Supported by
INTELLIGENT ENERGY
EUROPE

Key design elements of an effective and efficient RES policy in the EU

Final conference of the RE-Shaping project

Brussels, 7 December 2011

Mario Ragwitz, Fraunhofer ISI

RE-Shaping
Shaping an effective and efficient European renewable energy market

Fraunhofer ISI

Current achievements are substantial

The last decade was characterized by the successful deployment of renewable energy sources (RES) across EU member states – total RES deployment increased by more than 40%. In detail:

- RES electricity generation grew by approximately 40%, RES heat supply by 30% and biofuels by a factor of 27 during the last decade,
- new renewables in the electricity sector (all technologies except hydropower) increased fivefold during the same period,
- total investment amounts to € 40 billion annually in 2009,
- employment due to RES amounts to about 1.5 Mio. people in 2010
- cost reductions for key technologies like wind and PV are in line with learning curve expectations
- Europe acted as first mover to start global RES development

Supported by INTELLIGENT ENERGY EUROPE

The challenge

- But more is needed to reach the 2020 targets: Compared to the last decade,
  - growth in RES-E needs to almost double from 3.4% per year to 6.7% per year,
  - growth in RES-H sector needs to increase from 2.7% per year to 3.9% per year until 2020,
  - compared to the last three years relative growth rates need to roughly continue during the next decade,
  - credit crisis reduces growth in a number of MS
  - costs of RES policies have reached 0.3% of EU GDP
- Evaluation of NREAPs shows that largest deficits exist regarding the mitigation of non-economic and grid-related barriers and regarding support schemes for RES-H

Supported by INTELLIGENT ENERGY EUROPE

The challenge

Areas, where action is needed:

- Accelerate deployment by stronger and EU-wide coordinated mitigation of non-economic barriers
- Increase the effectiveness and efficiency of support by improved instrument design in case of RES-E and by introducing new off-budget instruments for RES-H
- Increase the compatibility between RES-E and power markets by increasing flexibility of power markets and of RES-E support schemes
- Coordinate support scheme design, market design, administrative procedures and intensify use of cooperation mechanisms

Supported by INTELLIGENT ENERGY EUROPE

Conclusions – Electricity sector 1 / 2

1. Provide policy stability (for FIT / FIP / Quota):
   - ➔ Retroactive policy changes are most crucial mistake but also other sudden changes should be avoided.
   - ➔ Move away from annual budget planning with stop and go consequences
2. Reduce (unproductive) revenue risks:
   - ➔ Long term contracts are most relevant (quota systems)
   - ➔ Priority dispatch in case of grid congestion & compensation for forced curtailment
3. Take stronger efforts in FIT / FIP schemes to assure that learning curve achievements are translated into price reductions
   - ➔ Strict use of automatic degression formulas
   - ➔ implement competitive elements

Supported by INTELLIGENT ENERGY EUROPE

Conclusions – Electricity sector 2 / 2

4. Apply automatic degression formulae for FIT and FIP.
   - ➔ Tariffs for new plants should reduce according to learning curve of technology.
   - ➔ FIT/FIP for RET with rapid cost reduction require frequent tariff adjustment cycles and good coordination of tariff levels with other relevant markets. (Frequent) tariff adjustments based on (automatic) adjustment formulae (related to market growth) at dates known to the market sufficiently long beforehand can manage this policy cost risk without negatively affecting the investment climate
5. Offer supplementary measures for small scale projects:
   - ➔ Many quota countries offer separate incentives: BE minimum prices for PV, IT FIP for PV, UK FIT for small-scale applications. Technology-banding within the quota as applied in UK can help to support cost-intensive technologies like wind offshore, but is less suitable for small-scale projects.

