



Energy Services

Establishing Markets for Energy Efficiency

Michael Geissler
CEO Berliner Energieagentur GmbH

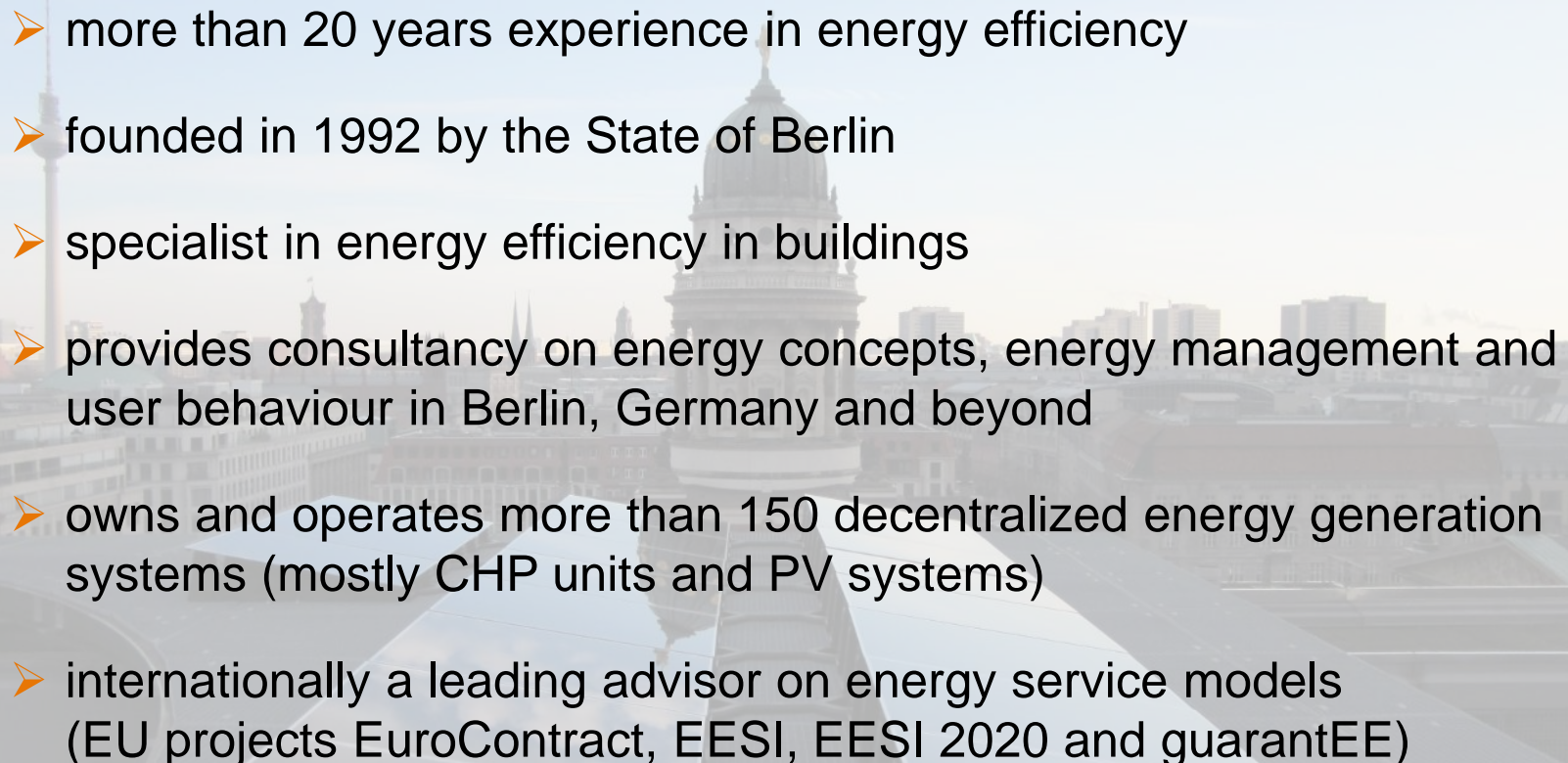
Berlin, 31 May 2017





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Berlin Energy Agency (BEA)

- 
- more than 20 years experience in energy efficiency
 - founded in 1992 by the State of Berlin
 - specialist in energy efficiency in buildings
 - provides consultancy on energy concepts, energy management and user behaviour in Berlin, Germany and beyond
 - owns and operates more than 150 decentralized energy generation systems (mostly CHP units and PV systems)
 - internationally a leading advisor on energy service models (EU projects EuroContract, EESI, EESI 2020 and guarantEE)



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Agenda

- 
- Framework
 - Energy Performance Contracting (EPC)
 - European EPC Market Development
 - Best Practices
 - Summary and Outlook



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Framework



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EU Framework for Energy Efficiency

EU Energy and Climate Package 2030

- 40% reduction in GHG emissions (reference year: 1990)
- 27% share of renewables in final energy consumption
- **30% reduction in total primary energy supply** (reference year: 2005)

EU Energy Efficiency Directive

- obligation for public sector to procure energy-efficient products and services
- refurbishment of public building stock: each year, national governments have to refurbish 3% of their buildings

„Energy Efficiency First“

European Commission's vice president Maroš Šefčovič

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Energy Services for Energy Efficiency in Buildings

Savings in the long run call for short-term investments

- High need for investment vs. constrained public households
- Field of activity for: – **Public-private cooperation**
– **Integration of private services**

Service Provider offers ...

