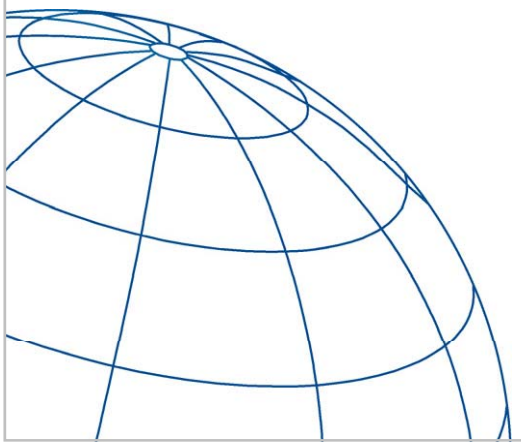
FICHTNER

Current Status of Renewable Power Pricing Policies in Europe

欧洲当前再生能源电力定价政策



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Content目录

Minimum Price Standard (MPS) = Feed-In Tariff
最低价格标准（MPS） = 上网电价

- Utilities are obliged by law to purchase RE electricity
  法律规定电力公司必须购买再生能源发电
- Utilities are obliged by law to pay a minimum price for RE electricity
  法律规定电力公司必须为再生能源发电支付最低价格
- Utilities are obliged by law to allow grid access
  法律规定电力公司必须允许接入电网

Renewable Portfolio Standard (RPS) = Quota
再生能源组合标准(RPS) = 配额

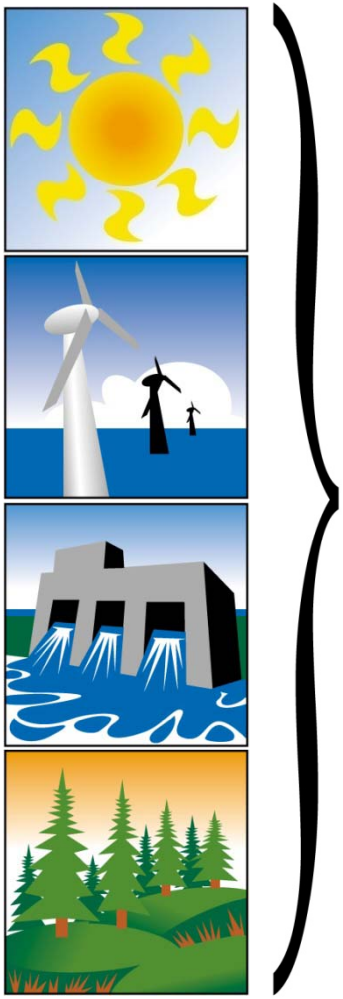
- Suppliers are obliged by law to have a certain share of RE in their generation mix

