



Federal Ministry
for Economic Affairs
and Energy




Overview of the German power market architecture II

The Erneuerbare Energien Gesetz (EEG) and its role in the deployment of renewable energy assets


Manuel Battaglia, dena

Renewable energy policy measures tackle all energy sectors



Electricity

- Priority access and dispatch for renewable energy
- Support scheme for renewable energy production
- Low interest loans for renewable energy investments



Heating

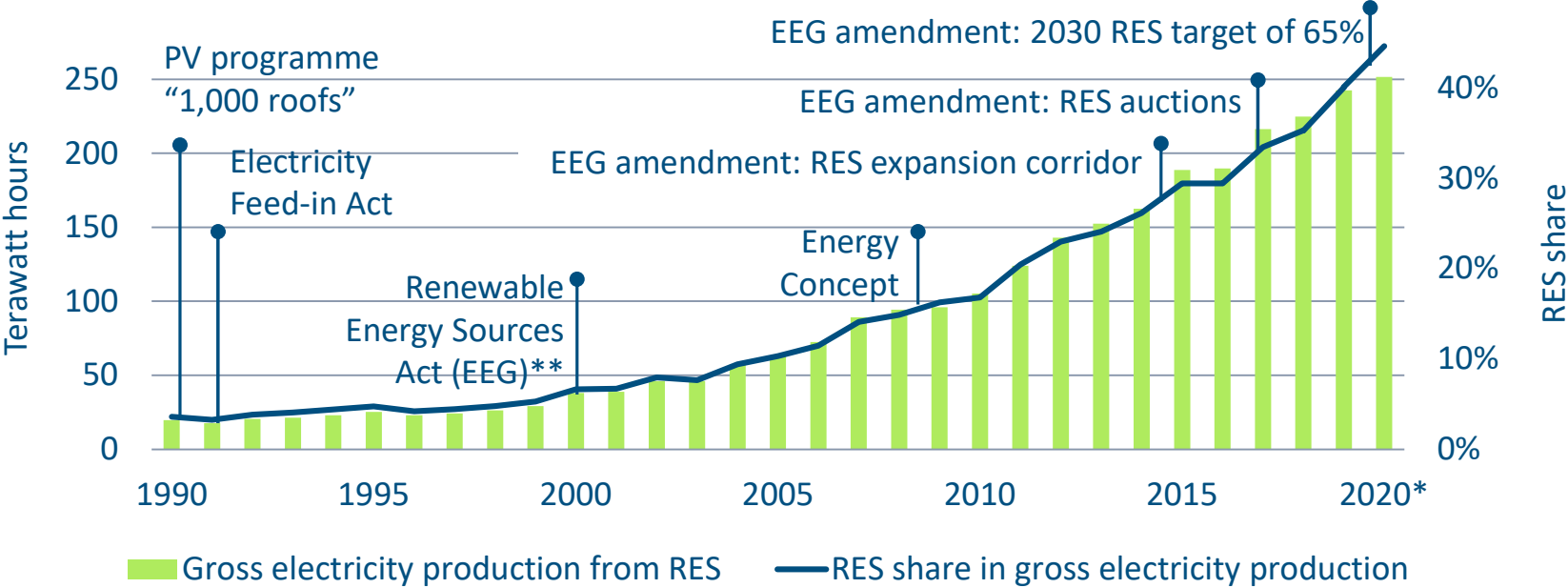
- Renewable Energies Heating Act with requirements for new buildings
- Financial support through Market Incentive Programme



Transport

- Emission reduction quota for biofuels
- Tax incentive for natural gas
- Tax exemptions for electric and hydrogen vehicles