- Investment
- Know-how / experience

Benefits for Building Owner:

- Reduction in operating costs
- Operational reliability
- Positive effects on the environment





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Most common Energy Service Models

Energy Operation Contracting

- Energy efficient operation of existing equipment/appliances (no investment)
- Energy supply

Invoicing of energy delivered

Energy Supply Contracting

- Planning, financing, implementation
- Operation (EE optimisation)
- Energy supply

Invoicing of energy delivered

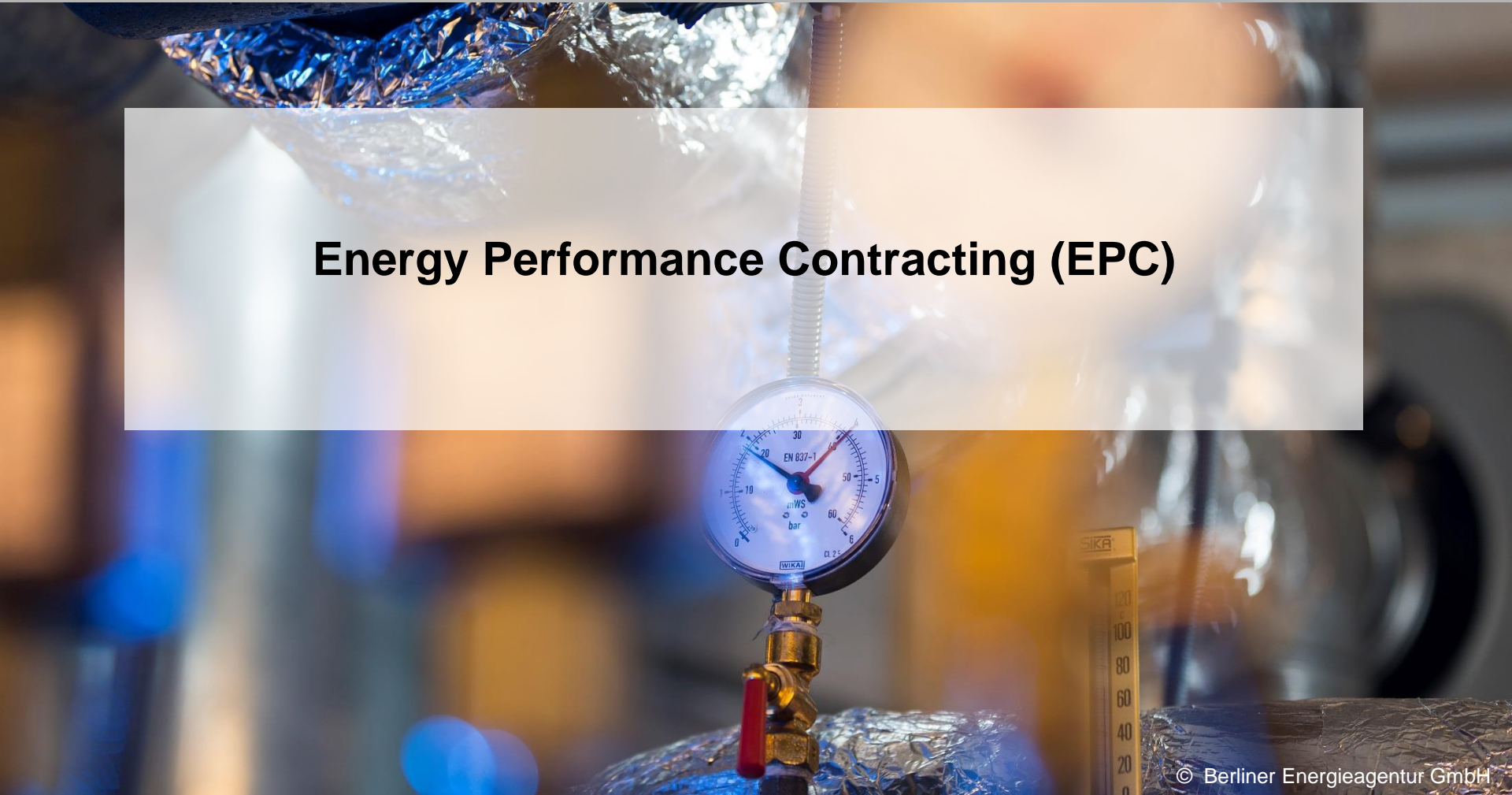
Energy Performance Contracting (EPC)

- Planning, financing, implementation, (operation), maintenance
- System responsibility for equipment and users behaviour
- Energy management / Controlling

Invoicing of reduced energy consumption



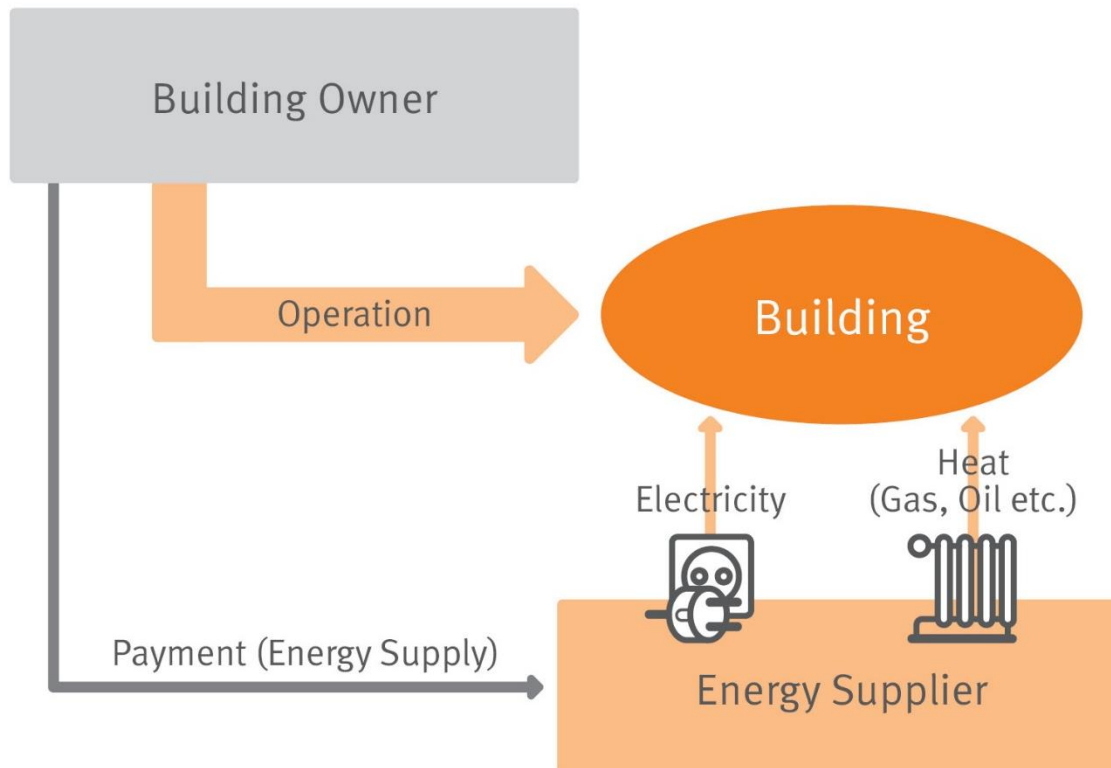
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Energy Performance Contracting (EPC)

