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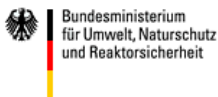
ecoCONSULTING
energy and environment, prague



**DEUTSCHE
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FORSCHUNGSSTELLE FÜR
UMWELTPOLITIK
*Environmental Policy
Research Centre*
Freie Universität Berlin



**Ministry of the
Environment of
the Czech Republic**

The Czech – German Initiative on Environmental
Tax Reform in the Czech Republic:
A cycle of seminars 2003-2006

Seminar

ETR RESEARCH: Dark side of the moon?

25 April, 2003, 9:00–16:00

Charles University in Prague - Jinonice
U Kříže 8, Praha 5
Room 2080, 2nd floor, building A

In cooperation with the Charles University Environmental Center in Prague



Seminar programme

Friday, 25 April, 2003	
9 ⁰⁰ – 9 ²⁰	<p>Project "The Czech-German Initiative on ETR in the Czech Republic" - the goal of the workshops and ETR preparation in the Czech Republic <i>RNDr. Martin Bursík, Ecoconsulting, s.r.o.</i> <i>PD Dr. Lutz Mez, Freie Universität Berlin</i></p>
9 ²⁰ – 9 ⁵⁰	<p>ETR in Germany – Experience and Position of the Green Ministry and news from EU <i>Kai Schlegelmilch, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany</i></p>
9 ⁵⁰ – 10 ⁰⁰	Discussion
10 ⁰⁰ – 10 ²⁰	Health-break
10 ²⁰ – 11 ³⁰	<p>ETR modeling <i>Dr. Barbara Praetorius- German Institute for Economic Research, Berlin</i> Tax provisions in the German ETR <i>Bettina Meyer - Ministry for the Environment, Nature Conservation and Agriculture of Schleswig-Holstein, Kiel</i></p>
11 ³⁰ – 12 ⁰⁰	Discussion
12 ⁰⁰ – 12 ³⁰	<p>ETR and other instruments research in the Czech Republic <i>Jiřina Jílková – Institute for Economic and Ecological Policy University of Economics in Prague</i> <i>Jan Brůha – CERGE Charles University and University of Economics</i> <i>Jana Szomolányiová – SEVEN</i> <i>Milan Ščasný – Charles University Environment Center</i></p>
12 ³⁰ – 13 ³⁰	Lunch
13 ³⁰ – 14 ³⁰	<p>Overcome obstacles in the implementation of ETR in Germany <i>PD Dr. Lutz Mez, Freie Universität Berlin</i></p>
14 ³⁰ – 15 ⁰⁰	Discussion
15 ⁰⁰ – 15 ¹⁵	Health-break
15 ¹⁵ – 16 ⁰⁰	Needs and gaps identification in the ETR research
16 ⁰⁰ – 16 ¹⁵	<p>Discussion Conclusions for the Policy of the Czech Republic</p>

Workshop language: Czech and English (with simultaneous translation) !
http://www.czp.cuni.cz/ekoreforma/EDR_diseminace/english.htm

Economic Instruments for Sustainable Energy in the Czech Republic

**Jana Szomolányiová
SEVEn - The Energy Efficiency Center**

www.svn.cz

Prague, April 25, 2003

Projects by SEVEn, o.p.s.

1. National strategies to support energy efficiency and renewable energy	Ministry of Environment, CEA, Ministry of Industry, UNDP
2. Support scheme for green electricity	Czech Energy Agency (Ministry of Industry), Association of heat producers, TEDOM Ltd.
3. Assessment of the energy price subsidies - Czech and Slovak Republic	Greenpeace, STUZ SR
4. Model for liberalisation of the energy markets	Market Operator
5. Economic instruments for SO₂, NO_x and VOC emissions	Ministry of Environment

1. National sustainable energy strategies

Long-term policy

- ◆ Systemic measures
 - ✦ removal of price distortions
 - ✦ internalisation of externalities (product taxes, effluent levies, emissions trading)
- ◆ Information dissemination, labelling
- ◆ Investment grants - only for demonstration of new technologies

Temporary policy

- ◆ Investment grants for energy savings and renewable energy projects
- ◆ Energy efficiency standards