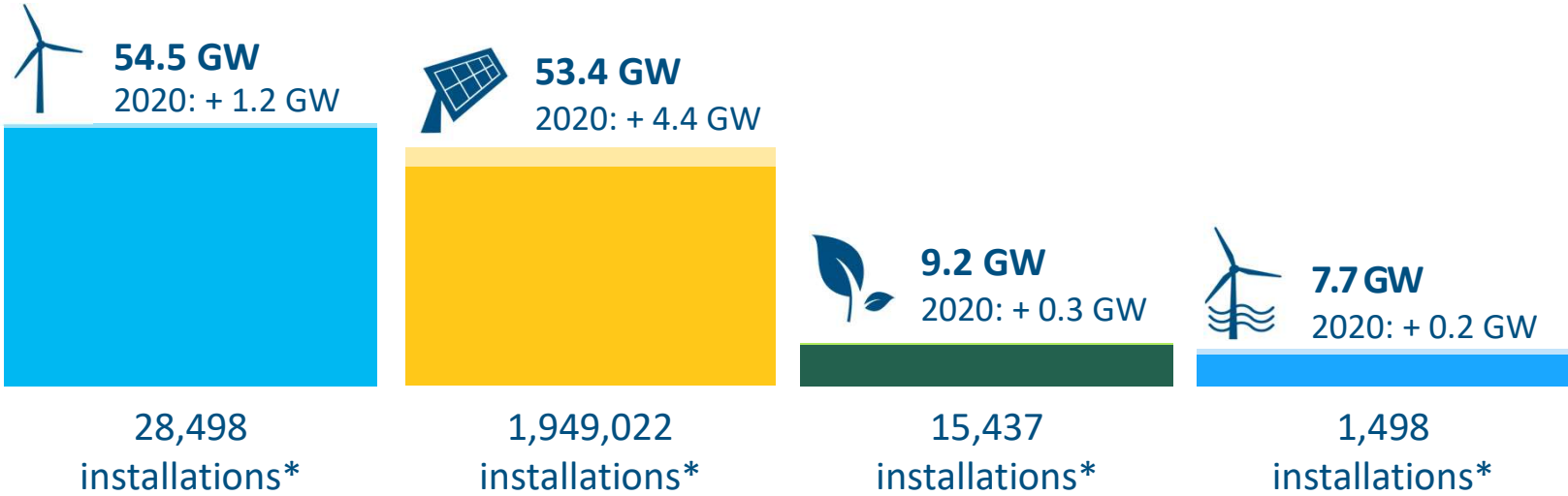
Continuous policy development has fostered the deployment of renewables in Germany



* preliminary data
** EEG amendments in 2004, 2009 and 2012 are not depicted.

Capacities of renewables are growing steadily

Installed capacities of Germany's most important renewable energy sources in 2020

