

A path to a new Quality of Democracy ?



THOUGHTS ON THE RELATIONSHIP

Politics and the Energy Markets

THE ENERGY MARKETS FINANCE CHANGE

The German Experiment

THE WIDENING OF THE DEBATE

An Example how Knowledge meets Power

CONSEQUENCES FOR URBAN PLANNING

**The Challenge of New Market Potentials on
a path to Public Sustainability**

INTRODUCTION

Renewable Energy Production



POLITICS AND THE ENERGY MARKET
critical theses – looking on a difficult history



Thoughts on the Relationship

An appraisal of history :

1. "Free Market Economies" do not create Democracies
2. Democracies without balanced Market Economies can't survive
3. Oligopolies and Monopolies are NOT Market Formats that are Democracy compatible
4. Economies that are Commodities Extraction dominated run an extreme risk of Corruption
5. Corrupt Economics create Corrupt Politics
6. Discovering Energy Riches is highly dangerous for society – only very strong democracies and diversified economies have a chance to cope.



THOUGHTS ON THE RELATIONSHIP Politics and the Energy Markets

Formulating Theses for a Debate:

1. Sustainability can't be imposed from above.

Effective Sustainability – covering the whole range of subjects from sustainable society and politics through sustainable economics to sustainable an ecological footprint – can only be achieved in direct proportionality with the functional effectiveness of the political system and its openness to integrate all these aspects and all pertaining stakeholders in the process.

2. A Market Equivalence: Free Ideas & Real Prices

Only a Market Economy with a comprehensive price development structure encompassing ALL production factors and the demand / supply balance is compatible with a clean Market of Ideas called Democracy.

3. Sustainable Development = $1/\text{Corruption}$

Greed and Corruption afflicted Societies and Sustainable Development are in a Relationship of direct and opposite proportionality.

THE GERMAN EXPERIMENT

Opening the Renewable Energy Production Market



Energy Markets finance Change

The principal Parameters:

1. Renewable Energy Investment is being “subsidized” by the investors being guaranteed 20 years of fixed / elevated electricity delivery prices for all electricity delivered.
2. The guaranteed renewable electricity delivery prices are distributed over all electricity sold and consumed in Germany.
(in 2000: 0.2 ¢/kWh rising to 2009 : 1.1 ¢/kWh and maybe 3.5 ¢/kWh in 2011 of the price while the total private consumer electricity price rise in that time period was 9.3 ¢/kWh from 13.9 ¢/kWh to 23.2 ¢/kWh or 67 % while normal economic inflation amounted to ~20% over these 10 years)
3. These guaranteed renewable electricity prices are infrequently politically adjusted to drive / follow the technology price development and targeted technology development and implementation preferences
(e.g. 2010 PV-E-Delivery-Prices went down by ~36% to recapture PV production prices, while E-Delivery – Prices for all other technologies – wind, water, biomass, renewable gases were adjusted upwards in 2009)
4. For small Investors the Government Development Bank (KfW) provides credit lines for such investment projects at the low end of current finance markets
5. **Result:** Renewable Energy Production is a viable business model, while a whole new technology market has been developed in the German economy – but there are some side effects to correct

Note: A similar program exists for non-renewable power-heat co-generation plants. Those significantly raise the efficiency of the used primary energy from ~45% to ~85% of useable energy output.

Sources: Bundesnetzagentur, KfW, Bundesministerium für Umwelt, Naturschutz & Reaktorsicherheit – EEG / KWK-G, Solar & Windenergie Portal, LEAF Laistner Energie



ENERGY MARKETS FINANCE CHANGE

The German Experiment – opening a new market

Some Outline Results :

