

Support mechanisms for RES and the new path of Japan towards Feed-In

Input from a German/European legislative point of view

Expert meeting on Renewable Energy

On Invitation by the

Japan Renewable Energy Foundation

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- Offices in Berlin, Brussels, Cologne, Munich, Stuttgart, Vienna
- More than 150 lawyers, auditors, tax accountants and engineers
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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, waste, environmental and competition law

1. Introduction towards Feed-In

Japan's new legislation

August 2011: Upper house of Parliament passed legislation which will require utilities to buy any amount of electricity generated from solar, wind, biomass, geothermal and small-sized hydro power plants at preset rates for up to 20 years.

A feed-in tariff scheme to boost capacity of the five renewable energy types by more than 30,000 megawatts (MW) over a decade.

But :key details still unresolved, including the price to be paid by utilities for each type of green energy, which will be decided by a parliament-appointed panel not set to meet until next year.

Source: Reuters

Support mechanisms for RES on National Level

- RE support mechanisms may be grouped into two major categories, Quota and certificate/tradable green certificates/Renewable Portfolio Standards/RPS (TGC) and feed-in-tariffs (FiT).
- Various possible structures: Uniform quota, quota with technology banding, fixed feed-in tariff mechanisms, feed-in premium
- Experiences from a number of countries in Europe show that FiT deliver larger and faster penetration of RE than TGC, at lower or comparable cost.

Current overall RES support Mechanisms in EU

- In TGC a defined member of the **national** electricity supply chain, be it consumer, generator or supplier, has to present a fixed minimum quantity of certificates each year, as set by a public authority. The certificates originate per MWh of RE electricity generated. An obligated party thus may generate himself or purchase certificates on a certificate market. The obligated party may pass on the cost of certificates to the consumer. The target of RE under the TGC system is set by the government and the certificate price is determined by the market
- In FiTsystems the basic principle is that any **national** generator of renewable electricity (RES) can sell its electricity at a fixed tariff for a specified time period under specific conditions depending on location, technology etc. The price remains constant for the defined period but for new connections in following years a lower price level is offered. The main elements in FiT systems are often combined with priority grid access. The costs of FiT payments are in general passed on to the electricity consumers.
- Majority in EU is FiT driven

