



ESCo Market Development: Business Models, Innovations and Lessons Learned

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**Grazer Energieagentur &
IEA DSM "Competitive Energy Services"**

Outline + Key Messages



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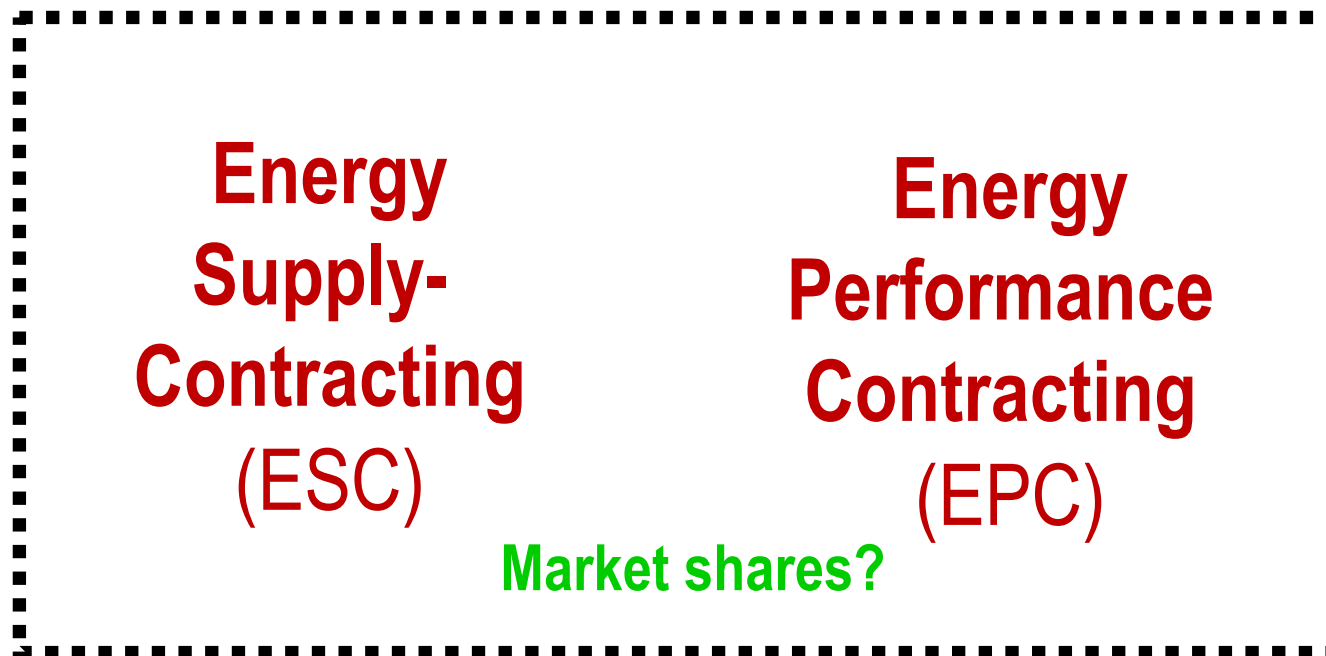
- 1. Two basic business models (in most) ESCo markets:
Energy Performance C. (EPC) and Energy Supply C. (ESC)
What are their market shares?**
- 2. EPC vs. ESC: (Typical) product properties and limitations**
- 3. ESC: a good and robust business model for Renewables, CHP
or heat recovery**
- 4. Integrated Energy Contracting (IEC) – A new ESCo business
model to combine savings and (renewable) supply**
- 5. EPC: Market development is demand side driven!**
- 6. Comprehensive building refurbishment – the future?**
- 7. Some lessons learned**

Two Basic ESCo Products: ESC and EPC



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German ESCo market: ~ 1,600 Mio €/a [Prognos 2009]

