Das EEG als Erfolgsmodell – Ein Blick nach Europa und Deutschland

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Germany Trade & Invest

GERMANY
TRADE & INVEST

Agenda

I. The role of *Germany Trade & Invest*

II. Fördersysteme Erneuerbare Energien in der Europäischen Union

III. Neue Wege der EE-Förderung

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The foreign trade and inward investment promotion agency of the Federal Republic of Germany

German Parliament
Resolutions for Founding/Financing

Federal Government

BMWi - Shareholder	BMI
Bundesministerium für Wirtschaft und Technologie	Der Beauftragte der Bundesregierung für die Neuen Bundesländer

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Company Tasks

Investment Attraction	Export Promotion	Location Promotion

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Two Headquarters in Germany - 48 Locations Worldwide

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Drei vorherrschende Förderregime

Einspeisevergütung/Feed-in tariffs

- Staatlich garantierte Vergütung von eingespeisten Strom aus EE, Ziel: Marktintegration
- Meist werden FiTs über die Zeit herabgesetzt → Degression
- 20 Länder in Europa mit einer Einspeisevergütung, weltweit 65 Länder

Quotenregelung

- Verpflichtende Quoten EE für Energieversorger
- Betreiber erhalten Zertifikate für EE → Zertifikate werden gehandelt
- Grünstromzertifikate-Markt auch ohne verpflichtende Quote
- 18 Länder weltweit

Prämiensystem

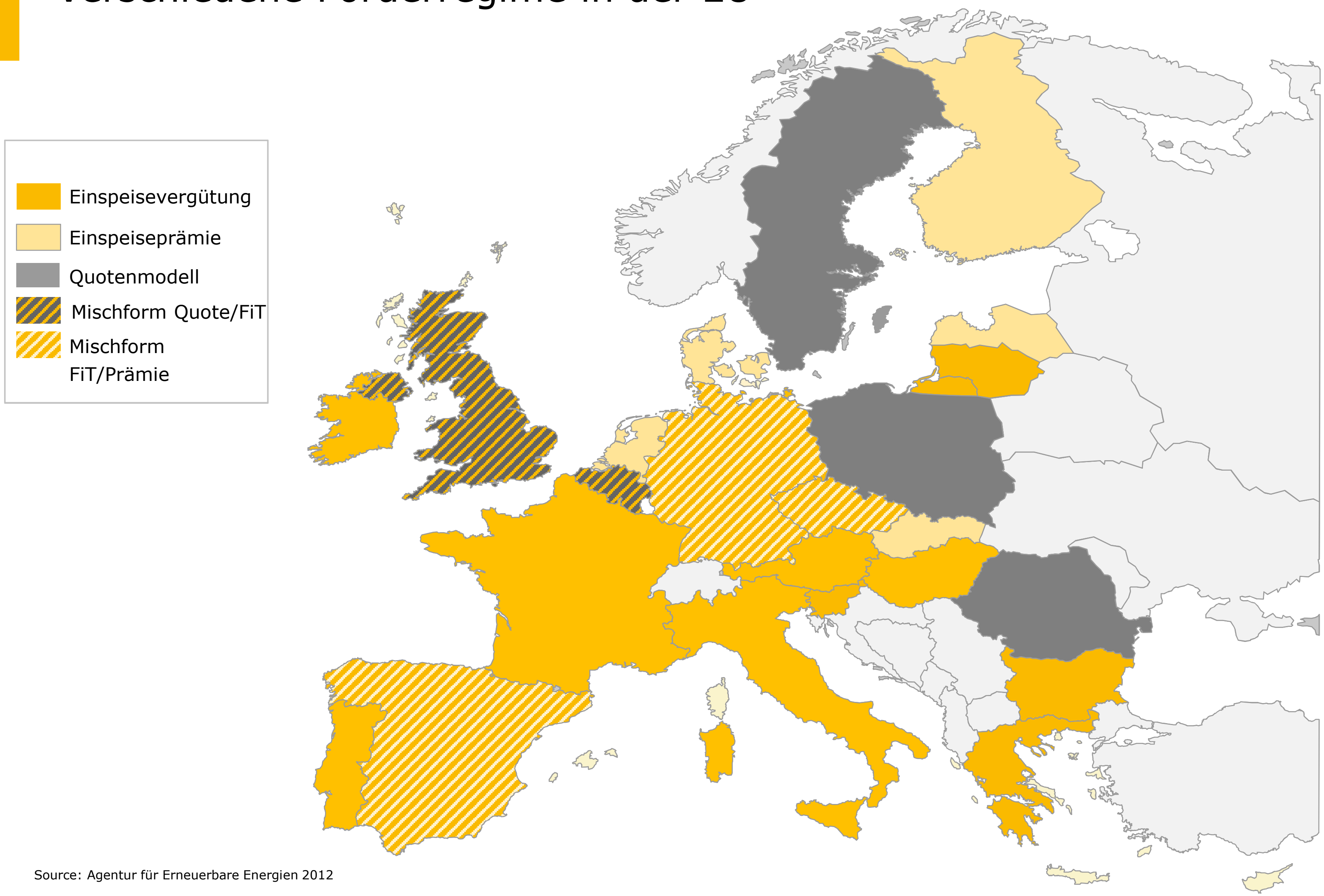
- Marktpreis plus Prämie
- Stärker nachfrageorientiertes Einspeisen

Investitionszuschüsse/Steuervergünstigungen

- In Europa in Zypern, Norwegen, Finnland
- In den USA gibt es die *Production Tax Credits* (PTC) und *Investment Tax Credits* (ITC)

→ PTC: Steuerfreibetrag v. 2,2 ct kW/h   ITC: 30% der Investitionskosten abschreibbar

