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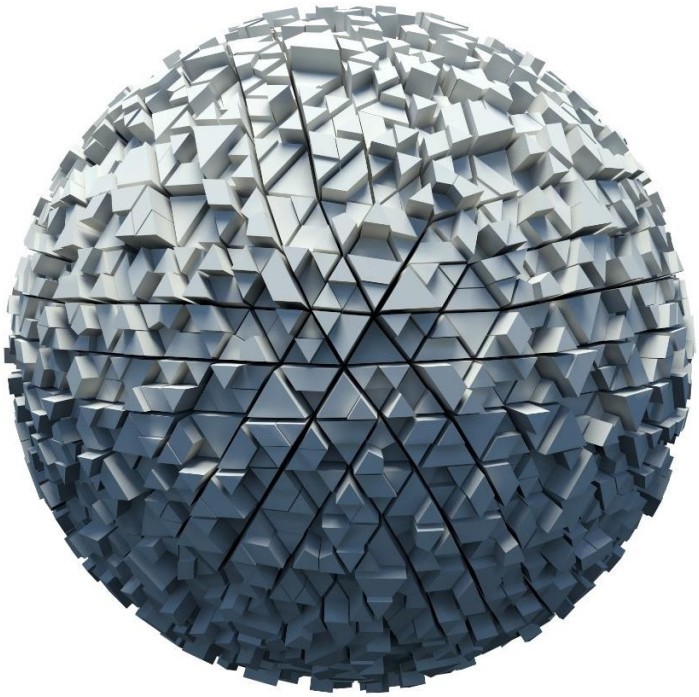

Energy Effiency4SMEs Project

Work Package 5: High-level Economic Study on energy efficiency in Accommodation and Manufacturing

12 October 2023

Scope of Work

This high-level report forms part of a request submitted by the Malta Business Bureau (MBB) as part of their participation in a European Union Life-funded (Grant agreement n° 101076459 LIFE21-CET-AUDITS) project titled EnergyEfficiency4SMEs, as part of a consortium of over 20 institutions across Europe.

The purpose of the project is to carry out initial research on energy efficiency amongst business operators in nine[1] partner countries of the consortium in the following segments/NACE codes:

- Accommodation and food service activities (NACE codes: I55 to I56.3.0)
- Manufacturing – Agri-food (NACE codes: C10 to C11.0.7)
- Manufacturing – Metalwork (NACE codes: C24 to C25.9.9)

The purpose of this initial analysis is to support the MBB, and the other partners in the project consortium, in presenting an initial state of play report for energy efficiency measures in the sectors and NACE codes mentioned above, by:

(i) Identifying business needs in terms of energy efficiency projects.
(ii) Identifying business needs in terms of financing of projects.
(iii) Analysing the financing options available for business operators in the respective participating countries.
(iv) Potential policy and financing recommendations for energy projects in the relevant businesses.

In order to achieve this goal, the following workstreams were undertaken to deliver this report:

- **Work stream 1 |Review documentation provided by Project partners**.

  A self-asssment questionnaire was circulated among Business operators, present in the 9 participating countries, and a thorough analysis of the results was made. Such analysis consisted of an initial assessment by Project partners of the results of the financing mechanisms available in each country and fact sheets provided by Project partners related to the sectors identified by the EE4SMEs project.

- **Work stream 2| Carry out further in-depth analysis and desktop research**

  We carried out a more in-depth analysis of the different financing instruments and mechanisms present in the nine partnering countries on behalf of the Project consortium, utilising publicly available information, official statistics on Eurostat and, when and where possible, national statistics offices.

[1] There are over 20 partners from 9 different European Union members states namely Austria, Bulgaria, Cyprus, Estonia France, Germany, Italy, Malta and Spain.

Limitations of Initial Study

This is an initial high-level analysis which gives an initial as is situation. It must be pointed out that no regional analysis was carried out. Limitations were experienced in terms of the scale of the larger countries, which meant that regional analyses were neither feasible nor requested and were outside of the scope of the study. Limitations were also present regarding the access to information about financing mechanisms and measures in a number of countries. Every care was taken to ensure the reliability of the data provided by the project partners. Project partners should use this document as an initial assessment which is not intended to be a conclusive report.

