The "Energy Savings Meter" funding scheme - performance-based funding of energy efficiency services

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Looking for a new kind of funding programme

Significant energy savings needed to attain Germany's energy and climate targets

- True outcomes of the efficiency schemes which have been funded? → Actual savings below savings estimated in basic calculations?

reliable energy savings needed

- Energy service companies still to reach their full potential, especially with fragmented market areas.

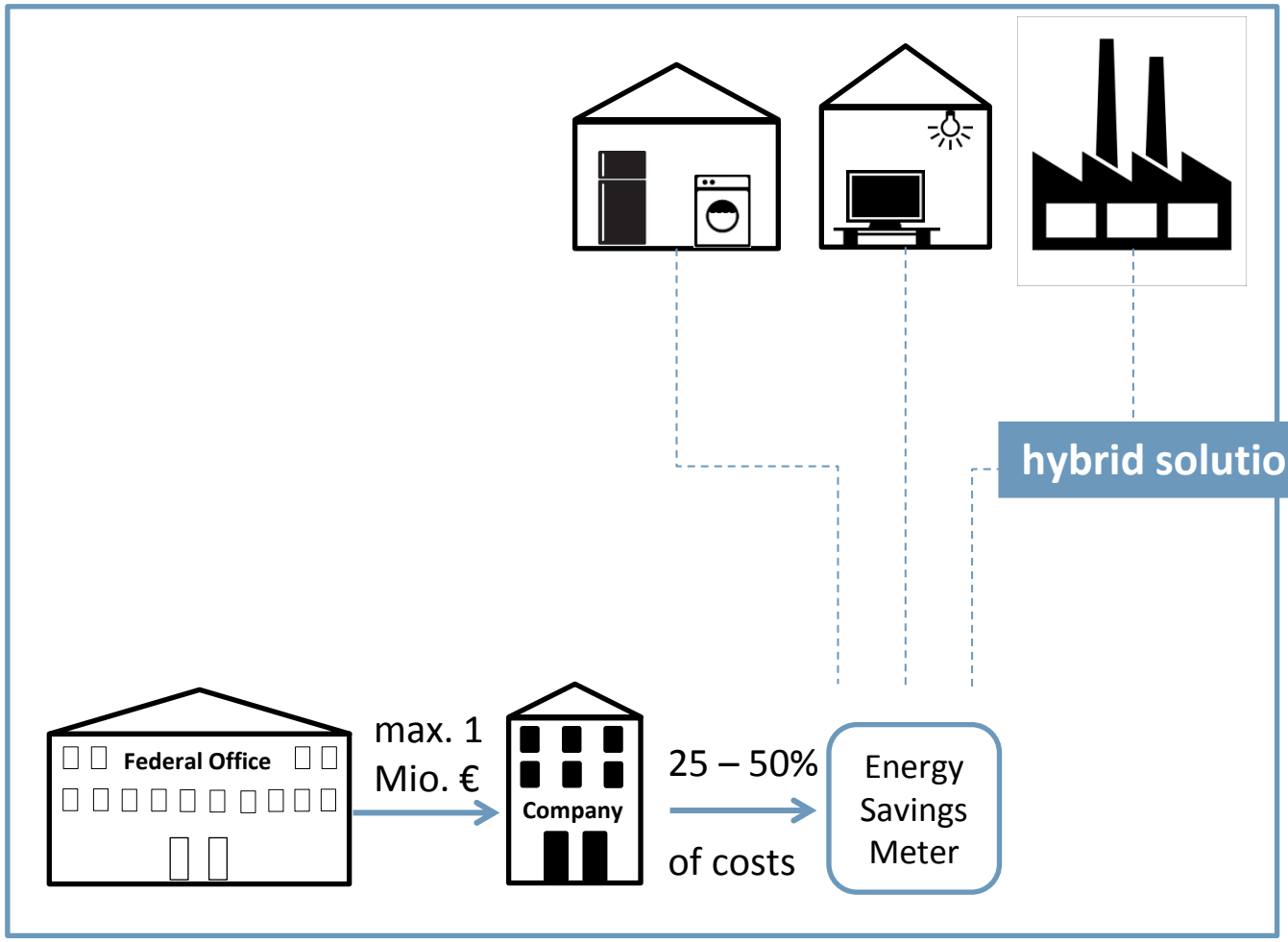
digitisation could bring leverage: offers new opportunities to deliver energy services at low costs, better customer-approach

→Idea of performance-based funding linked to a digital energy service

The "Energy Savings Meter": characteristics of the pilot funding programme

- Eligible companies propose energy services that generate energy savings for their clients
- Funding based on costs for development of an innovative digitised energy service
- 50% of the funding amount based on actual energy savings achieved
  - electricity saved: 28 cts/kWh for residential customers, 15cts/kWh for other customers
  - heat, gas, cold energy: 5 cts/kWh
  - Increase of remuneration due to additional options smart meter gateway, load-management ready, open source (2 cts/kWh each)

Funding scheme "Energy Savings Meter"



funding of a digital energy service (50%)

hybrid solution

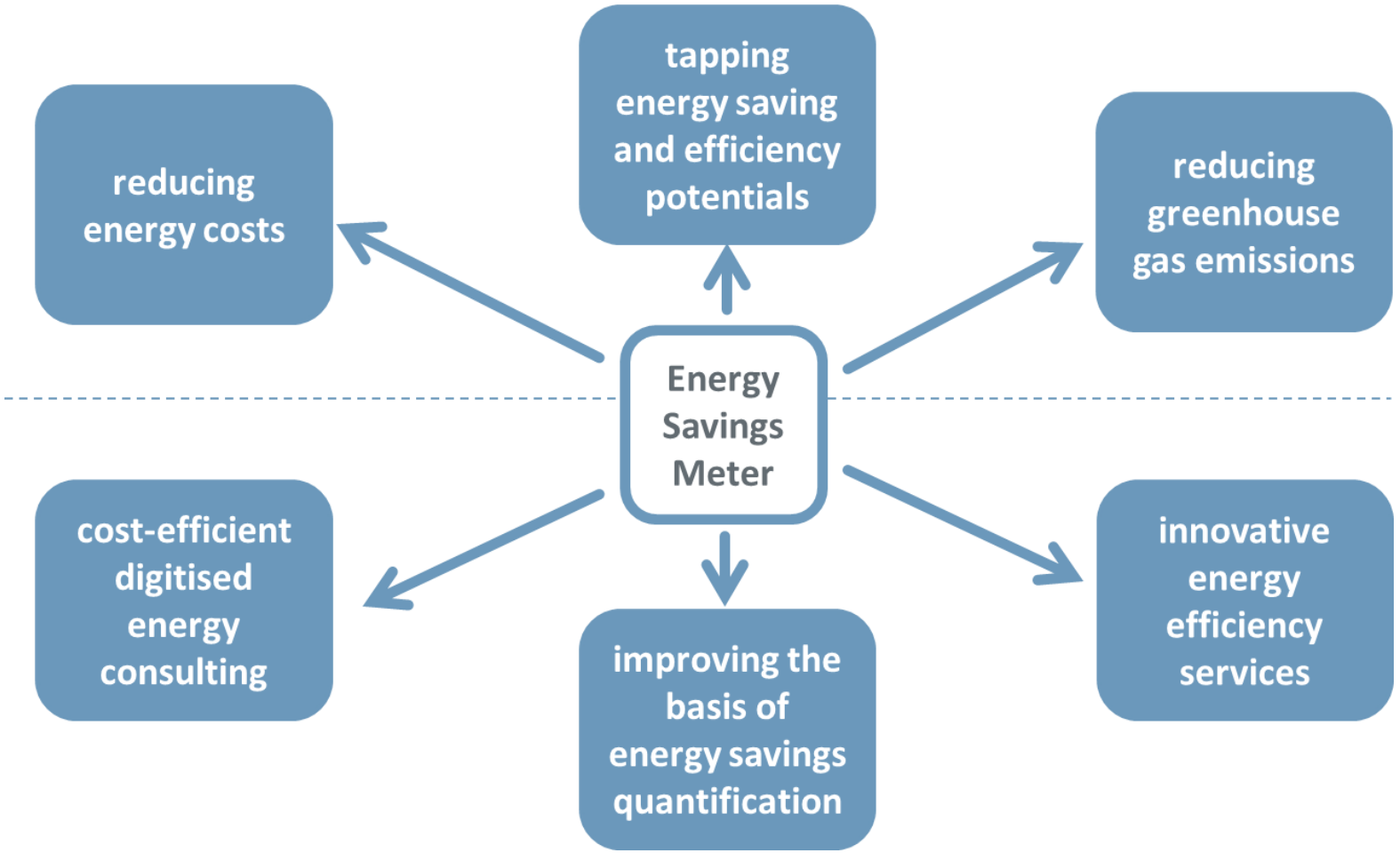
remuneration based on energy savings achieved (50%)