2. Support scheme for green electricity

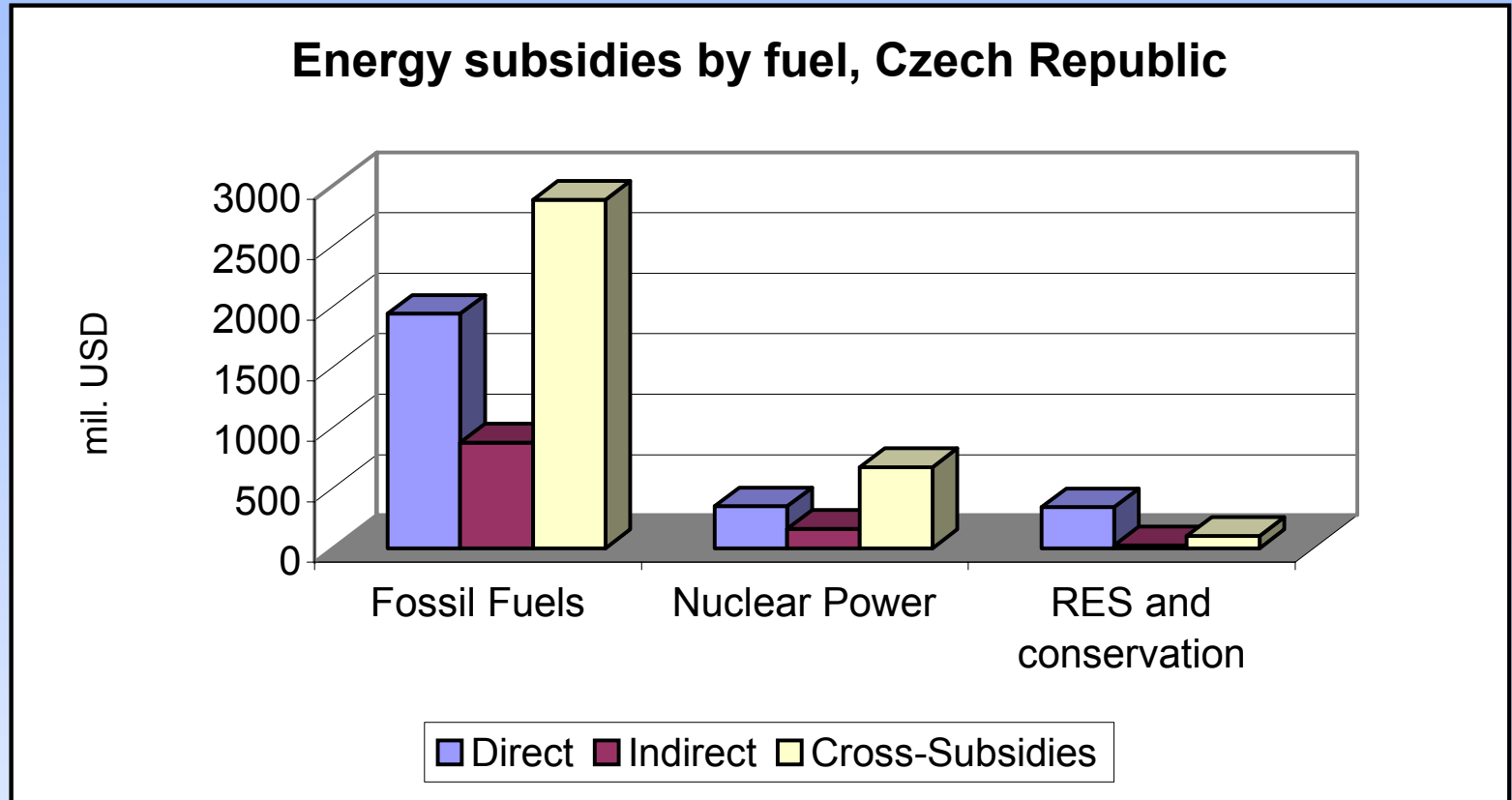
■ Risks of traditional feed-in tariff system:

- ◆ no guarantee of demand for green electricity that has to be buy out by law
- ◆ risks of profit losses and bankruptcy of the players obliged to buy-out electricity

■ Solution: compulsory quota

- ◆ works most effectively with tradable green certificates

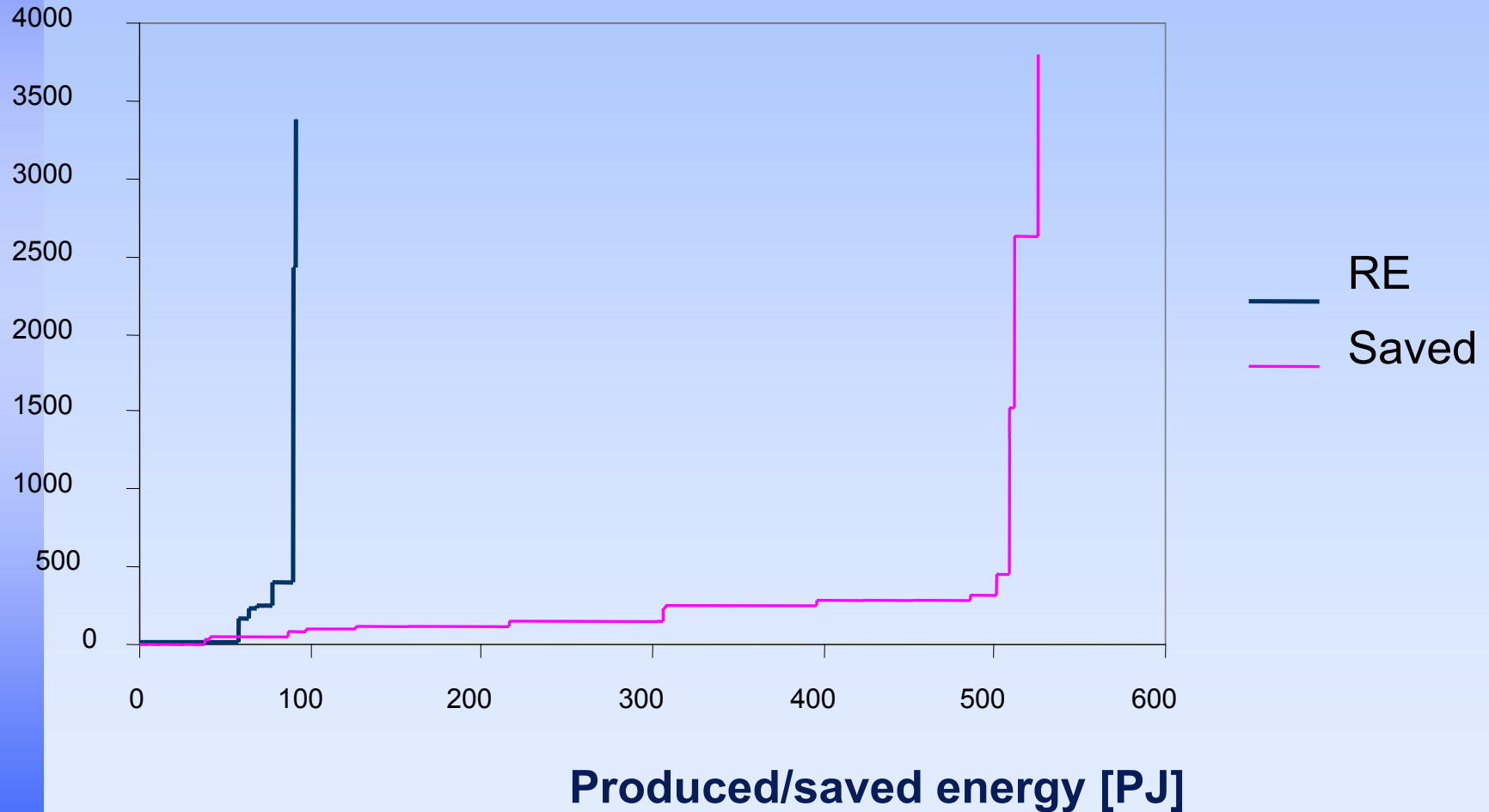
2. Energy Subsidies (1994-1998)



