# Task 26
# The Multiple Benefits of Energy Efficiency
# Task workplan & dissemination plan
# Proposal

Dr. Catherine Cooremans

Catherine Cooremans

- Position: researcher and co-director of the CAS in Energy Management at University of Geneva, Institute for Environmental Studies (ISE). Associate partner Eco'Diagnostic Consulting, Geneva.
- Education: PhD in Economic and Social Sciences (Business Management orientation (2010); Executive MBA; Certificate of Advanced studies in Environmental Business Management; B.A in Political Sciences (International Studies).
- Selected Reference Projects (involving Multiple Benefits):

  - Since 2012. Creation and co-direction of a new continuing education program of University of Geneva, the CAS in Energy Management

  - 2012-2018. Development of a new innovative audit tool for Canton of Vaud authorities to improve the success of their energy audit program aimed at large-scale energy consumers; teaching in the programme; creation and management of an engineers network.

  - 2014-2017. Co-leader of "M_Key – Management as a Key Driver of Energy Performance", research project financed by the Swiss National Science Foundation, within the framework of National Research Program NRP71 Managing Energy Consumption.

- Key contributions: member of the Editorial board of Energy Efficiency Journal; member of IEECB&SC & IEPPEC International Programme Committees.

# Outline

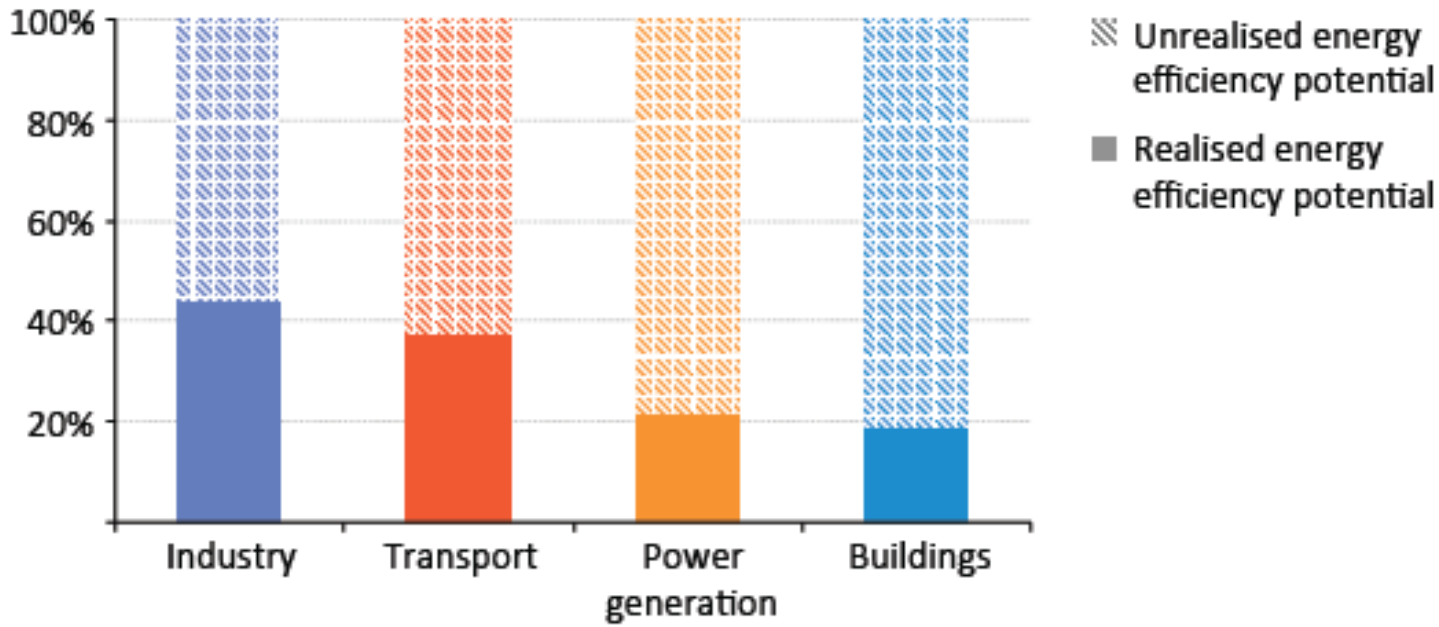
1. Background
2. Definition & examples
3. Objectives & scope
4. Target audience & benefits
5. Workplan
6. Deliverables
7. Funding

# 1. BACKGROUND

## The IEA energy efficiency market report 2014 confirms energy efficiency's place as the "first fuel":

"Avoided energy use was larger than the supply of oil (1,202 Mtoe), electricity (552 Mtoe) or natural gas (509 Mtoe) in 2011; these savings equate to 59% of total final consumption in the 11 IEA member countries that year".

