TASK 26
Multiple Benefits of Energy Efficiency

Catherine Cooremans
MBA, PhD.

Multiple Benefits
The strategic approach

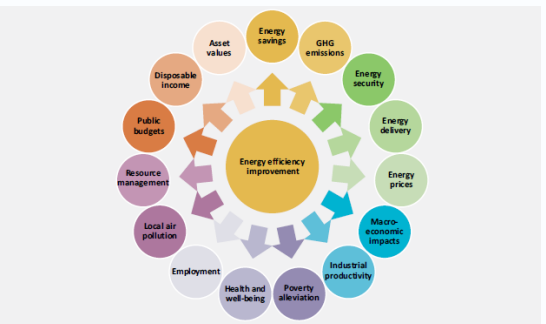
Catherine Cooremans – Task 26 Multiple Benefits of Energy Efficiency – DSM Day 16 mars 2016, Stockholm

Definition:

all the benefits entailed by an energy performance action which are not energy benefits (i.e. energy savings translated into monetary savings) in and of themselves.

Terminology:

non-energy benefits, ancillary benefits, multiple benefits



IEA report, Capturing the multiple benefits of energy-efficiency, Paris, September 2014:

- Macro-economic impacts
- public budget impacts
- Health & well-being impacts
- Industrial sector impacts
- Energy delivery impacts

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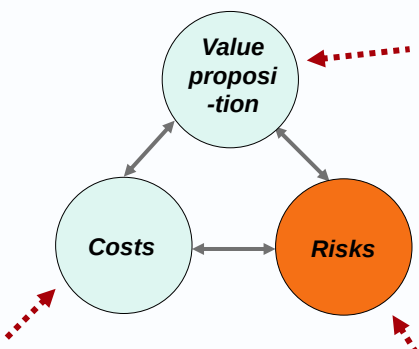
Scope

Catherine Cooremans - Annex 26 - Multiple benefits of energy efficiency : categories/sectors - August 31, 2015

MULTIPLE BENEFITS CATEGORIES			
IMPACTS ON:	TARGETS/FOCUS	MAIN RESPONSIBILITY	PARTNERS
LOCAL PUBLIC BUDGET	MUNICIPALITIES	DSM	ETI EBC Annex 63 (Implementation of Energy Strategies in Communities) ETI DHC (District Heating & Cooling)
BUSINESS SECTOR	INDUSTRIAL SECTOR:		
	- Process industries (eg food & bevarage, pulp & paper, foundries)	IETS	DSM
	- Non-process industries	DSM	IETS
	- SME	DSM	IETS
	COMMERCIAL SECTOR (eg general stores, hotels, parking lots)	DSM	
	ADMINISTRATIVE SECTOR (eg banks, insurances, data centers)	DSM	
HEALTH & WELL-BEING	Impacts on businesses & municipalities	DSM	IEA Secretary (IEPPEC)

Categories:

- MB for municipalities: impact on local public budget of energy-efficiency projects in public buildings and facilities, heating installations, sewage treatment plants, municipal lighting, transport, etc.
- MB for business sector: all for-profit activities. Enlarged perspective on businesses including process and non-process industries, as well as commercial and administrative activities and SME.
- Health & well-being benefits: for organizations (i.e. municipalities and businesses).



- Better product quality
- Increased product reliability
- Improved image & stronger brand
- Increased employees and customers loyalty
- Increased attractiveness

- Reduced accident risk
- Reduced commercial risk
- Reduced equipment risk
- Reduced legal risk
- Reduced carbon risk

- Lower energy costs
- Lower maintenance costs
- Lower product rejection
- Reduced raw materials
- Reduced absenteism
- Reduced insurance premiums

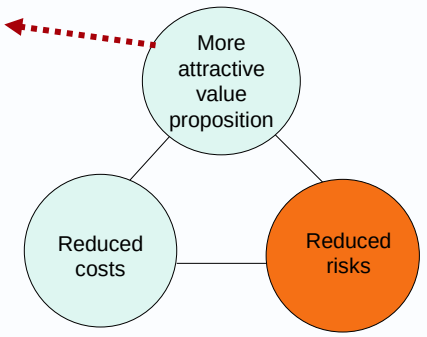
Measuring strategicity

- Higher number of pieces sold
- Higher unitary price

= Higher turnover

- Higher turnover
- Lower costs

= Higher profitability



Increased competitive advantage

Increased company's profitability

Bridging strategicity with financial analysis

SANTA CLARA UNIVERSITY Lighting project		Year 0	Proj. Year 1	Proj. Year 2	Proj. Year 3	Proj. Year 4	Proj. Year 5
			(% or thousand of USDOL)				
Net income			8'439	8'439	8'439	8'235	8'235
Capital expenditure		2'550	0	0	0	0	0
Terminal value before taxes			0	0	0	0	0
Terminal value after taxes			0	0	0	0	0
Free Cash-Flows		-2'550	**8'439**	**8'439**	**8'439**	**8'235**	**8'235**
NPV (NET PRESENT VALUE)							
15%	**11'169**						
9%	**29'996**						
5%	**33'657**						
IRR (INTERNAL RATE OF RETURN)	311%						
PAY-BACK TIME	0.30						