  法律规定供电公司必须有一定比例的再生能源发电
- Proof with certificates

  有许可证为证
- Certificates tradable

  许可证可以交易

Principles of the Renewable Portfolio Standard
再生能源组合标准的原则



MWh

兆瓦时

- **Certificates**
  许可证
- **Electricity**
  电力

Total Revenue

总收入

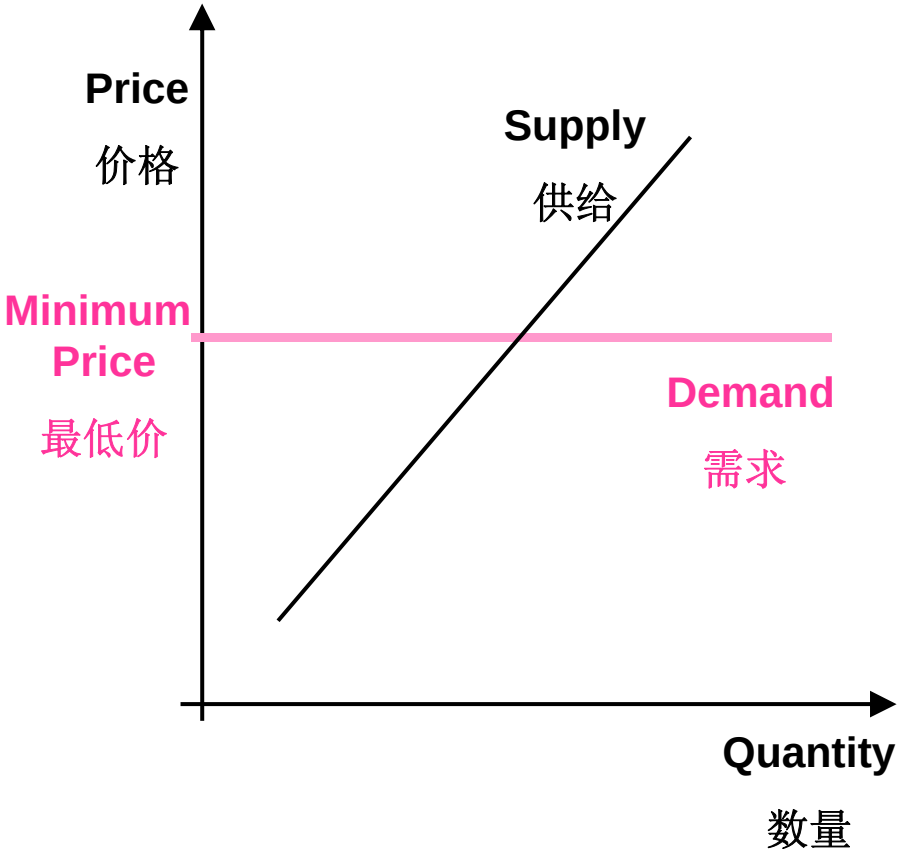
Certificate price

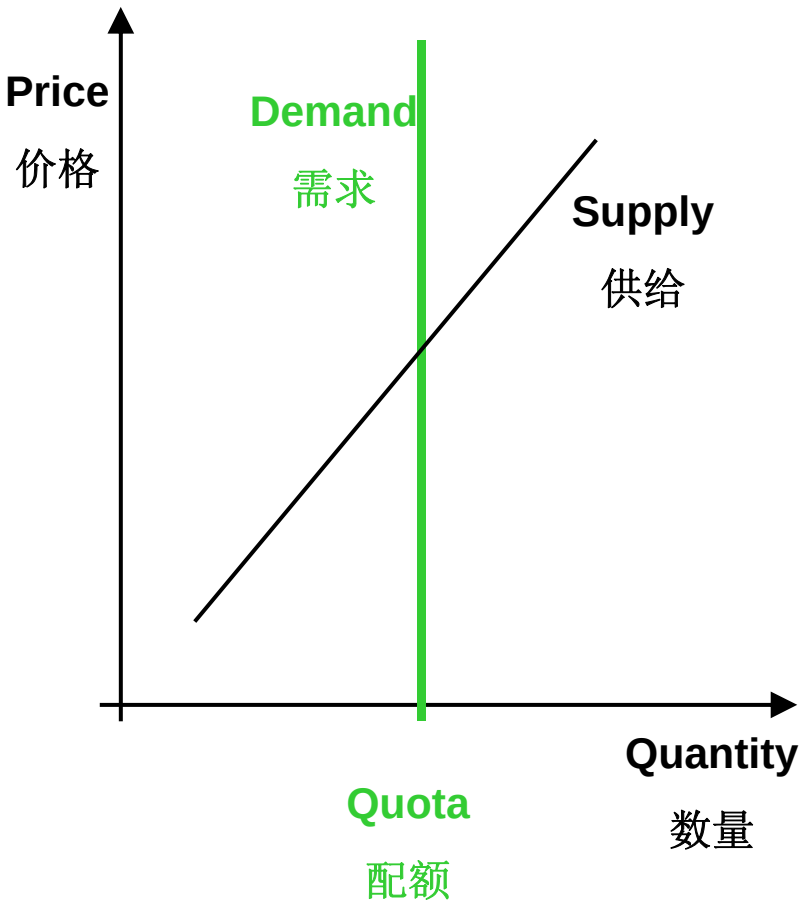
许可证价格

Electricity price

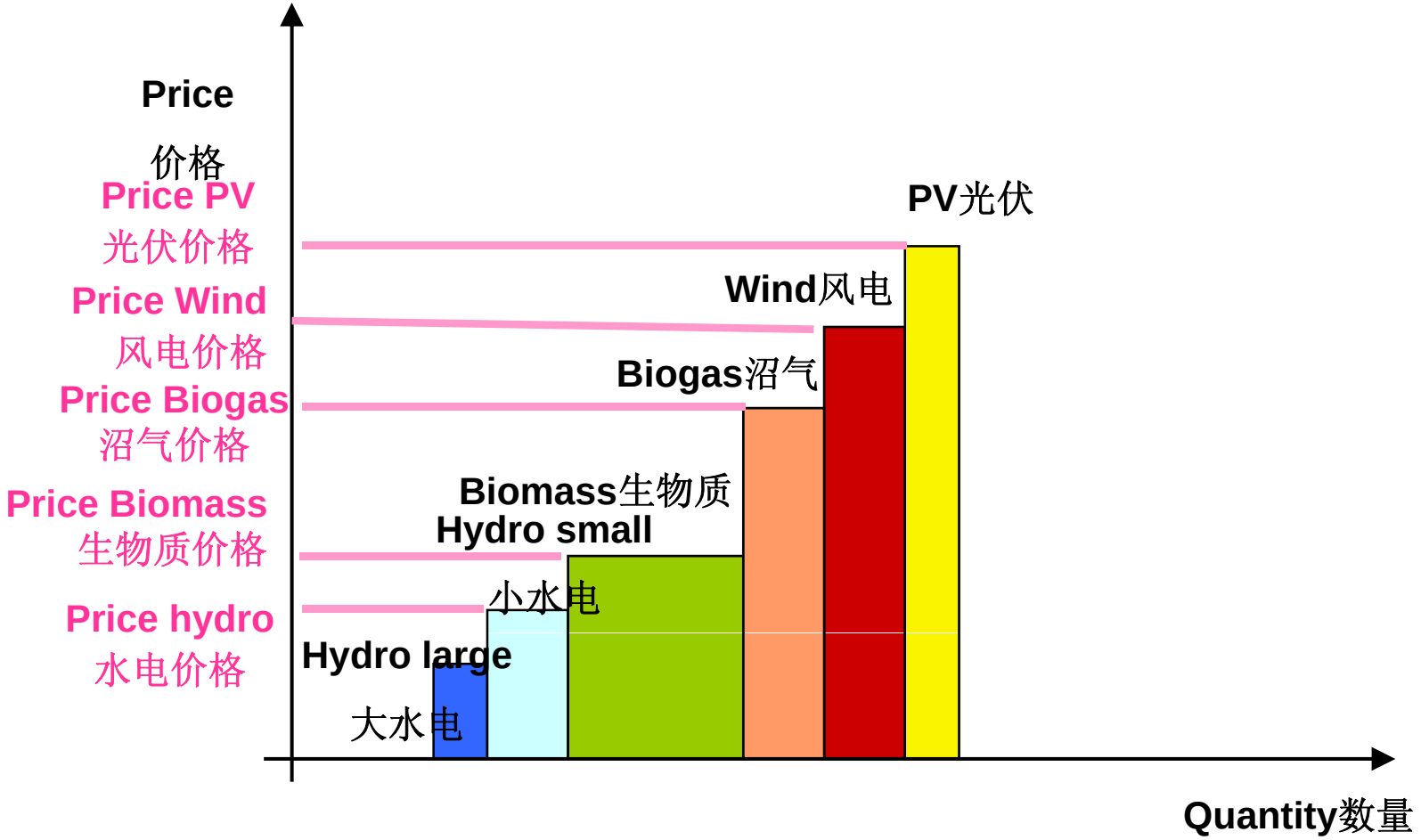
电力价格

MPS vs. RPS on Markets
市场MPS 和 RPS对比

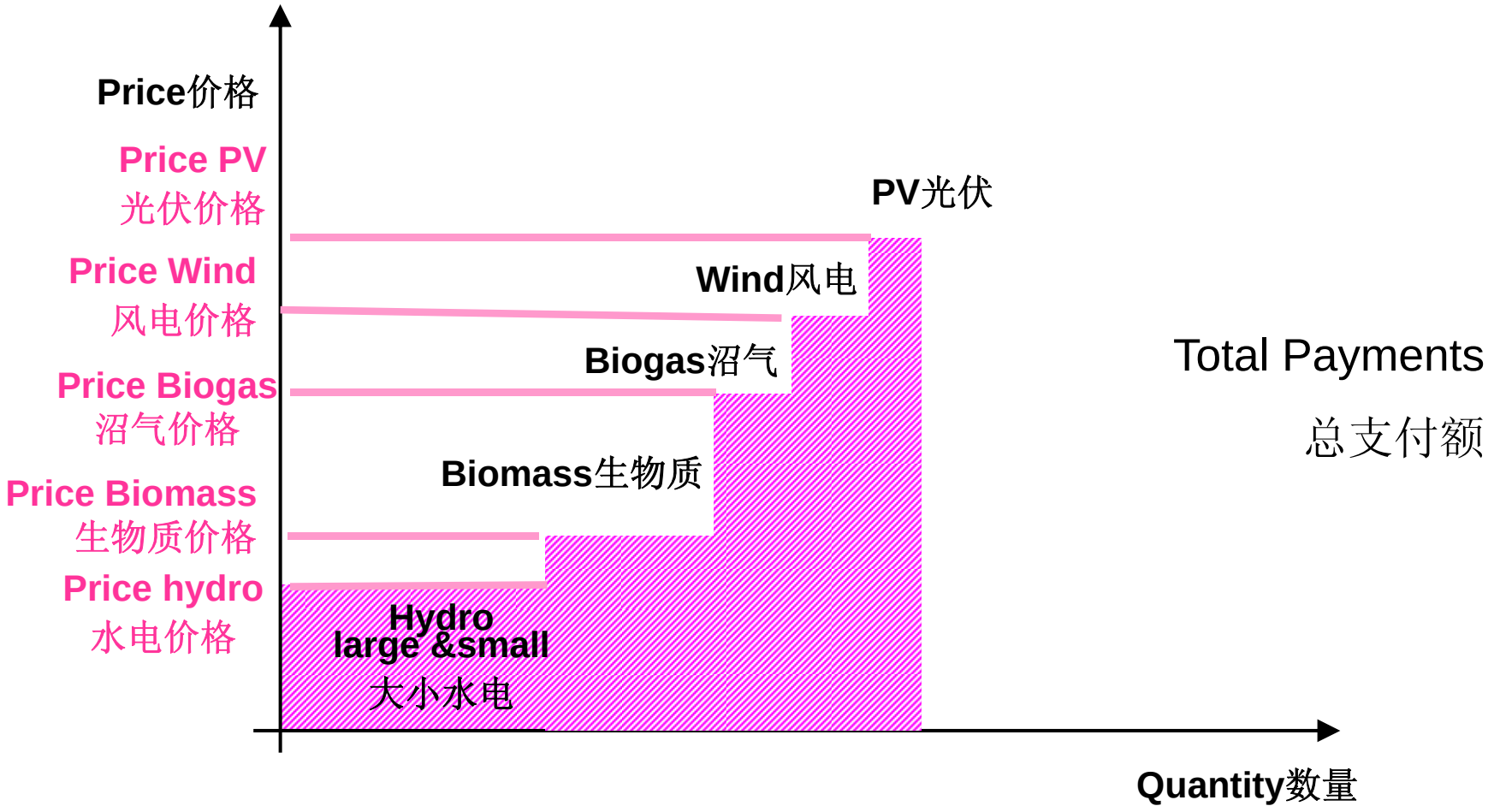




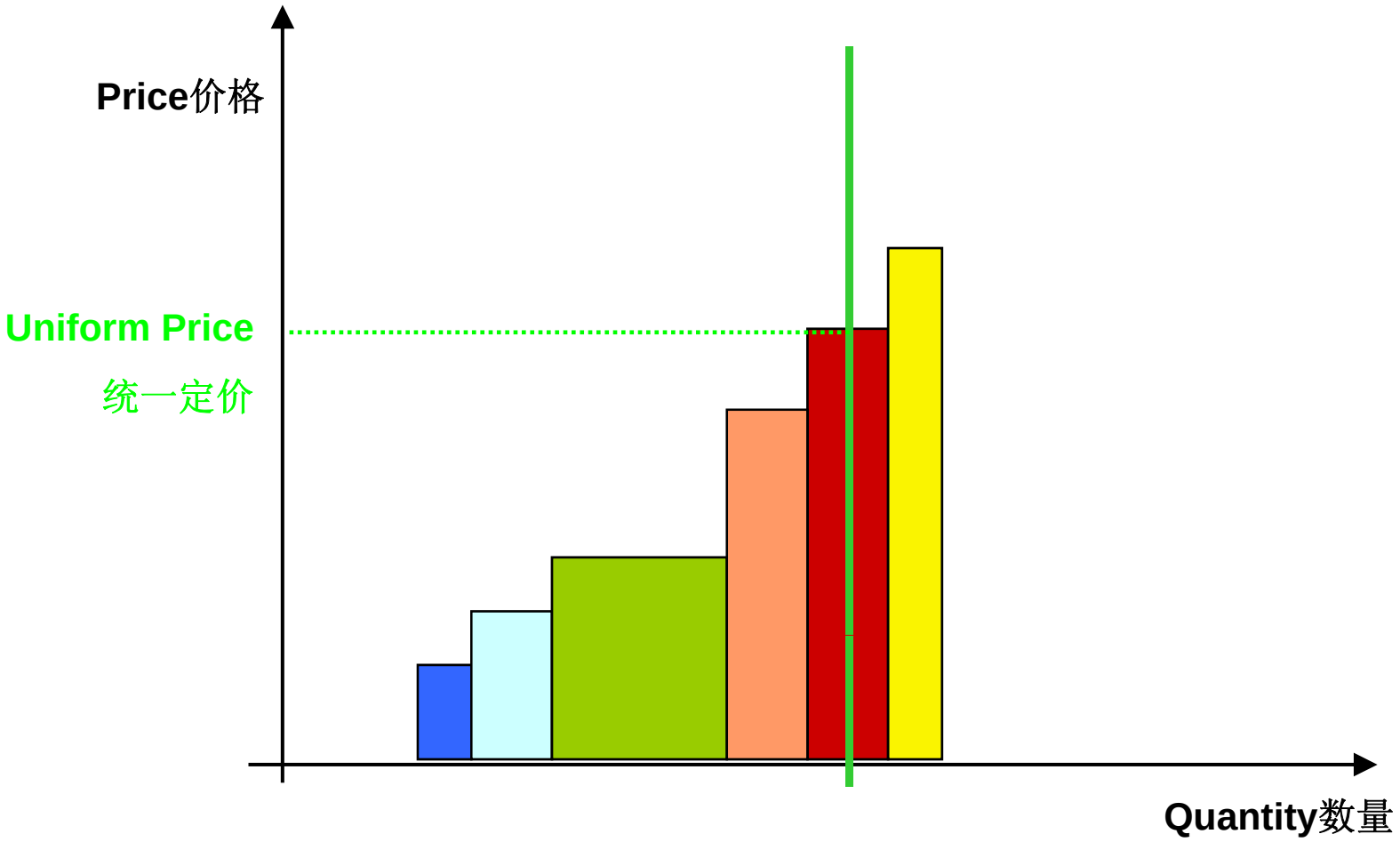
MPS features – Differentiated Prices I
MPS特点– 区别定价I



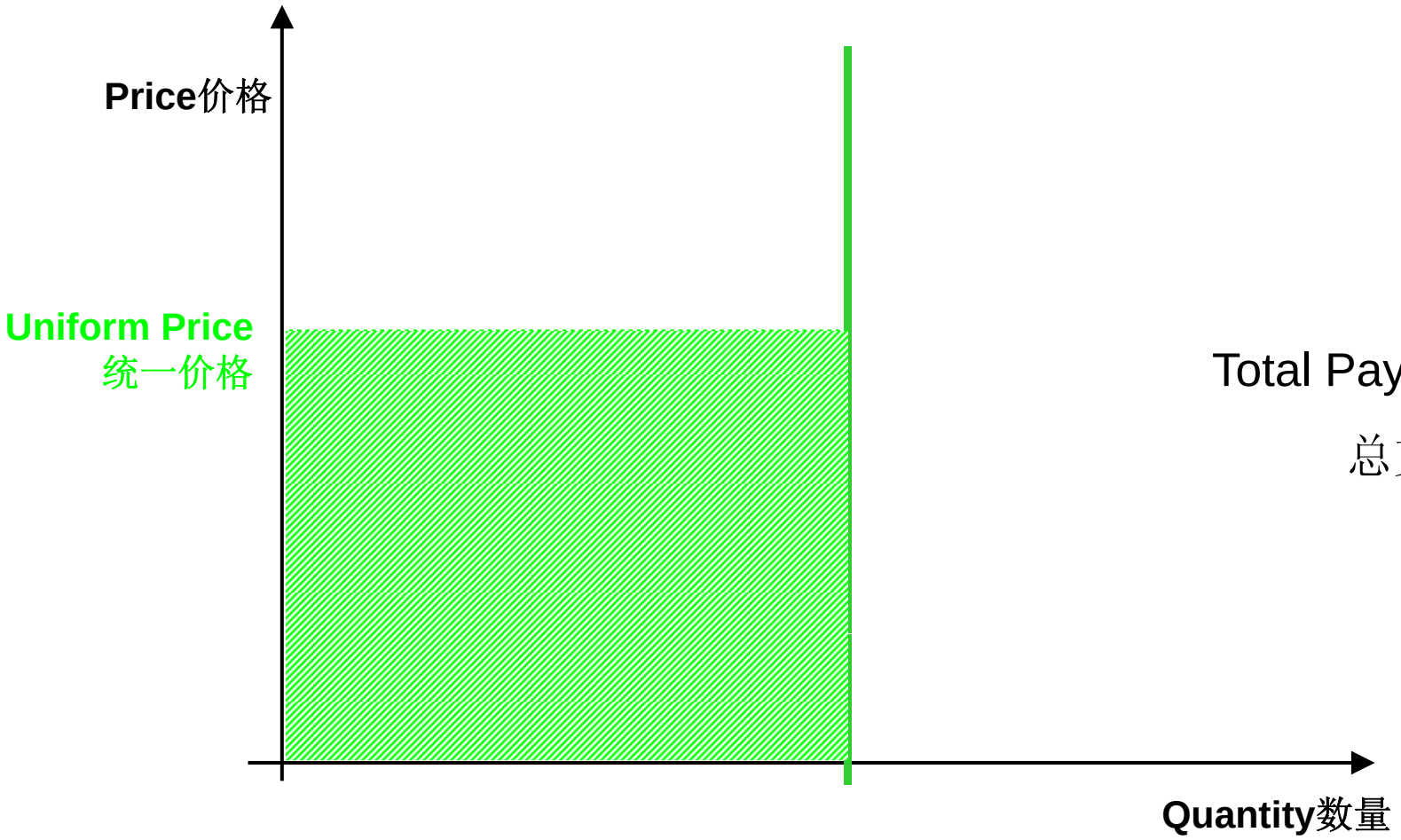
MPS features – Differentiated Prices II
MPS 特点– 区别定价II



