

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*

Task Status Report
50th IEA DSM ExCo Meeting
The Hague, Netherlands, October 05-06, 2017

Jan W. Bleyl, Task 16 Operating Agent

Task 16 in a nutshell

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

Task 16 structure

Task 16 Energy Services Expert Platform

Internal meetings + Nat. & Internat.
Stakeholder workshops (WS)

National Implementat. Activities (NIA)

- Capacity building
 - Project + market development
 - Facilitation services
 - Simplified M&V
 - Model projects
 - ...
- => *National experts decide*

Think Tank (TT) for Innovative Models

- Life-cycle costing
- 'Deep retrofit'
- Crowd-Finance
- Simplified M&V
- 'Facilitators'
- Integrated EC
- Business models + cases
- ES Taxonomy
- ...

Task 16 ES Expert Platform

Meetings,
Nat. & Internat. WS's

Task ES Expert Platform

Final meeting + Nat. & Internat.
stakeholder workshops

Dissemination

- Stakeholder workshops
- Presentations & conferences
- Publications, manuals
- Coop.& project coaching
- DSM University
- ...

+ Reporting to ExCo, IEA ...

[Source: Task 16 2015]

Executive Summary

- 1. Participants:** Belgium (*since 2016*), Canada (*in kind*), Germany (*coop. Annex 61*), GIZ (*for 9 m*), Netherlands, Norway, Switzerland
- 2. Budget: 181.700,- EUR: 78% spent ✓**
- 3. Think Tank:**
 - ⇒ **“Building Deep Energy Retrofits: Using Dynamic Cash Flow Analyses and Multiple Benefits to Convince Investors”**
published. And selected for a special issue of Energy Efficiency
In close cooperation with all Task 16 experts + IEA ECB Annex 61
- 4. Success story:** Life Cycle Cost Benefit (LCCBA) calculation training for **Greek bankers** to finance RE and EE investments
- 5. @ExCo: Guidance on future work needed** (if desired by ExCo after June 2018)?

Accomplishments since last meeting

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Energy Service Expert Platform (subt. 19)

- ✓ A **series of teleconferences** with Task 16 experts to discuss and prepare a joint paper on life cycle cost benefit analyses of building deep energy retrofit in combination with Multiple Benefits
- ✓ **20th experts meeting**, held on 28-29 May 2017 in France
(thank you Anne for your support!).

The main agenda items were presentation and discussion of national implementation activities, discussions on current Think Tank topics (Deep Energy Retrofit, Life cycle cost appraisals, Multiple Benefits) and dissemination activities

Accomplishments since last meeting

Think Tank (subtask 20)

1. Life-Cycle Cost & 'Deep Retrofit' & Multiple Benefits:

Deep Energy Retrofits: Using Dynamic Cash Flow Analysis and Multiple Benefits to Convince Investors