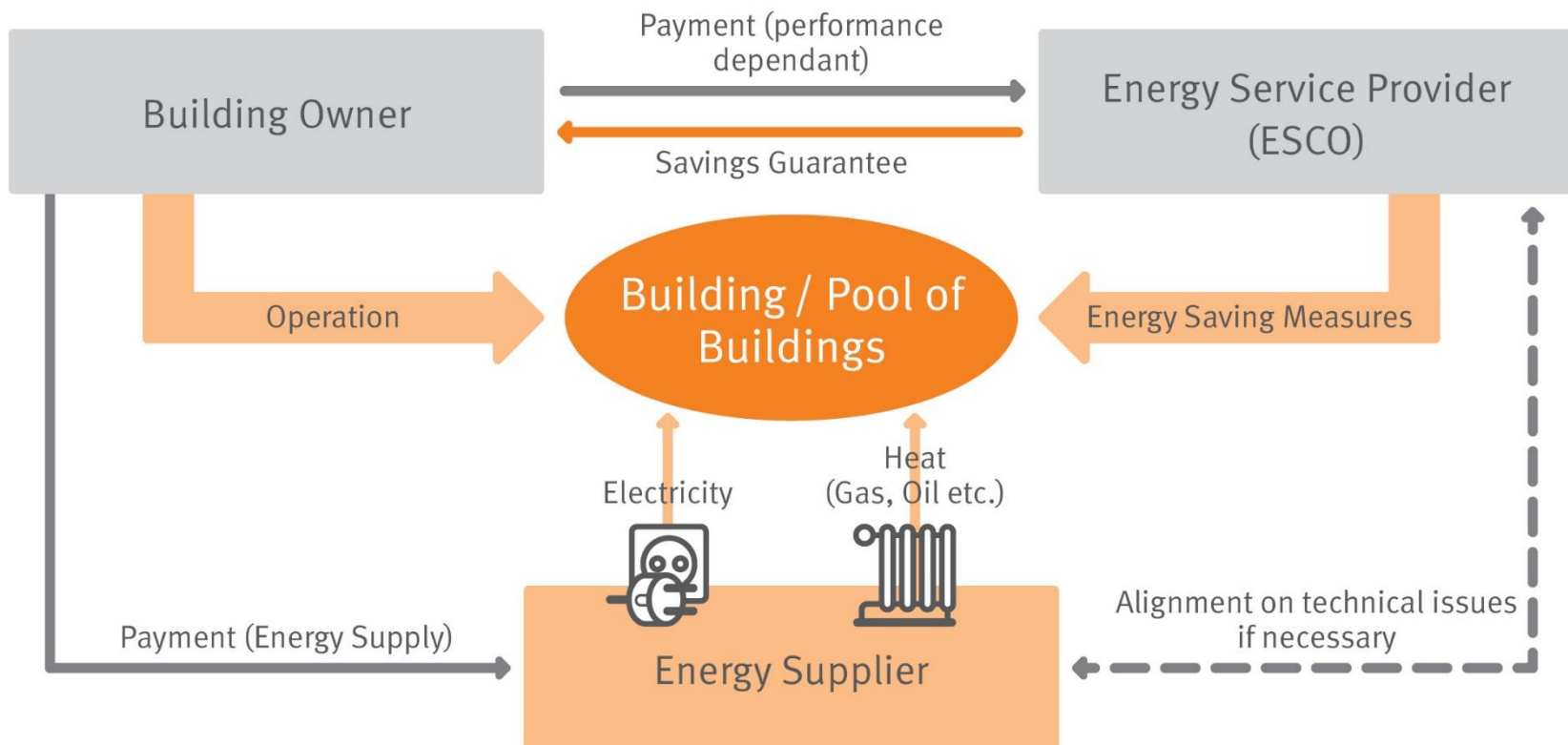
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Typical Energy Supply Situation without Energy Services



