

***IEA DSM Task 16 'Innovative Energy Services'***  
***Phase IV Life-Cycle Costing;***  
***'Deep Retrofit'; Simplified M&V;***  
***Crowd-Financing for EE & RE projects***  
***& Energy Services Taxonomy***

**DSM Day, Stockholm, Sweden, March 16, 2016**

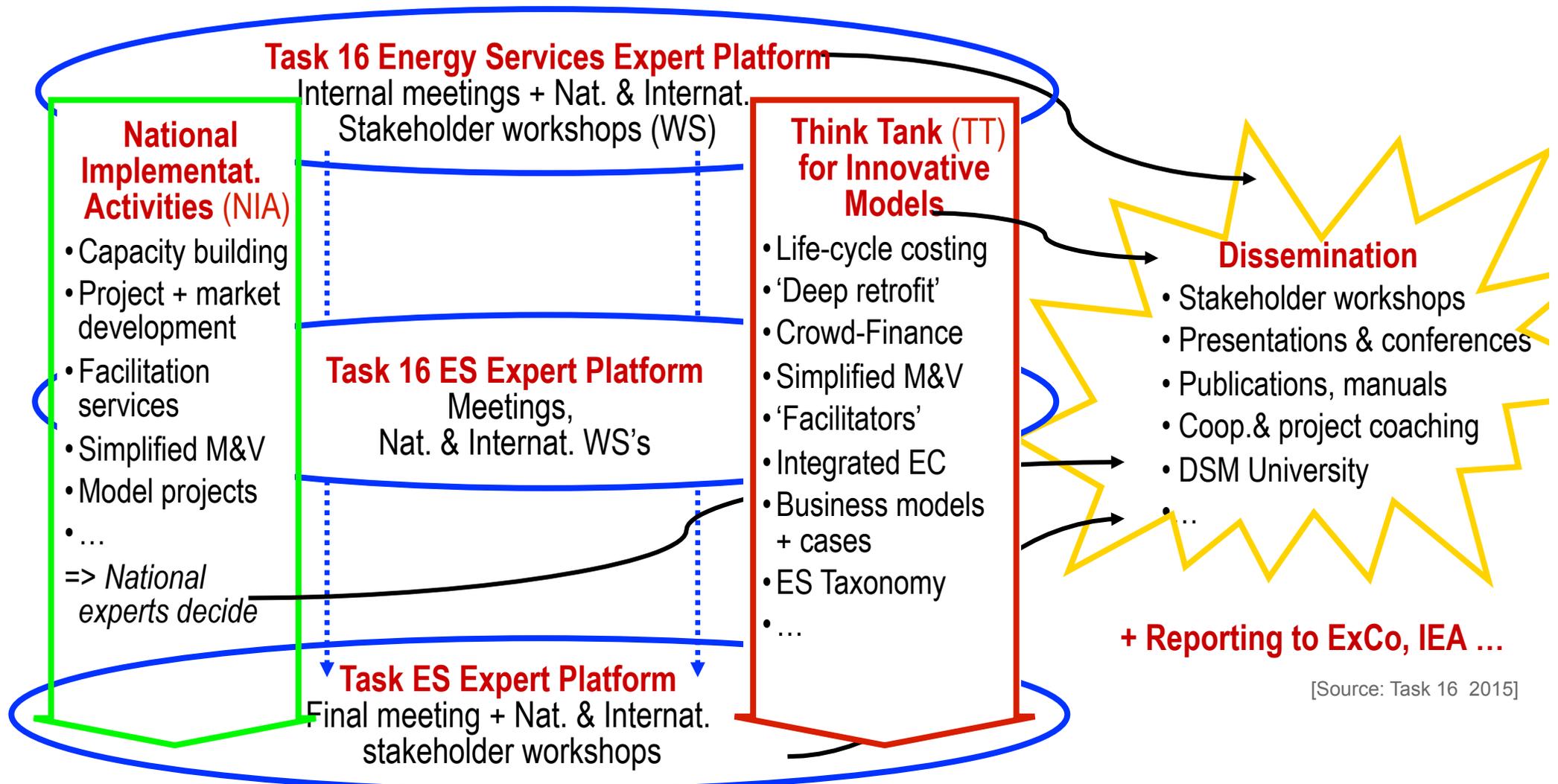
**Jan W. Bleyl, Task 16 Operating Agent**

