

Feed-In Tariffs

Input from a German/European legislative point of view

Expert meeting on Feed-In Tariffs

On Invitation by the

Japan Renewable Energy Foundation

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About us

- Founded in 1970
- Offices in Berlin, Brussels, Cologne, Munich, Stuttgart, Vienna
- More than 200 lawyers, auditors, tax accountants and engineers
- Leading provider of consulting services in the areas of energy and infrastructure law with an interdisciplinary approach
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- Successful representation of our clients in numerous fundamental legal issues
- Clients: municipalities and regional authorities, about 400 municipal utilities ("Stadtwerke") and municipal transport enterprises, internationally operating supply and trading companies, operators of renewable and conventional generation plants, project developers, banks and industrial enterprises

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- Born in Recklinghausen in 1957
- Married, 1 child
- Studies of Law at the Universities of Marburg and Hamburg
- 1982 Academic and Research Associate, Junior Lecturer at the University of Hamburg, Law Faculty
- 1988 Civil servant of the State of Hamburg, Ministry for the Environment and Energy
- 1991 Civil servant in liaison office of Hamburg and Schleswig-Holstein to the European Commission in Brussels,
- 1993 Partner in law firm Kuhbier, Brussels, specialising in European and International law and consulting on European affairs in the fields of competition, energy, transport, environment
- Since 2011 Partner in law firm BBH and head of the Brussels office of BBH
- Memberships
 - Admittance to the German Bar of Berlin and to the Brussels Bar
 - Green Budget Europe, FÖS
 - Eurosolar
 - BWE (German Wind Energy Association)
 - Deutscher Juristinnenbund (German Female Lawyer's Association)
- Practice areas:
 - Energy, environmental and competition law

Outline

1. What are the definitions of eligible renewable energy source technologies?
2. What is a good design for Tariffs?
3. What is the definition/meaning of priority access? What must be guaranteed under the ministerial order?
4. How to share the burden and who pays the cost of connecting and reinforcing of grids?
5. What kinds of procedures must be prepared?
6. What other factors or issues should be considered in designing Japan's FIT?

What are the definitions of eligible renewable energy source technologies?

Renewable energy technologies to be covered

- the scope of the support scheme needs to be defined
 - what counts as renewable energy source eligible for support?
- definition applied in the EU (Directive 2009/28/EC):
 - 'energy from renewable sources' means energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases;

Thermal Energy - EU Definitions

- 'aerothermal energy' means energy stored in the form of heat in the ambient air; (art. 2b))
- 'geothermal energy' means energy stored in the form of heat beneath the surface of solid earth; (art. 2c))
- 'hydrothermal energy' means energy stored in the form of heat in surface water; (art. 2d))

Biomass and Biogas

- 'biomass' means the biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries including fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste; (art. 2e))
- 'bioliquids' means liquid fuel for energy purposes other than for transport, including electricity and heating and cooling, produced from biomass; (art. 2h))
- 'biofuels' means liquid or gaseous fuel for transport produced from biomass; (art. 2i))

Solar? Wind? Hydro?

- Directive 2009/28/EC does not define those technologies
- There are established technologies
- Neither does the German Renewable Energy Act
 - there only definition of „renewable energy sources - as in RES Directive“
- Thus: questions:
 - Do they need to be defined?
 - Does the support scheme apply to all possible forms of solar, wind, hydro energy?
 - and how would one define them?

Existing plants and Refurbishment

- EU Directive 2009/28/EC only applies to
 - new plants that went into service after June 25, 2009
 - and plants refurbished after June 25, 2009

- HOWEVER: the Directive itself does not establish a support scheme - the „new or refurbished“ requirement is only imposed for counting the energy towards the mandatory national targets!

Existing plants and Refurbishment

- German Renewable Energies Act 2011:
 - new rates apply to installations commissioned from the 1 January 2012
 - HOWEVER: except for some transitional provisions, the current rates (EEG 2009) will continue to apply to all installations commissioned prior to 2012
 - IMPORTANT: NO RETROACTIVE CHANGES!

