Task XVI "Competitive Energy Services"

with support from:

Solving the EPC-Baseline Problem? The new Integrated Energy Contracting Model

DDI Jan W. Bleyl

IEA dsm Task XVI Operating Agent

c/o Grazer Energieagentur GmbH

contact: Bleyl@Grazer-EA.at

IEC: Goals

1. **to unite energy conservation and** (renewable) **energy supply into an integrated product**
2. **to discuss quality assurance instruments and simplified measurement & verification methods as a substitute for EPC savings guarantee**

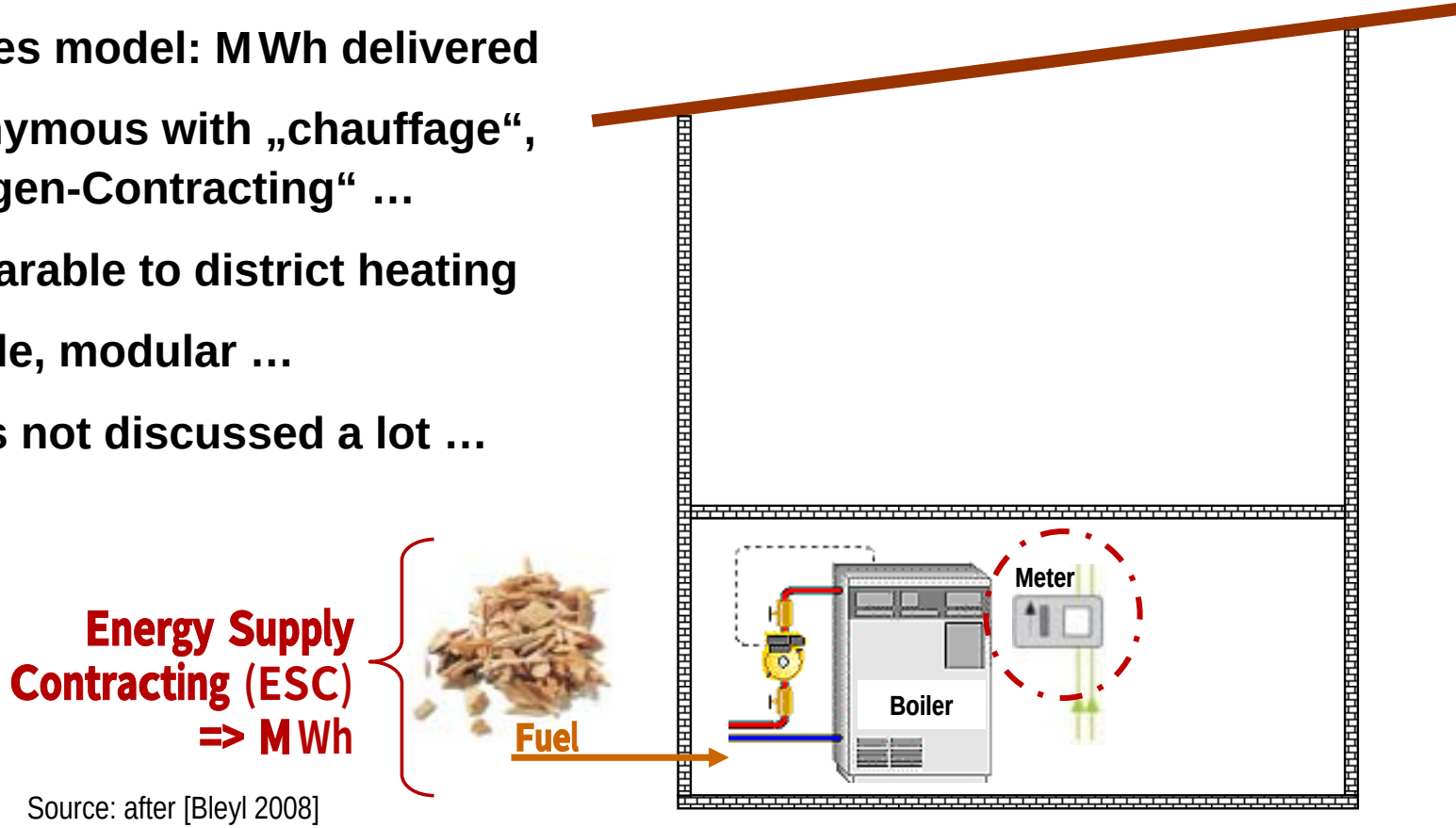
***Not against Energy Performance Contracting** (EPC), wherever it is marketable!*

