Task XVI
"Competitive
Energy Services"
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Energetic Solutions
DDI Jan W. Bleyl

IEA DSM Task XVI
"Competitive Energy Services
(Energy-Contracting, ESCo Services)"

ESCo Market Development: Business Models, Innovations and Lessons Learned

VTT, Espoo, Finland, November 14th 2012

Rob Kool for Jan W. Bleyl

Outline + Key Messages

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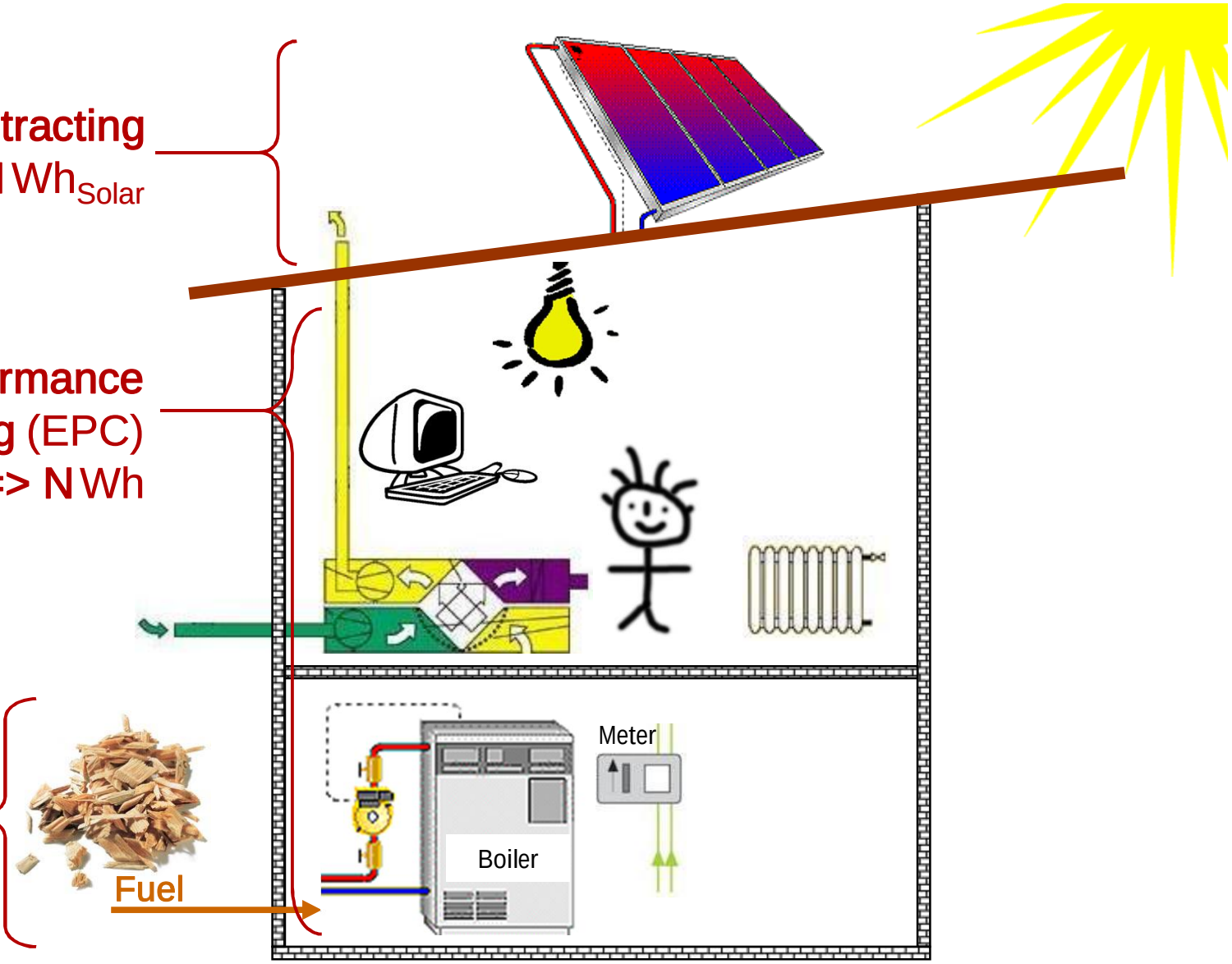
1. **Two basic business models** in (most) **ESCo markets: Energy Performance Contracting** (EPC) and **Energy Supply Contracting** (ESC). Typical **market properties** and **limitations**
2. **ESC:** a good and robust **business model for renewables, CHP** or **heat recovery.** But **limited to supply side efficiency.**
3. **Integrated Energy Contracting** (IEC) – A new ESCo business model **to combine savings** and **(renewable) supply**
4. **Market Development: Facilitators needed to connect** (potential) **customers and ESCos** (in particular for EPC and IEC)
5. Conclusions: Some l**essons learned**