What is a good design for Tariffs?

Feed-In Tariffs

- „The basic feed-in model could be considered a „pricing law“ , under which producers of renewable energy are paid a set rate for their electricity, usually differentiated according to the technology used and size of the installations. The rate should be scientifically calculated to ensure profitable operation is guaranteed. The period for which the rate is received should also be set in law; and should cover a significant proportion of the working life of the installation. Grid operators are obliged to provide priority access to the grid for RE installations.“

Mendonça, 2007

Design alternatives

- Feed-In Tariffs vs. Feed-In Premiums
- Technology specific vs. uniform
- Duration of the support period
- Calculation of the rate
- ...

Feed-In Premiums

- the government sets a fixed premium or an environmental bonus, paid above the normal or spot electricity price to the RE generators
 - regularly revised and oriented on the market price
 - e.g. percentage of 40% of the market price in addition to market price

- normally no priority purchase obligation

- Examples: Spain, Denmark

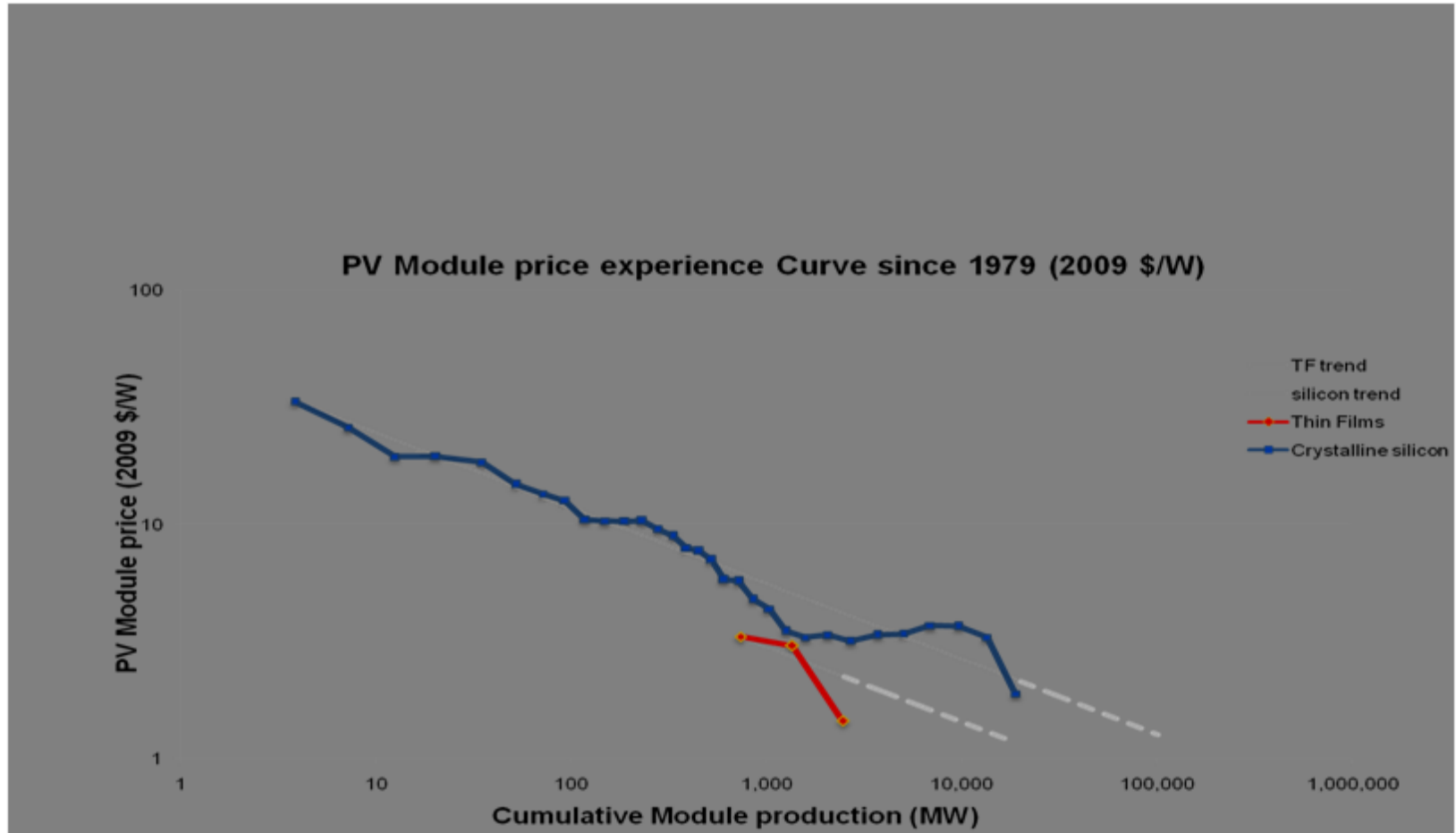
Feed-In Premiums

- as oriented on the market - said to be more compatible with liberalized market
- HOWEVER: wind and solar cannot respond to market signals
 - in Germany additional „flexibility premium“ for biomass and biogas to incentivise generation in accordance with market signals!
- Also: Feed-In Premiums lead to slower RE deployment unless extra-incentive to invest
- More investment insecurity, as the premium is oriented on the market prices (percentages...)

Technology Specificity and stepped tariffs

- Technology specificity
 - different RE technologies have different generation costs and different learning curves
 - uniform tariffs for all technologies would result in deployment only of the cheapest technologies delivering the fastest results!
- Stepped tariffs
 - different RE technologies may also have different generation costs depending on the size of the plant
 - thus smaller plants e.g. may need more support than bigger ones or vice versa
 - important for system change!

Example: Learning Curve PV



JRC, 2009

Example: The German FIT