Outline

1. **Two basic business models** (in German) **ESCo market: EPC and ESC and their market shares**
2. **EPC** vs. **ESC:** (Standard) **Market properties and limitations**
3. (Methodological) **EPC-problems**
4. **Introduction of Integrated Energy Contracting** (IEC)
5. **IEC in practice**
6. **Discussion and Outlook**

What is Energy Supply Contracting (ESC)?

- ✓ **Supply of useful energy**
  (heat, steam, electricity …)
- ✓ **Busines model: MWh delivered**
- ✓ **Synonymous with „chauffage“, „Anlagen-Contracting“ …**
- ✓ **Comparable to district heating**
- ✓ **Flexible, modular …**
- ✓ **ESC is not discussed a lot …**



Source: after [Bleyl 2008]

Two Basic ESCo Products (in German) Markets: ESC and EPC

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

Energy Supply-Contracting

Energy Performance Contracting

Market shares?

ESC is Dominating the Market

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

Energy Supply-Contracting

~ 90 %

Energy Performance Contracting

~ 10 %

Sources: [Prognos 2009], [VfW 2009]

ESC vs. EPC: Market Properties

	ESC	EPC
End-use markets	Residential, Industry, Commerce, Public …	only Public Buildings, Hospitals, Swimming
Efficiency potentials	**15 – 20 %** (limited scope of service)	**20 – 25 %** (30 – 50 %)
Project Size: Minimum energy cost baseline	**~ 20,000** €/a	**> 100,000** €/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**

Source: [Bleyl 2009]

EPC: (Method.) **Problems** (1/2)

1. **Savings measurement is often difficult**
   (only indirect measurement: Baseline – actual consumption)
   - ⇨ **Baseline determination** (lack of (accurate) historic data …)
   - ⇨ **Baseline adjustments over project duration**
     (load, utilization, climate …)
2. **Measurement&Verification may cause high (annual) expensis**
   (in relation to project volume) => Transaction cost
3. **ESCo savings guarantee may be costly**
   (ESCo calculates risk surcharges)