Verschiedene Förderregime in der EU



Source: Agentur für Erneuerbare Energien 2012

Fördersysteme Erneuerbare Energien in der EU

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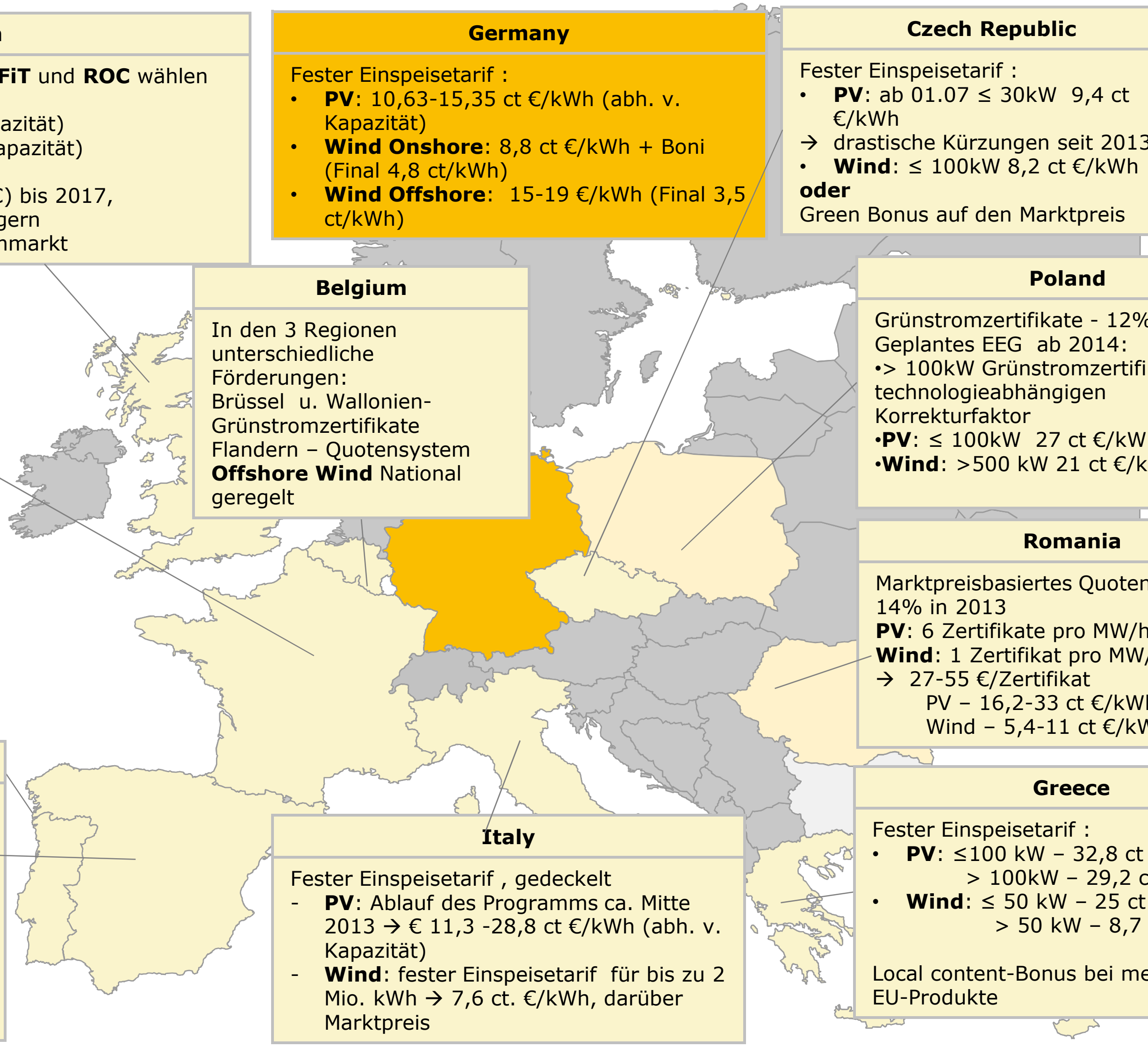
Europäische Einspeisetarife und Quoten 2013



United Kingdom

- Anlagen mit 50 kW-5 MW können zw. **FiT** und **ROC** wählen

FiT:

- PV: 7,9-18,03 ct €/kWh (abh. v. Kapazität)
- Wind: 4,8-76,1 ct €/kWh (abh. v. Kapazität)

ROC:
marktpreisbasiertes Quotensystem (ROC) bis 2017,
2013/2014: 20,6% Vorgabe von Versorgern
ROC: ~ 4,65 ct €/kWh **+** Preis am Strommarkt

France

Fester Einspeisetarif

- **PV**: 7,96-30,77 ct € kW/h (abh. v. Kapazität)
- **Wind**: 8,2 ct €/kWh for 10 years (Offshore 13 ct€/kWh)

Portugal

Fester Einspeisetarif , basierend auf Formel

- **PV**: ~ 25,7 ct €kW/h
- **Wind**: ~ 7,4-7,5 ct kW/h

Spain

Fester Einspeisetarif → **zurzeit ausser Kraft**

- **PV:** 12,17– 26,62 ct €/kWh (abh. v. Standort u. Kapazität) für 20 Jahre
- **Wind:** 8,12 ct €/kWh für 20 Jahre

oder
Green Bonus zusätzlich zum Marktpreis

Germany

Fester Einspeisetarif :

- **PV**: 10,63-15,35 ct €/kWh (abh. v. Kapazität)
- **Wind Onshore**: 8,8 ct €/kWh + Boni (Final 4,8 ct/kWh)
- **Wind Offshore**: 15-19 €/kWh (Final 3,5 ct/kWh)

Belgium

In den 3 Regionen unterschiedliche Förderungen:
Brüssel u. Wallonien- Grünstromzertifikate
Flandern – Quotensystem
Offshore Wind National geregelt

Italy

Fester Einspeisetarif , gedeckelt

- **PV**: Ablauf des Programms ca. Mitte 2013 → € 11,3 -28,8 ct €/kWh (abh. v. Kapazität)
- **Wind**: fester Einspeisetarif für bis zu 2 Mio. kWh → 7,6 ct. €/kWh, darüber Marktpreis

Czech Republic

Fester Einspeisetarif :

- **PV**: ab 01.07 ≤ 30kW 9,4 ct €/kWh

→ drastische Kürzungen seit 2013

- **Wind**: ≤ 100kW 8,2 ct €/kWh

oder
Green Bonus auf den Marktpreis

Poland

Grünstromzertifikate - 12% in 2013
Geplantes EEG ab 2014:
•> 100kW Grünstromzertifikate mit technologieabhängigen Korrekturfaktor
•**PV**: ≤ 100kW 27 ct €/kWh
•**Wind**: >500 kW 21 ct €/kWh

Romania

Marktpreisbasiertes Quotensystem - 14% in 2013
PV: 6 Zertifikate pro MW/h
Wind: 1 Zertifikat pro MW/h
→ 27-55 €/Zertifikat
PV – 16,2-33 ct €/kWh
Wind – 5,4-11 ct €/kWh

Greece

Fester Einspeisetarif :

- **PV**: ≤100 kW – 32,8 ct € kW/h
  > 100kW – 29,2 ct kW/h
- **Wind**: ≤ 50 kW – 25 ct € kW/h
  > 50 kW – 8,7 ct € kW/h