- Feed-In Tariff, technology specific, with stepped rates
- Support guaranteed for 20 years
 - no retroactive changes
- Technology specific degression rate to account for learning curves
 - however: support rate is fixed for 20 years, starting at the day of commissioning!
 - legal/investment certainty
- priority grid access
- Priority purchase, transmission and distribution

The success of FITs

- „A well designed (dynamic) FIT system provides a certain deployment of RES-E fastest and at lowest cost for society“ .

Haas, 2006

- „The EEG has been successful in deployment; in reducing risks; in developing an advocacy coalition; and in developing a new industry.“

Mitchell, 2003

What is the definition/meaning of priority access? What must be guaranteed under the ministerial order?

Priority access

- „Grid system operators shall immediately and as a priority connect installations generating electricity from renewable energy sources and from mine gas to that point in their grid system (grid connection point) which is suitable in terms of the voltage and which is at the shortest linear distance from the location of the installation if no other grid system has a technically and economically more favourable grid connection point....“

German Renewable
Energy Act, § 5(1)

Priority access

- „The obligation to connect the installation to the grid system shall also apply where the purchase of the electricity is only made possible by optimising, boosting or expanding the grid system ...“
- „Insofar as it is necessary for the determination of the grid connection point and for the planning of the grid system operator ..., those interested in feeding in electricity and grid system operators must submit to each other, upon request and within eight weeks, the necessary documentation, in particular the grid system data required to test and verify the grid compatibility.“

German Renewable
Energy Act, § 5(4, 5)

Costs for grid connection and grid expansion

- Costs from RES installation to connection point, including costs for metering devices - borne by RES operator
- Unless: Grid Operator could ask to connect at a different point than the closest, the thus resulting incremental costs are to be paid by grid operator
- Costs for capacity expansion to be borne by the grid system operator