Two Basic ESCo Business Models

Solar Supply-Contracting
(Solar ESC) => **M**Wh_{Solar}

Energy Performance Contracting (EPC)
=> **N**Wh

Energy Supply Contracting (ESC)
=> **M**Wh



Source: after [Bleyl 2008]

ESC vs. EPC: Typical Market Properties

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	ESC	EPC
End-use markets	Public institutions, residential, commerce, industry	Only public institutions (including universities, hospitals, leisure facilities)
Project Size: Minimum Energy Cost Baseline	> **20,000** €/a	> **200,000** €/a (ESP Berlin: 1,88 Mio €/a)
Energy savings	**15 – 20 %** => limited scope of service	**20 – 30 %** (up to 30 – 50 %)
CO_2 Savings	**40 – 90 %** => change of energy carrier	**20 – 30 %**
ESCo market share (in Germany 2008)	**85 – 90 %**	**10 – 15 %**
Business model / Performance measurement	**Useful energy** (**M**Wh)	**Energy savings** („**N**Wh“) => Baseline problems => High transaction cost

Source: [Bleyl 2009]

CO_2 + Energy Cost Savings in 55 ESCo Projects (Germany)

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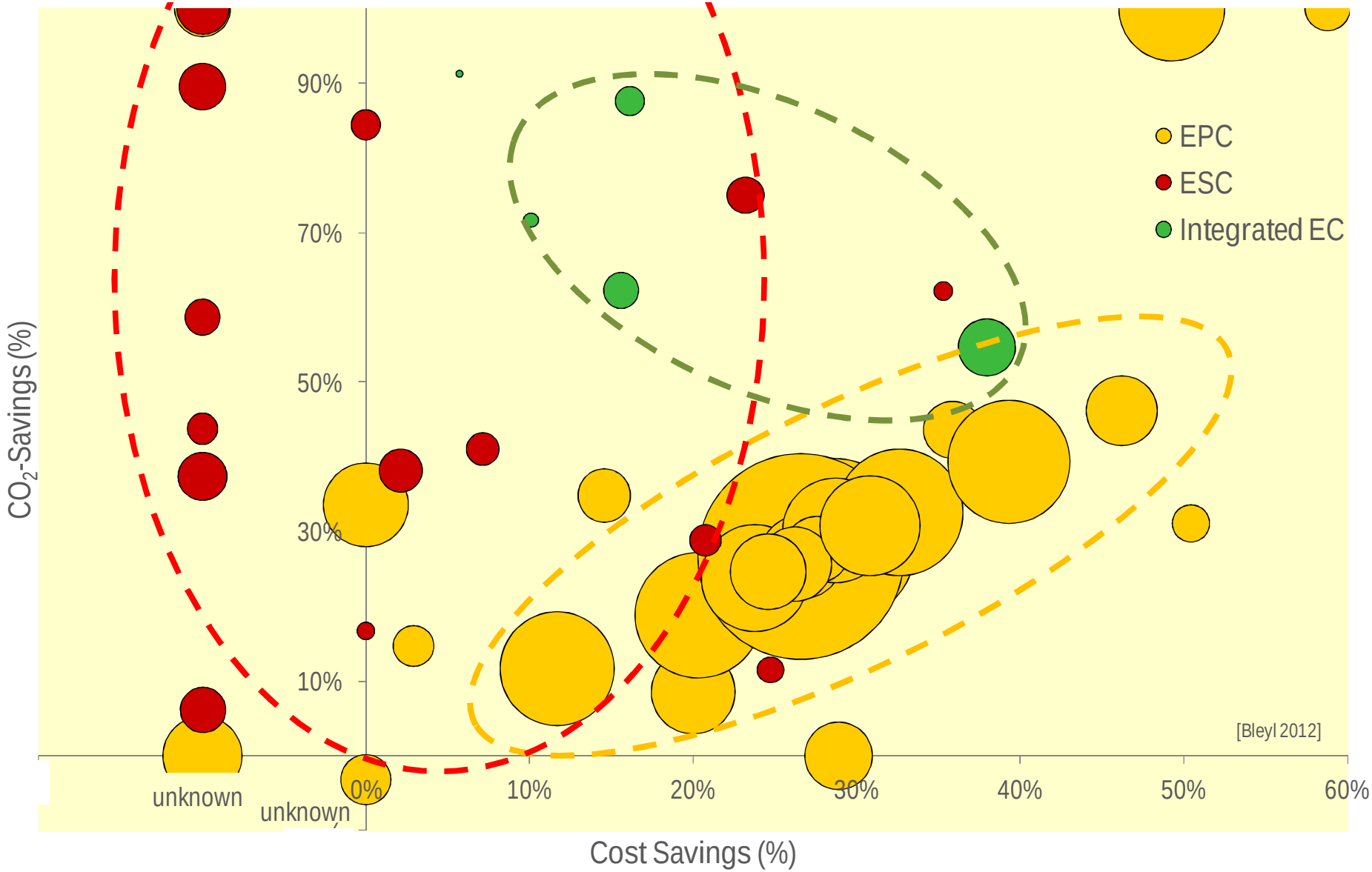