Supported by INTELLIGENT ENERGY EUROPE

Potential measures for electricity markets and RES-E policy

Market design:

- "Gate Closure" closer to Real Time
- Efficient Congestion Management
- Integration of Balancing Markets
- Efficient cross-border Intra-day Markets

RES-E policy:

- Introduction of premium tariffs as compared to fixed feed-in tariffs in order to apply signal of the electricity markets to RES-E
- HT / LT tariffs in order to account for dynamic value of renewable electricity

Supported by INTELLIGENT ENERGY EUROPE

Pros and cons of main RES-E support schemes

Fixed feed-in premiums

Feed-in premium with electricity price index

Banded quota models

Fixed Feed-in traiffs

Technology neutral quota models

+ low investment risk
+ high technology diversity
+ low windfall profits for mature technologies
+ broad spectrum of investors
- low compatibility with electricity markets
- limited competition between generators

+ high compatibility with electricity markets
+ competition between generators
- high risks and uncertainties (prices and market growth)
- low incentives for less mature technologies
- windfall profits

Conclusions – Heat sector

1. RES-H support usually depends on public budget, resulting stop- and go policies create strong uncertainty for investors.
   - ➔ Apply off-budget policies, e.g. via surcharge on heat (fuel) cost
   - ➔ Both new and existing buildings should be covered by new off-budget policies, such as building obligations, feed-in premiums or quota systems.
2. Some MS (e.g. AT, DK, FI, LV, SE) effectively promoted biomass-based centralised heating.
   - ➔ Incentives for creating / extending district heating networks are crucial.
3. Support for decentralised biomass heating plants typically needs a higher level of support than that of centralised plants
4. Ground-source heat pumps effectively promoted by using obligations in SE and investment grants and fiscal incentives HU & FI

Supported by INTELLIGENT ENERGY EUROPE

Conclusions – Heat sector

5. Long reinvestment cycles limit the diffusion rate for the integration of renewable heating systems that are integrated in buildings

   ➔ Due to long reinvestment cycles it might be useful to already start now supporting especially those technologies that are likely needed in the future energy system. This might refer especially to technologies that are beneficial for system integration of fluctuating RES-E, like heat pumps or biomass CHP with heat storage.

Supported by INTELLIGENT ENERGY EUROPE

Conclusions on Member State coordination

Coordination of MS methodologies for tariff-setting / support level determination both for FIT / FIP and banded quota systems:

- ➔ Establish process to assist MS to determine (technology-specific) support levels in such a way that they suit their (technology-specific) deployment target
  - ➔ assure that level of support gives a sufficient investment incentive
  - ➔ reduce the risk of excessive profits
  - ➔ avoid national boom and bust cycles for certain technologies, e.g. PV
- ➔ Elements for potential coordination / information provision:
  - ➔ formulae for calculation of levelised cost of electricity
  - ➔ the level for specific investments per technology (frequently updated)
  - ➔ regional specific capacity factors
  - ➔ biomass prices
  - ➔ reasonable (country specific) interest rates and duration of support
  - ➔ in FIP: calculation of value of RES electricity, costs for balancing
- ➔ MS may inform each other / the EC on planned policy changes in order to decrease unintended effects for other Member States
- ➔ EC may take action in creating the information platform

Supported by INTELLIGENT ENERGY EUROPE

Conclusions on coordination and cooperation

- Establish process to coordinate the mitigation of non-economic barriers regarding administrative procedures, permitting, grid connection
  - common guidelines for permit requirements and procedures
  - maximum / targeted lead times for projects
  - common guidelines for technical requirements for grid connection
- Establish process to assist price determination for cooperation mechanisms
  - Average support level for new RES in the EU may be a suitable approximation for price level
  - EC may calculate average support level on an annual basis and publish it on the transparency platform
- Create platform for stronger cooperation for large scale projects, which cannot be carried out by individual Member States alone, e.g. wind off-shore
- Keep the space for national policy innovation, competition of ideas for best practice policy development as this was one of the key success factors in EU RES policy

Supported by INTELLIGENT ENERGY EUROPE

Thank you for your attention!

Mario.Ragwitz@isi.fraunhofer.de

reports available on

www.reshaping-res-policy.eu

Final report available as of February 2012

Supported by INTELLIGENT ENERGY EUROPE