# Task 16 in a nutshell

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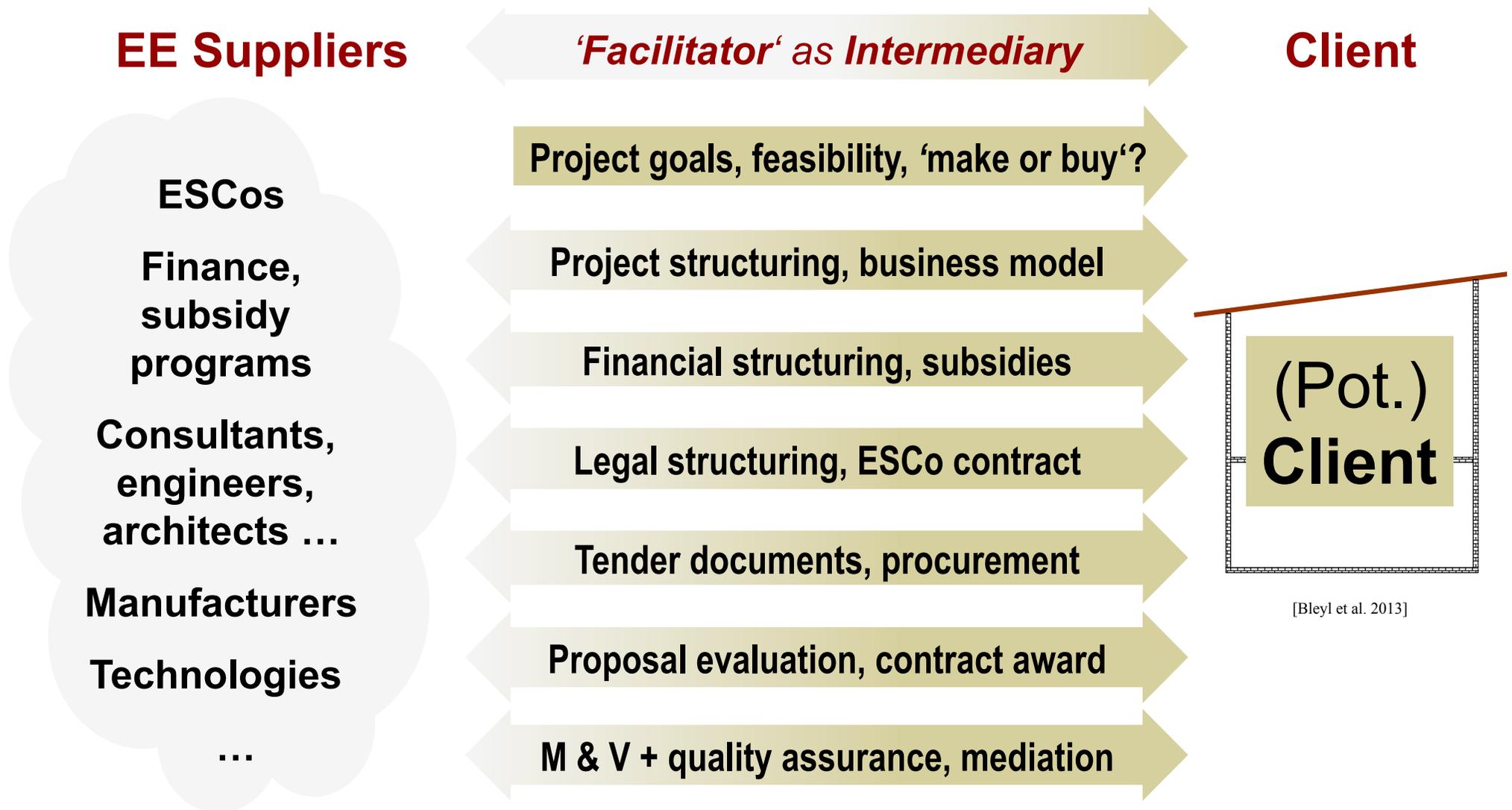
- 1. Innovations in performance-based Energy Services (ES):**  
*=> Think Tank, e.g. sM&V, Facilitators, IEC ...*
- 2. Task 16 Energy Services Expert Platform:**  
*=> Meetings, mutual coaching & invite guests ...*
- 3. National implementation activities (NIA)**  
*=> Individual ES market development in each country*
- 4. Dissemination of results:**  
*=> Publications, stakeholder workshops, DSM-University ...*