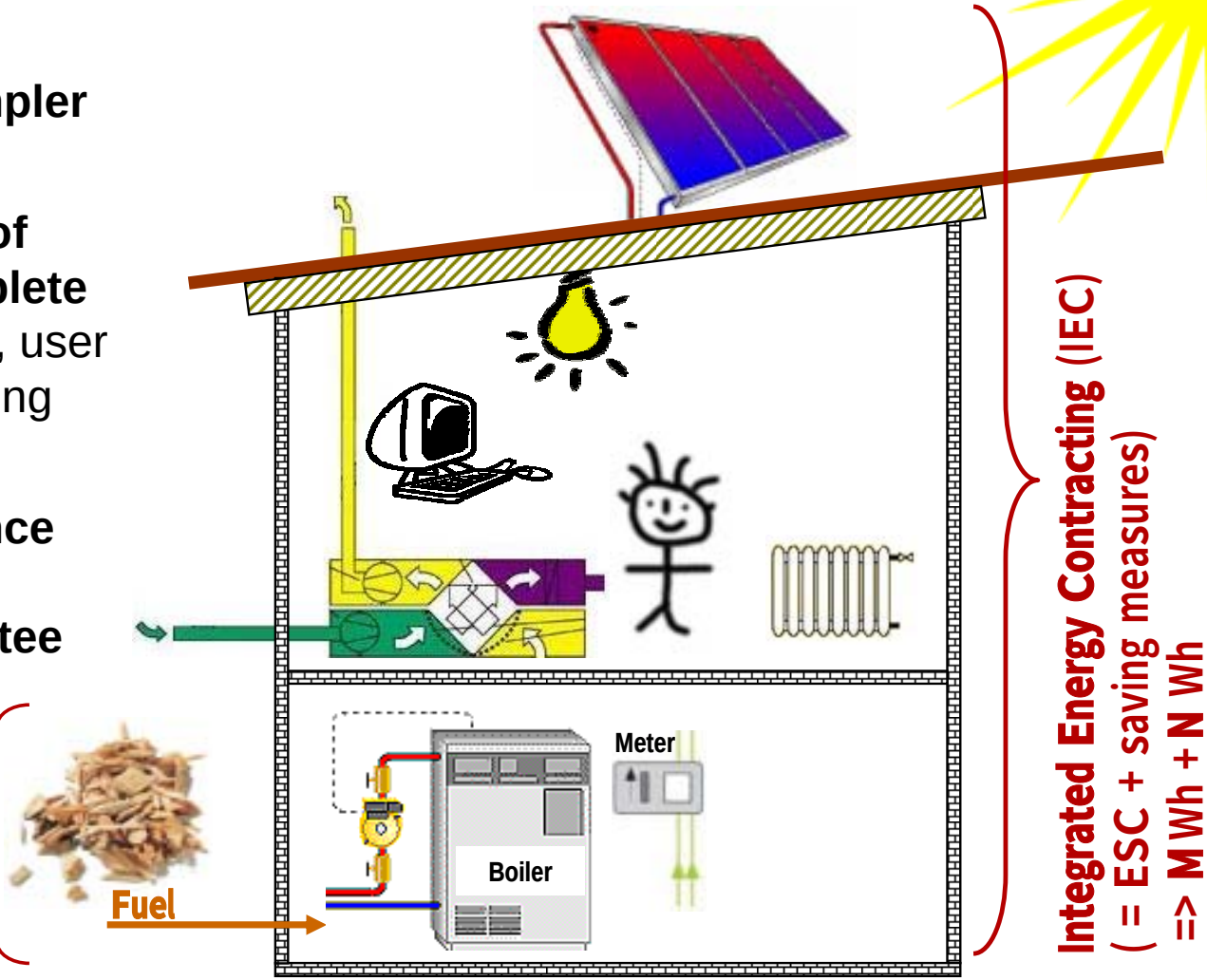
EPC: (Method.) Problems (2/2)

4. **Expectation: 100 % refinance from savings (+ immedate budget relieve)**
5. **In EPC-practice, comprehensive building refurbishment is the exception**
6. **„Negawatthours“ (savings) „can not be touched“ and the need is not felt** (as opposed to energy supply)

=> High transaction cost, insecurity of (prospective) project partners, minimum energy cost baseline: one order of magnitude above ESC …

