Regional ECREEE Training Workshop:

National Renewable Energy Policy and Incentive Schemes & Global Energy Transformation Pathways and Policy Tools

“Overview of market regulation Planning at the National Level”

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AGENDA

• Why do we need renewable?
  • Why do we need support?
  • Examples of support – Focus Austria
Electricity - Production

• Many Sources:
  – Oil
  – Gas
  – Coal
  – Nuclear
  – Water
  – Solar
  – Biomass
  – Geothermic
  – ......
Environment: EU27 with „CO₂- and Nuclear - backpack“

Electricity from fossil
- 990 TWh Coal
- 760 TWh Gas
- 115 TWh Oil

Electricity from Nuclear:
- 935 TWh

About 85 %

~ 3.000 TWh Electricity with „bad Image“
Situation in Austria

- **HYDO**
  - Wasserkraft: 36,496 GWh (51%)
- **Fossil**
  - Summe Fossil (Gas, Öl, Kohle): 24,638 GWh (35%)
- **Others**
  - Sonstige: 9,551 GWh (14%)

Gesamterzeugung: 70,685 GWh

[Quelle: ENTSOE 2011]
Electricity market in Austria

- About 4.2 million metering points
- About 60 TWh final electricity consumption
  - 44 % industry
  - 28 % households
  - 20 % private and public services
- About 130 electricity suppliers
- About 140 system operators

- **Electricity price for households: ~ 18 Cents/kWh**
  - ~ 44 % = energy
  - ~ 25 % = net, metering
  - ~ 31 % = taxes and charges (electricity tax, green electricity support, VAT)
Austria is platform for electricity
Electricity - Production

Everybody want to buy the cheapest energy

RENEWABLE ENERGY needs SUPPORT

Market liberalization → everybody can buy the energy where they want
Energy policies and developments

- **European Framework:**
  - Promotion on the use of renewable energies: 20 % all over Europe, 34 % in Austria until 2020
  - Increasing energy efficiency: by 20 % until 2020
  - Climate strategy: reducing CO2-Emission by 20 % until 2020  → more renewable Energy
Production - Costs

Long-run marginal generation costs (for the year 2009) for various RES-E options in EU countries European Framework

Source: Ecofys and Bamberger
Energy policies and developments

More renewable energy – high priced energy

Market buy the cheapest

‘Big Bang’

We need support

IS THIS NECESSARY?
Financing Instruments

- **Three main categories:**
  - Energy Market instruments (Feed-in Tariffs, Premium, Renewable obligations, Tenders, Fiscal incentives)
  - Equity Finance Mechanisms (Venture Capital, Equity, R&D Grants, Capital/Project Grants, Contingent Grants)
  - Debt Finance Mechanisms (Mezzanine Debt, Senior Debt, Guarantees)
- Austria uses **Feed-in Tariffs, Premium, Fiscal incentives**
Evaluation matrix of support instruments using different criteria (ECOFYS 2011):

<table>
<thead>
<tr>
<th>Name of Instruments</th>
<th>R&amp;D and Demo</th>
<th>Pre-commercialisation</th>
<th>Commercialisation</th>
<th>Start-up</th>
<th>Construction</th>
<th>O&amp;M</th>
<th>Efficiency</th>
<th>Effectiveness</th>
<th>Investment certainty</th>
<th>Competitiveness</th>
<th>Governance</th>
<th>Market compatibility</th>
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Support in the EU27

Main RES-E support instruments in the EU-27

- Quota obligation
- Feed-in-tariff
- Premium System = Market price + extra Cent/kWh
- Quota obligation
- other/mixed systems

Notes:
1. The patterned colours represent a combination of instruments
2. Investments grants, tax exemptions and fiscal incentives are not included in this picture.
Support in Austria

• Different feed-in-tariffs for different technologies

• Guaranteed feed-in-tariffs for a period of 13-15 years

• Additional investment support for PV and small hydro

• ~ 550 Mio. € annual budget
“Green electricity” = renewable sources

- Wind
- PV
- Biogas
- Biomass (fuel and solid)
- Hydro: Small (< 10 MW) and medium sized (10-20 MW) not the big one
Electricity from Renewables in EU27

Austria: 65%

Europe: 16%

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[Source: EurobservEER | 2008]

2012/04/09
Typical Support-System for RES-E
Example Austria (Feed-in-tariffs and additional investment grants without details))

Flow of "other" green electricity

Flow of small hydro power el.

Small Hydro Power < 10 MW

"Other" Green Electricity
Wind Power, Biomass, Biogas, PV, et al

Green Electricity Company OeMAG (licensed)

Settlement price for aliquote Small Hydro Power

Settlement price for aliquote "Other" Green Electricity

Balancing Group

Network System Operator

End Consumer

Electricity Trader

before amendm.: (Feed-in-tariff)

cash flow

cash flow end consumer - electricity trader

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Support in Austria

• Actually OeMAG pay for new (13 years)
  – SOLAR/PV >5kW: 27,6 ct/kWh(<20kW) - 23 ct/kWh
  – Wind 9,5 ct/kWh
• OeMAG gets the marketprice from the Trader:
  – About 50 Euro/MWh
• OeMAG get money from the customer via network companies (Distribution Companies)
  • Maximum OeMAG budget:~ 550 Mio. € / a

• Additional: Investment Support e.g. PV< 5kW
Feed in tariffs versus market prices 2003-2010

Graph showing the development of average remuneration and market prices from 2003 to 2010. The graph includes data points for different energy sources, such as Biogas, Biomass, Wind, and Photovoltaics. The market price is shown as a line graph with specific benchmarks for each year.

Key points:
- **Biogas**:
  - 2008: incl. 3.91 Cent/kWh
  - 2009: incl. 3.00 Cent/kWh
  - 2010: estimated RZ not included

- **Biomass**:
  - 2008: incl. 3.91 Cent/kWh
  - 2009: incl. 3.00 Cent/kWh
  - 2010: estimated RZ not included

- **Wind**:
  - 2008: 7.73 Cent/kWh
  - 2009: 7.75 Cent/kWh
  - 2010: 7.76 Cent/kWh

- **Photovoltaics**:
  - 2008: 65.16 Cent/kWh
  - 2009: 65.14 Cent/kWh
  - 2010: 64.46 Cent/kWh

- **Kleinwasserkraft**:
  - 2008: 4.41 Cent/kWh
  - 2009: 4.37 Cent/kWh
  - 2010: 4.07 Cent/kWh

- **Market Price**:
  - 2008: 2.70 Cent/kWh
  - 2009: 3.31 Cent/kWh
  - 2010: 4.07 Cent/kWh

**Note**: The market price in 2010 includes the Biogas feed-in-tariff (RZ) which was not included in the previous years.

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[22.03.2011 | Quelle: Energie-Control Austria, Öko-BGV, OeMAG]
Example – PV in Austria >5KW

Price: ~ 18 Cents/kWh
~ 44 % = energy
~ 25 % = net, metering
~ 31 % = taxes and charges

Energy price or Feed in Tariff

Distribution network
Example – PV in Austria <5KW - Investment support

Price: ~ 18 Cents/kWh
- ~ 44% = energy
- ~ 25% = net, metering
- ~ 31% = taxes and charges

Distribution network

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Thank you for your attention

Merci

Obrigado

Happy Eastertime
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Thank you for your attention.

Merci.