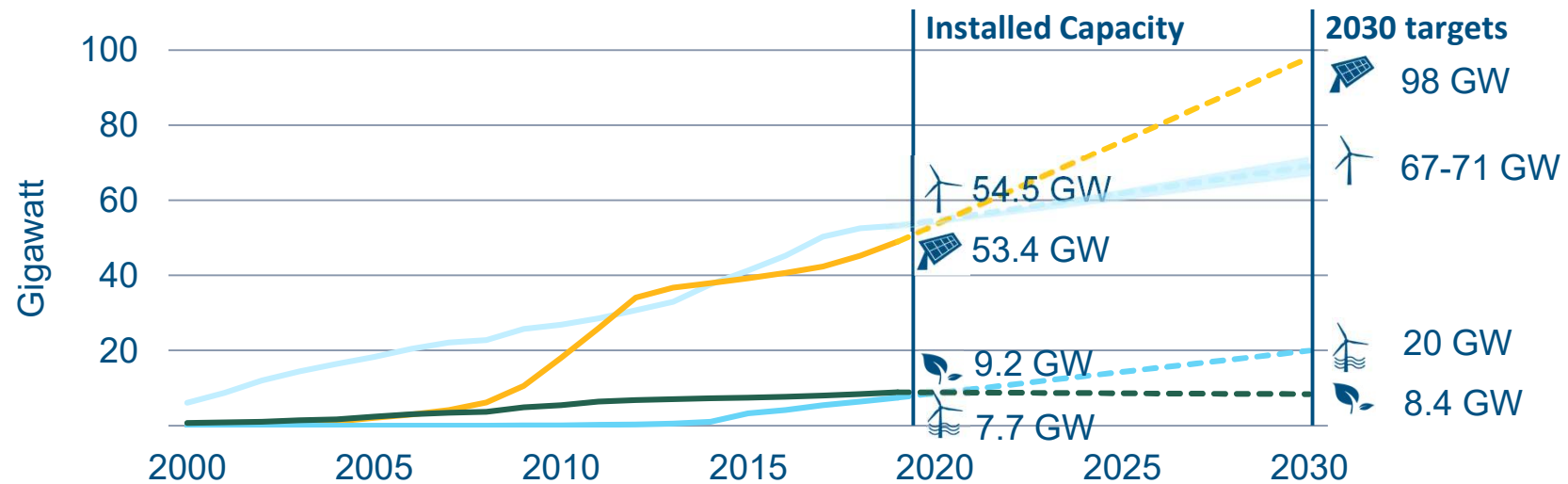


Source: Guidehouse 2021 based on BMWi 2020, BNetzA & BKartA 2021 & Agora Energiewende 2021

* Number of installations eligible for EEG levy payments in June 2020

Technology-specific capacity expansion targets make deployment of renewables plannable

Renewable energy installed capacity 2000-2020 and capacity targets for 2030 per technology



Source: Guidehouse 2021 based on BMWi 2020, BReg 2019, EnSaG 2018, EEG 2017, BNetzA 2019 & Agora Energiewende 2021

The EEG stipulates measures to deploy renewable electricity in a plannable, efficient & secure way



Guaranteed grid access & priority dispatch	Technology-specific capacity addition corridor	Support payments: feed-in premium via auctions	EEG surcharge to offset support costs	Regular monitoring and evaluation
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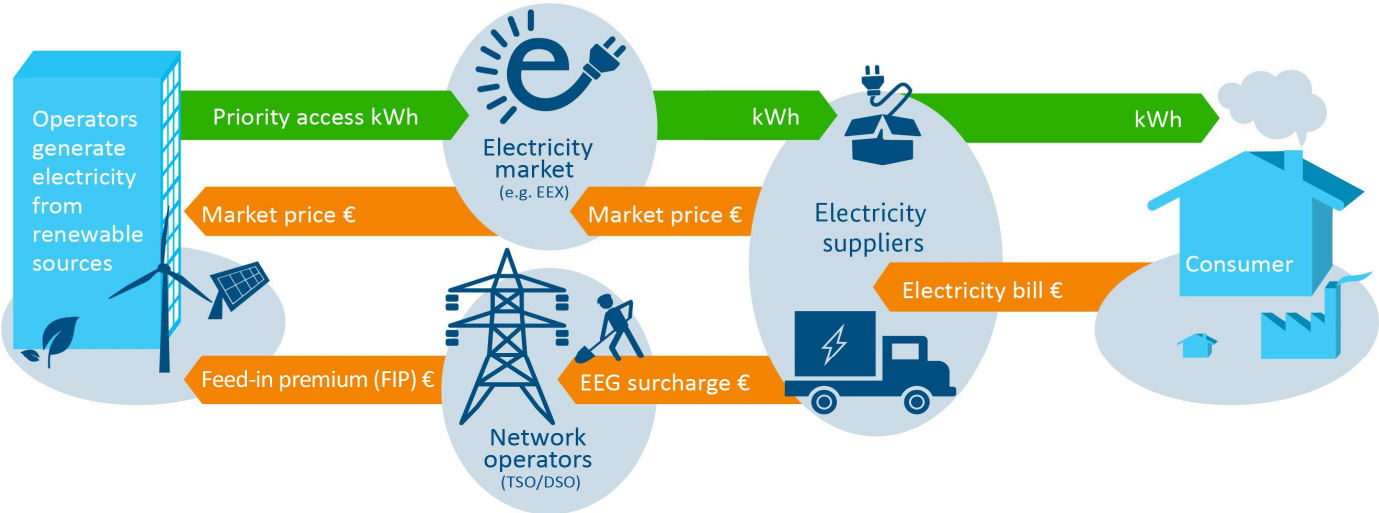
Source: Guidehouse 2016 based on BMWi 2016