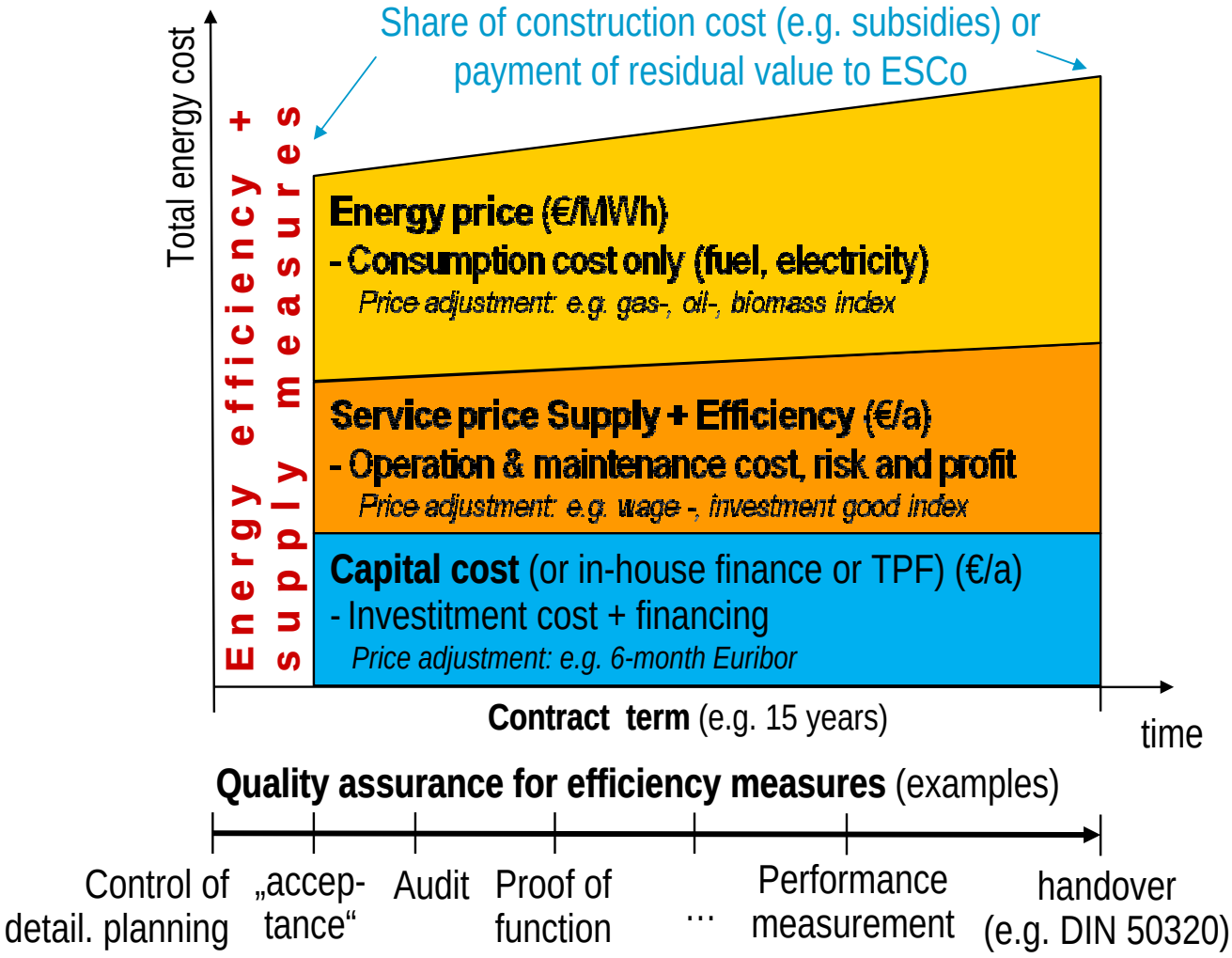
Integrated Energy-Contracting: Concept

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**

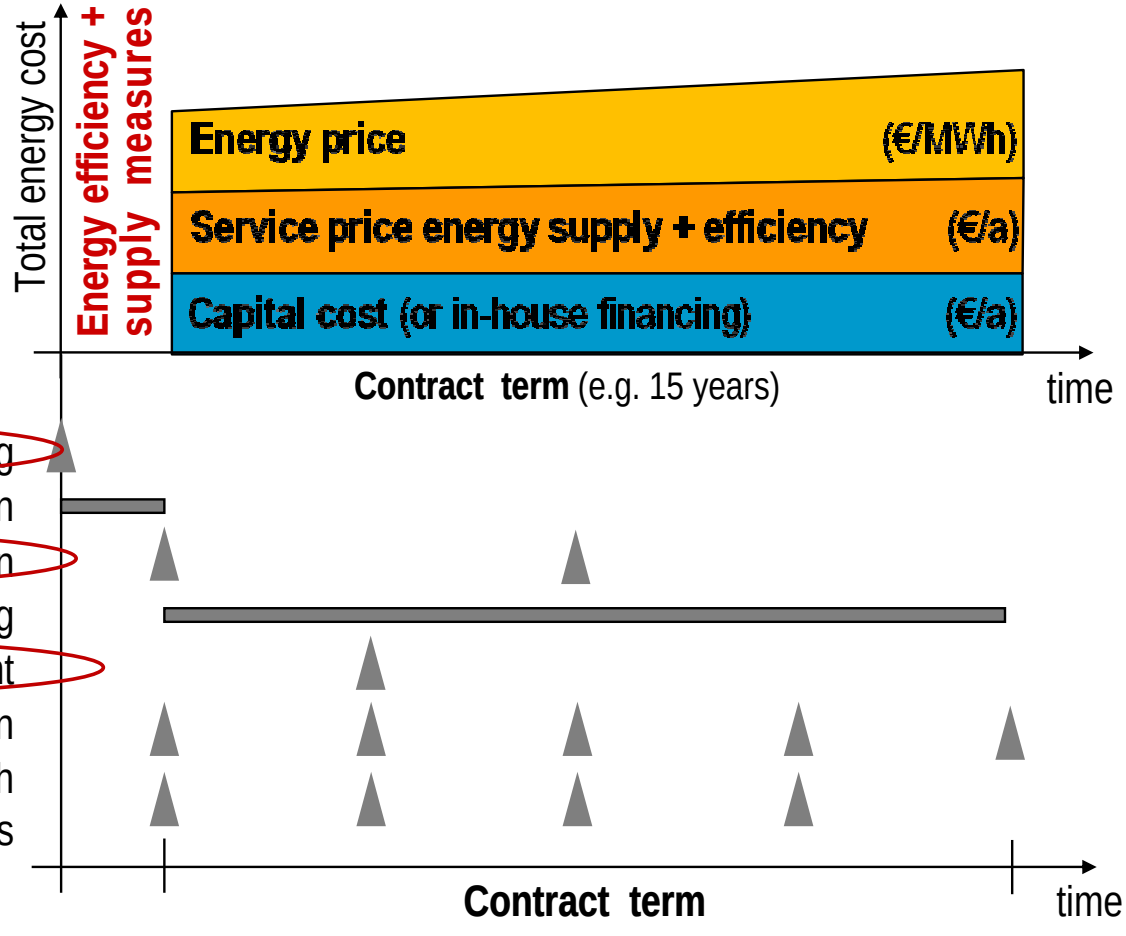


Source: after [Bleyl 2008]

Integrated Energy-Contracting (IEC) – Business model and quality assurance



Integrated Energy-Contracting (IEC) – **Quality Assurance** (Examples)



Quality assurance for energy efficiency measures (Examples)**:**

- Controlling of detailled planning
- Coaching + inspection of construction
- „Acceptance“, proof of function
- Energy book keeping
- Performance measurement
- Proof of user motivation
- Annaul audits with improvement propsals

Source: âfter [Bleyl 2009]

IEC in Practice
LIG, Austria: Results

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8 Projects implemented up to now

~ 30,000 m^2, e.g. elderly home, seminar + guest house …

Savings achieved:

- ✓ **Heat:** **16,8 - 30,8 %**
  => no comrehensive building refurbishment
- ✓ **Heat load:** **0 - 27,6 %**
- ✓ **Electricity:** **4,8 - 11,8 %**
  => higher potential? Requires more attention
- ✓ **Wasser:** **0 – 20 %**
- ✓ **CO_2:** **92 %**
  (switch to renewable)

IEC in Practice
LIG, Austria: Results

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Cash Flow energy efficiency measures (15 year project cycle)**:**

€ - 15,000 up to **- 250,000 !**