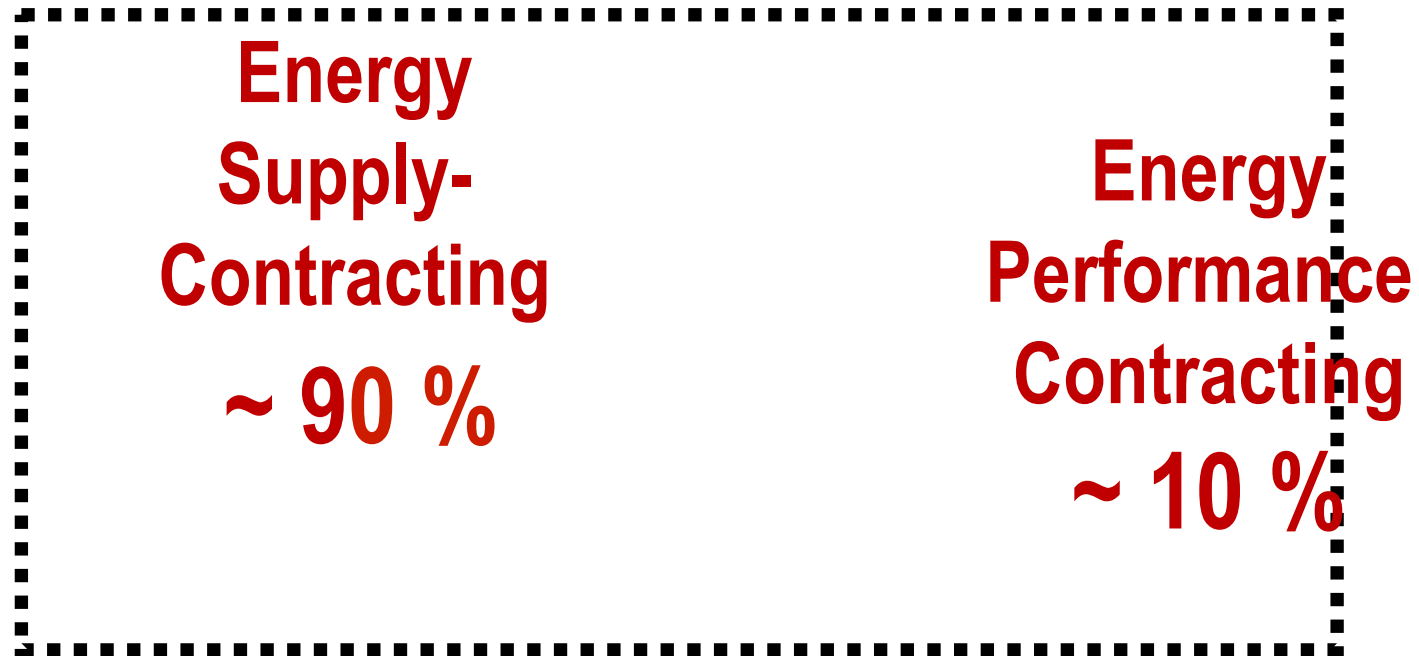


ESC is Dominating the Market



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German ESCo market: ~ 1.6 Bio €/a [Prognos 2009]



Sources: [Prognos 2009], [VfW 2009]