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1 Introduction - The Key Challenges in Financing the Transition

Facilitating access to energy efficiency financing needs to become a key priority at the EU and Member State level, and a set of key actions needs to be taken to get on track to meet the EU's long-term targets. Since various barriers are limiting the attractiveness to traditional private investors of financing energy efficiency measures (such as long payback periods, uncertain energy prices, lack of relevant and understandable information for investors, etc.), an efficient financing framework needs to be developed to ensure an optimal interplay between public and private actors.

Energy efficiency faces one of the largest investment gaps, estimated at around €185 billion annually according to the European Commission. Yet, the total annual investment by public banks and other financial intermediaries remains well below the amount required. Ramping up funds and facilitating the access to energy efficiency financing needs to become a key priority at the EU and at Member State level. Public funds alone cannot finance all the necessary energy efficiency measures.

The public sector needs to act as a catalyst, boosting private financing to close the investment gap through:

- Tailor-made solutions provided by closer public-private collaboration need to be developed to drive broader investments in energy efficiency;
- SMEs deserve particular attention. SMEs represent 99% of all companies in the EU, but only 64% of all SMEs are taking action to save energy, compared to 82% of large companies. Therefore, specific support needs to be offered to SMEs, among others, through intelligent project pooling structures and bundling mechanisms.
- Innovative financing mechanisms need to be put in place and promoted in order to overcome existing market failures and to unlock the significant energy efficiency potential, in particular in the building sector. Such innovative mechanisms include energy performance contracting mechanisms (EPCs), green bonds, etc. The latter constitute promising investment products for companies with green bond issuance increasing in the last years.

2 Economic Analysis

A high-level analysis of the segregation of the three identified sectors needed to be carried out in order to understand the impact each sector has on each relevant partner country in the project. For this reason, official Eurostat was utilised for the period 2019-2022 to understand the percentage share in terms of Gross Value Added (GVA) each Sector/NACE Code represents in each participating country.

Regional segmentation was not carried out. It is nonetheless clear that the partner countries which are based in the southern European area, and Mediterranean Island states (namely Malta and Cyprus), were more dependent on the Accommodation and food service sector than the ones based in the North or Central Europe. This is due to intrinsic dependence on Tourism, especially in the peak summer months.

Furthermore, it must be noted that the global COVID-pandemic which disrupted the economies as whole had a material higher impact on Tourism and travelling than Manufacturing during the period 2020 - early 2022. This means that for completeness's sake, available 2019 figures are being analysed as the last calendar year in which the pandemic had little to no disruption on the economic progress of these sectors.

In 2019, GVA in the accommodation and food service activities as a % of total Gross Value Added ranged from a high of 7.1% in Cyprus and a low of 1.6% in Germany with the European Union (EU) 27 average standing at 2.9%. In absolute terms, Spain generated almost €73billion in GVA from this sector in 2019.

In the two industrial segments included in this project, Agri-food and Metalwork, one can immediately note that the highest dependency in terms of value added generated by Agri-food is in Bulgaria at 2.4%. This denotes the higher dependency on agriculture and related industrial and food processing sectors in the country. Other countries which have shifted towards a more service-oriented sectors such as Malta stands at 1.2% of total GVA in the country. One must also note that due to the territorial size of Malta (which stands at a total area of 316 square kilometres), there is a limitation on the size of the agricultural sector and the processing of the same raw materials into industrial food products.

Strong food and beverage processing and producing countries such as Germany, France, Spain and Italy were the biggest contributors in absolute terms totalling over 60% of total GVA produced in the agri-food sector.

In terms of manufacturing of metals and fabricated metal products, Austria generated 3% of its total GVA from this sector with the lowest national market share noted in Malta at 0.5% of the total. In absolute terms, Germany generated €79 billion in GVA from this sector, which was over 31% of the total EU 27 value added produced by the sector.

The table below summarises the full list of available data per country and NACE code in terms of the % of Gross Value Added per sector as a share of total GVA per country.