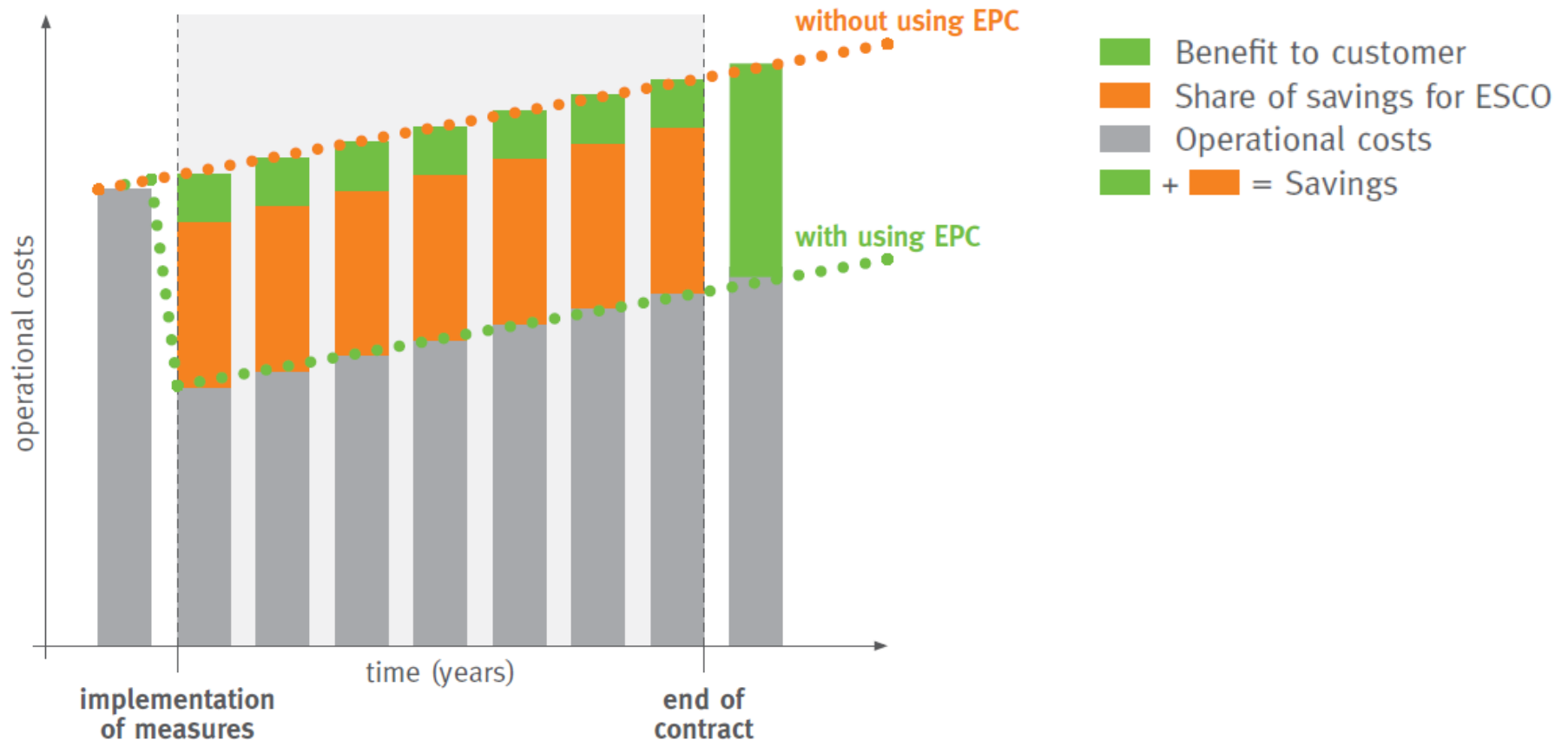
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Energy Performance Contracting (EPC) – General Project Scheme



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EPC – Payment Scheme



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EPC – Contract Content

Key elements: Guaranteed services of the ESCO

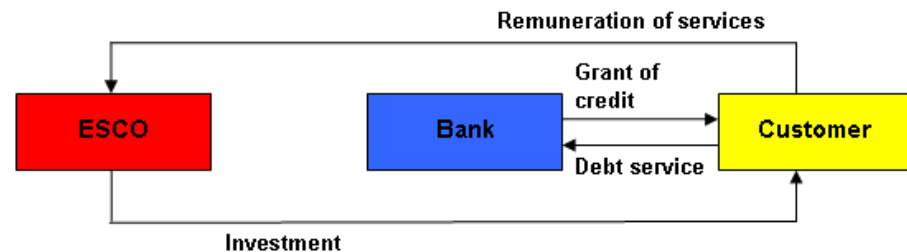
- Energy saving guarantee and share of the client on the savings
- Hardware investments (amount and structure)
- Energy controlling system, maintenance
- Compliance with required comfort levels
- User motivation concept (e.g. incentive schemes)
- Verification of energy savings and remuneration
- Liability / collaterals / crisis management



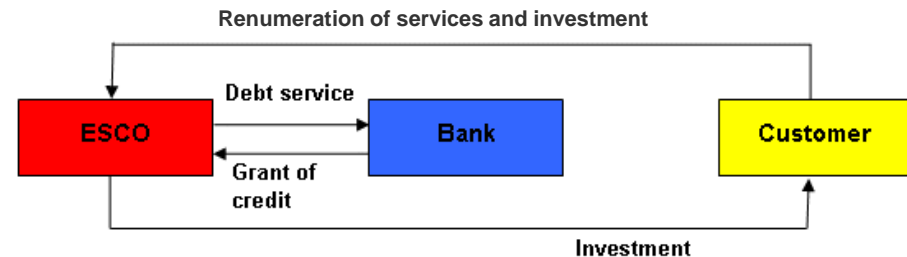
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General Financing Options for Energy Services

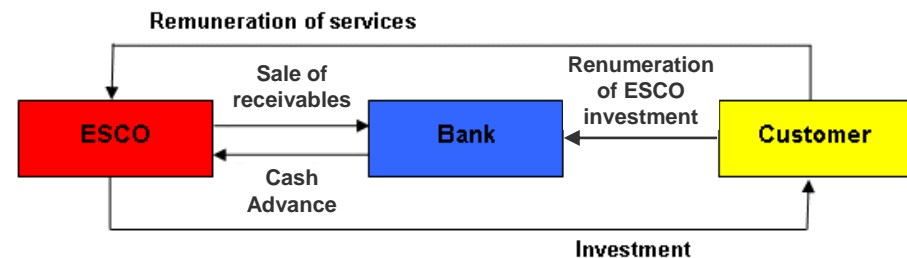
Financing through client



Financing through ESCO (credit)