Local content-Bonus bei mehr als 70% EU-Produkte

Sources: RES Legal 2013

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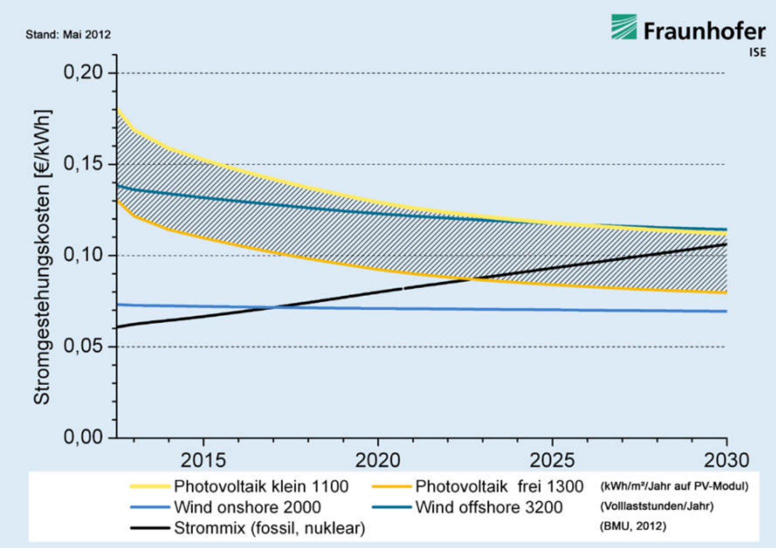
Grid Parity

Stromgestehungskosten PV und Wind stark gesunken



Onshore Windenergie kostengünstigste EE

→ durchschnittliche Standorte mit 2000 Volllaststunden LCoE 6-8 CT EUR/kWh

→ Grid Parity voraussichtlich in 2016

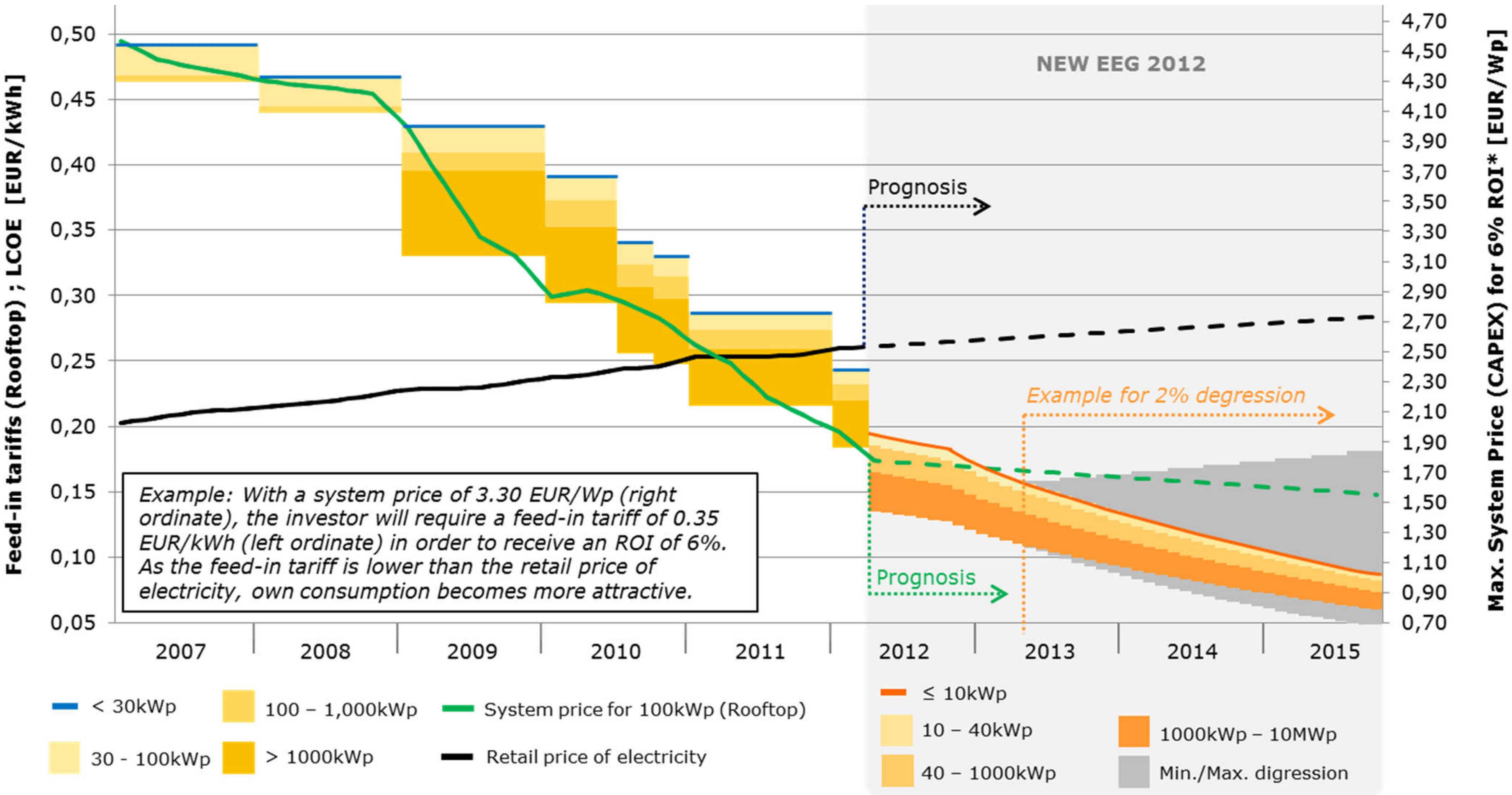
→ Standorte mit mehr als 2000 Volllaststunden bereits Grid Parity

PV Grid Parity für Eigenverbrauch bereits erreicht

→ Demand Side Management und Speicher attraktiv

The German PV Market reached Grid-Parity in 2011

"… PV can develop within a few years from the most expensive to one of the cheapest types of power generation from renewables." (BMU 2011)



* Model calculation for rooftop systems >30 kWp, <100 kWp; based on 802 kWh/kWp (Frankfurt/Main), 100% financing, 6% interest rate, 20 year term, 2% p.a. O&M costs

Sources: Feed-in Tariffs: BMU 2012; System Prices: BSW 2012; System Price Forecast: EPIA 2011; Model Calculation: Deutsche Bank 2010; Electricity Prices 2007-2011: Eurostat 2012 [Private households with annual consumption >2500 kWh, <5000 kWh]; Electricity Price Forecast 2011-2015: Prognos 2012 [Price Forecast 2016: 28,20 €ct./kWh]

The German PV Market: Installations per Segment

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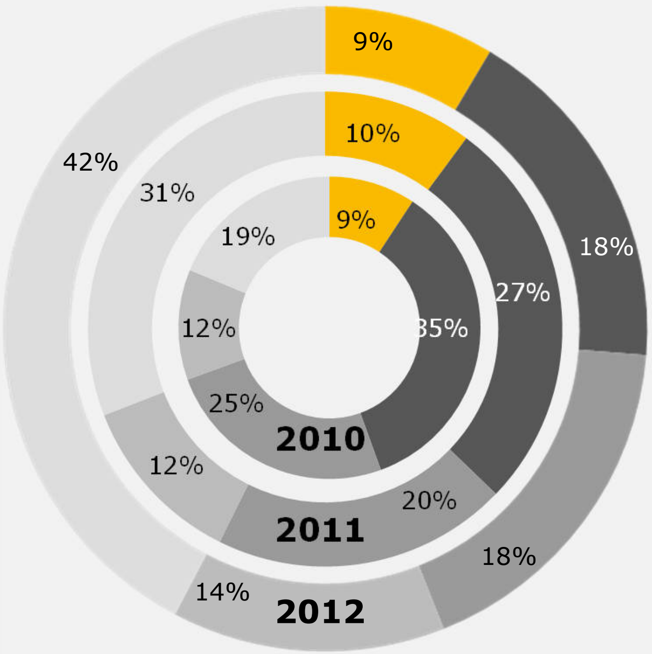
Own-consumption segments <5 kWp (priv.) and >100 kWp (com.) rising