Country	NACE code	2020	2021	2022
European Union - 27 countries (from 2020)	Manufacture of food products; beverages and tobacco products	2.1	:	:
European Union - 27 countries (from 2020)	Manufacture of basic metals and fabricated metal products, except machinery and equipment	1.9	:	:
European Union - 27 countries (from 2020)	Accommodation and food service activities	1.8	2.0	:
Bulgaria	Manufacture of food products; beverages and tobacco products	2.7	2.2	:

Bulgaria	**Manufacture of basic metals and fabricated metal products, except machinery and equipment**	2.2	2.3	:
Bulgaria	**Accommodation and food service activities**	1.7	2.3	:
Germany	**Manufacture of food products; beverages and tobacco products**	1.7	:	:
Germany	**Manufacture of basic metals and fabricated metal products, except machinery and equipment**	2.3	:	:
Germany	**Accommodation and food service activities**	1.0	1.0	:
Estonia	**Manufacture of food products; beverages and tobacco products**	1.9	1.7	1.7
Estonia	**Manufacture of basic metals and fabricated metal products, except machinery and equipment**	1.8	1.9	2.0
Estonia	**Accommodation and food service activities**	1.2	1.2	1.6
Spain	**Manufacture of food products; beverages and tobacco products**	2.4	:	:
Spain	**Manufacture of basic metals and fabricated metal products, except machinery and equipment**	1.6	:	:
Spain	**Accommodation and food service activities**	3.2	4.4	:
France	**Manufacture of food products; beverages and tobacco products**	2.2	1.9	:
France	**Manufacture of basic metals and fabricated metal products, except machinery and equipment**	1.0	1.1	:
France	**Accommodation and food service activities**	2.0	2.1	:
Italy	**Manufacture of food products; beverages and tobacco products**	2.0	1.8	1.6
Italy	**Manufacture of basic metals and fabricated metal products, except machinery and equipment**	2.6	3.1	2.9
Italy	**Accommodation and food service activities**	2.6	2.9	3.4
Cyprus	**Manufacture of food products; beverages and tobacco products**	1.9	:	:
Cyprus	**Manufacture of basic metals and fabricated metal products, except machinery and equipment**	0.8	:	:
Cyprus	**Accommodation and food service activities**	2.3	3.2	:
Malta	**Manufacture of food products; beverages and tobacco products**	1.1	1.0	1.1
Malta	**Manufacture of basic metals and fabricated metal products, except machinery and equipment**	0.5	0.4	0.4
Malta	**Accommodation and food service activities**	1.6	2.3	3.9
Austria	**Manufacture of food products; beverages and tobacco products**	2.0	1.9	:
Austria	**Manufacture of basic metals and fabricated metal products, except machinery and equipment**	2.9	3.0	:
Austria	**Accommodation and food service activities**	3.8	3.4	:

Source: Eurostat

2.1 Sectoral Analysis

In analysing the business needs in terms of energy efficiency, we decided to carry out a sector-by-sector analysis related to the three identified sectors in this project through public available and Deloitte proprietary data. This analysis was further augmented with documentation provided by the Project partners in the form of:

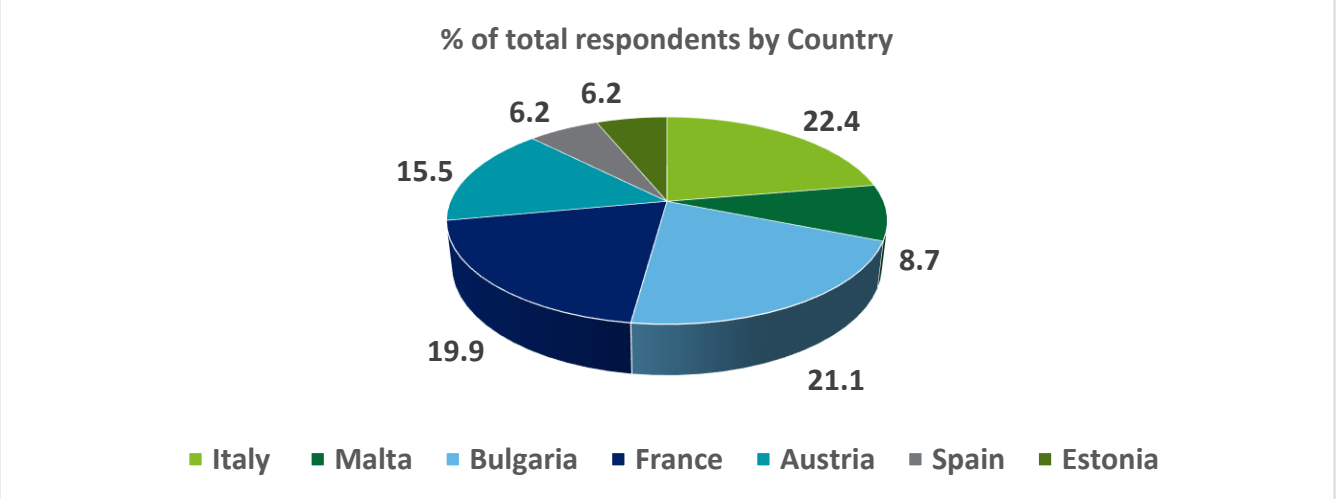
1) a self-assessment questionnaire which collated data from the business operators in the participating countries in the project;
2) sectoral information provided through other EU funded projects, namely the EUREMplus project[2], which Energieinstitut der Wirtschaft GmbH (EIW[3]) has developed fact sheets on energy efficiency for the following branches relevant within the EE4SMEs project: namely Bakeries; Metal Processing; Meat Processing and Hotels and Tourism
3) Other publicly available data.