Financing through ESCO (forfaiting)



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Advanced EPC Options

Advanced EPC models to address specific challenges

➤ EPC plus

- Integration of (comprehensive) building refurbishment measures
- Shared financing instruments



➤ EPC light

- Operation and energy management of buildings with saving guarantee



➤ Green EPC

- Focus on renewable energy technologies
- Specific tender objectives and link to subsidy programmes
- Primary energy consumption as guaranteed element





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European EPC Market Development

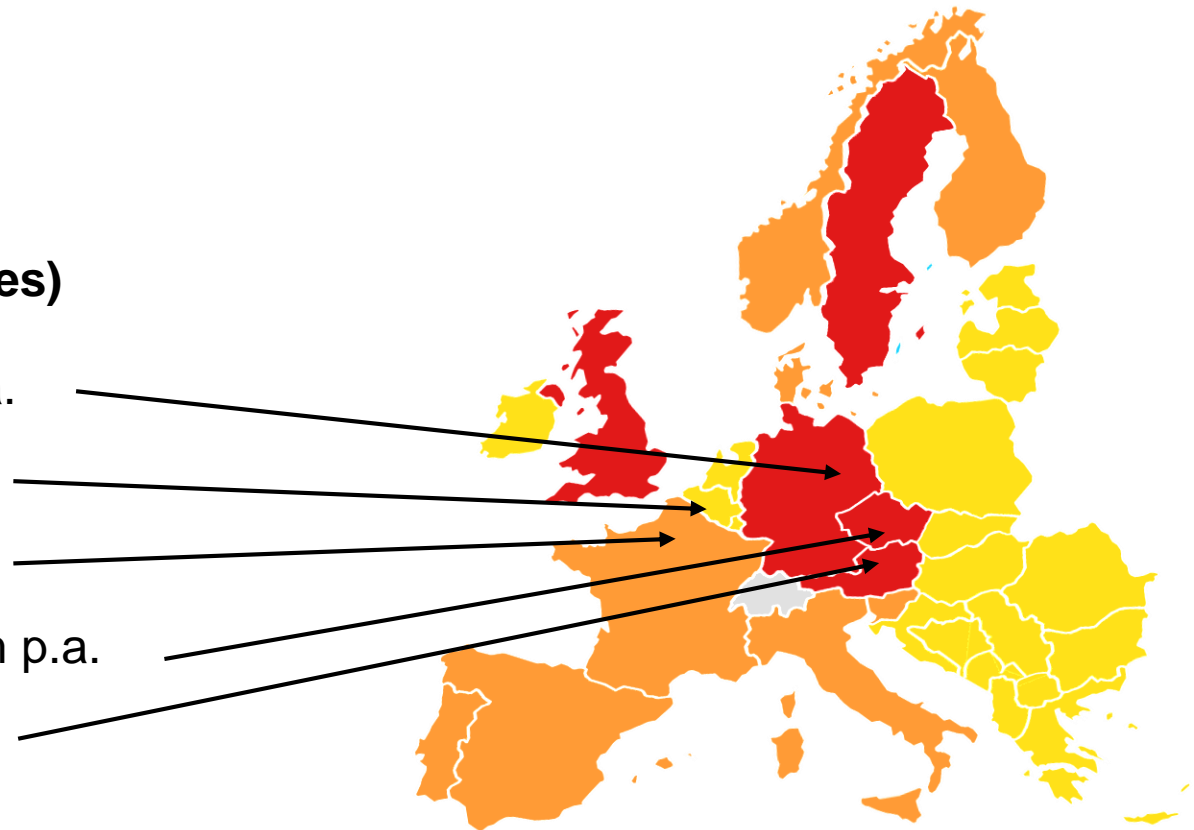
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European Markets for EPC

- well developed
- in development
- at early stages




EPC Market Sizes (examples)

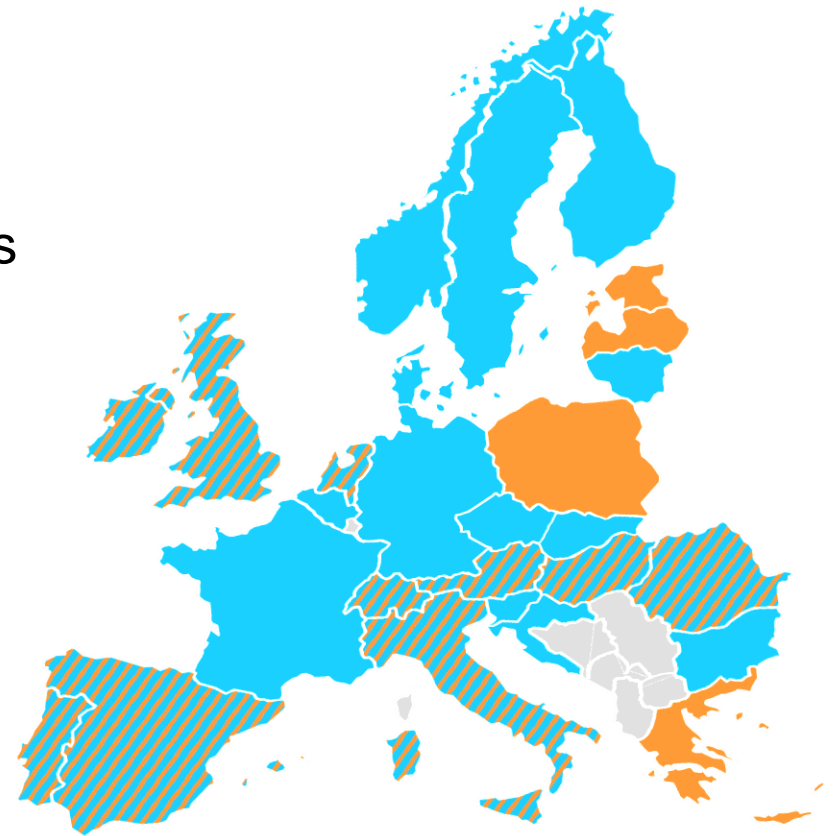
- Germany: €280-400m p.a.
- Belgium: €1-5m p.a.
- France: €75-100m p.a.
- Czech Republic: €10-20m p.a.
- Austria: €15-20m p.a.



