European Renewable Energy: Clarity, targets and level playing field

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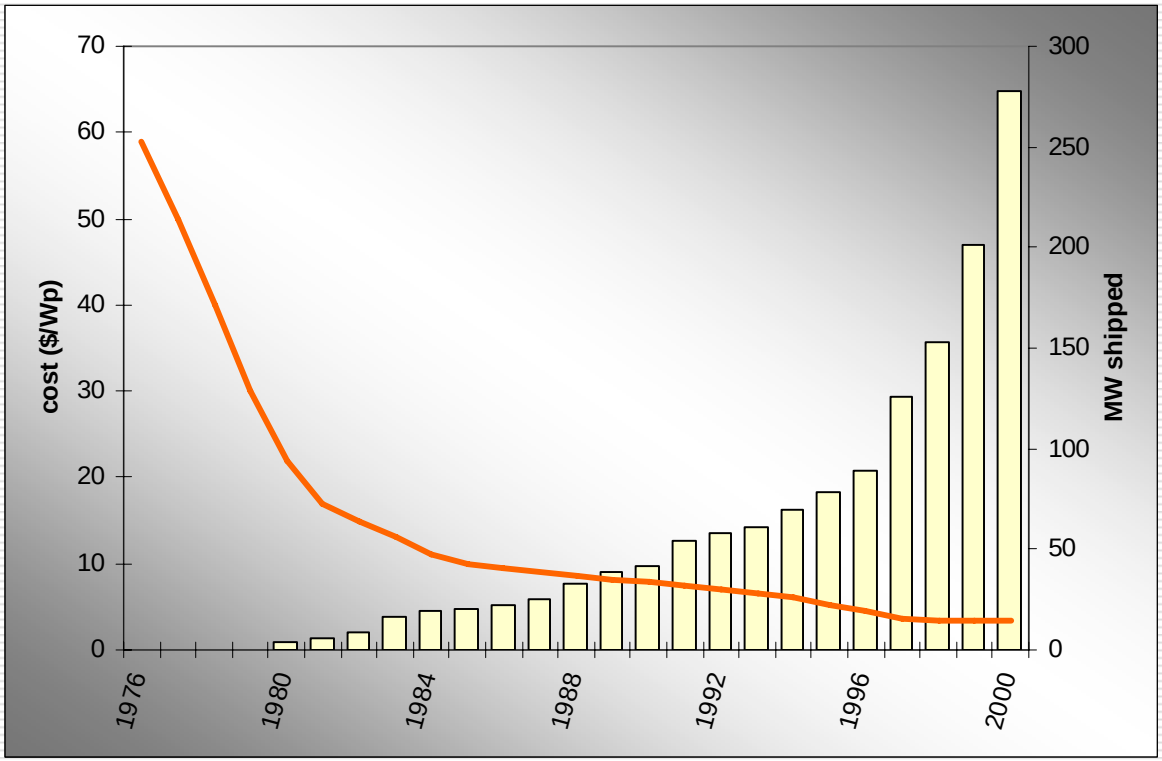
Renewable industry became a force

- Investment in new renewable energy in 2005 was worldwide $38 billion, up from $30 billion in 2004.
- Germany and China were investment leaders, with about $7 billion each, followed by the United States, Spain, Japan, and India.
- Overall:
  1. Wind power reached 59 GW.
  2. Biomass power production doubled in many countries.
  3. Biodiesel - 85 percent increase in overall annual prod.
  4. Grid-connected solar PV -55 percent increase in existing capacity
  5. Solar hot water existing capacity grew by 23 percent in China alone and reached record levels across Europe as well.

Source: REN 21, Renewable Global Status Report 2006

Cost digression in all RES sectors - example PV



***Source**: Solar Generation (Greenpeace – EPIA)*

PV/Solar in Germany for example

- 2005- PV installation: 1.500 MW
- Cost reduction since 1995: 50%
- Investment in 2005 in PV: 3.75 bio €
- Employment: 42.500 (PV and Solar Thermal)