Newly installed capacity



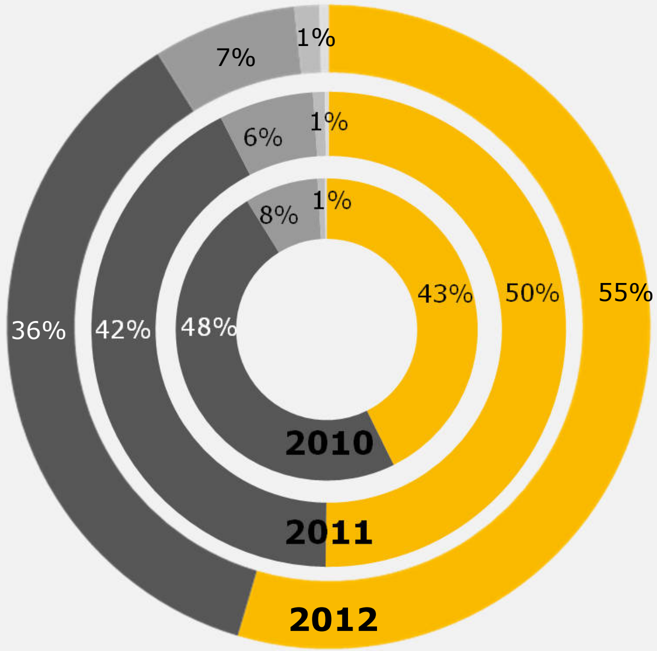
TOTAL capacity:

2012:
7.6 GWp

2011:
7.5 GWp

2010:
7.4 GWp

Number of systems newly installed



TOTAL number of systems:

2012:
184.298

2011:
238,202

2010:
250,043

Under 10kWp

10 - 50kWp

50 - 250kWp

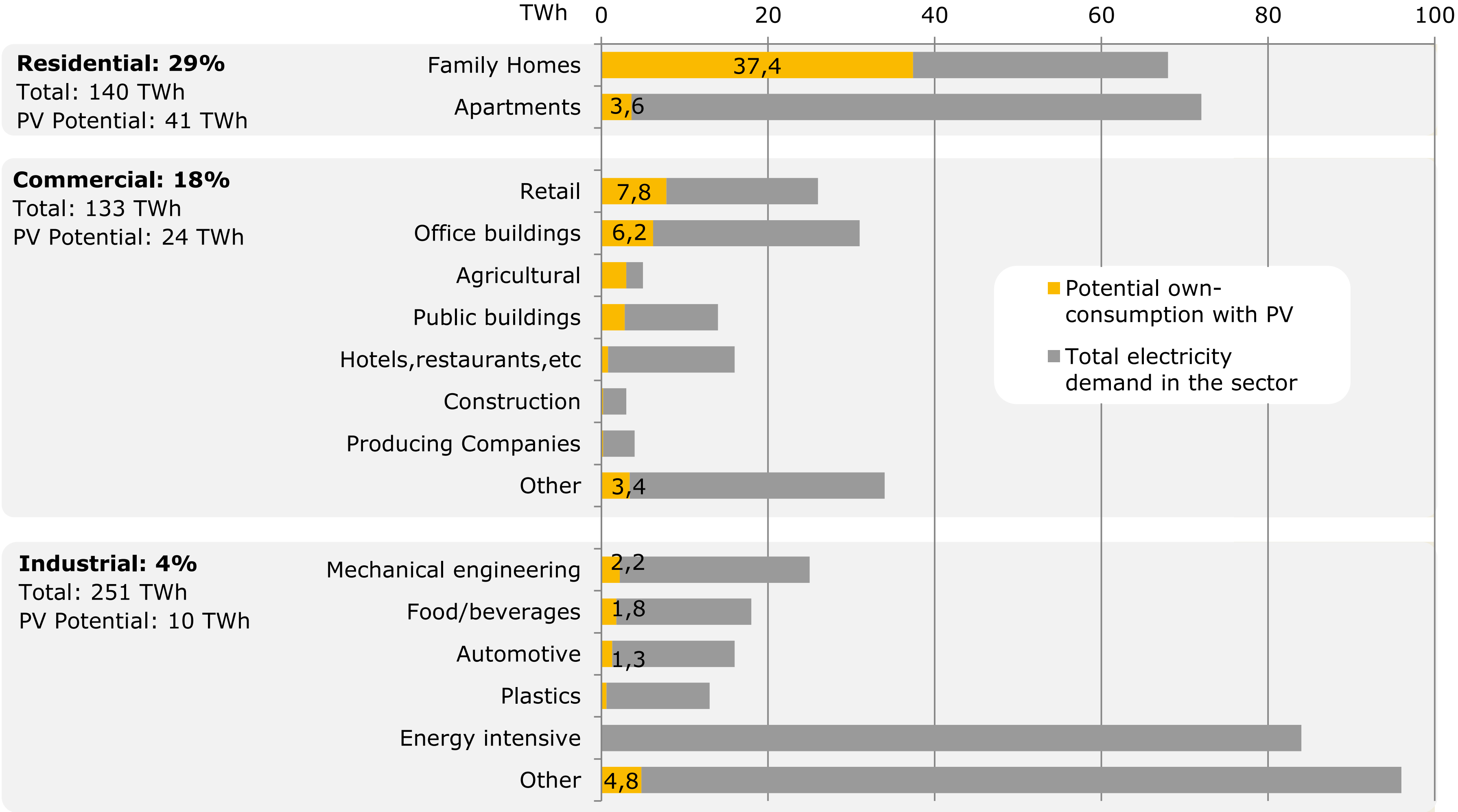
250kWp – 1MWp

Over 1MWp

Sources: Federal Network Agency 2012; Images: Solarwatt, BP, Geosol; BMU 2011

14% of total electricity demand for own-consumption

76 TWh out of 542 TWh total German electricity demand could be met by self-produced PV power (→ equals about 80 GWp of installed PV capacity):