# Continue in well established structure. With new Think Tank and NIA topics



[Source: Task 16 2015]

# Lesson learned: 'Facilitators' needed as Enablers between Clients & ESCOs



[Bleyl et al. 2013]

# Literature reference and webinar: Task 16 paper on the Role of ‚Facilitators‘

Bleyl, Jan W. et al.

## ***ESCo Market Development: A Role for Facilitators to play***

in ECEEE Summer Study, paper ID 3-472-13, Belambra Presqu'île de Giens, France June 2013

by **Adilipour; Bareit; Bleyl; Bourgois; Coolen; Kempen; Kim, Kil-Hwan; Jang, Hye-Bin; Cho, Sung-Hwan; Vanstraelen**

**Leonardo ENERGY Webinar:**

[www.leonardo-energy.org/webinar/esco-market-development-role-facilitators-play](http://www.leonardo-energy.org/webinar/esco-market-development-role-facilitators-play)

Bleyl et al., paper ID 3-472-13

## ESCo market development: A role for Facilitators to play

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### Abstract

Energy-Contracting is a many times proven 'delivery mechanism' to implement demand side energy efficiency

## A Teaser of our current work:

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### ***Life Cycle Cost Analyses of a Building 'Deep Retrofit' Case***

***= > Economic (pre-)feasibility?***

***= > Financiability?***

***= > Bankability?***

***= > Communication with stakeholders?***

# Case study office building: Deep Retrofit to Passive House standard

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## Key figures:

- ⇒ Floor area: 1.680 m<sup>2</sup>
- ⇒ Energy cost baseline: 39,000 EUR/a => price developm.: 2%/a (1,5%/a)
- ⇒ CAPEX (energy retrofit only): 560,000 EUR (330 EUR/m<sup>2</sup>)

# Goals and questions to be answered

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Detailed technical, economic and financial analyses of a Deep Retrofit business case:

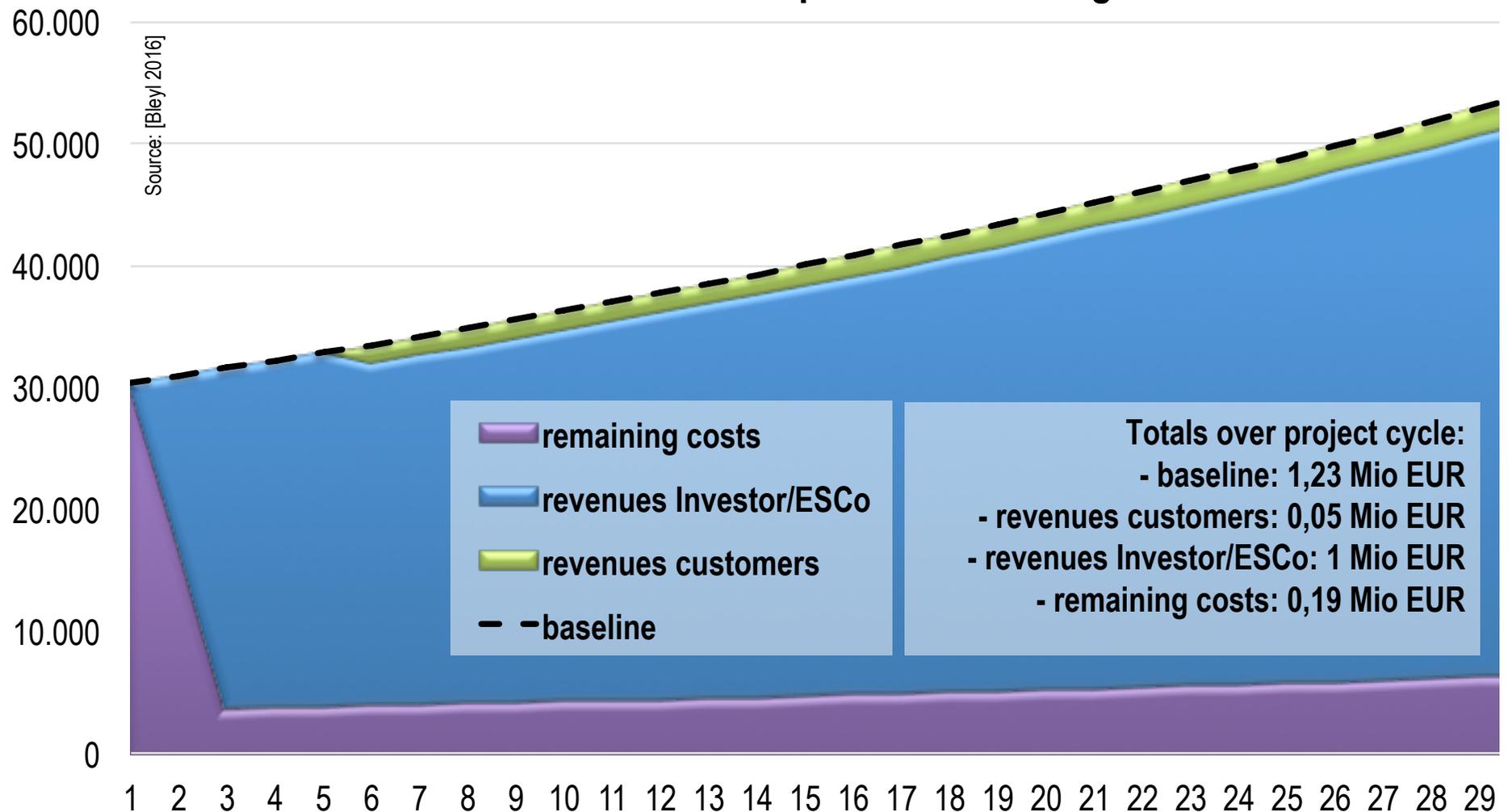
- **Economic viability and sensitivity analyses?**
- **Finance: Reporting, financial engineering, & due diligence**
- **How to communicate with decision makers?**

