

A feed-in tariff system for NZ



Stephan Heubeck

REFIT – NZ

SEF feed-in tariff system seminar
10th of September 2010
Wellington



What is a feed-in tariff (FIT)?



A FIT is a market steering mechanism of insurance character

- Not a subsidy
 - ➔ From a legal point of view
 - ➔ From a practical point of view (no transfer of taxpayer money)
- Cost neutral to lines companies, transmission companies, retailers and government.
- Preference for small scale distributed renewable generation, providing numerous benefits



Feed-in tariff system features



A FIT has 3 key characteristics

- ➔ Priority connection, transmission and use of electricity generated in small scale (renewable) set-ups
- ➔ Long term agreed (fixed) prices, guaranteed for extended periods of time (e.g. 20 years), for electricity from such set-ups with different rates for different schemes according to size, type, co-benefits and commissioning date
- ➔ National cost pass-on and equalisation scheme



Potential roles of stake holders



Small scale renewable generators

- Priority connection of small scale generation to local network
- Clearly defined handover / connection points and costs
- Generators compensated at minimum tariff levels

FIT system provides:

- novel investment options
- investment security
- sensible planning horizon
- little bureaucracy

Tasks:

- Build, own and operate small-scale renewable generation
- Create jobs
- Reduce current account deficit
- Drive innovation
- Reduce GHG emissions



Potential roles of stake holders



Local lines companies

- Lines companies pass on total cost of FIT's and all FIT electricity to retailers operating in the area
- Lines companies pass on cost of necessary (approved) lines infrastructure upgrades

FIT system provides:

- Cost neutrality
- Power quality enhancements in tail end networks
- little bureaucracy
- investment options

Tasks:

- Connect schemes
- Transmit electricity from small scale renewable generation schemes preferentially
- Upgrade lines infrastructure as required



Potential roles of stake holders



Electricity retailers

- Retailers pass on **additional** cost of FIT system, averaged county-wide, to end users e.g. difference between average FIT supported kWh (incl. potential lines upgrades) and annual average spot market price or set reference price.

FIT system provides:

- Cost neutrality
- Cost advantage vs. other schemes e.g. mandates
- little bureaucracy
- investment options

Tasks:

- Retail electricity from small scale renewable generation schemes preferentially
- Equalise additional cost of FIT system nationally (based on kWh sold to all users)



Potential roles of stake holders



Electricity end users

- Continues to consume electricity
- Receives a transparent and fair deal
- Enjoys secondary benefits of FIT system

FIT system provides:

- More secure, greener electricity supply
- Long term power price stabilisation
- Small short term retail price increase e.g. +5% first decade

Electricity end users

- BAU for majority of end users
- Enjoys more consistent better quality electricity supply, especially in rural areas
- Options to become a small scale renewable generator



Potential roles of stake holders



Government

- Legislates the FIT system
- Controls and improves FIT system over time

Tasks

- Legislates FIT system
- Enjoys a cost neutral system
- Needs to administer complaints panel and registry of generators
- Review of tariff levels for new entrants after 5 to 7 years.



Potential roles of stake holders



FIT system provides:

- **Economic stimulus, especially for rural areas, that doesn't cost one taxpayer dollar.**
- **improved balance of trade, due to reduced imports of coal and diesel for electricity generation, and use of more local equipment and materials for building future generation**
- **more secure electricity supply for more productive industry and homes**
- **reduced energy sector GHG emissions**
- **creation of jobs and “future industries” with export potential**
- **creation of sensible domestic investment options for NZ investors**
- **minimal bureaucracy**

Drivers for FIT's in NZ



Electricity provision

- A great number of large scale, fossil fuel as well as renewable generation projects are not commencing.
 - ➔ Consenting problems
 - ➔ Financing problems
 - ➔ Resource problems
 - ➔ Legal disputes
- Examples: Project Hayes, Hauāuru mā raki, Awhiti, Te Mihi, Otahuhu C, Project Aqua, Mohikinui and lower Clutha river dams etc.