The 2017 Renewable Energy Sources Act (EEG) introduced auctions for new installations



Priority access and feed-in premiums incentivize the market integration of renewables

Remuneration of electricity generation under Renewable Energy Sources Act (EEG)









Source: Guidehouse based on BMWi & Edelman.ergo 2016

Support costs for solar PV declined significantly since the introduction of auctions in 2015



Source: Guidehouse & Edelman 2019 based on BNetzA 2019

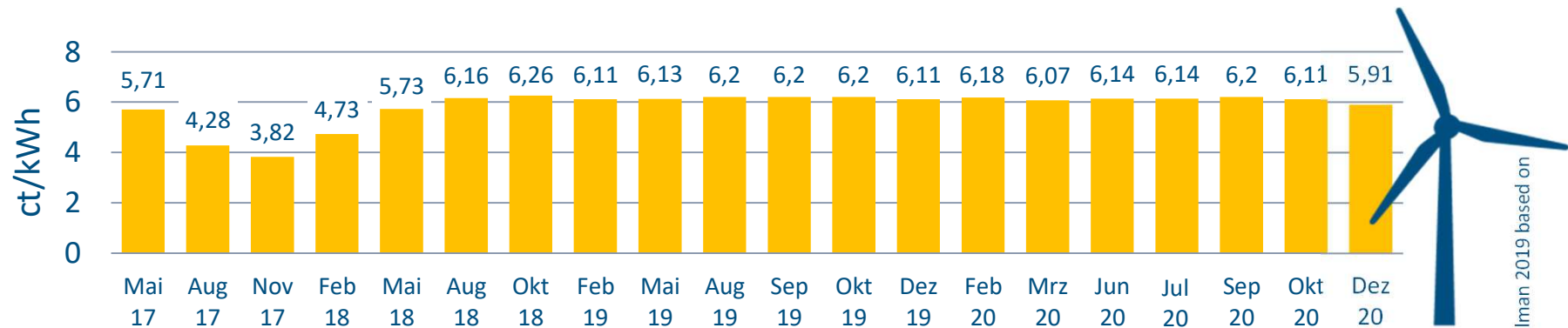
Pre-selected offshore wind areas to be auctioned from 2021 onwards

Site selection		By the Federal Maritime and Hydrographic Agency (BSH)
Auction volume		~1 GW annually (2021-2023), ~3 GW (2024), ~4 GW (2025)
Commissioning		From 2026 onwards
Guarantees		€200/kW
Bid award		Lowest bid offered; if multiple zero-subsidy bids by lot
Revenues		a.) electricity market sales + b.) feed-in premium



Source: Guidehouse 2020 based on Windenergie auf See Gesetz 2020, EEG 2017, BSH 2020

The new EEG shall keep prices low and prevent undersubscribed auctions for onshore wind



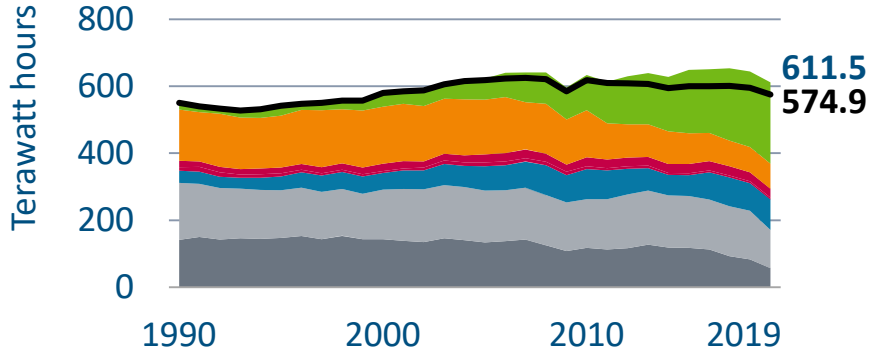
- Reduction of the auction volumes for the following round if previous auction was undersubscribed.
- From 2022, the maximum permitted value according to the EEG 2021 will decrease by 2% per year.
- New quota for the southern region: Only bids from the southern region will be awarded preferentially until 15 percent of the auction volume has been reached.