# A huge energy-efficiency potential remains untapped




***Two-thirds of the economic potential to improve energy efficiency remains untapped in the period to 2035***

*Source: Philippe Benoît, Several IEA strategic actions to increase energy-efficiency, EEMR 2015 and Multiple Benefits, ECEEE workshop, Brussels, October 21, 2014.*

# 2. Definition & examples

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

# Example1:

- A department store chain replaces its lighting fixtures in the grocery department by LEDs. LEDs, contrary to the previous lighting system, do not emit any infrared rays or X-rays. As a result, they do not modify the color of fresh meat and fish and they do not cause the development of bacteria in plastic packaging.

- Benefits:
  - increased value proposition (products quality and security)
  - reduced risks (commercial risk, legal risk entailed by presence of bacteria)
  - reduced costs (less meat and fish thrown away because rejected by customers feeling they were not fresh anymore) – energy costs reduction

## Example 2:

- A complete renovation of its lighting system in an assembling hall of a bag manufacturer.
  Aim = increasing workers' productivity.

- Benefits:

  - Reduced costs: number of bags rejected by the quality control (due to color differences between the bags' handles and the body) is divided by 22 – Energy costs reduction

# 3. Objectives & scope

# Present situation & challenges

- "Hundreds of different benefits for industry have already been identified …, making it challenging to produce a definitive list of the most important ones" (IEA, MB Report, 2014:134)
- Lack of categorization (impacts – actors)
- Lack of quantification
- MB identified most often *ex post*
- Practitioners (engineers – public programmers, etc.) don't have enough competencies and time to identify and quantify MB
- MB have to be communicated in a convincing and harmonized way to decision-makers