RPS features – Uniform Price I
RPS 特点– 统一定价 I



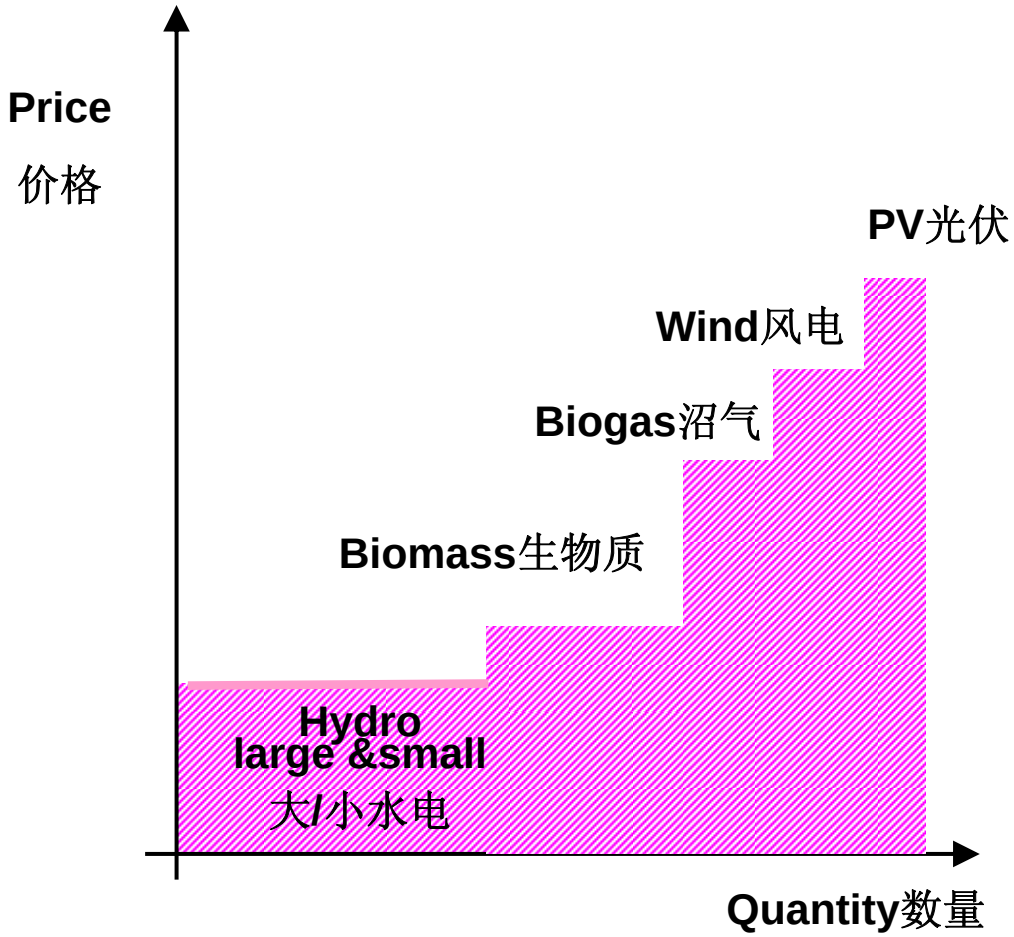
RPS features – Uniform Price II
RPS 特点 – 统一定价II

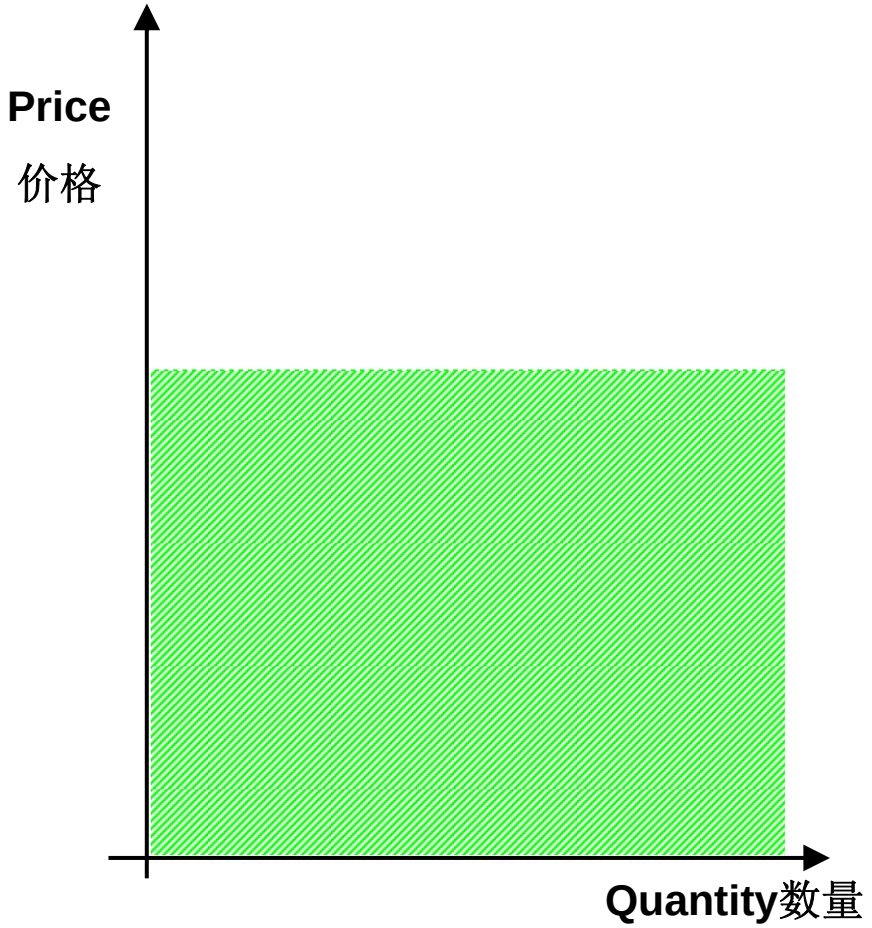


Total Payments

总支付额

Total payments compared 支付总额对比





Targets of RE policy再生能源政策的目标

Certain share of RE at a certain time

再生能源在一定时间占有一定份额

- **RE as a means for CO_2-mitigation**再生能源能够减少 二氧化碳排放
- **Minimize costs** 使成本最小化
- **Enhance competition**提高竞争力

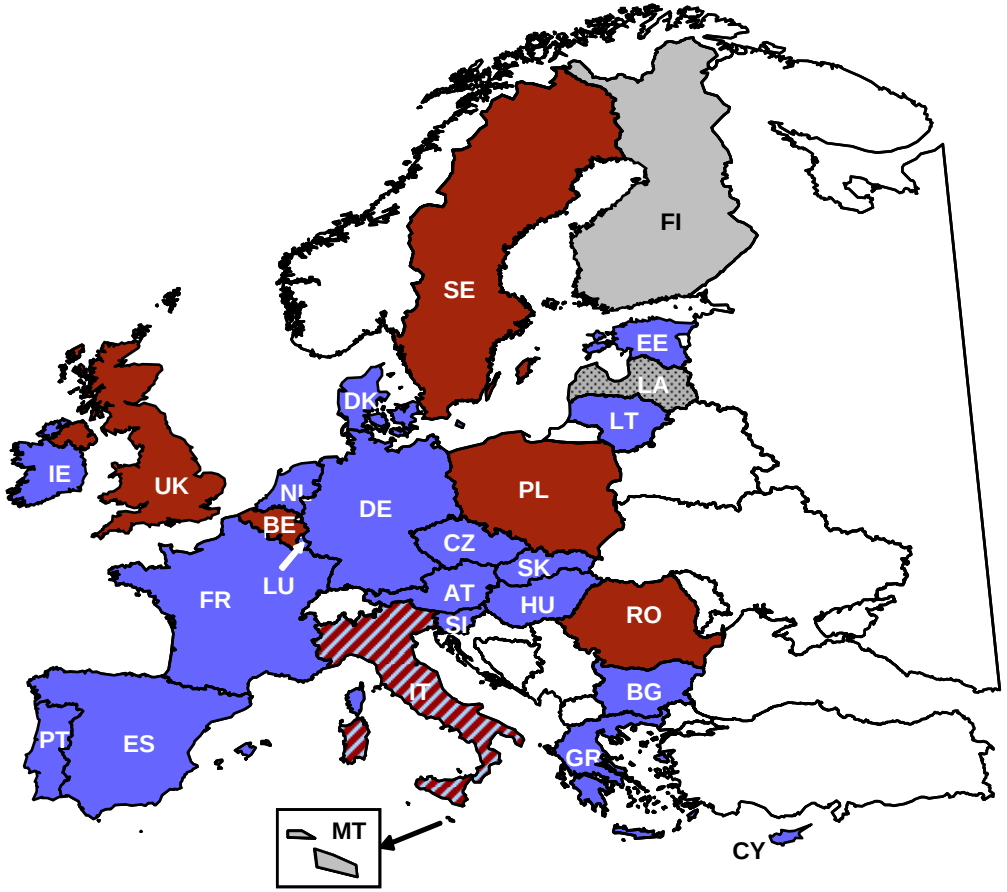
➔ **Renewable Portfolio Standard**再生能源组合标准

Substantial growth of RE　再生能源显著增长

- **RE as part of sustainable development**再生能源成为可持续发展的一部分
- **Establish manufacturing structures**确立生产结构
- **Establish appropriate legal & organizational framework**
  确立适当的法律和组织框架

