

TOTAL CONCEPT

The Total Concept method for major reduction of energy use in non-residential buildings



Intelligent Energy Europe Programme
of the European Union

60 projects out of 545

Why has Total Concept already been successful?

- **Business model of NZEB renovation**
 - Clear objective to achieve renovations following economic terms (the focus is on the business, not so much on the energy renovation)
 - It may not be a full NZEB renovation, but it looks at how far you can feasibly go (economic model)
- **Approach to case studies**
 - Real cases (not just research case studies)
- **Good involvement of stakeholder and target groups**
 - Directly involved in case studies
 - Good communication strategy
- **Good impact**
 - Energy savings
 - Renewable energy triggered (relative to the action)
 - Communication
- **Good value for money**

Strategic objective

To considerably reduce the energy demand in the sector of existing non-residential buildings and thus contribute to European 20/20/20- target by 2020.

Through the activities undertaken in this project more building owners/investors, in public and private sector, are active in **realizing major energy performance improvement** in non-residential buildings.

Expected Results

- **Implementing Total Concept method** opens up new opportunities for property owners to carry out major energy performance improvement retrofitting in a profitable way and thus **create a market driver for major refurbishment of existing buildings towards Nearly Zero-Energy Buildings.**
- Resolving one of the main non technical barriers for **finding economically profitable solutions** for investments for energy performance improvements in the non-residential building sector.
- **Increased awareness and competence** among the different stakeholders to continuously work with the energy issues related to the building performance on both short and long term scale.

Major outputs

- Detailed information, guidelines and a tool-kit available for the Total Concept method for each country
- Demonstration of the Total Concept in pilot buildings.
- Step 1. Theoretical investigation in 15-18 existing non-residential buildings. (2-4 per country)
- Step 2 and 3. Actual renovation will be carried out in about 6-8 demonstration buildings. (1-2 per country)
- Practical know-how transferred: National training courses (500 participants). Seminars and Total Concept workshops/meetings (700 stakeholders). Web-page, leaflets etc.

Project Objectives

Total Concept method introduced and adapted to the national conditions of each participating country and ready to be implemented by the stakeholders and key actors involved in the energy refurbishment process.

Specific objectives

Develop further the Total Concept method and tools needed for adapting it to national conditions. The Total Concept method will be customised to fit the needs of a participating country in particular

Apply and demonstrate the Total Concept method with pilot projects in participating countries

Develop materials and tools needed for know-how transfer and carrying out trainings and workshops for implementing the Total Concept method in the participating countries on a broader scale

Promote the cost-efficient energy retrofitting in existing non-residential buildings based on the Total Concept method so that it will be implemented both in the public and private sector in the participating countries

Improve awareness of and know-how about cost-efficient energy retrofitting in existing buildings together with necessary associated education and training. These activities are targeted at local authorities, financing institutions, property owners, developers, architects, consultants and construction companies

Provide general recommendation for the Total Concept method future implementation on an European scale

Main outputs

Detailed information materials, national guidelines and a tool-kit available for the Total Concept method implementation in each participating countries, targeting the different stakeholders and key actors in the participating countries. (at least 500 downloads of developed materials)

Pilot studies carried out and cost-efficient action packages based on Total Concept method developed for about 15-18 existing non-residential buildings and a practical implementation is carried out in about 6-8 demonstration buildings. Results show energy reduction of at least 50-70%. (at least 500 downloads of WP3 and WP4 reports)

Practical know-how is transferred to the stakeholders and key actors, new knowledge is made available and replication is stimulated. 2 national training courses are carried out in each participating country and at least 500 stakeholders and key actors will be trained within the project.