*Other applications:*

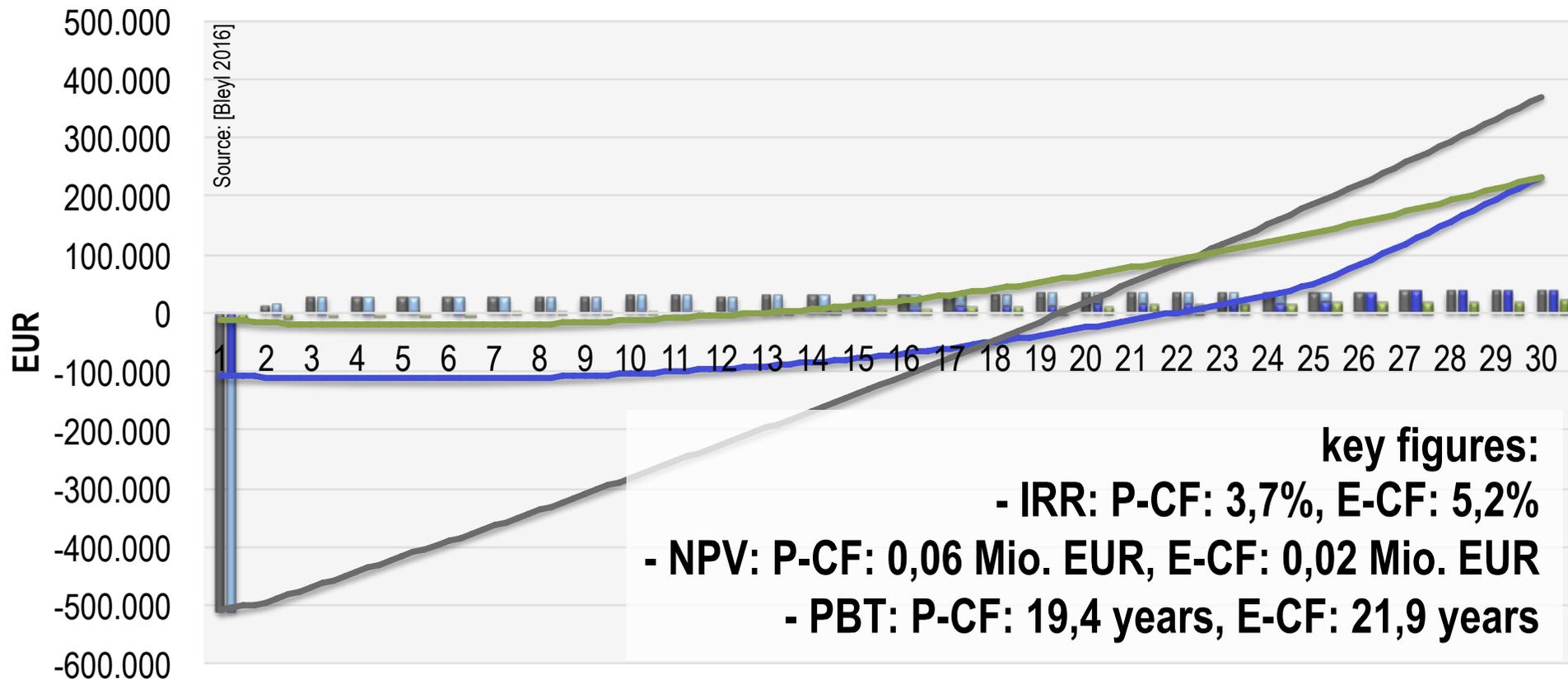
- *Economic and technical **project management and risk assessment over life cycle** => e.g. sensitive parameters*
- ***ESCos: Proposal calculation***
- *Support **policy design**, e.g. subsidy or funding demand calculations (amount and timing)*