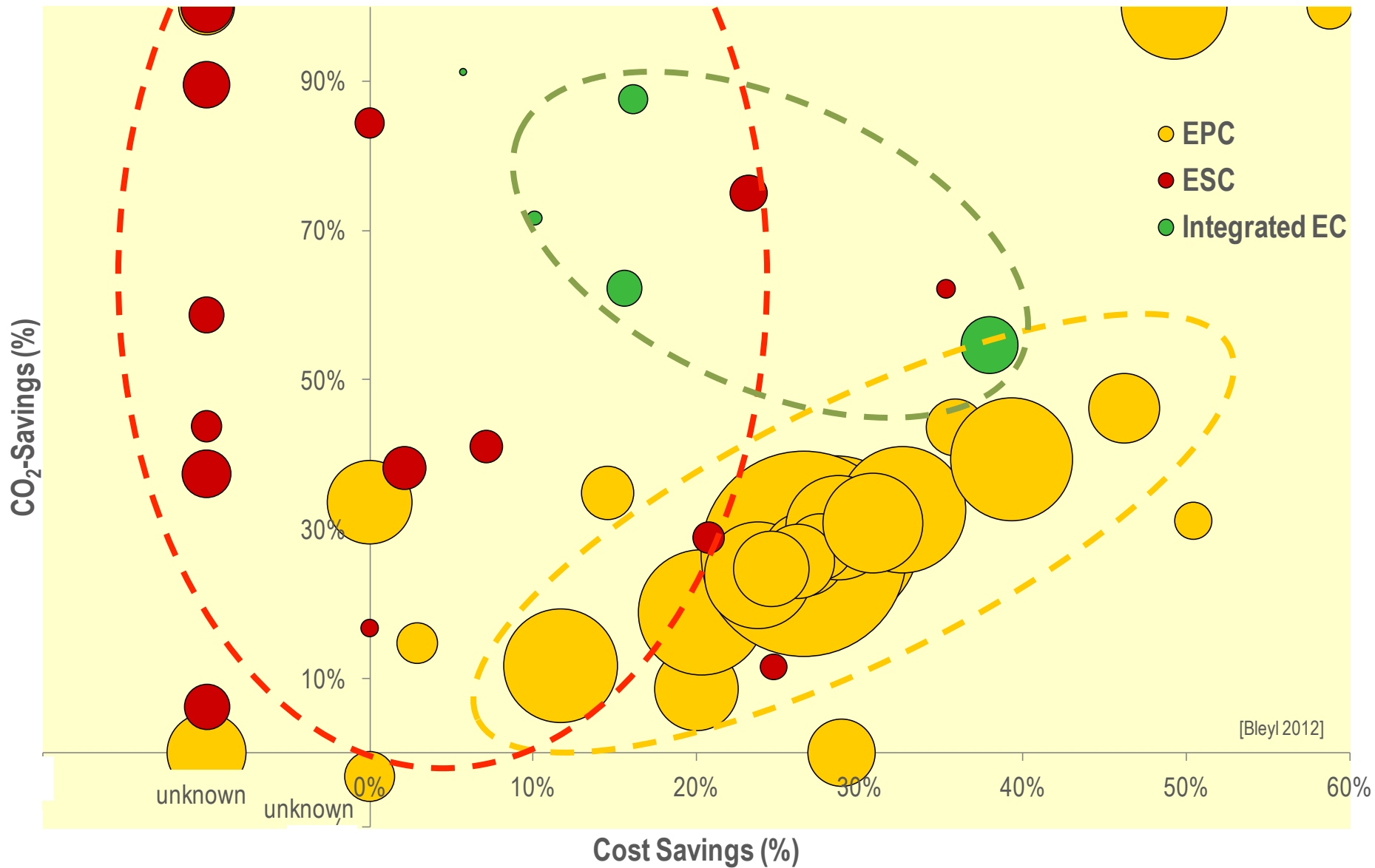
ESC vs. EPC: Typical Market Properties



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	ESC	EPC
End-use markets	Residential, Industry, Commerce, Public ...	only Public Buildings, Hospitals, (industry)
Efficiency potentials	15 – 20 % (limited scope of service)	20 – 25 % (30 – 50 %)
Project Size: Minimum energy cost baseline	> 20,000 €/a	> 150,000 €/a (ESP Berlin: 1,88 Mio €/a)
Share in ESCo market (in Germany 2008)	~ 90 %	~ 10 %
Business model	M Wh	Savings („N Wh“) => Baseline problems => high transaction cost

CO₂ + Energy Cost Savings in 50 ESCo Projects (Germany)



[Bleyl 2012]

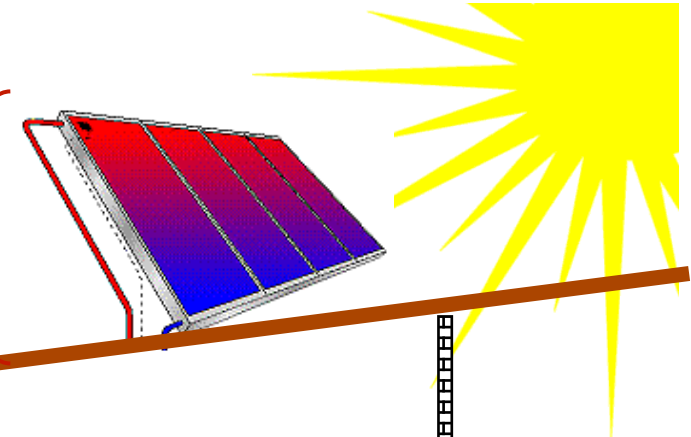
What is Energy Supply Contracting (ESC)?