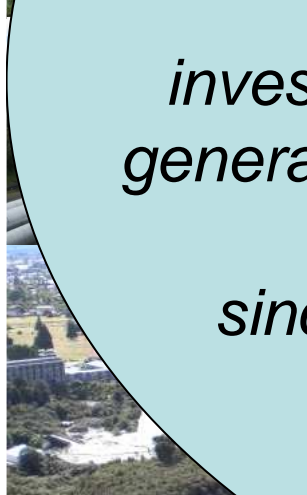
Drivers for FIT's in NZ



Electricity
Commission

Annual Security Assessment 2009:

“...despite the need for new generation, investment appears to be slowing. Over 600 MW of new generation that was rated as “medium” or higher probability for 2010 or 2011 in the 2008 assessment has since been deferred until at least 2013 or cancelled.”



Drivers for FIT's in NZ



Enhanced security of supply due to:

- Incrementally adding many small projects even if consenting, legal and financing conditions are though for larger projects
- Spatial diversification
- Source diversification (“oddball” resources)
- Avoidance of transmission bottlenecks
- National energy independence



Drivers for FIT's in NZ



Secondary benefits

- Creation of high and low skilled jobs, particularly in often neglected rural regions
- Boost for Maori economic development
- Improved balance of trade
- Development of future industries with export potential
- Reduction in direct + fugitive GHG emissions
- Secondary environmental benefits (reduced forest fire risk to waste nutrient recovery etc.)



Feed-in tariff track record



Globally FIT's are a proven concept

- Applied in over 60 states and territories around the world.
- FIT's are flexible and can be tailored to each country's individual needs.
- Beware of false labels!!
- NZ can learn from overseas success and failures
- Best system operates in Germany and good new systems in Finland and France



Traps to avoid



Examples from around the world

- Capacity caps (Austria and Spanish solar) lead to boom and bust cycles
- No clear demarcation of connection points (Ontario) = spanner in the works
- Lack of national equalisation (first draft UK) is unfair to regional retailers
- Gross vs net vs generation FIT (local factors)
- Narrow focus on 1 or 2 sources (wind, solar) multiplies problems and underutilizes potential



FIT example Germany



FIT introduced in 2000

- Facilitates >80 TWh/y (17% of total electricity) small scale renewable generation (2009)
- Parallel system for fossil co-generation
- Creation of 186,000 new jobs in < 10 years
- FIT avoided (2008) 55 million tCO_{2equi} GHG emissions and 900 million € in fuel + e Imports
- Annual direct investments: 13 billion €
- Retail price increases due to FIT ~ 5% gross, less net due to order of merit effect