Published and presented at ECEEE summer studies 2017

=> ***Joint Task 16 paper (in cooperation with IEA ECB Annex 61):***

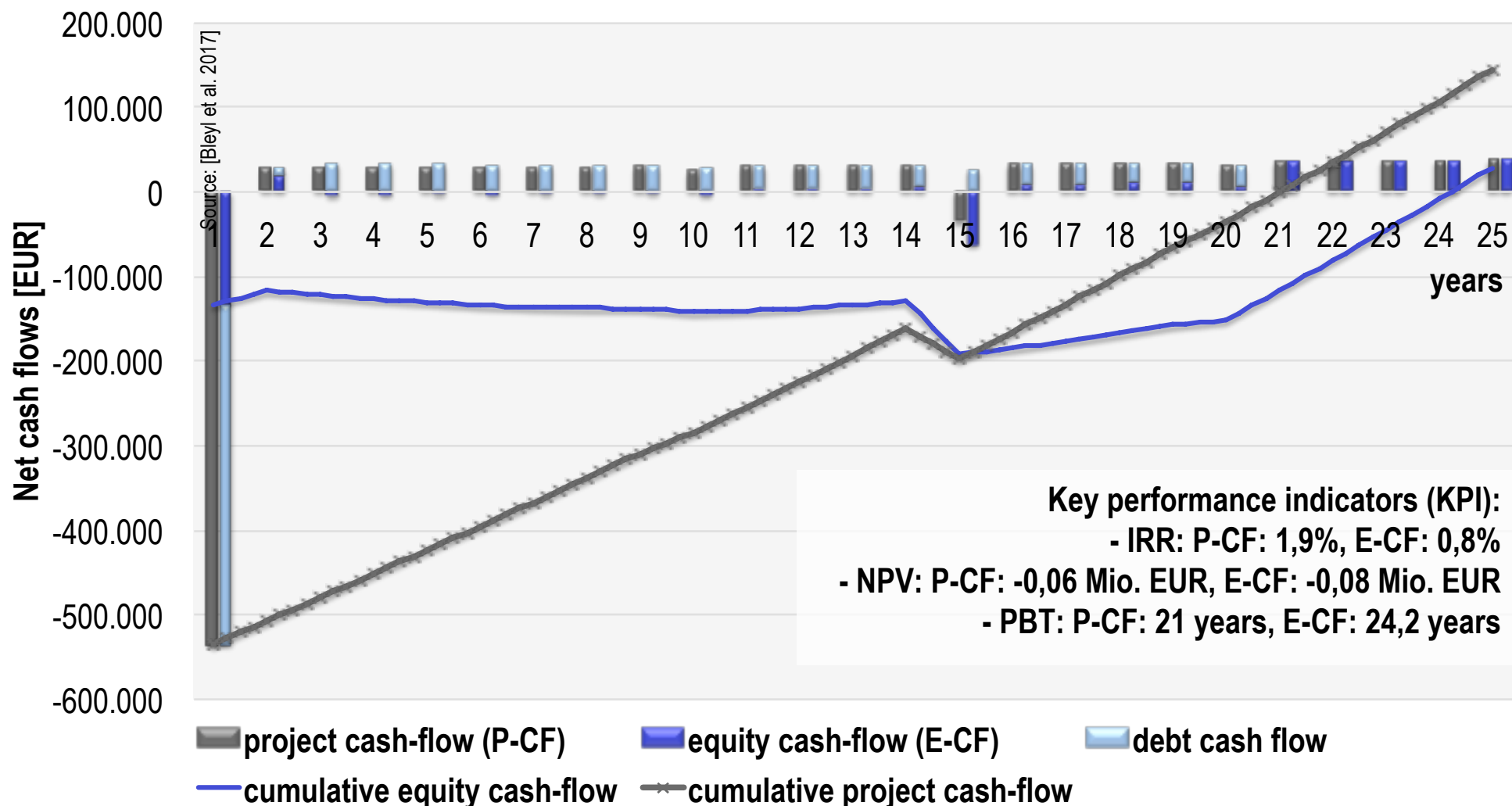
=> ***11 co-authors!***

Furthermore the paper was **selected for publication in a special edition of the Energy Efficiency journal**

A ,teaser‘ of our current work

Building Deep Energy Retrofit: Using Dynamic Cash Flow Analysis and Multiple Benefits to Convince Investors

DER case study: Net project, equity and debt cash flows (annual and cumulative)



[Source: Bleyl et al. 2017]

Multiple Benefits of Deep Energy Retrofit (DER): Pecuniary values in EUR/m²/year and NPVs over 25 years

Multiple Benefits of DER		Range	Valuation	
			EUR/ (m ² * y)	NPV: EUR/m ²
1.	Work productivity increase (0.3%)	Lower	8.0	169
		Upper	8.0	169
2a.	Rental income increase (1 - 5.3%)	Lower	1.2	25
		Upper	6.4	134
2b.	Building sales price increase (2.5 - 6.5%)	Lower	100	
		Upper	260	
3.	CO₂ savings (5 - 79 EUR/t)	Lower	0.2	5
		Upper	3.8	79
4.	Maintenance cost savings (2.1-3 EUR/m²/y)	Lower	2.1	44
		Upper	3.0	63
5a.	Energy cost savings project term (25 years)	Lower	16.8	354
		Upper	16.8	354
5b.	Add. energy cost savings over techn. lifetime (40 y)	Lower	16.8	157
		Upper	16.8	157

[Source: Bleyl et al. 2017]

Multiple Benefits of DER: Pecuniary Values and their Accountability to Different Stakeholders