2.1.1 High-level Analysis of the Self-Assessment Questionnaire[4]

As part of the project deliverables namely deliverable (D)2.1, the project partners carried out an initial assessment by means of sector specific questionnaires focusing on the knowledge and previous project experience in terms of energy efficiency uptake in their respective companies.

In total, and at the time of writing 161 responses had been collected with the results being reproduced in the tables below and further explanation below. It must be noted that given the small sample size and strong bias towards a number of larger participating countries, results must be analysed with caution.

The vast majority of responding operators hailed from Italy, Bulgaria and France representing more than 60% of total responses.



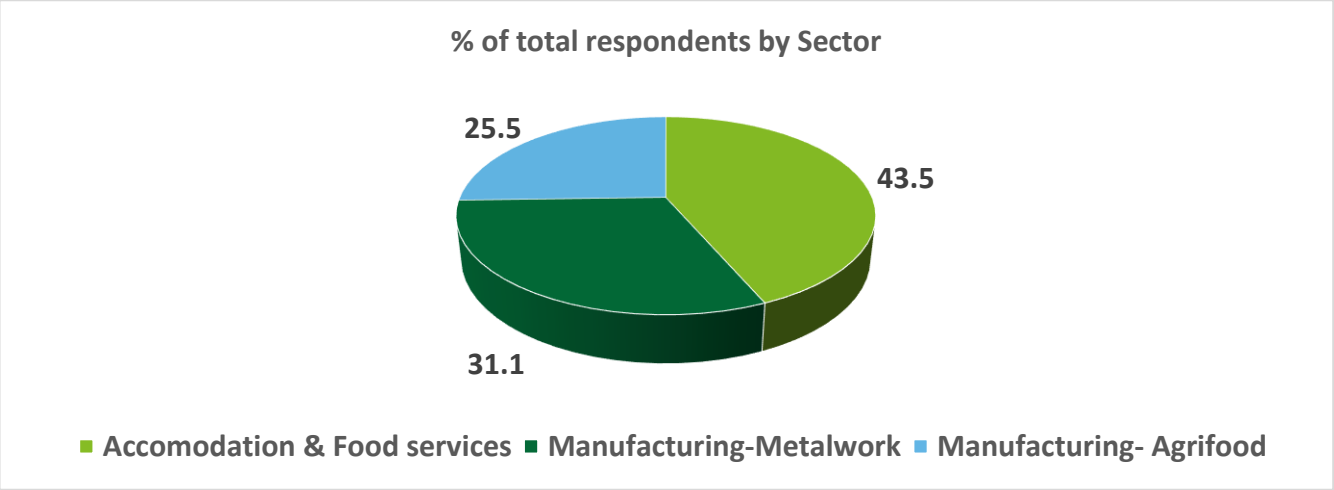
Source: EE4SME Self-assessment questionnaire- carried out between March and May 2023.