# Baseline-, revenue development of heat energy savings (84 EUR/MWh, 2%/a)

baseline + revenue development heat savings

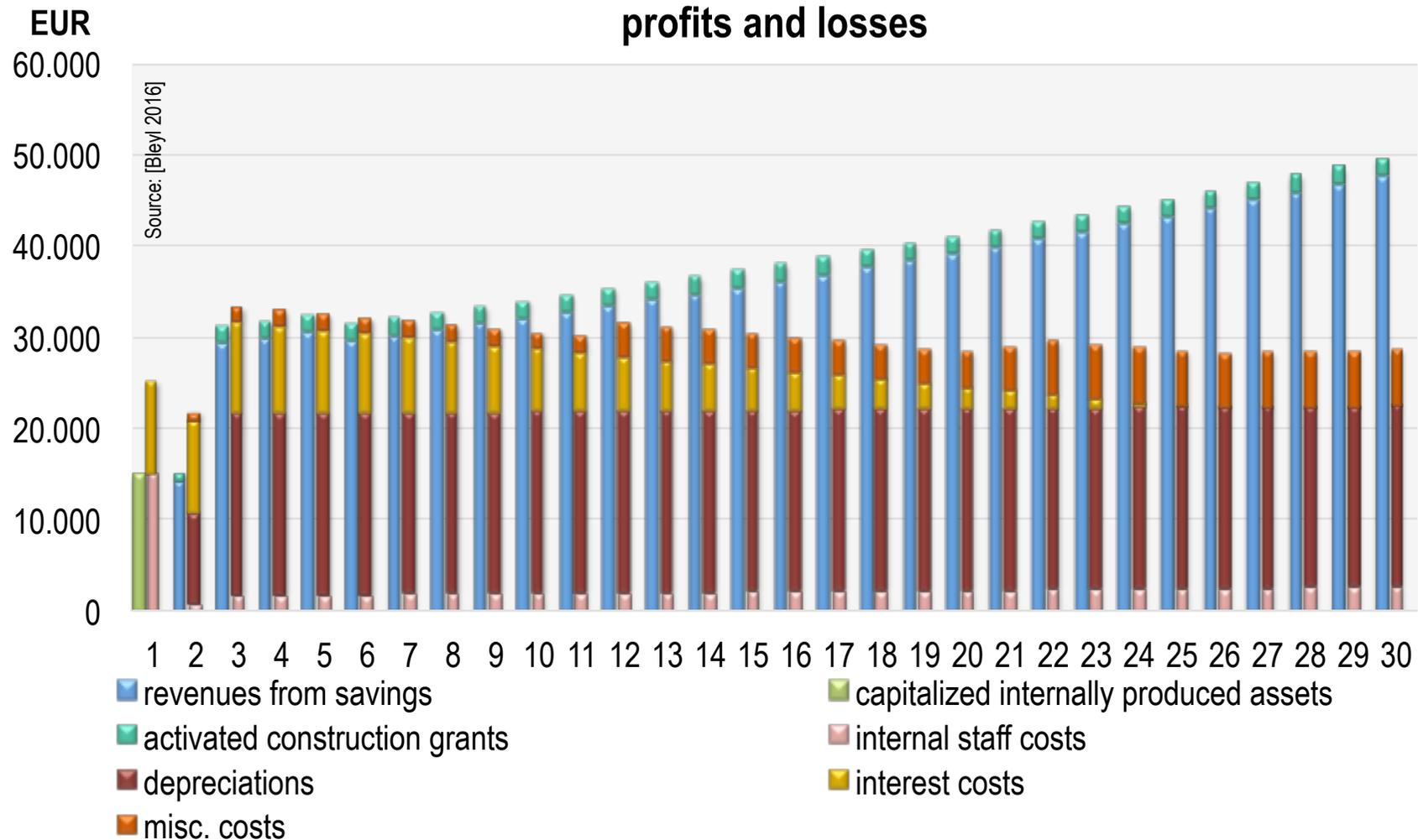


# Net Project-, Equity- & Debt- Cash Flows; annual profit (annual, cummulative)