Non-energy / multiple benefits have to be:

- analyzed ex ante
  (i.e. before projects start)
- better documented and quantified
- communicated in a convincing way to stakeholders

TASK 26!

Compulsory deliverables:

- Final report of the Task/Annex according to template
- A joint Task/Annex public website (or webpage on DSM website).
- Progress reports to Task 26 Advisory board two times annually for publication in the Newsletter
- Report to the DSM/IETS Annual report
- Text and pictures to a 2-page popular scientific summary of Annex results to be freely disseminated

Deliverables

Subtask 1 -

Conception of a Multiple Benefits Toolbox

to be used upstream to better identifying and assessing the MBs.

Subtask 2 -

Delivery of the Multiple Benefits Toolbox:

- Development of templates for workshops , webinars and online courses in collaboration with DSM University;
- Communication on the MB of energy efficiency to public programmers and policy-makers, & to the energy efficiency and climate change financial community.

Subtask 3 – Learning base

- Conception and realization of a Multiple Benefits learning base for practitioners and policy-makers.
- The learning base will contain data collected in the participating Member States.
- The learning base will be organized by business activity & municipality type, energy-efficiency measure type and geographical location.
- The learning base will be accessible only to participating member states or sponsors.

Subtask 4 - Dissemination

- One-day “Toolbox Training Session” in each participating Member State to enable engineers to take ownership of the MB toolbox;
- Webinars and online courses in collaboration with DSM University.

Division of work and coordination

- Sub-task 1: The operating agent will supply the main contribution work on sub-task 1, with the help of the co-operating agent. Deliverables include an in-depth literature review, definition and categorization of MBs, development of a harmonized analytical framework to analyse MBs ex ante or ex post.
- Sub-task 3: The co-operating agent would be mainly dedicated to collecting data on process industries in participating countries in collaboration with national experts.
- Sub-tasks 2-4: operating and co-operating agents jointly collaborate to these subtasks.

Costing method

Basis for WD calculations - YEARS 1 - 3		WD	€/day	Total euros
21 Wording Days (WD) per month, 11 months per year	100% =	231	800	184'800
	50% =	115	800	92'000
	40% =	92	800	73'600
	35% =	81	800	64'800
	25% =	58	800	46'400
	20% =	46	800	36'800
	15% =	35	800	28'000
	10% =	23	800	18'400
	5% =	12.5	800	10'000

Explanation:

- 40% are equivalent to 2 working days per week (one person) during 11 months.
- 20% are equivalent to 1 wd per week during 11 months.

BUDGET	5 participating countries					
RESOURCES wd = 800 €	TASK 1 TOOLBOX CONCEPTION		TASKS 2 & 3 TOOLBOX DELIVERY DATABASE		TASK 4 DISSEMINATION	
	YEAR 1		YEAR 2		YEAR 3	
	Hyp. %	euros	Hyp. %	euros	Hyp. %	euros
Operating agent	40%	73'600	35%	64'800	10%	18'400
Co-operating agent	10%	18'400	15%	28'000	10%	18'400
Administration	fixed a.	4'000	fixed a.	4'000	fixed a.	2'000
Data base IT & stastistical analysis	0%	0	10%	18'400	5%	10'000
Training	0%	0	0%	0	10%	18'400
DSM University (Webinars - MOOC)	0%	0	0%	0	20%	36'800
		96'000		115'200		104'000
Total travel costs		8'000		8'000		19'000
GLOBAL COST		104'000		123'200		123'000
Cost per country (5 countries)		20'800		24'640		24'600