➔ **Minimum Price Standard**最低价格标准

Dominating support schemes for RE-Electricity in the EU
欧盟国家对再生能源发电的主要支持政策

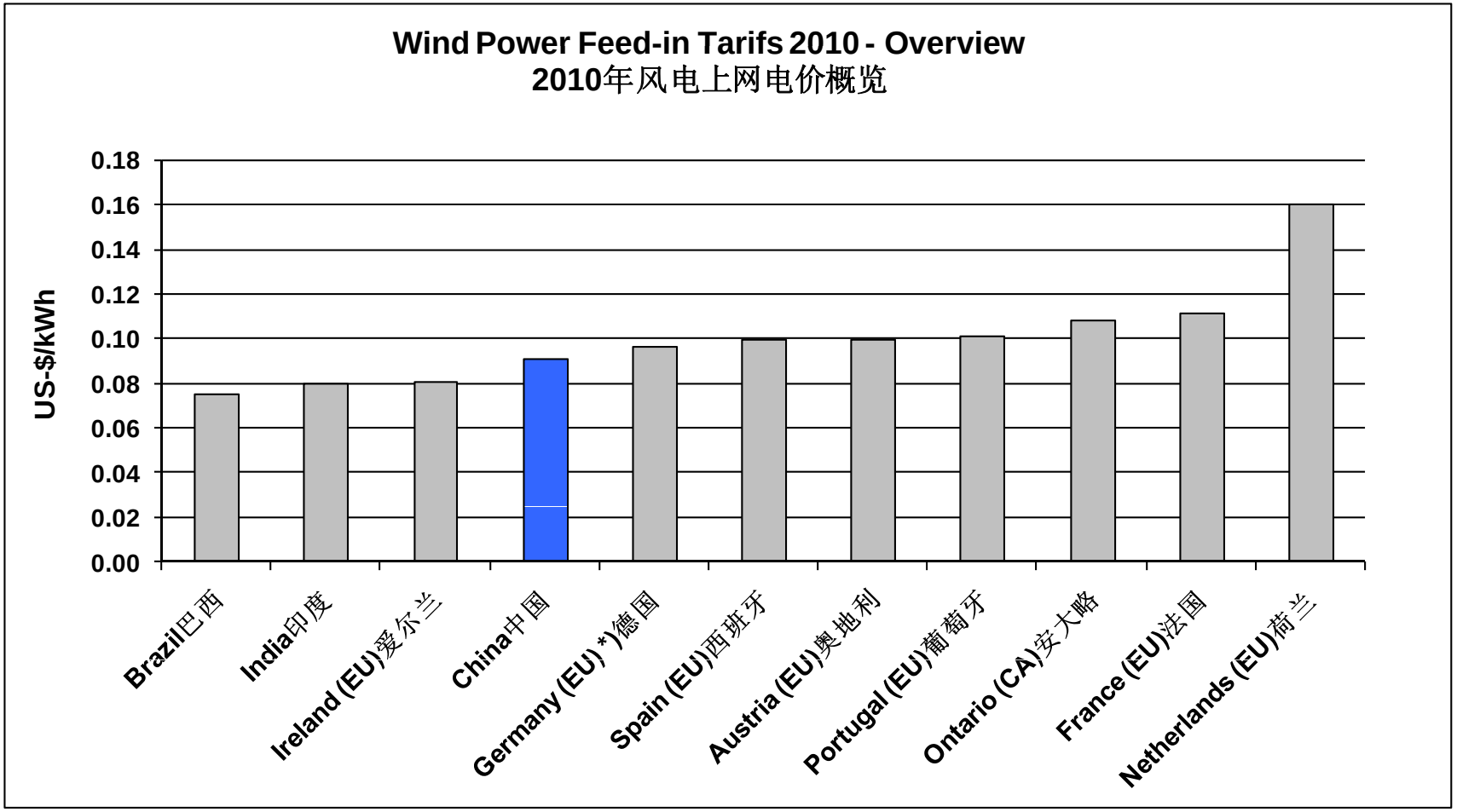


- Minimum Price Standards/FIT
  最低价格标准/上网电价
- RPS/ Quota / TGC
  RPS/ 配额 / TGC
- MPS and Quota / TGC
  MPS 和配额/ TGC
- Tax incentives / Investment grants
  税收鼓励/ 投资补贴
- Other system其他

A clear majority of EU countries uses feed-in tariffs as main instrument
6 countries have implemented a quota obligation with TGCs

欧盟国家大多数以上网价格为主要政策工具
有6个国家执行配额+GGC的政策

Feed-In Tariff Comparison Worldwide – Wind
世界各地上网电价对比—风力发电



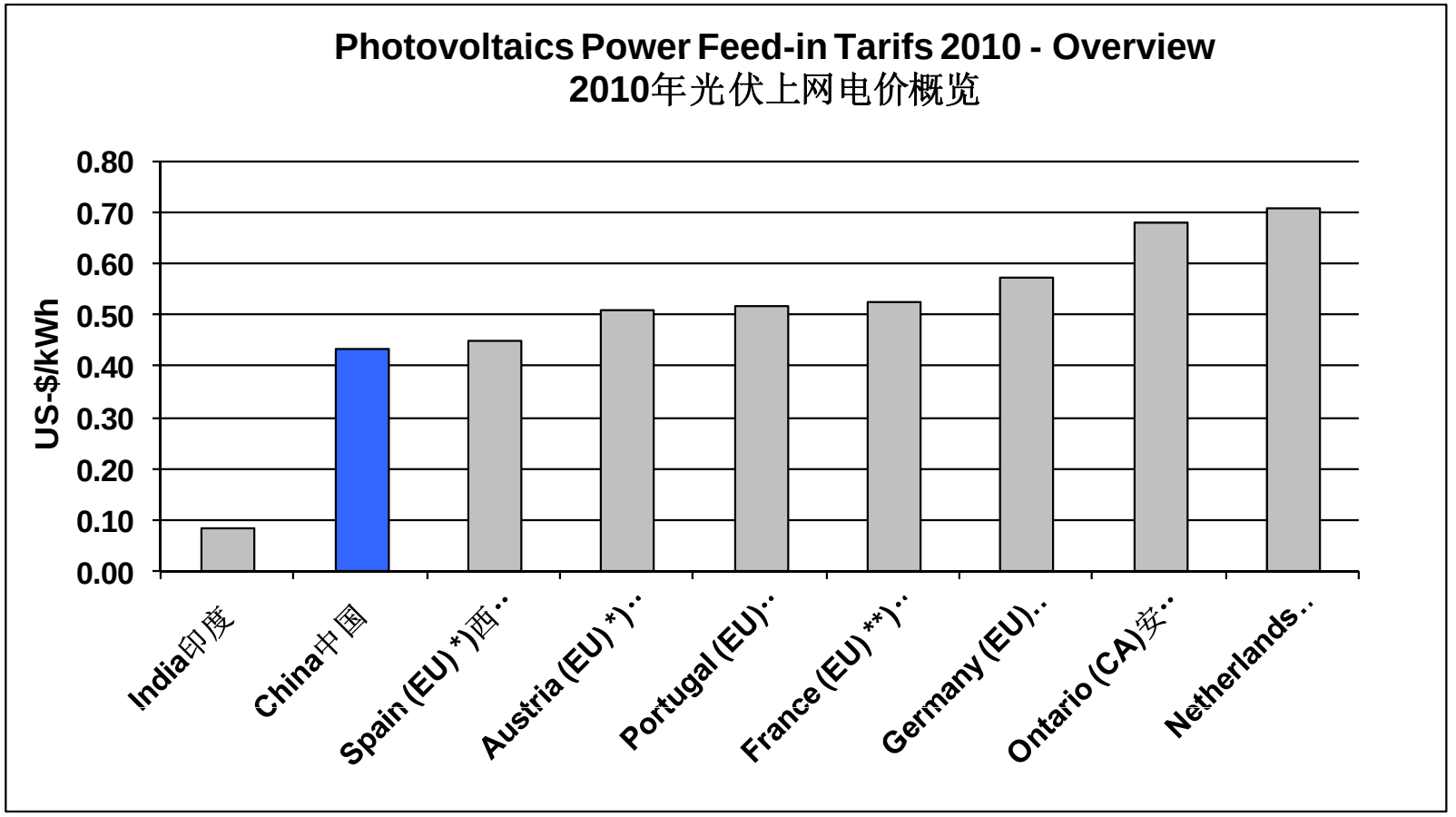
*) Average as depending on the amount produced

