TaylorWessing

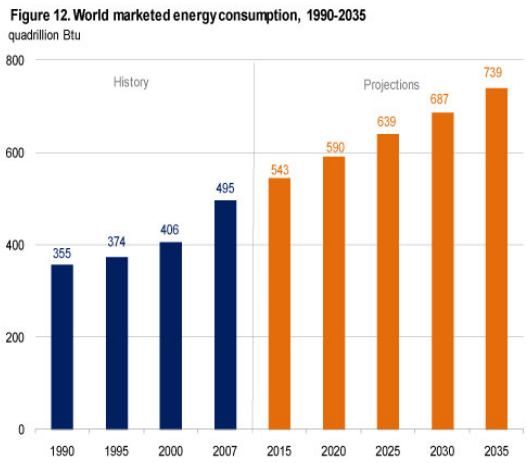
21st Energy Sources - Understanding And Dealing With The Regulatory, Development, and Production Issues Outside The United States: The German Experience

Dr. Jens Wolf

TechLaw Fall Meeting

Pittsburgh, 11 November 2011

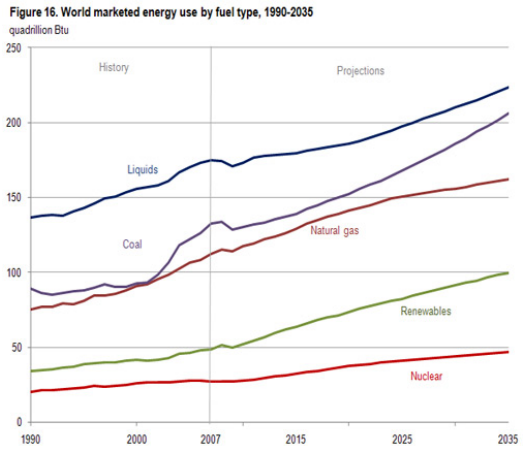
World Energy Consumption



* IEA World Energy Outlook 2010

TaylorWessing

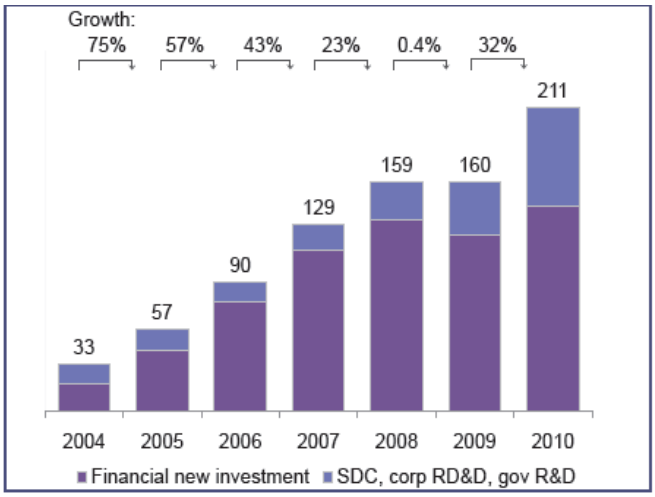
Fuel sources



* IEA World Energy Outlook 2010

TaylorWessing

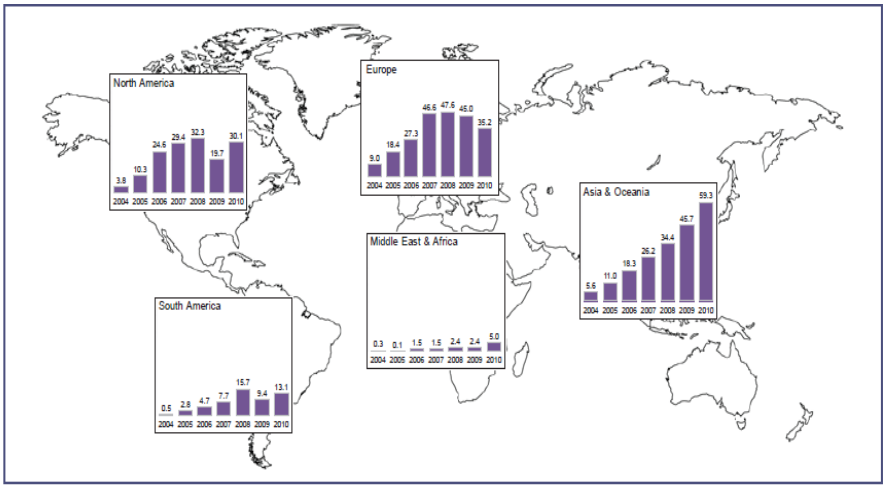
Global new investment in renewable energy 2004-2010



* Bloomberg New Energy Finance

TaylorWessing

Financial new investment in renewable energy by region 2004 – 2011, $BN



New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals. This comparison does not include small-scale projects.