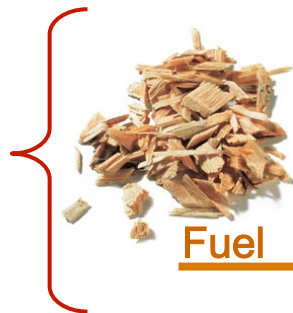
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- ✓ Supply of useful energy (heat, steam, electricity ...) from Renewables
- ✓ Business model: MWh delivered
- ✓ ESC is not discussed a lot ...
- ✓ Good Business model for Renewables, CHP or Heat Recovery ...

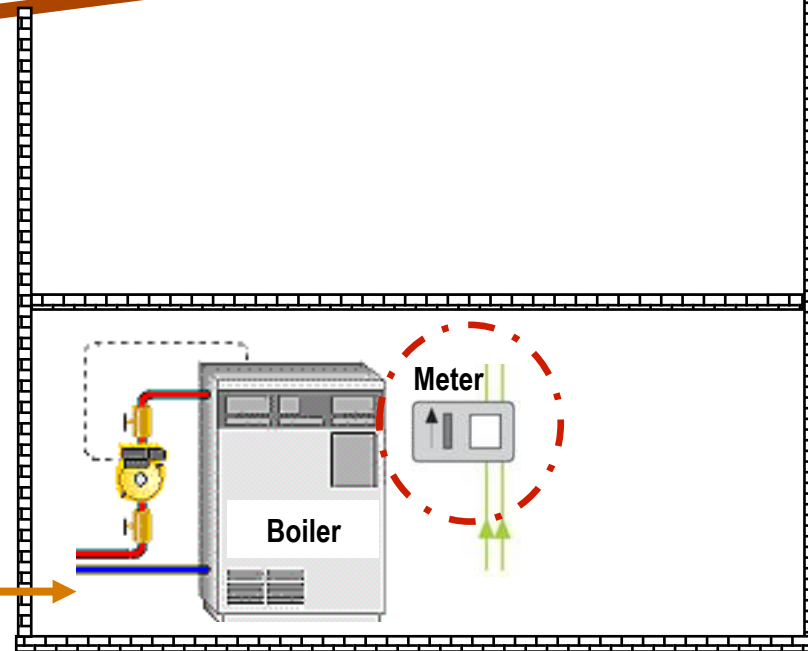
Solar Supply-Contracting
=> MWh_{Solar}