[2] EUREMplus | Energieinstitut der Wirtschaft

[3] Note: EIW an Austrian not for profit organisation owned by the Austrian Federal Economic Chamber (WKO), the Association for the Electrical and Electronics Industries (FEEI), Federation of Austrian Industries (IV) and Working Group "Agenda for Sustainability in Beverage Packaging" (ARGE)

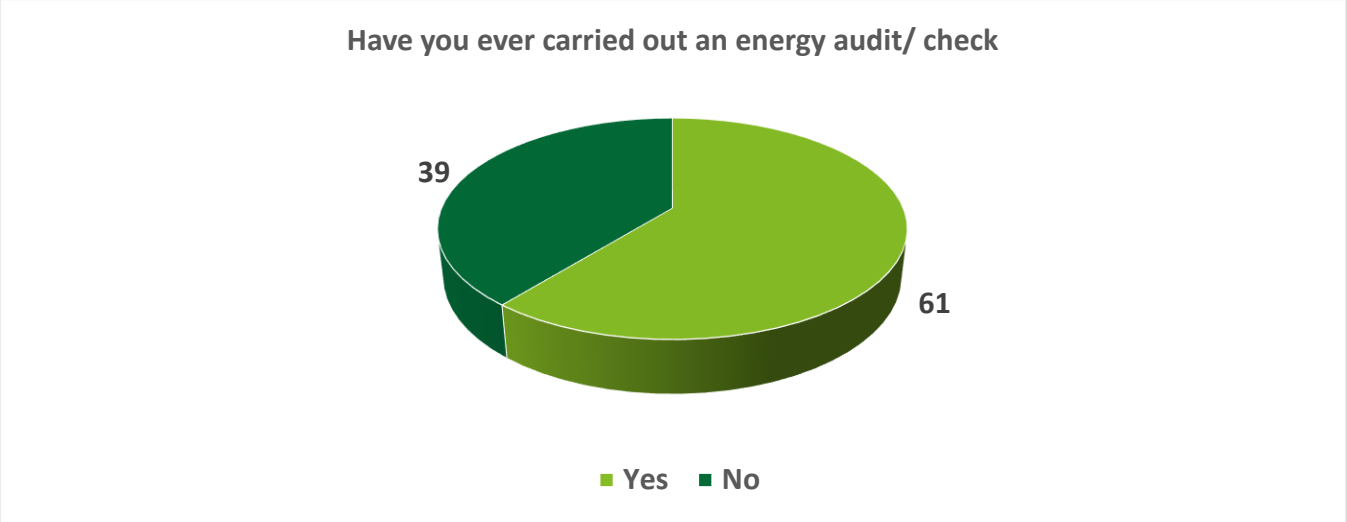
[4] See Full list of questions of the EE4SMEs project self-assessment questionnaire in Appendix 6.1

Sectoral segmentation in terms of responses resulted in a very good mix of responses with the Hospitality and food services sector representing 43.5% of total responses. This is also reflective of the partners' configuration with a number of them originating from countries that rely heavily on local and foreign tourism.