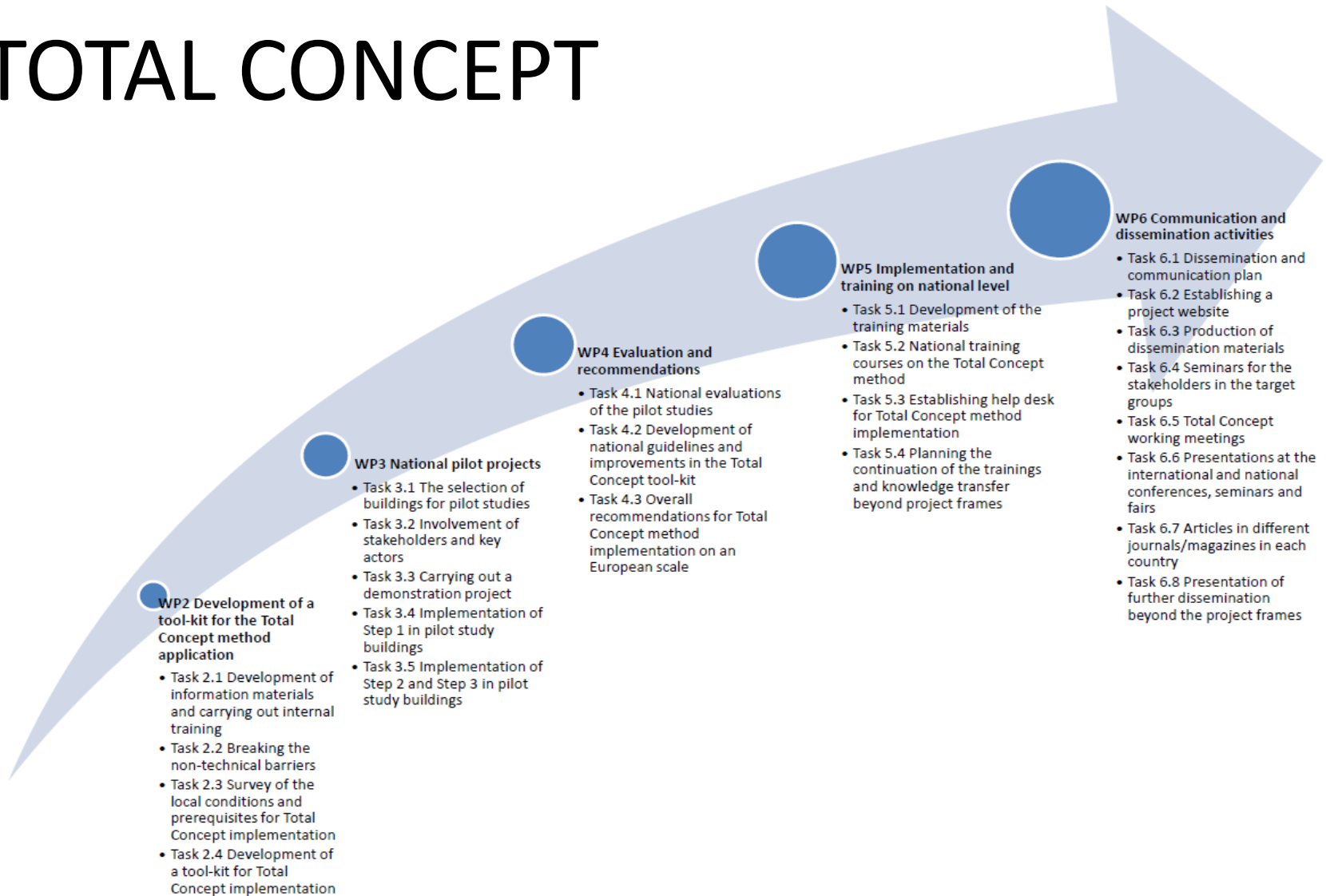
High level dissemination activities, including promotion, seminars and Total Concept workshops/meetings for the stakeholders and key actors for implementing the Total Concept in the participating countries.

- 2 national training courses in each participating country (50-100 participants/course)
- 1-2 national seminars in each participating country (50-100 participants/seminar)
- for local authorities and other stakeholders in the target group
- National help desk service provided to support the replications
- 10 000 printed leaflets and 3000 high quality brochures distributed
- project website with at least 2000 visitors during the project duration
- 4 e-newsletters distributed
- 5-6 Total Concept working meetings for key actors and stakeholders within the project consortium
- presentations at national conferences /seminars, articles published in trade journals

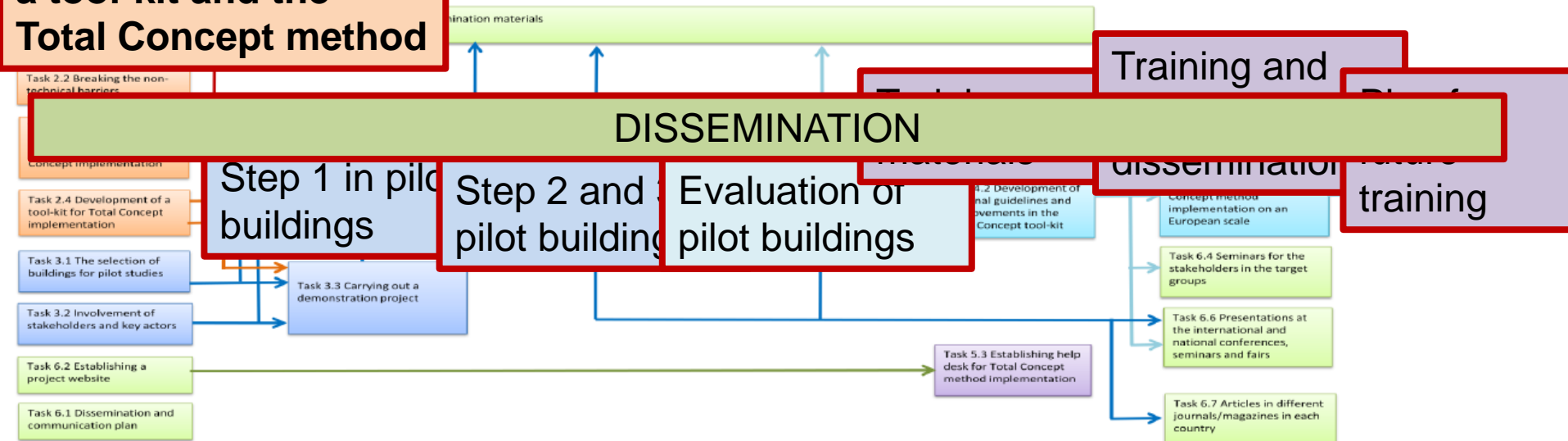
At least 10-15 concrete expressions of interest from relevant stakeholders in each participating country to try out and implement the Total Concept method.