*) 平均数取决于发电量

Source: www.wind-works.org; http://www.energy.eu/#feedin

来源: www.wind-works.org; http://www.energy.eu/#feedin

Feed-In Tariff Comparison Worldwide – Photovoltaics
世界各地上网电价对比—光伏发电

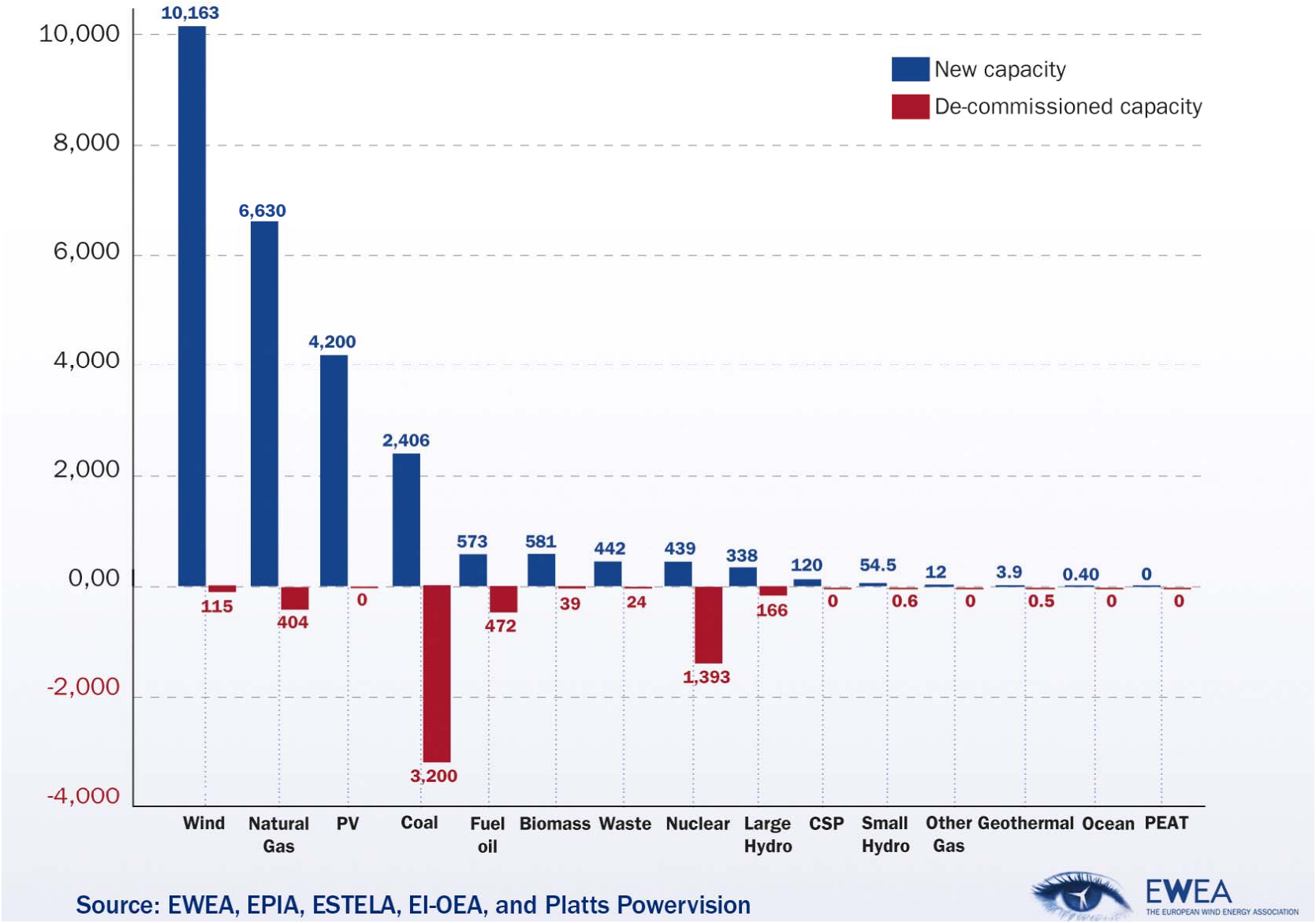


) Average as depending on the amount produced) 平均数取决于发电量

) Average as depending on mounted system) 平均数取决于所用系统

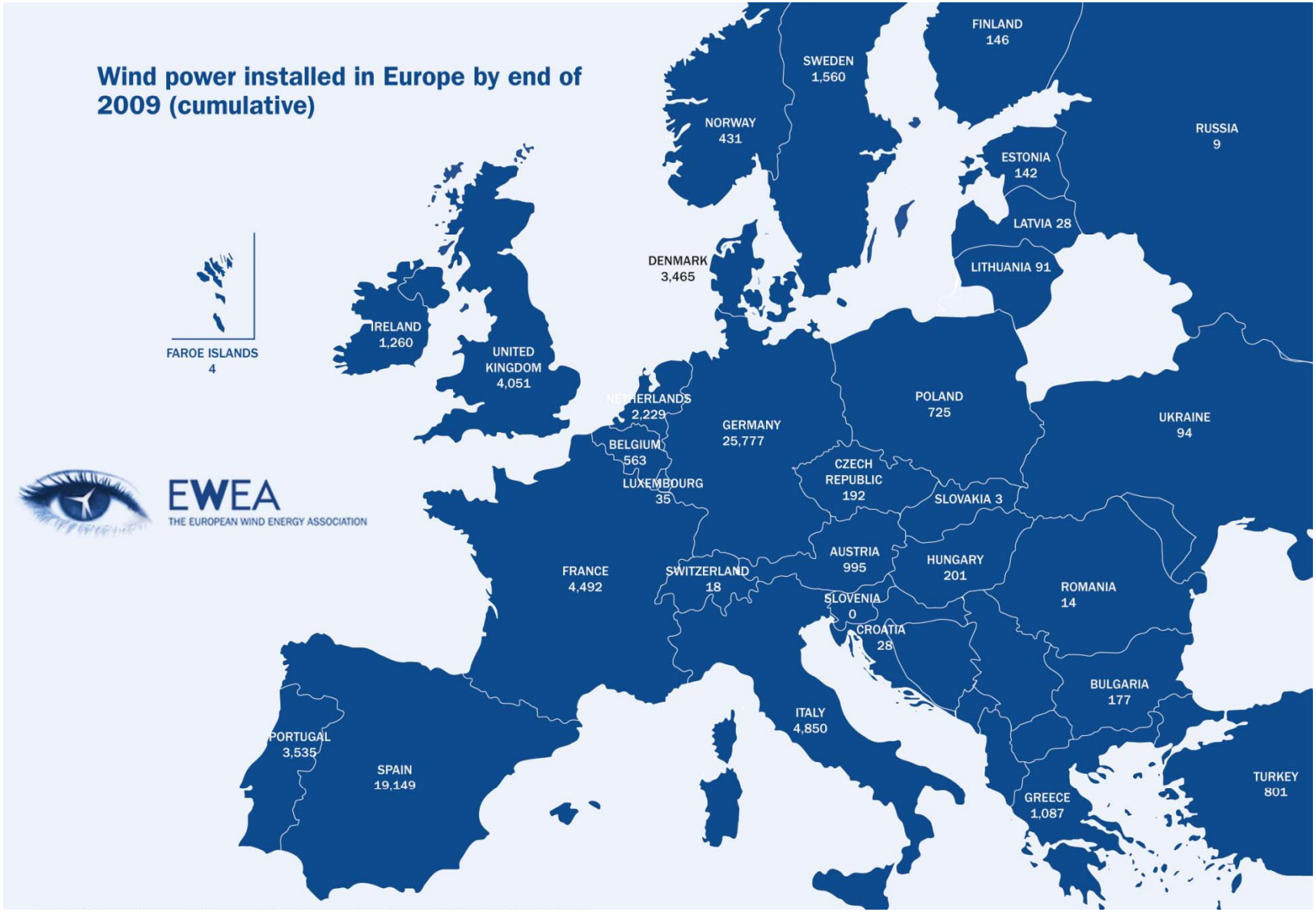
Source: www.wind-works.org; http://www.energy.eu/#feedin
来源: www.wind-works.org; http://www.energy.eu/#feedin

Added Power Generation Capacity in the European Union
欧盟新增发电装机容量



Source: EWEA, EPIA, ESTELA, EI-OEA, and Platts Powervision

Total Wind Power Capacity in Europe欧洲风力发电总容量



Summary小结

- Minimum Price Standards and Renewable Portfolio Standards create in theory the same markets

  理论上，最低价格标准和再生能源组合生成相同的市场

- In practise, price differentiation in minimum price standards allow for promotion of more individual renewable technologies at potentially lower over all costs

  实践中，最低价格标准的区别定价总体成本较低，能够促进更为个人化的再生能源技术的发展。

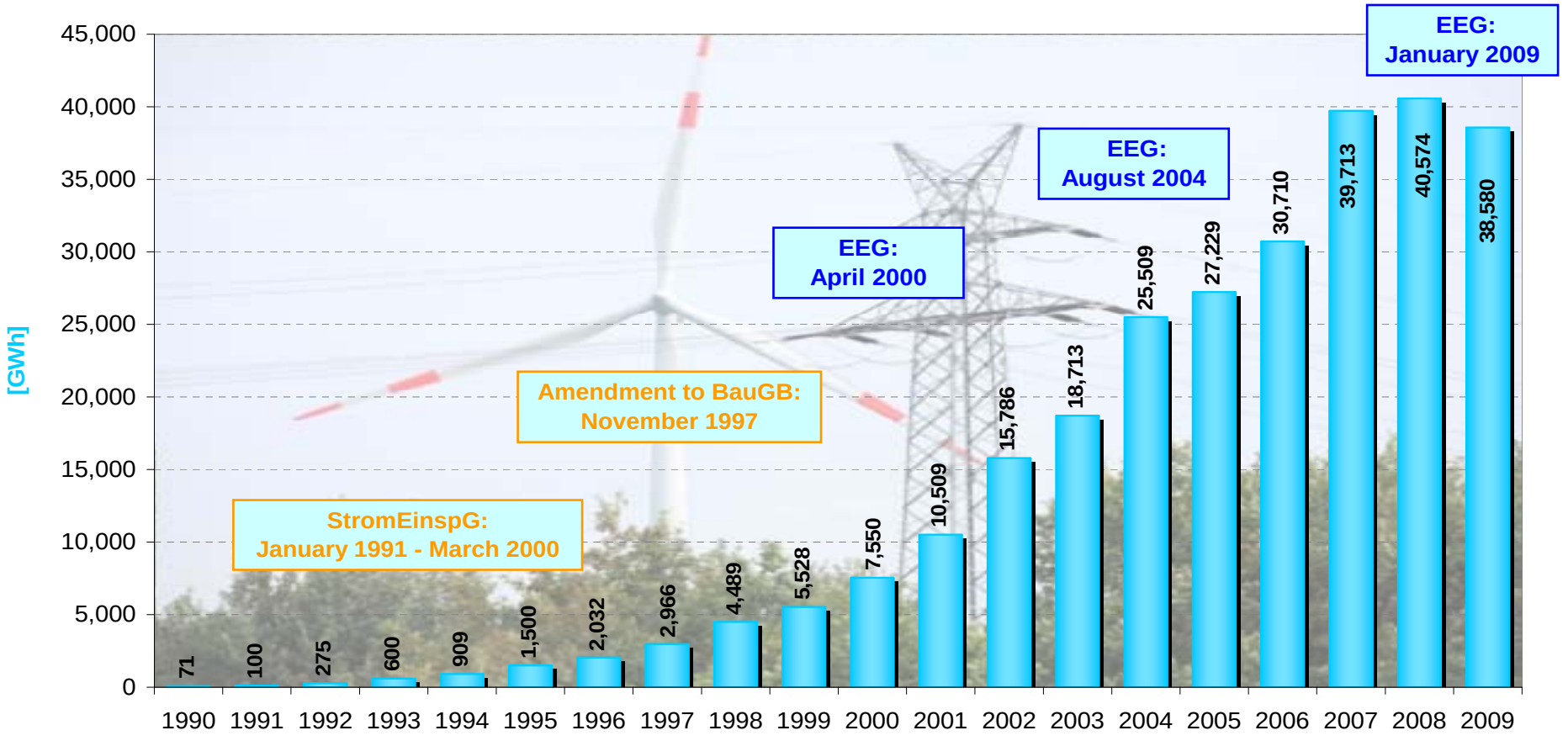
- Minimum Price Standards/Feed-In Tariffs prevailing in Europe

  欧洲当前主要采取最低价格标准/上网价格的政策

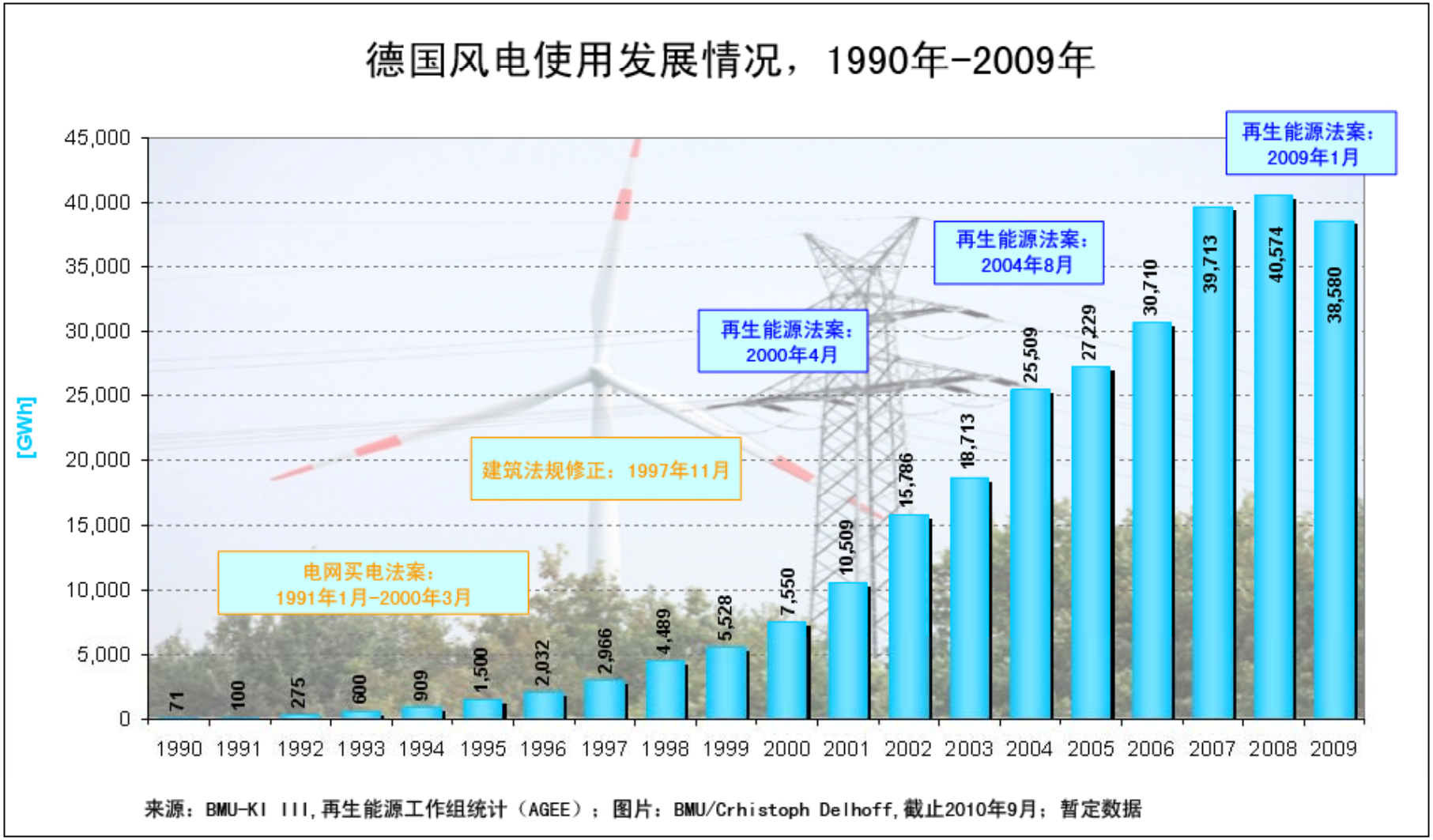
- European promotion policies has been successful in establishing renewable energy as a major energy carrier; total capacity additions in renewable power plants are higher than with fossil/nuclear power plants

  欧洲采取的促进政策成功地将再生能源确立为主要的能源载体，再生能源电厂新增装机容量高于火力/核电发电厂

Development of wind energy use in Germany 1990 - 2009



StromEinspG: Act on the Sale of Electricity to the Grid; BauGB: Construction Code; EEG: Renewable Energy Sources Act;
Source: BMU-KI III 1 according to Working Group on Renewable Energies-Statistics (AGEE-Stat); Image: BMU / Christoph Edelhoff; as at: September 2010; all figures provisional