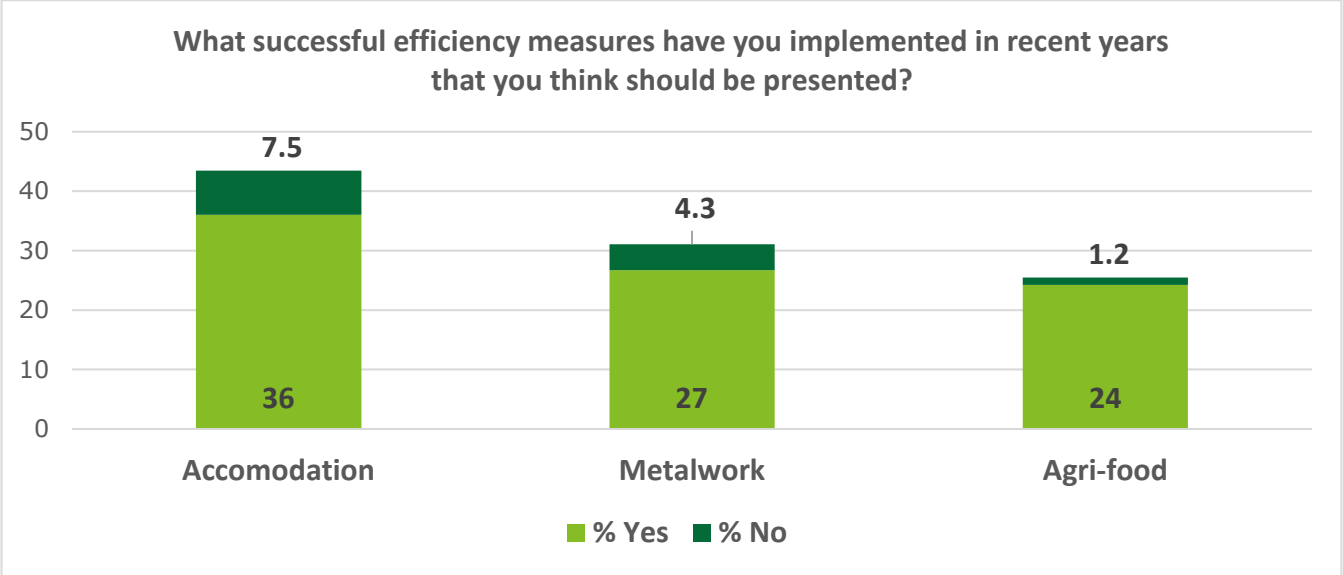


Among other deliverables, the EES4SMEs project will be focusing, in offering the opportunity for business operators to carry out an energy audit. It was noted that in the question on whether operators had carried out an energy audit or check, 61% replied in the affirmative with the remaining 39% replying that they had never done so. This shows that there's still a cohort of companies that would require to be hand-held in carrying out an initial energy consumption analysis. This further reaffirms the importance that EU funded projects such as EE4SMEs have in continuing to reach out through similar services in the wider Small and Medium Enterprise community.

Furthermore, it should be noted that more than 50% of those who replied that they have never carried an energy audit/check originated from the Hospitality and food services sector. This further shows the tendency for industry and manufacturing to have more in-house energy expertise. As a result of the nature of the productivity and higher energy dependency on their overall cost structure, more due attention is levelled by manufacturing companies towards analysing consumption. On the other hand, due to the variety of sizes and different offerings to the clients, Hospitality and food services businesses tend to focus less on utilities costs and rarely have internal expertise to carry out an initial scoping exercise.



In terms of the financing of the projects already carried out, the vast majority of respondents said that they had undertaken some investments. A total of 88% of respondents said they had carried some form of investment with 13% stating that they had not carried out any energy efficiency investments or measures.

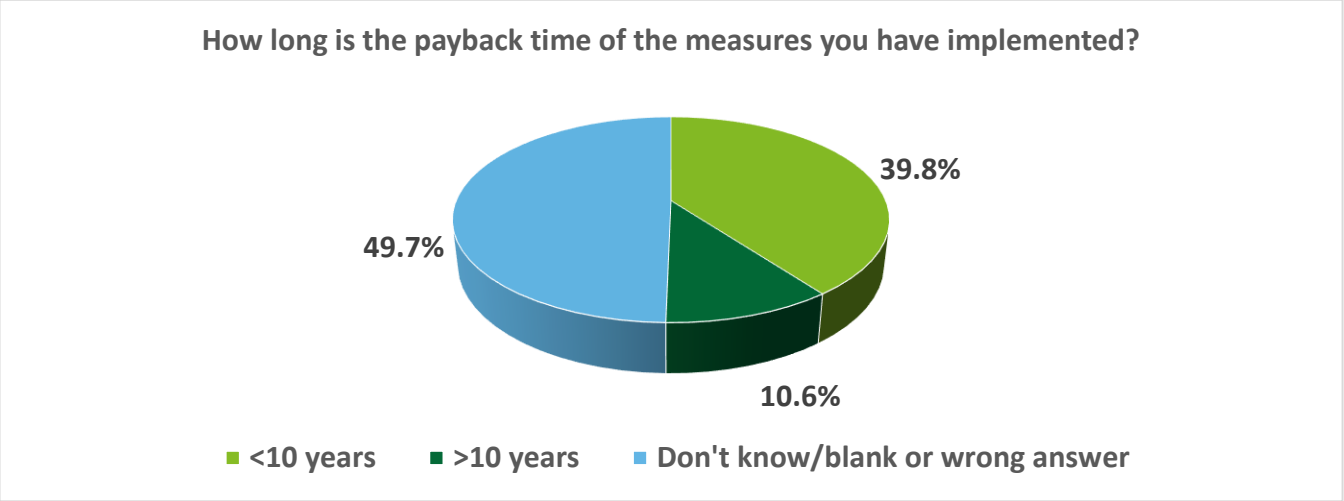


It is interesting to note that most of those who responded that they implemented some form of measures can be grouped into five main categories, namely:

- Lighting systems in the form of investment in LED lighting.
- Solar energy in the form of photovoltaics and solar heating.
- Insulation e.g. Installation of new windows/apertures (double glazing) and new outside wall and roof thermal insulation.
- Heating systems in the form of geothermal, heat pumps using other sources such as air or water and other heat recovery systems.
- Replacement of old machinery with new equipment, especially boilers and chillers

It is to be noted that very few respondents reported any investments in mobility and transportation such as investments in e-vehicles, charging points, car sharing etc. It must also be noted that in view of the costs required, very few operators reported any initiatives in carrying out a deep renovation of their commercial premises. As explained earlier in the report, buildings renovation together with transportation could have some of the best results in terms of energy savings.

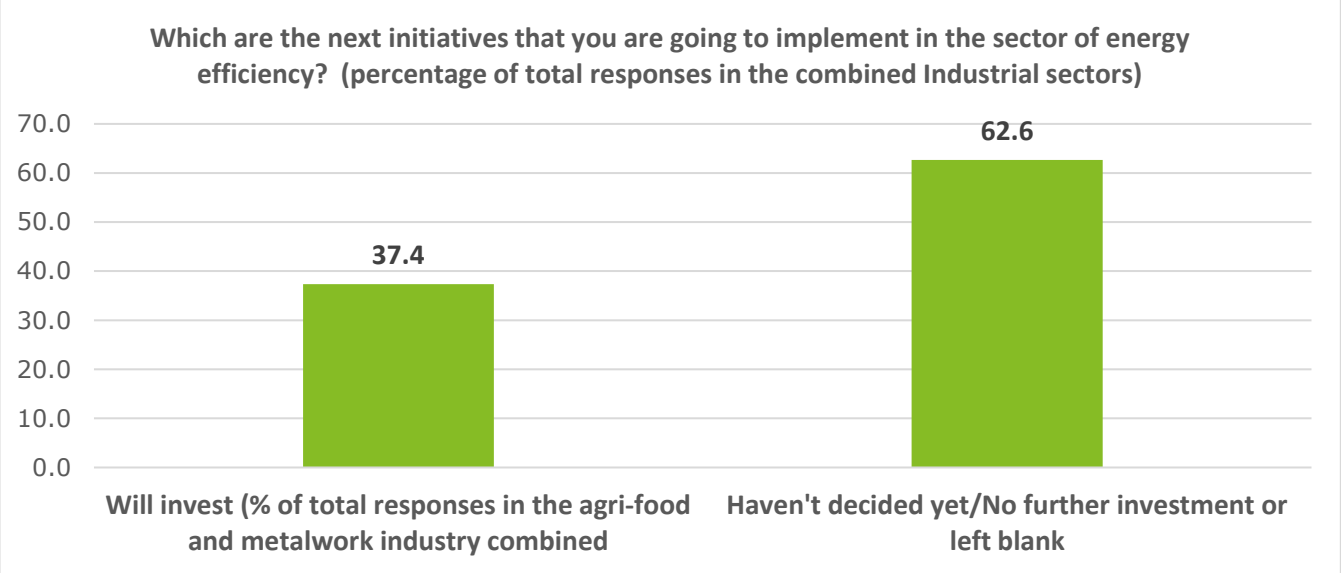
Furthermore, almost 50% of respondents could not answer the question related to the amount of years expected to amortise the investment made, with 40% saying that they expect to see a payback time of less than 10 years and slightly less than 11% saying that expect a payback of over a decade.



This further denotes that business operators in all the three sectors being analysed by this project, require further support in deciding which energy efficient measure/s should be undertaken at the initial stages of investment. This needs to be coupled with financing literacy support on how to measure payback time and ideally a return on the investment given that the former does not take into consideration inflation over time.

The EE4SMEs consortium partners are best suited to undertake an outreach programme with the sectors under review. This in order to offer to operators more feedback, specialised expertise and inputs on which investments to carry out initially, the so called '*low hanging fruits*' for the same businesses to undertake within their operations.