Overall recommendations reported for the general European applications of the Total Concept method, common guidelines and tools available to support the Total Concept method implementation on broader scale. (at least 100 downloaded reports and

TOTAL CONCEPT



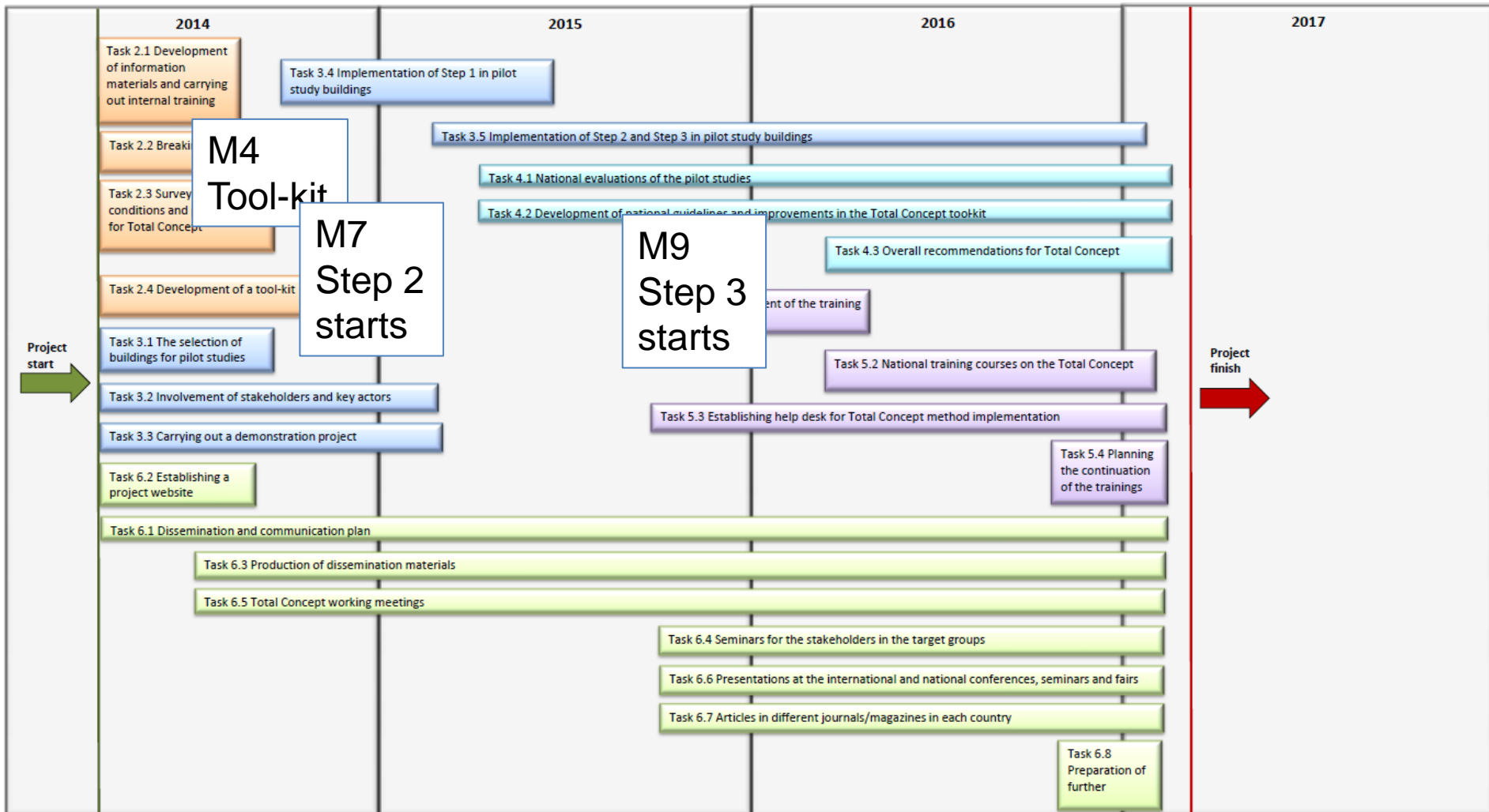
WP 2. Development of a tool-kit and the Total Concept method



