

»» KfW Financing of Renewable Sources of Energy

EUFORES Annual High-Level Experts Conference

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Brussels, 18.10.2017

Bank aus Verantwortung

KFW



»» 1. KfW overview and the German context

»» More than 65 years of KfW

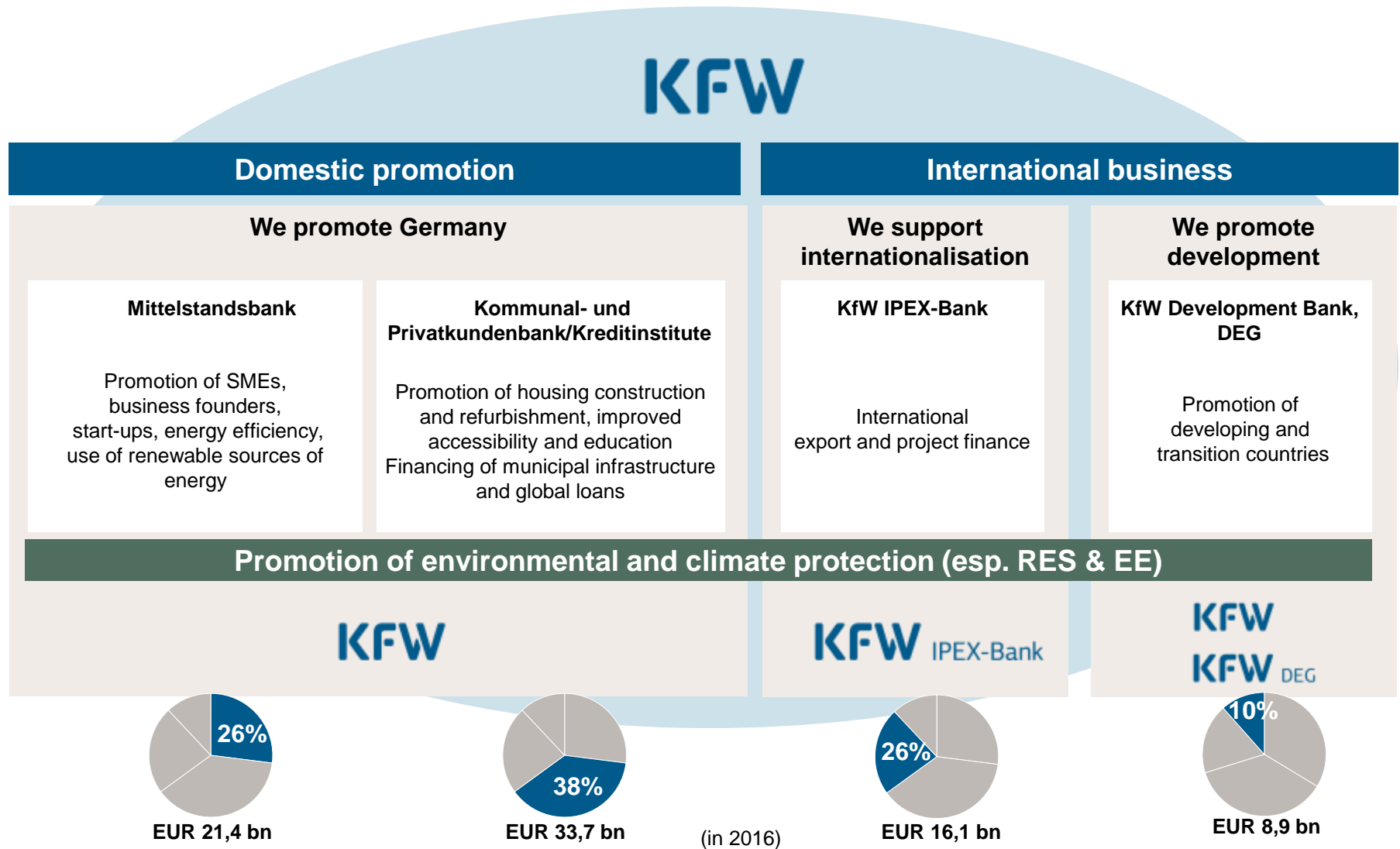
Financing with a public mission



- › Promotional bank of the Federal Republic of Germany
- › Established in 1948 as Kreditanstalt für Wiederaufbau
- › Shareholders: 80% Federal Republic, 20% federal states
- › Headquarters: Frankfurt am Main