	% share of energy subsidies	% share of energy supply
<i>Fossil fuels</i>	80,3	89,3
<i>Nuclear energy</i>	16,6	10,2
<i>RES and conservation</i>	3,1	0,45

Investment costs: RE vs. energy savings (CR 1999)

Investment costs [Kc/GJ]



DIW Berlin

Deutsches Institut
für Wirtschaftsforschung

www.diw.de

Modelling the effects of ecological tax reform

Dr. Barbara Praetorius
Charles University Prague
25 April 2003

Agenda

- Background to DIW modelling of ETR
- DIW study 1994/1995 in brief
- DIW study 2001 in brief
- Models used in 2001 study
- Results of modelling experience and comparison of models
- Some conclusions

Background: DIW research on ecological tax reform in Germany

- 1994 DIW Study on behalf of Greenpeace Germany: Design of an ecological tax reform (focus on CO₂ target)
- 1995 DIW expertise for Austria on transferability of the design developed for Germany
- 1998 DIW study on the design of exemptions for energy-intensive industry
- 1999 DIW study on ecological fiscal reform (more general focus)
- 1999 Ecological tax reform in Germany (1999-2003)**
- 2001 DIW study on the potential effects of the ETR as realised)

1994-95 study on the design of an ETR

Objective: To develop (and analyse) an ETR design that

- allows to cut CO₂ emissions by 25 % (German CO₂ target)
- does not lead to an economic disaster
- helps to lessen other burdens (social insurance, excess burden ...)

„Puristic“ design

- Phasing-in of an energy tax based on energy content
- Reduce contributions to social insurance (lump sum for private households)
- No exemptions

Modelling approach

- Adapted Input-Output *plus* adapted business cycle model (10 yrs)
plus energy scenario analysis

Result in brief

- A budget-neutral ETR may allow to reduce both unemployment and energy-related emissions

2000-01 DIW study on German ETR

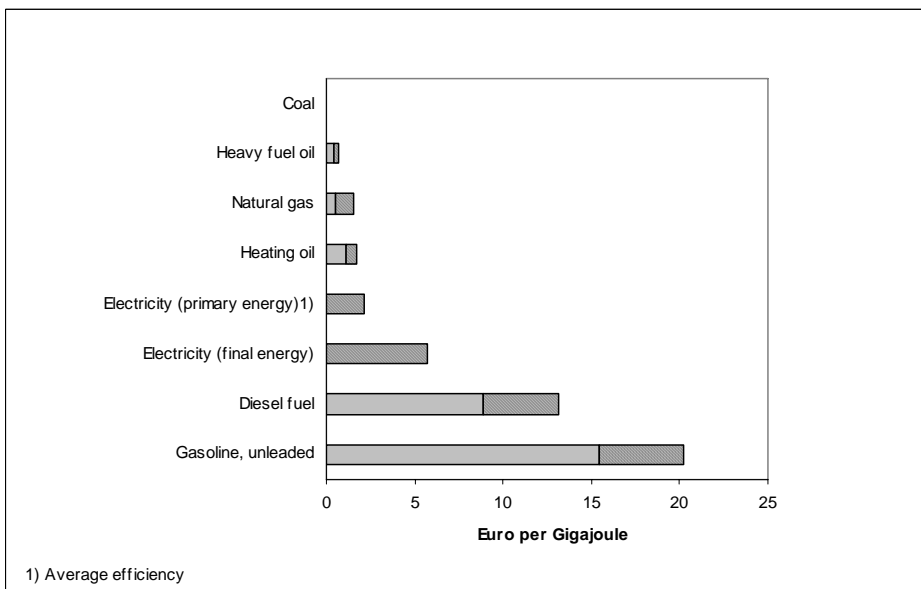
Objectives

- *Economic / political*: To analyse the possible impacts of the ETR as introduced in Germany in April 1998
 - Environmental impacts
 - Economic effects including sectoral impacts
 - Distributive effects
- *Methodological*: To use different & sophisticated modelling approaches and compare the results

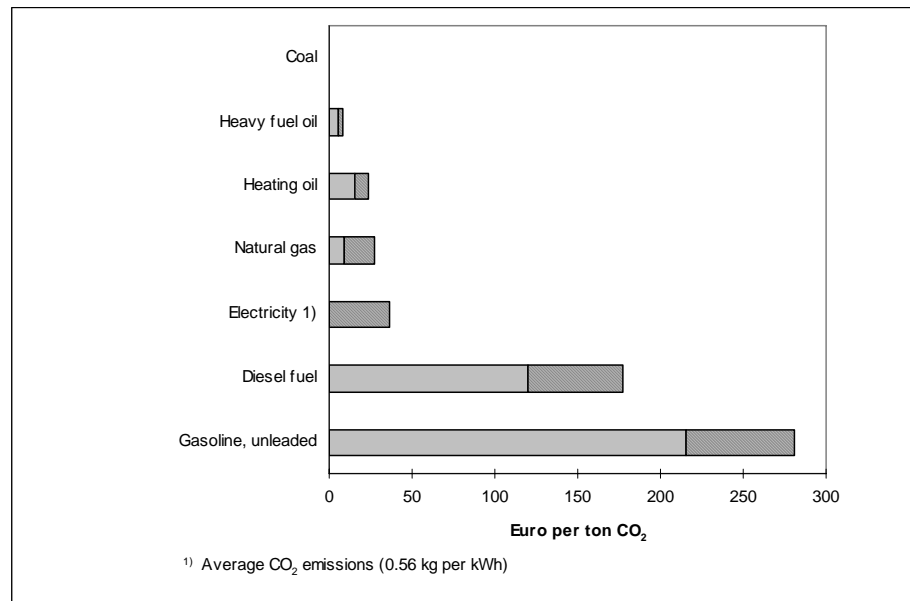
Models

- Two macro-sectoral models
 - Dynamic CGE model LEAN
 - Econometric input-output model PANTA RHEI
- Microsimulation model of household sector