Grid extension

- „Upon the request of those interested in feeding in electricity, grid system operators shall immediately optimise, boost and expand their grid systems in accordance with the best available technology in order to guarantee the purchase, transmission and distribution of the electricity generated from renewable energy sources or from mine gas. They shall inform the installation operator without delay as soon as the risk arises that technical control will be assumed over their installation in accordance with section 11(1) first sentence; the expected time, extent and duration of the control shall be communicated. The grid system operator shall immediately publish the information required in accordance with the second sentence above on his website and shall thereby describe the affected regions of the grid system and the reasons for the risk.“

German Renewable
Energy Act, § 9(1)

Web based publication obligation - Example

Einspeisemanagementsätze nach §11 Gesetz für den Vorrang Erneuerbarer Energien (EEG)

Infeed management as per §11 Act on Granting Priority to Renewable Energy Sources (EEG)

Die TenneT TSO GmbH veröffentlicht hier die detaillierten Informationen zu Einspeisemanagementsätze nach §11 EEG.

TenneT TSO GmbH publishes further information in detail about Infeed management as per §11 EEG.

01.03.2011 08:42

Einspeiser / feed-in source	Stufe (%) / level (%)	von / from Datum / date	bis / until Datum / date	Ursache / reason
EEG-Rückspeisung von E.ON Netz	siehe Veröffentlichung E.ON Netz	22.10.2010 03:07	22.10.2010 06:00	Engpassproblem durch EEG-Einspeisung
EEG feed-in from E.ON Netz	see publication E.ON Netz	22.10.2010 03:07	22.10.2010 06:00	Network congestion due to EEG-feed-in
EEG-Rückspeisung von E.ON Netz	siehe Veröffentlichung E.ON Netz	24.10.2010 07:05	24.10.2010 10:55	Engpassproblem durch EEG-Einspeisung
EEG feed-in from E.ON Netz	see publication E.ON Netz	24.10.2010 07:05	24.10.2010 10:55	Network congestion due to EEG-feed-in
EEG-Rückspeisung von E.ON Netz	siehe Veröffentlichung E.ON Netz	03.11.2010 03:30	03.11.2010 05:30	Engpassproblem durch EEG-Einspeisung
EEG feed-in from E.ON Netz	see publication E.ON Netz	03.11.2010 03:30	03.11.2010 05:30	Network congestion due to EEG-feed-in
EEG-Rückspeisung von E.ON Netz	siehe Veröffentlichung E.ON Netz	04.11.2010 23:25	05.11.2010 07:00	Engpassproblem durch EEG-Einspeisung
EEG feed-in from E.ON Netz	see publication E.ON Netz	04.11.2010 23:25	05.11.2010 07:00	Network congestion due to EEG-feed-in
EEG-Rückspeisung von E.ON Netz	siehe Veröffentlichung E.ON Netz	11.11.2010 17:15	12.11.2010 08:28	Engpassproblem durch EEG-Einspeisung
EEG feed-in from E.ON Netz	see publication E.ON Netz	11.11.2010 17:15	12.11.2010 08:28	Network congestion due to EEG-feed-in
EEG-Rückspeisung von E.ON Netz	siehe Veröffentlichung E.ON Netz	15.11.2010 01:38	15.11.2010 04:12	Engpassproblem durch EEG-Einspeisung
EEG feed-in from E.ON Netz	see publication E.ON Netz	15.11.2010 01:38	15.11.2010 04:12	Network congestion due to EEG-feed-in

Priority Purchase, transmission and distribution

- Subject to section 11, grid system operators shall immediately and as a priority purchase, transmit and distribute the entire available quantity of electricity from renewable energy sources and from mine gas.

German Renewable
Energy Act, § 9(1)

- Notwithstanding their obligation in accordance with section 9, grid system operators shall be entitled, by way of exception, to take technical control over installations connected to their grid system

...

- the grid capacity in the respective grid system area would otherwise be overloaded on account of that electricity,
- they have ensured that the largest possible quantity of electricity from renewable energy sources and from combined heat and power generation is being purchased, and
- they have called up the data on the current feed-in situation in the relevant region of the grid system.