Multiple Benefits of DER				Valuation		Beneficiaries			
				Range	EUR/ (m ² * y)	NPV: EUR/m ²	Different owner perspectives		
				Property develop.	Occupant -owner	Lessor -owner			
1.	Work productivity increase (0.3%)	Lower	8.0	169	-	169	-	169	
		Upper	8.0	169		169			
2a.	Rental income increase (1 - 5.3%)	Lower	1.2	25	-	-	25	-25	
		Upper	6.4	134			134	-134	
2b.	Building sales price increase (2.5 - 6.5%)	Lower	100		100	[100]	[100]	-	
		Upper	260		260	[260]	[260]		
3.	CO ₂ savings (5 - 79 EUR/t)	Lower	0.2	5	-	5	-	5	
		Upper	3.8	79		79		79	
4.	Maintenance cost savings (2.1-3 EUR/m ² /y)	Lower	2.1	44	-	44	44	-	
		Upper	3.0	63		63	63		
5a.	Energy cost savings project term (25 years)	Lower	16.8	354	-	354	-	354	
		Upper	16.8	354		354		354	
5b.	Add. energy cost savings over techn. lifetime (40 y)	Lower	16.8	157	-	157	-	[157]	
		Upper	16.8	157		157		[157]	
Totals				Lower NPV:	100	729	69	503	
				Upper NPV:	260	822	197	468	

Source: [Bleyl et al. 2017]

[Source: Bleyl et al. 2017]

Accomplishments since last meeting

Think Tank (subtask 20)

2. Simplified Measurement and Verification Using Quality Assurance Instruments: A Proposed Concept for Energy, Water and CO₂-Saving Projects:

=> The manuscript was returned from journal 'Applied Energy' editor and invited for enhancement and re-submission for peer-review and (hopefully) publication to the journal.

In close cooperation with EfficiencyOne, Nova Scotia, Canada.

*We also received an **invitation for publication of the sM&V paper in the planned IPMVP journal**, which will be exclusively dedicated to measurement and verification topics.*

Welcome to

Training on Bankable Calculation and Financing of Energy Efficiency Projects

Introduction & Hands-on Training

Jan W. Bleyl, Energetic Solutions & IEA DSM Task 16

Sophie Kazmierczak, GIZ

Athens, Greece, 03 - 04 July 2017

Activities + goals for next 6 month

Activities + goals for next 6 month **Think Tank (subtask 20)**

1. Life-Cycle Cost & 'Deep Retrofit' & Multiple Benefits:

Working title: **Deep Energy Retrofits: Using Dynamic Cash Flow Analysis and Multiple Benefits to Convince Investors on the project level**

=> Preparation of submission for publication in a special edition of the Energy Efficiency journal (25% new content required)

=> Focus on monetized Multiple Benefits of work productivity increase (a.o. 'comfort meter')

In cooperation with IEA ECB Annex 61 & CEU University, Hungary)

=> 12 co-authors

Activities + goals for next 6 month
Think Tank (subtask 20)

(cont'd)

2. *Simplified Measurement and Verification Using Quality Assurance Instruments: A Proposed Concept for Energy, Water and CO₂-Saving Projects*

=> Finalize submission for peer-review and (hopefully) publication to the Applied Energy journal

In close cooperation with EfficiencyOne, Nova Scotia, Canada (meaningful in-kind contribution!)

Stakeholder workshop, Dissemination and cooperation (subtasks 19 + 22)



EPC Facilitators training **6 oktober 2017, RVO, Croeselaan 15, Utrecht, Domtorenzaal**

Het programma

- 9.30 Inleiding en kennismaking
- 10.00 Jan W. Bleyl (Oostenrijk), Europees Coördinator Energiediensten voor IEA DSM Taak 16 (International Energy Agency – Demand Side Management): On the role of Facilitators as enablers for EE projects; Make or Buy; benefits (NB: in het engels)
- 10.45 koffiepauze
- 11.00 Petra Heemskerk, partner en advocaat bij CMS Praktijkgroep Real Estate & Construction, gespecialiseerd in aanbestedingsrecht en PPS: Juridische aspecten van aanbesteding en selectie
- 11.45 André Salomonson, Managing Partner bij ResetManagement, gespecialiseerd in verandermanagement en samenwerking: Hoe kun je vertrouwen en draagvlak creëren en samenwerken

Activities + goals for next 6 month (cont'd)

Coaching of NIAs (subtask 21)

Support and coaching of individual National Implementation Activities (subtask 21)

- ✓ **ESCo market development in Switzerland:**
Support in selection and preparation for a national pilot project for the Swiss Federal Office of Energy and its collaborating ministries (2nd opinion report)

Activities + goals for next 6 month (cont'd)

Dissemination & cooperation (subtask 22)

- ✓ *Next Task 16 IEA DSM Webinar:*
Deep Energy Retrofits: Using Dynamic Cash Flow Analysis and Multiple Benefits to Convince Investors

=> 23. November 2017, 15:00 CET

Task 16 Budget vs. Expenditures

(as of 1 September 2017 excl. VAT)