Energy taxes in Germany



Euro per Gigajoule



Euro per ton CO₂

2001 Study: Results in brief

Despite manifold shortcomings in real-world ETR design,

1. the German ETR helps to reduce CO₂ emissions
(- 2 to -3 %/year compared to business as usual BAU)
2. ... minimal impact on economic growth rates
(- 0.05 % annually compared to BAU)
3. ... it helps improving the employment situation (up to 250 000 supplemental jobs as compared to BAU)

To summarise:

- Small „double dividend“
- Effects are smaller than those caused by exchange rates or international energy price distortions

Methodological / modelling approach

1. PANTA RHEI

- Fully integrated, multi-sector econometric simulation and forecast model (Meyer, Osnabrück)
- 58 industry branches in accordance with the national input-output system
- Bottom-up model
- Imperfect information, bounded rationality, various imperfections of markets & competition
- Prices derived from unit production costs (mark-up)
- Econometrically estimated parameters (1978-1994)

Method. / modelling approach (2)

2. LEAN

- Empirical CGE model
- Two regions (Germany and Rest of EU)
- Emphasis on representation of energy markets and emission reduction policies
- Recursively dynamic, myopic expectations (so that the model can be solved for a sequence of temporary equilibria)
- Technical progress: Disembodied, factor-augmenting for labour and energy / embodied for capital
- Labour: Dynamic wage equation; wage formation explained by productivity (plus Philips curve mechanism); labour is mobile domestically but not internationally
- Foreign trade: „World trade pool“ with exogenous import volumes and export prices

Method./modelling approach (3)

Idea:

- Models span the range of methodological tools
- Results may diverge considerably
- Use different models to enhance credibility of results

Approach:

1. Reference scenario:
 - Use identical exogenous variables (i.e. world energy prices, exchange rate) in both models
 - Two energy price scenarios (high and low oil prices)
2. Tax scenario:
 - Identical tax rates and pension system contributions
3. Compare the two scenarios

Method./modelling approach (4)

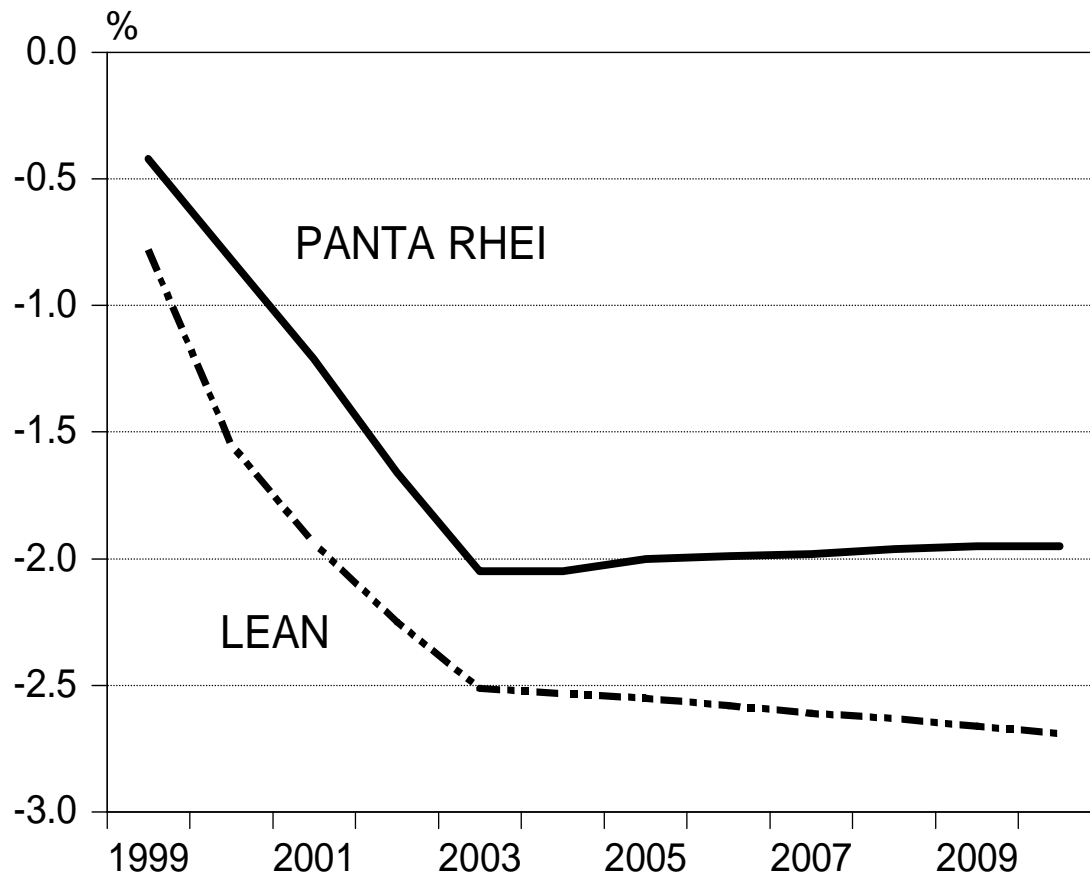
Similarities:

Macroeconomic results show considerable convergence

Main differences

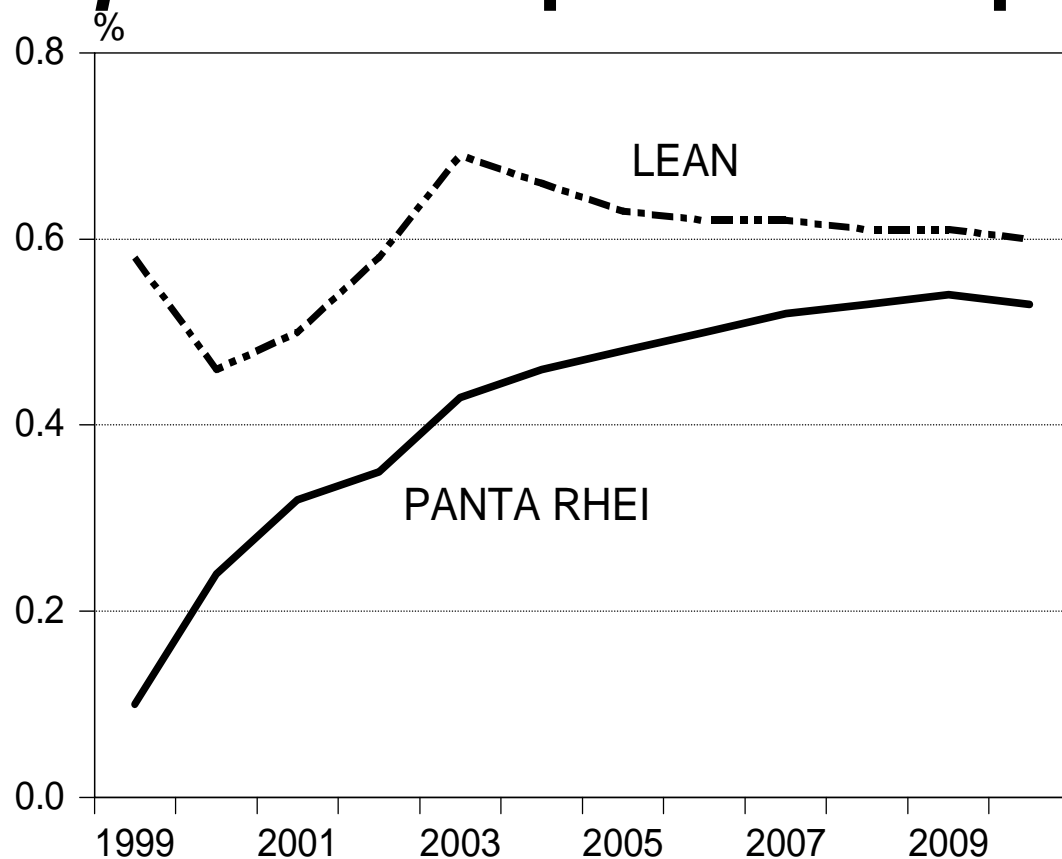
1. Difference in emphasis placed on empirical tracking performance and theoretical micro-foundation ...
 - **CGE**: consistent theoretical foundation/individual optimisation process assumed (*but fail to explain macroeconomic phenomena such as inflation, unemployment*)
 - **Econometric models**: based on statistical methods, ad hoc assumptions to fit the model to data (*but fail to integrate theoretical insights*)
2. ... results in different predictions of structural changes because:
 - PANTA RHEI has substantial flexibility in the way in which cost changes influence supply prices
 - LEAN transforms cost changes directly into supply price change

Selected results (1): Some reduction in CO₂ Emissions



LEAN produces more favorable emission reductions than PANTA RHEI

Selected results (2a): Small *positive* impact on employment



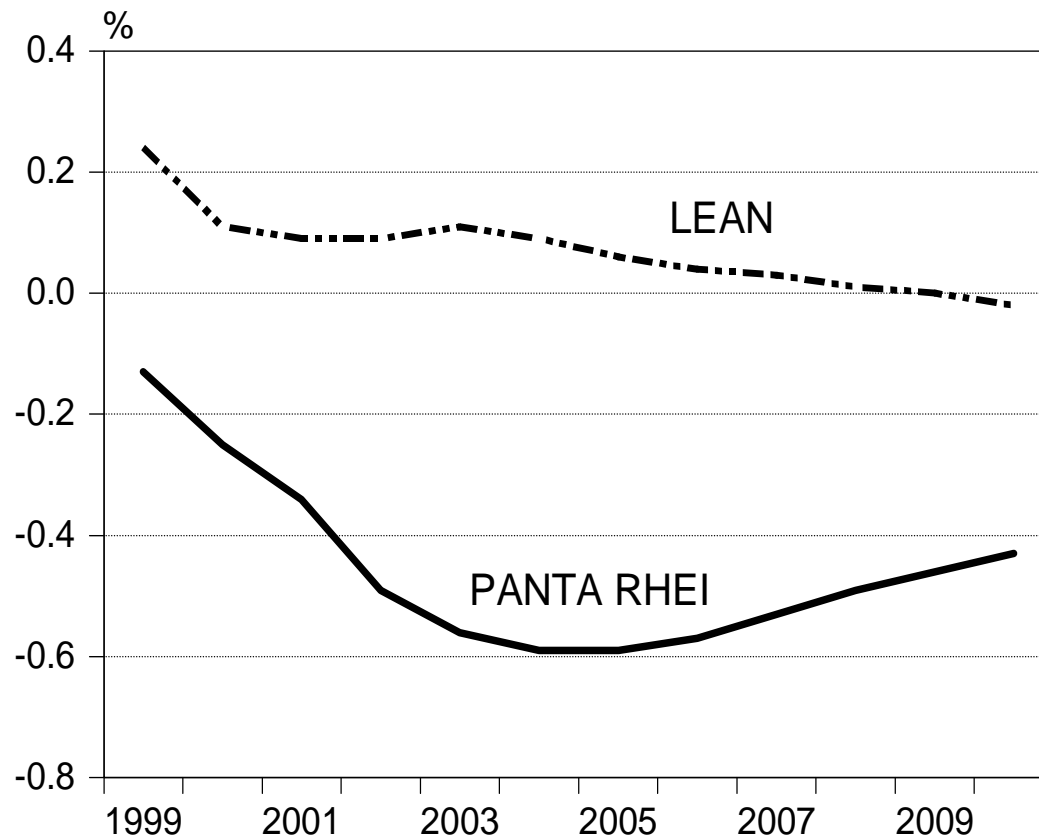
LEAN produces more favorable employment effects than PANTA RHEI