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Client Sectors of EPC

-  predominantly public clients
-  mix of public and private clients
-  predominantly private clients



Sources: Transparence (2013/15), EU JRC (2013)

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Market Development for Energy Services – Europe (I)



Clearinghouse for Energy Contracting in CEE

- Project duration: 2003-2004
- Model contracts and tender documents (BG, CZ, H, LT, LV, PL, SK, SLO)
- > 10 contracts signed



- Project duration: 2005-2007
- Model contracts and tender documents (A, D, F, FIN, GR, I, N, S)
- 17 new EPC projects kick-started



European Energy Service Initiative

- Project duration: 2009-2012
- Improving EPC and energy efficiency standards (A, B, F, CZ, N, S, SI, SK, RO)
- 24 EPC pilot projects, 57 trainings/workshops



European Energy Service Initiative 2020

- Project duration: 2013-2016
- Best-practice database, marketing tools for project developers (A, B, BG, CZ, D, E, HR, IRL, NL, NO)

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Market Development for Energy Services – Europe (II)

guarantEE – Energy Efficiency with Performance Guarantees in the Private and Public Sector



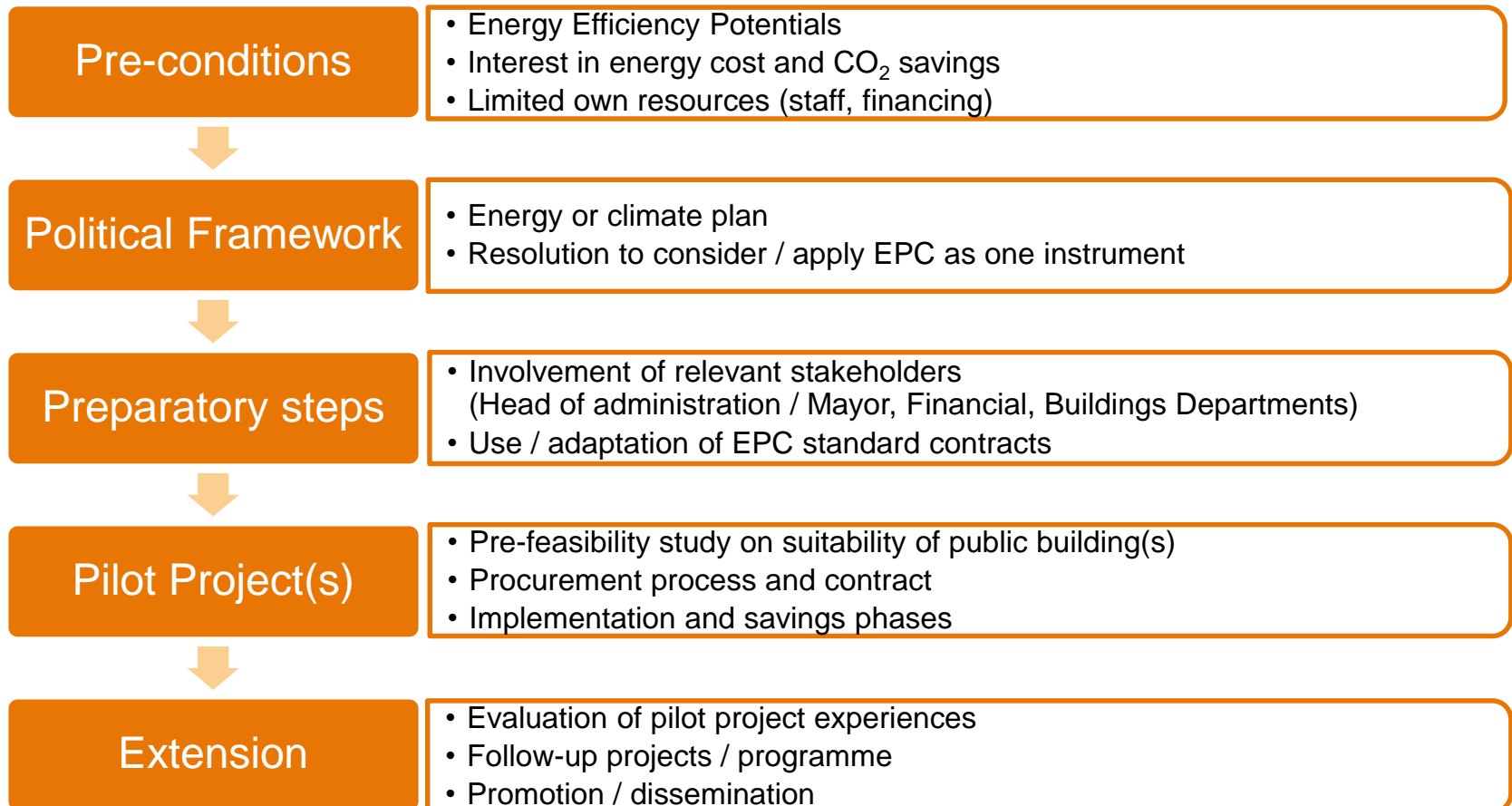
- **Objective:** Europe-wide dissemination of EPC as contribution to EU 2020 targets
- **Target group:** public and private sector (potential EPC clients) and EPC facilitators across Europe
- **Consortium:** BEA as coordinator; 13 partners from European countries
- **Contents:** at least 33 EPC pilot projects, developing innovative EPC solutions for rented facilities, making EPC more flexible, EESA
- **Duration:** 36 months (4/2016 – 4/2019)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 696040.