Milestones and deliverables

Nr	Description	Type and format	Responsible	Dissem. level	Deadline
D1.1	Consortium agreement	Printed contract in EN	CIT	Internal	apr-14
D1.4	Risk assessment on pilot projects	Report, electronic, EN	CIT	Internal	apr-14
D1.2	Minutes and documents of the coordination meetings	Paper, electronic, EN	CIT	Internal	maj-14
D6.1	Dissemination plan	Paper, electronic, EN	SBI/AAU, SINTEF, CIT, EKVÛ, Bionova	Internal	jun-14
D6.2	Reports for dissemination planning, reporting, evaluation, documentation (covering tasks 6.3- 6.7) in each participating country.	Paper, electronic, EN	SBI/AAU, SINTEF, CIT, EKVÛ, Bionova	Internal	jun-14
D7.1	Set of updated IEE Common Performance indicators including their baseline and assumptions for extrapolation	paper, electronic, EN	CIT	Internal	jun-14
M1	Information materials on the Total Concept method and its application ready		CIT		jul-14
D2.1	Information materials on the Total Concept method and its application.	Paper, electronic, EN	CIT	public	jul-14
D2.3	Materials needed for carrying out an internal workshop within the project consortium.	Slides, electronic, EN	CIT	Internal	jul-14
M2	Outcomes from the national evaluations of non-technical barriers and local conditions for Total Concept implementations recieved.		SBI/AAU, SINTEF, SCC, EKVÛ, Bionova		aug-14
M3	Internal workshop carried out		CIT		aug-14
D1.2	Minutes and documents of the coordination meetings	Paper, electronic, EN	CIT	Internal	aug-14
D1.4	Risk assessment on pilot projects	Report, electronic, EN	CIT	Internal	aug-14
D2.4	Minutes and documents of the internal workshop	Paper, electronic, EN	SCC	Internal	aug-14
D6.3	Project website	website/webtool, EN	SCC	public	aug-14
D6.9	Presentation materials at Total Concept working meetings	Slides, electronic, EN	SBI/AAU, SINTEF, CIT, EKVÛ, Bionova	public	aug-14

11 March 2014 – 10 March 2017, 36 months



Part. N°	Participant name	Short name	Country code	Profile of the organisation*
CO1	CIT Energy Management	CIT	SE	Consultant company
CB2	The Danish Building Research Institute	SBI/ AAU	DK	Research institute
CB3	Rambøll	Ramböll	DK	Technical engineering company
CB4	SINTEF Byggforsk	SINTEF	NO	Research institute
CB5	State Real Estate Ltd.	RKAS	EE	Public property owner
CB6	Danish Association of Construction Clients	DACC	DK	Trade association for construction clients and property owners
CB7	Estonian Society of Heating and Ventilation Engineers	EKVÜ	EE	Trade association for HVAC engineers (Heating, Ventilation and Air Conditioning)
CB8	Swedish Construction Clients Forum	SCCF	SE	Trade association for construction clients and property owners
CB9	Bionova	Bionova	FI	Expert service company

Letters of support / Pilot Buildings

- RKAS (Estonia)
- Ramböll (Denmark)
- Vasakronan (Sweden)
- City of Malmö (Sweden)
- Specialfastigheter (Sweden)
- Harry Sjögren (Sweden)
- Jernhusen (Sweden)
- Statsbygg (Norway)
- The Norwegian Defence Estates Agency (Norway)
- City of Tampere (Finland)

Letters of support

- BELOK (Sweden)
- Swegon Air Academy

Target groups

Primary

Project implementation

Property owners and building maintenance staff involved with pilot studies

Consultants and engineers working with energy performance improvements in pilot studies

Institutes (training and dissemination)

Trade association of construction clients

Trade association of HVAC engineers

Results

Real estate companies, building owners, companies investing in the energy performance improvements (ESCO)