Selected results (2b): **Small *positive* impact on employment**

Assumptions and model features

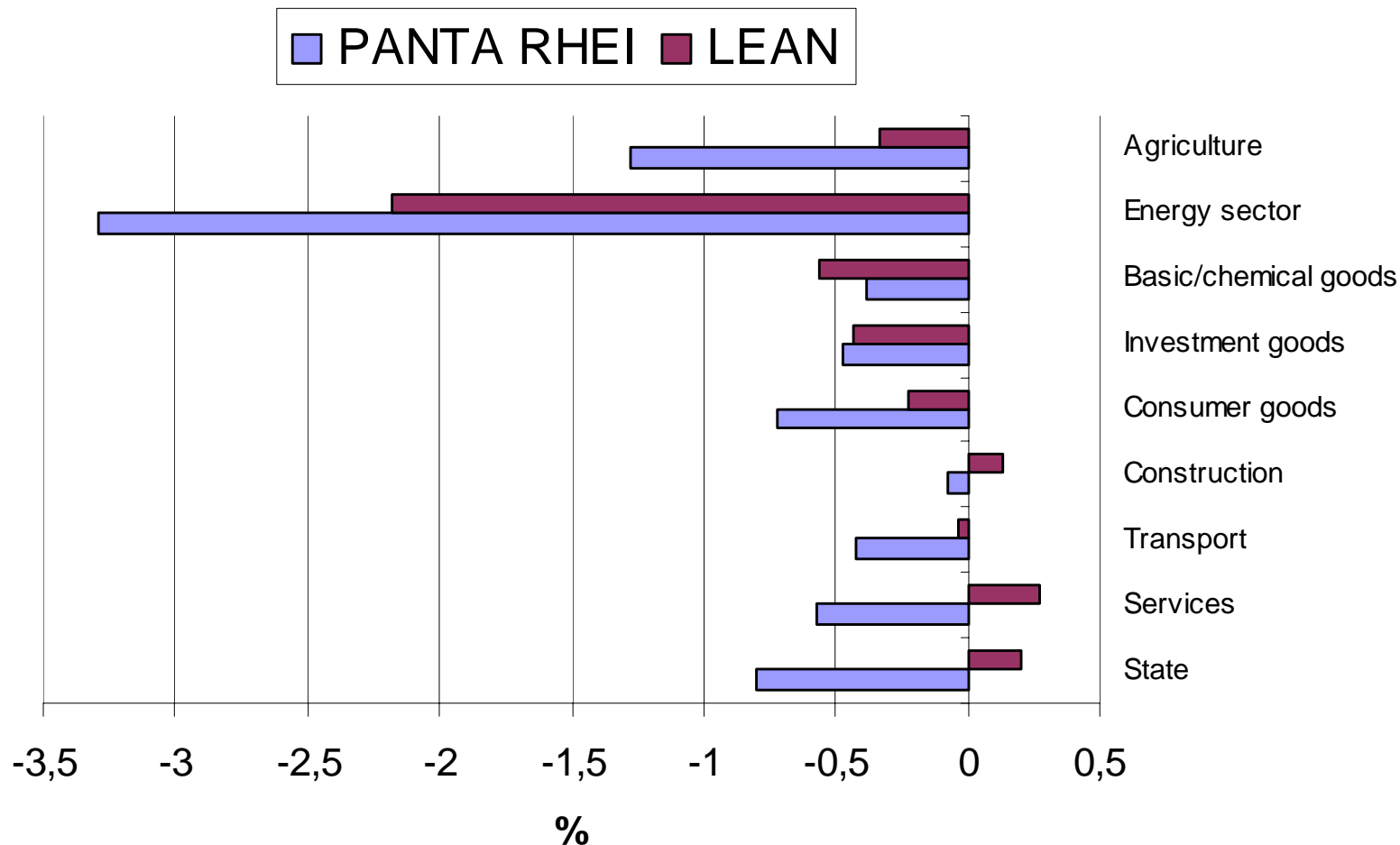
- *Wage formation*: increase in employment does not trigger higher wage claims (i.e. unions do not react)
- Labour mobility: only national

Selected results (3): Small negative impact on econ. growth



LEAN produces less unfavorable GDP effects than PANTA RHEI.

Selected results (4a): Ambiguous sectoral effects



Sectoral aggregates, effects on output 2003 (deviation from reference)

Selected results (4b): **Ambiguous sectoral effects**

PANTA RHEI predicts

- *less* structural change in favour of less energy-intensive industries,
 - *more* labour-intensive branches
 - *more* domestically oriented branches
- than LEAN