Branches: Berlin, Bonn and Cologne
- › Representative offices: about 80 offices and representations worldwide
- › Balance sheet total 2016: EUR 507.0 billion
- › Financing volume 2016: EUR 81.0 billion
- › 6,104 employees (2016) ¹
- › Best long-term rating: Aaa/AAA/AAA

¹⁾ The average number of employees including temporary staff but without members of the Executive Board and trainees



»» A bank with a wide array of functions



»» Central pillars of Germany's Energiewende

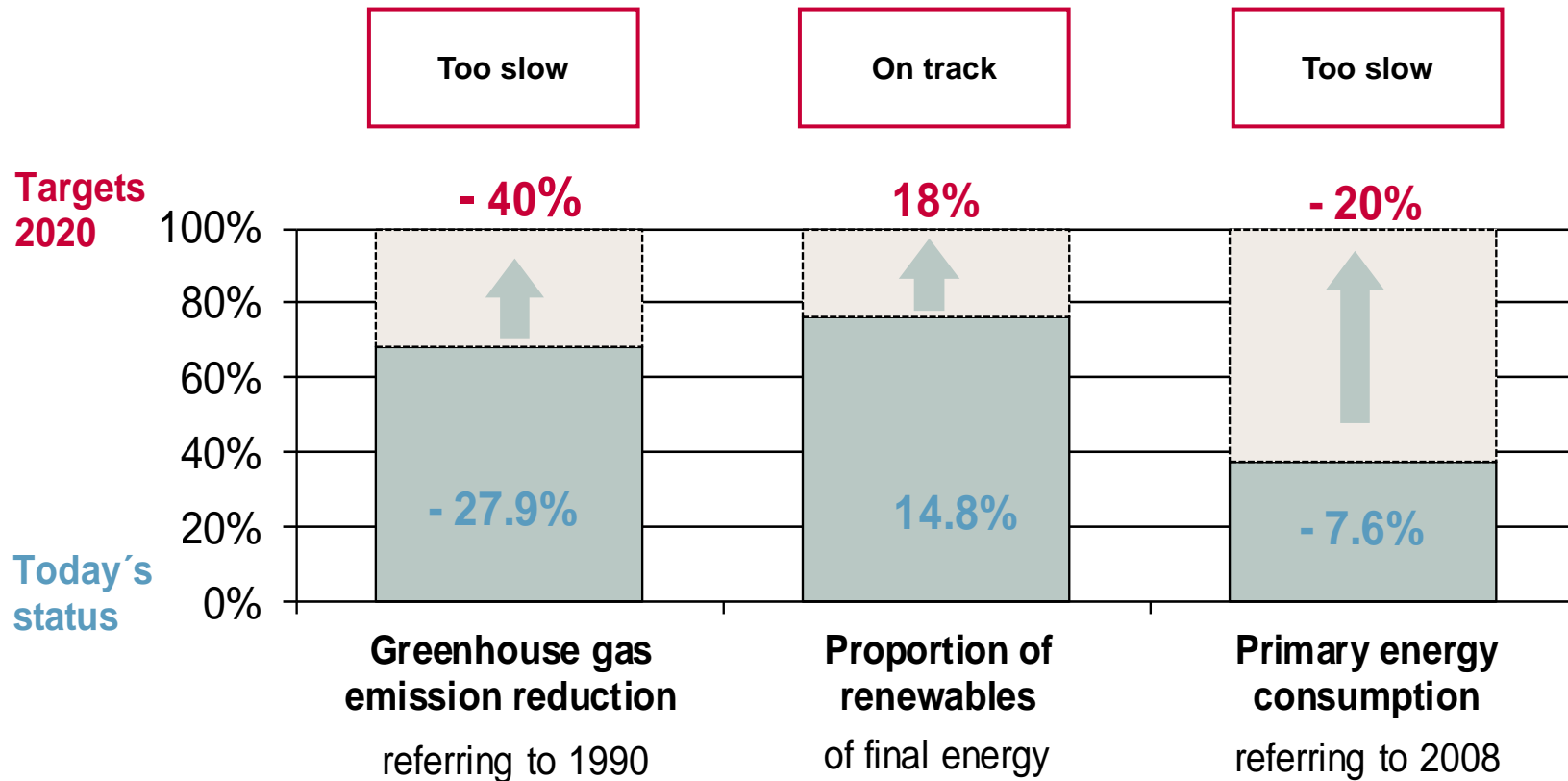
Ambitious long-term energy and climate targets

- › Nuclear power to be phased out by 2022
- › Long-term switch to an energy system mainly based on renewables
- › Significant reduction of energy consumption of households, industry, and transport

	2020	2050
Greenhouse gas emissions (vs 1990)	-40%	-80-95%
Expansion of renewable energies' (RE) share in		
 › final energy consumption	18%	60%
› electricity supply	35%	80%
Energy efficiency (vs 2008)		
 › primary energy consumption	-20%	-50%
› electricity consumption	-10%	-25%

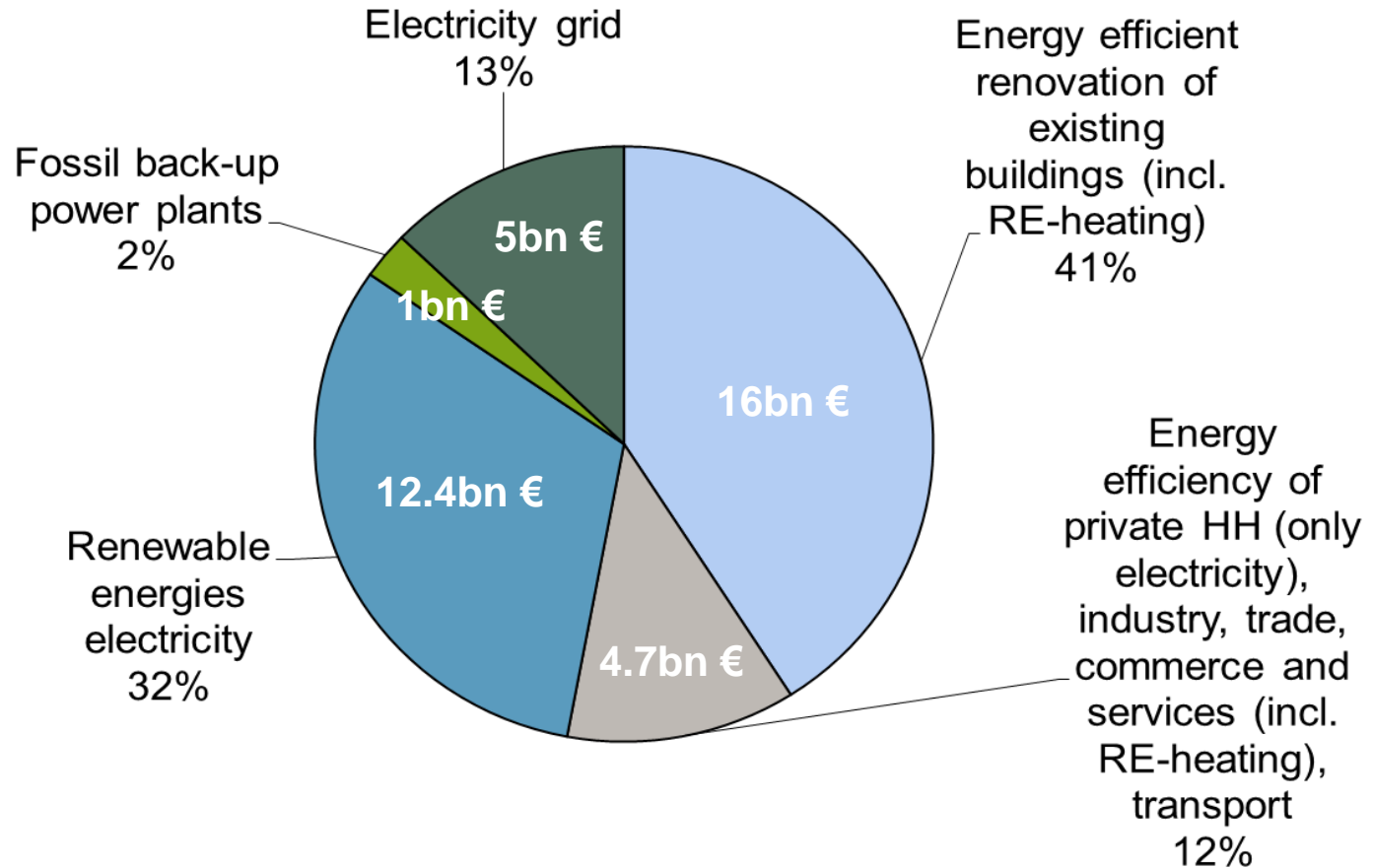
»» Energiewende in Germany:

Still substantial need for action to meet the 2020 targets



»» High demand for investment in energy system transformation

About EUR 40bn p.a. needed in Germany until 2020



»» KfW- Action Plan Energy Transition successfully implemented

103bn EUR for energy projects in Germany in 2012-2016

- › KfW is an important financier of the German Energy Transition. In 2012 – 2016 KfW committed **103bn EUR**.
- › KfW's promotional activities address both pillars of the German energy transition
 - › Energy efficiency in private, commercial, public buildings, industrial production & processes, urban quarters: **80bn EUR**
 - › Renewable energies for heat and electricity generation: **23bn EUR**

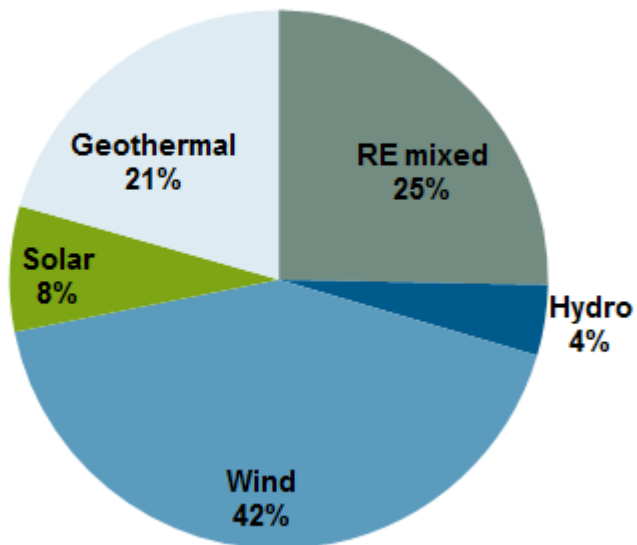
KfW makes a significant contribution to the achievement of the Federal Government's climate protection goals.



»» Impacts of Energy Projects in FC - 2016 *

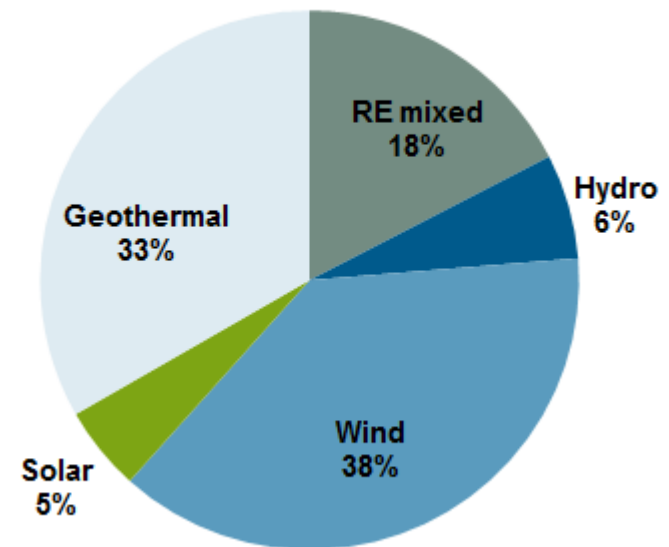
Creation of additional RE Generation (Capacity)

Generation Capacity added: 1.063 MW



Equals more than 350 Wind Power Turbines with 3 MW each

Additional annual Generation: 5.111 GWh



Equals the consumption of 1.5 million German households **

* Including energy related commitments from the financial sector

** Assuming an average household consumption of 3.5 MWh/a in Germany



»» 2. Key challenges for the further deployment of renewable sources of energy

»» 1. Grid integration:

Example of KfW financing: Green Energy Corridors in India. Expansion of Grids and Connection of Renewable Energies

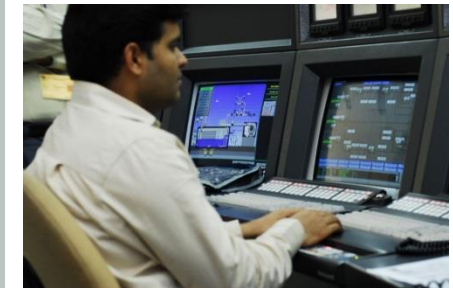
Challenge

- › Average annual economic growth of 6.4% causes high level of GHG emissions
- › Rising demand of energy and high potential for renewable energies
- › Old and inefficient grids



Approach

- › Connection of renewable energies to the grid
- › Expansion of grids in five Indian federal states by five single projects



Impact

- › A total of more than 5,800 kilometers of new power lines are being laid and more than 165 switchgear substations installed or renewed
- › Increase in the stability of the transmission grids
- › Connection of additional production capacities which also offers incentives for investors