Source: UBS 2013

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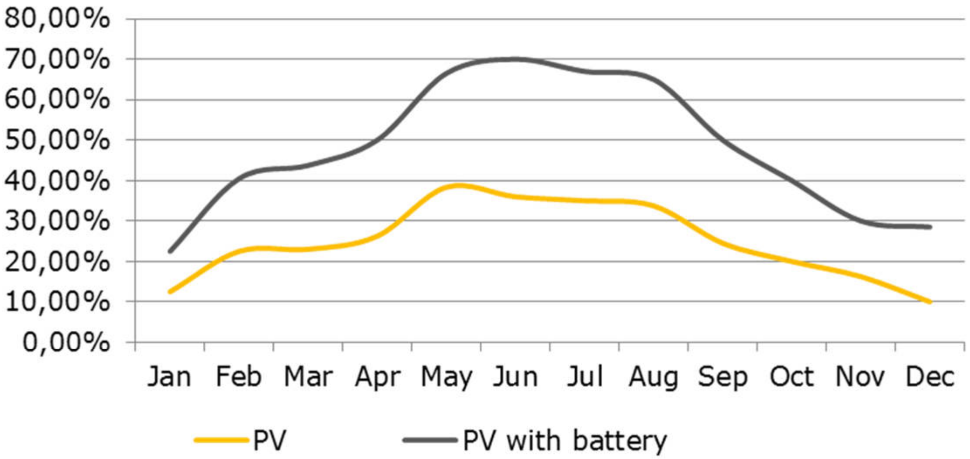
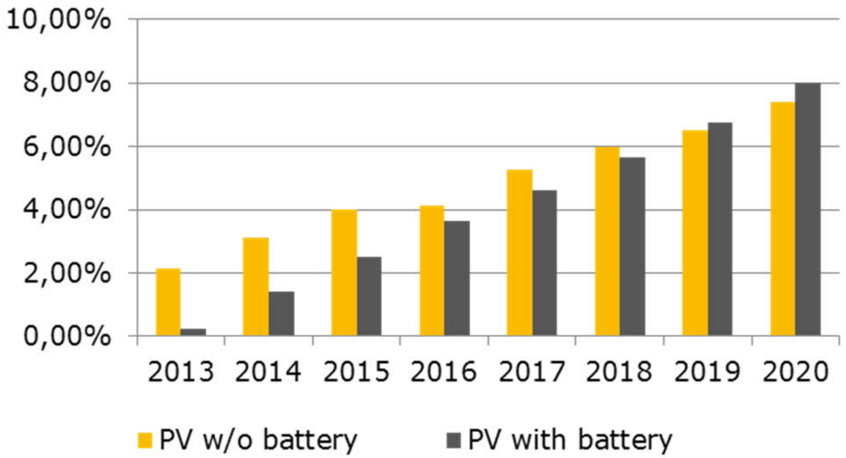
Lead Acid already cost competitive; Enormous cost reduction potential for Li-ion will bring down storage costs

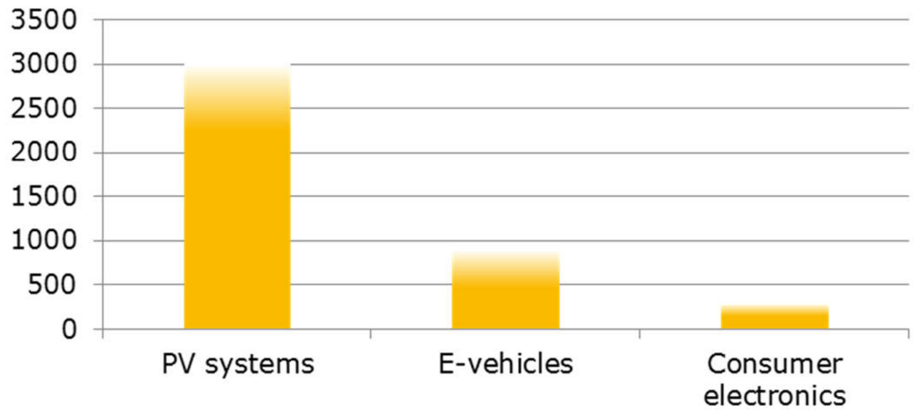


- → More than 43 GWp of unsusidized solar to be installed until 2020
- → Own-consumption w/o battery is about 30% of annual consumption
- → Double own-consumption to 60% with a 2 kWh battery system

IRRs of unsubsidized solar systems in Southern Germany



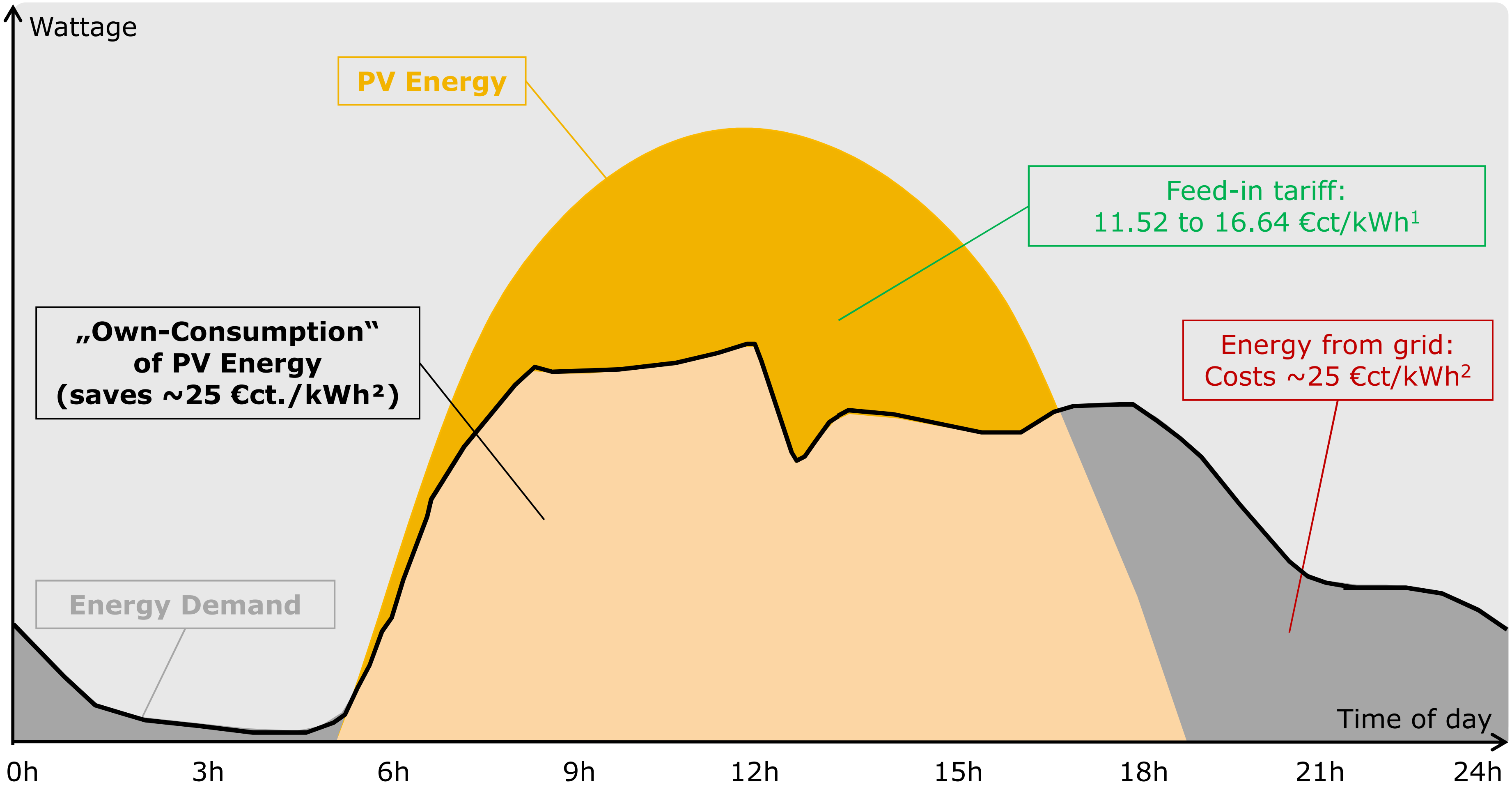
Costs of Li-ion battery packs in different applications (EUR/kWh)