1. Renewable Energy Power Plant numbers have shot up
 from just below ~12,000 plants commissioned until end of 1998
 to ~895,000 plants commissioned until end of 2010
2. Renewable Electricity Power Plant installed Capacity has grown from
 installed ~11,101 MW in 2001 (at ~63,000 power plants)
 to installed ~41,355 MW in 2009 (at ~645,000 power plants)
3. Renewable Electricity Production has grown
 from 10.391 GWh in 2000 being ~ 3% of all produced electricity
 to 74,942 GWh in 2009 being ~ 16% of all produced electricity
4. The guaranteed renewable electricity production price mix has changed
 from an average 8.5 ¢/kWh in 2000 to 13.945 ¢/kWh in 2009.
 This reflects the steep rise of the number of higher subsidized photo-voltaic power plants in the
 mix – as large sectors of the general public discovered the new worth of their roofs and politics
 created a building frenzy starting 2009.
5. Currently industrial electricity consumer prices
 are between ~5.5 ¢/kWh for the highest volume consumers
 to ~14.5 ¢/kWh for small business consumers,
 and at ~18.5 ¢/kWh to ~24 ¢/kWh for private consumers
 – renewable electricity is well within marketable values if sold in a mix

Sources: Bundesnetzagentur, <http://www.eeg-kwk.net>, wikipedia

Some Outline Problems:

1. A large section of Renewable Energy Power Plants produce electricity with a high dependency on daytime and seasonal cycles as well as weather
– storing & transporting electricity become the new problem issues
2. Only the electricity market (~1/3) is affected (with a small impact of the biomass co-generation plants on the heat market). Transport and Heat Energy Markets (~2/3) are still largely unaffected, for various reasons.
3. The increase in biomass power-heat co-generation plants has grown to such an extent, that problems arise in losing agricultural food production to corn-plantings for power plants. Similarly until July 2010 we lost valuable food production area to pv-power plants. Also the shipment of biomass to the plants is sometimes extensive due to local overcapacities of power plants vs. planting areas & in some cases there is no market for the heat side of the equation
4. The parallel decline in photo-voltaic power plant prices with the lowering of the guaranteed electricity delivery price over the last 2 years, currently indicates, that even with extensive cuts last year, there is still an imbalance of pv-electricity price and pv-plant production costs at present.

Sources: LEAF Laistner Energie GbR



ENERGY MARKETS FINANCE CHANGE

The German Experiment – opening a new market

Essen – Germany – 19. May 2011

REAL CORP 2011

THE GERMAN EXPERIMENT
An Example how Knowledge meets Power

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The Widening of the Debate

Essen – Germany – 19. May 2011

REAL CORP 2011

The energy political roller coaster 2008 to 2011 :

- 2008/09** Renewable Energy Investment in photovoltaic power plants become so profitable that the trade associations of the farmers advise their members to invest and fast. The news spreads as barns get covered.
- 10. 2009** The pv-e-delivery prices become a sideline issue in federal elections.
- 1-5. 2010** The reduction of "pv-subsidies" is fast tracked through parliament – pv-plant prices just follow the slope – but a huge "hype" of private and business pv-plant investments (~ 350.000 plants in one year) runs over Germany in three consecutive waves, timed to the pv-e-delivery price reduction schedule throughout the year.
- 6-10.2010** Using the "pv-subsidies reduction issue" as a starting point the nuclear energy producers and their lobbies together with the CDU / FDP government in Berlin overturn the 2000 consensus on nuclear plant shut down in Germany – in a rather unusual / questionable parliamentary fashion – which is still pending in court.
- 11.03.2011** The catastrophe at Fukushima Dai-Ichi happens – and German popular reaction on this political background is "extreme".
- 15.03.2011** Days after this state election Germany "temporarily" shuts off its 7 oldest nuclear power plants AND THE LIGHTS STAY ON ! – For now ? For ever ? Politicians scramble !
- 27.03.2011** In the CDU/FDP heartland of Baden-Württemberg after 57 years they loose the election, the government changes and there's the first Green Party State Prime Minister since 12.05.2011.
- 18.05.2011** The reactor safety commission report on an expanded safety check for NPP is published – only 2 of 17 NPP can prove at least minimum safety standards in all new / expanded safety review categories. What Now ? The debate continues !
- Coming soon** A new fixed date for NPP run down & creative thoughts on an accelerated and expanded renewable energy implementation program – **A New German Target: Be the first to be clean!**