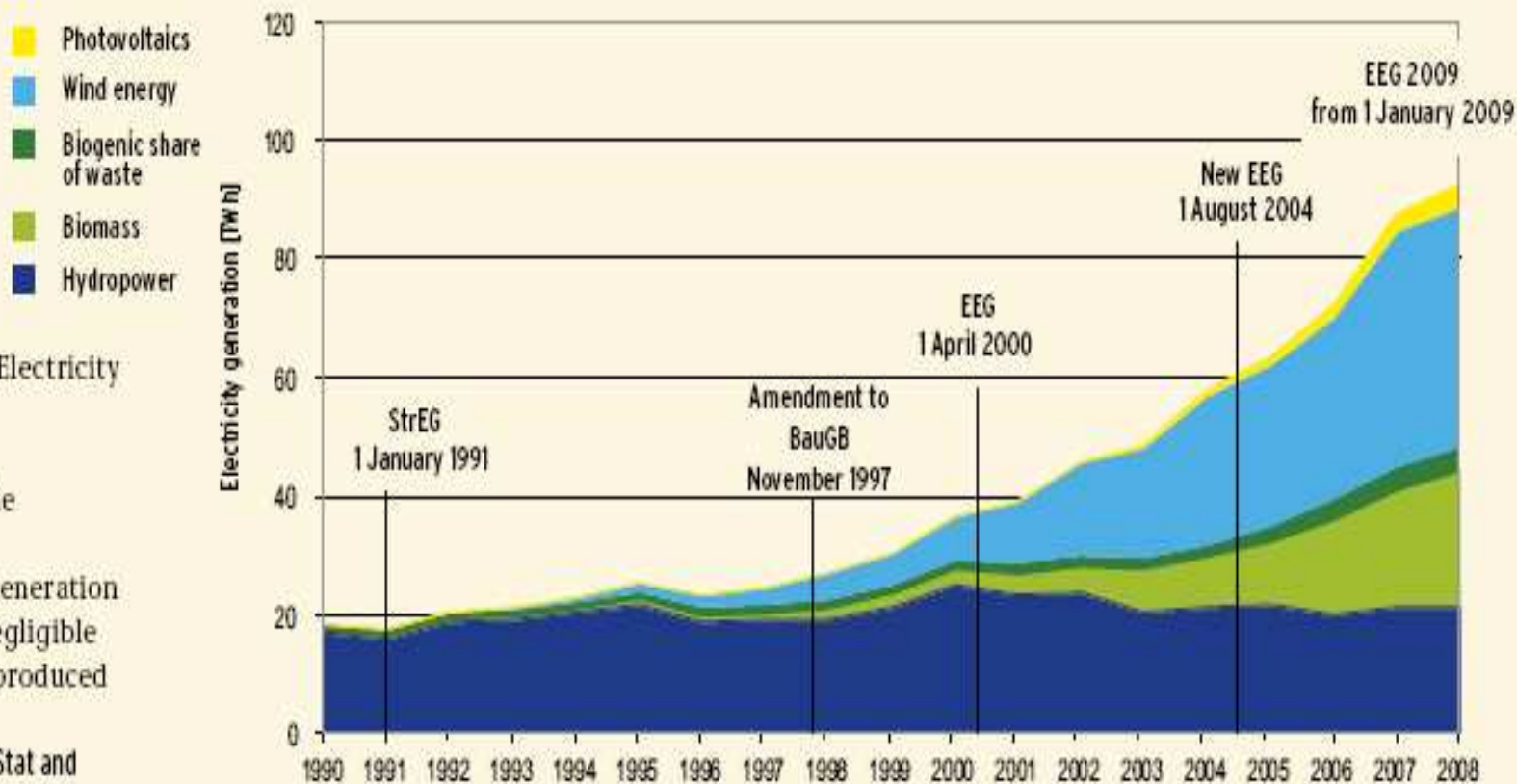




FIT example Germany



Development of electricity generation from renewable energies in Germany since 1990



StrEG Act on the Sale of Electricity to the Grid

BauGB Construction Code

Geothermal electricity generation not shown, due to the negligible quantities of electricity produced