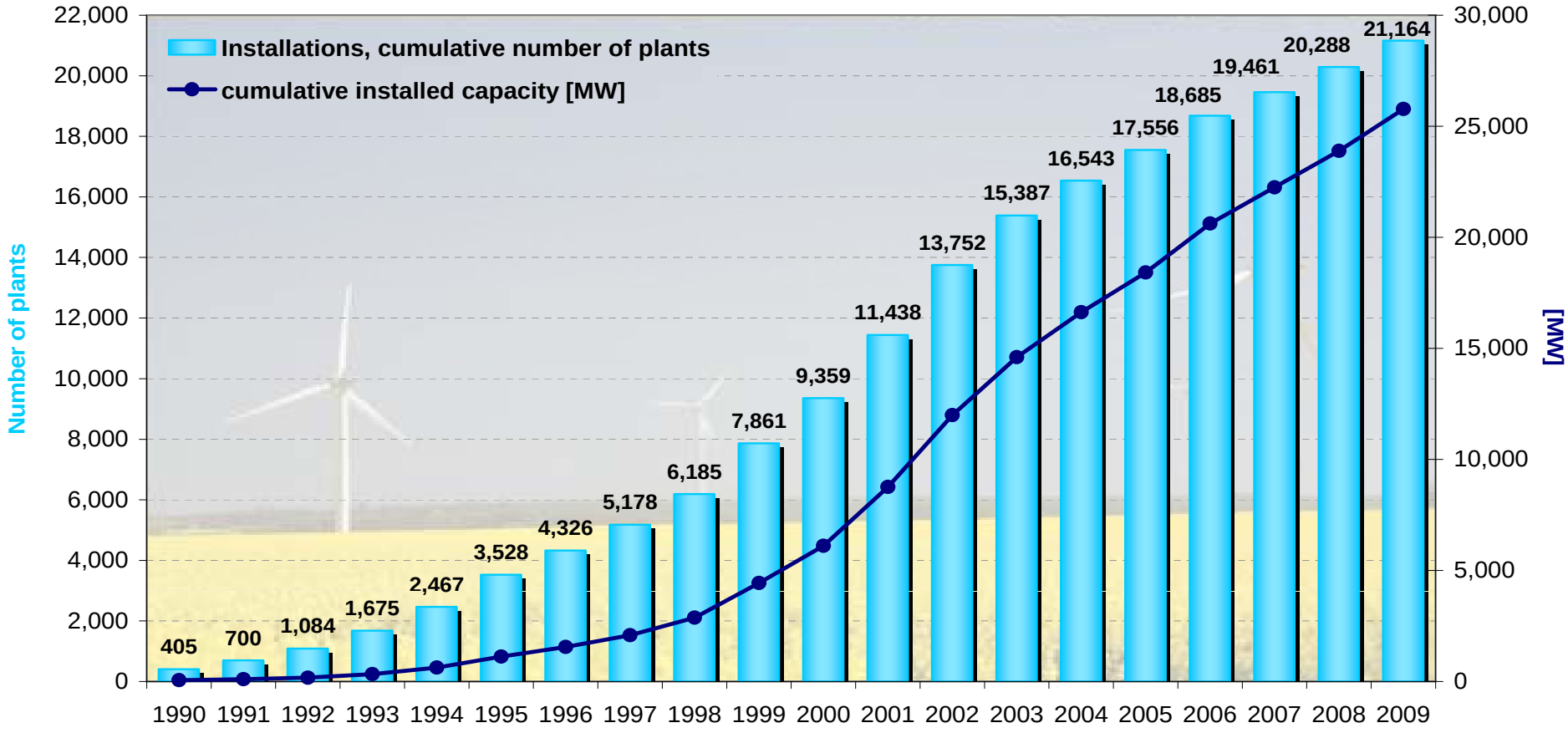


BMU – KI III 1

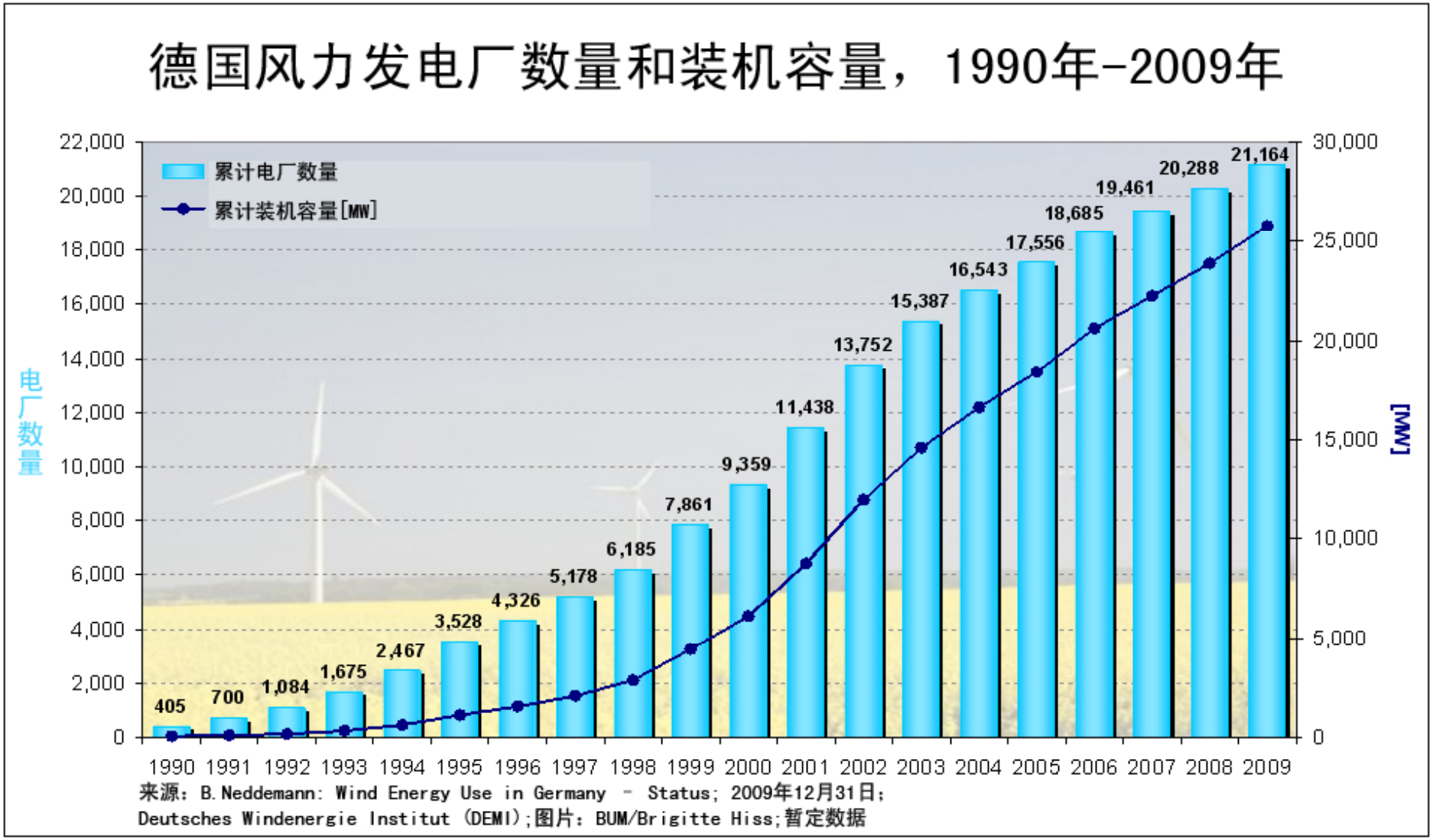
2009年德国再生能源发展情况

20

Number of wind energy plants and installed capacity in Germany 1990 - 2009

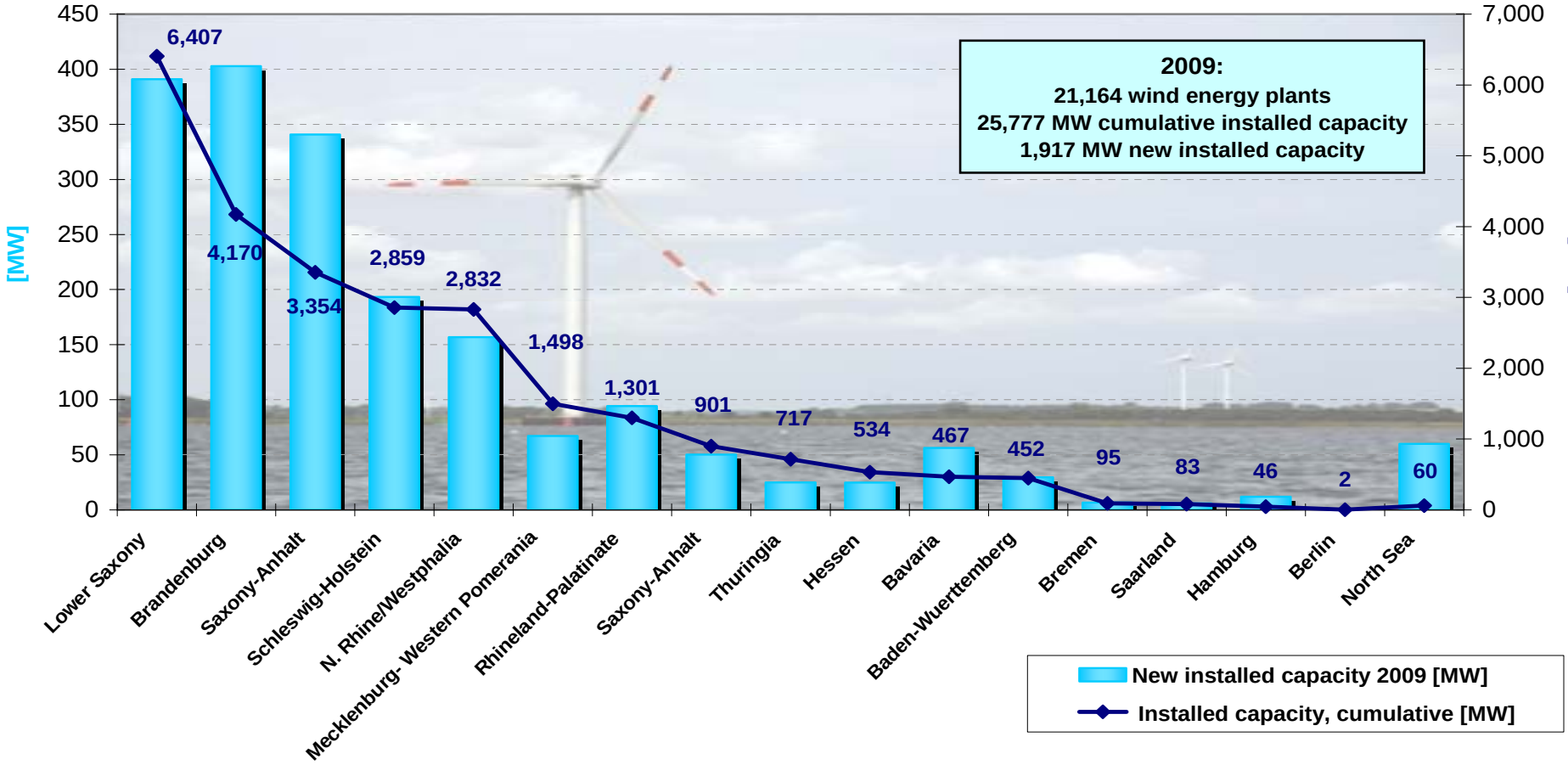


Source: B. Neddermann: Wind Energy Use in Germany - Status; 31.12.2009; Deutsches Windenergie-Institut (DEWI); Image: BMU / Brigitte Hiss; all figures provisional