Sources: FAZ 19.05.2011

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THE WIDENING OF THE DEBATE

The German Experiment – knowledge meets power

Essen – Germany – 19. May 2011

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The resulting Situation:

1. Currently ~ 850,000 principal investors – many private families have become energy producers and by force energy-policy savvy (at least to a higher degree than they were before). Overall it can be estimated that this encompasses a population segment of close to 2,000,000 people or ~2.5 % of the population and maybe ~5% of the working population. This is a huge change in the “educated public” potential of democracy.
2. The “non-effects” of the nuclear plant shut down have hugely undermined the confidence in large parts of the population in the veracity and validity of the traditional power company positions.
3. The public reaction to the unscheduled pv-e-delivery-price reductions in 2010 shows an unexpected level of personal involvement and activity in the body politic on this issue – which surprised everybody.
4. Germany now has ~872 individual electricity network operators and 746 individual gas network operators – most of whom are individual townships or their technical city works – and in the not to far future many concessions are up for renewal. So the number is likely to grow as communities rediscover this profitable service market.
5. Energy Politics is now a continuous hot political topic forcing huge party-line adjustments from the federal to the local level in Germany.
6. The state elections this year show unexpected high voter turnouts. Not just for energy politics reasons – but for many public participation issues.

THE CHALLENGE OF NEW MARKET POTENTIALS
ON A PATH TO PUBLIC SUSTAINABILITY
Widening the economic base of urban investment

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Consequences for Urban Planning