*Societal – macroeconomics levels*

*Energy delivery impacts*

*Public budget impacts*

*Health & well-being impacts*

*Industrial energy systems impacts*

*Supply side*

*Demand side*

*Energy delivery impacts*

*Industrial & commercial sector impacts*

*Municipalities impacts*

*households impacts*

***TASK 26***

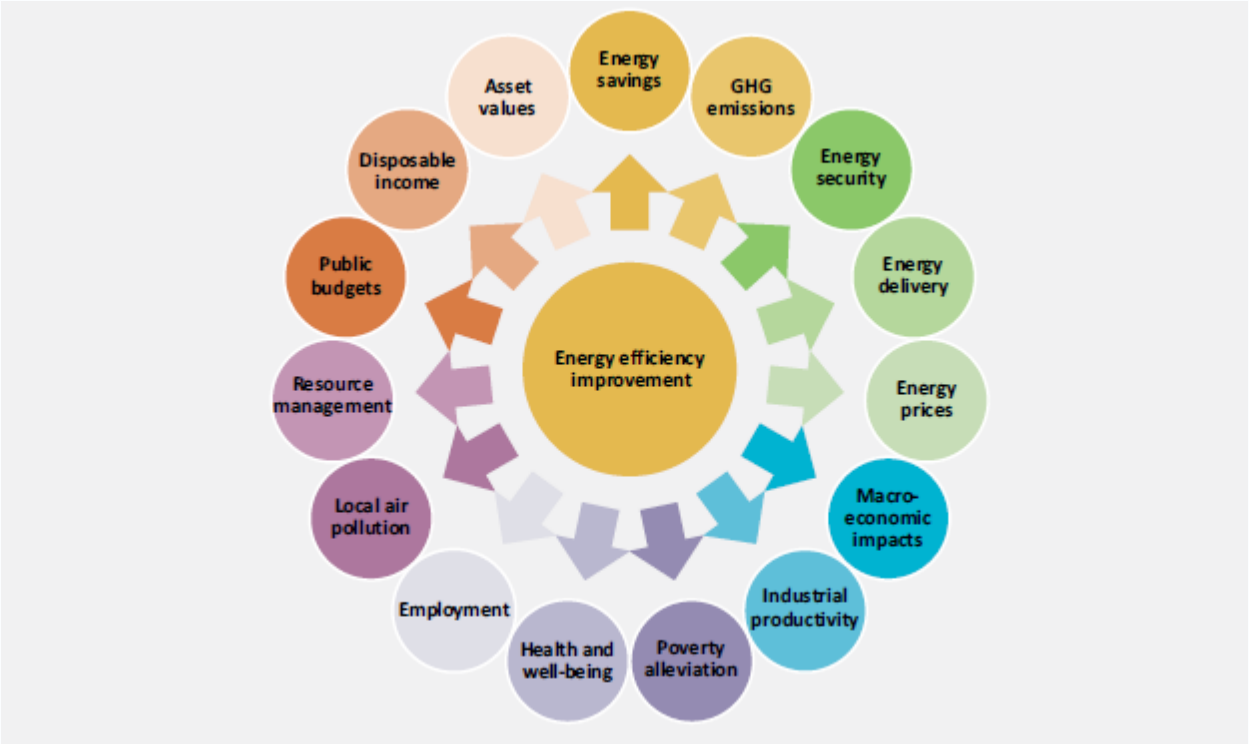
*Individual – microeconomics levels*

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)<br>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) |

*Annex 19 (IETS)*

# 4. Target audience & benefits




"Identifying the multiple benefits that may be linked to energy-efficiency measures in industry could enhance the business case for action"

IEA report on the "Multiple Benefits of Energy Efficiency", Sept. 2014

| TARGET AUDIENCE | TASK 26 / ANNEX 19 BENEFITS |
|---|---|
| Public programmers | - Task 26/Annex 19 provide them with better tools to include MB in energy-efficiency programmes.<br>- Energy-efficiency public programmes obtain better results (in terms of reduced energy consumption by users).<br>- Energy-efficiency public programs become more attractive to upper decision-makers. |
| Energy advisors<br>(engineering consultancies, ESCOs) | - Task 26 / Annex 19 provide them with better tools to evaluate and quantify MB *ex ante*, i.e. at the beginning of energy-efficiency projects or audits.<br>- Their energy-efficiency projects become more convincing to their customer organizations (as sound strategic and financial analyses enlarge the usual technical approach of evaluations and thus their analyses look more attractive to organizations top management).<br>- Their projets obtain better results (in terms of reduced energy consumption by users). |
| Academics | Task 26 / Annex 19 provide them with a unified and coherent theoretical framework to analyze energy-efficiency projects (optimization or investment) *ex ante* or *ex post*. |
| Energy users (businesses and municipalities) | - They adopt more energy-efficiency projets (presented by energy advisors).<br>- They become more competitive thanks to improved value proposition (to their own customers, which translates in higher sales), decreased costs (mainly non-energy costs), and decreased risks. |
| The energy efficiency and carbon financial communities | - Task 26 / Annex 19 will enable these communities to have reliable figures, translated into classical investment calculations, regarding profitability of investment calculations.<br>- Quantified MB could be added in economics models of climate change, thus lowering the cost of climate change mitigation. |
| Policy-makers | - Climate change mitigation costs are significantly reduced by including MB in the economic analysis as demonstrated by economic modelling.<br>- Policy-makers become less reluctant to promote stringent climate change mitigation policies. |
| The society and the environment | - Task 26 / Annex 19 contribute to resources conservation, climate change mitigation, air-quality improvement, public health improvement, security of energy supply, etc. |

Energy-efficiency people care about energy savings & energy performance improvement.