* Bloomberg New Energy Finance

TaylorWessing

EU regulatory regime

Key incentive mechanisms

> feed-in tariffs (FIT)
> green certificates
> renewables obligations
> grants and subsidies
> priority access to grid
> emissions trading
> Carbon taxes and exemptions from fossil fuel levies
> Enhanced capital allowances
> Multilateral loan guarantees

Member State	2020 Renewable Target
Austria	34%
Belgium	13%
Bulgaria	16%
Cyprus	13%
Czech Republic	13%
Denmark	30%
Estonia	25%
Finland	38%
France	23%
Germany	18%
Greece	18%
Hungary	13%
Ireland	16%
Italy	17%

Member State	2020 Renewable Target
Latvia	40%
Lithuania	23%
Luxembourg	11%
Malta	10%
The Netherlands	14%
Poland	15%
Portugal	31%
Romania	24%
Slovak Republic	14%
Slovenia	25%
Spain	20%
Sweden	49%
United Kingdom	15%

TaylorWessing

Country Attractiveness

Rank	Previous	Country	All	Wind	Solar
1	(1)	China	71	77	61
2	(2)	USA	67	67	75
3	(4)	Germany	64	68	49
4	(3)	India	62	63	64
5	(6)	UK	58	65	36
5	(5)	Italy	58	59	56
7	(7)	France	56	59	49
8	(9)	Canada	60	65	34
9	(8)	Spain	52	53	59
10	(11)	Sweden	50	54	32
11	(12)	Brazil	49	51	42
12	(16)	Australia	47	46	52
12	(14)	Poland	47	53	31
14	(18)	Belgium	46	52	31
14	(14)	Ireland	46	53	23
16	(12)	Portugal	45	46	46
16	(16)	South Korea	45		45
16	(21)	Romania	45	49	32

Rank	Previous	Country	All	Wind	Solar
19	(18)	Netherlands	44		32
19	(18)	Japan	44	44	51
21	(22)	Denmark	43	47	29
21	(10)	Greece	43	44	47
23	(23)	Mexico	42	42	45
23	(24)	Norway	42	48	22
23	(30)	Finland	42	46	21
26	(27)	South Africa	41		39
26	(24)	Egypt	41	42	44
26	(27)	New Zealand	41		24
29	(24)	Turkey	39	41	38
29	(27)	Morocco	39	38	48
31	(30)	Taiwan	38	42	31
32	(33)	Austria	36	32	39
33	(32)	Bulgaria	35	37	33
34	(34)	Chile	32	33	31
35	(35)	Czech[4]	29	31	24

Source: Ernst & Young All Renewables Index August 2011

TaylorWessing

The German Experience

TaylorWessing

The German Targets

Targets for Renewable Energy Supply post Fukushima:

> Nuclear energy phase-out by the end of 2022 or earlier

> At least 50% of electricity consumption and 60% of overall energy demand shall be covered by renewable energies by 2050

> Dynamic growth of renewable energies in all industries

> Swift expansion and modernisation of power networks

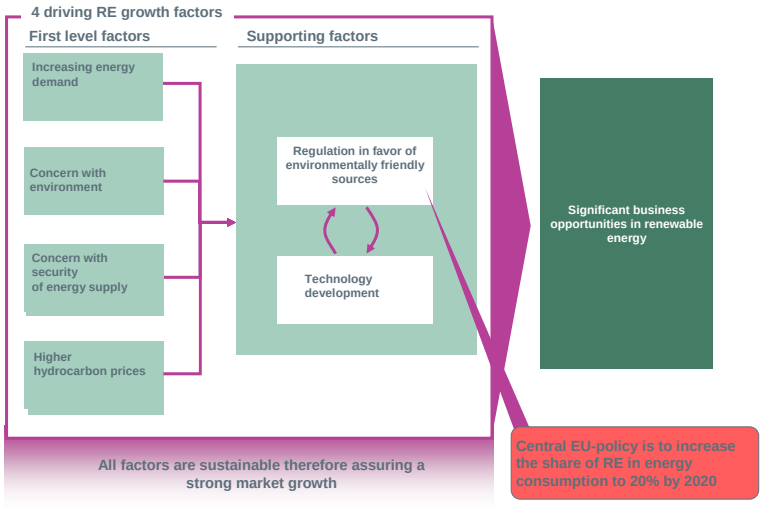
> Increasing energy efficiency by modernising buildings – reducing electricity consumption through modern technologies

> More than 1 million electric cars on German roads by 2020.

