

Questionnaire

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Multiple benefits of energy efficiency

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Environmental Change Institute



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European
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Table of Contents

1.	Focus of the questionnaire	4
2.	Questionnaire.....	5
	1. <i>Introduction</i>	5
	2. <i>Your role and your company</i>	6
	3. <i>Company characteristics</i>	7
	4. <i>Assessment of energy related measures and co-benefits</i>	8
	5. <i>Decision making</i>	20

1. Focus of the questionnaire

In this task, a questionnaire was developed for a harmonized data collection in companies in the participating countries. For this purpose, a standardised questionnaire was designed. This will enable a range of quantitative and qualitative data to be collected, with key data harmonized, but with the flexibility to ensure important company-specific details are gathered.

The focus of the questionnaire is on assessing the associated multiple benefits of energy efficiency measures and to gain insight in the perception of multiple benefits in companies and their role in decision-making. The main parts of the questionnaire will be the assessment of company characteristics, implemented measures affecting energy efficiency and the multiple benefits that co-occurred with the measures.

The sampling (selection of subsectors) is kept close to the categorization of stakeholders in WP7. It includes most subsectors from the manufacturing and the service sector. The implementing partners in the different countries will contact the companies with a request for participation according to the M-Benefits letter containing the relevant information about the project.

Before analyzing the data, all data will be anonymised and data confidentiality will be ensured during the whole process of data collection and analysis. The questionnaire will be implemented as an online-survey to increase the clearness of the structure, to ensure comparability of data and to facilitate data collection.

2. Questionnaire

1. Introduction

Thank you for participating in our survey.

We want to develop tools that enable a better understanding and quantification of multiple benefits (also called co-benefits) of energy efficiency measures.

Data anonymisation is granted. No conclusions can be drawn out of your individual answers.

If you are interested in the results of our project, please leave us your e-mail address on the last page.

Whenever measures that improve energy efficiency are carried out, several non-energy effects (co-benefits) will usually occur in addition to energy savings. Such effects usually improve the economic performance of the energy efficiency measure and add options to better “sell” energy efficiency to the top management. It is not acknowledged yet broadly, but many of those effects influence the core business and are of interest to decision makers. Energy managers can use them to find allies among their colleagues, by highlighting issues that are of concern for them.

Co- or multiple benefits linked to energy efficiency measures can be:

- Increased productivity (shorter processing cycles, increased output, ...)
- Reduced production costs/ losses
- Improved product quality
- Increased flexibility of working processes
- Reduced operations and maintenance costs
- Extended equipment lifetime
- Reduced malfunction or breakdown of appliance/ facilities
- Improved control opportunities of appliances
- Improved employee safety
- Improved employee health
- Improved employee comfort
- Improved employee morale and satisfaction
- Job creation in the company
- Additional space
- Reduced waste
- Reduced water use
- Reduced CO, CO₂, NO_x, SO_x emissions
- Reduced purchase of raw/ ancillary materials
- Improved public image or reputation
- Increased value of the building
- Compliance with legislation

Please answer the questions referring to the company you are working at.

Keys:

- Only one answer possible
- Multiple answers possible

_____ free text

2. Your role and your company

What is your role in your company?

- Energy manager
- CEO
- Technical management/ CTO
- Operating and maintenance
- Controlling
- Other (please specify): _____

How long have you been working at your company?

_____years

Does your company have multiple sites or only the one you are working at?

- Multiple sites
- One site

If the company has multiple sites:

Do you give your answers for this site of your company or for the whole company?

- Single site
- Whole company

The building(s) /plant(s) where the measure(s) have been implemented was (were) usually (at the time of implementation):

- Owned by the company
- Rented by the company
- Leased by the company

3. Company characteristics

To which sector does your company (mainly) belong?

Manufacturing

- Food, Beverages, Tobacco
- Textiles and wearing apparel
- Wood products/ furniture
- Pulp and paper
- Coke and refined petroleum products
- Chemical/ pharmaceutical products, rubber products
- Non-metallic mineral products
- Metal products/ machining/ machinery
- Electronic components/ electrical equipment
- Motor vehicles/ ships
- Construction and real estate
- Other: _____

Services

- Wholesale food
- Wholesale non-food
- Retail food
- Retail non-food
- Transport and storage
- Hotels
- Restaurants
- Office like companies
- Education
- Hospitals
- Other: _____

How many employees work at your company?