Achievement of Support – Systems

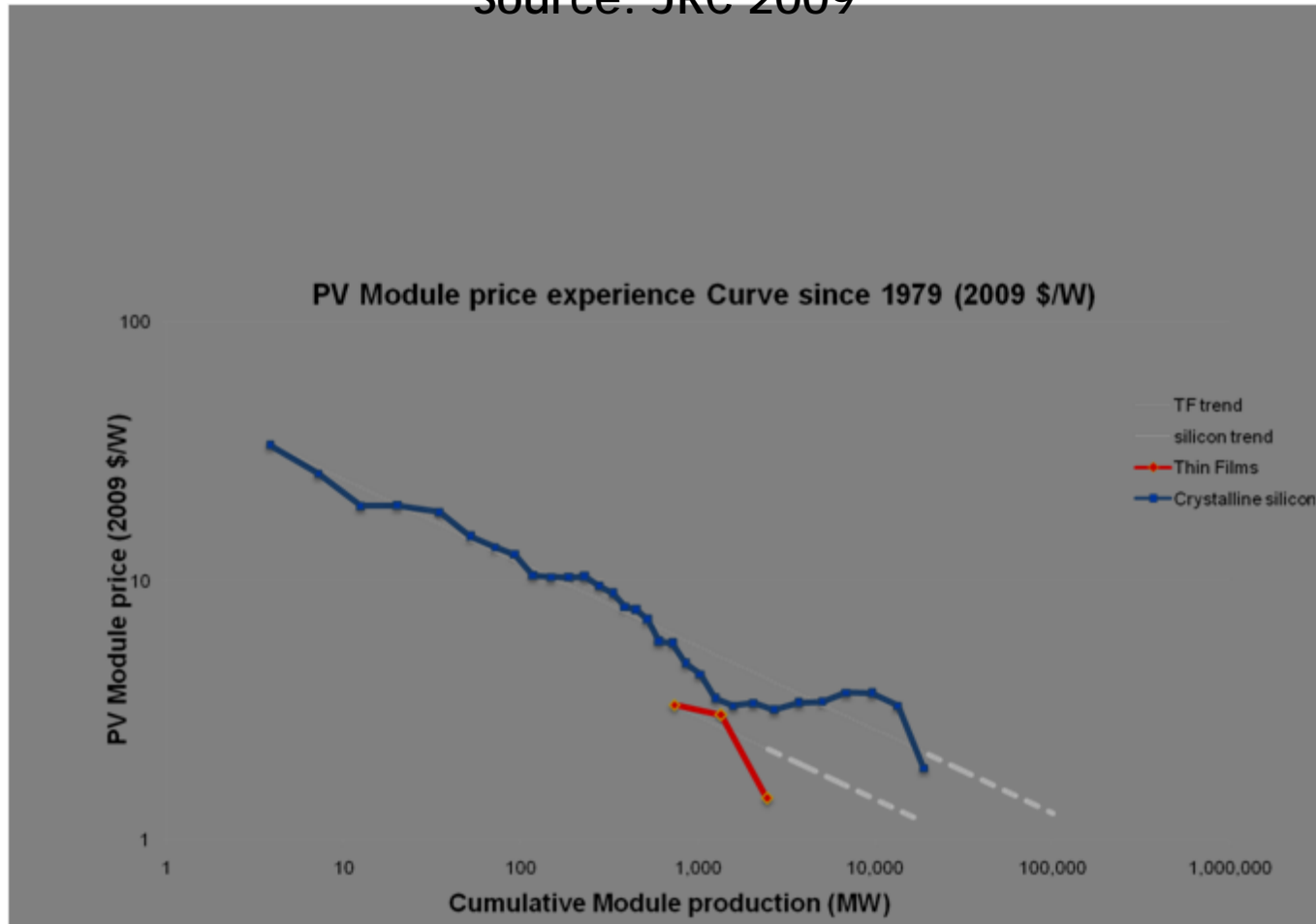
- Cap and Trade mechanisms tend to ensure the basic energy industry structure and market power to remain unchanged. The power of decision is kept with the incumbent energy industry.
- The tradable quota systems introduces a negative feedback, in a way punishing success. This does not seem adequate in a situation where goal is a fast deployment of new renewable energy technologies.
- Cap and trade introduce new transaction costs to renewable energy, while not to the polluters. Transaction costs are in the same order of magnitude as the extra support the systems give the producers. Thus a waste of public resources.
- The extra market risks and price fluctuations introduced is a benefit to the large power companies who have enough capital to handle price fluctuations while small independent producers are vulnerable in such a process.
- Run for so-called best places with big installations under TGC inherent.

Achievement

- Fit Mechanisms tend to be more welcoming towards new market players /IPP
- Share of RES in German energy use:
 - Increase from 6.3 percent of the national total in 2000 to about 17 percent in 2010.
 - In 2010, investments totaling 26 billion Euros were made in Germany's renewable energies sector
 - 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, the German FiT (EEG)
 - Germany became in 2008 the world's first major RES economy.
 - In 2010 nearly 17% (more than 100 TWh) of Germany's electricity supply (603 TWh) was produced from renewable energy sources, more than the 2010 contribution of gas fired power plants.
 - Renewable electricity in 2010 was 101.7 TWh including
 - Wind power 36.5 TWh,
 - Biomass and biowaste 33.5 TWh,
 - Hydropower 19.7 TWh and
 - Photovoltaic 12.0 TWh.