* IEA World Energy Outlook 2010

TaylorWessing

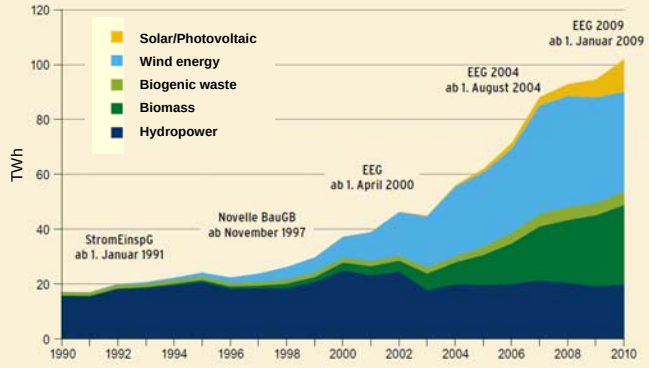
The main Growth Drivers



TaylorWessing

Development of Energy Mix since 1990

Electricity from renewable energies: Development in Germany since 1990:

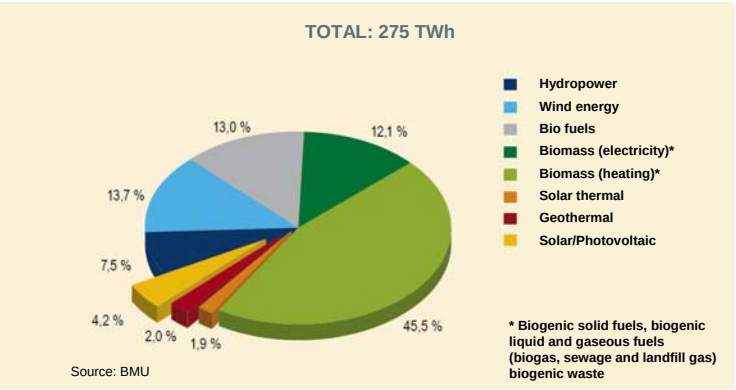


Source: BMU

TaylorWessing

Energy Mix Germany 2010

Structure of final energy supplies from renewable sources (2010):



Source: BMU

TaylorWessing

Status 2010 – Total Electricity Supply of 607.800 GWh in 2010

Achievements in Renewable Energies:

> 17.0% of gross electricity consumption

> 5.8% of fuel consumption

> 10.9% of total final energy consumption – electricity, heat, mobility

> Greenhouse gas emissions of 118 million tons of CO2 equivalents avoided

> Triggered investments of 26.6 bn euro

> 367,400 people employed in renewable energy sectors.

* IEA World Energy Outlook 2010

TaylorWessing

German incentive mechanism

> Tariff dependent upon commissioning (i.e. first production of electricity and delivery to the grid)

> Fixed tariff guaranteed for 20 years + first year of operation

> Obligatory grid connection – grid operator to provide for the nearest point of grid connection available

> Priority for grid connection of renewable energy sources

> Annual degression between 1% (onshore) and 9% (+? for solar pv)

> Numerous details for determination of tariff for different kinds of energy sources, sizes of projects etc., etc.

TaylorWessing

Trends and Developments in the Renewable Sector

Wind

> Due to unusually weak winds, electricity generation decreased despite new capacities and came to only 37.8 TWh.

> 1.040 MW are under construction; 2.000 MW planned till 2020.

Photovoltaic

> Germany is world champion in photovoltaic with added capacities of 7,400 MW.

> With 11.7 TWh the share in gross electricity consumption increased to 2 %.

Biomass

> The trend towards biogas power production continued.

> A total of 26.9 TWh was generated from solid, liquid and gaseous biomass in 2010.

E-Mobility

> Large e-mobility exhibition hall at the Frankfurt IAA.

> First e-cars expected to go on sale in 2012.

TaylorWessing

E-Mobility will Reach German Cities by 2020

Future e-mobility Study 2011:

> By 2020, e-mobility will have reached Germany's cities.

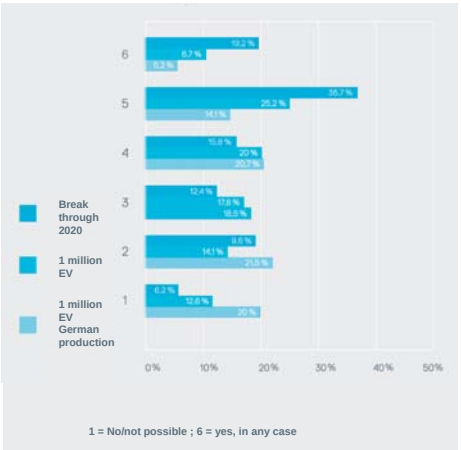
> Sustainable mobility concepts promote e-mobility.

> Customer requirements are changing

> State funding is necessary for a successful launch of e-cars

> The value chain will change

> Charging infrastructure needs to be further developed.