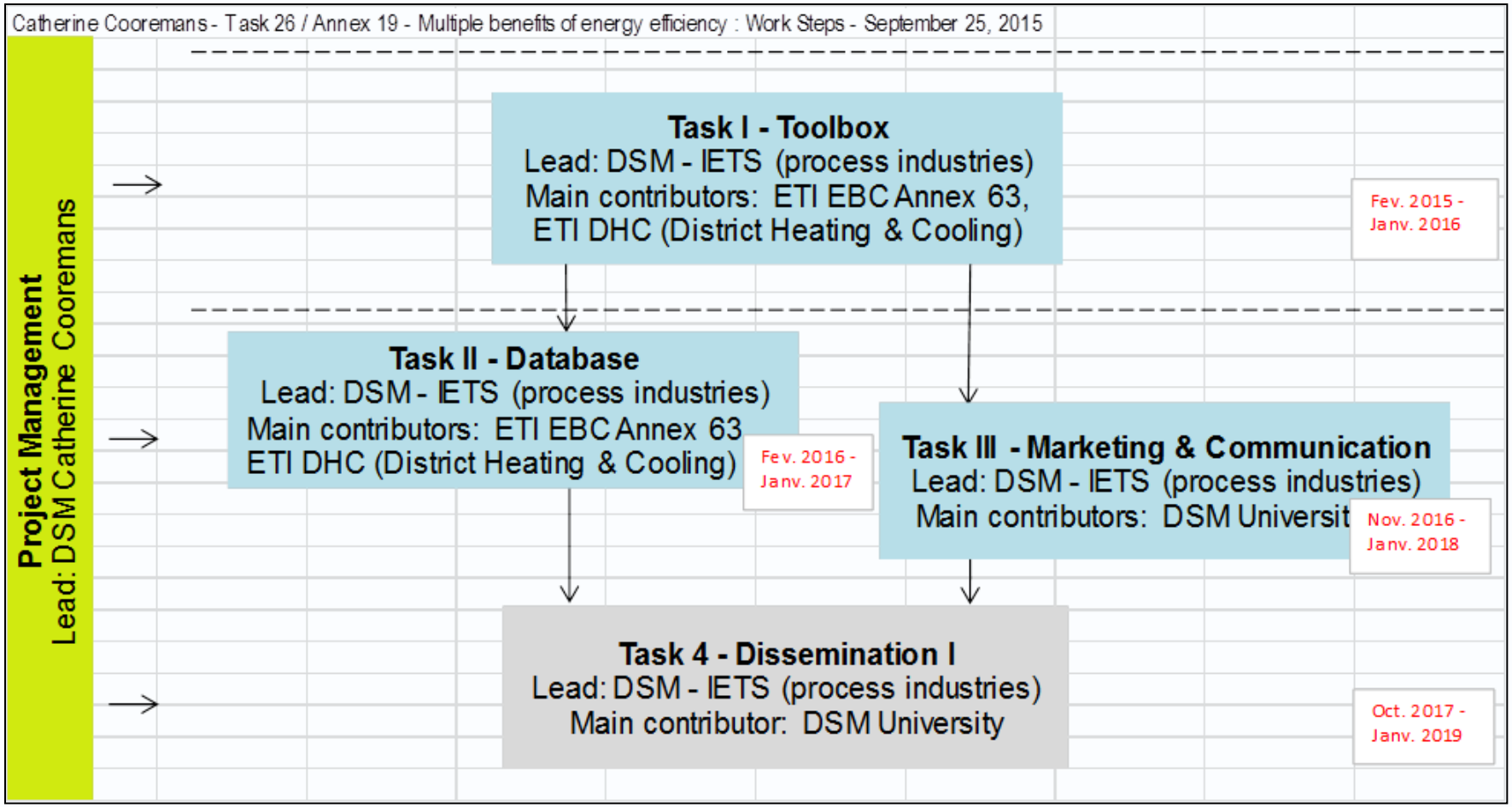
Businesses care about sales, security, productivity, flexibility, quality, production time.

Energy engineers and public programmers are frustrated not having a better success with their projects/programmes.

Politicians don't decide stringent climate change policies because of the supposedly high cost of climate change mitigation.

The Multiple Benefits of energy efficiency offer a common ground to gather these multiple interests

# 5. Workplan




It is proposed that this Annex would be conducted over a period of 36 months, from February 1st, 2016 to January 31, 2019.