Possible explanation

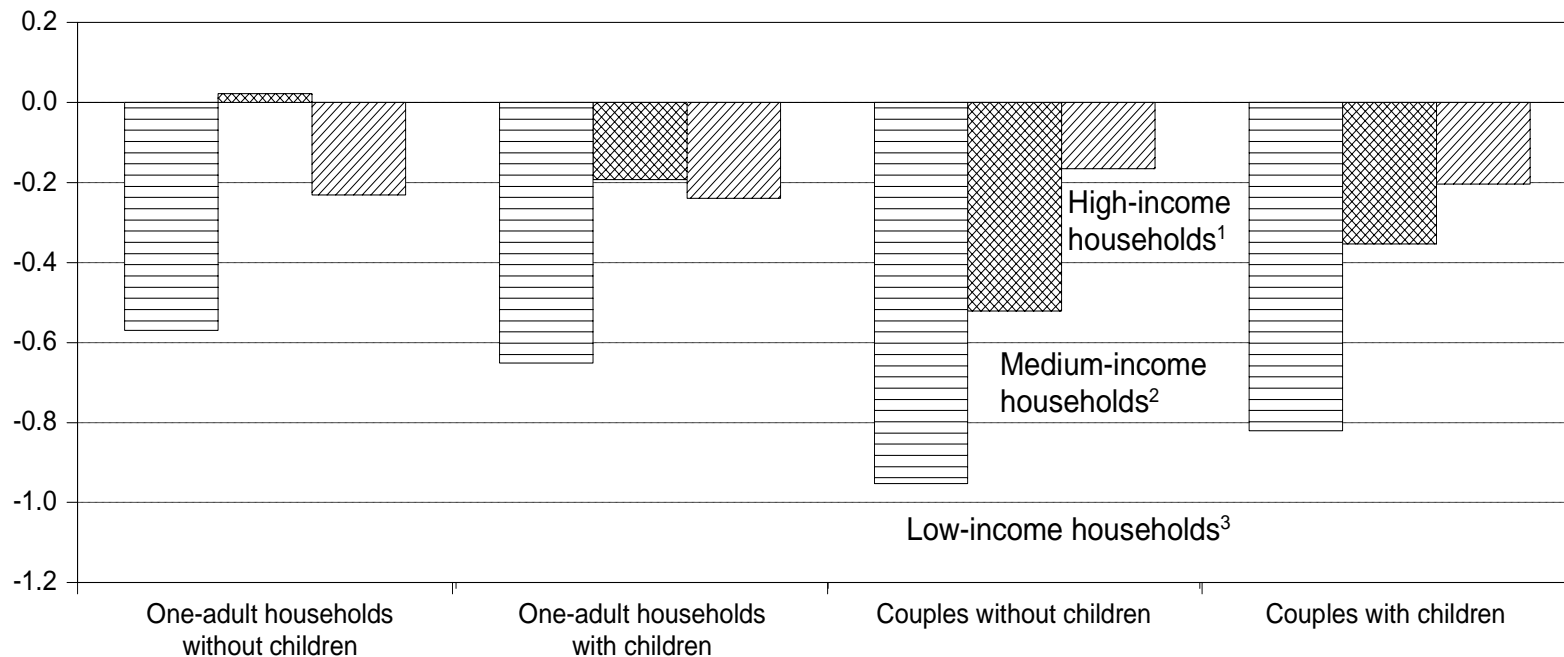
1. PANTA RHEI

- Producers in export-oriented industries have more flexibility in targeting their prices towards international price levels (hence, limited output decline (imperfect competition))

2. LEAN

- Cost changes translate directly into price changes (perfect competition)

Distributive effects (1)



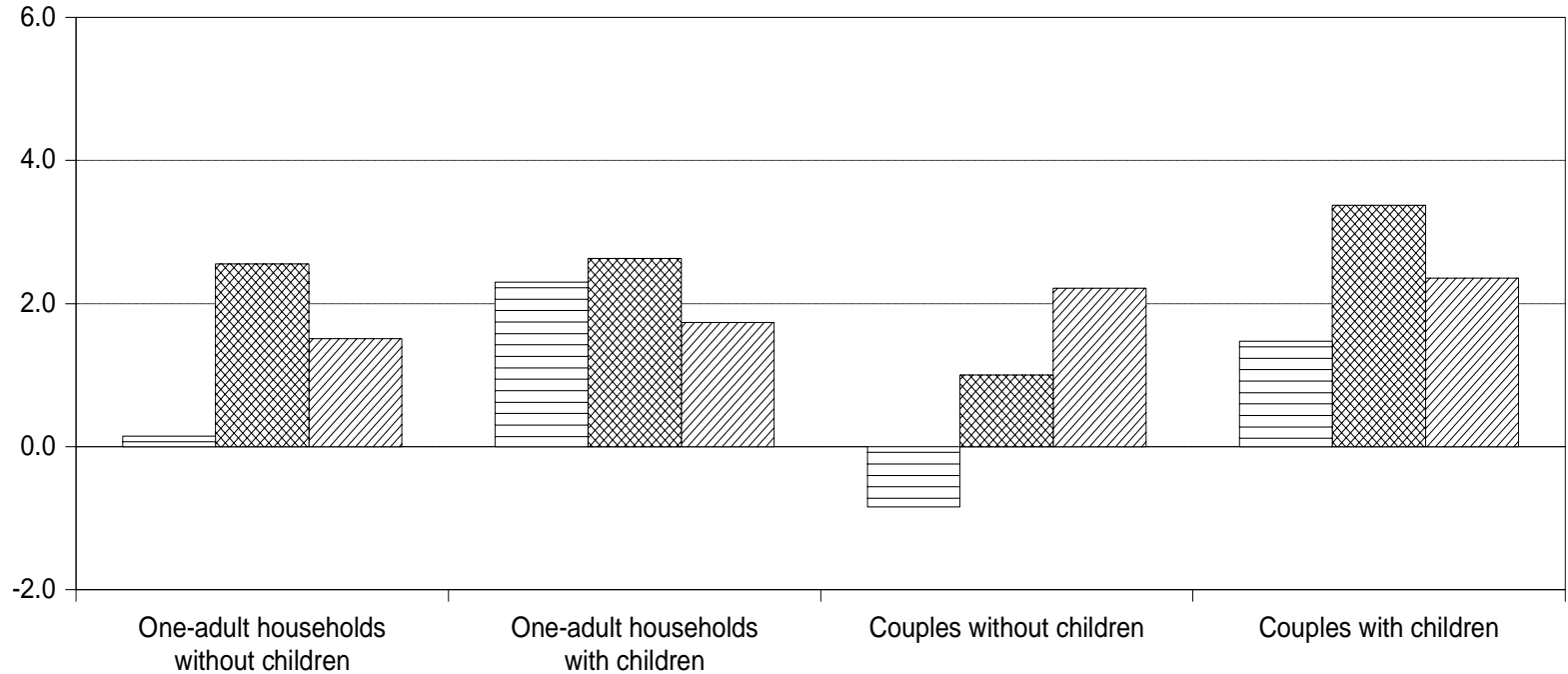
% of disposable income, by type of household

Households with lower income bear a heavier burden from ETR

but

ETR effects are balanced by a number of other elements of German income tax reform which outweigh these negative impacts

Distributive effects (2)



% of disposable income, by type of household,
combined with other elements of
income reform in Germany

Conclusions

- Results are similar in their sign, despite the fundamental differences in design of models
- Exemptions and design of German ETR affect modelling experience (data base problem)
- Results are affected by assumptions regarding external variables - models hence need to be calibrated carefully
- Modelling helps to understand the dynamics of ETR but needs to be „handled with care“ regarding interpretation of results
- In Germany, the results of modelling helped to convince politicians and to calm fears of economic disaster...