What is Energy Supply Contracting (ESC)?

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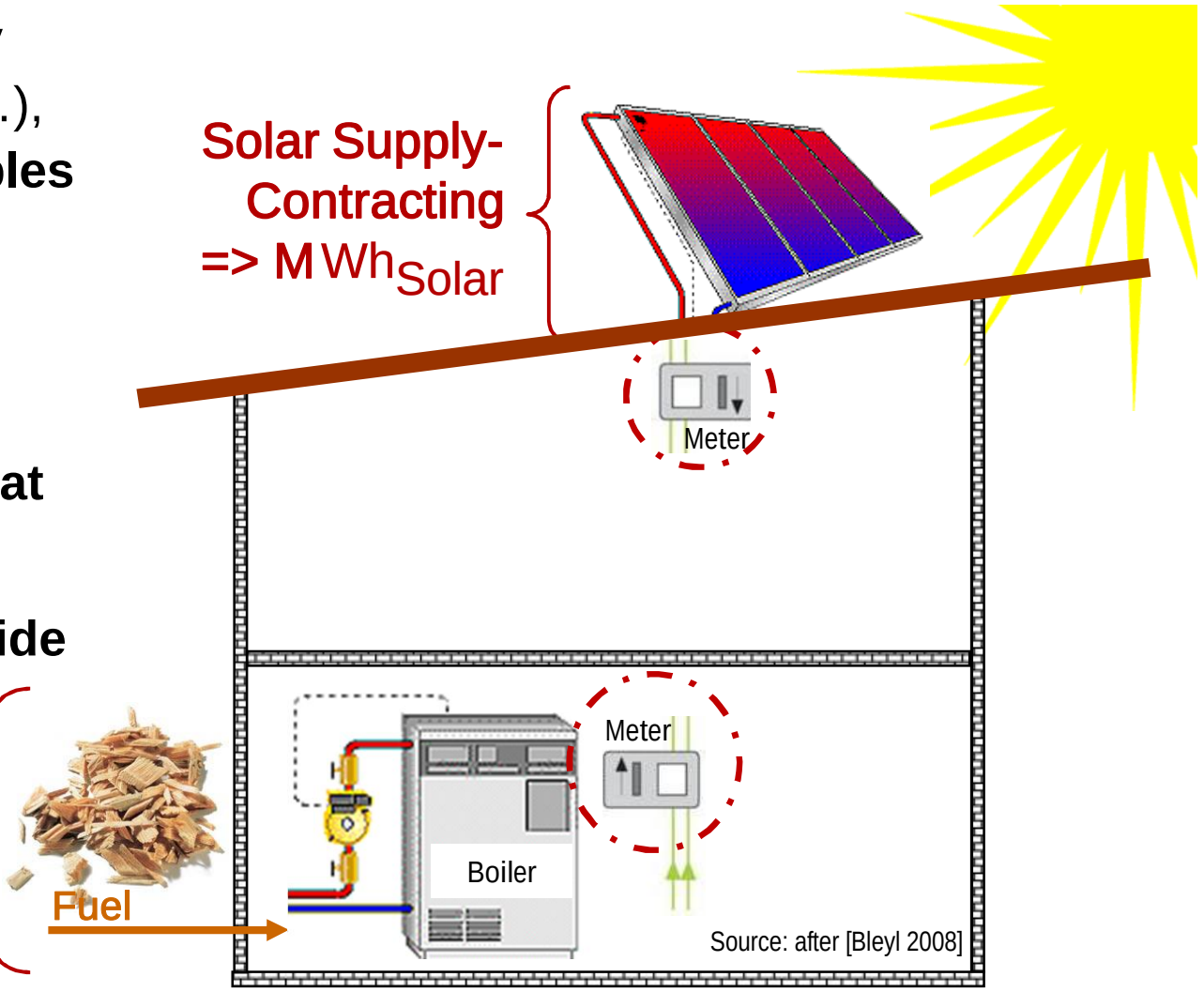
- ✓ **Supply of useful energy** (heat, steam, electricity …), preferably from **Renewables**
- ✓ **M&V: M**Wh **delivered** (pay for output, not fuel)
- ✓ Good business model for **Renewables, CHP or Heat Recovery …**
- ✓ But: **Limited to supply side efficiency**