German Renewable
Energy Act, § 11(1)

Hardship clause

- „The grid system operator whose grid system gives rise to the need for the assumption of technical control under section 11(1) shall compensate those installation operators who, on account of the measures under section 11(1), were not able to feed in electricity to the extent agreed upon. Where no agreement has been reached, the lost tariffs and revenues from the use of heat less the expenses saved shall be paid.“

German Renewable
Energy Act, § 12(1)

How to share the burden and who pays the cost of connecting and reinforcing of grids?

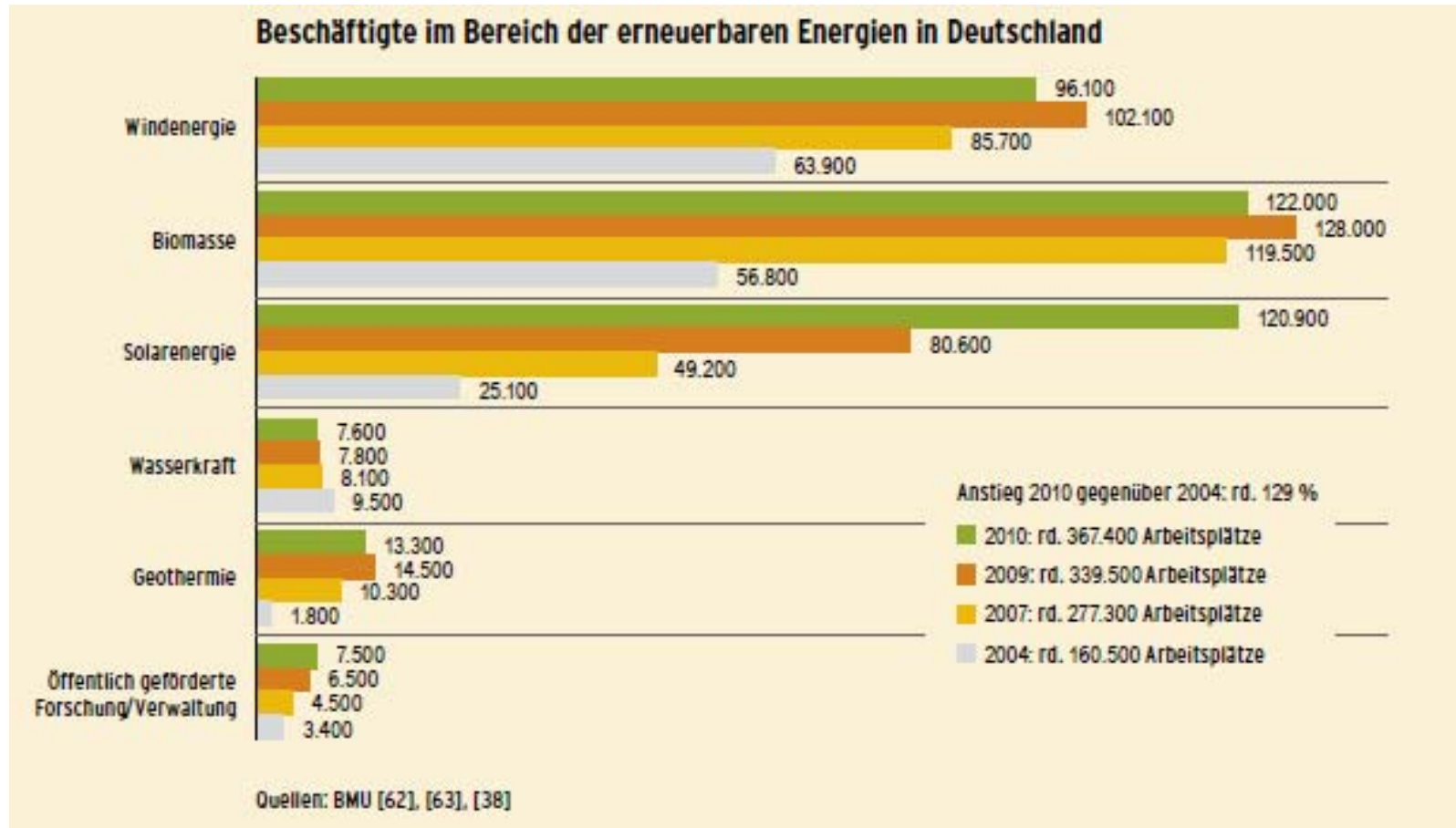
How much is acceptable for consumers?