Consultants and engineers working with energy performance improvements

Contractors and technology providers involved in retrofitting of non-residential

Secondary

BELOK members

Contractors and technology providers involved in retrofitting of non-residential

Representatives from local and national authorities

Grant Agreement

- Annex I: Description of the action
- Annex II: Estimated budget of the action
- Annex III: Technical Implementation Reports and Financial Statements
- Annex IV: Mandates

Follow up by EASME at Cost Statement according to GA

- **Budget 1.8 million Euro**
 - Estimation,
 - Framework
 - Maximum
- Actual number of hours (time-sheet)
- Actual staff-cost
- OH cost Indirect Staff costs are set to 60%
- Eligible: Travel costs and Other specific costs

Monthly Timesheet

IMPORTANT NOTE : This timesheet shall not only record the time spent on a specific project, but shall reconcile the total working time of one person

Name of staff member	
Name of Beneficiary/ Partner	
Total of working hours *	
Calendar Year	
Calendar Month	

* indicate number of working hours per day, week or month

Calendar Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
In case of absence, indicate one of the reason codes below					WE	WE		PH																								
Hours worked on Total Concept WP2	5,0	6,0																														11,0
Hours worked on Total Concept WP3			4,0	4,0																												8,0
Hours worked on project																																0,0
Hours worked on project																																0,0
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Hours worked on project																																0,0
Hours worked on project																																0,0
Hours worked on project																																0,0
Hours worked on project																																0,0
Hours worked on other projects	3,0	2,0	4,0	4,0																												13,0
Other activities																																0,0
Total hours (including overtime)	8,0	8,0	8,0	8,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	32,0

** indicate the reference of the project

edit check ok

Absences	
Weekend	WE
Sick leave	SL
Public holidays	PH
Annual holidays	AH
Other absence	OA

Date and signature of staff member

Date and signature of person in charge of the work

Actual Staff Cost

For each person or for group of categories of persons

Table I : **Productive hours**

ANNUAL PRODUCTIVE HOURS		
(1) Calendar days per year minus weekends		261
(2) Annual holidays (in n° of days)		
(3) Statutory holidays (in n° of days)		
(4) Others (i.e. illness etc.) (in n° of days) PLEASE SPECIFY		
(5) Productive days per year: (1) - (2) - (3) - (4)		261
(6) Working hours per day		
(7) Annual working hours: (1) x (6)		0
(8) Productive hours per year: (5) x (6)		0 (A)
(9) Productive hours per month		0 (A)/ 12

Only costs
related to
payroll

Table III : **Hourly labour rates per staff (in national currency)**

Staff Category	Salary cost per year (gross employee)	Social charges per year (charges employer)	%	Other Costs per year (please explain)	Total annual cost per employee	Hourly Labour rate (Total annual costs per person / A)	
I. Expert					-	#DIVISION/0!	(B1)
II.					-	#DIVISION/0!	(B2)
III.					-	#DIVISION/0!	(B3)
IV.					-	#DIVISION/0!	(B4)
V.					-	#DIVISION/0!	(B5)

Eligible Costs

Related

Necessary

Reasonable

Justified

Consistent

Value for money

Subcontracting

SCC and Bionova,

Other needs prior written approval by EASME

Proved by copies of invoices

1. Procurement of at least 3 potential actors
 - best value for money (price and quality)
2. Follow company rules, framework contracts

BUDGET TRANSFER 1

Between cost categories of one partner

Limit < 20% of total eligible cost of the partner

Staff costs, Travel costs, Other costs

~~Subcontracting~~

BUDGET TRANSFER 2

Between two partners

Limit < 20% of total eligible cost of the receiving partner

Must be informed to EASME latest with final report

Above 20%: Amendment at latest January 2017

Reporting

- Progress
- Interim
- Final

Payment scheme

- Pre-payment 30%
- Additional 30%
(not proved)
- Final 40%

EURO

	Total eligible costs	Requested Funding from IEE (75%)	Pre-payment 30%
CIT	393 940	295 455	88637
SBI/AAU	183 200	137 400	41220
Ramboll	152 140	114 105	34232
SINTEF	383 436	287 577	86273
RKAS	77 060	57 795	17339
DACC	115 000	86 250	25875
EKVÛ	128 360	96 270	28881
SCC	161 728	121 296	36389
Bionova	219 932	164 949	49485
TOTAL	1814796	1 361 097	408329