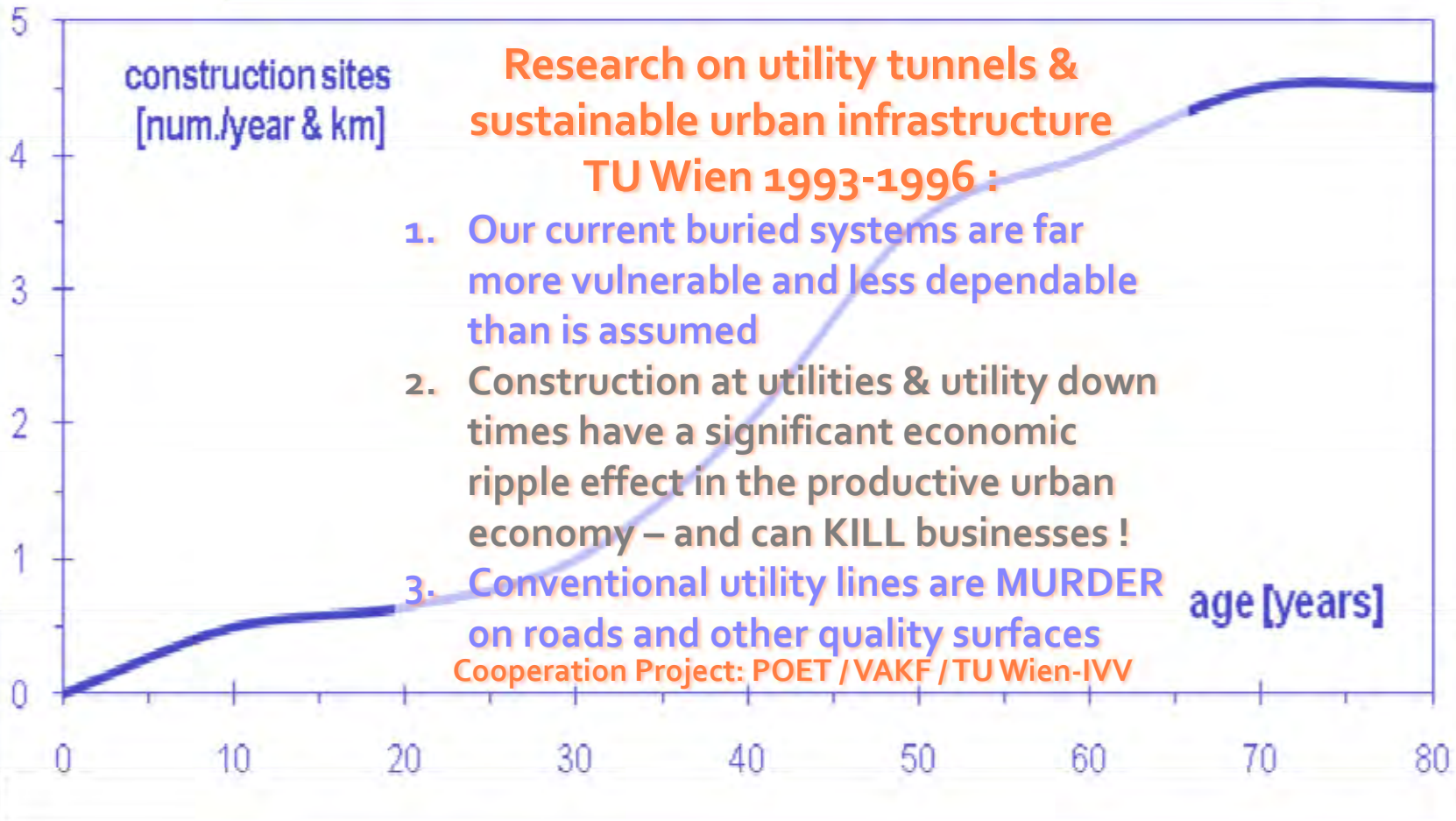
Essen – Germany – 19. May 2011

REAL CORP 2011

“New” Subject Taskings in Urban Development:

1. Understanding the **energy economic benefits** for building investments that can refinance not only their energy costs, but over the power plant lifetimes a substantial part of the building investment itself.
2. Understanding the way **cooperation structures** can be initiated and sustained between township, individual building investors and private power plant and network investors. And understanding the significant effect of **functional sustainability** in urban design in this process.
3. Understanding in what way **technical issues** like e.g. building and roof alignments, district heating and cooling network provisions, sewage and biomass availability, flexibility of supply technology for later change, can **determine the economic success** of both the developer and the investor.
4. Understanding the significance of **proactive public debate** on development projects. The old authority dominated methodologies of public participation are no longer enough – and any development with a possibly controversial element included will need a new process of moderated openness and discussion.
5. Understanding the **new forms of assistance / consulting** that public entities and authorities need from us to acquire the now demanded responsiveness and flexibility in the public development discussion.

line damages along utility systems under urban streets



Sources: pictures © & data: alc UG(hb) – POET GmbH



Developing Concepts for Humane Cities



Sources: pictures © & data: alc UG(hb) – POET GmbH

Understanding the towns' needs: sales & income

Wachau 1991 to 1993

Urgent need to develop businesses and further job-creation after the first free local elections in the east German states

High competition market for available business zones – a race between the townships - the first wins the investors & businesses, that last go empty:

Project schedule:

Feb 1991 – POET contracted to assist Wachau

May 1991 – POET presents Master Plan for approval / commencement of tender process

June 1991 – Start of construction works on development

Sept 1991 – first private investor starts building on his property

Oct 1993 – all development works and CHP plant completed and in operation – business park – 40% filled

Developing Concepts for Humane Cities



Sources: pictures © & data: alc UG(hb) – POET GmbH, GOOGLE Earth 2006 GeoContent

Understanding the towns' needs: sales & income

Wachau 1991 to 1993

Special project characteristics:

- Utility Tunnel system with a sufficient supply system density and number (sewage, potable water, district heating, electrical power (20kV & 400V), telephone, lighting, security & safety systems)
- High Green Quality Zoning
- Above Ground Storm Drainage & Retention
- Defined High Quality road cross section and limited property access scheme

All serve to enable the area to retain its value and avoid the usual time degradation of industrial and business areas.