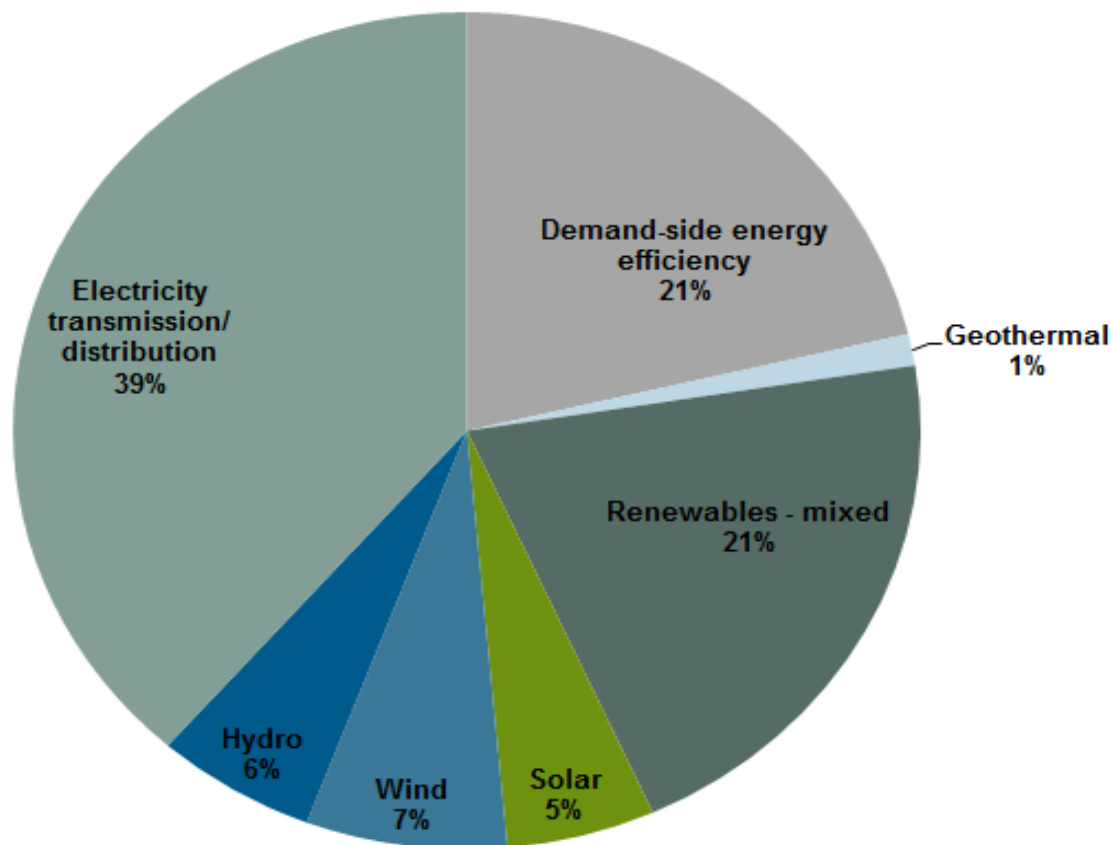
Volume of financing

Total investments of about EUR 5 billion
KfW EUR 1 billion
(interest subsidy)

»» FC Energy Commitments 2016 *

FC Total Energy Sector Commitments (2016): **2.5 billion EUR**

Nearly equal share of investments into the electricity grid and RES exemplify magnitude of task



* Including energy related commitments from the financial sector, excluding sectors below 1%

»» 2. High capital costs (in some countries)

Example from KfW: Krnovo, Montenegro - 2015



Financing of a 72 MW wind farm consisting of 26 GE 2.85- 103 wind turbines in Montenegro.

Total loan amount: USD 95,4 m

The Challenge

- › Short timeline to financial close to meet construction requirements
- › Equity raised through mezzanine facility
- › First wind farm in Montenegro and first wind farm for KfW IPEX-Bank in the Balkan region

The Solution

- › Strong guidance and advise to sponsor
- › Underwriting of the full loan amount by two experienced wind financing banks
- › Co-Financing by EBRD
- › Euler Hermes cover

Value Added by KfW IPEX-Bank

- › Global Agent, ECA Agent, Modelling Agent and Security Agent
- › Promotion of European exports

»» 3. More investments needed into use of RES for heating/cooling

KfW Mittelstandsbank's demand driven programmes for renewable energies: EUR 5,1bn new commitments in 2016, but most for electricity from RES.

I. Electricity from renewable energies (Programme "Standard")

- › Loan amount up to EUR 50m
- › Risk-based favourable interest rate
- › 2016: EUR 4.5bn new commitments, more than 85% for onshore wind projects (06/2017: EUR 2.3 bn)

II. Heat from renewable energies (Programme "Premium")

- › Loan amount up to EUR 10m
- › Low-interest loans from KfW with repayment bonus*
- › Risk-based favourable interest rate
- › 2016: EUR 104m new commitments (06/2017 EUR 52m)

III. Storage battery systems for solar power

- › Low-interest loans from KfW with repayment bonus*
- › Risk-based favourable interest rate
- › 2016: EUR 104.5m new commitments (06/2017 EUR 69m)
- › Since programme start: over 25,000 commitments

IV. Offshore wind energy

- › Credit amount up to EUR 800m per project
- › Financing up to 50 % of debt
- › 95 % guarantee of the Fed. Rep. of Germany
- › Since programme start: 5 projects, EUR 1.5bn

*Repayment bonus is financed by Federal Ministry for Economics Affairs and Energy

In terms of electrical capacity, about 50% of all newly installed RE facilities (excluding wind offshore) in Germany were co-financed by KfW (average 2012-2015).

»» 4. Complex regulatory environment

Example for KfW financing: Šilutė Wind Farm, Lithuania - 2015



Source: KfW IPEX/Max Wolf

Financing of 60 MW wind farm consisting of 24 GE 2.5-120 wind turbines in South-Western Lithuania close to the Baltic Sea Coast

Total loan amount: EUR 89,3 million

The Challenge

- › Largest wind farm in Lithuania and first wind farm for KfW IPEX-Bank in the Baltics
- › Project located close to a Natura 2000 region
- › 12 year loan tenor, Feed-in-Tariff 12 years (no tail under FIT)

The Solution

- › Very experienced Sponsor and good project arrangement
- › Careful due diligence and tailored environmental and social action plan
- › Risk-adequate repayment profile

Value Added by KfW IPEX-Bank

- › Prominent role in the Hermes process
- › Modelling Bank and Technical expertise
- › Ability to provide loan for 12 years

»» Thank you for your attention!

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