- Less than 10 employees
- 10 – 49 employees
- 50 – 249 employees
- More than 250 employees
- More than 500 employees

4. Assessment of energy related measures and co-benefits

Did you undertake investments or measures within the last 5 years that improved energy efficiency (e.g. energy savings) in your building or working processes? Investments could include new equipment, renovation, building retrofits and controls, improved management procedures or staff training.

Yes

- The last energy efficiency improving measure or investment was made in the year _____
- How many investments or measures (approximately) were implemented in sum in the last 5 years? _____

For filling in the rest of the survey, you can choose 3-5 exemplary measures/ investments (if available) and focus on those for the following questions.

No

- Why not?

- No suitable measure/ technology available
- Economic performance not in line with the company investment thresholds (e.g. long pay-back time)
- Financial constraints (i.e. insufficient budget, impossibility to access third party financing)
- Perception of high risks from the management
- Technical constraints (e.g. risk of issues with the production of goods or services)
- Organisational effort too high
- Other (please explain) _____

- Did you perform an evaluation of non-energy benefits and losses correlated with the proposed energy efficiency improving measures?

- Yes
- No

- If yes, which ones have been considered?

- Increased productivity (shorter processing cycles, increased output, ...)
- Reduced production costs/ losses
- Improved product quality
- Increased flexibility of working processes
- Reduced operations and maintenance costs
- Extended equipment lifetime
- Reduced malfunction or breakdown of appliance/ facilities
- Improved control opportunities of appliances
- Improved employee safety
 - Improved lighting
 - Reduced need for protective equipment
 - Other: _____
- Improved employee health
- Improved employee comfort
 - Lower noise
 - Better air quality
 - Improved lighting
 - Other _____
- Improved employee morale and satisfaction

- Job creation in the company
 - Additional space
 - Reduced waste
 - Reduced water use
 - Reduced CO, CO₂, NO_x, SO_x emissions
 - Reduced purchase of raw/ ancillary materials
 - Improved public image or reputation
 - Increased value of the building
 - Compliance with legislation
 - Other _____
- How did they affect the proposed project decision?
- _____
-
- If not, which of the following co-benefits of energy efficiency improvements could positively influence your company to implement measures to improve energy efficiency?
- Increased productivity (shorter processing cycles, increased output, ...)
 - Reduced production costs/ losses
 - Improved product quality
 - Increased flexibility of working processes
 - Reduced operations and maintenance costs
 - Extended equipment lifetime
 - Reduced malfunction or breakdown of appliance/ facilities
 - Improved control opportunities of appliances
 - Improved employee safety
 - Improved lighting
 - Reduced need for protective equipment
 - Other: _____
 - Improved employee health
 - Improved employee comfort
 - Lower noise
 - Better air quality
 - Improved lighting
 - Other _____
 - Improved employee morale and satisfaction
 - Job creation in the company
 - Additional space
 - Reduced waste
 - Reduced water use
 - Reduced CO, CO₂, NO_x, SO_x emissions
 - Reduced purchase of raw/ ancillary materials
 - Improved public image or reputation
 - Increased value of the building
 - Compliance with legislation
 - Other _____
 - none

If yes:

Please choose the energy improvements you carried out:

- Process heating
- Process cooling
- Lighting
- Compressed air
- Waste heat
- Power Systems
- Refrigeration
- Motors
- Pumps
- Building envelope/ insulation
- IT/ICT
- Heating, ventilation and air-conditioning technology (HVAC)
- Metering, monitoring, energy management
- Change of working/ production processes
- Other measures

Improvements in energy efficiency

- the following detailed questions will be shown for the measures chosen above only -

Which types of energy efficiency improvements did you conduct?

- Process heating
 - (Component) renewal
 - Optimize control/ automation
 - Optimize distribution
 - Insulation
 - Other: _____
 - How much did you invest?
 - 0 – 1000€
 - 1001 – 5000€
 - 5001 – 10.000€
 - 10.001 – 50.000€
 - 50.001 – 100.000€
 - More than 100.000€
 - What was the main motivation to conduct this measure?
 - Energy efficiency improvement was the main reason
 - Energy efficiency improvement was a desired co-benefit, but the main reason/s was/ were:
 - Regular refurbishment
 - Appliance was changed because it was defective
 - Achieving a certification
 - Other: _____
 - Did the availability of funds, financing schemes or subsidies for Energy Efficiency improvements play a role in your decision-making regarding the measure?
 - Yes
 - No

Which co-benefits of this measure did you recognize?