Solar Supply-Contracting => M Wh$_{Solar}$

Energy Supply Contracting (ESC) **=> M**Wh



Objectives of IEC

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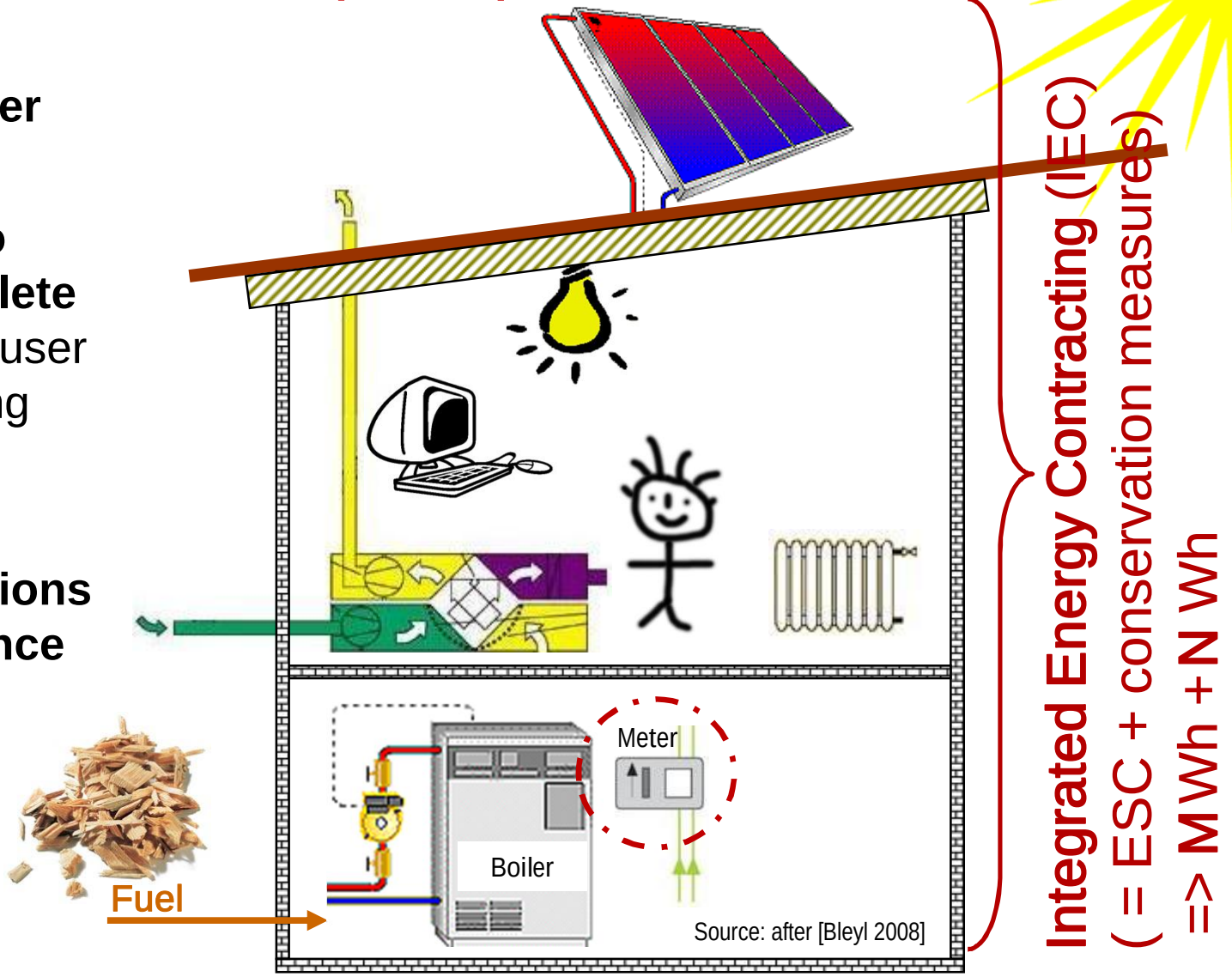
1. To **increase the saving potential** of the ESC model => **Conservation first**!,
2. to build on success of the ESC model **to reach out to additional end-use markets**.
3. to **unite energy conservation** and **(renewable) energy supply** into an integrated approach / product,
4. to **decrease transaction, measurement** & **verification cost**,
5. to make **performance based ESCo services available to smaller projects** …

(Not against EPC, wherever it is marketable!)

Integrated Energy-Contracting (IEC): Savings + (renewable) Supply

1. Building on **simpler ESC model**
2. **Expand scope to savings in complete building** (HVAC, user motivation, building shell)
3. **Simplified M&V: Savings calculations + quality assurance**



Comprehensive Refurbishment (deep retrofit …) – the Future?