Source: Guidehouse & Edelman 2019 based on BNetzA 2019

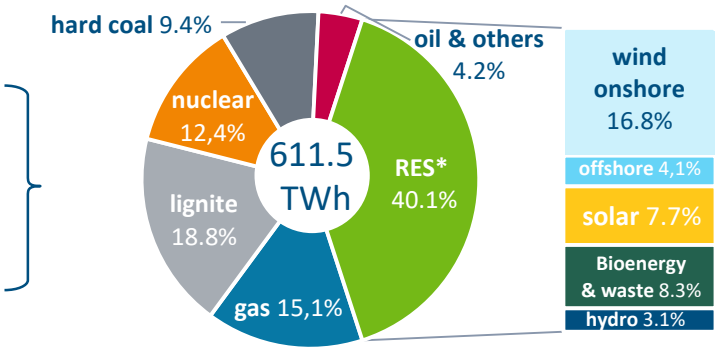
Outcomes and Lessons Learned

Renewables have become Germany's No. 1 source of electricity

Gross electricity generation in Germany

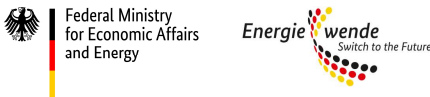


Electricity mix in 2019



- hard coal
- lignite
- wind onshore
- bioenergy & waste
- oil & others
- natural gas
- wind offshore
- hydro
- renewables (RES)
- nuclear
- solar
- electricity consumption

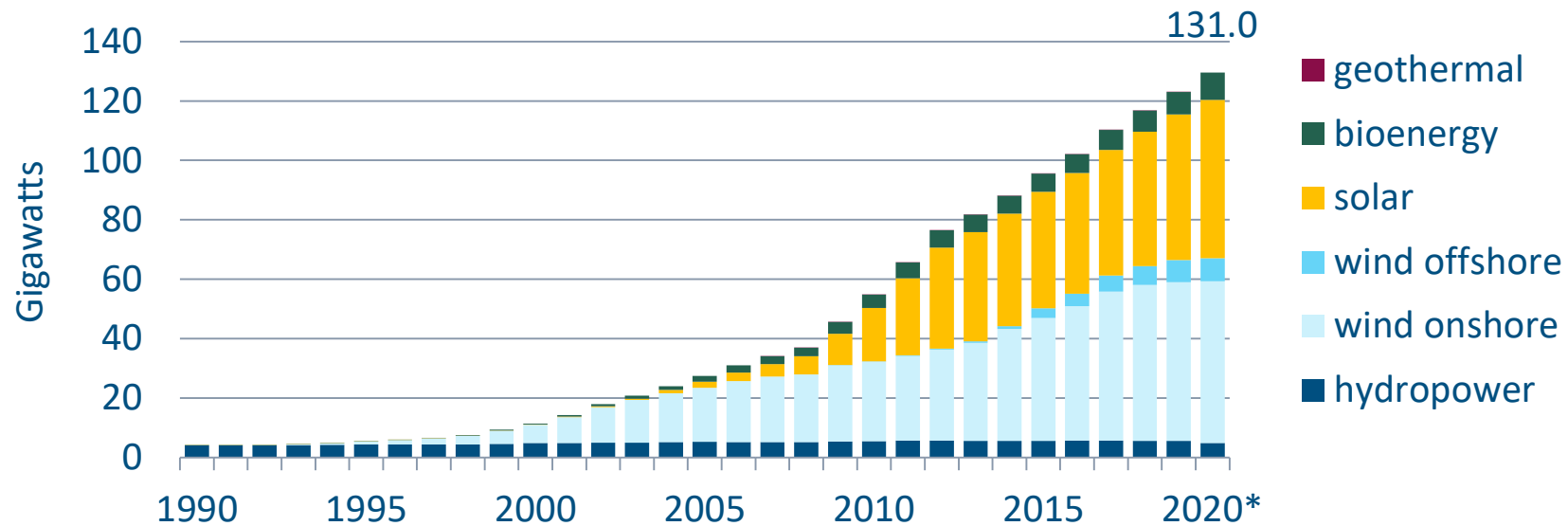
* 40.1% RES in gross electricity generation corresponds to 42.2% RES in gross electricity consumption.