Participant No.	Participant short name	Number of hours budgeted for the project	Direct eligible cost				Subtotal of direct eligible costs	Indirect eligible costs	Total eligible costs
			Staff Costs	Sub-contracting	Travel costs etc	Other Specific Costs			
1	CIT	3 700	233 150	0	15 900	5 000	254 050	139 890	393 940
2	SBI/AAU	1 700	103 250	0	12 900	5 100	121 250	61 950	183 200
3	Ramboll	1 435	89 525	0	8 900	0	98 425	53 715	152 140
4	SINTEF	2 795	224 335	0	10 500	14 000	248 835	134 601	383 436
5	RKAS	1 100	37 225	0	8 500	9 000	54 725	22 335	77 060
6	DACC	1 140	60 750	0	8 900	8 900	78 550	36 450	115 000
7	EKVÛ	2 245	66 850	0	9 300	12 100	88 250	40 110	128 360
8	SCC	995	62 685	34 032	10 500	16 900	124 117	37 611	161 728
9	Bionova	2 480	118 020	8 000	10 500	12 600	149 120	70 812	219 932
	TOTAL	17590	995790	42032	95900	83600	1217322	597474	1814796

Participant No4	Participant short name	Distribution of HOURS per work package and participant							Total number of hours
		WP 1: Management	WP 2: Development of the tool-kit	WP 3: National pilot projects	WP 4: Evaluation and recommendations	WP 5: Implementation and training	WP 6: Communication and dissemination	WP 7: IEE Dissemination Activities	
1	CIT	850	430	1 300	270	270	420	160	3 700
2	SBI/AAU	140	150	300	200	490	420	-	1 700
3	Ramboll	110	60	950	40	160	115	-	1 435
4	SINTEF	140	150	1 445	200	300	560	-	2 795
5	RKAS	110	60	625	40	150	115	-	1 100
6	DACC	120	50	75	40	280	575	-	1 140
7	EKVÛ	140	150	800	380	330	445	-	2 245
8	SCC	110	130	75	40	150	490	-	995
9	Bionova	140	150	1 100	200	330	560	-	2 480

Work packages	Distribution of hours per work package and participant									Total	Total (%)
	CIT (SE)	SBI/AAU (DK)	Ramboll (DK)	SINTEF (NO)	RKAS (EST)	DACC (DK)	EKVÜ (EST)	SCC (SE)	Bionova (FI)		
WP 1 leader	680									680	
WP 1.1-1.4	170	140	110	140	110	120	140	110	140	1180	
WP 1 total	850	140	110	140	110	120	140	110	140	1860	11%
WP 2 leader								70		70	
WP 2	430	150	60	150	60	50	150	60	150	1260	
WP 2 total	430	150	60	150	60	50	150	130	150	1330	8%
WP 3 leader				120						120	
WP 3.1	50		50	75	50	25	25	25	50	350	
WP 3.2	50			50	25	50	25	50	50	300	
WP 3.3	300									300	
WP 3.4	600	200	700	900	250		600		700	3950	
WP 3.5	300	100	200	300	300		150		300	1650	
WP 3 total	1300	300	950	1445	625	75	800	75	1100	6670	38%
Wp 4 Leader							100			100	
WP 4.1	50	50	20	50	20	20	80	20	50	360	
WP 4.2	170	100	20	100	20	20	120	20	100	670	
WP 4.3	50	50		50			80		50	280	
WP 4 total	270	200	40	200	40	40	380	40	200	1410	8%
WP5 leader		100								100	
WP 5.1	80	200	20	80	20	50	80	50	80	660	
WP 5.2	70	70	50	70	50	50	70	50	70	550	
WP 5.3	100	100	90	130	80	180	160	50	160	1050	
WP 5.4	20	20		20			20		20	100	
WP 5 total	270	490	160	300	150	280	330	150	330	2460	14%
WP 6 leader						100				100	
WP 6.1	20	20		20		20	20		20	120	
WP 6.2				40		40	40	180	40	340	
WP 6.3	30	30	10	80	10	180	80	120	80	620	
WP 6.4	100	100	30	150	30	70	100	70	150	800	
WP 6.5	100	100	30	100	30	100	100	80	100	740	
WP 6.6	90	90		90			60		90	420	
WP 6.7	70	70	35	70	35	35	35	30	70	450	
WP 6.8	10	10	10	10	10	30	10	10	10	110	
WP 6 total	420	420	115	560	115	575	445	490	560	3700	21%
WP 7	160									160	
WP 7 total	160									160	1%
Total	3700	1700	1435	2795	1100	1140	2245	995	2480	17590	

Pilot Buildings

- Step 1. Theoretical investigation in 15-18 existing non-residential buildings.
(2-4 per country)
- Step 2 and 3. Actual renovation will be carried out in about 6-8 demonstration buildings. (1-2 per country)
- National training courses (500 participants). Seminars and Total Concept workshops/meetings (700 stakeholders).
(Count everything and take signatures for proof)

Use the EU-flag on everything and disclaimer



Co-funded by the Intelligent Energy Europe
Programme of the European Union

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Consortium Agreement

Project Consortium (PC)