What is an "Energy Savings Meter"?

An energy service that comprises hardware and software for

- Continuous measurement of energy consumption
- Determination of energy savings based on a before and after measurement
- Visualisation of the data
- Identifying the energy consumption on a device level, where possible (e.g. via disaggregation)
- Providing individualised information on energy savings potentials and additional services.

Funding scheme "Energy Savings Meter": objectives



Funding scheme "Energy Savings Meter": findings of the first programme phase 2016-2018

90 applications submitted since the programme's start in May 2016, thereof 50 applications granted until now

General tendencies derived from these applications:

- most projects target electricity or gas/heat savings
- focus mostly new clients that have hitherto been rarely addressed by energy services (SME, residential, also small entities with central management)
- target sectors fairly well balanced between residential and non-residential sector, industrial sector underrepresented
- most projects tend to deliver system information rather than actively controlling systems
- projects tend to be relatively large (900.000 €)
- intended energy savings mostly between 10 and 30%, in some cases up to 70-80%

Funding scheme "Energy Savings Meter": Intended projects

Fields of activity e.g.

- Enhance performance of heating installations by uncovering bad operation
- „Smart sufficiency“: enable users to adapt heating, air conditioning and ventilation as well as usage of electrical appliances to their needs
- Enhanced information about power usage through disaggregation

tackle savings linked to real operation and / or behaviour

Motivation to act through e.g.

- alleviating split incentives, e.g. performance-based incentive paid to landlord in a landlord-tenant-situation
- benchmarks for business sectors via collected data
- gamification for residential customers

a variety of motivational tools

Funding scheme "Energy Savings Meter": Preliminary conclusions

- Great interest from market actors, but
  - complex programme
  - measurement requirements and baseline conception are a challenge for applicants
- Addressed energy savings go beyond installation of new technology
  - embrace behavioural changes and adaption to needs
  - optimise real performance and encompass bad operation
  - often include investments and demand financing solutions
- Addressed end users comprehend mainly commercial customers and public entities, but also residential and small businesses that have been difficult to attain up to today
- Many projects intend to share anonymised collected data
  → will improve understanding of energy consumption patterns

Programme Status 2019

- First programme phase 2016-2018 concluded
- Second programme phase 2019-2022 has been started
- New funding conditions in phase 2:
  - Maximum funding increased from 1 to 2 Mio €
  - Remuneration based on energy savings achieved increased from 50% to 75%
  - New funding line to support trading or financing schemes based on energy savings verified by Energy Savings Meters