- repeat this list of MBs for all energy efficiency measures -

Production/ working processes

- Increased productivity (e.g. shorter processing cycles, increased output, ...)
- Were you aware of this co-benefit in advance?
 - Yes
 - How did you know?
 - Information from an audit
 - Information from the vendor
 - We informed ourselves in advance
 - We already experienced this benefit in the past
 - Other: _____
 - Did this co-benefit influence your decision-making regarding the implementation of the measure?
 - Yes
 - No
 - Did you put a monetary value on this co-benefit?
 - Yes: _____ €
 - No
 - No
 - How did you recognize this?
 - Monitoring
 - Accidental observation
 - Reporting from employees
 - Other: _____
 - Would this co-benefit have positively influenced your decision for this measure if it was known in advance?
 - Yes
 - No
 - I don't know
- Reduced production costs/ losses
- Were you aware of this co-benefit in advance
 - ... (following questions as above)
- Improved product quality
- Were you aware of this co-benefit in advance
 - ... (following questions as above)
- Increased flexibility of working processes
- Were you aware of this co-benefit in advance
 - ... (following questions as above)

Equipment and appliances

- Reduced operations and maintenance costs

- Were you aware of this co-benefit in advance
- ... (following questions as above)
- Extended equipment lifetime
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)
- Reduced malfunction or breakdown of appliance/ facilities
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)
- Improved control opportunities of appliances
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)

Employees and working environment

- Improved employee safety
 - Improved lighting
 - Reduced need for protective equipment
 - Other: _____
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)
- Improved employee health
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)
- Improved employee comfort
 - Lower noise
 - Better air quality
 - Improved lighting
 - Other _____
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)
- Improved employee morale and satisfaction
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)
- Job creation in the company
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)
- Additional space
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)

Waste, use and emissions

- Reduced waste
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)
- Reduced water use
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)
- Reduced CO, CO₂, NO_x, SO_x emissions
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)
- Reduced purchase of raw/ ancillary materials
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)

Other

- Improved public image or reputation
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)
- Increased value of the building
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)
- Compliance with legislation
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)
- Other _____
 - Were you aware of this co-benefit in advance
 - ... (following questions as above)
- none

- end of list MBs -

Continuation of improvements in energy efficiency

- Process cooling
- (Component) renewal
 - Optimize control/ automation
 - Optimize distribution
 - Insulation
 - Other: _____
 - How much did you invest?
 - 0 – 1000€
 - 1001 – 5000€
 - 5001 – 10.000€
 - 10.001 – 50.000€
 - 50.001 – 100.000€
 - More than 100.000€
 - What was the main motivation to conduct this measure?
 - Energy efficiency improvement was the main reason
 - Energy efficiency improvement was a desired co-benefit, but the main reason/s was/ were:
 - Regular refurbishment
 - Appliance was changed because it was defective
 - Achieving a certification
 - Other: _____
 - Did the availability of funds, financing schemes or subsidies for energy efficiency improvements play a role in your decision-making?
 - Yes
 - No
- Lighting
- Indoor
 - Relamping
 - Optimize control/ automation
 - Other: _____
 - Outdoor
 - Relamping
 - Optimize control/ automation
 - Other: _____
 - How much did you invest?
 - 0 – 1000€
 - 1001 – 5000€
 - 5001 – 10.000€
 - 10.001 – 50.000€
 - 50.001 – 100.000€
 - More than 100.000€
 - What was the main motivation to conduct this measure?
 - Energy efficiency improvement was the main reason
 - Energy efficiency improvement was a desired co-benefit, but the main reason/s was/ were:
 - Regular refurbishment
 - Appliance was changed because it was defective
 - Achieving a certification
 - Other: _____
 - Did the availability of funds, financing schemes or subsidies for energy efficiency improvements play a role in your decision-making?
 - Yes

No

Compressed air

- (Component) renewal
- Optimize control/ automation
- Optimize distribution
- Other: _____
- How much did you invest?
 - 0 – 1000€
 - 1001 – 5000€
 - 5001 – 10.000€
 - 10.001 – 50.000€
 - 50.001 – 100.000€
 - More than 100.000€
- What was the main motivation to conduct this measure?
 - Energy efficiency improvement was the main reason
 - Energy efficiency improvement was a desired co-benefit, but the main reason/s was/ were:
 - Regular refurbishment
 - Appliance was changed because it was defective
 - Achieving a certification
 - Other: _____
- Did the availability of funds, financing schemes or subsidies for energy efficiency improvements play a role in your decision-making?
 - Yes
 - No

