

**Foundations of a
Sustainable Society**

World Future Council



Creating markets for renewables –
Best practise design of feed-in tariffs

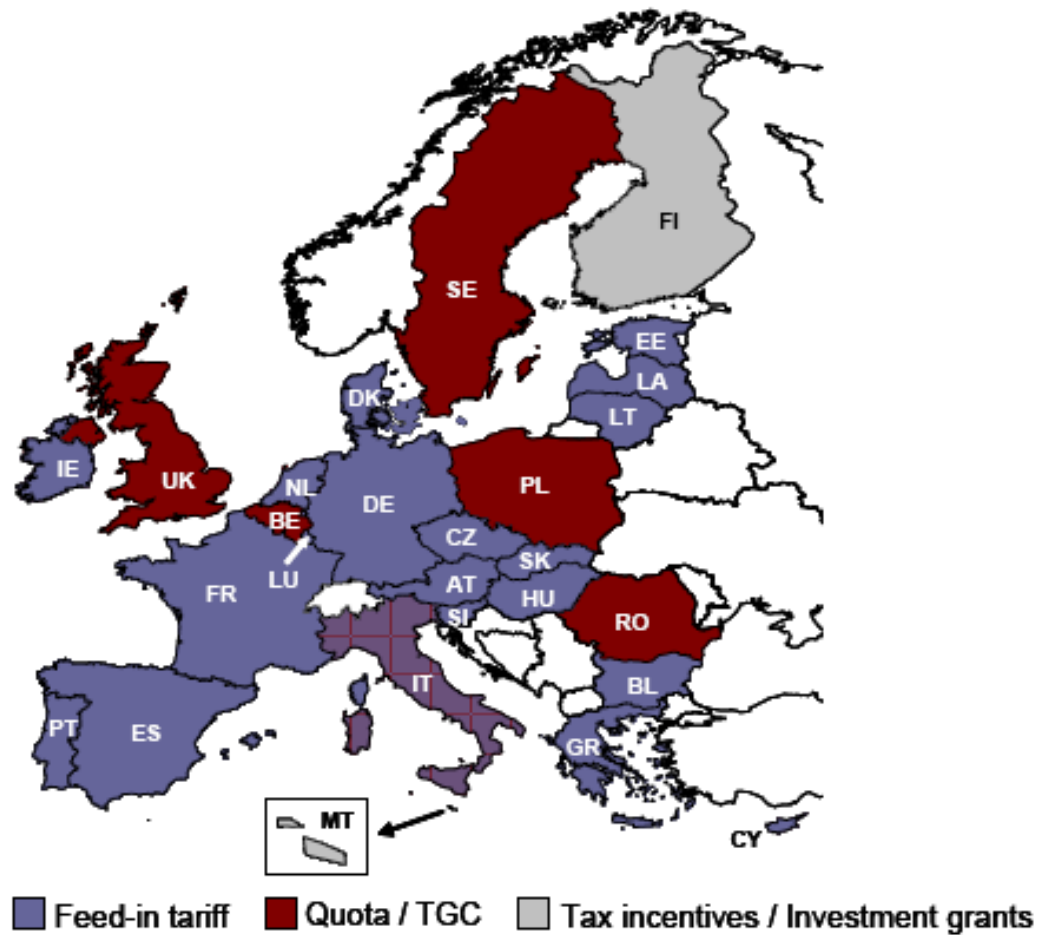
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IEA workshop, Paris

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Contents

- Diffusion of feed-in tariffs
- Activities of the WFC
- Basic feed-in tariff design – early stage market entry
- Design options for market integration – incorporation of large shares of renewable electricity

FITs in the European Union



FITs world-wide

Africa	Americas	Asia	Australasia
Algeria Kenya Mauritius (Nigeria) South Africa Uganda	Argentina Brazil Canada* Ecuador Nicaragua United States*	China India* Indonesia Korea (South) Pakistan Philippines Sri Lanka Thailand Taiwan Israel Mongolia	Australia

FIT activities of the WFC

- Research and evaluation of best practise
- Publication of books and brochures in order to inform policy makers
- Presentation at international conferences
- Parliamentary hearings
- Strategy workshops
- Creating of networks
- Study trips
- Feasibility studies

FIT activities of the WFC

PACT
Policy Action on Climate Toolkit

The PACT project aims to provide the necessary elements for rapidly introducing policy to combat climate change - giving parliamentarians, civil servants, and advocates around the world access to the legal and technical expertise needed to envisage, to argue for and to enact laws and policies that effectively protect the climate. Find out more...