Price Experience

Source: JRC 2009



World Bank Analysis on RES and IPP

- The traditional integrated utility monopoly often may not invest in renewable energy technologies that are not yet economical.
- Therefore, a positive impact of electricity market deregulation is the creation of independent power producers (IPPs), which increases opportunities for the development of renewable energy projects and expands the use of renewable technologies that are economically viable.
- Generally, legal framework allowing independent power suppliers using renewable resources the right to access to the electricity grid is contained in the legislation authorizing specific policies, such as price or quantity mandates.
- The legal and regulatory right to generate and sell electricity is a necessary but not sufficient step in the promotion of renewable energy. Many technical, financial and business risk barriers will still remain to be confronted by hopeful project developers.
- *Source: REToolkit: A Resource for Renewable Energy Development; World Bank, June 30 2008*

Estimates by Bankers

- Good policy instruments encourage solid expectation for Return of Investment leading to security of financing leading to fast deployment.
- FiT systems are labelled the “venture capital investor’s best friend”, - “risk-minimizing market-pull policies such as feed-in tariffs for renewable energy over CO2 emissions trading and certificate trading systems”. Source: Dr. Rolf Wüstenhagen, St. Gallern 2007;
- “Investing in solar is equivalent to investing in a government bond. We believe the government incentives in the form of feed-in tariffs act as an annuity stream for project investors, similar to interest earned on a government bond. Consequently, we expect project investors to add leverage and increase returns. “ (Barclays 2010)

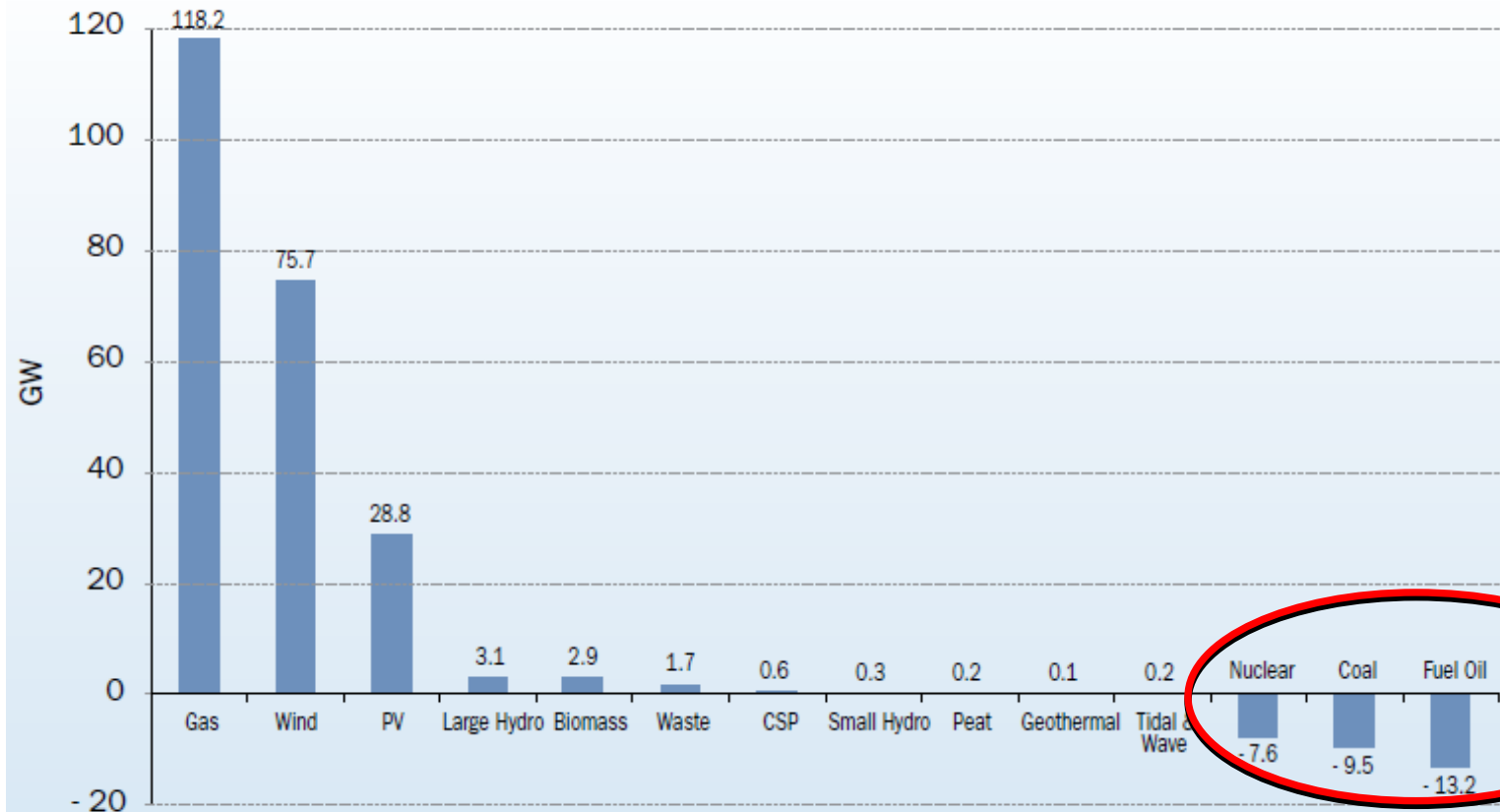
Scenario for Germany - (Federal Agency for the Environment /Umweltbundesamt) UBA