Source: UBS AG, 2013

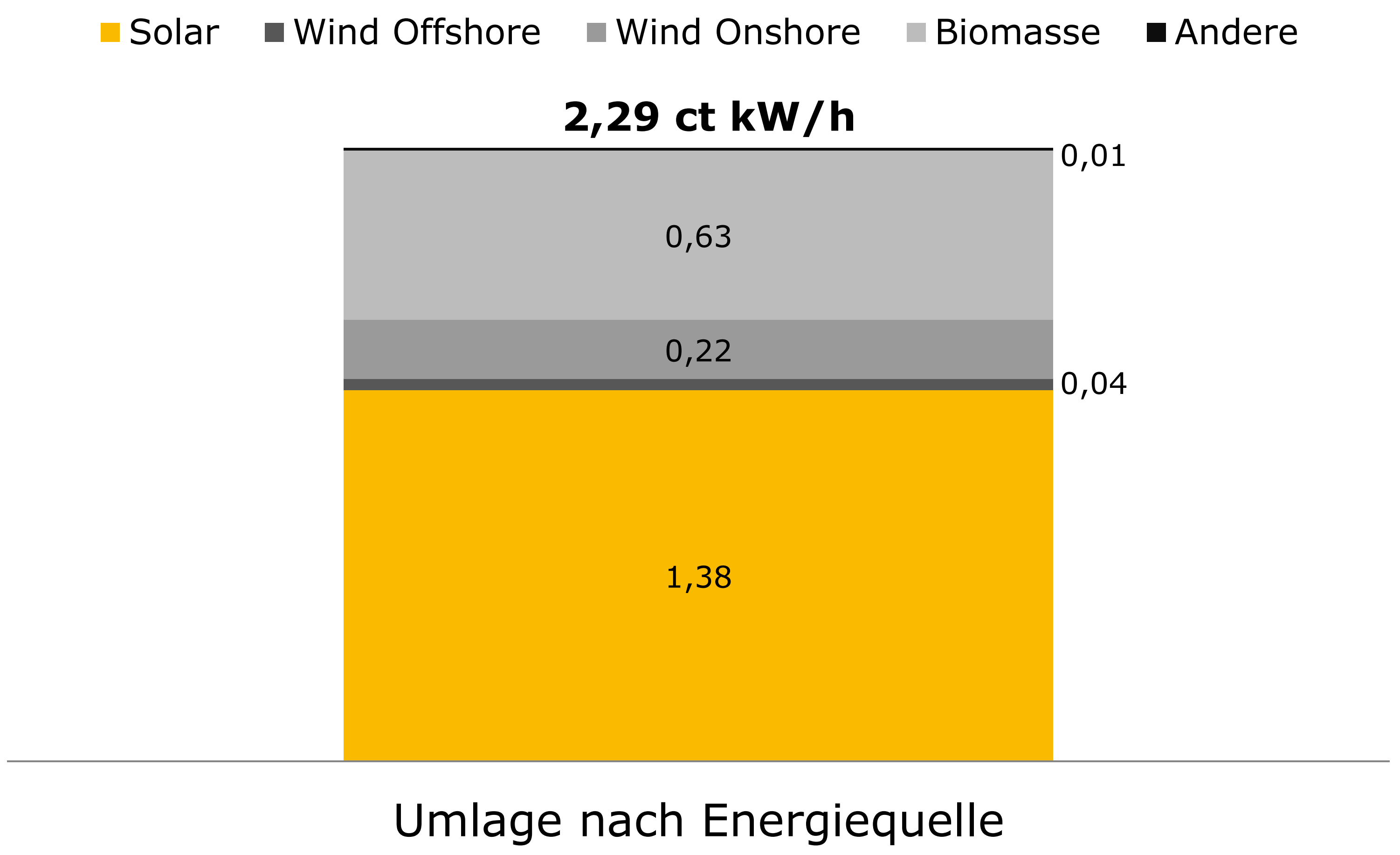
The Principle of „Own-Consumption"

Major income through **cost savings on electricity from the grid**,
Feed-in tariff only for surplus electricity:



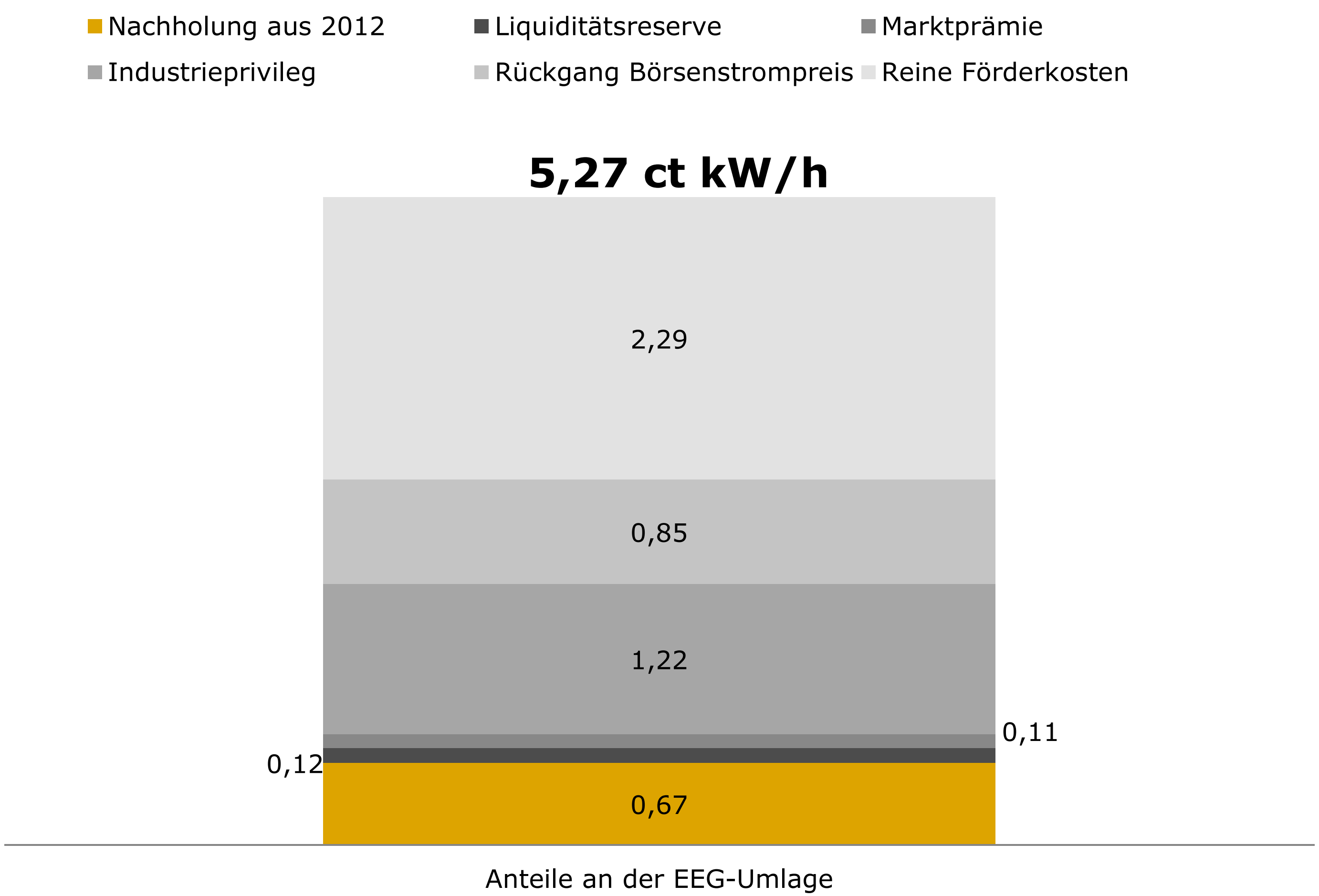
Notes: 1) Depending on size /type of system; Min. to max . tariff in 2013 of new EEG 2012 2) Depending on electricity retail price of respective utility company.

Bestandteile der EEG-Umlage 2013



Source: BEE e.V. 2012

Bestandteil der EEG-Umlage 2013



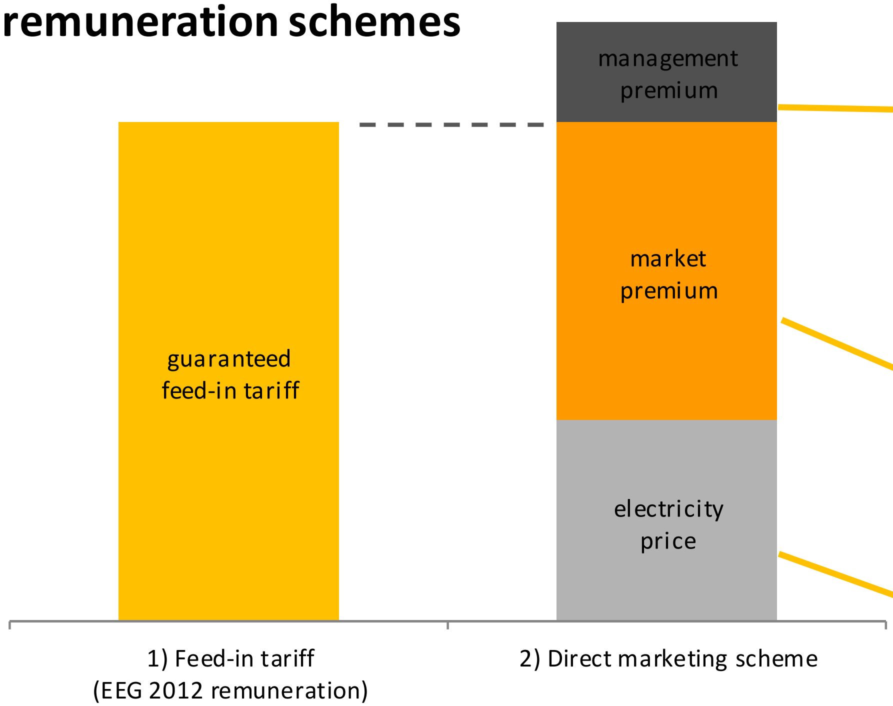
Source: BEE e.V. 2012

The Optional Market Premium

To improve market and system integration, incentives for direct selling of power from renewable energy have been established.

Operators of renewable energy facilities have two options for remuneration:
1) Feed-in tariff remuneration or 2) Direct sale under the direct marketing scheme

Elements of available remuneration schemes



Management Premium
To cover the cost of participating in trading and deviations from forecasting. Paid as a lump sum:
Year 2013: 0,65 €ct/kWh | Year 2014: 0.45 €ct/kWh
From 2015: 0.30 €ct/kWh
A higher premium is paid if plants are equipped with remote control technique.
Additional profits are possible through exact feed-in calculation and management.

Market Premium
Difference between electricity price and feed-in tariff (EEG 2012 remuneration). If a supplier sells its electricity at a price higher than the average price, it can make an additional profit.

Electricity Price
For calculation, reference value is used - based on the average monthly electricity price reached at the electricity market (EEX).

Source: Renewable Energies Sources Act (EEG) 2012; Managementprämienverordnung MaPrV 29.08.2012