Thank you for listening

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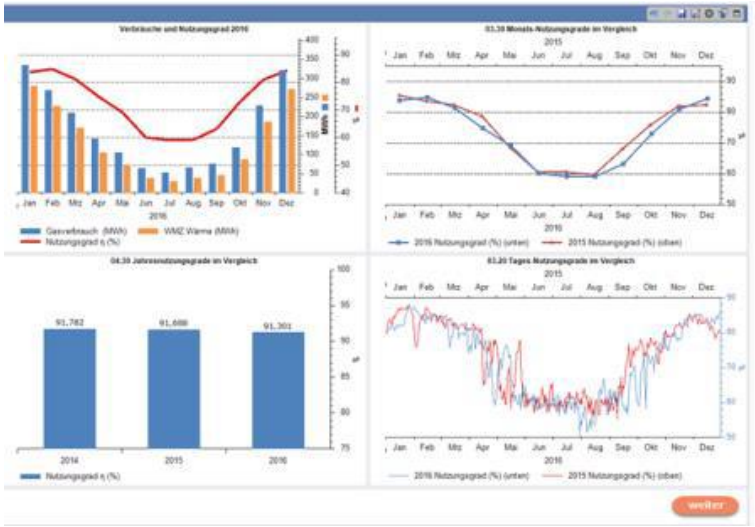
Annex:
Project Examples

Example 1:
EWUS Effiziente Wärme- und Stromlieferung GmbH

Business model
Energy monitor for natural gas, heat and electricity with guaranteed savings

End customers
Housing companies, contractors, energy supply subsidiaries

Expected savings potential
5 - 8 % without investments in new plant technology



www.ewus.berlin

Measures:

- **Digitization of heating systems**
  Recording of gas, heat and electricity meter consumption data at short intervals
- **Monitoring of existing heating systems** and system components
- **Information on energy-saving measures**, in particular on exploiting the potential of small and medium-sized plants
- **Development of an automated diagnostic tool** - a so-called "expert system"
- **Device recognition by disaggregation "NILM"** of the power consumers in the boiler room

Example 2:
meistro EFFIZIENZ GmbH

Business Model
Energy monitoring for electricity

End customers
Logistics, Bakers, Hotels, Retail Nonfood, Animal Trade

Expected savings potential
Electricity: 3-10%

www.meistro.de

Measures:

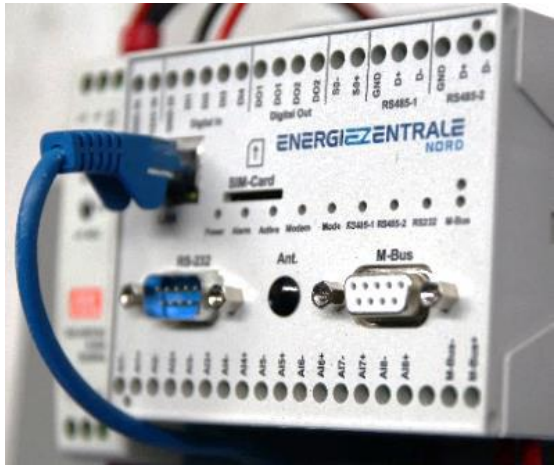
- Installation of around 400 digital billing meters as well as 300 additional submetering devices in the sub-distributions
- MAIC approach – „ Measuring, Analyzing, Investing, Controlling“
- Use of Smart Meter CONTROLIT Smart, which ensures digitized transfer of total energy consumption
- Device recognition through disaggregation of power consumption at the smart meter and software-controlled energy efficiency consulting with industry-specific saving tips and investment recommendations

Example 3:
Energiezentrale Nord

Business Model
Energy management, analysis and optimisation of the operating behaviour of heat generation plants

End customers
Housing industry, associations, municipalities

Expected savings potential
Primary energy: > 10%



www.ez-nord.com

Measures:

- Cross-vendor optimization of operation and efficiency, training, automated fault detection, remote adjustment of control systems
- Reduction of maintenance and repair costs as well as extension of the life cycle of the plant through optimised operating behaviour
- Self-developed measurement technology enables recording of various temperature and consumption data as well as system parameters
- Own visualization platform (EZN Visio) for operating data, infrastructure-independent measurement data recording with remote data transmission