Pre-Conditions for RES uptake

- Change in Paradigm: individual responsibility for own energy supply, as local and decentralised as possible
- Households and private sector in general should primarily produce their own heat and electricity from RES sources in an efficient environment
- Combination with drastic change in consumption pattern and increase in efficiency
- Political commitment beyond ideologies and short term thinking to go for strong national RES
- Clear instruments, targets for rapid uptake and enforcement
- High level of market penetration by Independent RES Power Production
- Swift abatement of open and hidden harmful subsidies to incumbent industry
- As long as one or more of these conditions are not met – counterbalance is necessity

Major barriers

- **Failure of Governments to deliver**:
- Consequent action planning
- Administrative capability and coherence
- Public Information on RES
- Sticking to promises given
- Ability to agree to new, decentralised market structure
- Flexibility
- Market incentives
- Market Fairness
- Nuclear

Promotion of RES because of imbalance in the overall energy market

- The Energy market as such is still a myth, hampered especially by ever increasing oligopolies and harmful subsidies to the fossil and nuclear sector.
- Each of the European Commission's evaluation reports of the electricity market so far underlines that obstacles still prevail. An essential condition for the completion of the internal electricity market is non-discriminatory access to a transmission or distribution network; otherwise – the Directive 2003/54/EC states – competition will not work.

Barriers and Harmful subsidies

- EC Commission attests “serious malfunctions in EU energy markets” (EC Commission MEMO/06/78 from February 2006)
- Harmful subsidies to the traditional fossil and nuclear sector amount to 250 billion US$ worldwide per year, representing “a substantial market distortion, discourage new entrants into the market, and undermine the pursuit of energy efficiency”. (*José Goldemberg, Thomas.B.Johansson, World Energy assessment, Overview 2004 Update (UNDP,2004, page 72))*
- Barrier market - fails to focus and internalise all negative effects of conventional energy use into the price for electricity, so that the price for electricity on these markets are not cost related prices. (*Goldemberg, Johansson*)
- It is not the renewable energy which is too expensive but the traditional energy which is made to be too cheap.

Example: Non Full Insurance Coverage of Nuclear

- **Costs of Insurance**

Nuclear Electricity Production in Germany ,06: **167,4 Mrd. KWh**
(Quelle Dt. Atomforum 17.1.2007)

Insurance obligation for all Nuclear Power sTations in Germany '06:
€ 11,523 Mio. + Vers.Steuer = **€ 13,367 Mio.**

Cost of Insurance per KWh = **0,008 Cent/KWh**

- Source: Haftungsvorsorge und Versicherung der Atomenergie, Dirk Harbrücker, DKVG Köln

Paris Convention (new, not ratified yet) opening for “full responsibility”

- Since 2001 and a deal between Nuclear Industry and German Government in June 2001 in the Agreement of Phasing out of Nuclear:
- Increase of Insurance coverage to 2.5 Bio Euro - More risk is not insured

Capacity of the Nuclear Industry to Cover Risk

- **Overview of available financial capacity in Germany**
- € 700 Mio. EURO per Power Plant

Source: Haftungsvorsorge und Versicherung der Atomenergie, Dirk Harbrücker, DKVG Köln

- Definitely not enough

Responsibility and Coverage

Source: DKVG Dt Kernreaktorversicherungsgemeinschaft

Deckung durch:	Deutschland	Belgien	Finnland	Frankreich	Großbritannien	Niederlande	Schweden	Schweiz	Slowenien
	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR	EUR
Versicherung	256	297	200	91	183	340	343	545 [3)]	75
Solidaritätsvereinbarung der Betreiber	2.244								
Staatsgarantie -gebührenfrei- [1)]				109					
Umlage unter BZÜ-Staaten [2)]	143	143	143	143	143	143	143		
Summe	**2.643**	**440**	**343**	**343**	**326**	**483**	**485**	**545**	**75**
weitergehende Betreiberhaftung	unlimitiert	keine	keine	keine	keine	keine	keine	unlimitiert	keine
Kurs SZR zu EUR vom 31.12.2006	1,142290	1,142290	1,142290	1,142290	1,142290	1,142290	1,142290	1,142290	1,142290
Kurs WE zu EUR vom 31.12.2006	1,000000	1,000000	1,142290	1,000000	1,308920	1,000000	1,142290	0,544716	0,036290