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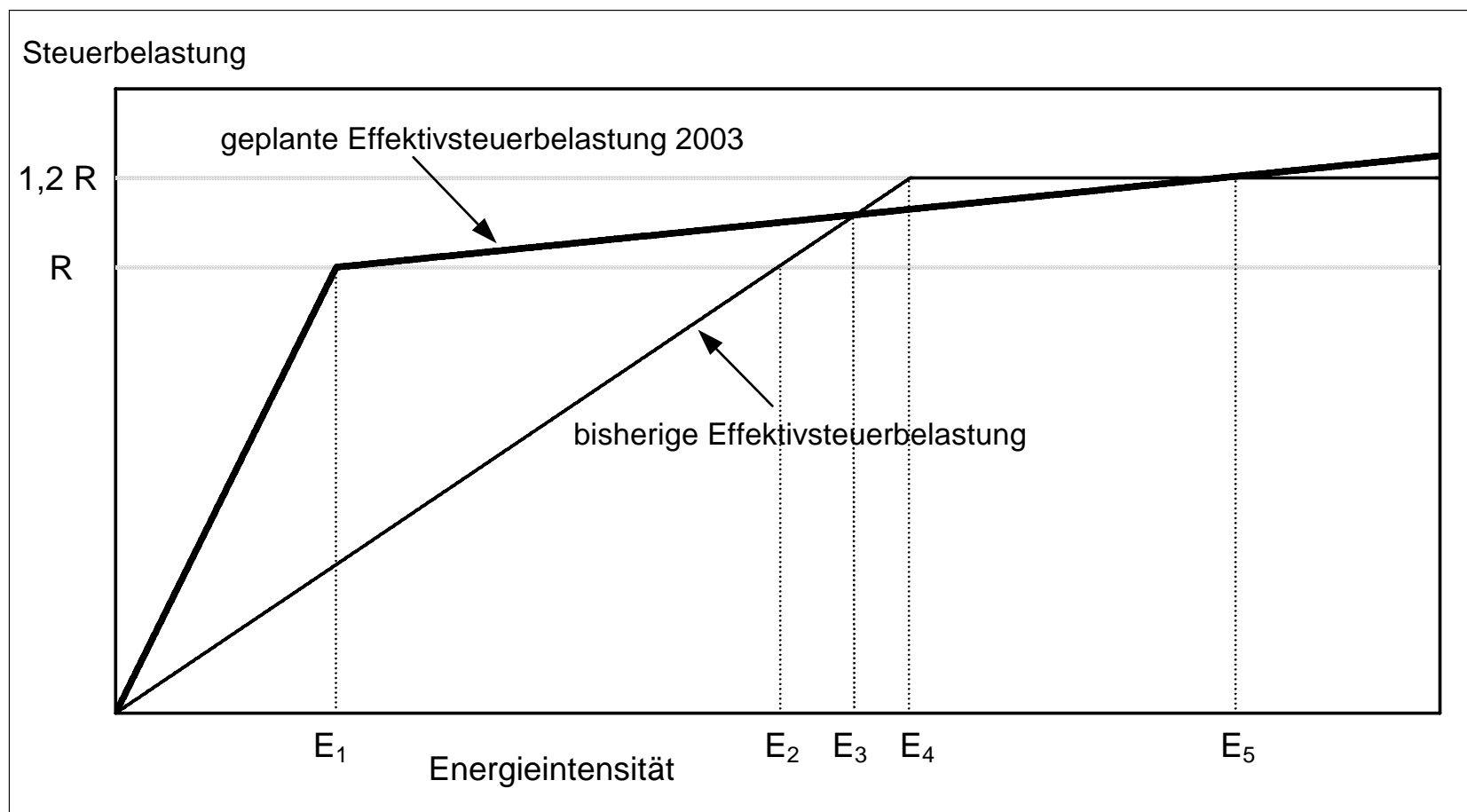
University Oldenburg (LEAN)

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Thank you.

Effective tax burdens (new and old)



Czech-German Initiative on ETR in the Czech Republic
April 25, 2003, Prague/Czech Republic

Overcoming obstacles in the implementation of ETR

PD Dr. Lutz Mez

Environmental Policy Research Centre

Freie Universität Berlin

ffu

ETR in the Czech Republic

Focus of the project

- Institutional factors and actors inhibiting effective policy implementation

Effectiveness and innovativeness of policy making is depending of

- policy instrumentation
- policy style
- sector-specific actor configuration

General Idea and Political Science Aspects

- Policy options for an energy & environmental policy
- Role of actors in the policy cycle
- The silent charm of a discourse approach
- Improvement of the regulation pattern

Obstacles & Implementation

- Institutional dimension
- State failure
- „hard“ instruments/strategies
- Negotiations & policy learning
- Democratic deficits
- Methodological consequences

Effectiveness of ETR

Instrumentation

- Economic stimulation
- Policy mix
- Strategic approach
- Process support

Policy Style

- Dialog orientation
- Calculability
- Demanding goals
- Flexibility

- Management orientation

Actors' Constellation

- Stakeholder influence
- Regulator/target group interconnection
- Target group network
- Policy integration

Energy/Environmental Policy - Policy Style

- Institutionalized and non-institutionalized approaches taken to political problems
- Process of policy formulation and design of programs (open vs. closed, authoritative-hierarchical vs. discourse-driven etc.)
- Differences in policy design and successes and failures of energy programs

Energy/Environmental Policy – Actors' Influence

- Parties, economic interests concerned, public interest groups, independent experts etc. And their standing in the energy/environmental policy discourse
- To what degree are the different actors' interests reflected in policy programs and international initiatives?
- What kind of domestic and international coalitions are forming?
- Are the positions of actors changing over time?

Energy/Environmental Policy - New Directions

- Successful environmental policies are interrelated to choices in energy policy
- Traditional energy policy-making does not take this into account and contradicts environmental goals
- Can instances or elements be identified with respect to an „inter-policy“ exchange between energy and environmental policy?
- How is the inter-face reflected in institutional and procedural structures and innovations?

That's all, folks!

Lutz Mez

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