Avoids water losses into the environment, protects pipes and cables from soil impacts

Protects the road surfaces and high quality landscaped areas from being disturbed by later constructions and repair works

Sustainability success after 20 years: 100%

No road excavations – all developed sites occupied with no time degradations – infrastructure still in pristine order – PPP operating company still has full site investor backing

Developing Concepts for Humane Cities

Understanding the sub-urban needs: growth on the fringes



Fahrland 1992 to 1995

Situated west of Berlin, north of Potsdam at the current outside fringes of both a federal and a state capital – the community needed a strategy and development that enabled it to capture part of the Bonn to Berlin capital relocation market as well as preserving its unique rural charm and still develop sub-urban supply infrastructure business.

High competition market for available housing zones – a race between the townships - the first wins the citizens, that last go empty:

Project specialties:

Combination of condensed urban housing with a villa park

Segregation of vehicle and pedestrian traffic – cars and car parks are at the back side of the houses

Economic comparison project – utility tunnel development vs. conventional development

Full urban services development including shopping center and kindergarten

Sources: pictures © & data: alc UG(hb) – POET GmbH, GOOGLE Earth 2005 DigitalGlobe

Developing Concepts for Humane Cities



Sources: pictures © & data: alc UG(hb) – POET GmbH, GOOGLE Earth 2005 DigitalGlobe

Understanding the sub-urban needs: growth on the fringes

Fahrland 1992 to 1995

Utility Tunnel and Cogeneration Heat-Power plant:

- Utility Tunnel system with a sufficient supply system density and number (sewage, potable water, district heating, electrical power (20kV & 400V), telephone, lighting, security & safety systems) needing to be placed partially below the ground water table
 - High Green Quality Zoning
 - Above Ground Storm Drainage & Retention
 - Defined High Quality road-parking-walkway system for optimized pedestrian and bicycle use
- enable a construction free and interruption free supply and development situation and have created an extraordinary urban / rural biotope situation.

Avoids ground water contamination

Sustainability success after 18 years: 100%

No road excavations – all developed sites occupied with no time degradations – infrastructure still in pristine order

On the way to future sustainability
technical and economical issues
on energy and/or transportation have currently
become huge social multipliers of the publics'
involvement and acceptance of
development projects.

Urban and Regional Design and Planning all of a
sudden has a "new" partner in the ongoing
conversation – the people !

It is our tasking to satisfy their requirements !

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SPEAKERS DETAILS

professional experience

18 years

in urban development
and airport projects
with a 100 % proven track
record of

– ON TIME – IN BUDGET –
– STATE OF THE ART –

educated in

mechanical & civil

engineering

business administration

SOURCES AND REFERENCES:

THOUGHTS ON A RELATIONSHIP

Author's own perceptions, experiences and conclusions developed from professional work, following the news and a wide reading and interest in history, politics and technology development

ENERGY MARKETS FINANCE CHANGE

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THE WIDENING OF THE DEBATE

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summary table of review results on German nuclear power plant expanded security review

Author's own perceptions, experiences and conclusions

developed from professional work, following the news and a wide reading and interest in history, politics and technology development

CONSEQUENCES FOR URBAN PLANNING

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The new economic feasibility of an old idea
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Einsatz begehbarer Leitungsgänge / Infrastrukturkanäle in der öffentlichen Ver- und Entsorgung

1996 Doktorarbeit an der Technischen Universität Wien
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POET Ing GmbH (GROLL); Dr. Axel Laistner (POET);
www.googleearth.com – Image © 2010 AeroWest



RENEWABLE ENERGY PRODUCTION

A path to a new quality of Democracy ?