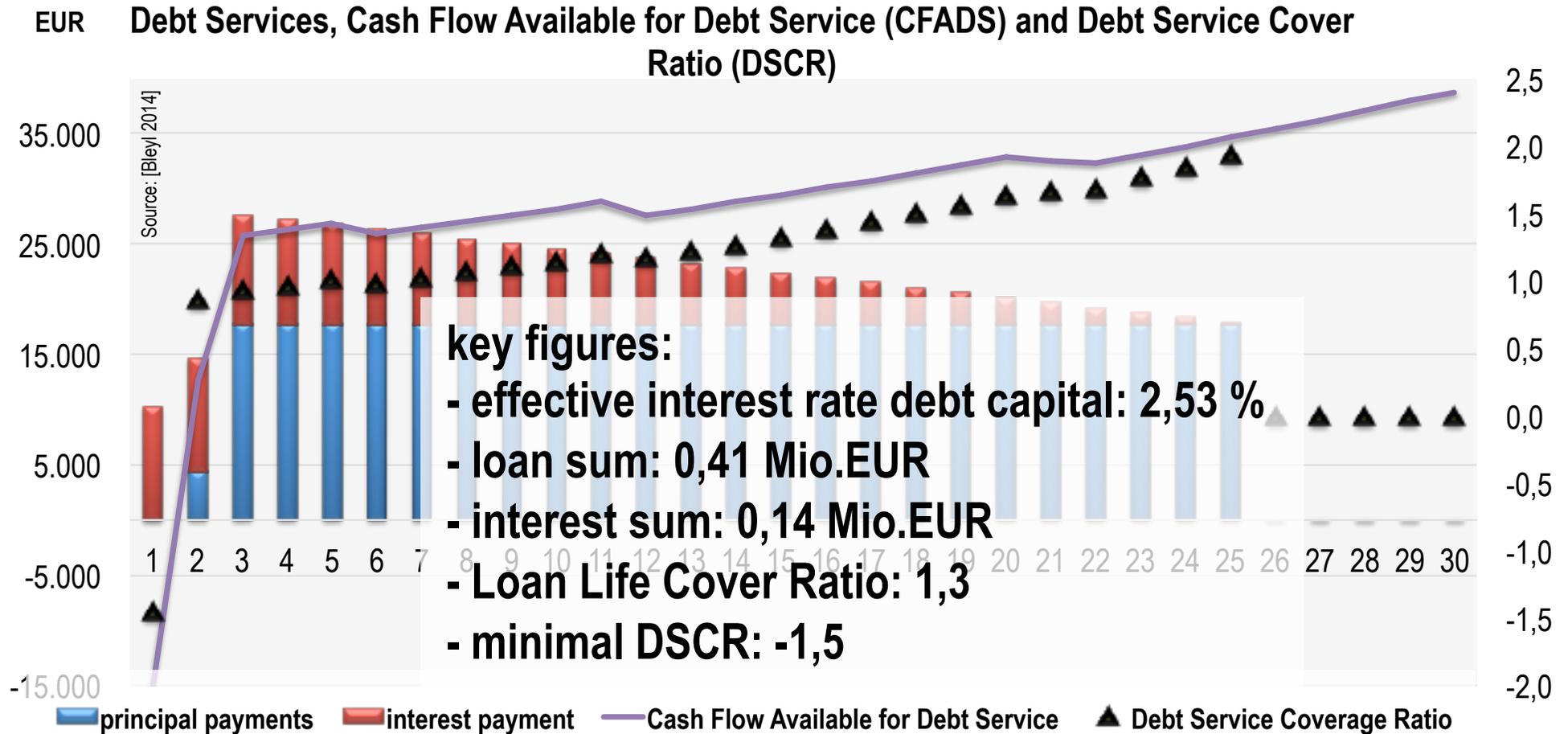


■ Annual profit (EBT)      ■ project cash-flow (P-CF)      ■ equity cash-flow (E-CF)  
■ debt cash flow      — cumulative equity cash-flow      — cumulative project cash-flow  
— cumulative annual profit