Sources: BMU based on AGEE-Stat and other sources, see table above





FIT costs



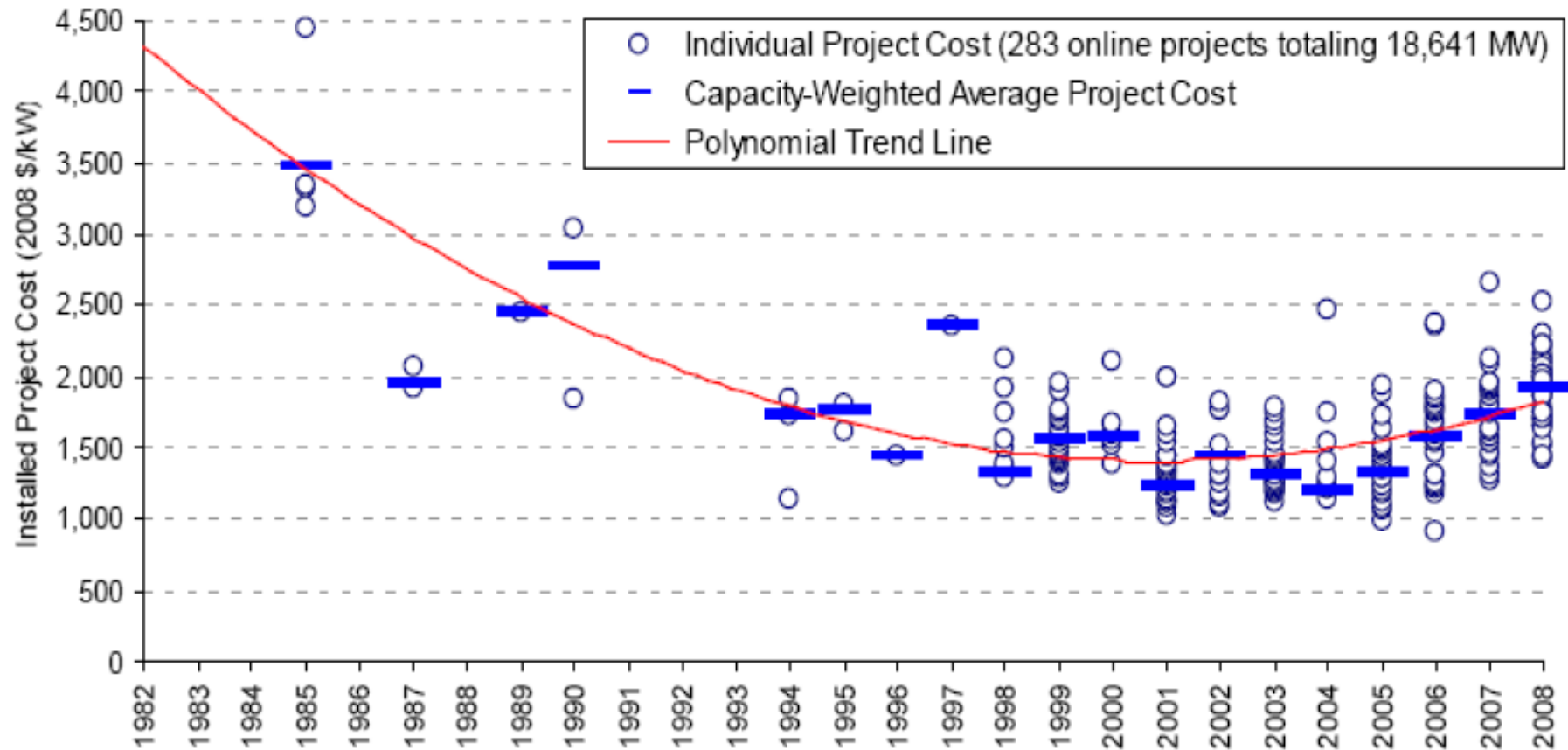
FIT cost are borne by all electricity consumers akin to an insurance premium

- Security of supply and environmental benefits start to materialize immediately
- Macroeconomic benefits start to materialize quickly
- FIT's stabilize electricity prices in the med to long term
- In the medium to long term (~10 years) a FIT system can reduce prices over BAU
 - ➔ Preliminary data just being available from Europe
 - ➔ Order of merit effect, time value of equipment, market inefficiencies





FIT costs



Source: Berkeley Lab database (some data points suppressed to protect confidentiality)

From DoE Annual Report on US Wind Power for 2008

Adequate FIT rates for NZ



Compared to the certainty and security provided to the small scale renewable generators, the absolute level of the tariff is of secondary importance