[1)] Für Staaten, die dem Brüsseler Zusatzübereinkommen beigetreten sind: Differenz zwischen SZR 175 mio. und Versicherung, falls Versicherung < SZR 175 Mio.
[2)] Betrag entspricht SZR 125 mio
[3)] Davon stehen aber nur CHF 500 Mio. für Schäden durch Terror zur Verfügung
[4)] Berechnung: 104KKW haften bis zu USD 100,59 Mio. pro Block, maximal USD 15 Mio. pro Jahr

Potential Risk is vastly underinsured = State Support

- Potential Risk of costs of a major accident is at least more the 100 Bio EURO
- All German Nuclear Power Producers in their solidarity pool could not cover such a risk
- Therefore State still the guarantor for such risk
- This state support must be calculated with a potential risk premium insurance calculation – per kwH result is the amount of state support
- EREF investigates

TVO venture

- EREF tasks: Finalising annulment procedure before EC First Instance
- Gave comments concerning COFACE deal
- Asks for Correction of PINC Paper

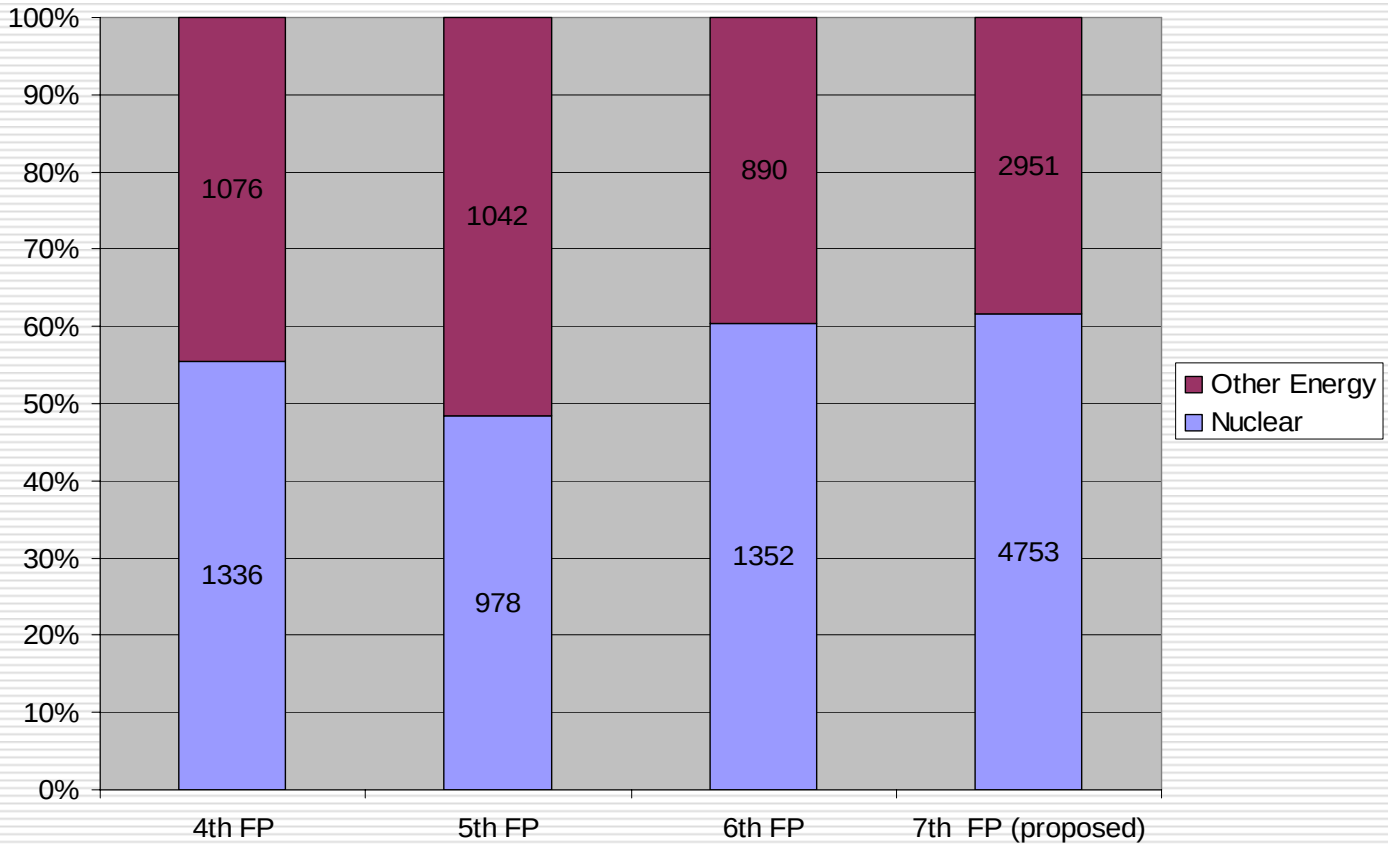
Subsidies to Nuclear in General

"More than half of the subsidies (in real terms) ever lavished on energy by OECD governments have gone to the nuclear industry." (The Economist, **Nuclear power Out of Chernobyl's shadow** May 6th 2004,from print edition)

Example US:

- Wind, solar and nuclear power got around $150 billion in cumulative US Federal subsidies over roughly fifty years, some 95% of which supported nuclear power.
- Nuclear power received far higher levels of support per kilowatt-hour generated early in its history than did wind or solar.

Comparison of Energy and Nuclear Research and Development Budgets



***Source**: Claude Turmes, 'Cordis and European Commission*

Background: Promotion of RES a main objective of Europe

- EU Tools for encouragement so far:
- Directive 2001/77/EC on the promotion of RES in the internal energy market
- Directive 2004/8/EC on the promotion of cogeneration
- Directive 2003/30/EC on the promotion of biofuels, in coordination with
- Directive 2003/96/EC on the restructuring of framework directives for taxation on energy products and electricity

Europe's targets

- Doubling of shares of RES in EU consumption from 5.4 % in 1997 to 12.0% by 2010 plus
- Global – binding – target with 20 % by 2020 and 10 % minimum for biofuels by 2020
- European Parliament asked for 35 % sectoral target for RES – Elec.,25 % for RES-Heating/Cooling und 12,5 % for biofuels by 2020