The world urgently needs good FIT laws

Feed-in tariff (FIT) laws have proved the most effective approach for increasing and accelerating the deployment of renewables in the electricity sector.

This site aims to help users around the world to introduce or improve FIT laws in their country or region.

Tackling climate change means rapidly changing the way we generate and use energy. We can only achieve this with an effective policy framework for promoting renewable energy and energy efficiency. FITs are a crucial element of any such framework.

Before you start drafting

Check you have answered the most important questions we think legislators must address before proposing any FIT law.

Features of a good FIT law

We outline the essential features of a good FIT law, and give you the opportunity to draft the basic elements of a proposed law.

World Future Council

Home
About the PACT project
Sitemap
Contact us
What is a FIT law?
Before you start drafting
Features of a good FIT law

Online policy advice:
Make your own FIT law

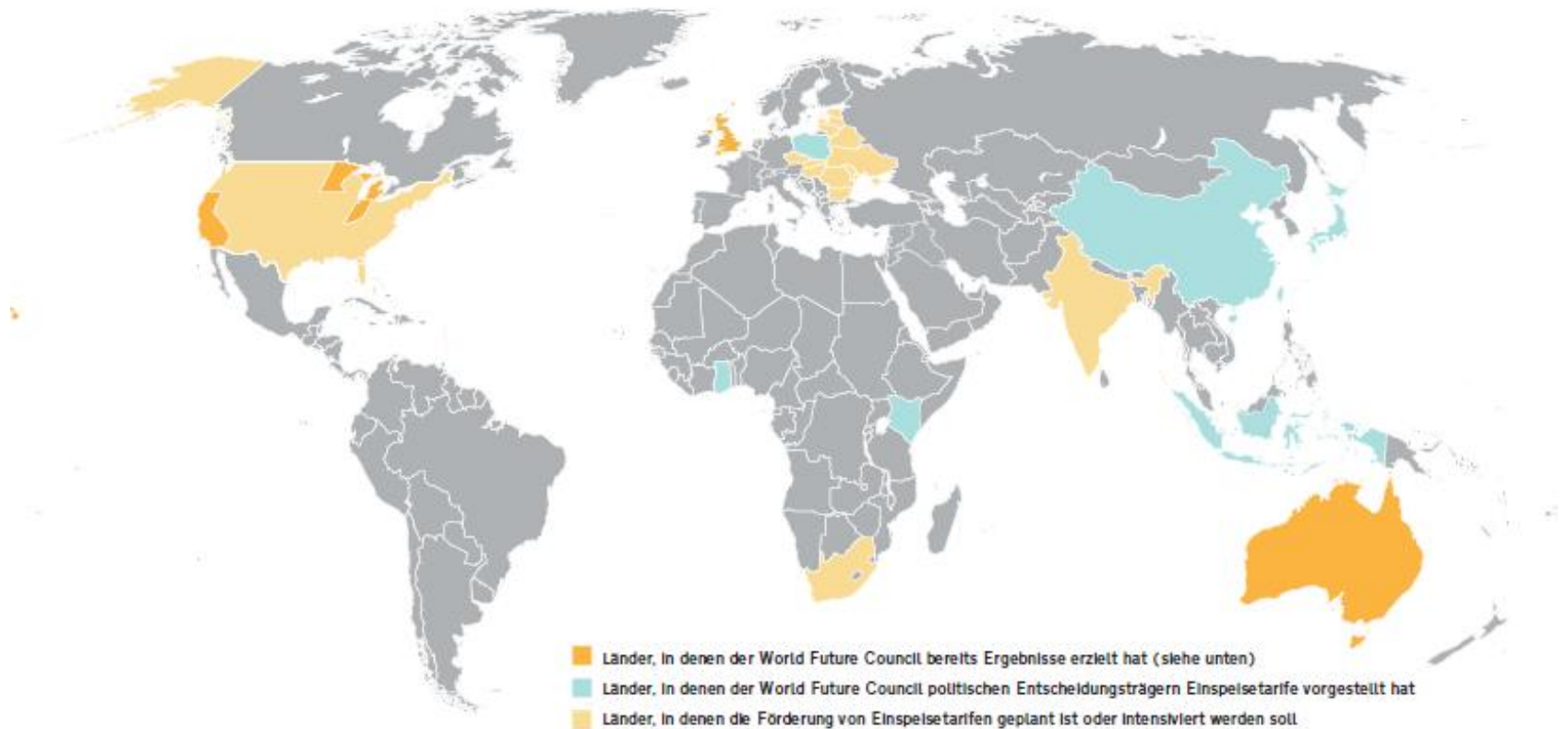
www.onlinepact.org

The feed-in tariff
handbook:

<http://www.earthscan.co.uk/?tabid=92822>



FIT activities of the WFC



Defining feed-in tariffs

Basic feed-in tariff components

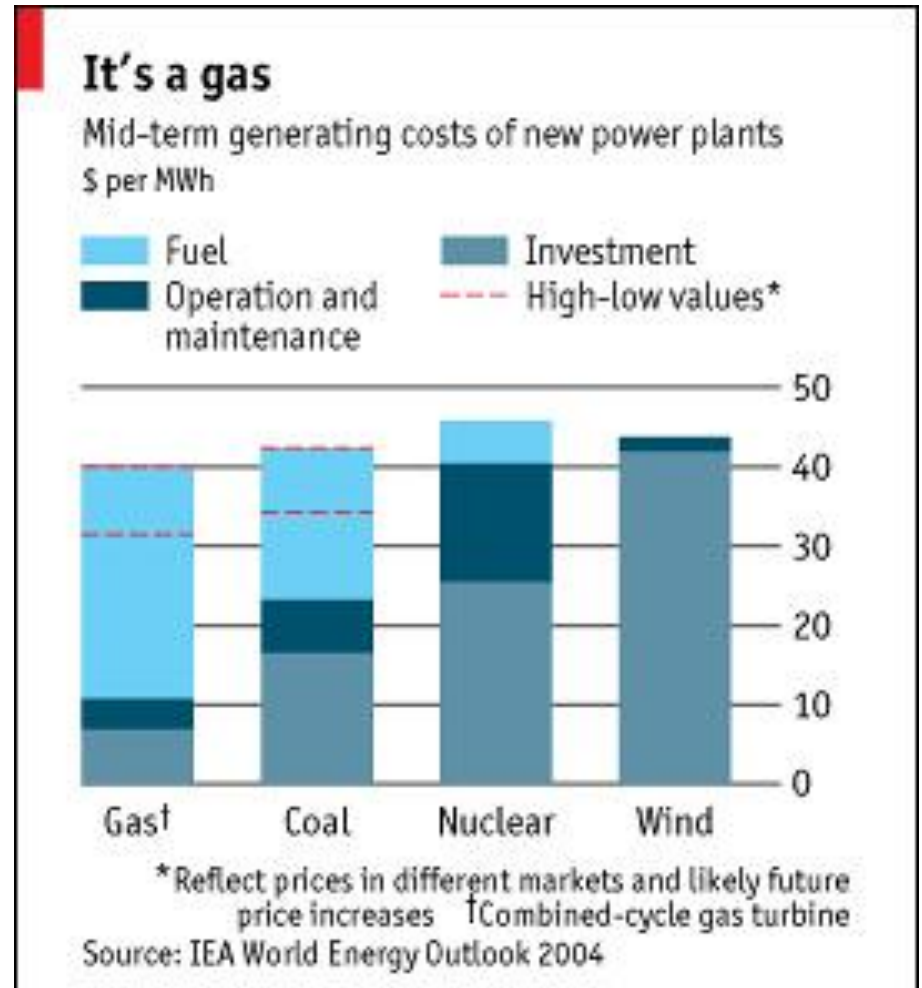
- Purchase obligation
 - Independent of electricity demand
- Guaranteed tariff payment
 - Fixed payment of a pre-defined tariff based on generation costs
- Payment over a long period of time
 - Reflecting the average lifetime of power plants (e.g. 20 years)

Tariff calculation methodology

- Tariff calculation based on technology specific generation costs + “reasonable” rates of return
- Don’t use “avoided costs” as point of reference
- Cost factors:
 - Investment costs (material and capital costs)
 - Grid-related and administrative costs (including grid connection, costs for licensing procedure)
 - Operation and maintenance costs
 - Fuels costs (biomass and biogas)
 - Decommissioning costs (where applicable)

Tariff payment duration

- Formerly: short periods (logic of conventional electricity sector)
- Nowadays: long payment durations (usually 20 years ~ lifetime of power plant)
- Necessary because of special investment structure