New budget –
cancels and replaces previous versions

MODIFIED BUDGET	5 participating countries					
RESOURCES wd = 800 €	TASK 1 TOOLBOX CONCEPTION		TASKS 2 & 3 TOOLBOX DELIVERY LEARNING BASE		TASK 4 DISSEMINATION	
	YEAR 1		YEAR 2		YEAR 3	
	Hyp. %	euros	Hyp. %	euros	Hyp. %	euros
Operating agent	40%	73'600	35%	64'800	10%	18'400
Co-operating agent	10%	0	15%	0	10%	0
Administration	fixed a.	4'000	fixed a.	4'000	fixed a.	2'000
Learning Base IT & stastistical analysis	0%	0	10%	18'400	5%	9'200
Training	0%	0	0%	0	5%	9'200
DSM University (Webinars - online courses)	0%	0	0%	0	15%	28'000
		77'600		87'200		66'800
Total travel costs		8'000		8'000		13'000
GLOBAL COST		85'600		95'200		79'800
Cost per country (5 countries)		17'120		19'040		15'960

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ANALYSES & ÉTUDES ÉCONOMIQUES ECO'DIAGNOSTIC

New budget –
Comments and explanations

- 5% of the operating agent's budget for year 1 cover the task preparation (August 2015 – May 2016).
- Co-operating agent costs are kindly borne by Swedish Energy Agency.
- DSM University budget is reduced: no more MOOC but online courses (which need less work to be developed).
- One dissemination workshop in each participating country instead of three, therefore:
  - Reduced training costs (11.5 wd instead of 23)
  - Reduced travel costs (5 days instead of 15 days)

Budget for 6 – 8 countries

Cost per each additional country		Year 1	Year 2	Year 3
Operating agent		2'400	2'400	2'400
Co-operating agent		0	0	0
Admin.		800	800	800
IT		0	800	400
DSM University		0	0	800
Training team		0	0	1'200
Per additional country		**3'200**	**4'000**	**5'600**
5 countries	Global costs	85'600	95'200	79'800
	Cost per country	**17'120**	**19'040**	**15'960**
6 countries	Additional cost per 1 country	3'200	4'000	5'600
	Global costs	88'800	99'200	85'400
	Cost per country	**14'800**	**16'533**	**14'233**
7 countries	Additional cost per 2 countries	6'400	8'000	11'200
	Global costs	92'000	103'200	91'000
	Cost per country	**13'143**	**14'743**	**13'000**
8 countries	Additional cost per 3 countries	9'600	12'000	16'800
	Global costs	95'200	107'200	96'600
	Cost per country	**11'900**	**13'400**	**12'075**

National costs for the whole project

National Experts Costs (2 experts)	WD
Year 1 - 10% each	46
Year 2 - 20% each	92
Year 3 - 10% + 5%	35
Total	**173**

- Two experts per country are necessary;
- Each expert will work on the project 10% of their time during year 1 and 20% of their time during year 2. During year 3, one expert will work 10% of his/her time and one expert will work 5% of his/her time.
- Travel cost for the two experts are evaluated at 8'000 euros over the 3 years of the project (i.e. 4 meetings for each expert at 1'000 euros each).

ieadsm energy efficiency

Rob Kool:

DSM-Energy Efficiency

(Demand-Side Management ~~Implementing Agreement~~ Technology Collaboration Program)

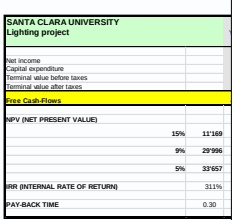
Forty Seventh Executive Committee Meeting

Rob Kool: *Task 26*

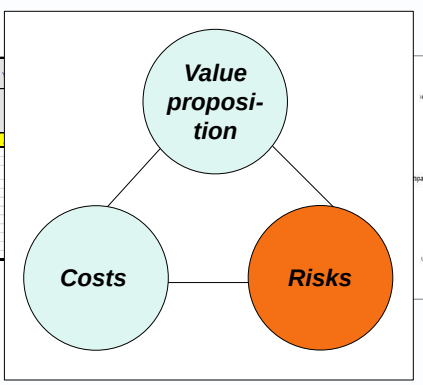
- The joined task 26 has an advisory board that
  - Oversees the work
  - Is responsible for the feedback to the ExCo, together with the operating agent
  - Gives a binding advise to the ExCo's on the final results
  - Consists of one ExCo member of each of the participating countries, to be decided by these countries.

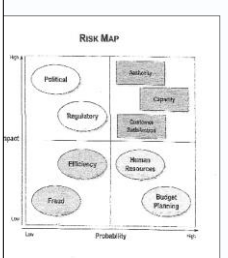
- The task allows sponsors, acceptable to the IEA. This can be countries outside the DSM/IETS members.

Task 26 Multiple Benefits of Energy Efficiency: building up the business case of energy-efficiency investment projects



Quantitative analysis





Qualitative analysis

Thank you for your attention

cooremans@ecodiagnostic.ch catherine.cooremans@unige.ch