- Rising electricity prices in the short term
 - BUT: due to learning curves and merit order = electricity prices to fall again thanks to higher share of RES-E
 - explanatory and informatory work
 - e.g. in Germany: broad support among population
- Importance of advocacy and stable political commitment
- Education about benefits of renewable integration
 - job creation, economic boost...

Example: Renewables and Job creation

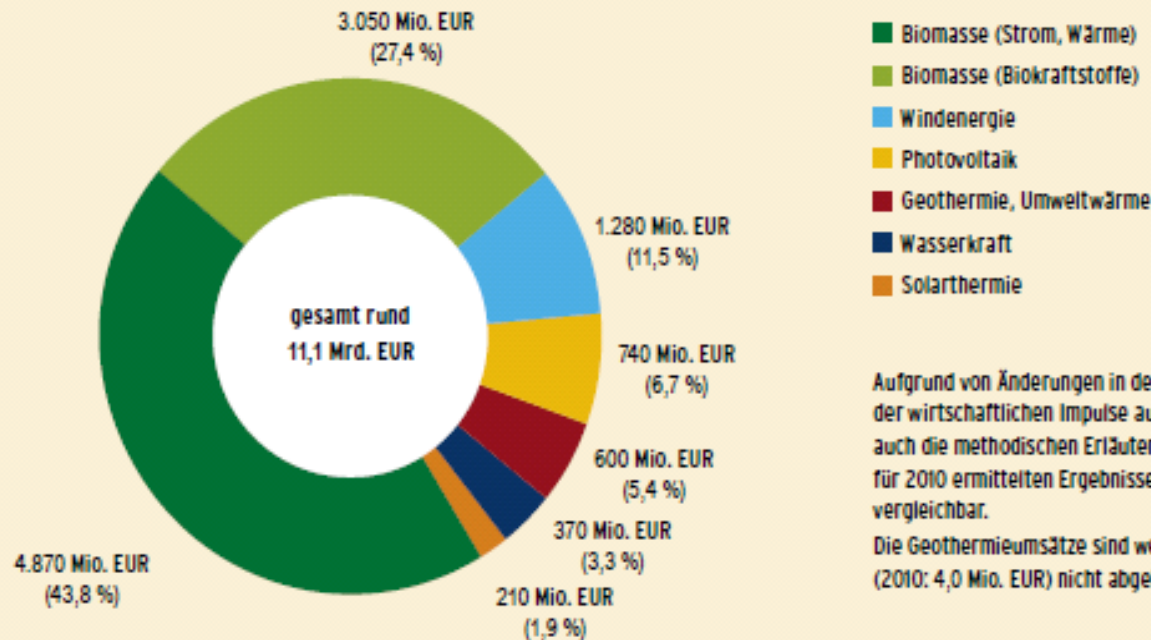
- 370,000 people in Germany were employed in the renewable energy sector in 2010, especially in small and medium sized companies= increase of around 8 percent compared to 2009 (around 339,500 jobs) and more than double the number of jobs in 2004 (160,500).
- About two-thirds of these jobs are attributed to the Renewable Energy Sources Act and the German FIT
- Germany became in 2008 the world's first major RES economy.

Job creation in Germany



Economic Impulses in Germany

Wirtschaftliche Impulse aus dem Betrieb von Anlagen zur Nutzung erneuerbarer Energien in Deutschland im Jahr 2010



Aufgrund von Änderungen in der Methodik für die Berechnung der wirtschaftlichen Impulse aus dem Anlagenbetrieb (vgl. hierzu auch die methodischen Erläuterungen in Anhang Abs. 7) sind die für 2010 ermittelten Ergebnisse nicht mit den Vorjahreswerten vergleichbar.