(total savings – cost, negative cash flow = net savings)

=> co-financing of building shell refurbishment?

Quality Assurance Instruments applied (selection)**:**

- ✓ Review of detailed planning,
- ✓ “acceptance” after construction phase,
- ✓ measurement of solar thermal output,
- ✓ thermographic recordings,
- ✓ computational saving verifications …

And: switch to renewable heat supply with competitive prices

Discussion and Outlook

1. **No simple solutions for EE. Implementation tools?** [IEA 2006]
   => Stronger ESCo role in NEEAPs …
2. **Customers decision to invest in EE is key.**
   => How to develop customer demand? Market facilitators …?
3. **IEC allows to combine** (renewable) **supply and energy conservation in an integrated product.**
   EE more attractive in combination with renewable supply?
4. **QAI substitute EPC savings guarantee:** A solution to baseline problems? Sufficient to ensure savings? Penalties needed? IPMVP?
5. **Outlook: Comprehensive Refurbishment including building shell**
   (IEA dsm Task XVI discussion paper available)
6. **Projects, projects, projects**

Questions or Remarks?
What can we do together?

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Thank you for your attention!

Thank you:

Task XVI
"Competitive Energy Services"

bmvit
Bundesministerium für Verkehr, Innovation und Technologie
IEA FORSCHUNGS KOOPERATION

Contact: Bleyl@Grazer-EA.at