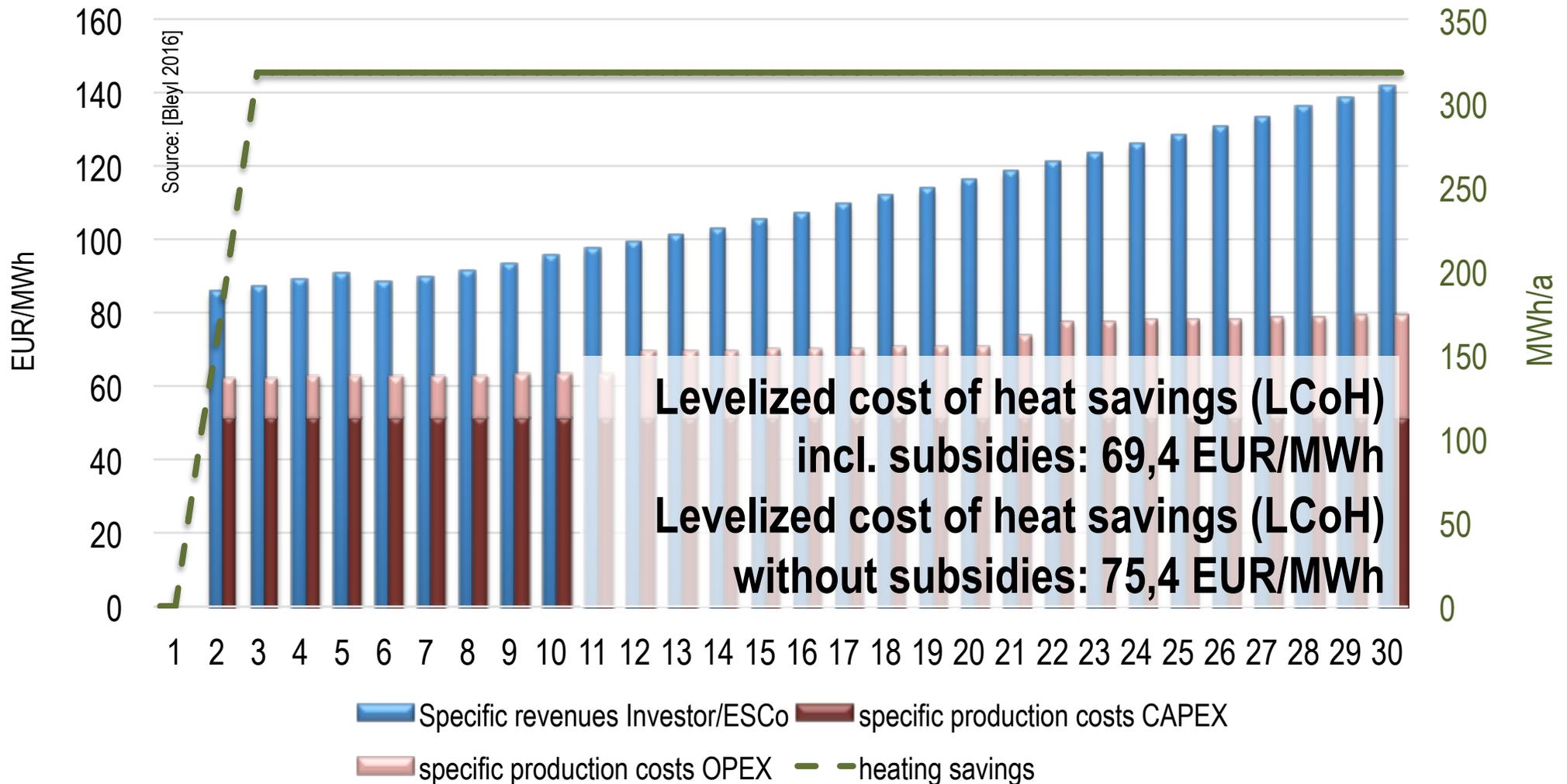
# Profit & Loss figure



# Debt Services; Cash Flow Available for Debt Service Service; Debt Service- & Loan Life Cover Ratios



# Spec. revenue-, cost structure developm.; MWh heat savings/a; LCoH



# ***Outlook: Think Tank topics and research questions*** for Task 16 Phase IV (1/2)

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## **1. Life Cycle Costing and economic rationale of EE and RES:**

- **3 Methodologies** how to perform Life-Cycle Cost appraisals:
  1. Pre-feasibility, 2. Comparison of variants, 3. „Bankable“ incl. financing
- **Comparison of tools:** Own tools, RETScreen ...
- **„Common language“: Communication with decision makers**
- **Case studies** from different DSM applications: Re-lighting, PV, CHP, HVAC, deep retrofit ...

## **2. „Deep Retrofit“ of buildings (Comprehensive refurbishment, NZEB) through Energy Services (*in coop. with EBC Annex 61*):**

- **Economic pre-feasibility** and **opportunity cost to wait** (case studies)
- **Investment-grade calculation & financing** (case studies)
- **Business model advancement** with stakeholders including financiers
- How to factor in **Multiple Energy Benefits?**
- **Policy implications & recommendations**

# **Outlook: Think Tank topics and research questions for Task 16 Phase IV (2/2)**

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## **3. Simplified M&V (sM&V) (cont'd):**

- Deepening & **more examples**
- Adaption and publication of **national versions + academic journal**
- Dialogue with **IPMVP** + other stakeholders

## **4. Crowd-financing for EE and RES investments, e.g.**

- **Which bottlenecks can Crowd-Financing solve?** Access to CAPEX for smaller projects in SME, communities? Bridge the mezzanine financing gap? Reduce risks and transaction cost?
- Building on a study in cooperation with GIZ: National perspectives ...

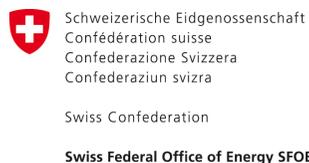
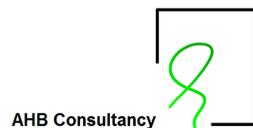
## **5. Energy Services Taxonomy** for an academic journal paper

## **6. Knowledge exchange, transfer to develop. markets, DSM-University**

- Simplified M&V, Lessons learned for project & market development (e.g. 'Facilitators') ... other topics on demand

**ENERGETIC  
SOLUTIONS**

JAN W. BLEYL



## Task 16 'Innovative Energy Services'

# How can we join forces?

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