Die Geothermieumsätze sind wegen ihrer geringen Höhe (2010: 4,0 Mio. EUR) nicht abgebildet.

Quelle: BMU nach ZSW [1]; Berechnung auf Basis von [20]; Staiß et al. [35]; ZSW [49], [137]; [140]; UFOP [141]; Gehring [122]; DBFZ [57]; DLR et al. [134]; [138]; ZSW et al. [136]; Fichtner et al. [139]

How to share among consumers?

- in Germany: equalisation mechanism:
 - grid operators pay FIT to generators and pass it on „up-level“, where it is equalized within the respective system operators total energy package
 - the consumer pays the overall „equalized“ price

- special schemes for energy intensive undertakings
 - interesting: many consumers are willing to pay more for their energy if they know it is renewable
 - importance of good education and information!

EEG-Equalization rate and costs in Germany

- in 2011: 3,530ct/Kwh
- in 2012: 3,592ct/Kwh
 - only a moderate increase thanks to a well-tailored FIT and a good equalisation mechanism
- predictions:
 - until 2020 system costs will still increase
 - from 2025 positive economic effects will show
 - in 2038 costs will break even prior investments
 - in 2050 thanks to renewables about EUR 670 billion saved through energy change!

BMU, 2011

What kinds of procedures must be prepared?

Data collection and disclosure

- Basic principle:
 - „Installation operators, grid system operators and utility companies shall make available to each other without delay the data required for the nationwide equalisation scheme...“
- installation operators in particular need to disclose capacity and location of a plant
- grid system operators especially need to disclose the actual tariffs paid

Renewable Energy Act,
§ 45

Monitoring

- grid system operators pass on the information to the Federal Network Agency
- installation operators who do not claim tariffs but directly market the RES-E to third parties shall inform the agency
- Forms are made available on all information needed for statistics and reporting
 - both by the Federal Network Agency, the Federal Ministry for the Environment and the Federal Ministry of Economics

Progress Reports and transparency for decision-making

- regular progress reports by the government to the parliament
 - based on the latest report: recast of the German Renewable Energy Act to become effective in 2012
- importance of information to the public
 - duty to disclose to the public information on generation and transmission on their websites

Examples: The German Energy Economy Law and the Grid Extension Acceleration Law and their focus on grid extension

- ten year grid development plans based on grid operator scenarios
 - public consultation on the plan
 - adoption by the Parliament
- Federal Network Agency plans on federal level the development of the German grid - focus on important European and pan-regional projects („Bundesfachplanung“)
 - „Bundesnetzplan“
 - can be adopted according to „Planfeststellungsverfahren“ initiated by respective TSOs concerned
 - to facilitate proceedings
 - HOWEVER: Federal Network Agency in „Bundesfachplanung“ checks compatibility with environmental, regional etc. issues

Other issues

- Independent body for dispute settlement
 - „Clearing House“
- Court access and legal protection
- Clear political support and development of renewable advocacy
- Consideration of relaxation of other rules to support renewables

What other factors or issues should be considered in designing Japan's FIT?

Binding Targets

- In the EU: negative experience with non-binding mechanisms
 - Directive 2001/77/EC did not set binding targets
 - few Member States took appropriate measures to increase their share of renewables
 - Directive 2009/28/EC sets binding national targets for 2020 and a non-binding trajectory for Member States how to get there
 - in addition: Member States had to submit National Renewable Energy Action Plans
 - good means for control and monitoring whether they show sufficient ambition to reach their target!

Binding targets

- „The main purpose of mandatory national targets is to provide certainty for investors and to encourage continuous development of technologies which generate energy from all types of renewable sources. Deferring a decision about whether a target is mandatory until a future event takes place is thus not appropriate.“

Directive 2009/28/EC,
Rec. 14.

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Thank you for your attention!

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