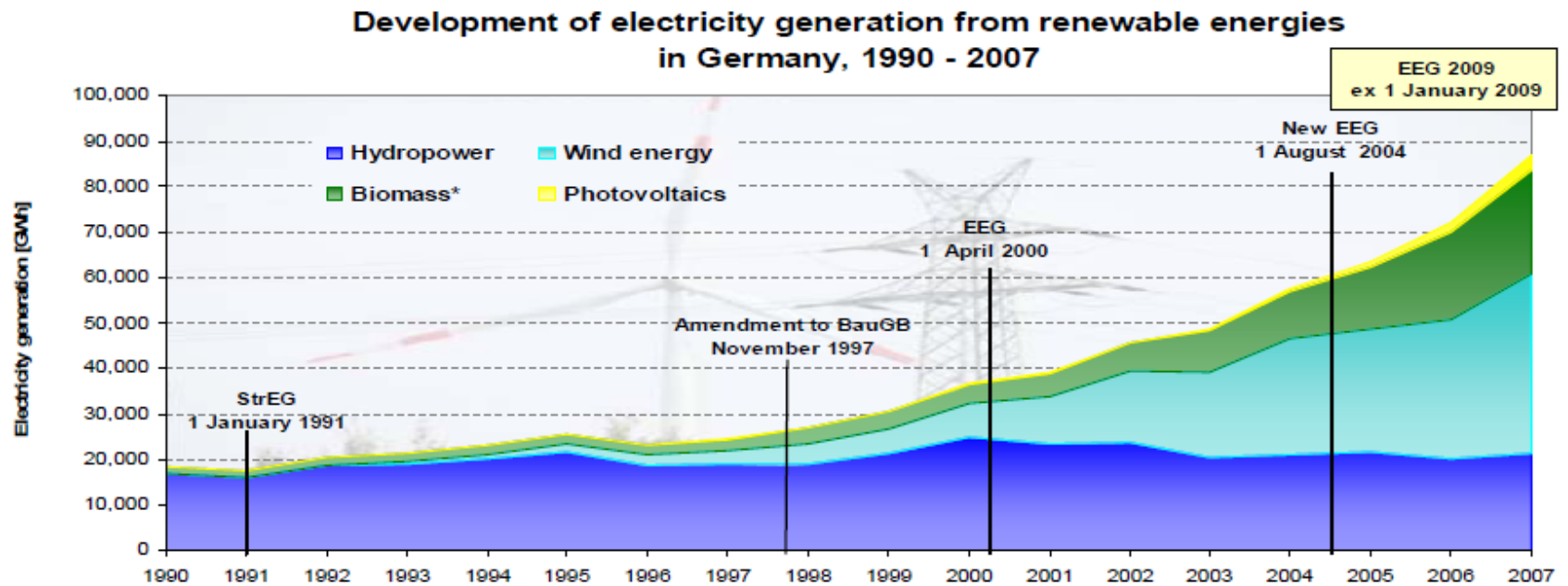


Effects of feed-in tariffs

- Increases investment security
 - Fixed tariff over a predictable period of time
- Reduces price risk and therefore costs
 - Even small and medium sized actors get cheap loans
 - Risk reduction reduced additional costs for final consumer
- Replaces long negotiations between RES-e producers and utilities/monopolists
 - Short track for PPAs
 - Fast growth of renewable energy sector in a “protected” market

→ Creating markets for renewables!

RES-e development in Germany (1990–2007)



Source: BMU 2009

Additional design options

Basic FIT design options

- Financing mechanism
- Targets and progress report

Design options for tariff differentiation and adjustment

- Technology, size and location specific tariffs
- Tariff degression
- Inflation indexation

Conclusion:

Feed-in tariffs manage to incentivise investment into renewable energy sources at an early stage of market development.

Question:

Can feed-in tariffs help to incorporate an increasing share of renewable electricity?