Energy Supply Contracting (ESC)
=> MWh



Fuel

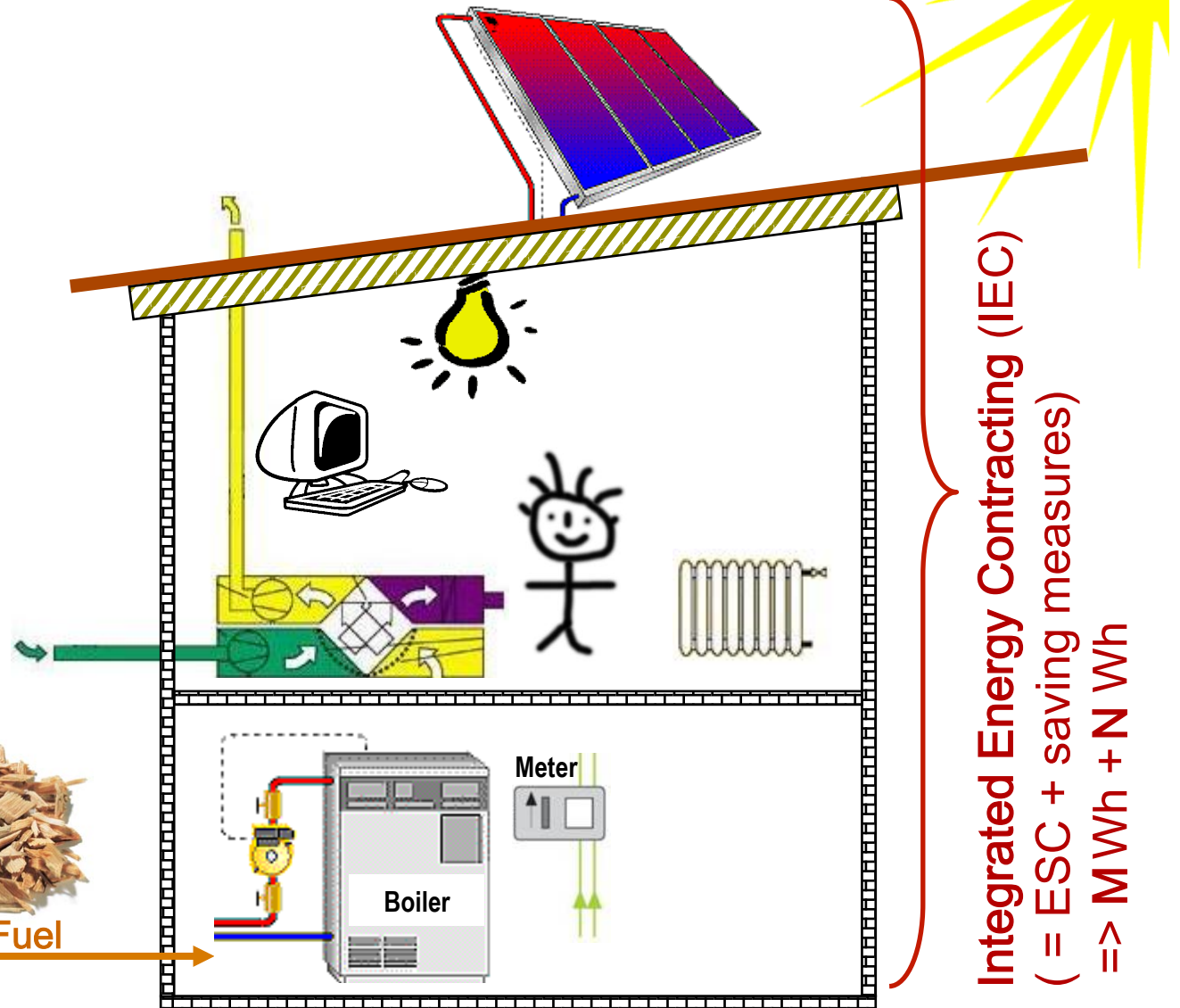
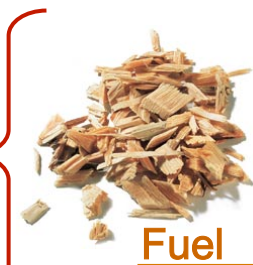


Source: after [Bleyl 2008]

Integrated Energy-Contracting: A new ESCo business model

1. Building on simpler ESC model
2. Expand scope of service to complete building (HVAC, user motivation, building shell)
3. Quality assurance replaces EPC savings guarantee

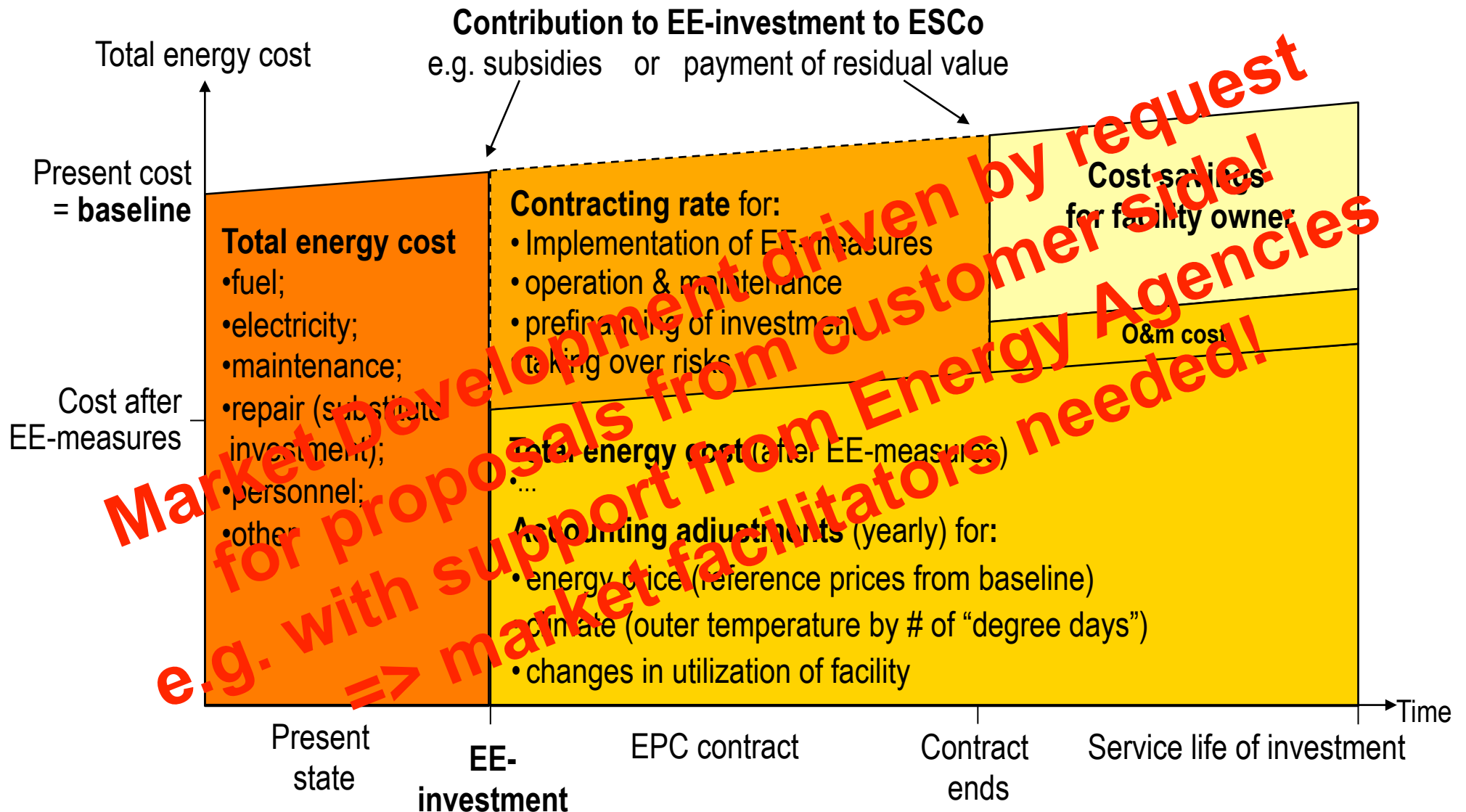
Energy Supply Contracting (ESC)
=> MWh



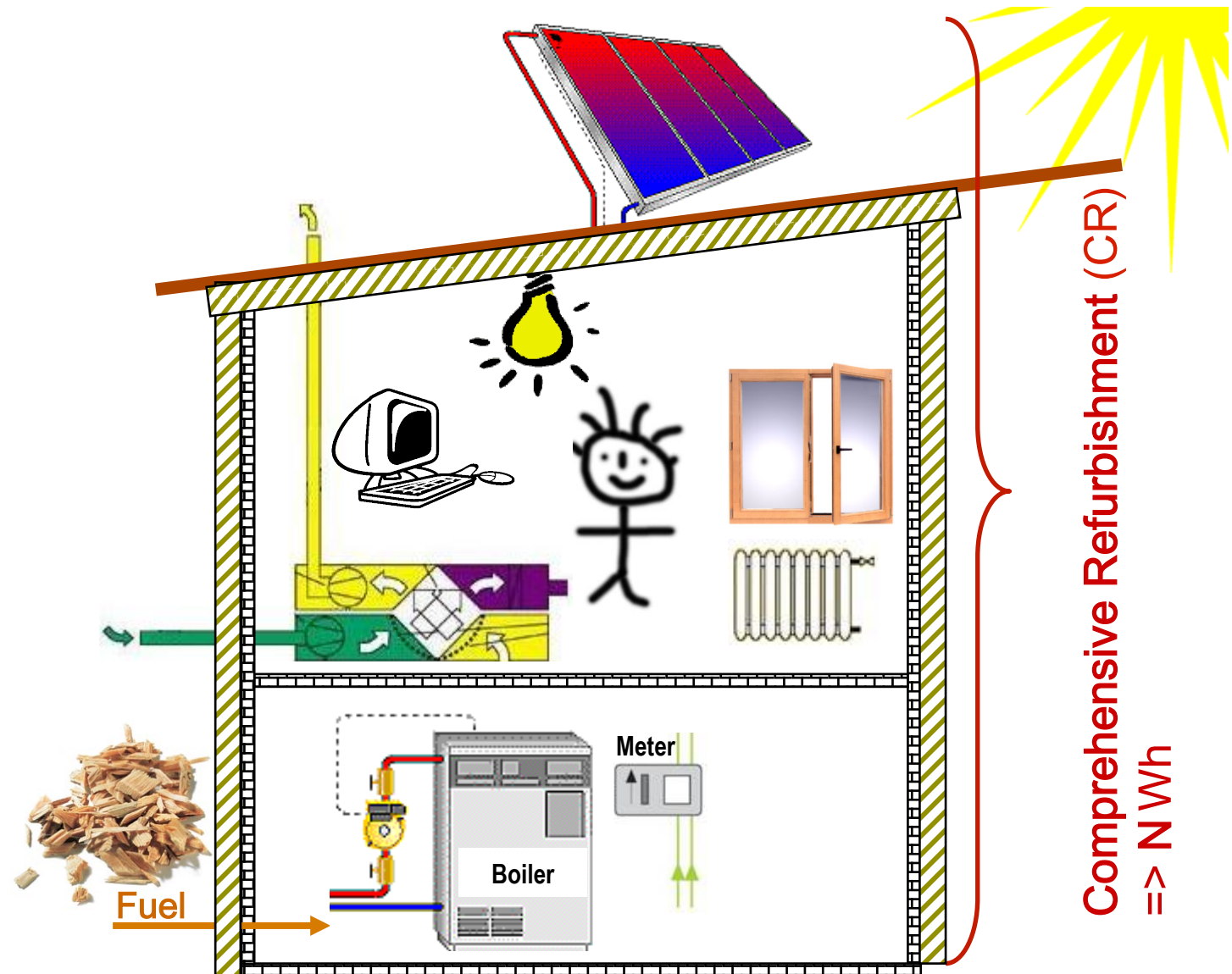
Integrated Energy Contracting (IEC)
(= ESC + saving measures)
=> MWh + N Wh

Source: after [Bleyl 2008]

Energy Performance Contracting (EPC) – Business Model



Comprehensive Building Refurbishment (deep retrofit ...) ESCo models – the Future?



Source: after [Bleyl 2009]

Lessons learned (1/6)



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1. Successful **market development** - in particular for EPC - was **demand side driven**, meaning (pot.) ESCo customers defined their needs and goals for energy service packages and **put out request for proposals on the market**.
- Studies or IGAs are not sufficient to create projects
2. To foster market development, the role of **independent market and project facilitators as mediators between ESCos and their (potential) clients** has proved to be of great value (e.g. energy agencies).
This facilitator role requires more active players and **deserves better support + financing!**

Lessons learned (2/6)



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3. Efficiency markets need **"educated" customers** to demand energy efficiency (services) in the market. Still many educated customers will require facilitators to support them.
4. It requires **new organizational routines**, in particular **on the customer side** (e.g. with regard to procurement practices, interdisciplinary co-operations between different departments and project engineers or long-term cross-budgetary financial management.)
5. And the **decision of the building or business owner to tap into energy efficiency resources** (either voluntarily or forced by regulations) remains a basic requirement – independent of the implementation model.

Lessons learned (3/6)



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6. EE often is not the driving force / not a stand alone business case but a (beneficial) side effect .

Listen better to the “real” needs expressed by customers, build strategic alliances with e.g. security, automation, DR ... to incorporate energy efficiency goals or minimum performance standards early on in the project development.

7. High priority on **concrete projects** in the end-use sectors of public institutions, tertiary sector, trade and industry as well as housing.

Optimize investment decisions according to **project (or better life) cycle cost** and to ensure the results on a long-term basis.
=> ESCo models have a substantial advantages to offer.