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Steps to EPC Implementation in Public Authorities





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Best Practices



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Example 1: “Energy Saving Partnerships” in Berlin, Germany



Total number of pools:	27 more than 1,400 buildings
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Guaranteed annual savings in total:	€ 12.5 million (25.5%)
Annual plus to the public household:	€ 2.7 million

Total CO ₂ reduction (1996-2016):	approx. 816,000 t
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Total net investment:	€ 55 million
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Example 2: Wenckebach Hospital Berlin, Germany

- Building: public-owned hospital with 438 beds
- Baseline: €808,359 p.a.
- Guaranteed savings: 39.6% = €320,000 p.a.
- Invest: €2.44m
- CO₂ reduction: 1,789 t p.a.
- Duration of contract: 12 years (start in 2011)
- Measures: modernisation of heat distribution, cooling and ventilation system, installation of CHP unit, web-based energy management system, user trainings
- Special feature: insulation of top storey ceilings



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Example 3: RE:FIT London, United Kingdom

➤ Political Framework

- RE:FIT programme established in 2008 by the Greater London Authority (GLA)
- objective: make public buildings more efficient, using EPC

➤ EPC task force

- expert team (Programme Delivery Unit) supports public projects free of charge
- accessible to range of public organisations, including the London boroughs

➤ Programme implementation

- start in 2008
- rollout phase 2011-13 with ELENA support (EIB)
- programme extension 2015 with ERDF support



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Example 4: Akershus County, Norway

➤ Political Framework

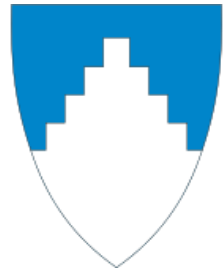
- Akershus Council recommends EPC in Climate and Energy Plan

➤ Use of standards

- official Norwegian Standard for EPC was adopted in 2014
- first official national EPC standard in Europe

➤ EPC pilot projects

- seven successful EPC projects in Akershus County implemented by NEE



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Example 5: City of Dublin, Ireland

➤ Political Framework

- EPC programme is embedded in Dublin's Sustainable Energy Action Plan (SEAP)



➤ EPC task force

- Interdepartmental Steering Committee (incl. Legal, Finance, Procurement departments)
- installed by Dublin City Council in 2014



➤ EPC pilot projects

- contract for first public sector EPC in Ireland (leisure centres) signed in 2016



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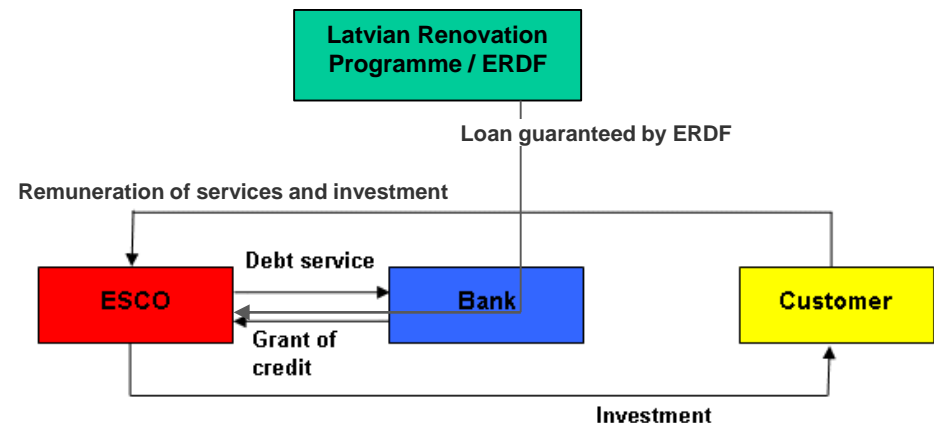
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Example 6: Financing EPC with ERDF support in Latvia

EPC in residential housing in Latvia



- deep refurbishment of apartment blocks owned by private housing associations
- EPC projects with 20 years duration, 100% financing through private ESCO "RenEsco"
- financing provided by
 - local banks, based on project cash flows (60%)
 - National Renovation Programme through a loan guaranteed by ERDF (40%)
- new: forfeiting facility to refinance the ESCOs' future receivables



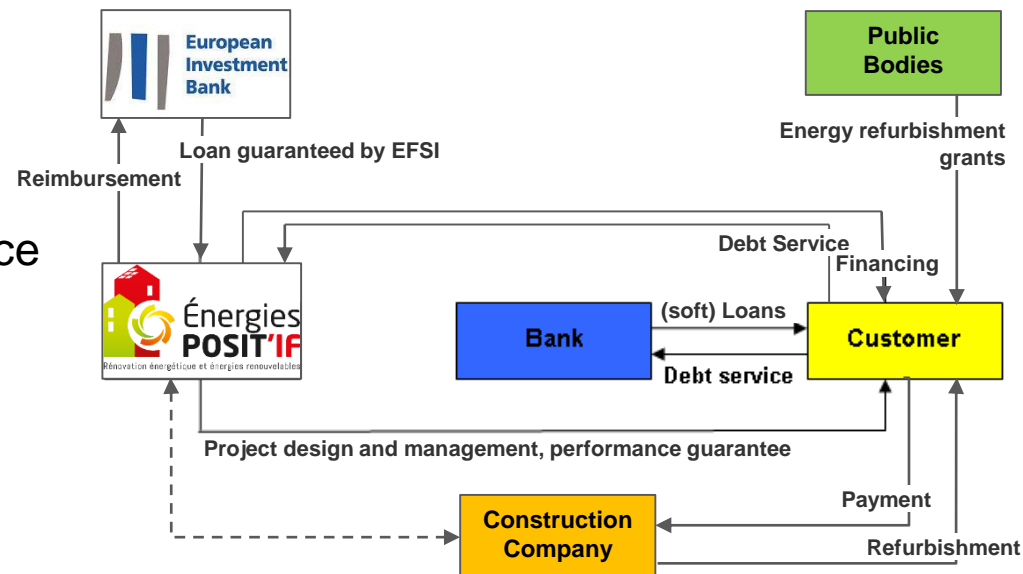
Financing scheme in 2013

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Example 7: EIB Loan and EFSI Guarantee for EPC in Ile-de-France