- “For Germany, the technological change towards an electricity supply system completely based on renewable energies by 2050 is possible. By doing so, Germany’s status as a highly industrialised country can be maintained, as can its subsequent ways of living, patterns of consumption and behaviour.
- It is not only necessary to accelerate the expansion of renewable energies but also to substantially convert the existing energy system to make it fit for an exclusive use of renewables in the future.
- It is important to define intermediate goals, particularly for the period after 2020. Generally, it can be said: The earlier we start decisive actions the more time we will have to tackle the upcoming challenges of necessary technological and societal adaptation!”

Promotion of RES because of imbalance in the overall energy market

- The Energy market as such is still a myth, hampered especially by ever increasing oligopolies and harmful subsidies to the fossil and nuclear sector.
- Each of the European Commission's evaluation reports of the electricity market so far underlines that obstacles still prevail.
- Market opening in principle created chance for Independent Power producers to enter with RES energies in heating, cooling, electricity and transport but centralised incumbent structure is opponent to change, in unhealthy coalition with harmful subsidies especially to coal and nuclear sector

Net Increase/Decrease installed capacity EU 2000-2010



Source: EWEA, EPIA, Estela, EU-OEA and Platts Powervision

2. The basic elements needed for a good FiT system
Or not all FiT mechanisms are well tailored

Basic Principles for a stable FiT (I)

- Clarity of the government in long-term planning for RES Deployment
- Binding Deployment Targets over a robust period of time
- Priority Connection for RES electricity
- Priority Purchase, transmission and distribution of and payment for RES by the grid system operator
- Nationwide equalisation scheme for the quantity of electricity purchased and paid for
- Direct legal right /statutory obligation to be established under the FiT law, meaning no condition of conclusion of a contract between grid operator and RES producer in order to have access to FiT right

Basic principles for a stable FiT: the Connection

- “Grid system operators shall immediately and as a priority connect installations generating electricity from renewable energy sources ..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. In the case of one or several installations with a total maximum capacity of 30 kilowatts located on a plot of land which already has a connection to the grid system, the grid connection point of this plot shall be deemed to be its most suitable connection point” (see German Renewable Energy sources Act, Section 5, Para 1)

Connection obligation

- Connection obligation has to apply also in case that purchase of RES is only possible by optimising, boosting or expanding the grid system
- Grid operator and RES operator need to be obliged to exchange upon request and within a maximum delay of now more than 6 to 8 weeks all documentation necessary, e.g. Grid system data in order to test and verify grid compatibility
- As a rule, grid operator always needs to be obliged to immediately optimise, boost and expand system following best available technology in order to fulfil guarantee for priority purchase, transmission and distribution of RES - Compensation schemes need to be established in case of violation of obligation to be paid to RES producer

Clarity on grid responsibilities

- In case of congestion and bottlenecks a first important step - clear reporting by the grid operator on web page portal:

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

Bottleneck/Feed-in Management

- Clear rules that bottleneck management , e.g taking control over installations connected to it grid the operator may do so only - and only for transitional period -with immediate need to boost system if:
- the grid capacity in the respective grid system area would otherwise be overloaded on account of that electricity,
- Grid operator has 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.
- Verification right for RES producer
- Hardship clause: RES operator whose feed-in was blocked or lowered must have right for compensation, at least: at the order of lost tariffs and revenues form use of heat less expenses saved

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 beared by the grid system operator

Payment claims

- Clear rules to be established via legislation:
- Clarity that obligation of Grid system operator to pay RES tariffs according the type of RES source/location etc. has also to apply where the electricity was temporarily stored
- Progressive FiT systems in a world of fast digression of RES costs should also encourage for direct selling to third parties on a calendar-monthly basis -with clear information rules

The fees

- The fee paid for the electricity depends on the energy source and the size of the installation. The rate also depends on the date of commissioning; the later an installation begins operation, the lower the tariff (degression).
- A good FiT ensures the increased use of environmentally friendly renewable energies, not through subsidies but through apportioning the costs.
- The grid operators and energy supply companies can pass on the difference in costs for electricity from renewable energies to the final consumer.

Tariff structure

- Detailed, differentiated tariff structure according to siting, technology, size, capacity....
- Example: German FiT:
- Section 32 Solar radiation
- “(1) The tariff paid for electricity from installations generating electricity from solar radiation shall amount to 31.94 cents per kilowatt-hour.
- (2) In cases where the installation is not attached to or on top of a building structure used primarily for purposes other than the generation of electricity from solar radiation, the grid system operator shall only be obliged to pay a tariff if the installation was erected within the territorial application of a local development plan (Bebauungsplan), “

Example Solar Radiation (consecutive)

- “(3) For electricity from an installation in accordance with subsection (2) above erected within the territorial application of a local development plan drawn up or amended at least also for this purpose after 1 September 2003, the grid system operator shall only be obliged to pay a tariff if the installation is located on
- plots of land which were already sealed when the decision on drawing up or amending the local development plan was adopted,
- land previously used for economic, transport, housing or military purposes,
- green areas which were designated for the erection of this installation in a local development plan adopted prior to 25 March 2010 and which had been used as cropland for the three years preceding the point inor
- land along motorways and railway tracks at a distance of up to 110 meters measured from the outside edge of the paved carriageway. “

Example Solar Radiation (consecutive)

- “The tariff paid for electricity from installations generating electricity from solar radiation which are exclusively attached to or on top of a building or noise protection wall shall amount to
- 43.01 cents per kilowatt-hour for the first 30 kilowatts of output,
- 40.91 cents per kilowatt-hour for output between 30 and 100 kilowatts,
- 39.58 cents per kilowatt-hour for output between 100 kilowatts and 1 megawatt, and
- 33.0 cents per kilowatt-hour for output over 1 megawatt.
- (2) For electricity from installations pursuant to subsection (1) above with a maximum capacity of 500 kilowatts commissioned before 1 January 2012, the installation operator shall be entitled to payment of a tariff where the installation operator or a third party is using the electricity himself in the immediate vicinity of the installation and can furnish proof of that fact. “

Example Solar Radiation (consecutive)

- “Tariffs pursuant to subsection (1) above shall be reduced for that electricity
- by 16.38 cents per kilowatt-hour for the share of the electricity that does not exceed 30 per cent of the electricity generated by the installation in the same year and
- by 12 cents per kilowatt-hour for the share of the electricity that exceeds 30 per cent of the electricity generated by the installation in the same year. ...”

Evaluation and regular review of tariffs

- Legislation should clearly mark a regular review period (e.g. every two years, to be applied for new connections/Installations)
- No retroactive tariff reduction
- Evaluation report to be prepared under clear objectives by specialists (e.g. EEG Erfahrungsbericht) and in consideration of view of RES industry, grid operators, consumer groups etc.

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Thank you for your attention!

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