EU Commission is rowing backwards – Council is shaky – European Parliament strong consensus for sectoral RES targets

- Energiepackage January 07 presented by Commission:
- - no more sectoral targets but only one global target of 20 % by 2020 (exception biofuels, minimum secoral target)
- – enivsages abolishment of RES Electricity and Biofuels Directives for one monster directive for RES electricity, biofuels and heating/cooling –

Why sectoral targets

- To tap the full potential of RES in EU-27
- To continue good policies (never chagne a winning team) to give smart copy tools for those MS which are just starting
- To decrease costs of all RES technologies and increase economy of scale
- To maintain and ensure investor‘s confidence
- To phase out oligopolistic structure of industry in energy with increased IPP
- To fulfill Lisbon agenda and trigger regional development across EU

European success in RES is still too much in the hands of very few committed MS

- **Positive Example – Germany**:
- 2006 : 10,4 % electricity supply reached
- 2006 : 4,7 % share of RES in primary energy consumption
- 2020: 16 % RES in prim. Energy consumpt.
- 2030: Share of RES in electr. supply 45 % and by
- 2050: 77 % feasible

- Source: (German Ministry of the Environment, BMU, Press Service 055/07, 27.02.2007)

Economic value of RES in Germany in 2006

- 214.000 people working in RES (170000 in ’05)
- Avoided CO2-Emission: 97-100 Mio. tons (86 Mio. Tons in ’05)
- Gross Turnover: 21,6 bio. Euro (18,1)
- Split into:
- Turnover from new installation set up: 11,3 bio. Euro (10,3)
- Turnover from running of installations: 10,3 Mrd. Euro (7,8)

Support mechanisms in EU 27

- Fixed feed-in tariffs
- Green certificate obligations
- Tendering schemes
- Tax incentives
- Investment grants

DG Competition View on RES and Energy Market

- EC Commission: “Lack of transparency on prices and grid access conditions make it harder to implement efficient policies to promote renewable technologies. **Fragmented support schemes for these technologies may lead to national success stories, but not European ones.** Here, competitive electricity and gas markets are capable of establishing the same rules for all players. The larger the internal market the more economies of scale can be realised.”
- *Source: MEMO/06/78 Brussels, 16th February 2006 Energy sector competition inquiry – preliminary report – frequently asked questions*
- But: What then is a competitive electricity market? Where do we find this in Europe?