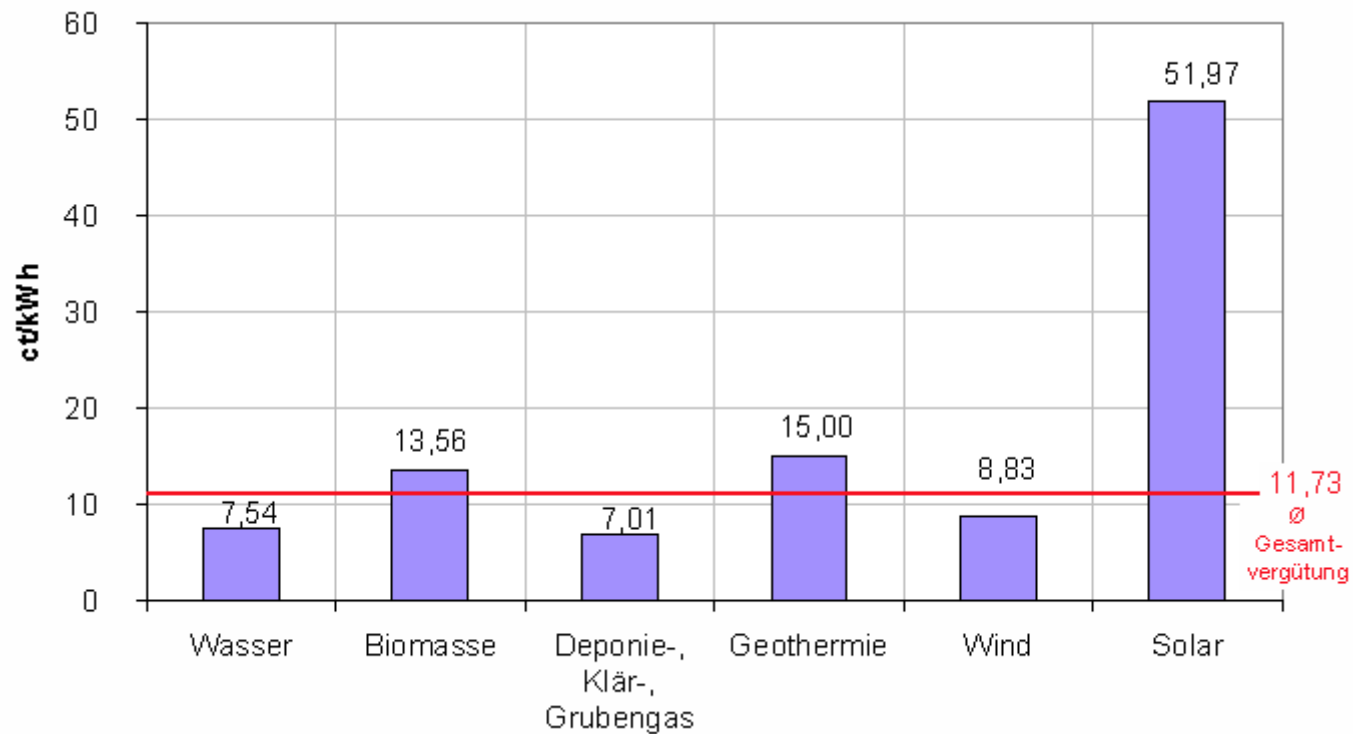
- NZ FIT rates should be lower than in Europe as our resources are better
- Option to develop from the bottom up
- Better to include as many sources as possible at a lower rate than to exclude sources
- Time horizons are an important factor
- Requires more investigation



A feed-in tariff system for NZ



FIT rates in Germany 2007



A feed-in tariff system for NZ



FIT's have justly been named “the worlds most efficient and effective renewable energy policy”

- FIT's are “a free lunch that one is paid to eat”
- FIT's don't interfere or distort the electricity market they create a true market by allowing everyone to participate
- NZ would have much to gain from introducing a Kiwi FIT



A feed-in tariff system for NZ



You can support a Kiwi FIT:

- Learn more about international experience with feed-in tariff systems
- Spread the word on FIT's – being talked about means being alive
- Support REFIT-NZ
 - ➔ Join online at www.refit.org.nz
 - ➔ All support welcome