# 5. Deliverables

The compulsory deliverables of Task 26 / Annex 19 are:

- Final report of the Task/Annex according to template
- A joint Task/Annex public Website
- Progress reports to the DSM/IETS ExCos four 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

Further deliverables of Task 26 are:

Four subtask:

- Subtask 1 – Toolbox
- Subtask 2 – Database
- Subtask 3 - Marketing and communication
- Subtask 4 - Dissemination

# Four subtask:

- Subtask 1 - Toolbox
  - Identification of multiple benefits for each type of investment or optimization measure in each business segment & municipalities
  - Integration with works being done in the climate change field
  - Identification of methods/tools for quantification of major MBs in municipalities and in the business sector (process industry to be analyzed by IETS)
  - Development of analytical tools to identify and quantify MBs *ex ante* in different business activities and under different scenarios and circumstances
  - Development of a communication tool for businesses' internal staff, consultants advising them and public programmers
  - Development of a financial spreadsheet to properly include energy benefits and MBs in investment appraisal
  - Development of a user's manual to facilitate comprehension and use of the Toolbox by practitioners

Four subtask:

- Subtask 2 – Database
  - Development of a Questionnaire for harmonized data collection in the different organizations / countries
  - Establishment of a network of experts to collect high quality data (based on real examples, experiences and figures)
  - Design of a Database organized by business activity & municipality type, energy-efficiency measure type, geographical location
  - Collection of data in participating Member States using the Questionnaire
  - Statistical analysis of the data collected

Four subtask:

- Subtask 3 - Marketing and communication
  - Development of a template for workshop and webinar training
  - Development of MOOC (Massive Open Online Course), in collaboration with DSM University
  - Development of Task 26 social network page and social network presence
  - Communication on the MB of energy efficiency and on their contribution to activate the untapped potential of energy efficiency to public programmers and policy-makers, as well as to the energy efficiency and climate change financial community

Four subtask:

- Subtask 4 - Dissemination
  - Organization of three one-day “Toolbox Training” sessions in each participating Member State to enable engineers to take ownership of the MB toolbox
  - Organization of webinars and MOOCs, in collaboration with DSM University.
  - Final report to ExCos.

# 6. Funding

Catherine Cooremans - Task 26 / Annex 19 - Multiple benefits of energy efficiency - forecast budget - Sept. 25, 2015

## DSM - IETS MBs BUDGET — Scenario 2 : 5 participating countries

| RESOURCES | TASK 1 TOOL BOX | | TASKS 2 & 3 DATABASE MARKETING | | TASK 4 DISSEMINATION | | TASKS 1-4 TOTAL |
|---|---|---|---|---|---|---|---|
| | YEAR 1 | | YEAR 2 | | YEAR 3 | | YEARS 1-3 |
| | Hyp. % | WD | Hyp. % | WD | Hyp. % | WD | WD |
| **I. GLOBAL PROJECT COSTS** | | | | | | | |
| Operating agent | 35% | 81 | 30% | 69 | 10% | 23 | 173 |
| Co-operating agent | 10% | 23 | 15% | 35 | 10% | 23 | 81 |
| Administration | 0% | 0 | 0% | 0 | 0% | 0 | 0 |
| Data base IT & stastistical analysis | 0% | 0 | 10% | 23 | 5% | 13 | 36 |
| Training | 0% | 0 | 0% | 0 | 10% | 23 | 23 |
| DSM University (MOOC) | 0% | 0 | 0% | 0 | 20% | 46 | 46 |
| Total cost (5 countries) | | **104** | | **127** | | **128** | **359** |
| Cost per country | | **21** | | **25** | | **26** | **72** |
| **II. NATIONAL PROJECT COSTS** | | | | | | | |
| National expert | 10% | 23 | 20% | 46 | 10% | 23 | 92 |
| Expert (1 for each participating country) | 10% | 23 | 20% | 46 | 5% | 12 | 81 |
| Total national cost | | **46** | | **92** | | **35** | **173** |
| **III. TOTAL PROJECT COST PER COUNTRY (I. + II. - 10 countries) - WORKING DAYS** | | 67 | | 117 | | 61 | **245** |

*Total fees, per participating country, of 245 working days (WD) and 14,300 US$ (travel costs) over the 3-year life of the project*