Share of renewable electricity in EU countries (excluding hydro, 2004)

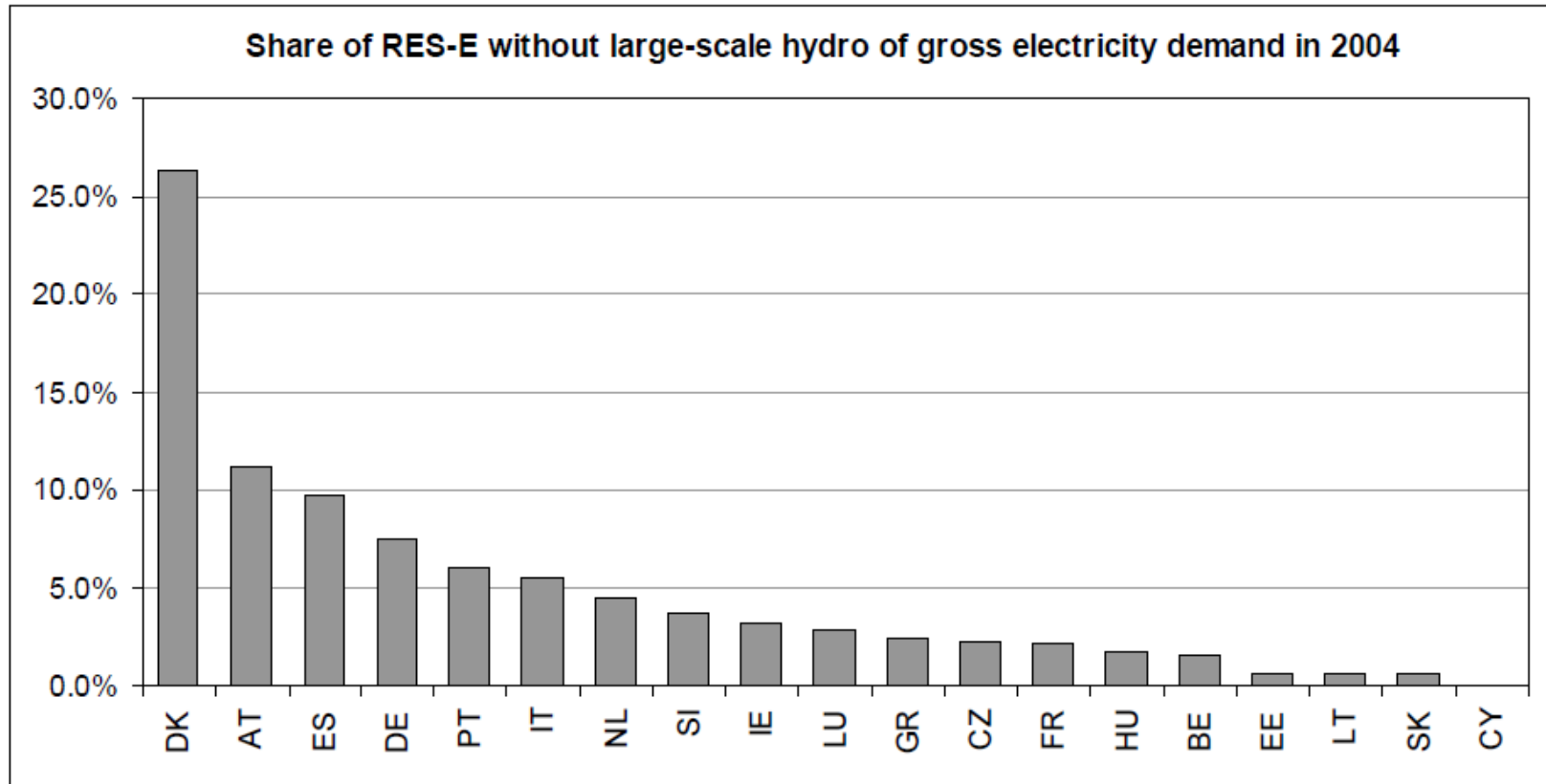


Figure 4.1: Share of electricity from renewable energy sources of gross electricity consumption excluding large-scale hydro power in 2004

Source: [OPTRES 2006]

Design options for market integration

Alternative sales options

- Market sales
- Premium feed-in tariffs
- Auto-consumption (solar PV)

Tariff payment for improved system integration

- Auxiliary grid services (reactive power, voltage dips)
- Demand-oriented tariff payment
- Tariff payment for steady electricity supply

Regulations for controlling power output

- Forecast obligation
- Remote-controlled power output

Outlook and questions

With an increasing share of RES–e the debate has to move from from designing support mechanisms to the design of electricity markets:

- Fixing tariffs vs. market sales
- Which kind of actors do we want in the power generation business?
- How to cope with merit–order effect?
- Establish capacity markets?

...the end...

Thank you for your attention!



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