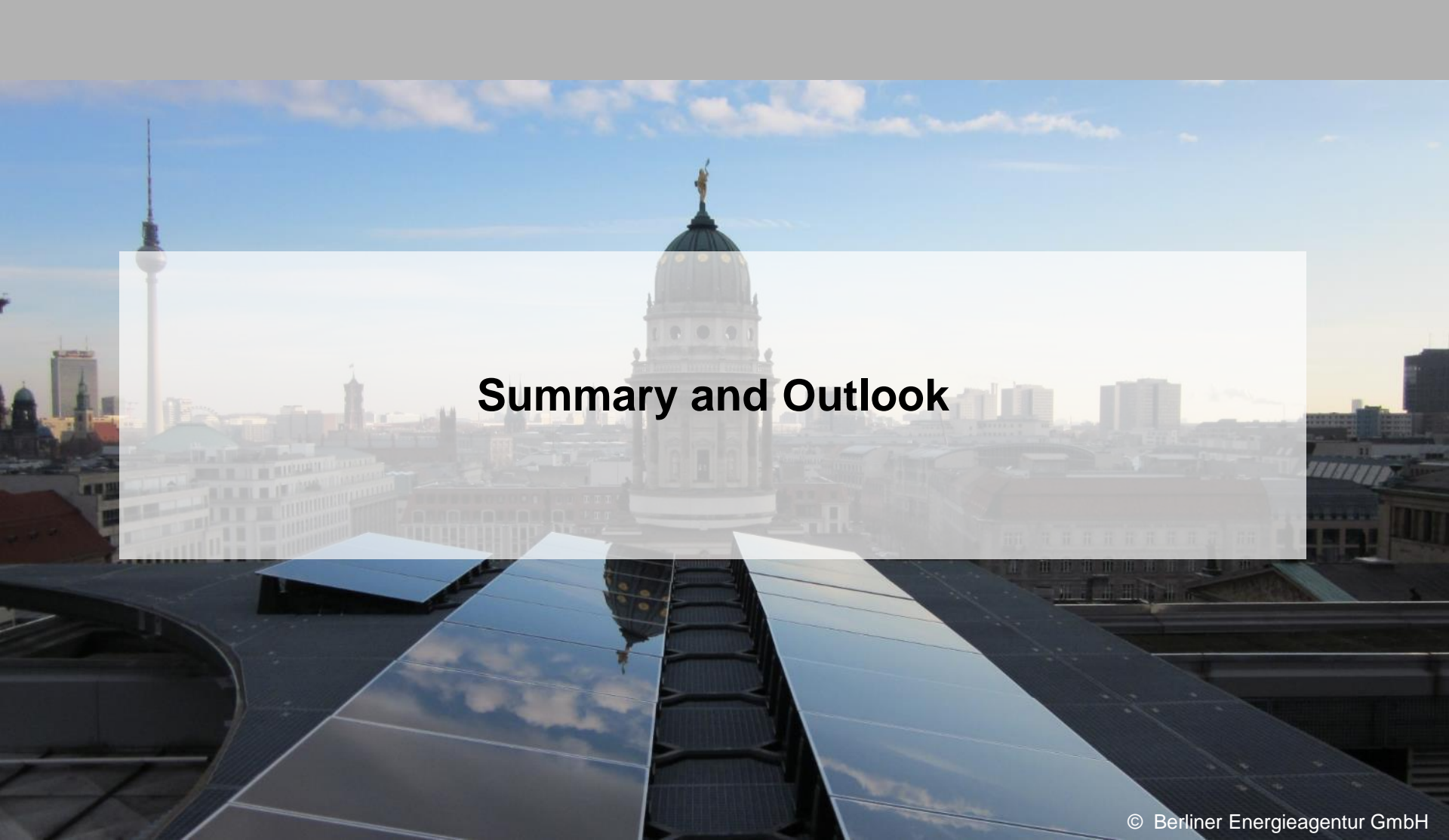
Thermal retrofitting with EPC in Ile-de-France

- stimulation of investment in renovation projects in condominiums and in social housing
- project financing through
 - design-implement-operate contract for works and services
 - guarantee on energy performance
 - third-part financing (optional)
- achievements
 - 4 condominiums in works phase
 - 24 signed contracts





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Summary and Outlook



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Summary

- **Driving force and commitment:**
 - political decision makers and public authorities who take on responsibility
- **Reliable legal framework:**
 - clear signal that EPC is possible and wanted (e.g. in energy plans)
 - favourable public procurement rules, tender procedure and accounting treatment
- **Promotion of standardized procedures and contracts:**
 - time and cost-effectiveness for implementation
 - competition and transparency
- **Neutral and professional process management:**
 - involvement of independent market facilitators with technical and economic expertise



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Outlook

- Experience shows that
 - refinancing of energy efficiency via EPC is guaranteed
 - energy services are not only financing tools
- European ESCO market has still a huge potential for growth
- Key success factors are
 - political embedding of EPC
 - promotion and facilitation
- Overseas markets existent but still at an early stage
- Capacity building through experienced senior facilitators helps open up new EPC markets



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For more information please visit:

www.berliner-e-agentur.de

www.guarantee-project.eu



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