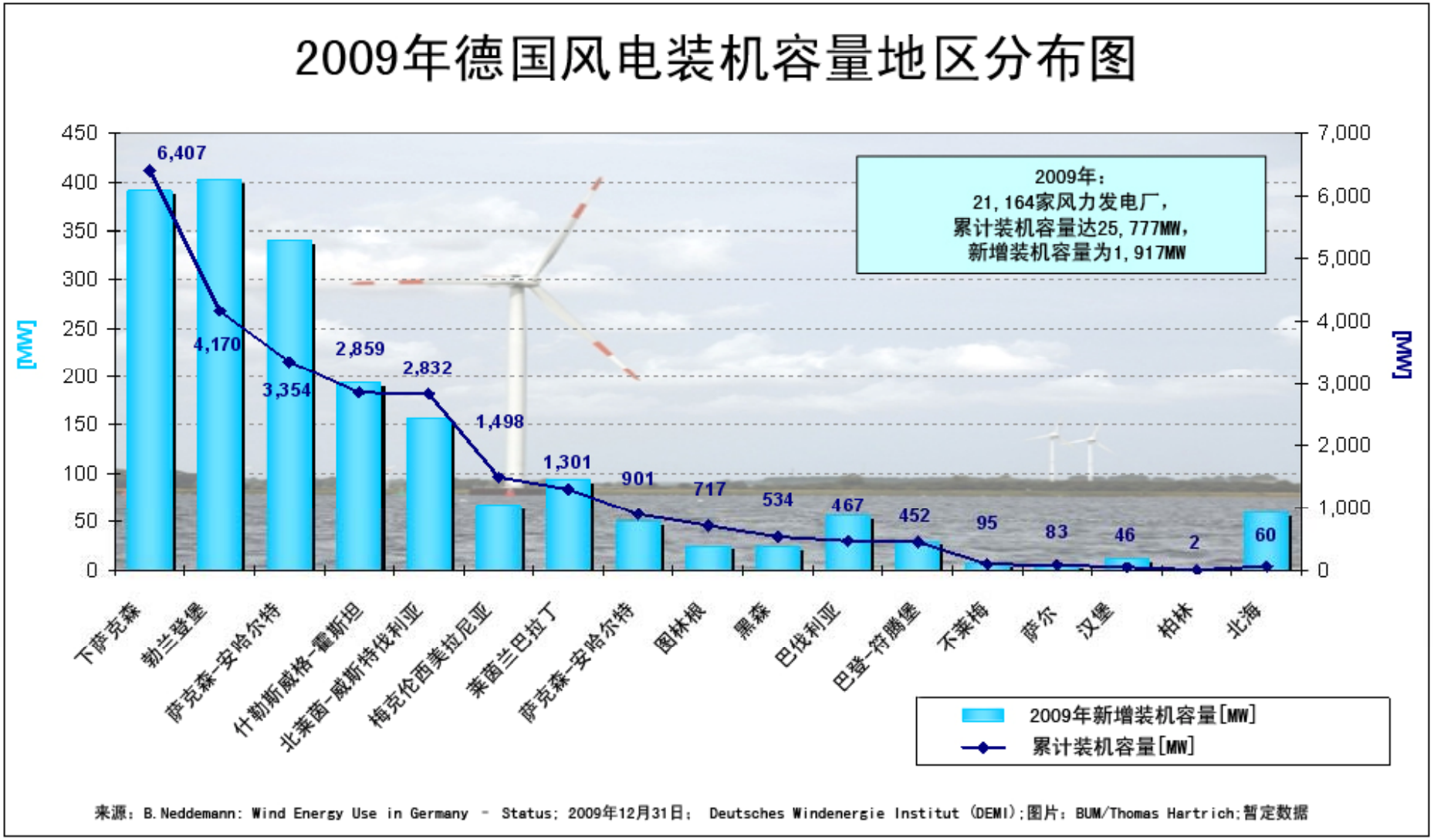

德国风力发电厂数量和装机容量，1990年-2009年
累计电厂数量
累计装机容量[MW]
电厂数量
[MW]
22,000
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
30,000
25,000
20,000
15,000
10,000
5,000
0
405
700
1,084
1,675
2,467
3,528
4,326
5,178
6,185
7,861
9,359
11,438
13,752
15,387
16,543
17,556
18,685
19,461
20,288
21,164
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009
来源：B. Neddemann: Wind Energy Use in Germany - Status; 2009年12月31日;
Deutsches Windenergie Institut (DEMI);图片：BUM/Brigitte Hiss;暂定数据

BMU – KI III 1

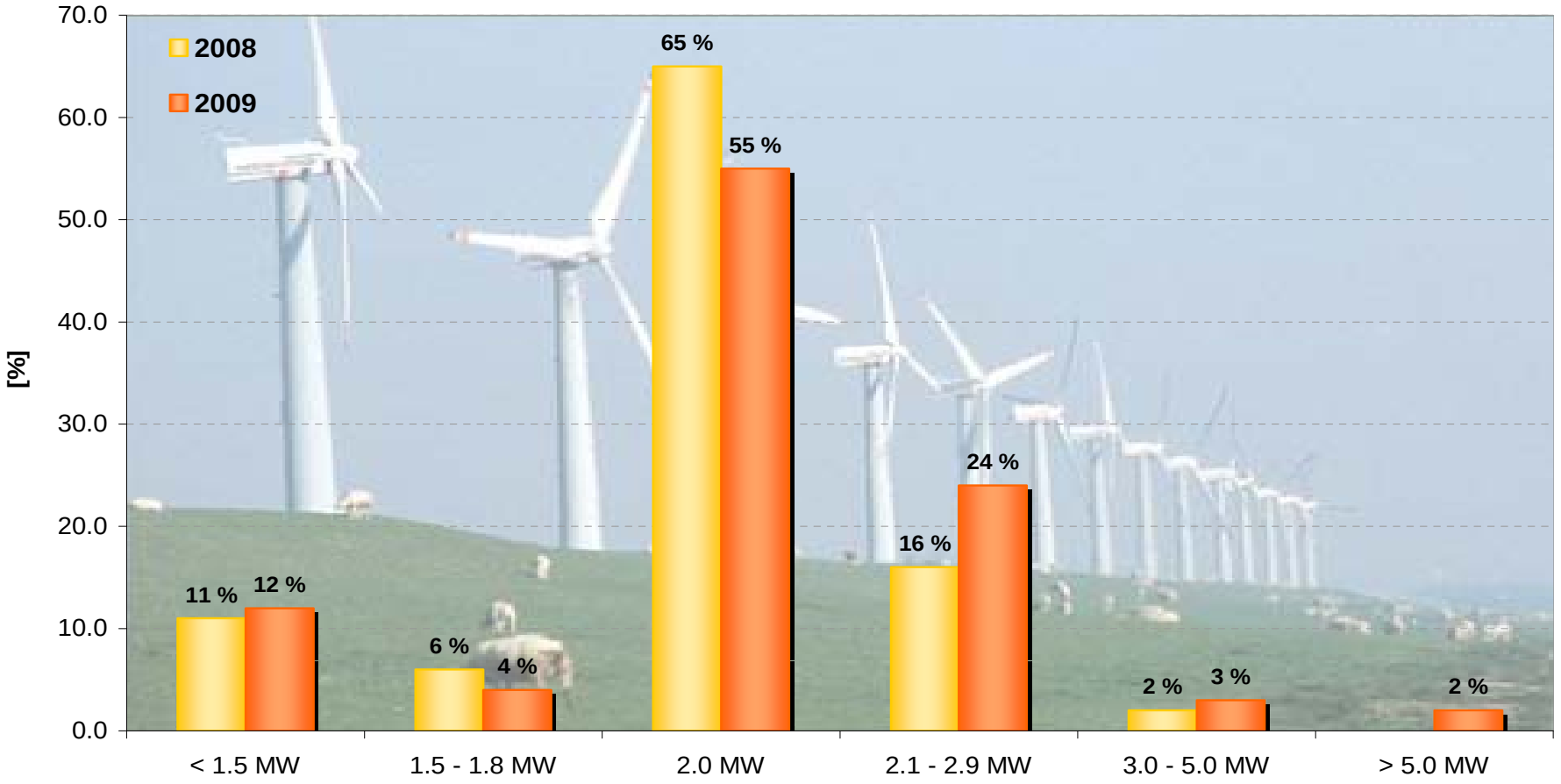
Regional distribution of installed wind energy capacity in Germany 2009



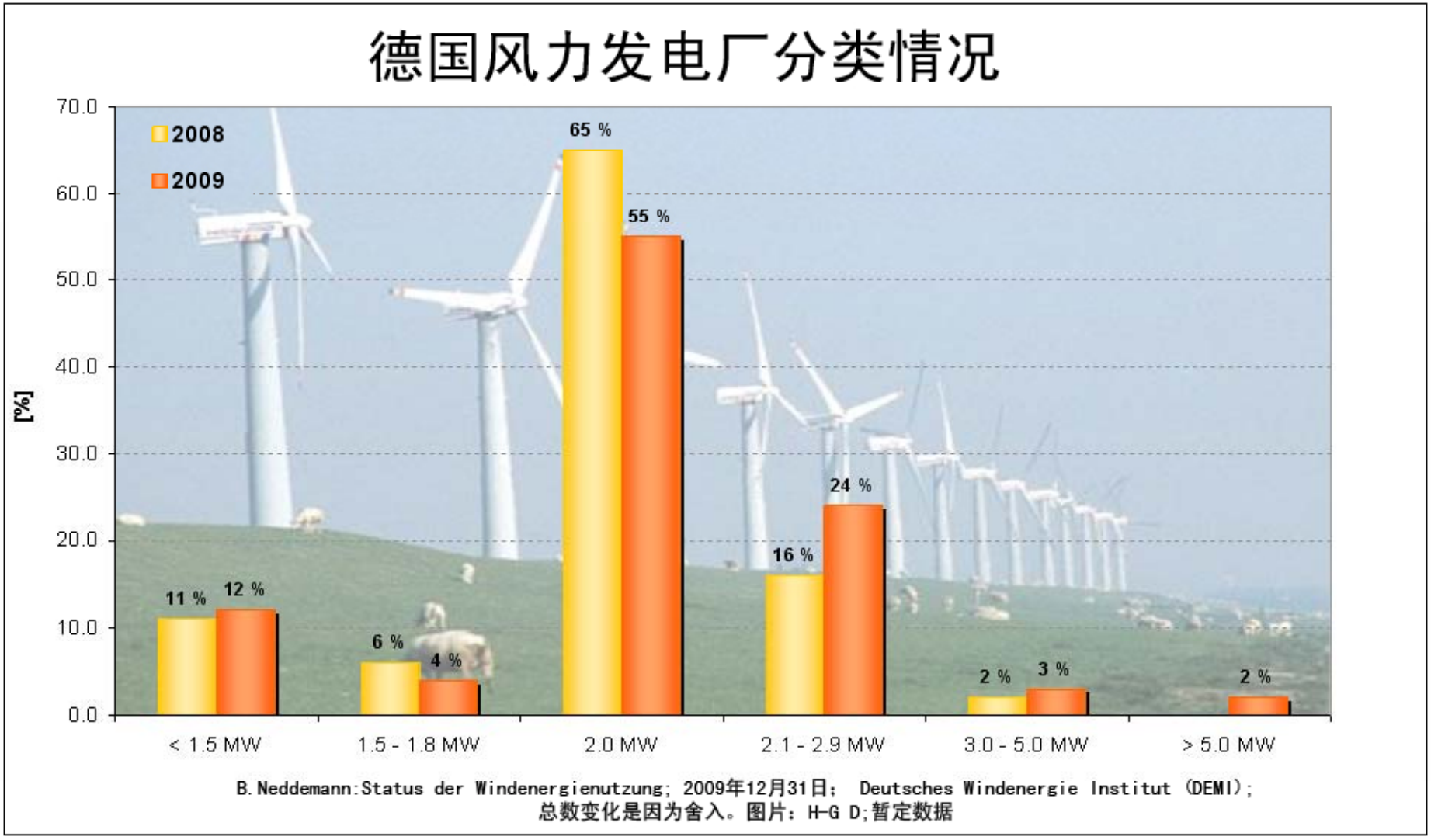
Source: B. Neddermann: Wind Energy Use in Germany; Version: 31.12.2009 ; Deutsches Windenergie-Institut (DEWI); Image: BMU / Thomas Härtrich; all figures provisional


2009年德国风电装机容量地区分布图
[MW]
[MW]
450
400
350
300
250
200
150
100
50
0
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
2009年：
21, 164家风力发电厂，
累计装机容量达25, 777MW，
新增装机容量为1, 917MW
6,407
4,170
3,354
2,859
2,832
1,498
1,301
901
717
534
467
452
95
83
46
2
60
下萨克森
勃兰登堡
萨克森-安哈尔特
什勒斯威格-霍斯坦
北莱茵-威斯特伐利亚
梅克伦西美拉尼亚
莱茵兰巴拉丁
萨克森-安哈尔特
图林根
黑森
巴伐利亚
巴登-符腾堡
不莱梅
萨尔
汉堡
柏林
北海
2009年新增装机容量[MW]
累计装机容量[MW]
来源：B. Neddemann: Wind Energy Use in Germany - Status; 2009年12月31日； Deutsches Windenergie Institut (DEMI)；图片：BUM/Thomas Hartrich;暂定数据

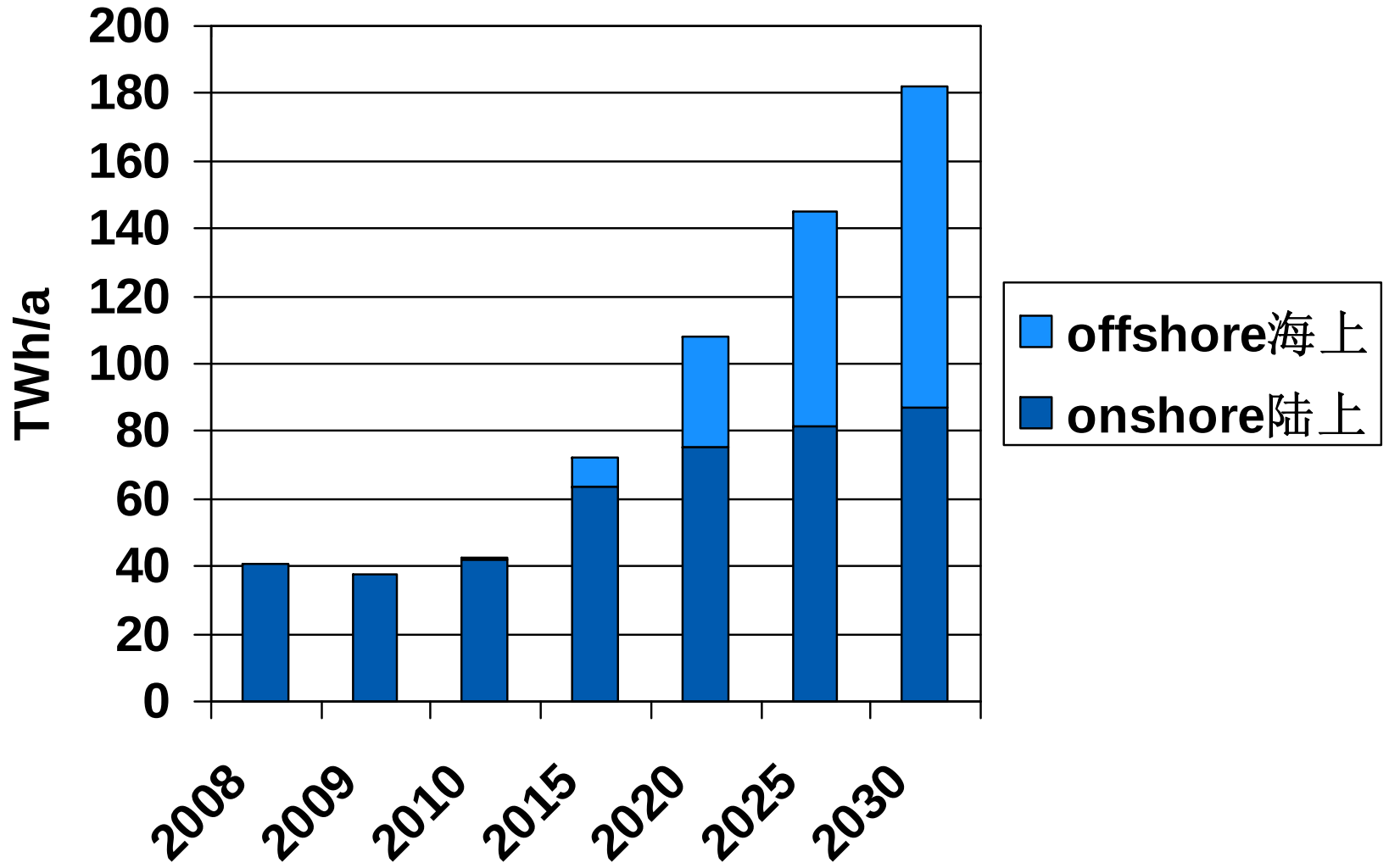
Classifications of windpower plants in Germany



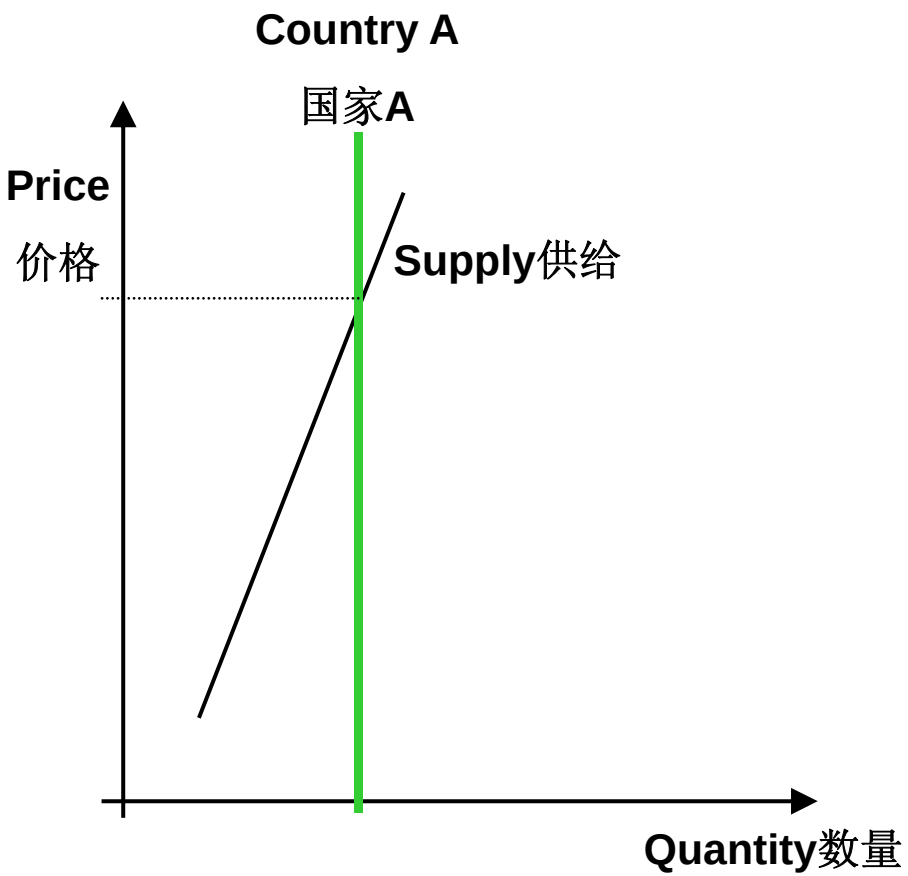
Source: B. Neddermann: Status der Windenergienutzung; Stand: 31.12.2009; Deutsches Windenergie-Institut (DEWI); deviations in the totals are due to rounding; Image: H.-G. Oed; all figures provisional

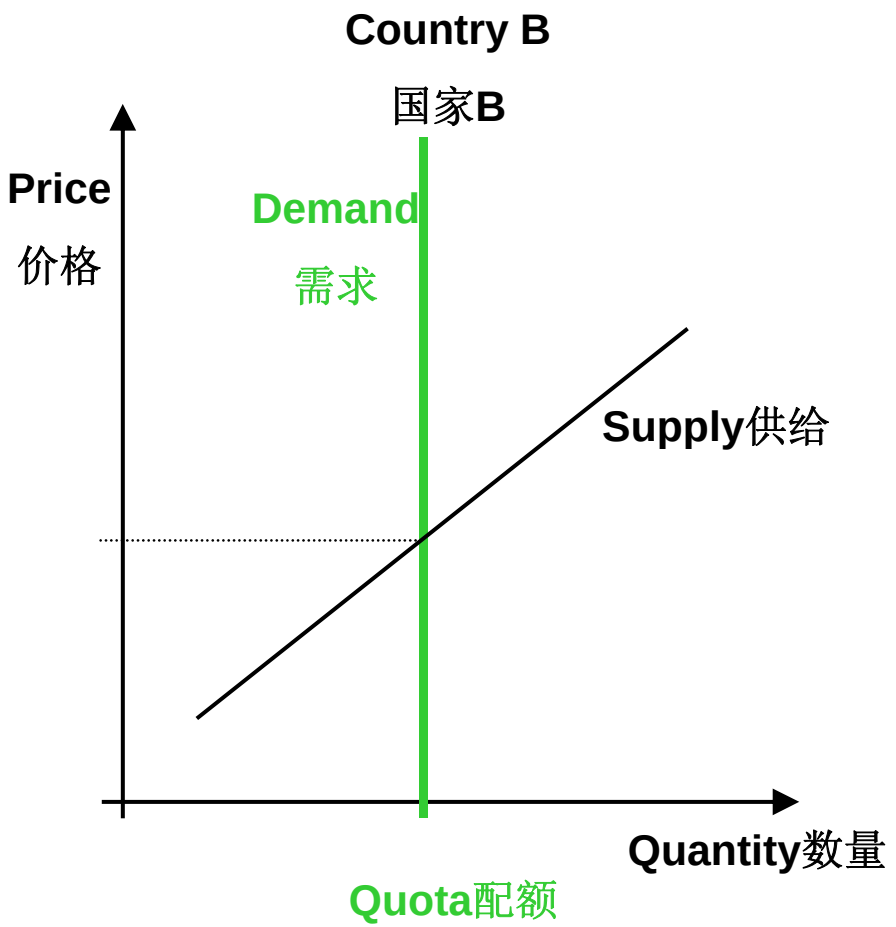

德国风力发电厂分类情况
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
[%]
2008
2009
11 %
12 %
6 %
4 %
65 %
55 %
16 %
24 %
2 %
3 %
2 %
< 1.5 MW
1.5 - 1.8 MW
2.0 MW
2.1 - 2.9 MW
3.0 - 5.0 MW
> 5.0 MW
B. Neddemann:Status der Windenergienutzung; 2009年12月31日; Deutsches Windenergie Institut (DEMI);
总数变化是因为舍入。图片: H-G D;暂定数据

Future development of wind power according to the German government
德国政府未来风电发展预测



MPS vs. RPS: RPS features II – trade
MPS和RPS对比: RPS 特点II – 交易





MPS vs. RPS: RPS features II – trade
MPS和RPS对比: RPS 特点II – 交易