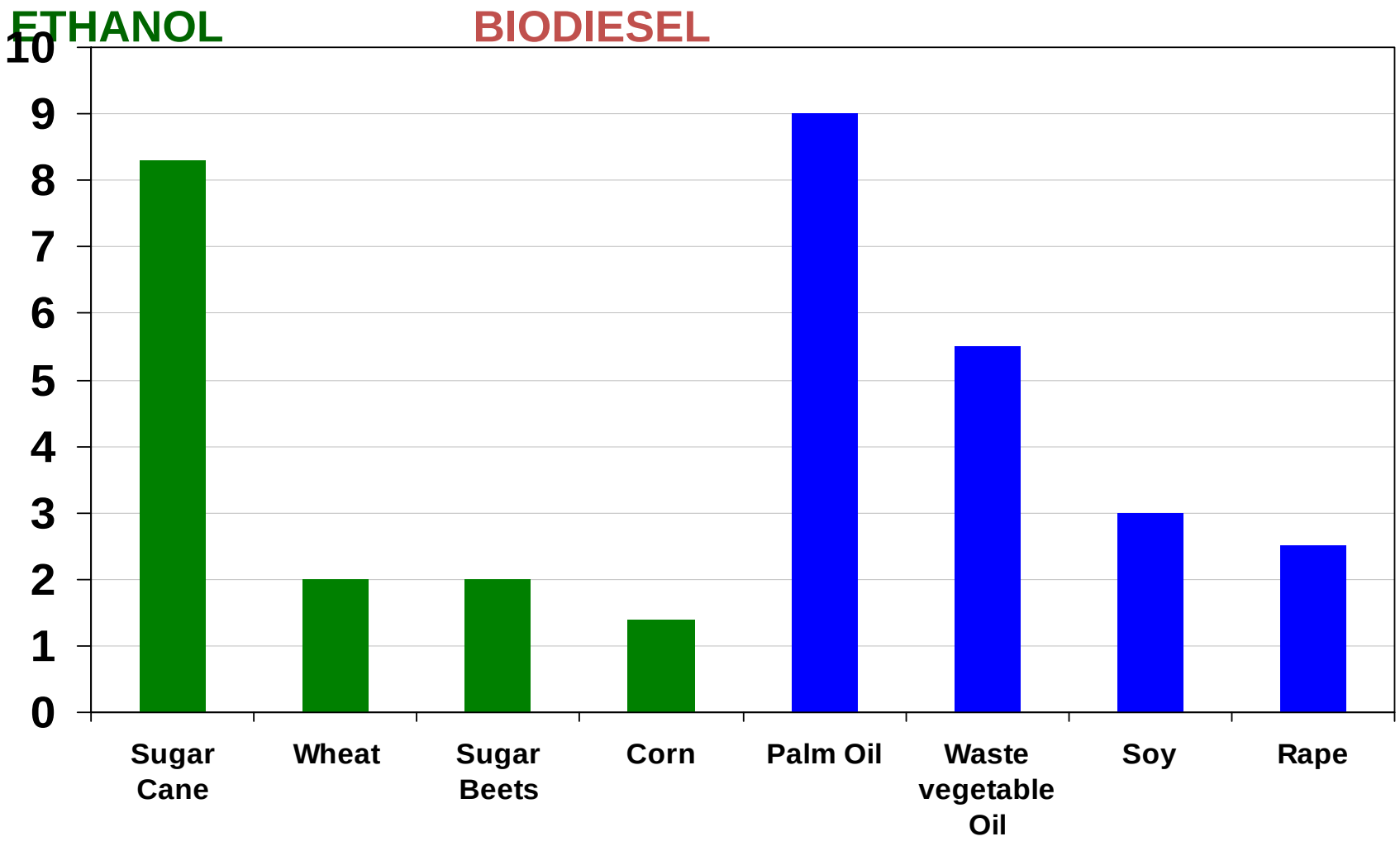
Rapid growth in biofuels production during 2000-2005

Bio-ethanol production by country or region (billion litres)									
	2000	***2001***	***2002***	***2003***	***2004***	***2005***	***Global Share, 2000***	***Global Share, 2005***	***Annual Average change***
Brazil	10.6	11.5	12.6	14.7	14.7	16.1	55%	45%	8.6%
U.S.A.	7.6	8.1	9.6	12.1	14.3	16.2	40%	46%	16.4%
Other	0.9	1.7	1.9	1.9	2.4	3.3	5%	9%	28.5%
World	**19.2**	**21.3**	**24.1**	**28.7**	**31.4**	**35.6**			**13.2%**
Source: calculations based on F.O.Licht, 2006.									

Biodiesel production by country or region (million litres)									
	2000	***2001***	***2002***	***2003***	***2004***	***2005***	***Global Share, 2000***	***Global Share, 2005***	***Annual Average change***
EU Total	***813***	***912***	***1210***	***1630***	***2265***	***3618***	***86%***	***86%***	***34.8%***
U.S.A.	8	19	57	76	95	284	1%	7%	106.4%
other	125	190	256	284	273	307	13%	7%	19.7%
World	**945**	**1121**	**1523**	**1989**	**2633**	**4209**			**34.8%**
Sources - estimated based on: Eurobserver, 2006; National Biodiesel Board, 2006.									

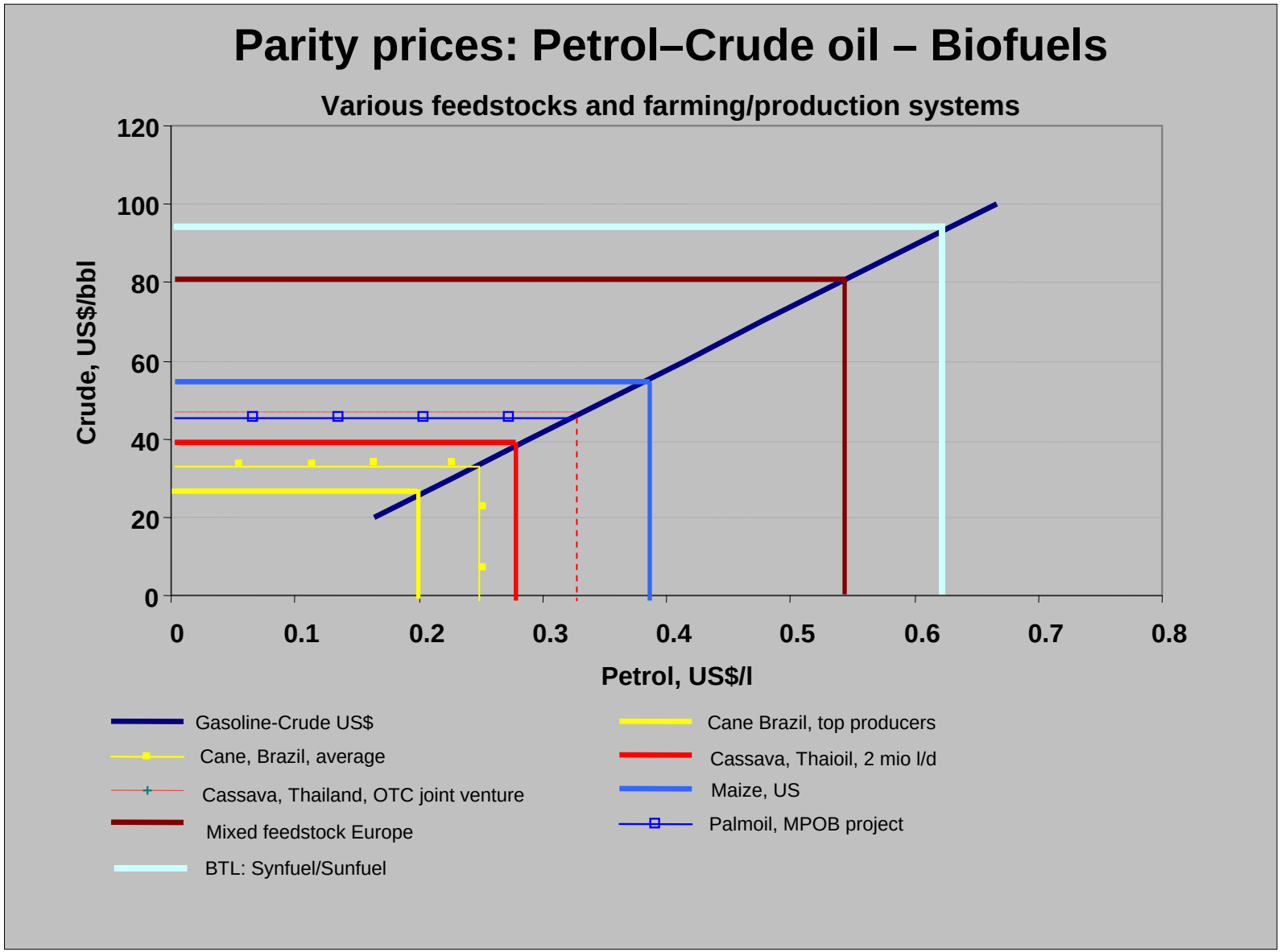
FOSSIL ENERGY BALANCE

Energy output per unit of fossil fuel input



Source: Various, compiled by World Watch Institute, 2006.

Cost competitiveness



Source: Schmidhuber (2005)

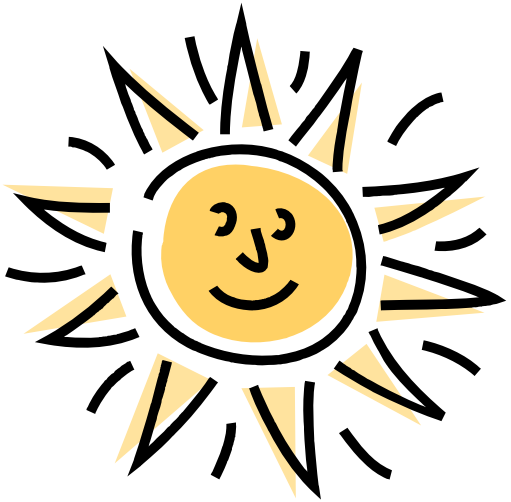
What is one buying when importing biofuels?

Is it technology?

Is it innovation?

Is it labour?

Is it the Sun?



Thanks for your attention!

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SEI STOCKHOLM ENVIRONMENT INSTITUTE

Climate and Energy Programme

The Roundtable on Sustainable Biofuels

Ensuring that biofuels deliver on their promise of sustainability

The need for biofuel standards

The Roundtable on Sustainable Biofuels

We are an international multi-stakeholder initiative developing principles and criteria for sustainable biofuels production that will be:

- **Simple, accessible** and implemented worldwide
- **Generic** to all crops
- **Adaptable** to new information
- **Efficient and cheap** to measure
- **In line with WTO rules** (use ISEAL code)

How is the RSB organized?

- One **Steering Board** composed of international stakeholders from WWF, UNEP, Swiss and Dutch governments, US and Japanese universities, Shell, BP, Toyota, TERI India, Mali Folkecenter, Petrobras, and others.

- One **secretariat** based at EPFL.

- Four **Working Groups (GHG, Environment, Social, and Implementation)** + smaller **Expert Advisory Groups** to make recommendations to the Steering Board. 230 participants from international organisations, NGOs, private sector and academic institutions have signed up for one or more Working Groups.

- **Global stakeholder** feedback at every step (blogs, meetings, wiki technology, pilot projects, regional outreaches)

- Innovative **transparent standard-setting using www.BioenergyWiki.net**, to share background information and share comments with other participants.

Draft Principles

- **National Law** (especially regarding land, labor, water rights)
- **Community Consultation** (especially to determine land rights, assess social & environmental impact, identify idle land, and resolve grievances)
- **GHG** – positive balance over lifecycle, including direct & indirect effects
- **Environmental** – conserve and protect high conservation values, soil, water, air; responsible use of potentially hazardous technologies (e.g. biotechnologies)
- **Social** – biofuels should benefit rural communities and workers; should not contribute to food insecurity

'Better' biofuels

- **Minimum social and environmental criteria for sustainable agriculture**
  - Low-cost verification system, accessible to smallholders
  - Global multi-stakeholder governance
- **Incent 'better' biofuels, i.e. those with:**
  - Good GHG reduction potential, including sequestering carbon in soil
  - Rural development potential
- **Reduce pressure to use new lands:**
  - Encourage use of degraded lands (but these need identification)
  - Use waste materials as feedstocks
  - Improve yields on existing lands (whilst minimizing environmental impacts)

Roundtable on Sustainable Biofuels - Draft Scorecard Concept

	Overall Energy and Greenhouse Gas Efficiency	Conservation of Natural Resources				Social Concerns	
	Total score for product life-cycle (well-to-wheel)	biodiversity	soil health	air quality	water use	Food security	Working conditions
Considerable reduction of ecolog./ social footprint	Low GHG emissions, maximize carbon sequestration (e.g. low-till)	Biodiversity corridors	Restore degraded land	No sig. impact on air quality on farm or at processing facility	No sig. impact on local water quality or quantity	Use of degraded or idle land	Best-practice wages and working conditions
Small or no reduction on ecolog./ social footprint	10-90% GHG emissions as compared to fossil fuel	Buffer zones	erosion protection	Moderate impact on air quality	Moderate impact on local water quality, quality		
No or negative impact on ecolog./ social footprint	High N2O emissions from fertilizers, conversion of high carbon-stock land	Deforestation, habitat encroachmt.			Water pollution, significant reduction in water availability		Hazardous or illegal working conditions

Timeline

- Draft principles and criteria to be approved by Steering Board in June
- Next steps regarding governance (e.g. regional groupings, how to formally balance stakeholder groups, membership requirements) to be discussed in June

After June:

- Implement next phase of governance
- Pilot testing of draft standards in real supply chains
- Encourage/foster crop-specific better practice definitions (e.g. jatropha)
- Collaborate with US, UK, and other partners to co-host an in-person meeting on indirect land use change accounting, perhaps summer 2008

Contact

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