Source: Future eMobility Study – Taylor Wessing / TU Munich

TaylorWessing

The Development of Renewables in China

> Renewable development in China is largely the preserve of state owned enterprises

> Rapid expansion (Onshore wind, Offshore wind, Solar)

> Competition in the Asian and European markets leading to price reductions

> Chinese financial support for exports and strategic partnership

> Chinese acquisitions in Europe are to increase

> Principal opportunity for European firms to access China's market is through technology licensing but fears around IP protection

> North America and Europe will compete head-to-head to attract outbound Chinese investment

TaylorWessing

21st Energy Sources – Summary & Outlook

> China enjoyed a huge lead in financial new investment over the US in second place, and Italy a distant third. If small-scale projects are included, Germany's rooftop PV boom took it up to second place.*

> According to an German industry forecast** 47 % of the energy demand could be covered by renewable energy sources by 2020.

> The annual investment volume driven by development of renewable energy sources will double by 2020.

> Investment forecasted by BEE will ad up to 235 Bn. EUR in 2020 for Germany.

> In 2011 German companies will invest up to 5.5 Bn. EUR driven by the change in nuclear politics.

* Bloomberg New Energy Finance 2011; ** Bundesverband Erneuerbare Energien e.V. (BEE)

TaylorWessing

Questions?

> Further Information can be found on:
http://www.taylorwessing.com/FutureEnergy/Publications.html

> Bridging the Funding Gap: the financing challenge for European cleantech and renewable energy - 2010

> 3Q 2011 European Renewable Energy Investment Review.

> Enter the Dragon: How China will impact Europe's renewable energy landscape

> Future eMobility

TaylorWessing

Contact Details

Dr. Jens Wolf
Partner, Hamburg

Contact
T: +49 (0)40 36 80 3- 104
E: j.wolf@taylorwessing.com

Dr. Jens Wolf
Rechtsanwalt / Attorney-at-law
Partner Corporate Transactions
M&A/Venture Capital/Private Equity

Taylor Wessing
Hanseatic Trade Center
Am Sandtorkai 41
D-20457 Hamburg
Germany

www.taylorwessing.com

TaylorWessing

Our Offices

Berlin
Ebertstraß5 15
10117 Berlin
T. +49 (0)30 88 56 36 0
F. +49 (0)30 88 56 36 100

Brüssel
Trône House
4 Rue du Trône
1000 Brüssel
T. +32 (0)2 289 6060
F. +32 (0)2 289 6070

Cambridge
24 Hills Road
Cambridge, CB2 1JP
T. +44 (0)1223 446400
F. +44 (0)1223 446401

Dubai
26th Floor, Rolex Tower,
Sheikh Zayed Road,
P.O. Box 33675
Dubai, United Arab Emirates
T. +971 (0)4 332 3324
F. +971 (0)4 332 3325

Düsseldorf
Benrather Straße 15
40213 Düsseldorf
T. +49 (0)211 83 87 0
F. +49 (0)211 83 87 100

Frankfurt
Senckenberganlage 20-22
60325 Frankfurt a.M.
T. +49 (0)69 971 30 0
F. +49 (0)69 971 30 100

Hamburg
Hanseatic Trade Center
Am Sandtorkai 41
20457 Hamburg
T. +49 (0)4 0 36 80 30
F. +49 (0)4 0 36 80 3280

London
5 New Street Square
London EC4A 3TW
T. +44 (0)20 7300 7000
F. +44 (0)20 7300 7100

München
Isartorplatz 8, 80331
München
T. +49 (0)89 2 10 38 0
F. +49 (0)89 2 10 38 300

Paris
42 avenue Montaigne
75008 Paris
T. +33 (0)1 72 74 03 33
F. +33 (0)1 72 74 03 34

Representative offices

Beijing
Unit 1503, Tower 2,
Prosper Center No. 5,
Guanghua Road
Chaoyang District
Beijing 100020
T. +86 10 8587 5886
F. +86 10 8587 5885

Shanghai
Unit 1509, United Plaza
No. 1468,
Nanjing West Road
Shanghai 200040
T. +86 21 6247 7247
F. +86 21 6247 6248

Associated office

Warschau
BSJP Legal
Al Armii Ludowej 26
PL-00-609 Warsaw
T. +48 (0) 22 579 89 00
F. +48 (0) 22 579 89 01

© Taylor Wessing 2011
This publication is intended for general public guidance and to highlight issues. It is not intended to apply to specific circumstances or to constitute legal advice.
Taylor Wessing's international offices operate as one firm but are established as distinct legal entities.
For further information about our offices and the regulatory regimes that apply to them, please refer to www.taylorwessing.com