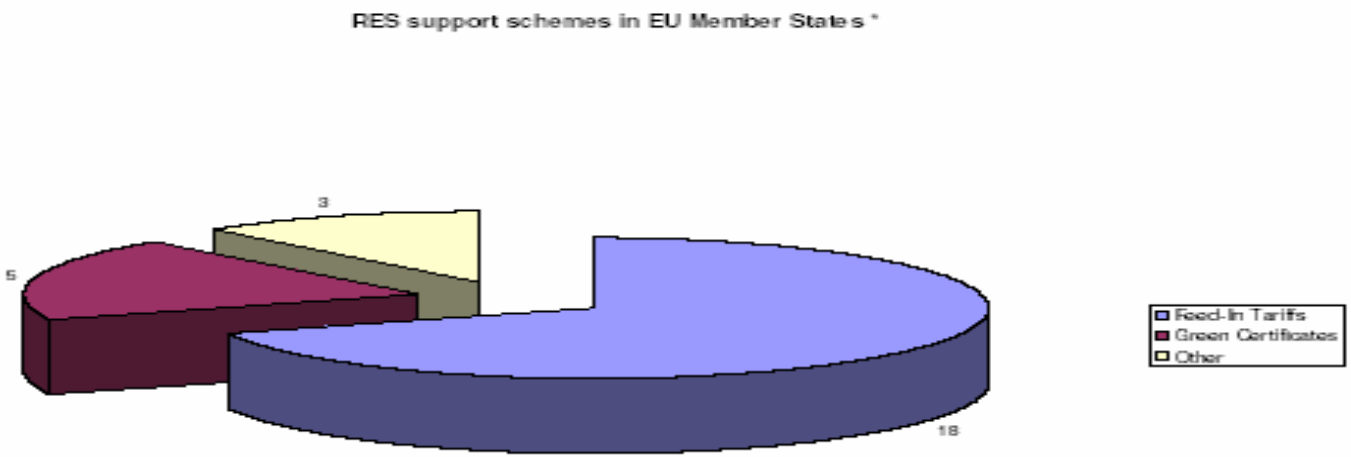
Fragmented Support Schemes in Europe 27?

- This is in view that the vast majority of MS have introduced feed-in systems a strong misinterpretation
- It is certainly right that not all feed-in systems are structured well enough and not all are embedded in an efficient planning environment
- The successful feed-in countries are the ones which help Europe to come closer to its Kyoto and RES targets – without them the situation would be quite disastrous on Europe's promises

Majority is clearly “feed-in”