Waste heat

- Please shortly describe the measure: _____
- How much did you invest?
 - 0 – 1000€
 - 1001 – 5000€
 - 5001 – 10.000€
 - 10.001 – 50.000€
 - 50.001 – 100.000€
 - More than 100.000€
- What was the main motivation to conduct this measure?
 - Energy efficiency improvement was the main reason
 - Energy efficiency improvement was a desired co-benefit, but the main reason/s was/ were:
 - Regular refurbishment
 - Appliance was changed because it was defective
 - Achieving a certification
 - Other: _____
- Did the availability of funds, financing schemes or subsidies for energy efficiency improvements play a role in your decision-making?
 - Yes
 - No

Power Systems

- (Component) renewal
- Optimize control/ automation
- Other: _____
- How much did you invest?
 - 0 – 1000€
 - 1001 – 5000€

- 5001 – 10.000€
 - 10.001 – 50.000€
 - 50.001 – 100.000€
 - More than 100.000€
 - What was the main motivation to conduct this measure?
 - Energy efficiency improvement was the main reason
 - Energy efficiency improvement was a desired co-benefit, but the main reason/s was/ were:
 - Regular refurbishment
 - Appliance was changed because it was defective
 - Achieving a certification
 - Other: _____
 - Did the availability of funds, financing schemes or subsidies for energy efficiency improvements play a role in your decision-making?
 - Yes
 - No
- Refrigeration
- (Component) renewal
 - Optimize control/ automation
 - Insulation
 - Other: _____
 - How much did you invest?
 - 0 – 1000€
 - 1001 – 5000€
 - 5001 – 10.000€
 - 10.001 – 50.000€
 - 50.001 – 100.000€
 - More than 100.000€
 - What was the main motivation to conduct this measure?
 - Energy efficiency improvement was the main reason
 - Energy efficiency improvement was a desired co-benefit, but the main reason/s was/ were:
 - Regular refurbishment
 - Appliance was changed because it was defective
 - Achieving a certification
 - Other: _____
 - Did the availability of funds, financing schemes or subsidies for energy efficiency improvements play a role in your decision-making?
 - Yes
 - No
- Motors
- (Component) renewal
 - Optimize control/ automation
 - Other: _____
 - How much did you invest?
 - 0 – 1000€
 - 1001 – 5000€
 - 5001 – 10.000€
 - 10.001 – 50.000€
 - 50.001 – 100.000€
 - More than 100.000€
 - What was the main motivation to conduct this measure?
 - Energy efficiency improvement was the main reason

- Energy efficiency improvement was a desired co-benefit, but the main reason/s was/ were:
 - Regular refurbishment
 - Appliance was changed because it was defective
 - Achieving a certification
 - Other: _____
 - Did the availability of funds, financing schemes or subsidies for energy efficiency improvements play a role in your decision-making?
 - Yes
 - No
- Pumps
- (Component) renewal
 - Optimize control/ automation
 - Optimize distribution
 - Other: _____
 - How much did you invest?
 - 0 – 1000€
 - 1001 – 5000€
 - 5001 – 10.000€
 - 10.001 – 50.000€
 - 50.001 – 100.000€
 - More than 100.000€
 - What was the main motivation to conduct this measure?
 - Energy efficiency improvement was the main reason
 - Energy efficiency improvement was a desired co-benefit, but the main reason/s was/ were:
 - Regular refurbishment
 - Appliance was changed because it was defective
 - Achieving a certification
 - Other: _____
 - Did the availability of funds, financing schemes or subsidies for energy efficiency improvements play a role in your decision-making?
 - Yes
 - No
- Building envelope/ insulation
- Roof
 - Wall
 - Floor
 - Glazing
 - Shading
 - Other: _____
 - How much did you invest?
 - 0 – 1000€
 - 1001 – 5000€
 - 5001 – 10.000€
 - 10.001 – 50.000€
 - 50.001 – 100.000€
 - More than 100.000€
 - What was the main motivation to conduct this measure?
 - Energy efficiency improvement was the main reason
 - Energy efficiency improvement was a desired co-benefit, but the main reason/s was/ were:
 - Regular refurbishment
 - Appliance was changed because it was defective