Subtasks <i>unit</i>	Total budget <i>EUR</i>	Cumulative spending <i>EUR</i>	% spent <i>%</i>	Remaining <i>EUR</i>
19 Energy Services Expert Platform	22.000	17.160	78%	4.840
20 Think Tank for innovative Energy Services	73.920	59.840	81%	14.080
21 Coaching of National Implementation Activities	14.520	11.440	79%	3.080
22 Dissemination & Cooperation (international + national)	15.840	13.200	83%	2.640
23 Management & Reporting (to ExCo)	37.840	26.840	71%	11.000
Subtotals	164.120	128.480	78%	35.640
Travel costs	14.700	11.025	75%	3.675
Other costs	2.880	1.500	52%	1.380
Totals	181.700	141.005	78%	40.695

☛ Spending of last reporting period: **37,676 EUR**, adding to a total expenditure of **141,005 EUR** (= 78% of total budget)

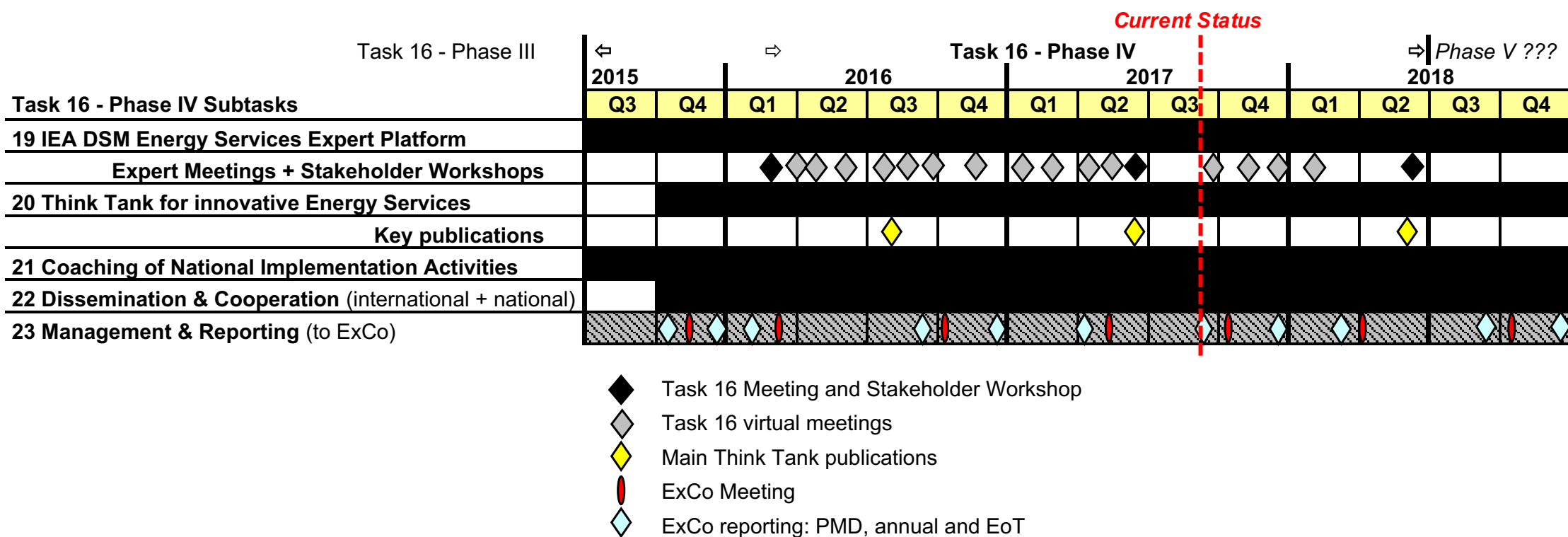
☛ Income during last reporting period: **15,000 EUR** (against **30,000 EUR** billed),
Total income realized: 121,700 EUR (= 67% of total budget)

Task 16 - Phase IV

Activity time schedule update

Phase IV has started operation on 01 July 2015 and will end 30 June 2018

Task 16 - Phase IV Timetable (as of September 2017)



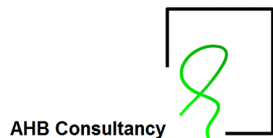
Matters for the ExCo

- 1. Approve the Task Status Update Report**
- 2. Provide guidance on future work after June 2018, if desired by the ExCo (on content and lead/OA)?**


**ENERGETIC
SOLUTIONS**

JAN W. BLEYL

energinvest



Forsvarsbygg

 Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Swiss Federal Office of Energy SFOE



Task 16 'Innovative Energy Services'

***Thank you very much
for your continued support!***

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