- CIT, Mrs. Åsa Wahlström,
- SBI/AAU, Mr. Alireza Afshari.
- Rambøll, Mr. Nikolaj Haaning,
- SINTEF, Mr. Mads Mysen,
- RKAS, Mr. Allan Hani,
- DACC, Mr. Graves K. Simonsen,
- EKVÜ, Mr. Aivar Uutar,
- SCC, Mr. Tommy Lenberg
- Bionova, Mr. Panu Pasanen

Project Management Group (PMG)

- CIT,
- SBI/AAU
- SINTEF
- DACC
- EKVÜ
- Bionova

Involvement of support

- BELOK (Sweden)
- Swegon Air Academy
- Vasakronan (Sweden)
- City of Malmö (Sweden)
- Specialfastigheter (Sweden)
- Harry Sjögren (Sweden)
- Jernhusen (Sweden)
- Statsbygg (Norway)
- The Norwegian Defence Estates Agency (Norway)
- City of Tampere (Finland)

Total Concept working meetings / seminars

- **Technical and non-technical barriers for major energy retrofitting in non-residential building sector**
- **Financing models for major energy retrofitting**
- **Technical solutions for energy performance improvements in non-residential buildings**
- **Management aspects in major energy retrofitting projects, etc.**
- **Issues related to practical implementation of the Total Concept method.**

Next Meetings – 2 days (half day work shop)

Meeting 2: Internal training and meeting
(Stockholm) August 2014

Meeting 3: Denmark (December 2014/January
2015)

Meeting 4: Norway (May 2015 / June 2015)

Online meetings PMG (2 hours)

Online 1: June 2014

Online 2: October-November 2014

Online 3: March-April 2014

Risk Assessment

No	Possible risks	Probability to occur (scale 1-5, 1=low, 5=high)	Impact on results (scale 1-5, 1=low, 5=high)	Score/ Ranking	Possible measures to eliminate the risk	Time to deliver	Responsible partner(s)
1	Internal workshop takes place too late (WP2) (difficulty to set the suitable date and involve subcontractors)	3	5	15			
2	Tool-kit not ready in time for pilot studies (preparation of guidelines and tools delayed as well as results from task 2.3)	3	5	15			
3	Property owners of pilot study building cancel their participation in the project (requires evaluation per country) (WP3)			0			
4	Difficulty to involve the key actors and stakeholders for pilot studies, pilot studies can not be started in time (requires evaluation per country) (WP3)			0			

Strategic objectives

Total Concept method becoming a market driver for large scale energy retrofitting of non-residential buildings in the participating countries and beyond the target countries leading

Considerably reduce the energy demand in the sector of existing non-residential buildings in the participating countries and beyond the target countries.

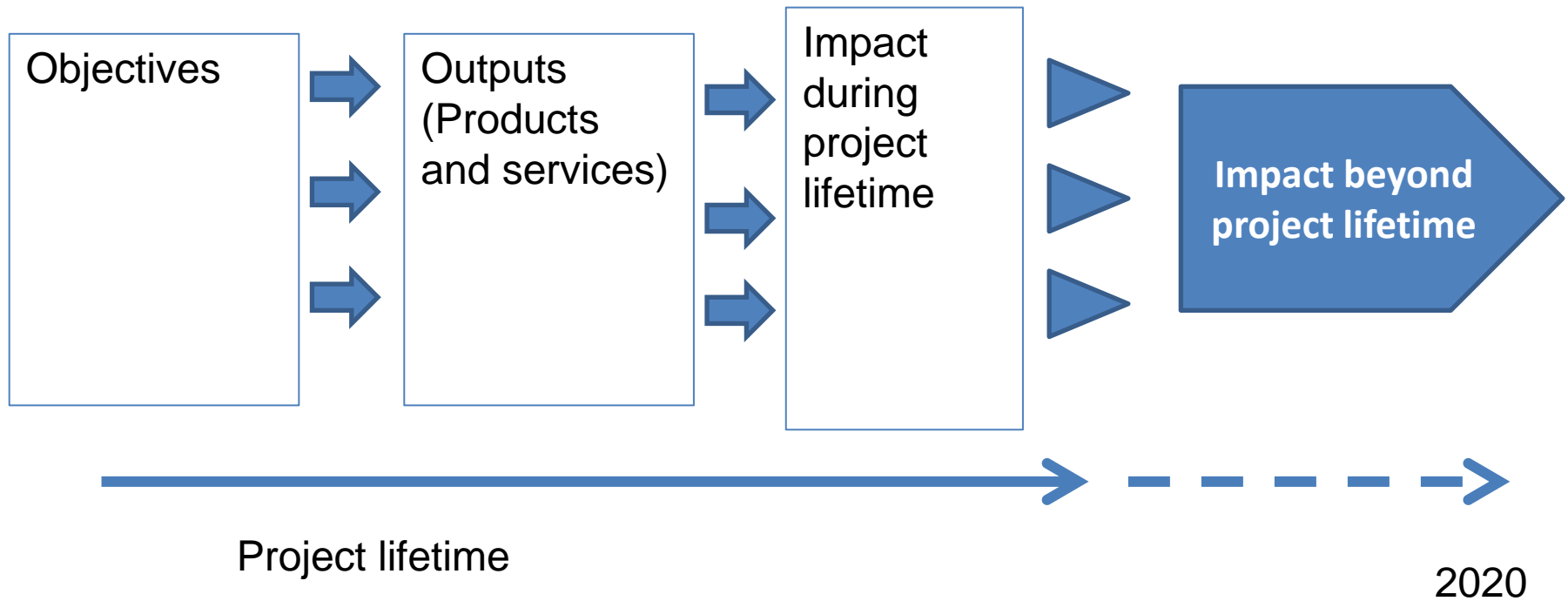
Resolving the barriers for finding economically profitable solutions for investments for energy performance improvements in the non-residential building sector.