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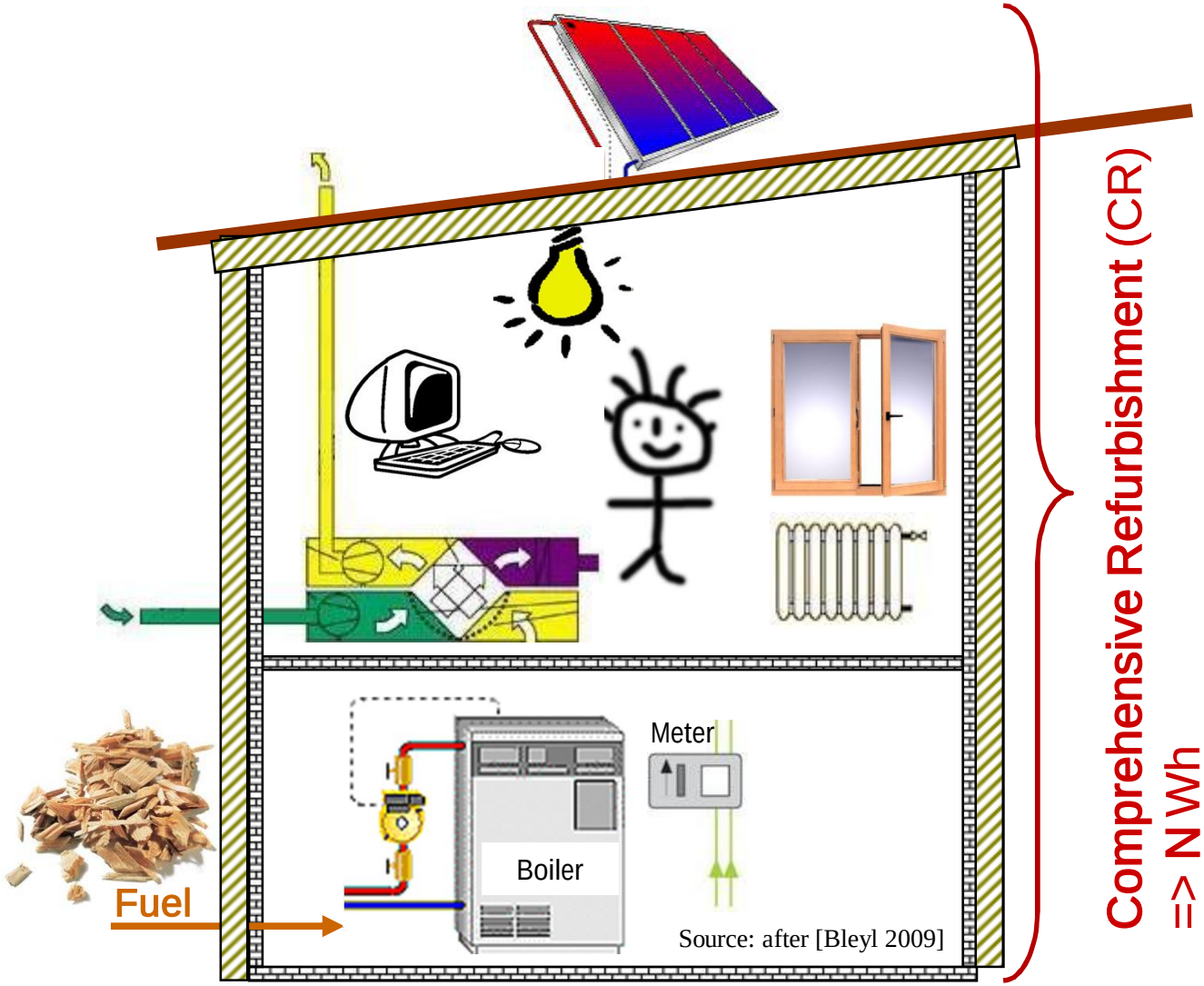
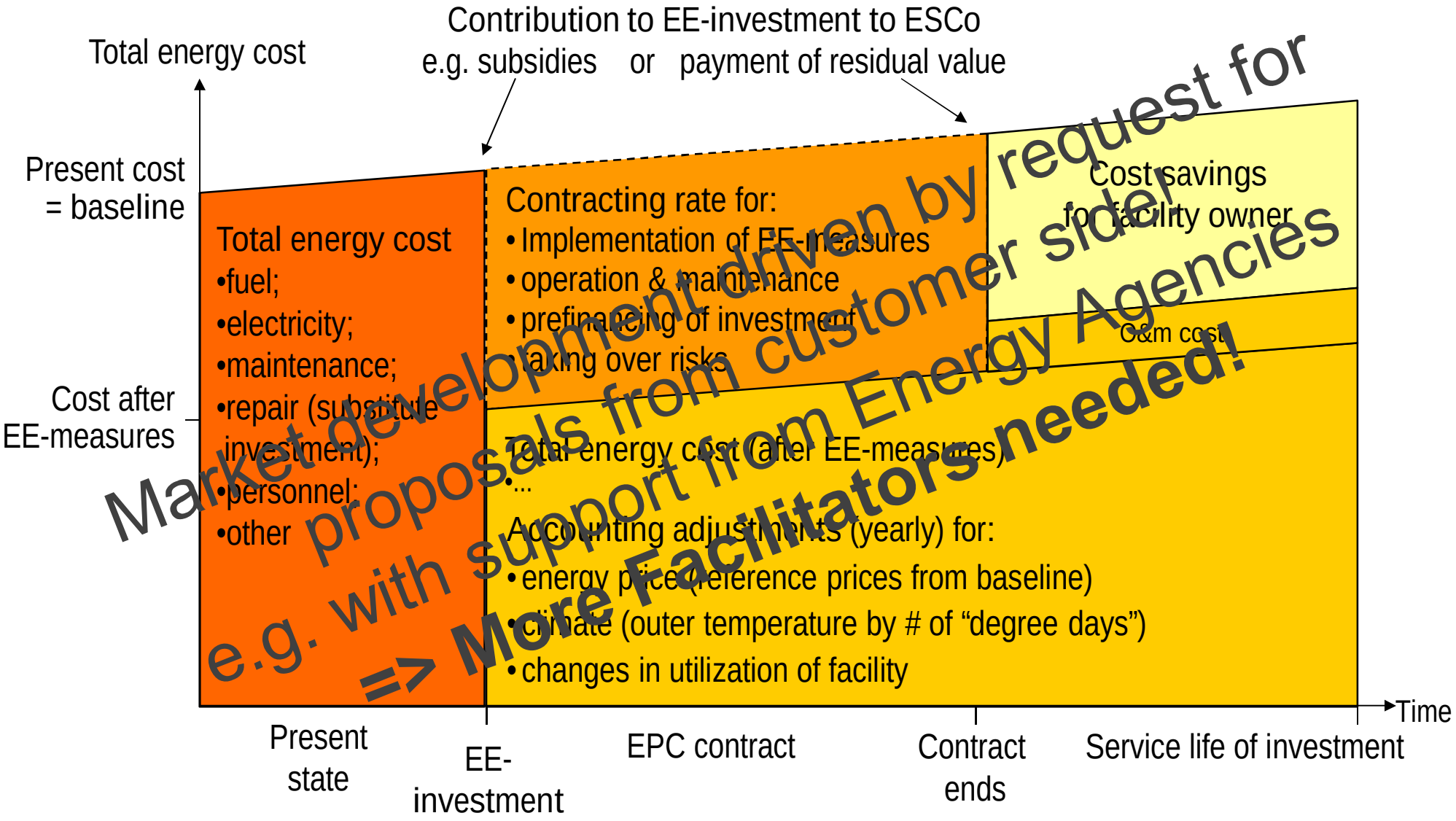