- Achieving a certification
 - Other: _____
 - Did the availability of funds, financing schemes or subsidies for energy efficiency improvements play a role in your decision-making?
 - Yes
 - No
- Heating, ventilation and air-conditioning technology (HVAC)
- (Component) renewal
 - Optimize control/ automation
 - Optimize distribution
 - Insulation
 - Other: _____
 - How much did you invest?
 - 0 – 1000€
 - 1001 – 5000€
 - 5001 – 10.000€
 - 10.001 – 50.000€
 - 50.001 – 100.000€
 - More than 100.000€
 - What was the main motivation to conduct this measure?
 - Energy efficiency improvement was the main reason
 - Energy efficiency improvement was a desired co-benefit, but the main reason/s was/ were:
 - Regular refurbishment
 - Appliance was changed because it was defective
 - Achieving a certification
 - Other: _____
 - Did the availability of funds, financing schemes or subsidies for energy efficiency improvements play a role in your decision-making?
 - Yes
 - No
- IT/ ICT
- Servers
 - PCs
 - Infrastructure
 - Other: _____
 - How much did you invest?
 - 0 – 1000€
 - 1001 – 5000€
 - 5001 – 10.000€
 - 10.001 – 50.000€
 - 50.001 – 100.000€
 - More than 100.000€
 - What was the main motivation to conduct this measure?
 - Energy efficiency improvement was the main reason
 - Energy efficiency improvement was a desired co-benefit, but the main reason/s was/ were:
 - Regular refurbishment
 - Appliance was changed because it was defective
 - Achieving a certification
 - Other: _____
 - Did the availability of funds, financing schemes or subsidies for energy efficiency improvements play a role in your decision-making?

- Yes
- No

Metering, monitoring, energy management

- Please briefly describe the measure: _____
- How much did you invest?
 - 0 – 1000€
 - 1001 – 5000€
 - 5001 – 10.000€
 - 10.001 – 50.000€
 - 50.001 – 100.000€
 - More than 100.000€
- What was the main motivation to conduct this measure?
 - Energy efficiency improvement was the main reason
 - Energy efficiency improvement was a desired co-benefit, but the main reason/s was/ were:
 - Regular refurbishment
 - Appliance was changed because it was defective
 - Achieving a certification
 - Other: _____
- Did the availability of funds, financing schemes or subsidies for energy efficiency improvements play a role in your decision-making?
 - Yes
 - No

Change of working/ production processes

- Please briefly describe the measure: _____
- How much did you invest?
 - 0 – 1000€
 - 1001 – 5000€
 - 5001 – 10.000€
 - 10.001 – 50.000€
 - 50.001 – 100.000€
 - More than 100.000€
- What was the main motivation to conduct this measure?
 - Energy efficiency improvement was the main reason
 - Energy efficiency improvement was a desired co-benefit, but the main reason/s was/ were:
 - Regular refurbishment
 - Appliance was changed because it was defective
 - Achieving a certification
 - Other: _____
- Did the availability of funds, financing schemes or subsidies for energy efficiency improvements play a role in your decision-making?
 - Yes
 - No

Other measures: _____

- Please briefly describe the measure: _____
- How much did you invest?
 - 0 – 1000€
 - 1001 – 5000€
 - 5001 – 10.000€
 - 10.001 – 50.000€
 - 50.001 – 100.000€

- More than 100.000€
- What was the main motivation to conduct this measure?
 - Energy efficiency improvement was the main reason
 - Energy efficiency improvement was a desired co-benefit, but the main reason/s was/ were:
 - Regular refurbishment
 - Appliance was changed because it was defective
 - Achieving a certification
 - Other: _____
- Did the availability of funds, financing schemes or subsidies for energy efficiency improvements play a role in your decision-making?
 - Yes
 - No

5. Decision making

Who had decided to implement the measure/s? (Please tick all that apply)

- Department or a person in charge for energy management
- CEO
- Technical management
- Controlling
- Other departments: _____
- No one at our site
- No one from our company
- Unclear responsibility

What is the most important criterion when deciding about energy issues?

Please rank the following options.

- Costs of the measures
- Profitability
- Organizational effort
- Energy saving potential
- Other: _____

Is energy efficiency an important strategic issue in your company?

Not important at all

very important

- --- ○ --- ○ --- ○ --- ○

6. Energy and financial issues

Has your company conducted an energy audit within the last 5 years?

- Yes
 - Have you implemented any of the measures recommended as a result of the audit?
 - Yes
 - No
- No

Is your company certified according to an energy or environmental management system?

- ISO 50001
- ISO 14001
- Other: _____
- no

How high were your company's energy costs last year?

- < 10.000€
- 10.001€ – 50.000€
- 50.001€ – 100.000€
- 100.001€ – 250.000€
- 250.001€ – 500.000€
- > 500.000€

How much was your turnover last year?

_____ €

How much was your energy consumption last year? Please give estimation if you are unsure.

_____ €

7. End of questionnaire

Do you have any questions left or something you would like to tell us about energy issues and co-benefits in your company?

Would you like to be informed about the results of our project?

If yes, please leave us your e-mail address:
