



D3.1 | Final report on comparative sociological analysis of the business enterprises' survey

Deliverable:	Final report on comparative sociological analysis of the business enterprises' survey results
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Version:	Final
Quality review:	Thomas Pellerin-Carlin, Emilie Magdalinski (JDI), Stefano Proietti (ISINNOVA)
Date:	23/07/2018
Grant Agreement N°:	727524
Starting Date:	01/11/2016
Duration:	36 months
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The project in brief

The Energy Union Framework Strategy laid out on 25 February 2015 aims at fostering a cost-efficient energy transition able to deliver secure, sustainable and affordable energy to all European consumers. It has embraced a citizen-oriented energy transition based on a low-carbon transformation of the energy system. At the end of the day, the successful implementation of the Energy Union will materialise in a change in energy production and energy consumption choices. Such choices are heavily shaped by particular economic prerequisites, value systems, gender-based preferences, efficiency of governance and the maturity of civil society.

The ENABLE.EU project attempts to understand the key drivers of individual and collective energy choices, including in the shift to prosumption (when energy consumers start to become also energy producers). The project will develop participatory-driven scenarios for the development of energy choices until 2050 by including the findings from the comparative sociological research. As differences between European countries remain salient, ENABLE.EU will have a strong comparative component.

The final aim of this project is to contribute to more enlightened, evidence-based policy decisions, to make it easier to find the right incentives to reach the twin goals of successful implementation of the Energy Union and Europe's transition towards a decarbonised energy system. To reach this final aim, ENABLE.EU will seek to provide an excellent understanding of the social and economic drivers of individual and collective energy choices with a focus on understanding changes in energy choice patterns. Results will be disseminated to relevant national and EU-level actors as well as to the research community and a wider public.

1.Introduction

This report provides a technical overview of the results from a survey of business enterprises in the eleven project countries (Bulgaria, France, Germany, Hungary, Italy, Norway, Poland, Serbia, Spain, Ukraine, and the United Kingdom). The survey focused on SMEs and aimed at taking a snapshot of the recent experiences and future plans of the enterprises regarding social, economic, technological and governance factors, which determine their behaviour and choices regarding the use and management of energy resources. In the framework of the Energy Union initiative, SMEs have been one of the key players, which should both guide and benefit from the transition to a low-carbon economy and thus contribute to meeting 2030 energy and climate objectives cost-effectively.

Questionnaire and Sampling

The project team elaborated a survey questionnaire for the specific research needs at hand. It contained 6 sections covering the following topics: energy use, energy management, energy efficiency, corporate sustainability policy, mobility and company's demographics. The questionnaire was then translated in all national languages, tested for length and consistency, and programmed into an online survey platform. A survey invitation message was also prepared introducing respondents to the questionnaire in their national language.

The sampling methodology started with the drawing up of a list with contact details (name, e-mail) of about 204.000 enterprises from the eleven countries, stratified by company size (measured by both number of employees and annual turnover) and economic sector. The list was drawn from the Amadeus database, containing information on around 21 mln. companies across all European countries.¹ The list included only companies, for which an e-mail address and an information for the size and economic sector was available. The e-mail addresses of the selected companies were additionally verified through technical means in order to exclude inactive e-mails. As a result, a final list of more than 160.000 companies with valid e-mail addresses, covering all countries was elaborated and used to disseminate an e-mail invitation for participation in the online survey. Additionally, a Facebook advertisement campaign in all national languages, targeted to audiences with pre-selected specific characteristics has been implemented, aiming at widening the coverage of the mass-mailing campaign.

Survey results: constraints and limitations²

As a result of the survey campaign, the project collected 215 full surveys from the 11 countries. The following report presents the results from these responses trying to provide as much added value to the survey as possible in view of the low turnout rate. It should however be perceived as problematic

¹ <https://www.bvdinfo.com/en-gb/our-products/data/international/amadeus>

² More details on the activities performed in terms of numbers are given in Appendix 1.

to draw sound statistically relevant research conclusions. Instead, it should be used as providing additional qualitative information on a limited number of enterprises, which might be used to exemplify specific cases of energy behaviour.

Despite the implemented strict procedures for ensuring a good survey response rate, such as technical proofing that the e-mail invitations are actually received by the recipients, incl. measures to avoid the classification of messages as spam, the response rate remained unprecedentedly low (less than 0,001%), well below the planned number of responses. The following possible reasons for the lack of responses, highlighted by professional polling and market research companies, contacted by the team for an advice and feedback, have been identified:

- a) the observed major change in the public attitudes towards the general use of internet and specialised online-services due for example to the possible misuse of personal data as result of the "Cambridge Analytica" case, which coincided with the timing of the survey;
- b) the heavily increased fear of clicking on links, coming from unknown source, as a result of the increased number of online security threats (e.g. mass deployment of ransomware viruses, phishing mails intended to steal personal data, etc.).

In an attempt to collect more responses, two major additional steps were undertaken. On the one hand, the questionnaire was shortened from 43 to 34 questions and the ordering of some questions was changed. On the other hand, the period of the field-work was extended by two months, including the following additional measures: about 60.000 new e-mail invitations were sent to a newly generated and verified list of e-mails; the Facebook campaign was extended by another two weeks; 12 LinkedIn professional groups in the field of manufacturing industries were identified and posts with invitations for participation in the survey were published manually every 3rd day in each of the groups for about a month; in collaboration with the national coordinator of the Enterprise Europe Network – Bulgaria, a message to all EEN offices across all the eleven project countries was sent, with a request for forwarding the invitation to the list of their clients (companies).

Regardless of the additional efforts, the response rate remained low and at the end of the extended period, only 215 full responses in total were collected. In addition to the possible reasons for the low response rate, discussed above, several responses from different EEN offices indicated the implementation of the new GDPR rules as an argument for not forwarding the invitation to their clients as being afraid of probable infringement of the new regulation.

Having in mind the constraints in the timing of the online survey within the time-schedule, the planning of the whole research project and the fact that all of the reasons for the low response rate mentioned above remain valid, the team took a decision to discontinue the field-work as of the third week of June, and to analyse the already collected results.

Due to the low number of full responses collected (215), the initially envisaged cross-country analysis was not possible and the team elaborated an approach for analysing the results by three types of groupings for the whole sample and not country by country: a) three groups by size of companies; b) four groups by major economic sectors; and c) three groups based on the size of GDP per country.

2. Results

At the end of the fieldwork, there were 215 completed and 505 incomplete questionnaires collected in total. 25 out of the 215 companies that completed the survey replied that they had ceased operations as of the end of 2017. This left a sample of 190 companies for the 11 countries included in the survey. Most of the 190 companies were from Bulgaria (45) and Hungary (48) while for the rest of the countries the number of responses varied between 4 and 16 per country. A more detailed distribution of the companies that participated in the survey is available in Appendix 2: Sample description. In order to make cross-country comparisons based on such a small sample, the 11 countries were grouped together according to their GDP per capita. Two types of countries grouping were introduced – two sub-groups of five countries with a lower GDP per capita and 6 countries with a higher one and alternatively, another three sub-groups comprising low-, medium- and high- GDP countries³. While both sub-groupings are presented in the tables below, the analysis focuses on the second one (low-, medium-, and high-GDP) which seems to be more informative in most of the cases.

In terms of number of employees, there were 43 micro companies with between 1 and 10 employees, 80 small companies with between 11 and 49 employees, 41 medium companies with between 50 and 249 employees and 26 large companies with more than 250 employees (14 of these having more than 500 employees). The medium and large companies were grouped together for the purposes of the analysis and were compared with the small and micro companies.

The largest economic sector represented in the sample was manufacturing with 61 companies included. Within the framework of the analysis the manufacturing sector was combined with the mining and quarrying sector (5 companies). The "other services" sector was the second most common one with 50 companies included. It got combined with the "services / repair of motor vehicles and motorcycles" sector (5 companies) into the general group called "services". The third largest sector was "wholesale or retail trade" with a total of 33 companies and the "construction" sector came fourth with a total of 24 companies. Twelve companies fell into other sectors: 4 in "agriculture, forestry and fishing", 3 in "water supply; sewerage, waste management and remediation activities", and 5 in "electricity, gas, steam and air conditioning supply". The latter 12 companies were eventually excluded from the cross-sector comparisons in view of their negligible number per sector. As a sum up, the companies within the analysis are categorized by size, turnover, economic sector and GDP per capita as follows:

Table 1. Distribution of companies in the sample

		Counts
Total (All companies)		190
	1-10 employees	43

³ Data sources: EUROSTAT data on GDP (current prices for 2017) and World Bank data on GDP for Ukraine (current prices for 2016). Eurostat data on population for 2017 (2016 for Ukraine).

Size of the company (N of employees)	11-50 employees	80
	More than 50 employees	67
Turnover groups	up to 500 thousand euro	58
	from 500 thousand to 2 million euro	47
	more than 2 million euro	82
	No answer	3 ⁴
Economic sector	Manufacturing and mining	66
	Construction	24
	Wholesale or retail trade	33
	Services	55
	Other sectors	12 ⁵
Country type 1 (3 GDP groups)	High GDP / capita countries - above 30 000 EUR / capita (Norway, Germany, France, UK)	50
	Medium GDP/ capita countries – 13 000 to 30 000 EUR / capita (Italy, Spain, Poland, Hungary)	69
	Low GDP / capita countries – below 13 000 EUR / capita (Bulgaria, Serbia, Ukraine)	71
Country type 2 (2 GDP groups)	High GDP / capita countries – above 25 000 EUR / capita (Norway, Germany, France, UK, Italy, Spain)	60
	Low GDP / capita countries below 25 000 EUR / capita (Bulgaria, Serbia, Ukraine, Poland, Hungary)	130

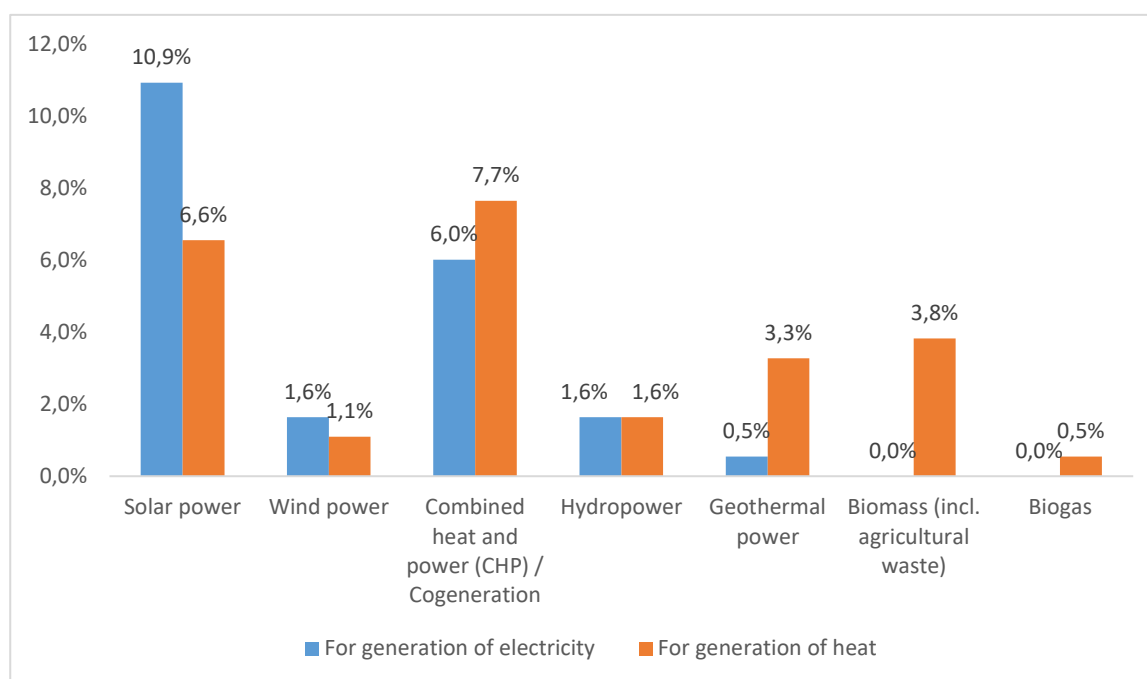
2.1. Energy use: general trends

In 2017, most of the companies, which produce electricity or heat on-site by own installations relied on solar power (11% for generation of electricity and 7% for generation of heat). The second most common own energy source is combined heat and power (CHP) / cogeneration. In terms of heat generation, CHP is actually the most common means, cited by 8% of the companies. Hydropower was used only by 2% of companies for generation of electricity and by the same percentage for generation of heat. Wind power shows similar results with 2% of the companies using it for electricity and 1% for heat. Geothermal power and biomass are preferred mainly for heat generation (3% and 4% respectively). In 2017, biogas was used by only one company from the sample.

⁴ Not included into the cross-tables in the analysis below

⁵ Not included into the cross-tables in the analysis below

Figure 1. In 2017 did your company use electricity or heat, generated on-site by your own installation for:



Base: 183 companies that answered the question

Larger companies (both in number of employees and in turnover) are more likely to have their own installations for on-site generation of energy – both for power and heat. However, differences with regard to the companies' size seem to be smaller, when only solar technologies are concerned. When it refers to solar installations for generation of electricity, the respective shares of companies are similar, i.e. 14% of the medium and large companies, 9% of the small companies, and 10% of the micro companies respectively use such technologies. The differences appear much bigger, when solar technologies for generation of heat are concerned - 11% of the medium and large companies use such technologies against 5% of the small and 2.4% of the micro companies. However, when the other 3 main types of installations for generation of electricity are concerned (CHP, geo-thermal and biomass), the share of medium and large companies, using such technologies is **3 to 9 times higher** than the respective share of micro or small companies. Possible reasons are the high installation cost and the need for larger scale installation in order to be profitable. In terms of economic sectors, on-site energy generation with own installation is most common for the manufacturing sector, followed by the construction one.

Companies from low GDP countries are rarely using on-site generated energy. The main difference between the medium and high GDP groups is observed in the use of CHP energy with a prevalence of high-GDP countries using it, while the respective shares among the low- and medium-GDP countries are much smaller (respectively 3 to 5 times smaller).

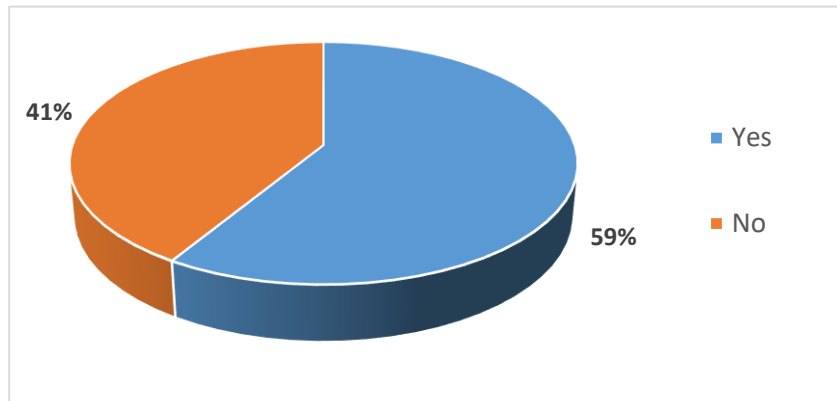
Table 2. In 2017, did your company use electricity or heat, generated on-site by your own installation for:

		For generation of electricity				For generation of heat				Total (count)
		Solar power	CHP / Cogeneration	Geo-thermal power	Biomass (incl. agricultural waste)	Solar power	CHP / Cogeneration	Geo-thermal power	Biomass (incl. agricultural waste)	
Size of the company (N of employees)	1-10	9.8%	2.4%	0.0%	0.0%	2.4%	0.0%	2.4%	0.0%	41
	11-50	9.0%	0.0%	0.0%	0.0%	5.1%	2.6%	1.3%	3.8%	78
	More than 50	14.1%	15.6%	1.6%	0.0%	10.9%	18.8%	6.3%	6.3%	64
Turnover (groups)	up to 500 thousand euro	1.8%	0.0%	0.0%	0.0%	3.6%	1.8%	1.8%	1.8%	55
	from 500 thousand to 2 million euro	17.8%	2.2%	0.0%	0.0%	4.4%	0.0%	0.0%	4.4%	45
	more than 2 million euro	13.8%	12.5%	1.3%	0.0%	10.0%	16.3%	6.3%	5.0%	80
Economic sector	Manufacturing and mining	13.8%	10.8%	0.0%	0.0%	10.8%	12.3%	3.1%	6.2%	65
	Construction	18.2%	4.5%	4.5%	0.0%	0.0%	4.5%	0.0%	4.5%	22
	Wholesale or retail trade	9.4%	3.1%	0.0%	0.0%	6.3%	3.1%	6.3%	0.0%	32
	Services	7.5%	0.0%	0.0%	0.0%	5.7%	3.8%	3.8%	1.9%	53
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	16.0%	14.0%	2.0%	0.0%	8.0%	18.0%	2.0%	4.0%	50
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	16.9%	4.6%	0.0%	0.0%	7.7%	4.6%	4.6%	4.6%	65
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	1.5%	1.5%	0.0%	0.0%	4.4%	2.9%	2.9%	2.9%	68
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	18.3%	11.7%	1.7%	0.0%	8.3%	15.0%	1.7%	3.3%	60
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	7.3%	3.3%	0.0%	0.0%	5.7%	4.1%	4.1%	4.1%	123

Companies with on-site generation of electricity

More than half (59%) of the companies that generate electricity (incl. for CHP) in one or more of the ways listed above, reported selling electricity to the grid in 2017.

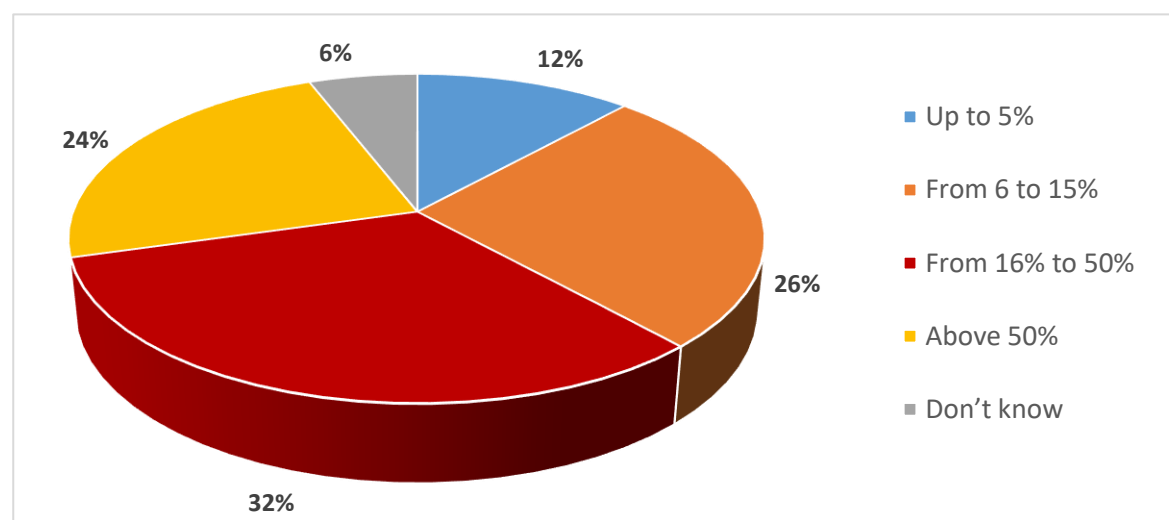
Figure 2. In 2017, did your company sell to the grid electricity, generated on-site?



Base: 34 companies using electricity, generated on-site by their own installation

About one third of the companies that generate electricity (32%) can cover between 16% and 50% of their consumption with their own production, while about one fourth of the companies (24%) cover above 50% of their energy needs.

Figure 3. What share of the company's total electricity consumption was generated from own on-site installation(s) in 2017?

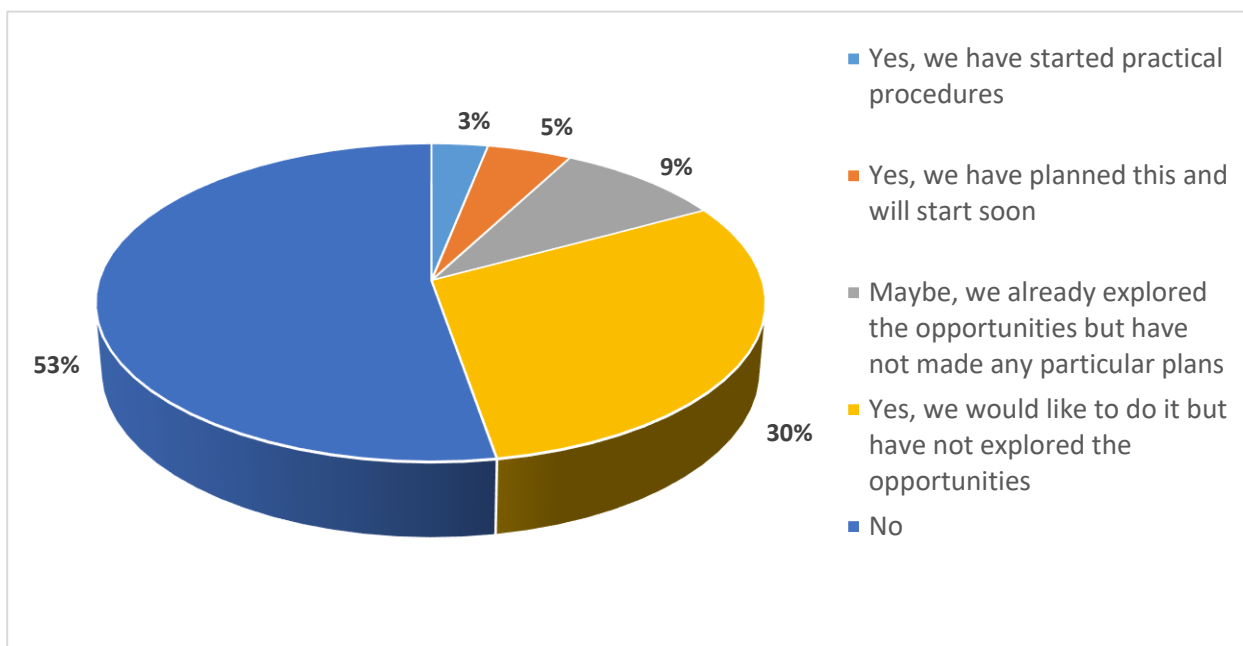


Base: 34 companies using electricity, generated on-site by their own installation

Plans of companies that do not generate energy on-site

Nearly one-third (30%) of the companies that currently do not have their own on-site energy generation are willing to invest in such a technology in the next 1-2 years, but haven't explored the opportunities yet. However, the share of companies that do not intend to invest in own generation of electricity or heat in the next 1-2 year is much higher – about half of all (53%).

Figure 4. Are you planning to invest in own on-site installation for energy generation (heat and/or power) in the next 1-2 years?



Base: 129 companies that do not use electricity or heat generated on-site by their own installation

Among the possible reasons for not planning to invest in own on-site installation, the most common one is by far the financial constraints, i.e. companies assess such an investment as "not economically feasible at the moment". This reason is given by more than half (57%) of the companies not planning on such an investment, while other less common non-financial reasons include lack of knowledge on the topic (22%) and technical difficulties (16%), which they think they would face when building their own RES installations.

Figure 5. Are you planning to invest in your own on-site installation for energy generation (heat and/or power) in the next 1-2 years?



Base: 68 companies, which do not plan to invest in their own on-site installation for energy generation (heat and/or power) in the next 1-2 years

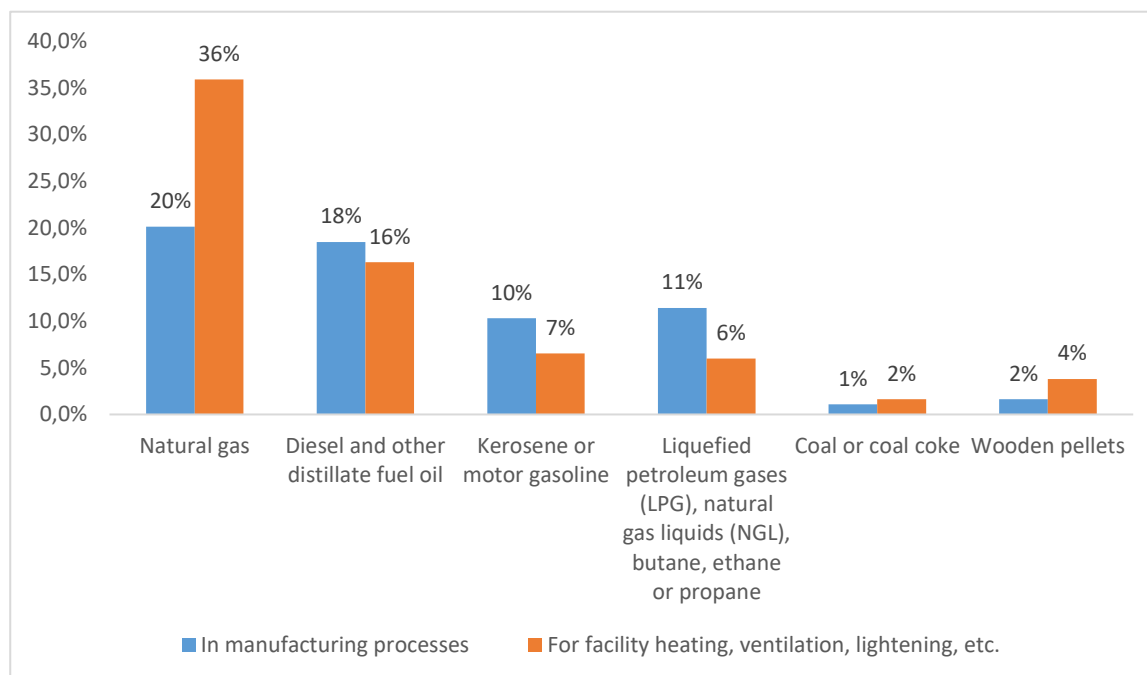
There is no clear tendency among the companies according to their size regarding the planned investments in RES installations for own generation of heat and/or power – respectively 59% of the large and medium, 53% of the small and 45% of the micro companies. Counterintuitively, the share of companies not planning to invest in their own RES installations in the next 1-2 years is higher in the countries from the high-GDP group (Norway, UK, France, Germany) - 67%, and much lower respectively in the low-GDP (53%) and medium-GDP (43%) groups. A possible explanation of this result is that companies from the high-GDP group, which have not already invested in own RES installations, would need stronger economic and other incentives to do so.

Table 3. Are you planning to invest in your own on-site installation for energy generation (heat and/or power) in the next 1-2 years?

		Yes, we have started practical procedures	Yes, we have planned this and will start soon	Maybe, we already explored the opportunities but have not made any particular plans	Yes, we would like to do it but have not explored the opportunities	No	Total (count)
Total		3%	5%	9%	30%	53%	129
Size of the company (N of employees)	1-10	0%	3%	12%	39%	45%	33
	11-50	3%	7%	12%	25%	53%	59
	More than 50	5%	3%	3%	30%	59%	37
Turnover (groups)	up to 500 thousand euro	0%	2%	11%	36%	51%	45
	from 500 thousand to 2 million euro	3%	6%	9%	27%	55%	33
	more than 2 million euro	6%	6%	8%	27%	53%	49
Economic sector	Manufacturing and mining	5%	0%	16%	33%	47%	43
	Construction	7%	7%	0%	33%	53%	15
	Wholesale or retail trade	0%	19%	5%	29%	48%	21
	Services	2%	2%	5%	30%	61%	44
Country type 1 (3 groups)	High GDP/Capita countries (Norway, Germany, France, UK)	3%	3%	3%	23%	67%	30
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	7%	7%	16%	27%	43%	44
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	0%	4%	7%	36%	53%	55
Country type 2 (2 groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	5%	3%	8%	22%	62%	37
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	2%	5%	10%	34%	49%	92

In 2017, the major energy sources for companies remain natural gas and diesel (or other distillate types of fuel oil). Natural gas is by far the most preferred source for facility heating, ventilation, lighting, etc. (36% of the companies), followed by diesel and other fuel oil types (16%). The same is valid also for the manufacturing processes, where again the natural gas and diesel are the most preferred sources with respectively 20% share of companies using natural gas and 18% using diesel and other fuel oil, followed by kerosene and LPG/NGL with 10% and 11% respectively.

Figure 6. In 2017, did your company use any of the following energy sources?



Base: 184 companies that answered the question

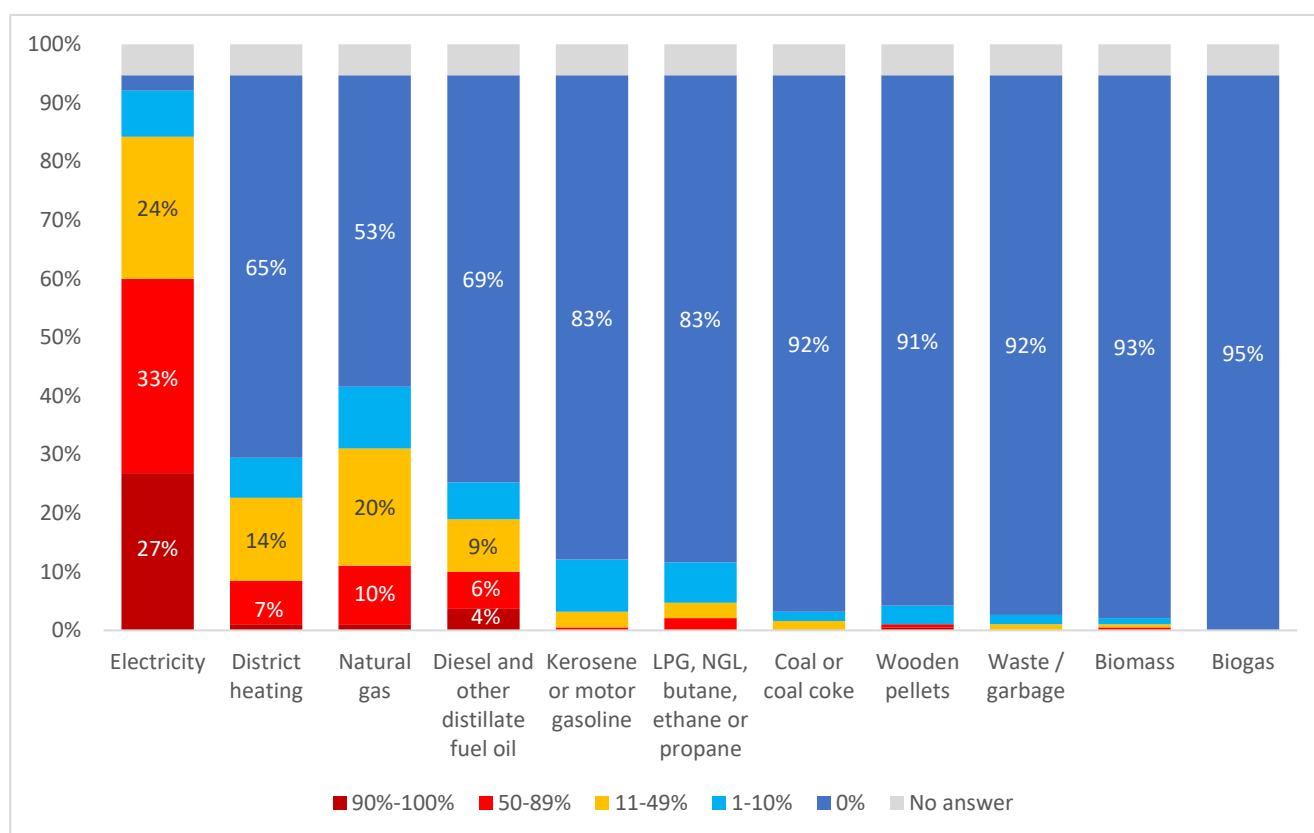
In terms of size, medium and large companies use more often natural gas and diesel than small and micro companies, which rely much more on electricity. The difference is clearly visible particularly regarding the use of natural gas, where the share of medium and large companies, which use it is 4 times higher in the manufacturing processes and 2 times higher for facility heating, ventilation, lighting, as compared to the respective shares of the micro companies.

Table 4. In 2017, did your company use any of the following energy sources?

		In manufacturing processes				For facility heating, ventilation, lightening, etc.				Total (count)
		Natural gas	Diesel and other distillate fuel oil	Kerosene or motor gasoline	LPG,NGL, butane, ethane or propane	Natural gas	Diesel and other distillate fuel oil	Kerosene or motor gasoline	LPG,NGL, butane, ethane or propane	
	Total	20.1%	18.5%	10.3%	11.4%	35.9%	16.3%	6.5%	6.0%	184
Size of the company (N of employees)	1-10	7.1%	21.4%	9.5%	14.3%	23.8%	9.5%	2.4%	4.8%	42
	11-50	19.0%	15.2%	11.4%	8.9%	34.2%	16.5%	6.3%	3.8%	79
	More than 50	30.2%	20.6%	9.5%	12.7%	46.0%	20.6%	9.5%	9.5%	63
Turnover (groups)	up to 500 thousand euro	7.0%	14.0%	8.8%	10.5%	28.1%	5.3%	3.5%	3.5%	57
	from 500 thousand to 2 million euro	9.1%	20.5%	13.6%	6.8%	29.5%	18.2%	4.5%	4.5%	44
	more than 2 million euro	36.3%	18.8%	7.5%	12.5%	46.3%	22.5%	10.0%	8.8%	80
Economic sector	Manufacturing and mining	37.9%	9.1%	3.0%	7.6%	40.9%	21.2%	9.1%	3.0%	66
	Construction	13.6%	31.8%	22.7%	13.6%	31.8%	13.6%	4.5%	4.5%	22
	Wholesale or retail trade	6.3%	15.6%	6.3%	12.5%	34.4%	15.6%	9.4%	9.4%	32
	Services	7.5%	18.9%	13.2%	11.3%	35.8%	11.3%	0.0%	5.7%	53
Country type 1 (3 groups)	High GDP/Capita countries (Norway, Germany, France, UK)	22.4%	12.2%	8.2%	20.4%	36.7%	18.4%	4.1%	10.2%	49
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	26.6%	32.8%	12.5%	6.3%	48.4%	23.4%	10.9%	4.7%	64
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	12.7%	9.9%	9.9%	9.9%	23.9%	8.5%	4.2%	4.2%	71
Country type 2 (2 groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	22.0%	15.3%	8.5%	16.9%	39.0%	16.9%	3.4%	8.5%	59
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	19.2%	20.0%	11.2%	8.8%	34.4%	16.0%	8.0%	4.8%	125

In terms of distribution of cost among different energy sources, companies as a whole paid the most for electricity, which accounted for between 90% and 100% of the total energy costs for 27% of them and made up more than a half of the energy costs of another 33% of the companies. The second largest share of costs was paid for natural gas and the third – for district heating. Coal, wooden pellets, waste/garbage, biomass, and biogas were less common and in fact, 9 out of 10 companies did not use these sources of energy at all in 2017.

Figure 7. What is the approximate percentage share of cost of the following energy sources out of the total cost of energy, paid by your company for both manufacturing processes and for facility heating, ventilation, lighting, etc.?



Base: 190 companies

When only the main energy source (the one accounting for more than 50% of the company energy costs) is considered, electricity seems to dominate as an energy source for the companies in low-GDP countries (69% of companies from the low GDP group rely on electricity as a main source), while the respective shares of companies in medium- and high-GDP countries are 15 percentage points lower. In terms of economic sectors, electricity is also the main energy source for manufacturing (73% of companies), followed by wholesale and services with respectively 64% and 62% of companies, and

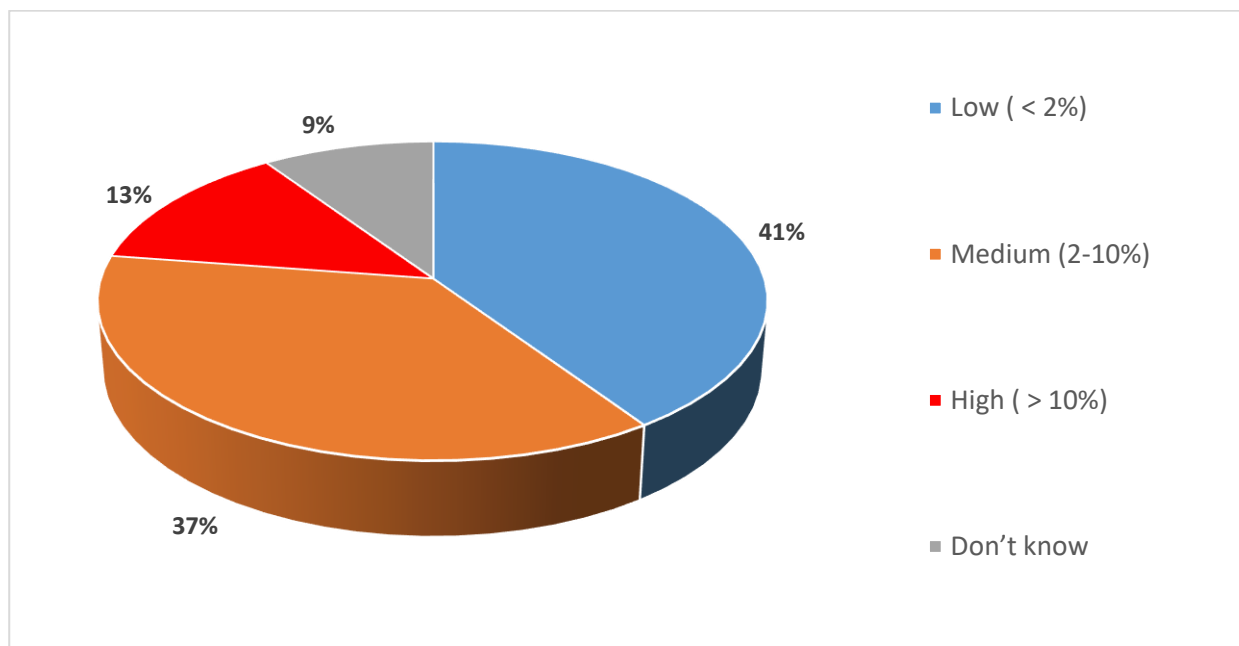
only for one third of the companies in the construction sector (33%), where the use of natural gas and diesel is preferred as main energy sources. In most cases district heating seems to be selected as main energy source by lower turnover companies (14% of the group) compared to the middle and higher turnover groups: 9% and 5% respectively.

Table 5. Share of companies relying mainly (50+% of their usage) on the corresponding energy source.

		Electricity	District heating	Natural gas	Diesel and other distillate fuel oil	Total (count)
Total		60%	8%	11%	10%	190
Size of the company (N of employees)	1-10	53%	14%	5%	16%	43
	11-50	70%	4%	14%	6%	80
	More than 50	52%	10%	12%	10%	67
Turnover (groups)	up to 500 thousand euro	62%	14%	5%	9%	58
	from 500 thousand to 2 million euro	60%	9%	15%	9%	47
	more than 2 million euro	60%	5%	13%	11%	82
Economic sector	Manufacturing and mining	73%	2%	14%	2%	66
	Construction	33%	8%	17%	17%	24
	Wholesale or retail trade	64%	12%	9%	9%	33
	Services	62%	15%	5%	15%	55
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	54%	10%	16%	8%	50
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	55%	6%	9%	16%	69
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	69%	10%	10%	6%	71
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	58%	10%	17%	7%	60
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	61%	8%	8%	12%	130

For the majority of companies, the cost of energy represents less than 10% of their total annual turnover. High energy costs (considered as more than 10% of the total annual turnover) are reported only by 13% of the companies in the sample.

Figure 8. What is the share of total energy costs out of the total annual turnover of your company?



Base: 190 companies

Energy costs represent a larger share of the company turnover in the low-GDP countries than in the high-GDP ones. There isn't a clear trend, however, with respect to company size and turnover, which could be due to the small sampling size. Construction is the economic sector where companies report the lowest energy costs as a share of their annual turnover, while in manufacturing the energy costs tend to be the highest. The conclusions for the companies from the Services sector is difficult to be drawn as the results show the natural trend of declining shares of companies reporting higher energy costs.

Table 6. What is the share of total energy costs out of the total annual turnover of your company?

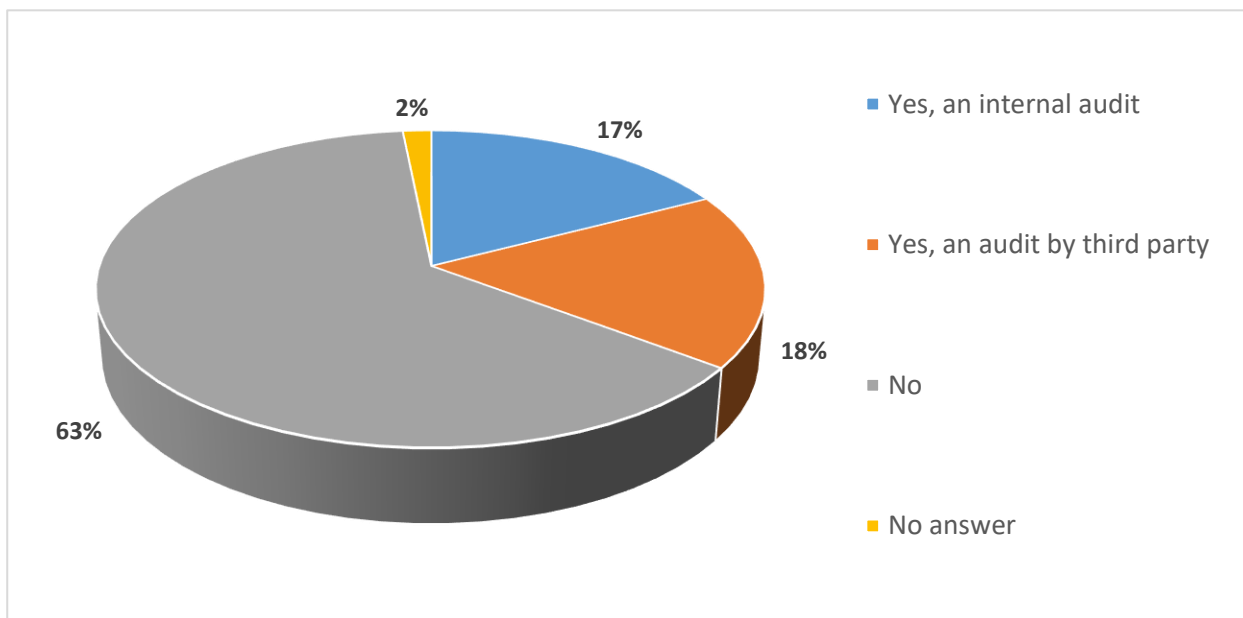
		Low (< 2%)	Medium (2-10%)	High (> 10%)	Don't know	Total (count)
	Total	41%	37%	13%	9%	190
Size of the company (N of employees)	1-10	40%	42%	12%	7%	43
	11-50	44%	38%	14%	5%	80
	More than 50	37%	33%	13%	16%	67
Turnover (groups)	up to 500 thousand euro	31%	43%	17%	9%	58
	from 500 thousand to 2 million euro	47%	40%	6%	6%	47
	more than 2 million euro	45%	30%	13%	11%	82
Economic sector	Manufacturing and mining	39%	42%	14%	5%	66
	Construction	50%	33%	4%	13%	24
	Wholesale or retail trade	36%	45%	9%	9%	33
	Services	45%	25%	16%	13%	55

Country type 1 (3 groups)	High GDP/Capita countries (Norway, Germany, France, UK)	54%	32%	8%	6%	50
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	33%	41%	14%	12%	69
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	38%	37%	15%	10%	71
Country type 2 (2 groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	53%	35%	7%	5%	60
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	35%	38%	16%	12%	130

2.2. Energy management

Over the last 3 years, more than one third of companies (35%) had conducted an energy audit. About half of them did it internally, while the other half used the services of an external – third party consultant. Still, nearly two thirds of the companies (63%) had not performed such audits. This result highlights the large opportunity for possible improvements in the companies' energy use, since the lack of energy audits signifies the lack of knowledge how the energy use could be optimized.

Figure 9. Has your company conducted an energy audit (assessment) over the last three years (2015-2017)?



Base: 190 companies

Energy audits are more common among medium and large companies (52%), compared to 34% of small companies (11-50 employees) and only 11% of micro companies. Not surprisingly, audits by third parties are by far most common among the highest turnover group (more than 2 million euro) – 39%, while the two other groups based on turnover performed external audit in only 2% of the cases. Having in mind that the cost of energy audits depends mainly on the size of the company, the complexity of its business processes and the availability of infrastructure and equipment, i.e. the energy audit of a large production company is much more expensive than the audit of a small one, the realized economic benefit from such an audit would be the most significant in the highest turnover group. Another reason, why energy audits are more common among the large companies is the fact that Art. 8 of the Energy Efficiency Directive requires the companies with more than 250 employees and an annual turnover above EUR 50 mln. To perform such an audit unless they are not implemented an energy management system. Naturally, the lower turnover group would prefer to apply internal resources rather than a third party service, if they need to perform such audits. Energy audits are most common in the manufacturing sector (44%) followed by the construction one (37%) and the services sector (32%) as opposed to the wholesale and retail trade sector (15%).

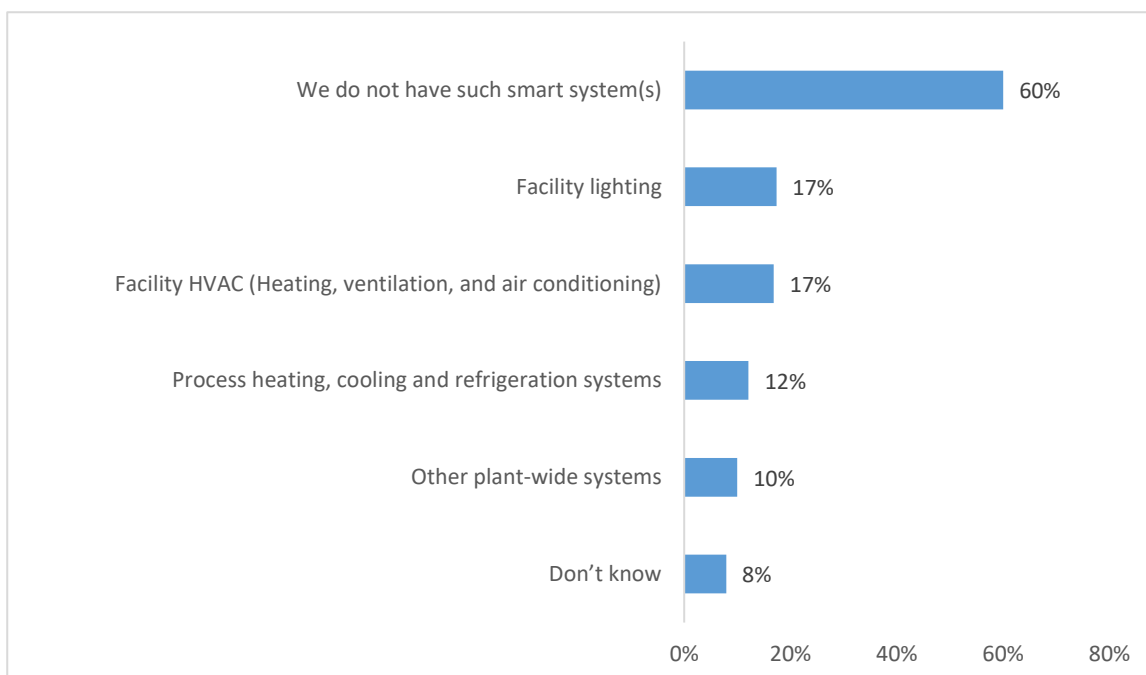
Table 7. Has your company conducted an energy audit (assessment) over the last three years (2015-2017)?

		Yes, an internal audit	Yes, an audit by third party	No	No answer	Total (count)
	Total	17%	18%	63%	2%	190
Size of the company (N of employees)	1-10	9%	2%	84%	5%	43
	11-50	19%	15%	66%	0%	80
	More than 50	21%	31%	46%	2%	67
Turnover (groups)	up to 500 thousand euro	14%	2%	83%	2%	58
	from 500 thousand to 2 million euro	19%	2%	77%	2%	47
	more than 2 million euro	18%	39%	42%	1%	82
Economic sector	Manufacturing and mining	14%	30%	56%	0%	66
	Construction	33%	4%	63%	0%	24
	Wholesale or retail trade	9%	6%	82%	3%	33
	Services	16%	16%	66%	2%	55
Country type 1 (3 groups)	High GDP/Capita countries (Norway, Germany, France, UK)	18%	20%	60%	2%	50
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	17%	28%	54%	1%	69
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	17%	7%	75%	1%	71

Country type 2 (2 groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	15%	27%	57%	2%	60
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	19%	14%	66%	2%	130

More than half of the sampled companies (60%) have still not implemented smart systems for management and monitoring of energy consumption within the enterprise. If such systems are however implemented, they are being used in most of the cases for controlling the facility lightening, heating, ventilation, and air conditioning (17% of the companies) and only rarely for controlling production processes' heating, cooling and refrigeration systems (12%) or other plant-wide systems (10%).

Figure 10. Does your company implement smart system(s) for management and monitoring of energy consumption regarding:



Base: 190 companies

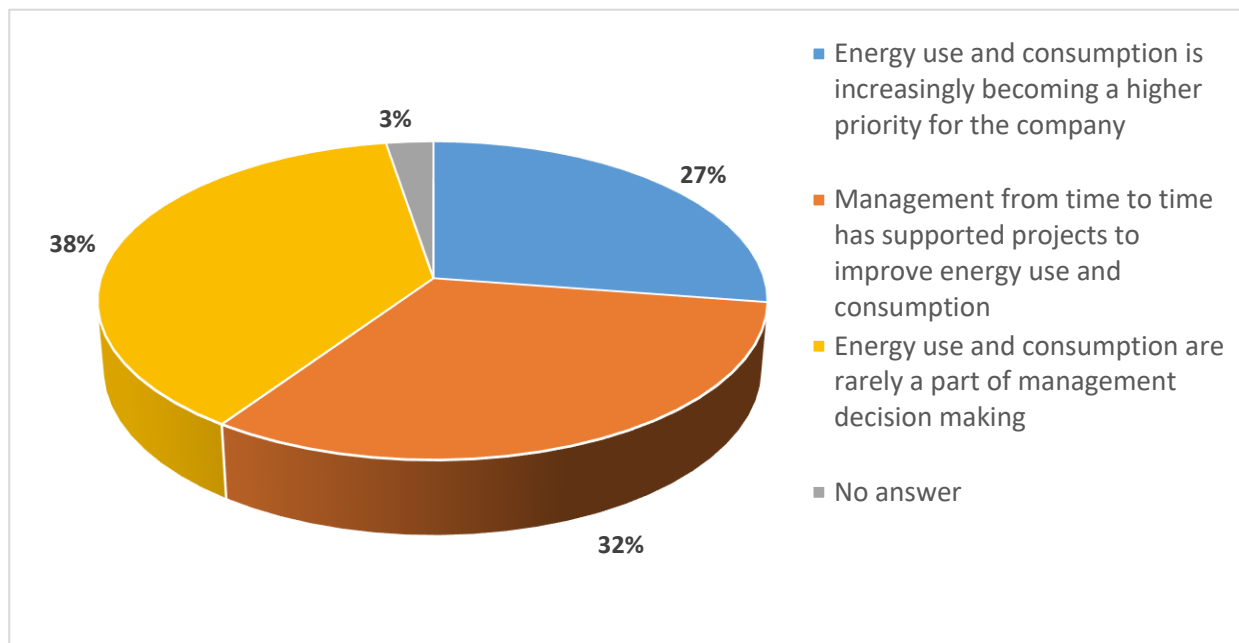
Larger companies and companies with higher turnover use such systems more often than smaller companies do. In terms of economic sectors, smart systems are least common in services (68%) and wholesale trade (66%), and a bit more common in construction and manufacturing (58% for both sectors). In terms of countries grouping by GDP, smart systems are slightly more common in the companies from high-GDP countries than in those coming from low-GDP countries.

Table 8. Does your company implement smart system(s) for management and monitoring of energy consumption regarding:

		Process heating, cooling and refrigeration systems	Facility HVAC (Heating, ventilation, and air conditioning)	Facility lighting	Other plant-wide systems	We do not have such smart system(s)	Total (count)
	Total	12%	17%	17%	10%	60%	190
Size of the company (N of employees)	1-10	2%	5%	12%	5%	79%	42
	11-50	12%	18%	18%	5%	62%	78
	More than 50	20%	24%	21%	20%	50%	66
Turnover (groups)	up to 500 thousand euro	4%	13%	14%	2%	73%	56
	from 500 thousand to 2 million euro	9%	7%	9%	4%	67%	46
	more than 2 million euro	20%	26%	25%	20%	51%	81
Economic sector	Manufacturing and mining	12%	18%	20%	18%	58%	65
	Construction	13%	17%	13%	4%	58%	24
	Wholesale or retail trade	16%	22%	22%	3%	66%	32
	Services	6%	9%	11%	4%	68%	53
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	12%	24%	20%	18%	53%	49
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	19%	15%	18%	10%	60%	67
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	6%	14%	16%	4%	69%	70
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	12%	22%	19%	19%	54%	59
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	13%	15%	17%	6%	65%	127

Energy use and consumption have increasingly become a higher priority for 27% of the companies but still within the majority of companies (70%) managers deal with these topics rather occasionally.

Figure 11. Which statement best describes your company's management decision-making process:



Base: 190 companies

Once again, optimising and improving energy use and consumption is prioritized by medium and large companies (both in terms of employees and turnover) with the highest group (50+ employees and more than 2 million euro in terms of turnover) demonstrating higher engagement with the topic than the others. Companies in the manufacturing sector are generally more concerned with improving energy consumption, yet the difference comes mainly from projects supported by management from time to time.

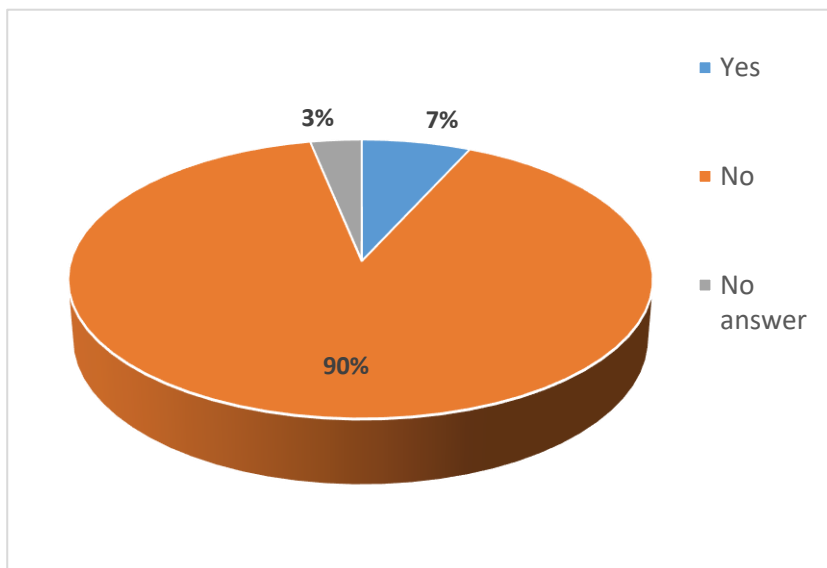
Table 9. Which statement best describes your company's management decision-making process:

		Energy use and consumption is increasingly becoming a higher priority for the company	Management from time to time has supported projects to improve energy use and consumption	Energy use and consumption are rarely a part of management decision making	No answer	Total (count)
Total		27%	32%	38%	3%	190
Size of the company (N of employees)	1-10	26%	19%	53%	2%	43
	11-50	23%	36%	40%	1%	80
	More than 50	34%	36%	25%	4%	67
Turnover (groups)	up to 500 thousand euro	22%	28%	48%	2%	58
	from 500 thousand to 2 million	19%	21%	55%	4%	47

	euro					
	more than 2 million euro	37%	41%	20%	2%	82
Economic sector	Manufacturing and mining	29%	44%	26%	2%	66
	Construction	25%	21%	54%	0%	24
	Wholesale or retail trade	27%	27%	42%	3%	33
	Services	25%	25%	45%	4%	55
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	18%	36%	44%	2%	50
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	41%	32%	23%	4%	69
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	21%	30%	48%	1%	71
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	18%	37%	43%	2%	60
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	32%	30%	35%	3%	130

Only 7% of companies have implemented certified Energy Management Systems (EMS) according to ISO 50.001 "Energy management", which is 3 to 5 times less than the share of companies, which have implemented some kind of a smart system for management and monitoring of energy consumption or of companies concerned about the use of energy. Certified systems are by far most common in medium and large companies, 18% of which report having an implemented EMS compared to only 1% of small companies (11-50 employees) and none of the micro ones.

Figure 12. Does your company have a certified Energy Management System according to ISO 50.001 "Energy management"?



Base: 190 companies

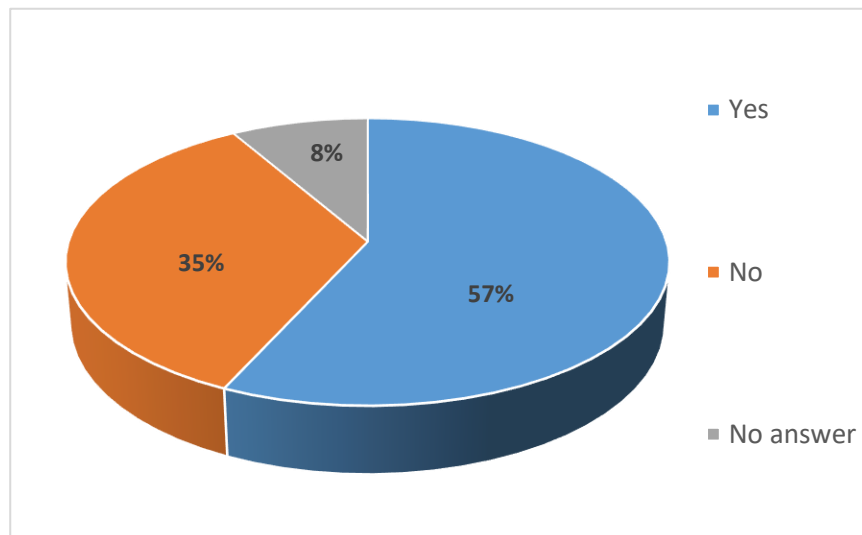
Table 10. Does your company have a certified Energy Management System according to ISO 50.001 "Energy management"?

		Yes	No	No answer	Total (count)
Total		7%	90%	3%	190
Size of the company (N of employees)	1-10	0%	98%	2%	43
	11-50	1%	96%	3%	80
	More than 50	18%	78%	5%	67
Turnover (groups)	up to 500 thousand euro	0%	98%	2%	58
	from 500 thousand to 2 million euro	2%	94%	4%	47
	more than 2 million euro	15%	83%	2%	82
Economic sector	Manufacturing and mining	12%	86%	2%	66
	Construction	4%	96%	0%	24
	Wholesale or retail trade	3%	94%	3%	33
	Services	2%	95%	4%	55
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	12%	84%	4%	50
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	7%	90%	3%	69
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	3%	94%	3%	71
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	10%	87%	3%	60
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	5%	92%	3%	130

The main motivation for the 13 companies that have implemented EMS according to ISO 50.001 "Energy Management" was to reduce the company cost of energy consumption (62%). This reason is followed by the requirements set by the "industry standards", which is mentioned by 7 out of the 13 companies and "legal requirements" by 4 out of the 13 companies.

Despite the seldom reliance on smart systems for monitoring energy use, the little attention paid by management and the low level of EMS certification, more than half of the companies (57%) have declared that they have set goals for improving their energy use. The percentage is largest among the highest turnover group (more than 2 million euro) – 68% of them have set such goals compared to 50% and 49% of the other two turnover groups respectively. In terms of economic sectors, energy goals are set most often by companies in manufacturing (65% of companies in the sector) than in the other sectors.

Figure 13. Has your company set goals for improving its energy use?



Base: 190 companies

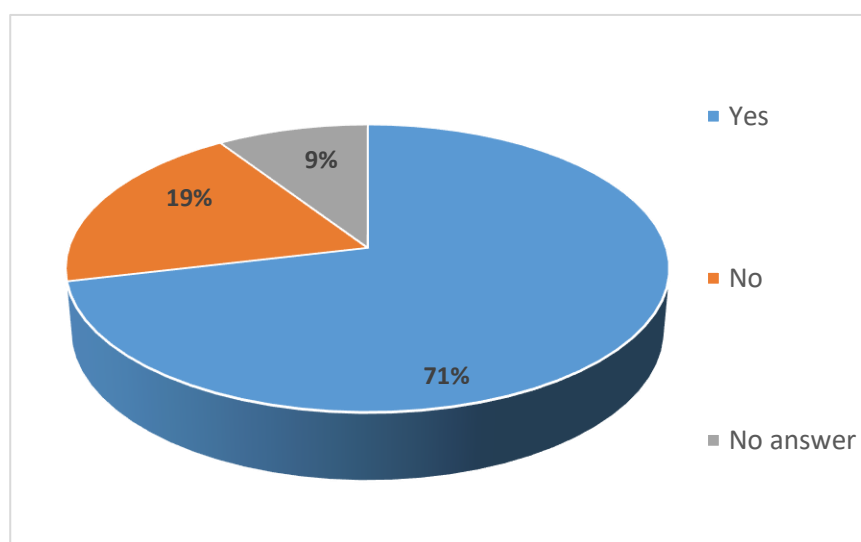
Table 11. Has your company set goals for improving its energy use?

		Yes	No	Don't know	Total
Total		57%	35%	8%	190
Size of the company (N of employees)	1-10	56%	42%	2%	43
	11-50	55%	34%	11%	80
	More than 50	60%	31%	9%	67
Turnover (groups)	up to 500 thousand euro	50%	43%	7%	58
	from 500 thousand to 2 million euro	49%	43%	9%	47
	more than 2 million euro	68%	26%	6%	82
Economic sector	Manufacturing and mining	65%	33%	2%	66
	Construction	50%	46%	4%	24
	Wholesale or retail trade	55%	27%	18%	33
	Services	55%	35%	11%	55
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	54%	36%	10%	50
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	59%	32%	9%	69
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	56%	37%	7%	71

Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	57%	35%	8%	60
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	57%	35%	9%	130

When companies have set energy improvement goals, these goals are most often quantitative (71% of the companies that set goals). The share is similarly high in all types of companies, independent of size, economic sector or country of origin.

Figure 14. Are these goals quantitative (e.g., 10% improvement)?



Base: 108 companies that have set goals for improving their energy use

Table 12. Are these goals quantitative (e.g., 10% improvement)?

		Yes	No	Don't know	Total (count)
Total		71%	19%	9%	108
Size of the company (N of employees)	1-10	67%	17%	17%	24
	11-50	75%	18%	7%	44
	More than 50	70%	23%	8%	40
Turnover (groups)	up to 500 thousand euro	72%	14%	14%	29
	from 500 thousand to 2 million euro	65%	22%	13%	23
	more than 2 million euro	73%	21%	5%	56
Economic sector	Manufacturing and mining	77%	14%	9%	43
	Construction	67%	25%	8%	12
	Wholesale or retail trade	67%	22%	11%	18

	Services	70%	23%	7%	30
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	67%	33%	0%	27
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	73%	22%	5%	41
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	73%	8%	20%	40
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	65%	35%	0%	34
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	74%	12%	14%	74

The companies participating in the survey were also asked to rate the influence of seven groups of factors over the use of energy in the company in the last year. The price of energy resources has the strongest influence⁶, followed by corporate policy and legal obligations. All factors, except the price of energy resources, tend to be estimated as having below average influence by the companies as a whole.

Figure 15. How strong influence have the following factors had on the energy use of your company in 2017? (scale from 1 to 5, where 1 means "Not at all" and 5 "Very strong")



⁶ Participants rated the factors on a scale from 1 (not strong at all) to 5 (very strong influence). The influence is calculated as the mean values for all the companies who answered the question. Larger number means stronger influence, as assessed by the companies.

Base: Average values, calculated for each sub-question, based on all companies that answered:

Legal obligations	Industry standards	Corporate policy	Customer requirements	Government incentives	Price of energy resources	Practices of other companies in our sector / region
178	174	175	174	172	178	169

Linear regression models with the different factors as dependent variables and company size group, company turnover group and country GDP type (3 groups) demonstrated statistically significant effect of company size ($p < 0.05$) on government incentives and on practices of other companies. This means that **the larger the company, the more important government incentives and practices of other companies in the sector/region tend to become**. Regression analysis also demonstrated that customer requirements is considered as a more important factor influencing energy use within the higher turnover groups and particularly in the highest 2+ million group. While the influence of these three factors (government incentives, practices of other companies and customer requirements) is considered quite small by micro and small companies and by companies with turnover below 2 million euro, these factors become more important with the increase of the company size.

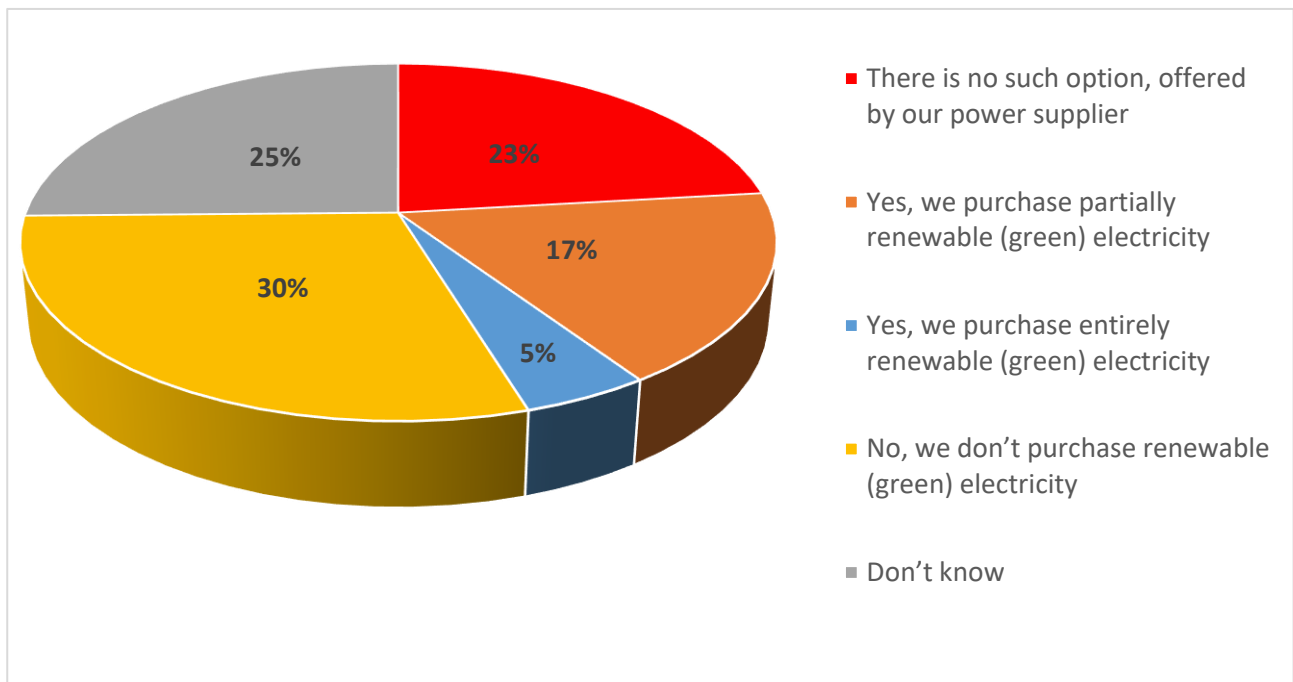
Table 13. How strong influence have the following factors had on the energy use of your company in 2017? (scale from 1 to 5, where 1 means "Not at all" and 5 "Very strong")

		Legal obligations	Industry standards	Corporate policy	Customer requirements	Government incentives	Price of energy resources	Practices of other companies in our sector / region
Total		2.3	2.2	2.8	2.1	1.9	3.3	1.9
Size of the company (N of employees)	1-10	2.3	2.2	2.6	1.7	1.5	3.0	1.6
	11-50	2.2	2.1	2.7	2.1	1.8	3.3	1.8
	More than 50	2.5	2.4	3.0	2.3	2.4	3.6	2.2
Turnover (groups)	up to 500 thousand euro	2.2	2.1	2.5	1.8	1.5	3.1	1.6
	from 500 thousand to 2 million euro	2.0	2.0	2.4	1.8	1.8	3.2	1.8
	more than 2 million euro	2.6	2.3	3.1	2.3	2.3	3.6	2.2
Economic sector	Manufacturing and mining	2.3	2.2	2.6	1.8	1.9	3.4	1.9
	Construction	2.1	2.2	2.7	2.6	2.4	3.4	2.3
	Wholesale or retail trade	2.2	2.2	2.7	1.9	1.7	3.2	1.7
	Services	2.5	2.1	2.9	2.1	1.8	3.2	1.7
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	2.2	2.0	2.8	1.9	2.0	3.0	2.0
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	2.3	2.2	3.0	2.2	2.3	3.6	2.0
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	2.5	2.3	2.5	2.0	1.5	3.2	1.8
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	2.3	2.1	2.6	1.8	1.9	2.9	1.9
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	2.3	2.2	2.8	2.2	1.9	3.5	1.9

Base: All companies who answered the question, statistically significant differences ($p < 0.05$) marked in blue.

About one fourth of the companies (23%) do not have the option to buy "green" or produced by RES electricity, while another fourth (25%) are not aware of the source of the electricity they bought. Less than one fourth (22%) of the companies only use the existing option and buy either partially or entirely renewable electricity, thus supporting the energy transition goals even at a higher price. Companies from high-GDP countries tend to purchase renewable energy more often than companies from low-GDP countries.

Figure 16. Does your company purchase renewable (or green) electricity?



Base: 190 companies

Table 14. Does your company⁷ purchase renewable (or green) electricity?

		There is no such option, offered by our power supplier	Yes, we purchase partially renewable (green) electricity	Yes, we purchase entirely renewable (green) electricity	No, we don't purchase renewable (green) electricity	Don't know	Total (count)
Total		23%	17%	5%	30%	25%	190
Size of the	1-10	30%	14%	0%	33%	23%	43

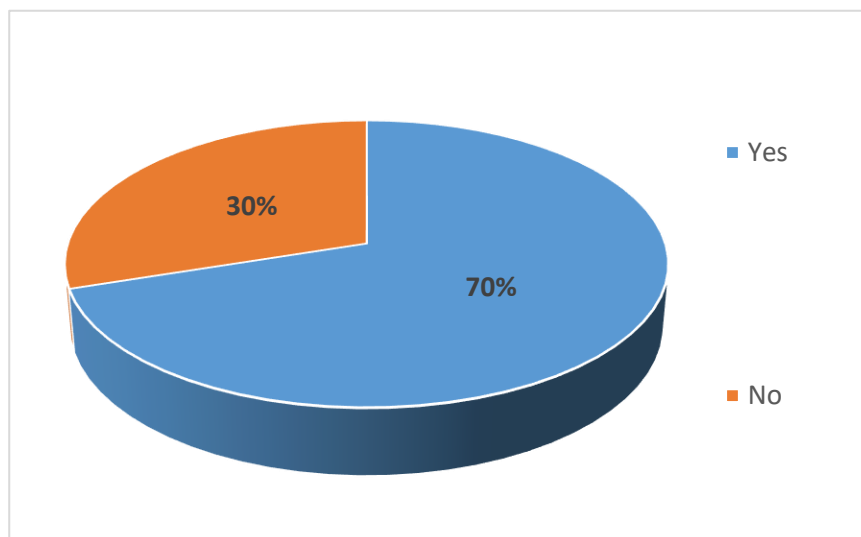
⁷ The question refers to all companies, irrespective of the fact whether they have their own RES installations or not?

company (N of employees)	11-50	23%	18%	6%	28%	26%	80
	More than 50	19%	19%	6%	30%	25%	67
Turnover (groups)	up to 500 thousand euro	22%	10%	0%	36%	31%	58
	from 500 thousand to 2 million euro	26%	21%	6%	32%	15%	47
	more than 2 million euro	22%	20%	7%	24%	27%	82
Economic sector	Manufacturing and mining	27%	21%	6%	23%	23%	66
	Construction	17%	21%	0%	33%	29%	24
	Wholesale or retail trade	30%	9%	3%	30%	27%	33
	Services	20%	15%	6%	36%	24%	55
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	12%	26%	14%	30%	18%	50
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	30%	16%	3%	25%	26%	69
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	24%	13%	0%	34%	30%	71
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	13%	27%	15%	25%	20%	60
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	28%	13%	0%	32%	28%	130

2.3. Energy efficiency

The majority of companies (70%) reported that they have been implementing some measures for improving their energy efficiency in the last three years. The share is highest for the group of medium and large companies, with stable trend of correlation between the size of turnover and the share of companies, implementing such measures - the higher the turnover, the higher the percentage is (from 52% of the lowest turnover group, to 68% of the medium turnover group and 84% of the highest one). In terms of economic sector, energy efficiency measures are more common in manufacturing and construction, although the difference with wholesale and retail trade and services is not very large. In terms of the countries' groups by GDP, the highest share of companies (80%), which have implemented such measures are in the medium-GDP group, while the respective share for the other two groups is much smaller – 70% in high-GDP countries and 61% in low-GDP countries.

Figure 17. In the last three years (2015-2017), has your company implemented any measures to improve its energy efficiency?



Base: 190 companies

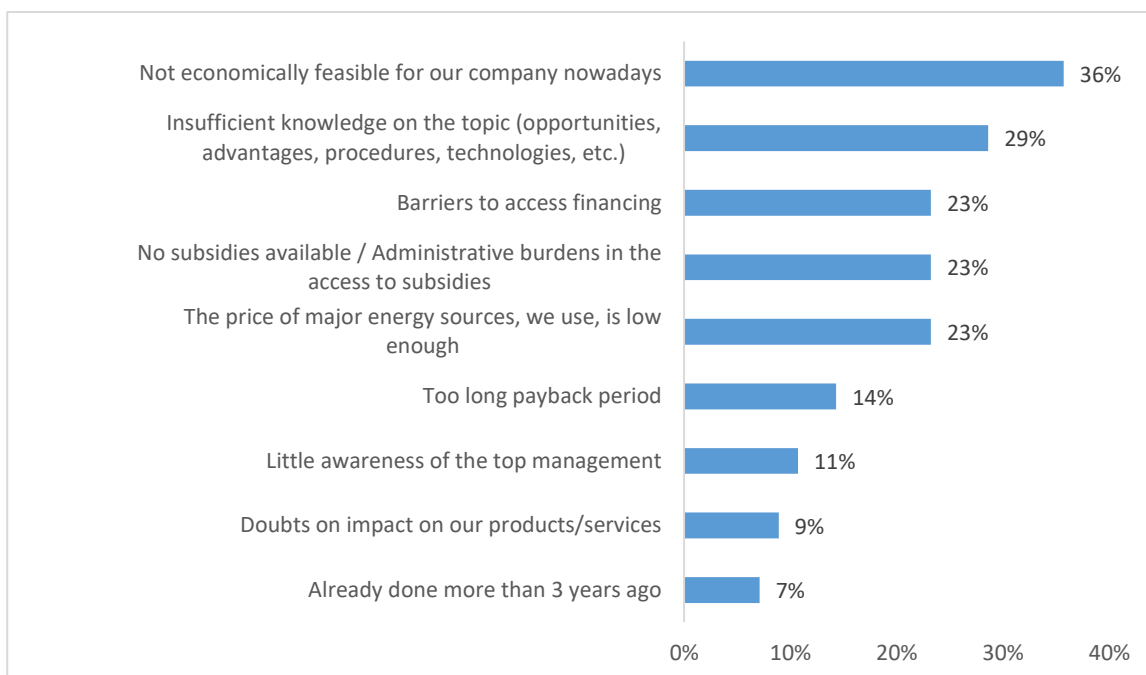
Table 15. In the last three years (2015-2017), has your company implemented any measures to improve its energy efficiency?

		Yes	No	Total (count)
Total		70%	30%	190
Size of the company (N of employees)	1-10	54%	47%	43
	11-50	71%	29%	80
	More than 50	79%	21%	67
Turnover (groups)	up to 500 thousand euro	52%	48%	58
	from 500 thousand to 2 million euro	68%	32%	47
	more than 2 million euro	84%	16%	82
Economic sector	Manufacturing and mining	71%	29%	66
	Construction	71%	29%	24
	Wholesale or retail trade	64%	36%	33
	Services	67%	33%	55
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	70%	30%	50
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	80%	20%	69
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	61%	39%	71
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	72%	28%	60

groups)	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	69%	31%	130
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The major reasons for not implementing energy efficiency measures are the assessment that such measures are not economically feasible (36% of the companies), the insufficient knowledge on the topic (29%) and barriers to access financing (23%). Financial reasons and the lack of knowledge, information, and low awareness tend to summarize the most common reasons for the lack of measures for improving the company's energy efficiency.

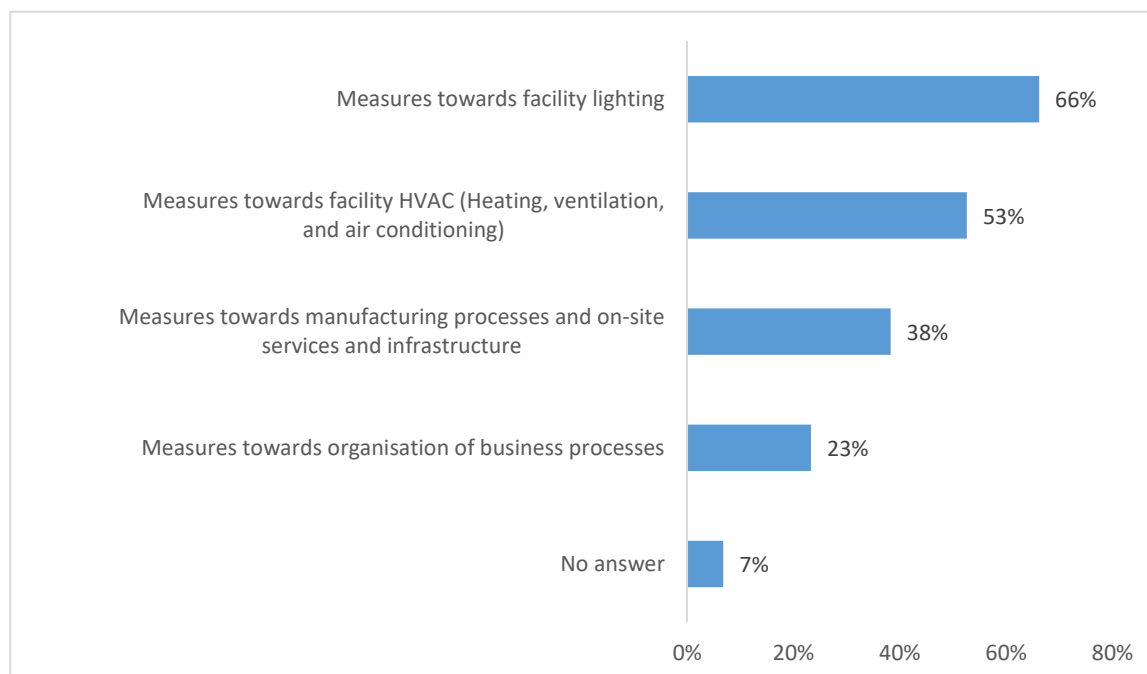
Figure 18. Why haven't your company implemented any measures to improve its energy efficiency in the last three years (2015-2017)?



Base: 56 companies that haven't implemented any measures to improve their energy efficiency in the last three years (2015-2017)

The companies that have implemented measures for energy efficiency focused most often on facility lighting (66%) and on measures towards HVAC (53%). Much smaller are the groups of companies, which implemented energy efficiency measures regarding manufacturing process (38%) and regarding organisation of business processes (23%).

Figure 19. What kind of energy efficiency measures has your company implemented?



Base: 133 companies that have implemented measures to improve their energy efficiency in the last three years (2015-2017)

Measures towards facility HVAC and lighting tend to be more common in the low-GDP countries, while measures towards manufacturing processes are more common in the medium- and high-GDP countries.

Table 16. What kind of energy efficiency measures has your company implemented?

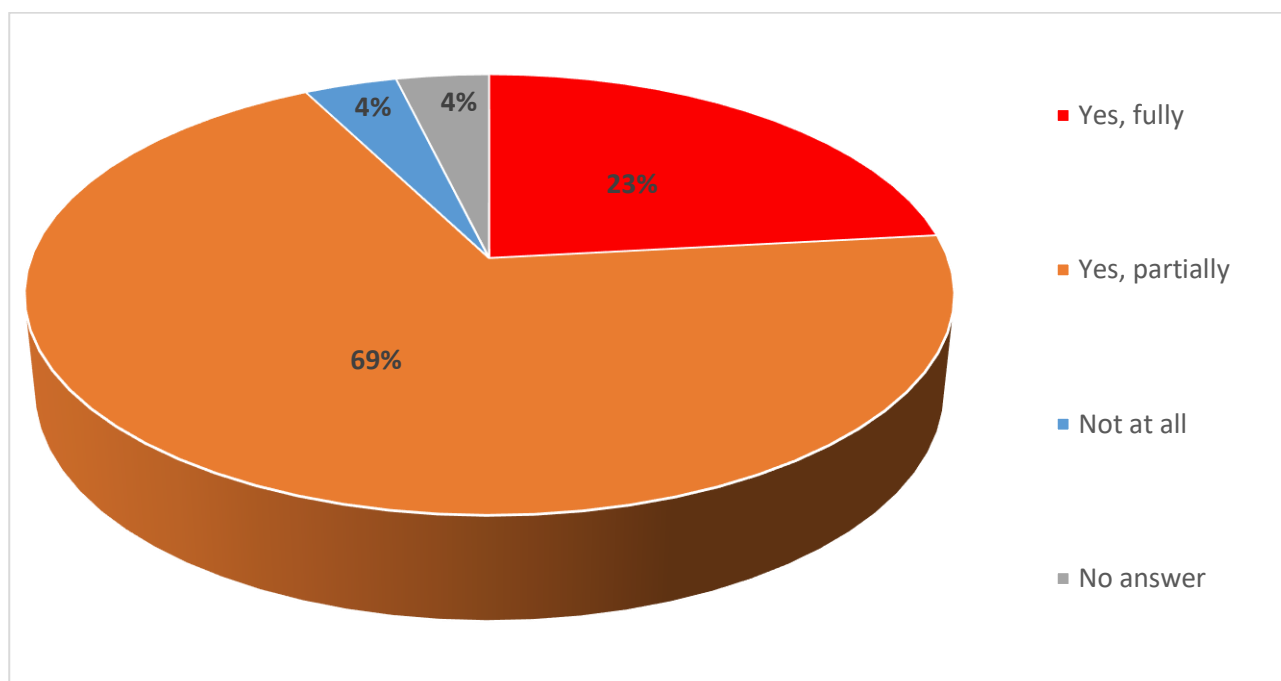
		Measures towards facility HVAC (Heating, ventilation, and air conditioning)	Measures towards facility lighting	Measures towards manufacturing processes and on-site services and infrastructure	Measures towards organization of business processes	No answer	Total (count)
Total		53%	66%	38%	23%	7%	133
Size of the company (N of employees)	1-10	44%	70%	39%	26%	4%	23
	11-50	49%	58%	28%	16%	11%	57
	More than 50	60%	74%	49%	30%	4%	53
Turnover (groups)	up to 500 thousand euro	53%	70%	27%	23%	7%	30
	from 500 thousand to 2	47%	50%	31%	22%	9%	32

	million euro						
	more than 2 million euro	55%	73%	48%	23%	6%	69
Economic sector	Manufacturing and mining	53%	72%	53%	23%	2%	47
	Construction	53%	65%	18%	18%	18%	17
	Wholesale or retail trade	55%	55%	18%	23%	14%	22
	Services	56%	67%	39%	31%	6%	36
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	50%	64%	36%	25%	11%	36
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	49%	64%	49%	15%	7%	55
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	60%	71%	26%	33%	2%	42
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	50%	68%	39%	21%	9%	44
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	54%	65%	38%	25%	6%	89

Base: 133 companies that have implemented measures to improve their energy efficiency in the last three years (2015-2017)

Almost all of the companies that implemented some measures achieved at least partially the expected results. Only 4% report not achieving any results at all. Still, only 23% of the companies declared they have fully achieved their expected results.

Figure 20. Did you achieve the expected results from the implementation of the energy efficiency measures?



Base: 133 companies that have implemented measures to improve their energy efficiency in the last three years (2015-2017)

Most of the companies financed their energy efficiency measures with their own financing, followed by bank credits. A small percentage of companies relied on financial assistance from specific public-funded programmes (3% for primary source and 12% for partial source, covering 10% to 50% of the total costs).

Table 17. How did your company finance the implementation of the energy efficiency measures in the last three years (2015-2017)?

	Primarily (more than 50%)	Partially (10%- 50%)	Very limited (up to 10%)	Not used	Don't know
Own financing	67%	11%	6%	14%	2%
Bank credit	12%	12%	3%	71%	2%
Financial assistance from specific national/local programme (e.g. low-rate loans, tax credits, rebates, subsidies)	3%	12%	7%	76%	2%

Base: 133 companies that have implemented measures to improve their energy efficiency in the last three years (2015-2017)

Micro companies and companies with turnover below 500 000 euro used most often their own resources (87% and 83% of the companies respectively), while bank credits are preferred as the primary source by larger companies. Moreover, bank credit is clearly preferred in high-GDP countries

where the respective share of the companies that used it is almost four times higher than in the low- and medium-GDP countries.

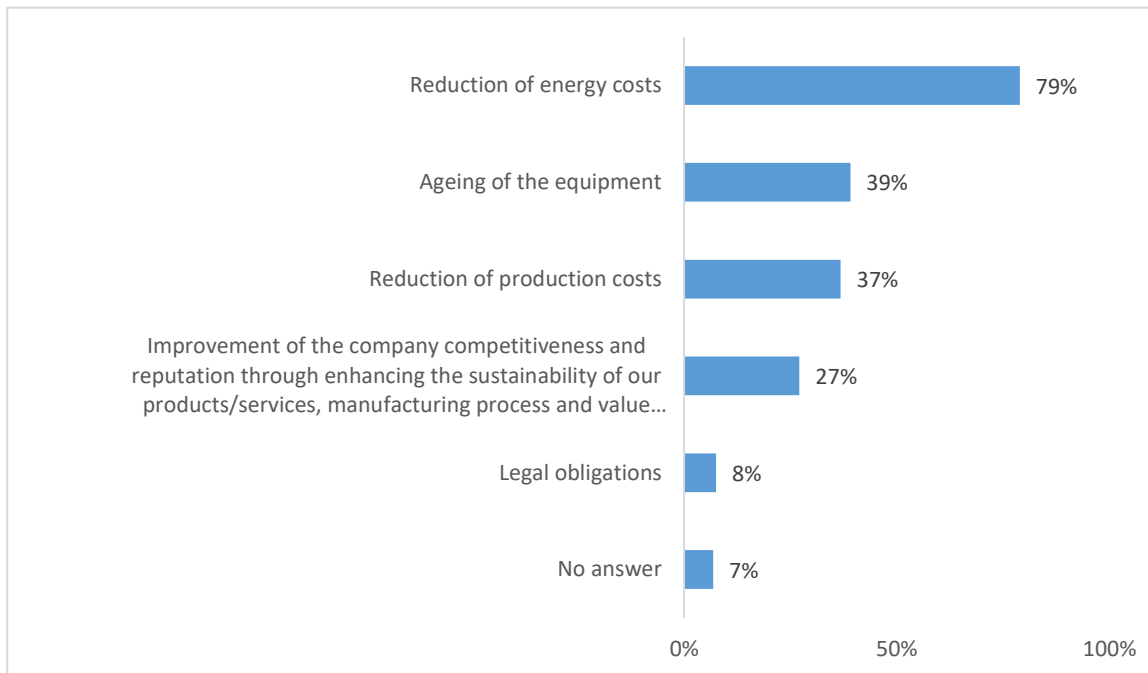
Table 18. How did your company finance the implementation of the energy efficiency measures in the last three years (2015-2017)?

		Primarily (more than 50%)			Partially (10%-50%)			Total (count)
		Own financing	Bank credit	Financial assistance (programme)	Own financing	Bank credit	Financial assistance (programme)	
Total		67%	12%	3%	11%	12%	12%	133
Size of the company (N of employees)	1-10	87%	4%	0%	4%	9%	0%	23
	11-50	67%	7%	4%	5%	12%	16%	57
	More than 50	59%	21%	4%	21%	13%	13%	53
Turnover (groups)	up to 500 thousand euro	83%	3%	0%	3%	3%	0%	30
	from 500 thousand to 2 million euro	69%	3%	3%	13%	16%	13%	32
	more than 2 million euro	59%	19%	4%	15%	15%	17%	69
Economic sector	Manufacturing and mining	68%	13%	4%	17%	21%	23%	47
	Construction	41%	24%	6%	18%	0%	0%	17
	Wholesale or retail trade	71%	5%	0%	0%	10%	5%	21
	Services	76%	8%	3%	5%	8%	8%	37
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	54%	26%	3%	20%	23%	11%	35
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	67%	7%	6%	9%	11%	18%	55
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	77%	7%	0%	7%	5%	5%	43
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	54%	23%	5%	16%	21%	9%	43
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	73%	7%	2%	9%	8%	13%	90

Base: 133 companies that have implemented measures to improve their energy efficiency in the last three years (2015-2017)

By far, the main motivation of the companies for investment in energy efficiency is the expected reduction of energy costs (79%), followed by ageing of the equipment (39%) and the expected reduction of production costs (37%).

Figure 21. What was the main motivation for investing in energy efficiency?



Base: 133 companies that have implemented measures to improve their energy efficiency in the last three years (2015-2017)

Ageing of the equipment, legal obligations and reduction of production costs were the more common reasons for investing in energy efficiency for large companies. On the other hand, reduction of energy costs was mentioned marginally more often by smaller companies, although this reason was quite common among the largest companies too. Reduction of production costs was very important in manufacturing (62% of the companies), while legal obligations were more common among companies in the services sector (17%) than in the other three economic sectors.

Table 19. What was the main motivation for investing in energy efficiency?

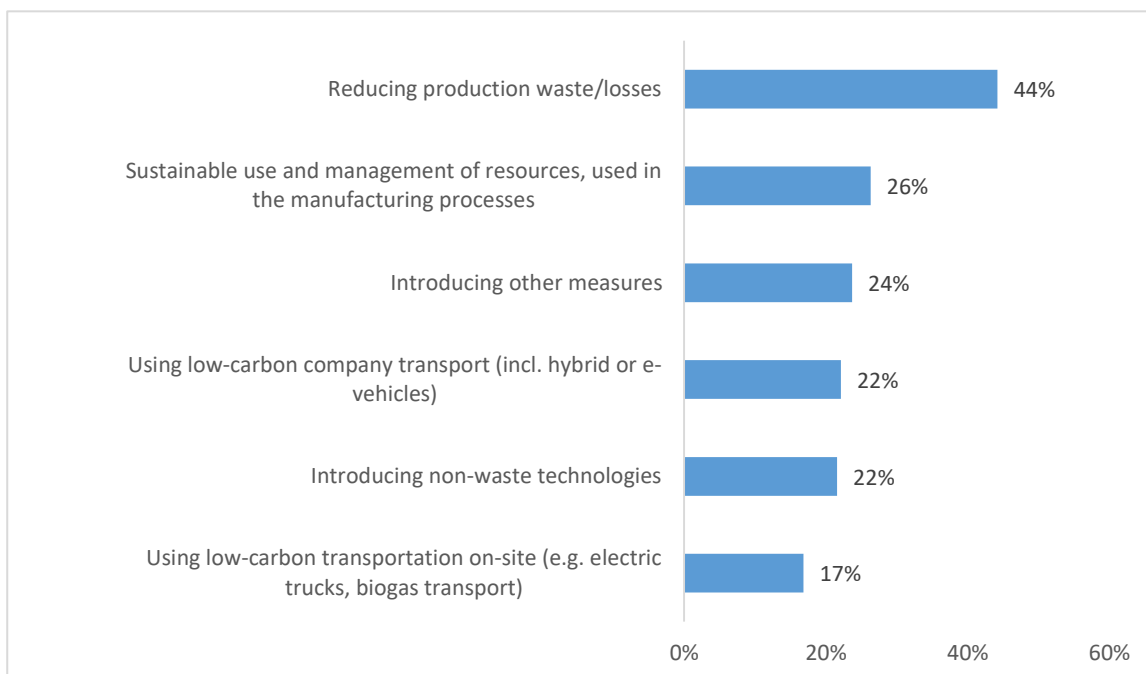
		Ageing of the equipment	Legal obligations	Reduction of energy costs	Reduction of production costs	Improvement of the company competitiveness and reputation through enhancing the sustainability of our products/services, manufacturing process and value chain	No answer	Total (count)
Total		39%	8%	79%	37%	27%	7%	133
Size of the company (N of employees)	1-10	30%	4%	87%	39%	9%	4%	23
	11-50	35%	5%	75%	26%	30%	9%	57
	More than 50	47%	11%	79%	47%	32%	6%	53
Turnover (groups)	up to 500 thousand euro	17%	0%	87%	47%	20%	3%	30
	from 500 thousand to 2 million euro	38%	6%	69%	38%	16%	9%	32
	more than 2 million euro	48%	10%	81%	33%	36%	7%	69
Economic sector	Manufacturing and mining	49%	4%	81%	62%	38%	2%	47
	Construction	12%	0%	71%	35%	18%	6%	17
	Wholesale or retail trade	32%	5%	73%	9%	18%	18%	22
	Services	39%	17%	83%	22%	22%	6%	36
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	36%	8%	75%	31%	31%	11%	36
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	49%	7%	76%	40%	29%	7%	55
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	29%	7%	86%	38%	21%	2%	42
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	34%	9%	71%	34%	30%	9%	44
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	42%	7%	83%	38%	26%	6%	89

Base: 133 companies that have implemented measures to improve their energy efficiency in the last three years (2015-2017)

2.4. Sustainability policy

In addition to energy efficiency, the most common measures for reducing the companies' carbon footprint are the decrease in their production waste/losses (44% of the companies) and the sustainable use and management of resources (26% of the companies). In terms of economic sectors, construction and manufacturing sectors have introduced such measures more often than companies from services and trade.

Figure 22. Beside the energy efficiency measures, has your company implemented any of the following measures to reduce its carbon footprint over the last three years (2015-2017)?



Base: 190 companies

Table 20. Beside the energy efficiency measures, has your company implemented any of the following measures to reduce its carbon footprint over the last three years (2015-2017)?

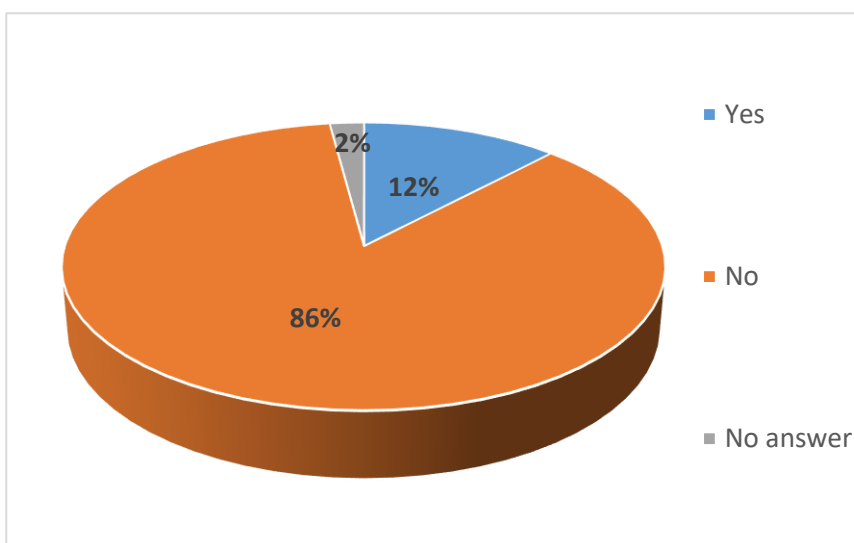
		Using low-carbon company transport (incl. hybrid or e-vehicles)	Using low-carbon transportation on-site (e.g. electric trucks, biogas transport)	Sustainable use and management of resources, used in the manufacturing processes	Reducing production waste/losses	Introducing non-waste technologies	Introducing other measures	Total (count)
Total		22%	17%	26%	44%	22%	24%	190
Size of the company (N of employees)	1-10	12%	9%	12%	30%	19%	19%	43
	11-50	25%	18%	33%	53%	23%	20%	80
	More than 50	25%	21%	28%	43%	22%	31%	67
Turnover (groups)	up to 500 thousand euro	12%	9%	16%	31%	16%	14%	58
	from 500 thousand to 2 million euro	15%	19%	32%	49%	17%	19%	47
	more than 2 million euro	34%	22%	31%	51%	28%	33%	82
Economic sector	Manufacturing and mining	15%	23%	33%	55%	30%	18%	66
	Construction	29%	21%	29%	46%	21%	25%	24
	Wholesale or retail trade	21%	12%	27%	39%	24%	24%	33
	Services	29%	13%	18%	31%	9%	22%	55
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	32%	22%	18%	36%	16%	22%	50
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	23%	15%	33%	62%	30%	29%	69
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	14%	16%	25%	32%	17%	20%	71
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	30%	20%	18%	38%	18%	20%	60
	Low GDP/Capita countries (Bulgaria,	19%	15%	30%	47%	23%	25%	130

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	Serbia, Ukraine, Poland, Hungary)							
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However, only 12% of the companies measure regularly their carbon footprint. This percentage is higher in larger companies (22% of the 50+ employees companies and 23% of the more than 2 million euro turnover companies). The percentage is highest in construction (17%) and manufacturing (12%) and lowest in the wholesale and retail trade (3%). The low-GDP countries (Bulgaria, Serbia, and Ukraine) have the smallest share of companies measuring their carbon footprint (7%), while the medium-GDP and high-GDP countries have twice bigger share – respectively 15% and 16% of the cases.

Figure 23. Does your company measure regularly its carbon footprint?



Base: 190 companies

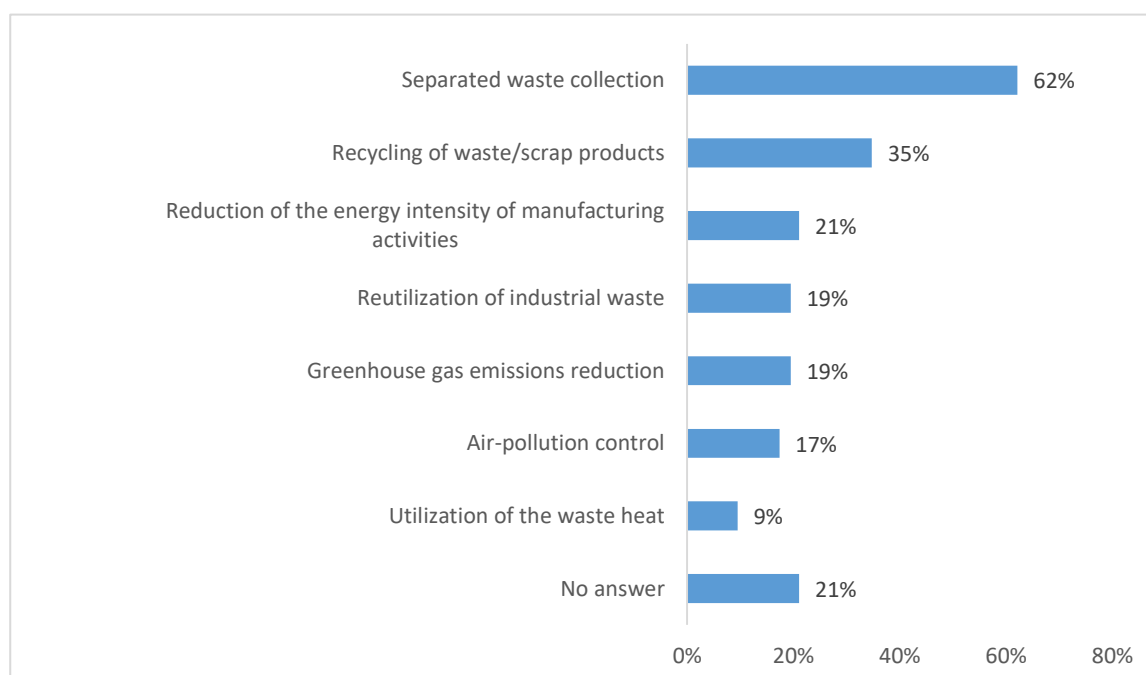
Table 21. Does your company measure regularly its carbon footprint?

		Yes	No	Don't know	Total (count)
Total		12%	86%	2%	190
Size of the company (N of employees)	1-10	5%	93%	2%	43
	11-50	8%	91%	1%	80
	More than 50	22%	75%	3%	67
Turnover (groups)	up to 500 thousand euro	5%	95%	0%	58
	from 500 thousand to 2 million euro	2%	92%	6%	47
	more than 2 million euro	23%	76%	1%	82
Economic sector	Manufacturing and mining	12%	88%	0%	66
	Construction	17%	79%	4%	24
	Wholesale or retail trade	3%	94%	3%	33

	Services	9%	89%	2%	55
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	16%	82%	2%	50
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	15%	81%	4%	69
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	7%	93%	0%	71
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	17%	80%	3%	60
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	10%	89%	2%	130

Nearly two third of the companies (62%) have introduced separate waste collection in the last three years as part of their sustainability policies, while 35% of the companies have also started recycling of waste/scrap products and 21% have introduced reduction of the energy intensity of manufacturing activities. Other measures in this respect have been the reutilization of industrial waste (19% of the companies), air-pollution control (17%) and utilization of the waste heat (9%).

Figure 24. In the last three years (2015-2017) has your company introduced any technologies or production / business processes regarding:



Base: 190 companies

Once again, more and diverse measures have been launched by larger companies, while in terms of economic sectors, air-pollution control, greenhouse gas emissions reduction, and reutilization of

industrial waste, were most commonly applied by the manufacturing sector as compared to the other sectors.

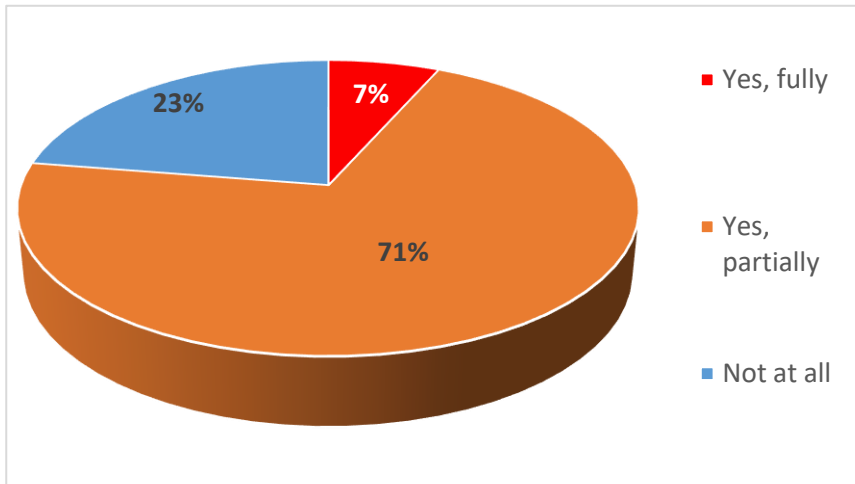
Table 22. In the last three years (2015-2017) has your company introduced any technologies or production / business processes regarding:

		Air-pollution control	Separated waste collection	Greenhouse gas emissions reduction	Reduction of the energy intensity of manufacturing activities	Recycling of waste/scrap products	Reutilization of industrial waste	Utilization of the waste heat	Total (count)
Total		17%	62%	19%	21%	35%	19%	9%	190
Size of the company (N of employees)	1-10	12%	44%	9%	16%	23%	14%	2%	43
	11-50	18%	66%	16%	23%	29%	19%	11%	80
	More than 50	21%	69%	30%	22%	49%	24%	12%	67
Turnover (groups)	up to 500 thousand euro	5%	45%	7%	19%	14%	14%	5%	58
	from 500 thousand to 2 million euro	13%	57%	15%	11%	32%	19%	2%	47
	more than 2 million euro	29%	77%	32%	29%	51%	22%	17%	82
Economic sector	Manufacturing and mining	27%	65%	21%	29%	35%	35%	15%	66
	Construction	13%	67%	13%	21%	38%	17%	8%	24
	Wholesale or retail trade	6%	61%	12%	21%	39%	12%	15%	33
	Services	11%	62%	18%	11%	27%	7%	2%	55
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	18%	66%	28%	16%	50%	16%	6%	50
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	26%	71%	22%	30%	45%	25%	13%	69
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	9%	51%	11%	16%	14%	17%	9%	71
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	18%	67%	25%	13%	45%	20%	7%	60
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	17%	60%	17%	25%	30%	19%	11%	130

The majority of companies (78%) declared that they have achieved at least partially the expected

results from their sustainability policies, while 23% have not achieved such results at all.

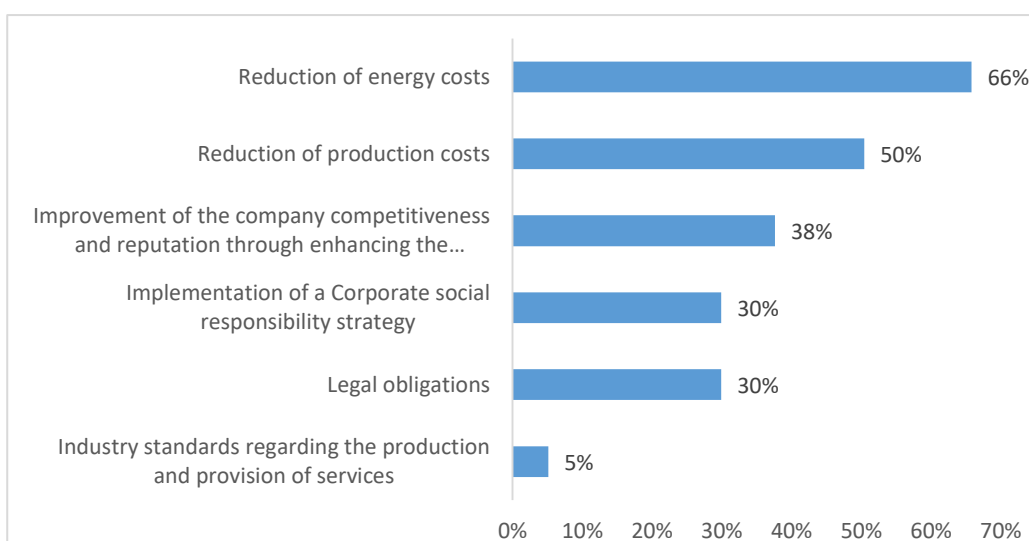
Figure 25. Did you achieve the expected results from the implementation of the measures for reducing the carbon footprint?



Base: 120 companies that have implemented measures for reducing the carbon footprint over the last three years (2015-2017)

The main motivation for implementing measures for reducing companies' carbon footprint remained again the reduction of costs - both for energy (66%) and production costs (50%). Improvement of company competitiveness (38%), legal obligations (30%), and the implementation of a corporate social responsibility strategy (30%) are mentioned by about one third of the companies.

Figure 26. What was the main motivation for implementing the measures for reducing the company's carbon footprint?



Base: 117 companies that have implemented measures for reducing the carbon footprint over the last three

years (2015-2017), 3 companies did not answer the question

Table 23. What was the main motivation for implementing the measures for reducing the company's carbon footprint?

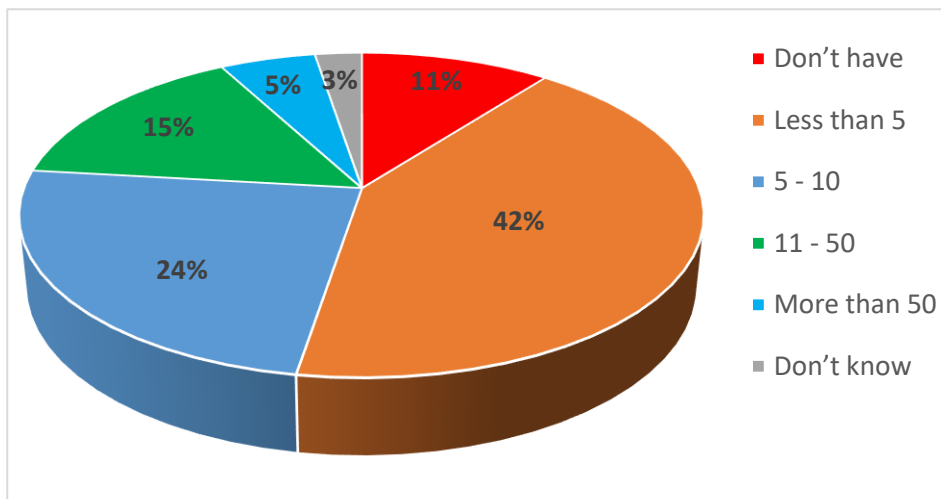
		Legal obligations	Industry standards regarding the production and provision of services	Reduction of energy costs	Reduction of production costs	Improvement of the company competitiveness and reputation through enhancing the sustainability of our products/services, manufacturing process and value chain	Implementation of a Corporate social responsibility strategy	Total (count)
Total		30%	5%	66%	50%	38%	30%	117
Size of the company (N of employees)	1-10	37%	5%	68%	47%	26%	21%	19
	11-50	30%	5%	63%	43%	30%	29%	56
	More than 50	26%	5%	69%	62%	52%	36%	42
Turnover (groups)	up to 500 thousand euro	22%	7%	63%	56%	26%	30%	27
	from 500 thousand to 2 million euro	27%	3%	60%	43%	20%	17%	30
	more than 2 million euro	33%	5%	72%	51%	54%	39%	57
Economic sector	Manufacturing and mining	24%	5%	76%	71%	33%	29%	42
	Construction	33%	11%	33%	50%	39%	39%	18
	Wholesale or retail trade	16%	0%	74%	32%	37%	32%	19
	Services	46%	7%	68%	29%	39%	25%	28
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	38%	6%	44%	38%	47%	38%	32
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	26%	4%	74%	48%	38%	36%	50
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	29%	6%	74%	66%	29%	14%	35
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	35%	5%	46%	41%	46%	35%	37
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	28%	5%	75%	55%	34%	28%	80

Poland, Hungary)

2.5. Mobility

Nearly half of the companies (44%) have more than 5 freight and passenger vehicles not used on-site but still the majority of them are vehicles with internal combustion engines and not hybrid or fully electric ones.

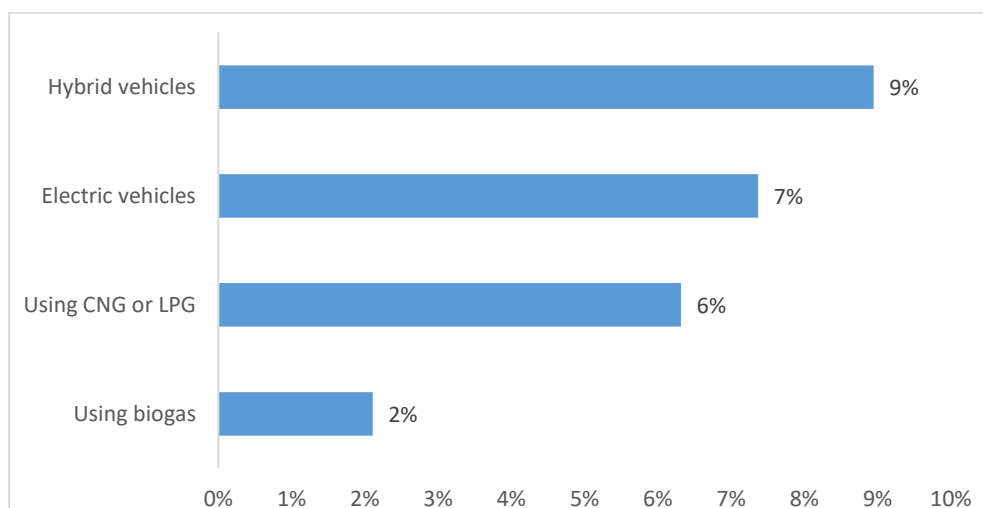
Figure 27. How many own freight and passenger vehicles, not used on-site, does your company have?



Base: 190 companies

The number of clean energy vehicles remains respectively quite small. Only 9% of companies report that at least 5% of the company's vehicles are hybrids. The percentage is even smaller for electric vehicles (7%), CNG/LPG vehicles (6%) and vehicles using biogas (2%).

Figure 28. Percentage of companies where at least 5% of the company's own vehicles (not used on-site) are:



Base: 190 companies

Hybrid vehicles are most common in companies with 11-50 vehicles (28%) while companies with more than 50 vehicles report most often that at least 5% of the company vehicles are using biogas (10% of the companies with more than 50 vehicles) and CNG/LPG (20% of the companies with more than 50 vehicles). Not surprisingly, hybrid and particularly electric vehicles are more common in the high-GDP country group.

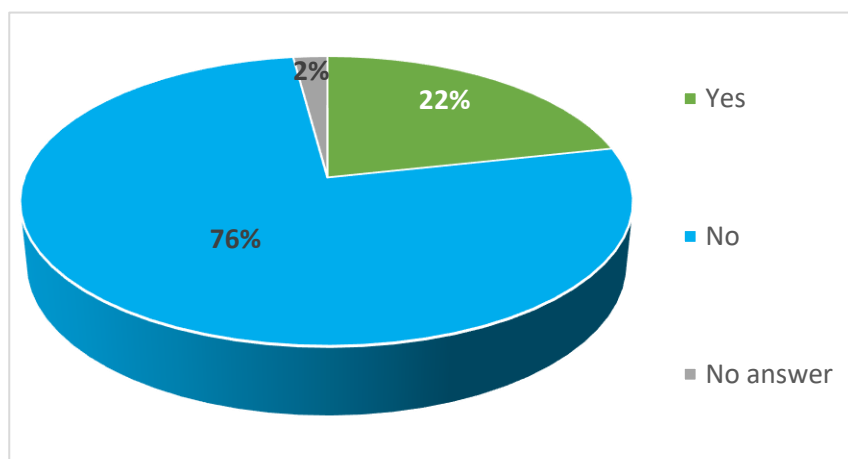
Table 24. Percentage of companies where at least 5% of the company's own vehicles (not used on-site) are:

		Hybrid vehicles	Electric vehicles	Using biogas	Using CNG or LPG	Total (count)
Total		9%	7%	2%	6%	190
How many own freight and passengers vehicles, not used on-site, has your company?	Don't have	0%	0%	0%	0%	20
	Less than 5	6%	10%	0%	5%	80
	5 - 10	9%	9%	2%	4%	46
	11 - 50	28%	7%	7%	14%	29
	More than 50	0%	0%	10%	20%	10
Size of the company (N of employees)	1-10	5%	2%	0%	5%	43
	11-50	6%	11%	1%	5%	80
	More than 50	15%	6%	5%	9%	67
Turnover (groups)	up to 500 thousand euro	0%	2%	2%	5%	58
	from 500 thousand to 2 million euro	6%	6%	2%	6%	47
	more than 2 million euro	17%	12%	2%	7%	82
Economic sector	Manufacturing and mining	6%	2%	3%	8%	66
	Construction	8%	8%	4%	17%	24

	Wholesale or retail trade	12%	9%	0%	3%	33
	Services	9%	13%	2%	4%	55
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	12%	18%	2%	4%	50
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	12%	4%	0%	6%	69
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	4%	3%	4%	9%	71
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	12%	17%	2%	3%	60
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	8%	3%	2%	8%	130

Less than one fourth of the companies (22%) have a corporate policy for incentivising their staff to use low-carbon mobility options (e.g. public transport, bicycles, walking, hybrid or electric vehicles, car sharing or bike sharing). The respective share is lower among the micro companies (9%) as compared to the small and medium-large company groups (25%). The share for the high turnover group is also two times higher (32%) than in the other two turnover groups.

Figure 29. Does your company have a corporate policy for incentivising its staff to use low-carbon mobility options (e.g. public transport, bicycles, walking, hybrid or electric vehicles, car-sharing and bike-sharing)



Base: 190 companies

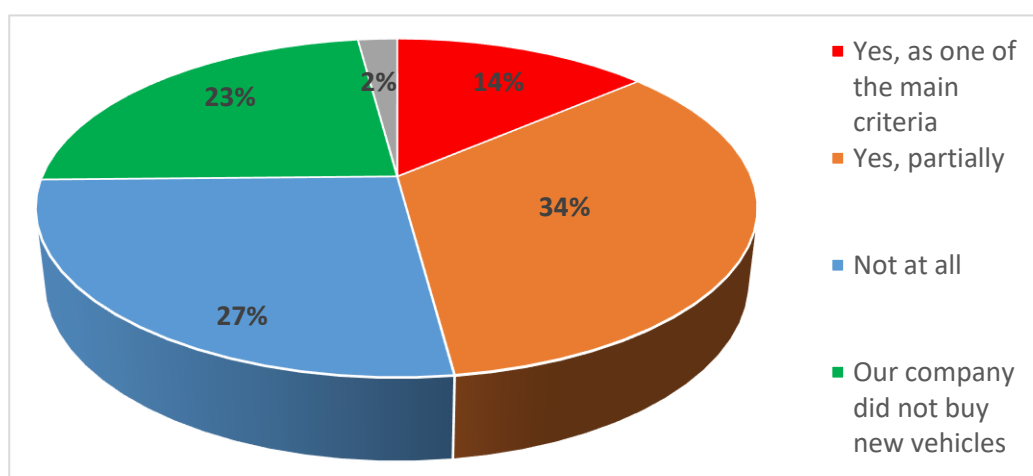
Table 25. Does your company have a corporate policy for incentivising its staff to use low-carbon mobility options (e.g. public transport, bicycles, walking, hybrid or electric vehicles, car-sharing and bike-sharing)

Yes	No	No answer	Total

Total		22%	76%	2%	190
Size of the company (N of employees)	1-10	9%	86%	5%	43
	11-50	25%	75%	0%	80
	More than 50	25%	72%	3%	67
Turnover (groups)	up to 500 thousand euro	16%	83%	2%	58
	from 500 thousand to 2 million euro	13%	83%	4%	47
	more than 2 million euro	32%	67%	1%	82
Economic sector	Manufacturing and mining	21%	79%	0%	66
	Construction	21%	79%	0%	24
	Wholesale or retail trade	30%	67%	3%	33
	Services	20%	76%	4%	55
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	22%	76%	2%	50
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	28%	70%	3%	69
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	16%	83%	1%	71
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	23%	75%	2%	60
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	21%	77%	2%	130

Nearly half of the companies (48%) have considered at least partially the environmental criteria when they bought new freight or passenger vehicles in the last five years and only 27% did not consider the environment at all.

Figure 30. If your company bought new freight or passenger vehicles in the last five years (2013-2017), have the environmental criteria been considered as important in the selection process?



Base: 190 companies

Consideration for the environment was more common in larger companies, but interestingly, not in the high-GDP countries, where the percentage of companies considering the environment and those that don't consider it at all is equal. For comparison, in the medium-GDP countries the share of companies considering the environment is 4 times larger than the share of those, which do not consider it at all.

Table 26. If your company bought new freight or passenger vehicles in the last five years (2013-2017), have the environmental criteria been considered as important in the selection process?

		Yes, as one of the main criteria	Yes, partially	Not at all	Our company did not buy new vehicles	No answer	Total (count)
Total		14%	34%	27%	23%	2%	190
Size of the company (N of employees)	1-10	7%	23%	21%	44%	5%	43
	11-50	16%	33%	30%	21%	0%	80
	More than 50	15%	43%	27%	12%	3%	67
Turnover (groups)	up to 500 thousand euro	5%	24%	28%	41%	2%	58
	from 500 thousand to 2 million euro	11%	34%	30%	21%	4%	47
	more than 2 million euro	21%	42%	24%	12%	1%	82
Economic sector	Manufacturing and mining	12%	32%	39%	17%	0%	66
	Construction	17%	50%	25%	8%	0%	24
	Wholesale or retail trade	15%	30%	21%	30%	3%	33
	Services	16%	29%	18%	33%	4%	55
Country type 1 (3 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK)	14%	30%	44%	10%	2%	50
	Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	23%	39%	15%	20%	3%	69
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	4%	32%	27%	35%	1%	71
Country type 2 (2 GDP groups)	High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	15%	33%	38%	12%	2%	60
	Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	13%	35%	22%	29%	2%	130

Conclusions

Despite the limitation of the small sample number, the results reveal several major differences in the use of energy according to companies' size and main economic sectors. Medium-and-large companies and companies from the manufacturing sectors have implemented more often policies towards introduction of RES, environmental-friendly activities and optimization of company's energy use than micro-and-small companies and companies from the other sectors (agriculture, wholesale and retail trade, services). Possible reasons are the higher investment potential, related capabilities for long-term decision making, as well as the influence of political and institutional frameworks and professional requirements, applicable for medium and large companies from the manufacturing sectors.

The results show the broad diffusion of one of the RES technologies across all type of companies and sectors, and namely – solar technologies for production of both heat and power. This fact diminishes the differences between the companies and sectors and reveals a specific trend. On the one hand, the differences in the use of solar technologies between the companies' types and sectors are much smaller as compared to the differences in the use of all other types of RES technologies. Even when micro companies are concerned, the differences in the diffusion and the use of solar technologies as compared to the other companies could be measured in percentage points, while the respective differences regarding the application and the use of the other types of RES are in times higher (e.g. three to ten times). At the same time, micro companies differentiated from the others in terms of their major characteristics that could be seen as vital for the implementation of energy transition policies - lack of structured corporate sustainability policies, lack of long-term planning and much lower investment readiness. On the other hand, despite the broad diffusion of solar technologies, the majority of the companies irrespective of their size or sector, are still relying mostly on fossil-based energy sources (mainly on natural gas) for their major production and business processes. This is clearly visible particularly in the area of mobility and corporate sustainability policies, while companies perform much better in terms of introduction of energy efficiency measures.

The results confirm also the correlation between the level of general economic development in the country and the degree of implementation of energy transition policies. The companies from the high-GDP countries (UK, NO, DE, FR) dominated all areas of activities, related to the introduction of energy transition policies and practices as compared to the companies from the groups of low- and even medium-GDP countries. This could be seen also as a result of the favourable policy and institutional frameworks in the high-GDP countries towards the development of low-carbon economy. One particular area, where the differences between the companies from the three groups are much smaller and in some cases – not existing, is again the area of low-carbon mobility policies and practices. Having in mind that companies differentiate only slightly in their energy behaviour regarding mobility also in terms of size or sector, it could be concluded that mobility is one of the less developed areas in the companies' policies and, hence, it has a higher potential for short- and medium-term progress in achieving energy transition goals.

Appendix 1: Recruiting activities

	sent messages	
	Jan - Apr 2018	May-Jun 2018
BG	11 968	7227
FR	32 249	6 012
DE	31 994	6372
HU	14 823	7808
IT	8 364	2196
NO	11 932	8202
PL	24 353	7 432
RS	3 061	2315
ES	7 527	3733
UA	7 007	6701
UK	11 455	4211
TOTAL	164 733	62 209

Facebook campaign		
	Jan - Apr 2018	May-Jun 2018
ad sets	14	11
reach / impressions	961 508	428 544
unique link clicks	8 976	3 968

LinkedIn campaign		
		May-Jun 2018
identified LinkedIn groups		12
published posts to all groups		420

Appendix 2: Sample distribution (main tables)

I1 What best describes your company situation at the end of 2017? One answer only

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 In operation	190	88.4	88.4	88.4
2 Ceased operation	25	11.6	11.6	100.0
Total	215	100.0	100.0	

Country

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 Bulgaria	45	23.7	23.7	23.7
2 France	15	7.9	7.9	31.6
3 Germany	11	5.8	5.8	37.4
4 Hungary	48	25.3	25.3	62.6
5 Italy	6	3.2	3.2	65.8
6 Norway	9	4.7	4.7	70.5
7 Poland	11	5.8	5.8	76.3
8 Serbia	16	8.4	8.4	84.7
9 Spain	4	2.1	2.1	86.8
10 Ukraine	10	5.3	5.3	92.1
11 United Kingdom	15	7.9	7.9	100.0
Total	190	100.0	100.0	

Country type 1 (3 groups) Crosstabulation

Count

		type1 Country type 1 (3 groups)			Total
		1.00 High GDP/Capita countries (Norway, Germany, France, UK)	2.00 Medium GDP/Capita countries (Italy, Spain, Poland, Hungary)	3.00 Low GDP/Capita countries (Bulgaria, Serbia, Ukraine)	
country	Country				
	1 Bulgaria	0	0	45	45
	2 France	15	0	0	15
	3 Germany	11	0	0	11
	4 Hungary	0	48	0	48
	5 Italy	0	6	0	6
	6 Norway	9	0	0	9
	7 Poland	0	11	0	11
	8 Serbia	0	0	16	16
	9 Spain	0	4	0	4
	10 Ukraine	0	0	10	10
	11 United Kingdom	15	0	0	15
Total		50	69	71	190

Country type 2 (2 groups) Crosstabulation

Count

		type2 Country type 2 (2 groups)		Total
		1 High GDP/Capita countries (Norway, Germany, France, UK, Italy, Spain)	2 Low GDP/Capita countries (Bulgaria, Serbia, Ukraine, Poland, Hungary)	
country	Country			
	1 Bulgaria	0	45	45

2 France	15	0	15
3 Germany	11	0	11
4 Hungary	0	48	48
5 Italy	6	0	6
6 Norway	9	0	9
7 Poland	0	11	11
8 Serbia	0	16	16
9 Spain	4	0	4
10 Ukraine	0	10	10
11 United Kingdom	15	0	15
Total	60	130	190

I2 How many employees work in your company? One answer only

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 1-10	43	22.6	22.6	22.6
	2 11-50	80	42.1	42.1	64.7
	3 51-250	41	21.6	21.6	86.3
	4 251-500	12	6.3	6.3	92.6
	5 More than 500	14	7.4	7.4	100.0
	Total	190	100.0	100.0	

I2 How many employees work in your company? * Size of the company (N of employees) Crosstabulation

Count

		Size of the company (N of employees)			
		1 1-10	2 11-50	3 More than 50	Total
I2 How many employees work in your company?	1 1-10	43	0	0	43
	2 11-50	0	80	0	80

3 51-250	0	0	41	41
4 251-500	0	0	12	12
5 More than 500	0	0	14	14
Total	43	80	67	190

I3 What was your annual company turnover for 2017? One answer only

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 up to 500 thousand euro	58	30.5	31.0	31.0
	2 from 500 thousand to 1 million euro	22	11.6	11.8	42.8
	3 from 1 to 2 million euro	25	13.2	13.4	56.1
	4 from 2 to 10 million euro	38	20.0	20.3	76.5
	5 from 10 to 50 million euro	28	14.7	15.0	91.4
	6 from 50 to 200 million euro	7	3.7	3.7	95.2
	7 more than 200 million euro	9	4.7	4.8	100.0
	Total	187	98.4	100.0	
Missing	System	3	1.6		
Total		190	100.0		

I3 What was your annual company turnover for 2017? * Turnover (groups) Crosstabulation

Count

		Turnover (groups)			Total
		1 up to 500 thousand euro	2 from 500 thousand to 2 million euro	3 more than 2 million euro	
I3 What was your annual company turnover for 2017?	1 up to 500 thousand euro	58	0	0	58
	2 from 500 thousand to 1 million euro	0	22	0	22
	3 from 1 to 2 million euro	0	25	0	25

4 from 2 to 10 million euro	0	0	38	38
5 from 10 to 50 million euro	0	0	28	28
6 from 50 to 200 million euro	0	0	7	7
7 more than 200 million euro	0	0	9	9
Total	58	47	82	187

I4 Which economic sector does your company belong to: One answer only

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Agriculture, forestry and fishing	4	2.1	2.1	2.1
	2 Mining and quarrying	5	2.6	2.6	4.7
	3 Manufacturing	61	32.1	32.1	36.8
	4 Electricity, gas, steam and air conditioning supply	5	2.6	2.6	39.5
	5 Water supply; sewerage, waste management and remediation activities	3	1.6	1.6	41.1
	6 Construction	24	12.6	12.6	53.7
	7 Wholesale or retail trade	33	17.4	17.4	71.1
	8 Services / repair of motor vehicles and motorcycles	5	2.6	2.6	73.7
	9 Other services	50	26.3	26.3	100.0
	Total	190	100.0	100.0	

Sector Economic sector					Total
3 Manufacturing and mining	6 Construction	7 Wholesale or retail trade	8 Services	9 Other sectors	

1 Agriculture, forestry and fishing	0	0	0	0	4	4
2 Mining and quarrying	5	0	0	0	0	5
3 Manufacturing	61	0	0	0	0	61
4 Electricity, gas, steam and air conditioning supply	0	0	0	0	5	5
5 Water supply; sewerage, waste management and remediation activities	0	0	0	0	3	3
6 Construction	0	24	0	0	0	24
7 Wholesale or retail trade	0	0	33	0	0	33
8 Services / repair of motor vehicles and motorcycles	0	0	0	5	0	5
9 Other services	0	0	0	50	0	50
Total	66	24	33	55	12	190

I6 Your company is: One answer only

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 More than 50% owned by domestic individuals, companies or organisations	166	87.4	88.8	88.8
	2 More than 50% owned by foreign individuals, companies or organisations	21	11.1	11.2	100.0
	Total	187	98.4	100.0	
Missing	System	3	1.6		
Total		190	100.0		

I8 The ownership of your company is: One answer only

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 More than 50% private	175	92.1	93.1	93.1
	2 More than 50% state-owned	13	6.8	6.9	100.0
	Total	188	98.9	100.0	
Missing	System	2	1.1		
Total		190	100.0		

Appendix 3: Questionnaire v.1

COMPANY INFORMATION

I1. What best describes your company situation at the end of 2017?

One answer only

1. In operation
2. Ceased operation -> **cancel questionnaire and go to "Thank you page"**

I2. How many employees work in your company?

One answer only

1. 1-10
2. 11-50
3. 51-250
4. 251-500
5. More than 500

I3. What was your annual company turnover for 2017?

One answer only

1. up to 500 thousand euro
2. from 500 thousand to 1 million euro
3. from 1 to 2 million euro
4. from 2 to 10 million euro
5. from 10 to 50 million euro
6. from 50 to 200 million euro
7. more than 200 million euro

I4. Which economic sector does your company belong to:

One answer only

1. Agriculture, forestry and fishing
2. Mining and quarrying
3. Manufacturing
4. Electricity, gas, steam and air conditioning supply
5. Water supply; sewerage, waste management and remediation activities
6. Construction
7. Wholesale or retail trade
8. Services / repair of motor vehicles and motorcycles

9. Other services

Only for answer "3 = Manufacturing" of question I4

I4a. The main economic activity of your company includes manufacturing of:

1. Food
2. Beverages
3. Tobacco products
4. Textiles and wearing apparel
5. Leather and related products
6. Wood and of products of wood and cork, except furniture
7. Paper and paper products
8. Printing and reproduction of recorded media
9. Coke and refined petroleum products
10. Chemicals and chemical products
11. Basic pharmaceutical products and pharmaceutical preparations
12. Rubber and plastic products
13. Other non-metallic mineral products
14. Basic metals
15. Fabricated metal products, except machinery and equipment
16. Computer, electronic and optical products
17. Electrical equipment
18. Machinery and equipment n.e.c.
19. Motor vehicles, trailers and semi-trailers
20. Other transport equipment
21. Furniture
22. Repair and installation of machinery and equipment
23. Other manufacturing

Only for answer "9 = Other services" of question I4.

I4b. Which of the following services is the main economic activity of your company:

1. Transportation and storage (incl. postal and courier activities)
2. Accommodation and food service activities
3. Information and communication⁸
4. Financial and insurance activities
5. Real estate activities
6. Professional, scientific and technical activities⁹

⁸ incl. publishing activities, programming and broadcasting activities, telecommunications, computer programming, information services

⁹ incl. legal and accounting, architectural and engineering, advertising, market research, scientific research and

7. Administrative and support service activities¹⁰
8. Public administration and defence; compulsory social security
9. Education
10. Human health and social work activities
11. Arts, entertainment and recreation
12. Other, pls. specify

I5. Which is your company's major market?

One answer only

1. Local / regional market (up to about 100 km around)
2. National market
3. European countries (EU and non-EU)
4. Country/countries outside Europe

I6. Your company is:

One answer only

1. More than 50% owned by domestic individuals, companies or organisations
2. More than 50% owned by foreign individuals, companies or organisations

I7. Is your company part of:

One answer only

1. Larger domestic company
2. Larger foreign / multinational company
3. None of the above

I8. The ownership of your company is:

One answer only

1. More than 50% private
2. More than 50% state-owned

I9. Your position in the company corresponds to:

One answer only

1. Top-level / executive management (CEO, (vice-)director, (vice-)president, (co)owner)
2. Middle level management (head of department or major unit, project manager, etc.)

development, veterinary activities

¹⁰ Incl. rental and leasing, employment activities, travel agencies, security and investigations

3. Employee
4. Administrative staff (e.g. administrative secretary)
5. Other, pls. specify

ENERGY USE

EU1. During 2017, did your company use electricity or heat, generated on-site by your own installation¹¹ for:

At least one answer per row

	For generation of electricity	For generation of heat	None
1. Solar power			
2. Wind power			
3. Combined heat and power (CHP) / Cogeneration			
4. Hydropower			
5. Geothermal power			
6. Biomass (incl. agricultural waste)			
7. Biogas			

Only for answer YES at least in one category on "For generation of electricity" of question EU1

EU2a. During 2017, did your company sell to the grid electricity, generated on-site?

Only one answer

1. Yes
2. No

Only for answer YES at least in one category on "For generation of electricity" of question EU1

¹¹ "Own installation" refers also to cases, when the company is one of the co-owners of the respective installation.

EU2b. What share of the company's total electricity consumption was generated from own on-site installation(s) in 2017?

One answer only. If you don't know the exact number, please give your estimation.

1. Up to 5%
2. From 6 to 15%
3. From 16% to 50%
4. Above 50%
5. Don't know

Only for answers "None" in all categories on "For generation of electricity" and "For generation of heat" of question EU1

EU3. Are you planning to invest in own on-site installation for energy generation (heat and/or power) in next 1-2 years?

1. Yes, we have started practical procedures
2. Yes, we have planned this and will start soon
3. Maybe, we already explored the opportunities but have not made any particular plans
4. Yes, we would like to do it but have not explored the opportunities
5. No

Only for answers "No" of question EU3

EU4. What are the main reasons for not considering to invest in own on-site installation for energy generation (heat and/or power) in next 1-2 years?

Tick all that apply

1. Not economically feasible for our company nowadays
2. The price of major energy sources, we use, is low enough
3. Too long payback period
4. No subsidies available / Administrative burdens in the access to subsidies
5. Barriers to access financing
6. Administrative barriers / slow administrative procedures
7. Little awareness of the top management
8. Doubts on impact on our products/services
9. Insufficient knowledge on the topic (opportunities, advantages, procedures, technologies, etc.)
10. Technical difficulties / impossibility for building such an installation
11. Other, please specify

EU5. During 2017, did your company use any of the following energy sources (including on-site transportation but excluding fuels for the company's freight and passengers vehicles, if freight /passenger transportation is not a main company's activity):

Tick all that apply

	In manufacturing processes	For facility heating, ventilation, lighting, etc.	Not applicable
1. Natural gas			
2. Diesel and other distillate fuel oil			
3. Kerosene or motor gasoline			
4. Liquefied petroleum gases (LPG), natural gas liquids (NGL), butane, ethane or propane			
5. Coal or coal coke			
6. Wooden pellets			

EU6. What is the approximate percentage share of the cost of the following energy sources out of the total cost of energy, paid by your company for both manufacturing processes and for facility heating, ventilation, lighting, etc.?

Indicate the approximate percentage share so the total sum should be 100%

Electricity%
District heating%
Natural gas%
Diesel and other distillate fuel oil%
Kerosene or motor gasoline%
Liquefied petroleum gases (LPG), natural gas liquids (NGL), butane, ethane or propane%
Coal or coal coke%
Wooden pellets%
Waste / garbage%
Biomass%
Biogas%

EU7. What is the share of total energy costs¹² out of the total annual turnover of your company?

One answer only

1. Low (< 2%)
2. Medium (2-10%)
3. High (> 10%)
4. Don't know

ENERGY MANAGEMENT

EM1. Did your company conduct an energy audit (assessment) in the last three years (2015-2017)?

One answer only

1. Yes, an internal audit
2. Yes, an audit by third party
3. No

EM2. Does your company implement smart system(s) for management and monitoring of energy consumption regarding:

Tick all that apply

1. Process heating, cooling and refrigeration systems
2. Facility HVAC (Heating, ventilation, and air conditioning)
3. Facility lighting
4. Other plant-wide systems
5. We do not have such smart system(s)
6. Don't know

EM3. Which statement best describes your company's management decision-making process.

One answer only

1. Energy use and consumption is increasingly becoming a higher priority for the company
2. Management from time to time has supported projects to improve energy use and consumption
3. Energy use and consumption are rarely a part of management decision making

¹² Energy costs refer to cost of all energy resources, used by your company, incl. for manufacturing processes, facility heating, ventilation, lightening, etc.

EM4. Does your company have a certified Energy Management System according to ISO 50.001 "Energy management"?

One answer only

1. Yes
2. No

Only for answers "Yes" of question EM4

EM5. What influenced the company's decision to implement a certified Energy Management System according to ISO 50.001 "Energy Management"?

Tick all that apply

1. Legal requirements
2. Industry standards
3. Due to headquarter's decision (if applicable)
4. Customers' requirements
5. We wanted to improve the general competitiveness of the company
6. We wanted to lower the cost of energy consumption of the company
7. We wanted to decrease the production cost of our products/services
8. It's part of an overall corporate sustainability policy
9. As result of government incentives' programme

EM6. Has your company set goals for improving its energy use?

One answer only

1. Yes	Continue with the next question
2. No	SKIP the next question
3. Don't know	

EM7. Are these goals quantitative (e.g., 10% improvement)?

One answer only

1. Yes
2. No
3. Don't know

EM8. How strong influence have the following factors had on the energy use of your company in 2017?

Use a scale from 1 to 5, where 1 means "Not at all" and 5 "Very strong"

Tick all that apply

	1 Not at all	2	3	4	5 Very strong
1. Legal obligations	1	2	3	4	5
2. Industry standards	1	2	3	4	5
3. Corporate policy	1	2	3	4	5
4. Customer requirements	1	2	3	4	5
5. Government incentives	1	2	3	4	5
6. Price of energy resources	1	2	3	4	5
7. Practices of other companies in our sector / region					

EM9. Does your company measure regularly its carbon footprint?

One answer only

1. Yes
2. No

EM10. How relevant are the following practices to your company?

One answer per each row; Use a scale, where 1 = Irrelevant, 5 = Highly relevant

	1 Irrelevant	2	3	4	5 Highly relevant
Calculation of energy costs for new product/services during the development processes	1	2	3	4	5
Post calculation: Comparison of actual and planned costs in order to identify significant deviations	1	2	3	4	5
Fair allocation of indirect energy costs (e.g. facility heating, ventilation, air conditioning, and lighting) to products/services and/or to their final costs	1	2	3	4	5
Calculating energy footprint of a product/service regarding the energy	1	2	3	4	5

consumption accumulated over all the supply chain					
Exchanging information concerning the energy demand across the energy supply chain (e. g. with the energy supply company, smart grid)	1	2	3	4	5

EM11. Does your company purchase renewable (or green) electricity?

Only one answer

1. There is no such option, offered by our power supplier
2. Yes, we purchase partially renewable (green) electricity
3. Yes, we purchase entirely renewable (green) electricity
4. No, we don't purchase renewable (green) electricity
5. Don't know

ENERGY EFFICIENCY

EE1. In the last three years (2015-2017), has your company implemented any measures to improve its energy efficiency?

One answer only

1. Yes	SKIP question EE2
2. No	Continue with question EE2

EE2. If not, why?

Tick all that apply

1. Already done more than 3 years ago
2. Not economically feasible for our company nowadays
3. The price of major energy sources, we use, is low enough
4. Too long payback period
5. No subsidies available / Administrative burdens in the access to subsidies
6. Barriers to access financing
7. Little awareness of the top management
8. Doubts on impact on our products/services

9. Insufficient knowledge on the topic (opportunities, advantages, procedures, technologies, etc.)
10. Other, please specify

EE3. Are you planning to implement energy efficiency measures at your company in next few years?

1. Yes, we have started practical procedures
2. Yes, we have planned this and will start soon
3. Yes, we already explored the opportunities but haven't made any particular plans
4. Yes, we would like to do it
5. No

Only for answer "YES" of question EE1

EE4. What kind of energy efficiency measures has your company implemented?

Tick all that apply

1. Measures towards facility HVAC (Heating, ventilation, and air conditioning)
2. Measures towards facility lighting
3. Measures towards manufacturing processes and on-site services and infrastructure
4. Measures towards organisation of business processes
5. Other, please specify

Only for answer "YES" of question EE1

EE5. Did you achieve the expected results from the implementation of the energy efficiency measures?

One answer only

1. Yes, fully
2. Yes, partially
3. Not at all

Only for answer "YES" of question EE1

EE6. How did your company finance the implementation of the energy efficiency measures in the last three years (2015-2017)?

One answer per each row

	Primarily (more than 50%)	Partially (10%- 50%)	Very limited (up to 10%)	Not used	Don't know
Own financing	1	2	3	4	5
Bank credit	1	2	3	4	5
Financial assistance from specific national/local programme (e.g. low-rate loans, tax credits, rebates, subsidies)	1	2	3	4	5

Only for answer "YES" of question EE1

EE7. What was the main motivation for investing in energy efficiency?

Tick all that apply

1. Ageing of the equipment
2. Legal obligations
3. Reduction of energy costs
4. Reduction of production costs
5. Improvement of the company competitiveness and reputation through enhancing the sustainability of our products/services, manufacturing process and value chain
6. Other:

EE8. Is energy efficiency a part of your company's purchasing decision?

One answer only

1. Yes, always
2. Yes, sometimes
3. No

SUSTAINABILITY POLICY

SP1. Beside the energy efficiency measures, has your company implemented any of the following measures to reduce its carbon footprint over the last three years (2015-2017)?

One answer per row

	Yes	No	Don't know
1. Using low-carbon company transport (incl. hybrid or e-vehicles)	1	2	3

2. Using low-carbon transportation on-site (e.g. electric trucks, biogas transport)	1	2	3
3. Sustainable use and management of resources, used in the manufacturing processes	1	2	3
4. Reducing production waste/losses	1	2	3
5. Introducing non-waste technologies	1	2	3
6. Introducing other measures	1	2	3

SP2. In the last three years (2015-2017) has your company introduced any technologies or production / business processes regarding:

Tick all that apply

1. Air-pollution control
2. Separated waste collection
3. Greenhouse gas emissions reduction
4. Reduction of the energy intensity of manufacturing activities
5. Recycling of waste/scrap products
6. Reutilization of industrial waste
7. Utilization of the waste heat

Only for answers YES of question SP1

SP3. Did you achieve the expected results from the implementation of the measures for reducing the carbon footprint?

One answer only

1. Yes, fully
2. Yes, partially
3. Not at all

Only for answers YES of question SP1

SP4. What was the main motivation for implementing the measures for reducing the company's carbon footprint?

Tick all that apply

1. Legal obligations
2. Industry standards regarding the production and provision of services
3. Reduction of energy costs
4. Reduction of production costs
5. Improvement of the company competitiveness and reputation through enhancing the sustainability of our products/services, manufacturing process and value chain
6. Implementation of a Corporate social responsibility strategy

7. Other:

MOBILITY

M1. How many own freight and passengers vehicles, not used on-site, does your company have?

1. Don't have
2. Less than 5
3. 5 - 10
4. 11 - 50
5. More than 50
6. Don't know

Only for answers "2. Less than 5" to "5. More than 50" of question M1

M2. What share of the company's own vehicles (not used on-site) are:

One answer per each row

	Less than 5%	5%-30%	31%-50%	More than 50%	Don't have
1. Hybrid vehicles					
2. Electric vehicles					
3. Using biogas					
4. Using CNG or LPG					

M3. Does your company have a corporate policy for incentivising its staff to use low-carbon mobility options (e.g. public transport, bicycles, walking, hybrid or electric vehicles, car-sharing bike-sharing)

One answer only

1. Yes
2. No

M4. If your company bought new freight or passenger vehicles in the last five years (2013-2017), have the environmental criteria been considered as important in the selection process?

One answer only

1. Yes, as one of the main criteria
2. Yes, partially
3. Not at all
4. Our company did not buy new vehicles

If you are interested in receiving an executive summary of main the findings from this survey, please, fill in below an e-mail address, to which the results will be sent.

The address will not be shared to third parties or used for other purposes.

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Appendix 4: Questionnaire v.2

I1. What best describes your company situation at the end of 2017? ¹³

One answer only

3. In operation
4. Ceased operation -> **cancel questionnaire and go to "Thank you page"**

ENERGY USE

EU1. During 2017, did your company use electricity or heat, generated on-site by your own installation¹⁴ for:

At least one answer per row

	For generation of electricity	For generation of heat	None
1. Solar power			
2. Wind power			
3. Combined heat and power (CHP) / Cogeneration			
4. Hydropower			
5. Geothermal power			
6. Biomass (incl. agricultural waste)			
7. Biogas			

Only for answer YES at least in one category on "For generation of electricity" of question EU1

EU2a. During 2017, did your company sell to the grid electricity, generated on-site?

Only one answer

¹³ Version 2 of the questionnaire include 2 type of changes as compared to the initial version – 10 questions were removed (marked with strikethrough text bellow) and reordering of some questions ("company information" section containing items about company's demographics were moved at the end of the questionnaire and in addition – the question about the company's turnover were placed as a last one).

¹⁴ "Own installation" refers also to cases, when the company is one of the co-owners of the respective installation.

1. Yes
2. No

Only for answer YES at least in one category on "For generation of electricity" of question EU1

EU2b. What share of the company's total electricity consumption was generated from own on-site installation(s) in 2017?

One answer only. If you don't know the exact number, please give your estimation.

1. Up to 5%
2. From 6 to 15%
3. From 16% to 50%
4. Above 50%
5. Don't know

Only for answers "None" in all categories on "For generation of electricity" and "For generation of heat" of question EU1

EU3. Are you planning to invest in own on-site installation for energy generation (heat and/or power) in next 1-2 years?

1. Yes, we have started practical procedures
2. Yes, we have planned this and will start soon
3. Maybe, we already explored the opportunities but have not made any particular plans
4. Yes, we would like to do it but have not explored the opportunities
5. No

Only for answers "No" of question EU3

EU4. What are the main reasons for not considering to invest in own on-site installation for energy generation (heat and/or power) in next 1-2 years?

Tick all that apply

1. Not economically feasible for our company nowadays
2. The price of major energy sources, we use, is low enough
3. Too long payback period
4. No subsidies available / Administrative burdens in the access to subsidies
5. Barriers to access financing
6. Administrative barriers / slow administrative procedures
7. Little awareness of the top management
8. Doubts on impact on our products/services
9. Insufficient knowledge on the topic (opportunities, advantages, procedures, technologies, etc.)
10. Technical difficulties / impossibility for building such an installation
11. Other, please specify

EU5. During 2017, did your company use any of the following energy sources (~~including on-site transportation but excluding fuels for the company's freight and passengers vehicles, if freight /passenger transportation is not a main company's activity~~):

Tick all that apply

	In manufacturing processes	For facility heating, ventilation, lighting, etc.	Not applicable
1. Natural gas			
2. Diesel and other distillate fuel oil			
3. Kerosene or motor gasoline			
4. Liquefied petroleum gases (LPG), natural gas liquids (NGL), butane, ethane or propane			
5. Coal or coal coke			
6. Wooden pellets			

EU6. What is the approximate percentage share of the cost of the following energy sources out of the total cost of energy, paid by your company for both manufacturing processes and for facility heating, ventilation, lighting, etc.?

Indicate the approximate percentage share so the total sum should be 100%

1. Electricity%
2. District heating%
3. Natural gas%
4. Diesel and other distillate fuel oil%
5. Kerosene or motor gasoline%
6. Liquefied petroleum gases (LPG), natural gas liquids (NGL), butane, ethane or propane%
7. Coal or coal coke%
8. Wooden pellets%
9. Waste / garbage%
10. Biomass%

11. Biogas%
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EU7. What is the share of total energy costs¹⁵ out of the total annual turnover of your company?

One answer only

1. Low (< 2%)
2. Medium (2-10%)
3. High (> 10%)
4. Don't know

ENERGY MANAGEMENT

EM1. Did your company conduct an energy audit (assessment) in the last three years (2015-2017)?

One answer only

1. Yes, an internal audit
2. Yes, an audit by third party
3. No

EM2. Does your company implement smart system(s) for management and monitoring of energy consumption regarding:

Tick all that apply

1. Process heating, cooling and refrigeration systems
2. Facility HVAC (Heating, ventilation, and air conditioning)
3. Facility lighting
4. Other plant-wide systems
5. We do not have such smart system(s)
6. Don't know

EM3. Which statement best describes your company's management decision-making process.

One answer only

1. Energy use and consumption is increasingly becoming a higher priority for the company

¹⁵ Energy costs refer to cost of all energy resources, used by your company, incl. for manufacturing processes, facility heating, ventilation, lightening, etc.

2. Management from time to time has supported projects to improve energy use and consumption
3. Energy use and consumption are rarely a part of management decision making

EM4. Does your company have a certified Energy Management System according to ISO 50.001 "Energy management"?

One answer only

1. Yes
2. No

Only for answers "Yes" of question EM4

EM5. What influenced the company's decision to implement a certified Energy Management System according to ISO 50.001 "Energy Management"?

Tick all that apply

1. Legal requirements
2. Industry standards
3. Due to headquarter's decision (if applicable)
4. Customers' requirements
5. We wanted to improve the general competitiveness of the company
6. We wanted to lower the cost of energy consumption of the company
7. We wanted to decrease the production cost of our products/services
8. It's part of an overall corporate sustainability policy
9. As result of government incentives' programme

EM6. Has your company set goals for improving its energy use?

One answer only

1. Yes	Continue with the next question
2. No	SKIP the next question
3. Don't know	

EM7. Are these goals quantitative (e.g., 10% improvement)?

One answer only

1. Yes
2. No

3. Don't know

EM8. How strong influence have the following factors had on the energy use of your company in 2017?

Use a scale from 1 to 5, where 1 means "Not at all" and 5 "Very strong"

Tick all that apply

	1 Not at all	2	3	4	5 Very strong
1. Legal obligations	1	2	3	4	5
2. Industry standards	1	2	3	4	5
3. Corporate policy	1	2	3	4	5
4. Customer requirements	1	2	3	4	5
5. Government incentives	1	2	3	4	5
6. Price of energy resources	1	2	3	4	5
7. Practices of other companies in our sector / region					

EM9. Does your company measure regularly its carbon footprint?

One answer only

1. Yes
2. No

EM10. How relevant are the following practices to your company?

One answer per each row; Use a scale, where 1 = Irrelevant, 5 = Highly relevant

	1 Irrelevant	2	3	4	5 Highly relevant
Calculation of energy costs for new product/services during the development processes	1	2	3	4	5
Post calculation: Comparison of actual and planned costs in order to identify significant deviations	1	2	3	4	5
Fair allocation of indirect energy costs (e.g.	1	2	3	4	5

facility heating, ventilation, air conditioning, and lighting) to products/services and/or to their final costs					
Calculating energy footprint of a product/service regarding the energy consumption accumulated over all the supply chain	1	2	3	4	5
Exchanging information concerning the energy demand across the energy supply chain (e.g. with the energy supply company, smart grid)	1	2	3	4	5

EM11. Does your company purchase renewable (or green) electricity?

Only one answer

1. There is no such option, offered by our power supplier
2. Yes, we purchase partially renewable (green) electricity
3. Yes, we purchase entirely renewable (green) electricity
4. No, we don't purchase renewable (green) electricity
5. Don't know

ENERGY EFFICIENCY

EE1. In the last three years (2015-2017), has your company implemented any measures to improve its energy efficiency?

One answer only

1. Yes	SKIP question EE2
2. No	Continue with question EE2

EE2. If not, why?

Tick all that apply

1. Already done more than 3 years ago
2. Not economically feasible for our company nowadays
3. The price of major energy sources, we use, is low enough
4. Too long payback period
5. No subsidies available / Administrative burdens in the access to subsidies
6. Barriers to access financing
7. Little awareness of the top management
8. Doubts on impact on our products/services

9. Insufficient knowledge on the topic (opportunities, advantages, procedures, technologies, etc.)
10. Other, please specify

EE3. Are you planning to implement energy efficiency measures at your company in next few years?

1. ~~Yes, we have started practical procedures~~
2. ~~Yes, we have planned this and will start soon~~
3. ~~Yes, we already explored the opportunities but haven't made any particular plans~~
4. ~~Yes, we would like to do it~~
5. ~~No~~

Only for answer "YES" of question EE1

EE4. What kind of energy efficiency measures has your company implemented?

Tick all that apply

1. Measures towards facility HVAC (Heating, ventilation, and air conditioning)
2. Measures towards facility lighting
3. Measures towards manufacturing processes and on-site services and infrastructure
4. Measures towards organisation of business processes
5. Other, please specify

Only for answer "YES" of question EE1

EE5. Did you achieve the expected results from the implementation of the energy efficiency measures?

One answer only

1. Yes, fully
2. Yes, partially
3. Not at all

Only for answer "YES" of question EE1

EE6. How did your company finance the implementation of the energy efficiency measures in the last three years (2015-2017)?

One answer per each row

	Primarily (more than 50%)	Partially (10%- 50%)	Very limited (up to 10%)	Not used	Don't know
Own financing	1	2	3	4	5

Bank credit	1	2	3	4	5
Financial assistance from specific national/local programme (e.g. low-rate loans, tax credits, rebates, subsidies)	1	2	3	4	5

Only for answer "YES" of question EE1

EE7. What was the main motivation for investing in energy efficiency?

Tick all that apply

1. Ageing of the equipment
2. Legal obligations
3. Reduction of energy costs
4. Reduction of production costs
5. Improvement of the company competitiveness and reputation through enhancing the sustainability of our products/services, manufacturing process and value chain
6. Other:

EE8. Is energy efficiency a part of your company's purchasing decision?

One answer only

1. Yes, always
2. Yes, sometimes
3. No

SUSTAINABILITY POLICY

SP1. Beside the energy efficiency measures, has your company implemented any of the following measures to reduce its carbon footprint over the last three years (2015-2017)?

One answer per row

	Yes	No	Don't know
1. Using low-carbon company transport (incl. hybrid or e-vehicles)	1	2	3
2. Using low-carbon transportation on-site (e.g. electric trucks, biogas transport)	1	2	3
3. Sustainable use and management of resources, used in the manufacturing processes	1	2	3
4. Reducing production waste/losses	1	2	3
5. Introducing non-waste technologies	1	2	3

6. Introducing other measures	1	2	3
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SP2. In the last three years (2015-2017) has your company introduced any technologies or production / business processes regarding:

Tick all that apply

1. Air-pollution control
2. Separated waste collection
3. Greenhouse gas emissions reduction
4. Reduction of the energy intensity of manufacturing activities
5. Recycling of waste/scrap products
6. Reutilization of industrial waste
7. Utilization of the waste heat

Only for answers YES of question SP1

SP3. Did you achieve the expected results from the implementation of the measures for reducing the carbon footprint?

One answer only

1. Yes, fully
2. Yes, partially
3. Not at all

Only for answers YES of question SP1

SP4. What was the main motivation for implementing the measures for reducing the company's carbon footprint?

Tick all that apply

1. Legal obligations
2. Industry standards regarding the production and provision of services
3. Reduction of energy costs
4. Reduction of production costs
5. Improvement of the company competitiveness and reputation through enhancing the sustainability of our products/services, manufacturing process and value chain
6. Implementation of a Corporate social responsibility strategy
7. Other:

MOBILITY

M1. How many own freight and passengers vehicles, not used on-site, does your company have?

1. Don't have
2. Less than 5
3. 5 - 10
4. 11 - 50
5. More than 50
6. Don't know

Only for answers "2. Less than 5" to "5. More than 50" of question M1

M2. What share of the company's own vehicles (not used on-site) are:

One answer per each row

	Less than 5%	5%-30%	31%-50%	More than 50%	Don't have
1. Hybrid vehicles					
2. Electric vehicles					
3. Using biogas					
4. Using CNG or LPG					

M3. Does your company have a corporate policy for incentivising its staff to use low-carbon mobility options (e.g. public transport, bicycles, walking, hybrid or electric vehicles, car-sharing bike-sharing)

One answer only

1. Yes
2. No

M4. If your company bought new freight or passenger vehicles in the last five years (2013-2017), have the environmental criteria been considered as important in the selection process?

One answer only

1. Yes, as one of the main criteria
2. Yes, partially
3. Not at all
4. Our company did not buy new vehicles

COMPANY INFORMATION

I2. How many employees work in your company?

One answer only

1. 1-10
2. 11-50
3. 51-250
4. 251-500
5. More than 500

I4. Which economic sector does your company belong to:

One answer only

1. Agriculture, forestry and fishing
2. Mining and quarrying
3. Manufacturing
4. Electricity, gas, steam and air conditioning supply
5. Water supply; sewerage, waste management and remediation activities
6. Construction
7. Wholesale or retail trade
8. Services / repair of motor vehicles and motorcycles
9. Other services

Only for answer "3 = Manufacturing" of question I4

I4a. ~~The main economic activity of your company includes manufacturing of:~~

- ~~1. Food~~
- ~~2. Beverages~~
- ~~3. Tobacco products~~
- ~~4. Textiles and wearing apparel~~
- ~~5. Leather and related products~~
- ~~6. Wood and of products of wood and cork, except furniture~~
- ~~7. Paper and paper products~~
- ~~8. Printing and reproduction of recorded media~~
- ~~9. Coke and refined petroleum products~~
- ~~10. Chemicals and chemical products~~
- ~~11. Basic pharmaceutical products and pharmaceutical preparations~~
- ~~12. Rubber and plastic products~~
- ~~13. Other non-metallic mineral products~~
- ~~14. Basic metals~~
- ~~15. Fabricated metal products, except machinery and equipment~~
- ~~16. Computer, electronic and optical products~~
- ~~17. Electrical equipment~~
- ~~18. Machinery and equipment n.e.c.~~
- ~~19. Motor vehicles, trailers and semi-trailers~~

- ~~20. Other transport equipment~~
- ~~21. Furniture~~
- ~~22. Repair and installation of machinery and equipment~~
- ~~23. Other manufacturing~~

Only for answer "9 = Other services" of question I4.

I4b. Which of the following services is the main economic activity of your company:

- ~~1. Transportation and storage (incl. postal and courier activities)~~
- ~~2. Accommodation and food service activities~~
- ~~3. Information and communication¹⁶~~
- ~~4. Financial and insurance activities~~
- ~~5. Real estate activities~~
- ~~6. Professional, scientific and technical activities¹⁷~~
- ~~7. Administrative and support service activities¹⁸~~
- ~~8. Public administration and defence; compulsory social security~~
- ~~9. Education~~
- ~~10. Human health and social work activities~~
- ~~11. Arts, entertainment and recreation~~
- ~~12. Other, pls. specify~~

I5. Which is your company's major market?

One answer only

- ~~1. Local / regional market (up to about 100 km around)~~
- ~~2. National market~~
- ~~3. European countries (EU and non-EU)~~
- ~~4. Country/countries outside Europe~~

I6. Your company is:

One answer only

- 1. More than 50% owned by domestic individuals, companies or organisations
- 2. More than 50% owned by foreign individuals, companies or organisations

¹⁶ incl. publishing activities, programming and broadcasting activities, telecommunications, computer programming, information services

¹⁷ incl. legal and accounting, architectural and engineering, advertising, market research, scientific research and development, veterinary activities

¹⁸ Incl. rental and leasing, employment activities, travel agencies, security and investigations

17. Is your company part of:

One answer only

1. ~~Larger domestic company~~
2. ~~Larger foreign / multinational company~~
3. ~~None of the above~~

18. The ownership of your company is:

One answer only

1. More than 50% private
2. More than 50% state-owned

19. Your position in the company corresponds to:

One answer only

1. ~~Top-level / executive management (CEO, (vice-)director, (vice-)president, (co)owner)~~
2. ~~Middle-level management (head of department or major unit, project manager, etc.)~~
3. ~~Employee~~
4. ~~Administrative staff (e.g. administrative secretary)~~
5. ~~Other, pls. specify~~

13. What was your annual company turnover for 2017?

One answer only

1. up to 500 thousand euro
2. from 500 thousand to 1 million euro
3. from 1 to 2 million euro
4. from 2 to 10 million euro
5. from 10 to 50 million euro
6. from 50 to 200 million euro
7. more than 200 million euro

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