Energy Performance Contracting (EPC) Business Model



Market development driven by proposals from customer side!
e.g. with support from Energy Agencies
=> More Facilitators needed!

Project Development: Facilitators needed to link Clients and ESCos

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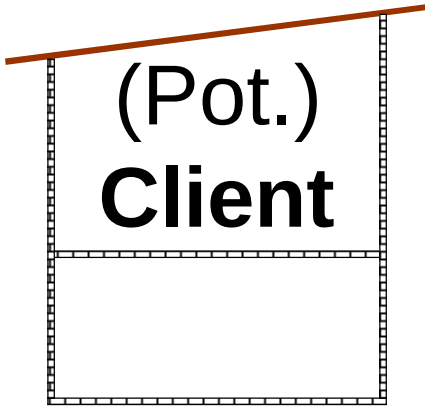
Clients | Facilitators / Intermediaries | EE Suppliers



Source: [after Bleyl 2010]

Feasibility study

Structuring + business Model

Procurement procedure

Tender documents

Proposal evaluation

ESCo contract

M & V + quality assurance

ESCOs

Finance, subsidies

Engineers, consultants

Technologies, Manufacturers

...

Lessons learned (1/5)

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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 are not sufficient to develop projects/markets
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 (2/5)

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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 (3/5)

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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 (4/5)

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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 (5/5)

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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 …)

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Thank you!

Questions and remarks welcome!

And ideas for co-operations

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IEA DSM Task XVI - Phase III builds on work, which was previously led by Graz Energy Agency. Thank you GEA!