Lessons learned (4/6)



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- 8. Financing is not necessarily the core business of ESCOs.**
Their core competence usually lies in technical, economic, and organizational matters of an energy service package
ESCOs should serve as finance vehicle, not necessarily as financiers.
But: Payments to ESCo must be secure
- 9. Energy-Contracting is a flexible and modular energy service package.** This also implies the ESCo customer may define – depending on his or her own resources – what components of the energy service will be outsourced and which components he carries out himself.

Lessons learned (5/6)



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- 10. ESCo models offer integrated solutions for project life cycle** (planning, construction and operation&maintenance), **ESCo is interdisciplinary approach** (technical, economical, financial, organizational and legal aspects) **to achieve guaranteed performance and results** of the efficiency technology deployed **=> great, but complex products!** (too complex?)
- 11. This integrated and multidimensional approach opens up solutions, which are not achievable through a standard, disintegrated implementation process** (e.g. life cycle cost optimization across investment and operation budgets, integrated planning or performance guarantees over the complete project cycle ...)

Lessons learned (6/6)



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No easy solutions for Energy Efficiency!

Many obstacles root in the fragmented nature and small units of end-use energy conservation potentials and must not be attributed to Energy-Contracting models.

On the way to better **developed energy service markets** **strong efforts on all levels of policy framework, capacity building and concrete market development remain to be done.**

In Norway, Europe, India ...



RWE Energiedienstleistungen



IEA-DSM, Task XVI: "Energy Efficiency and Demand Response Services"

*Proposal for
Extension of Task Work Plan
ExCo, Nov. 3-4th 2011, South Korea*

Jan W. Bleyl, Graz Energy Agency Ltd, Austria



Thank you!
Questions welcome.
And ideas for
further co-operation.

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In-House vs. ESCo (outsourcing) implementation

Decision criteria (checklist)

Decision criteria	in-house	Energy service (outsourcing)
Financing of investment	100 % owner	0 – 100 % owner
Technical + economic risks	Owner	ESCo
Optimization, operation & maintenance	Requires motivated personal	in the own interest of oof ESCo
Guaranteed results (e.g. savings)	No	Yes
Functional guarantees	only warranty period	Over contract term
Price guarantees (e.g. heat price)	No	yes („all inclusive“)
Longterm contractual obligation	No	Yes
Transaction cost for ESCo project	No	Yes
Know-how + Competition of ideas + optimization	Owner (+ consultant)	Owner (+ Consultant) + ESCo
Project specifications	(generally) detailed	(commonly) functional
Service package / Outsourcing	No	Yes
Size of building / facility	Any	Energy cost: ESC: > 20.000 € /a EPC: > 100.000 € /a
Life cycle cost (LCC)	(generally) higher	(generally) lower

Energy Services – Hotspot Berlin

BERLINER *nergie* AGENTUR



Mini-CHP works in many cases...

with more and more customers



CHP Lindenhof
20 kW_{el} / 46 kW_{th}

CHP Pulvermühle
50 kW_{el} / 95 kW_{th}

CHP Bremer Höhe
18 kW_{el} / 42 kW_{th}

CHP Ostseeplatz
34 kW_{el} / 78 kW_{th}



CHP BSR
50 kW_{el} / 95 kW_{th}

CHP Stadt & Land
50 kW_{el} / 95 kW_{th}

CHP BIM
34 kW_{el} / 78 kW_{th}

CHP Lindenhof
20 kW_{el} / 46 kW_{th}

ESC business model
recommended for CHP,
Renewables or heat recovery
(whenever energy can be measured)

Lessons learned (2/7)

3. Contracting to an ESCo is a strategic “**make or buy**” decision of the (potential) client. Outsourcing to an ESCo competes with in-house implementation and has substantial implications on the outsourcing institution.
This decision implies either trusting one **general contractor** (ESCo) versus contracting to individual subcontractors (Planning, HVAC, Electric ...)
4. **Outsourcing requires new organizational routines**, in particular **on the customer side** (e.g. with regard to procurement practices, interdisciplinary co-operations between different departments and project engineers or long-term cross-budgetary financial management.)