Part I: RES-electricity EU Frameworks & Prices

Graphic 1 Comparison between different support schemes in EU Member States

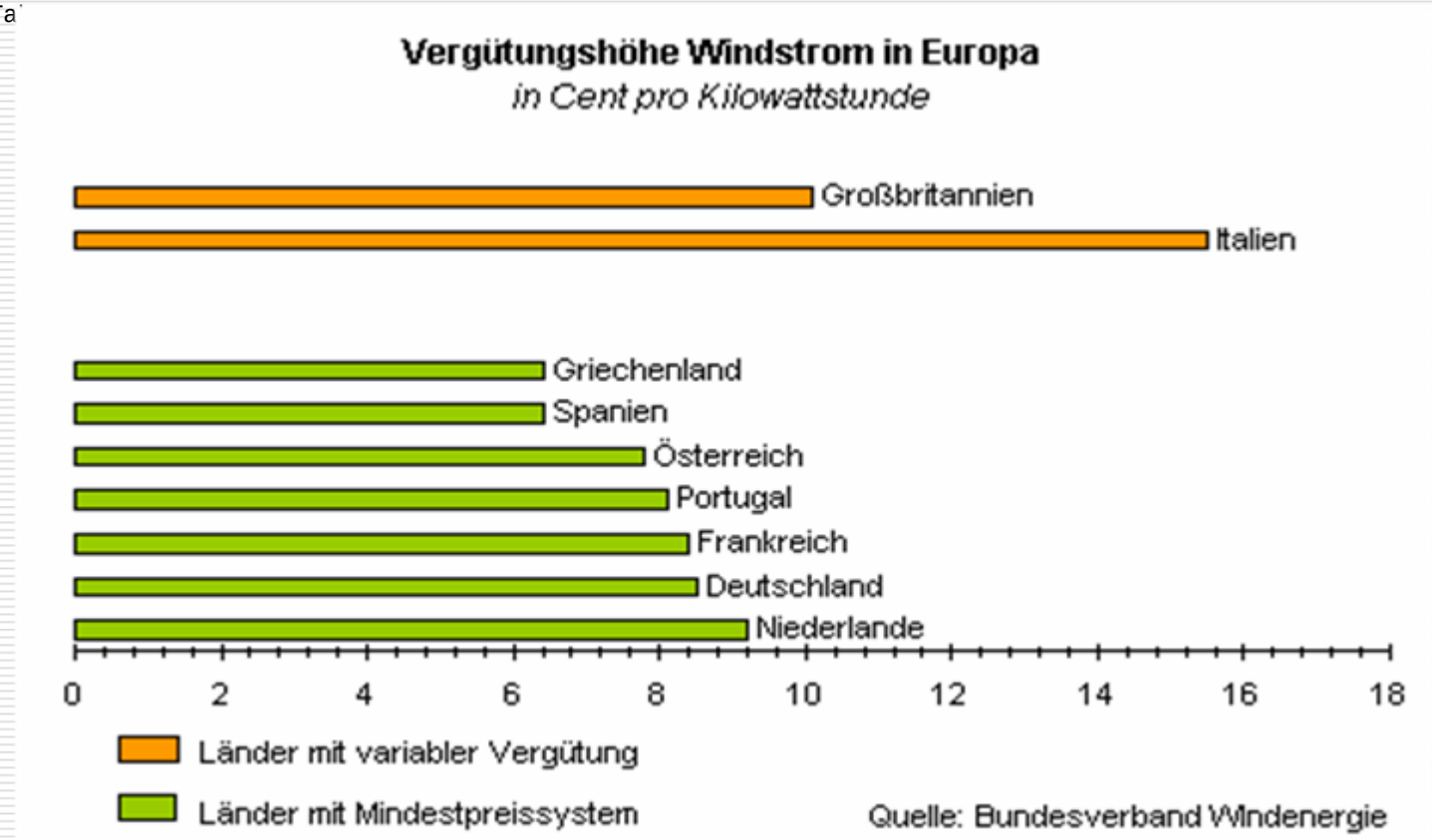


- Feed-in Tariffs: Austria, Cyprus, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Ireland, Lithuania, Luxembourg, Netherlands, Portugal, Slovak republic, Slovenia, Spain.
- Green Certificates: Belgium, Great Britain, Italy, Poland, Sweden
- Tax subsidies: Finland, Latvia, Malta*

Source: EREF RES – Price Report 2006/2007

Feed in more efficient and competitive than existing Quota schemes

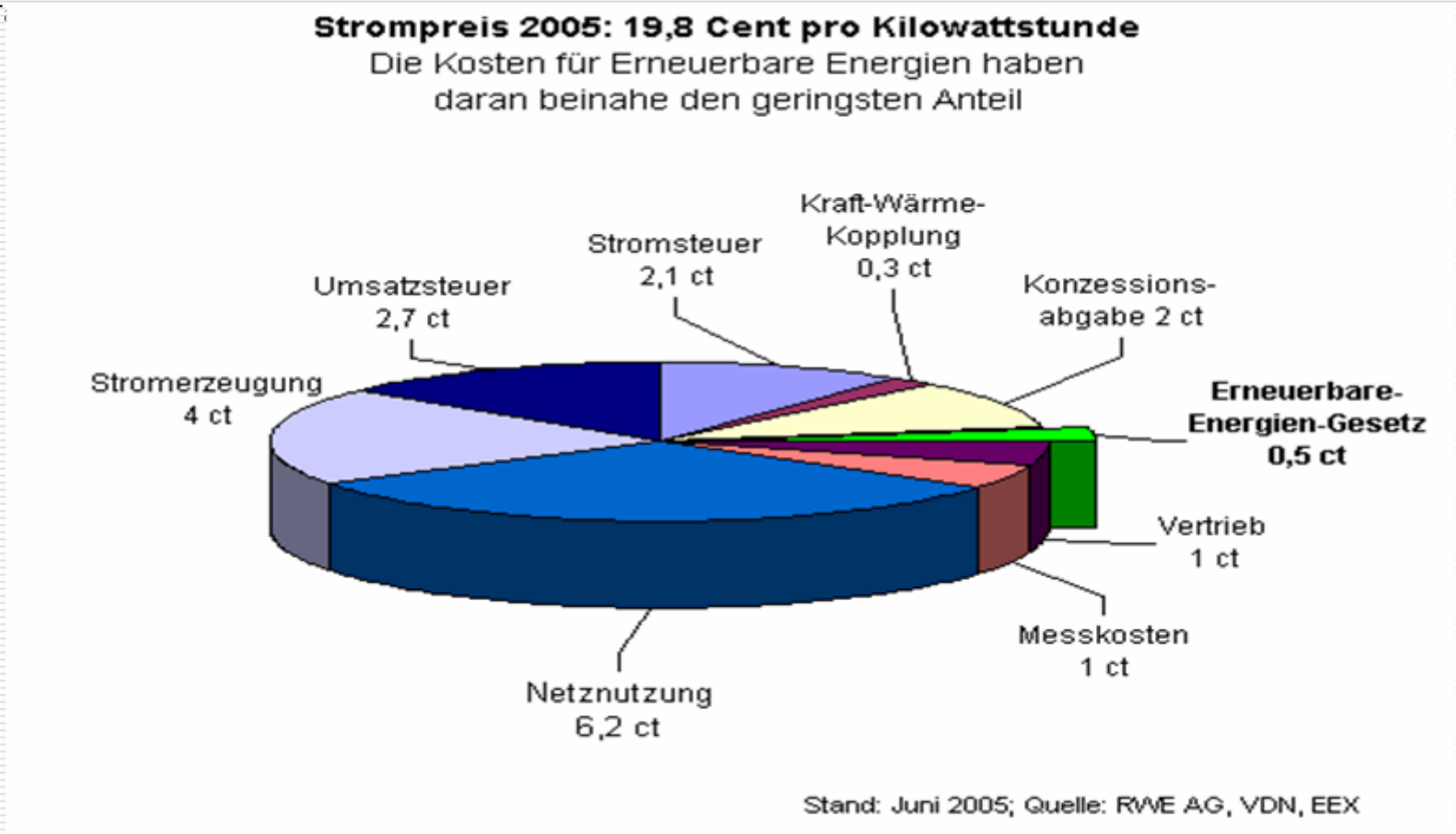
- Ta



Future sharing – some figures

- 2004 2,2 bio. Euro RES incentive added to consumption price in Germany. Consumer pay approx. 0,5 Cent per kWh for „future-sharing“ by increased use of RES
- Average household with electricity consumption of 3.500 kWh per year pays less than 1,50 Euro per month.

Reflection of RES part of electricity price in 2005



Any Harmonisation of support Mechanisms must ensure proportionality

- Must be “appropriate to ensure achievement of the intended aim and must not go beyond what is necessary in order to achieve that aim” *ECJ Case C-6/98 ARD vs Pro 7, paragraph 51, referring to cases: , Case C-288/89 Collectieve Antennevoorziening Gouda and Others vs. Commissariaat voor de Media, paragraph 15, and Case C-384/93 Alpine Investments v Minister van Financiën [1995], paragraph 45*

Efficiency criteria

- Art. 4 RES – E : support should be effective, simple and efficient esp. in terms of costs
- Feed-in systems are comparatively easy to handle, whilst quota systems create a lot of administrative effort. The fulfilment of the quota obligations needs to be controlled, certificate-trading needs a structure, possible penalties need to be enforced.
- Regarding consumers' costs, experience shows that the price in quota systems are not lower but positive effect in price curve comes from rapid uptake in feed-in countries: In 2003, in Italy, the price per kWh electricity generated by wind turbines was 13,0 Ct (UK: 9,6 Ct), whilst it was only 6,6 – 8,8 Ct in Germany (Spain: 6,4 Ct).
  Fouquet/Grotz/Sawin et al., "Reflections on a possible unified EU Financial Support Scheme for Renewable Energy Systems" (Brussels and Washington, DC, 2005), p. 15.

Anyway.

- Harmonisation would be premature yet, see overall distorted market arguments
- And New Member States just started to implement mechanisms
- And Energy Policy is still priority a Member States Obligation

Feed-In Alliance

- The Spanish German Initiative on a feed-in MS alliance should be strengthened and vividly supported by RES Industry and MS in Europe

- Thank you very much for your attention !

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