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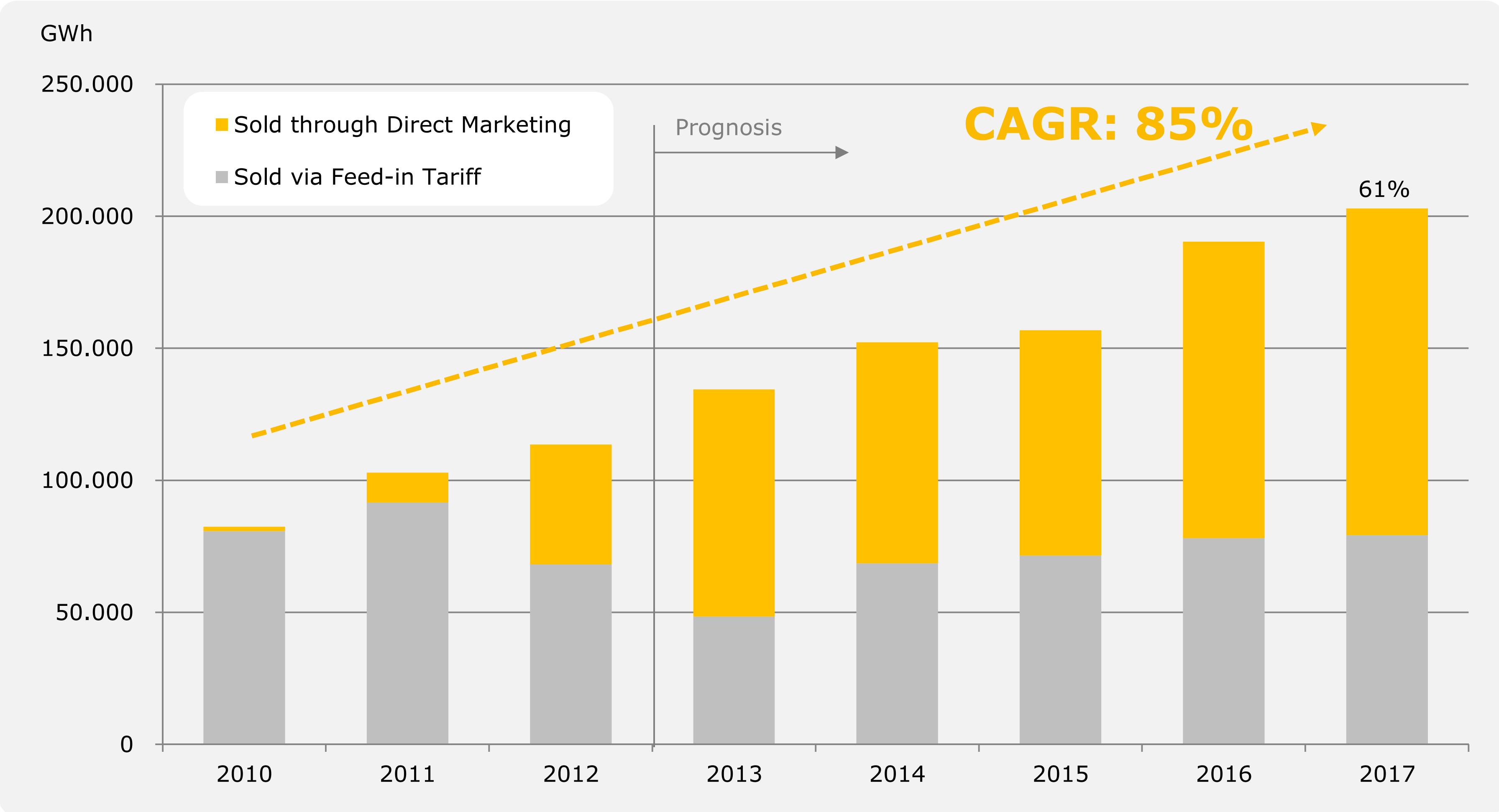
More and more renewable energy sold through Direct Marketing services enabling new business models for service providers and plant operators



Source: BDEW 2013

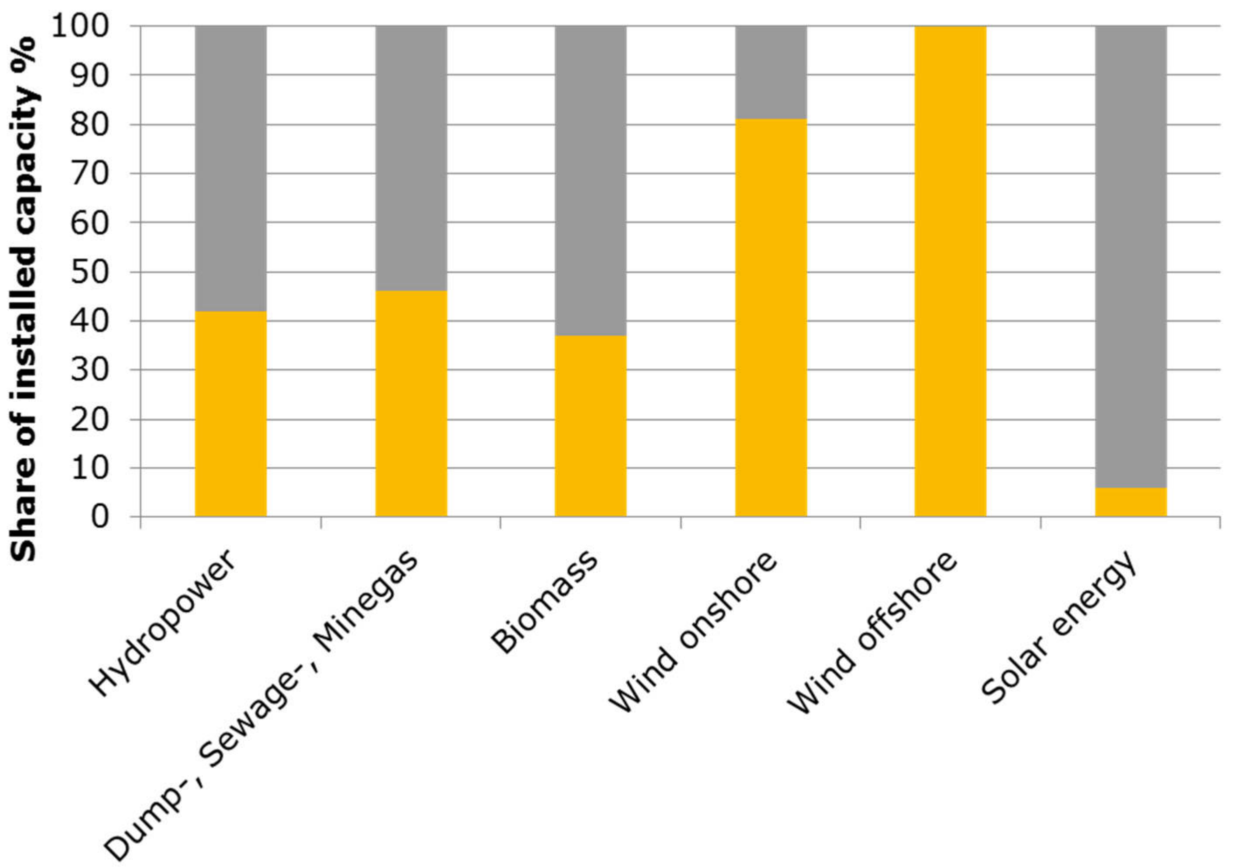
Successful implementation of the market premium in 2012

Nominal capacity

Wind
  Onshore: 23409 MW
  Offshore: 308 MW
Solar: 1961 MW
Biomass: 1836 MW
Hydro: 445 MW

Overall: 28002 MW

Share of installed capacity in direct marketing (November 2012)



Source: Own draft according to Clearingstelle EEG/KWK-G 2012

Vielen Dank für Ihre Aufmerksamkeit!

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