Source: Guidehouse 2020 based on AGEB 2020

The installed capacity of renewables in Germany has more than tripled during the past decade

Installed capacity of renewable energy sources in Germany



Source: Guidehouse 2021 based on BMWi 2020 & Agora Energiewende 2021

* preliminary values for installed capacities in 2020

EEG – Lessons Learned

- Continuous and stable regulation are key to sustainable deployment of renewables
- Cost-effectiveness monitoring is vital to ensure public support
- Given the cost-competitiveness of today's renewables, market-based deployment schemes appear advisable



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Thank you for your attention!

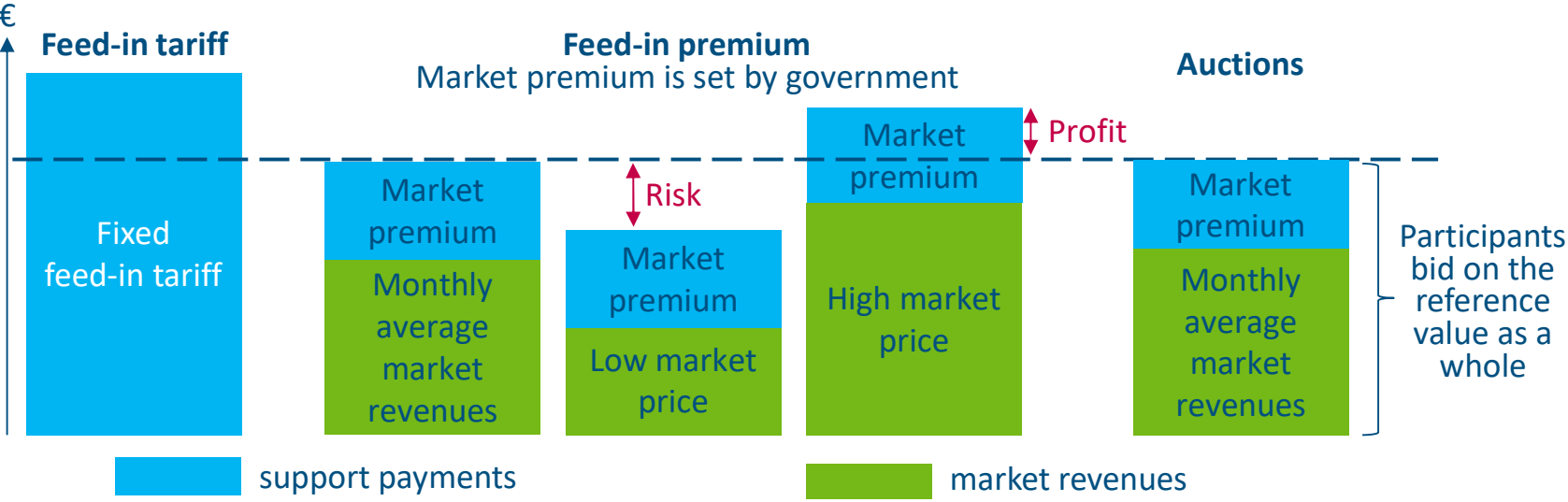
Contact details

Bundesministerium für Wirtschaft und Energie
Scharnhorststr. 34-37
10115 Berlin

Manuel Battaglia, German Energy Agency (dena)
www.bmwi.de

Premium system increases market integration of renewables

Types of remuneration under Renewable Energy Sources Act (EEG)



Source: Guidehouse 2019