Accelerate the refurbishment of existing non-residential buildings towards Nearly Zero-Energy Buildings in Several European countries.

Increased cooperation between the different stakeholders in the energy performance improvement process, i.e. public and private property owners, property managers, maintenance staff, tenants, architects, consultants, construction companies for gaining the

Continuous knowledge transfer and training for the important stakeholders and key actors in the building energy performance improvement process.

Spread the outcomes from the TOTAL CONCEPT project in order to give uptake in large part of European countries.



CPI-factors including baseline and assumptions for extrapolation

Overall objective	Target within the action duration :	Target by 2020:
To contribute to the EU 2020 targets on energy efficiency and renewable energy sources	<ul style="list-style-type: none"> 40 million Euro Cumulative investment made by European stakeholders in sustainable energy (Euro) 	<ul style="list-style-type: none"> 5 billion Euro Cumulative investment made by European stakeholders in sustainable energy (Euro)
	<ul style="list-style-type: none"> 2400 Renewable Energy production triggered (toe/year) 	<ul style="list-style-type: none"> 300 000 Renewable Energy production triggered (toe/year)
	<ul style="list-style-type: none"> 7300 Primary energy savings compared to projections (toe/year) 	<ul style="list-style-type: none"> 1 million Primary energy savings compared to projections (toe/year)
	<ul style="list-style-type: none"> 44 000 Reduction of greenhouse gas emissions (t CO₂e/year) 	<ul style="list-style-type: none"> 5 million Reduction of greenhouse gas emissions (t CO₂e/year)

CPI-factors

2017

- 10 pilot buildings
- 10-15 EoI for Total Concept triggered in each country



500 000 m²

2018-2019

- 1% of stock is renovated



5 000 000 m²

2020

- 2% of stock is renovated



10 000 000 m²



25 000 000 m²

CPI-factors

ESTIMATIONS

- Heat saving 100-150 kWh/m²
- Electricity saving 25-50 kWh/m²
- 20% converted to renewable energy
- Investment 80 Euro/m²

1 MWh = 0.086 toe

1 MWh = 0.52 ton CO_{2e}

Primary energy heat = 1.0

Primary energy electricity = 2.8

CPI-factors including baseline and assumptions for extrapolation

Overall objective	Target within the action duration :	Target by 2020:
To contribute to the EU 2020 targets on energy efficiency and renewable energy sources	<ul style="list-style-type: none"> million Euro Cumulative investment made by European stakeholders in sustainable energy (Euro) 	<ul style="list-style-type: none">Euro Cumulative investment made by European stakeholders in sustainable energy (Euro)
	<ul style="list-style-type: none">Renewable Energy production triggered (toe/year) 	<ul style="list-style-type: none"> Renewable Energy production triggered (toe/year)
	<ul style="list-style-type: none">Primary energy savings compared to projections (toe/year) 	<ul style="list-style-type: none">Primary energy savings compared to projections (toe/year)
	<ul style="list-style-type: none">Reduction of greenhouse gas emissions (t CO₂e/year) 	<ul style="list-style-type: none">Reduction of greenhouse gas emissions (t CO₂e/year)

Baseline:
Assumptions:

Homepage

Template of dissemination plan

CPI

Mads

Åsa

Ali

Niels

Tutti

Risk

Marii-Liis

Anna

Nikolaj

Allan

Tommy

Panu

Homepage

Graves

Monika

Pawel

Aivar