When the operators were asked *'which are the next initiatives that you are going to implement in the sector of energy efficiency',* the combined metalwork and agrifood industry respondents replied as follows:



One can immediately notice the Manufacturing segment participating in this project is less inclined to invest further in energy efficiency. This could have resulted from a range of factors including previous or recent investments, lack of future planning, lack of current cashflow/own equity to invest in the project, negative experiences or higher expectations with past investments, lack of financial incentives in the respective countries etc.

Out of those that replied that will be investing further in energy efficiency, almost 60% said that they will be investing in either extending their existing photovoltaic capacity or implementing a new project. Given this strong propensity to invest more in solar energy, further feedback and guidance by the Project partners should be offered to the industrial operators in terms of existing financing options in solar energy and whether this investment makes sense from a payback, energy saving and cost point of view in all the regions being covered. This especially for industry based in the Northern and Eastern region of the European Union where solar radiance is less present than the Mediterranean area.

On the other hand, the Hospitality and food services sector shows more willingness and interest in investing further in improving their energy consumption with over 54.3% of respondents in this sector confirm future investments. On the other hand, slightly less than 46% stated that they are not planning to invest at this stage or left the answer blank.

When analysing the replies in greater detail, there was a good mix of answers in terms of the types of investment they expect to undertake. Solar energy generation through photovoltaic installations mainly, featured in 42% of those who state they will be investing further in new measures. Moreover, green mobility and transport featured in almost one-fifth of the responses. This mainly reflected the hospitality sector's interest in terms of investing in charging stations on their premises or further investment by the accommodation and restaurants/other catering establishments to purchase e-vehicles, most possibly as either to use for transfers or transportation of Hospitality guests or as a means to deliver food products by restaurants and catering establishments.

2.1.2 Agri-food Industry

The agri-food industry is one which is quite fragmented incorporating diverse sectors from the processing and preserving of meat and production of meat products, manufacturing of bakery and other confectionary products to the production of non-alcoholic and alcoholic beverages.

As can be seen in the previous economic analysis, the agri-food industry remains strong in terms of Gross Value added in a number of European Union Members states. With a total Gross Value Added of around €251 billion in 2019 and 2020 across all the EU member states, NACE codes C10-12 remain very important contributors in terms of food and beverage security and supply to the European continent and beyond and in terms of keeping the agricultural, rural development and animal husbandry sector in Europe sustainable. Furthermore, the sector employs almost 1.8 million individuals as per 2019 figures. 2020 figures, in view of the COVID pandemic must be analysed with caution as the sector has rebounded, but data is not yet available for the year 2022.

Total Employment in thousands[5]

Country	2019	2020	2021	2022
Bulgaria	114.89	110.71	115.34	:
Germany	941 (P)	924 (P)	:	:
Estonia	15.12	14.89	14.59	:
Spain	442.20	437.9 (P)	:	:
France	652.00	658.00	685 (P)	703 (P)
Italy	482.50	479.00	477.60	:
Cyprus	14.26 (P)	14.18 (P)	14.22 (P)	:

[5] National accounts employment data by industry (up to NACE A*64): Statistics | Eurostat (europa.eu)

Malta	3.72	3.63	3.71	3.74
Austria	86.33	85.45	85.62	:
Total	**1,797**	**1,352**	**N/A**	**N/A**

Source: Eurostat

As explained previously, the agri-food sector in Europe is varied, but one thing that is common to all sub-sectors in the industry is its energy consumption. According to available Final Energy Consumption (FEC) data, the sector, which also includes the tobacco sub-sector, represents around 11.62% of total FEC in 2021 in Industry as can be seen from the table[6] below.

Total final energy consumption by industrial sector, EU, 2021 (PJ)		
	2021	**% of total**
Iron and steel	1,027.2	*10.22%*
Chemical and petrochemical	2,158.7	*21.48%*
Non-ferrous metals	389.4	*3.87%*
Non-metallic minerals	1,419.5	*14.13%*
Transport equipment	301.6	*3.00%*
Machinery	670.1	*6.67%*
Mining and quarrying	155.2	*1.54%*
Food, beverages and tobacco	1,168.0	*11.62%*
Paper, pulp and printing	1,361.1	*13.55%*
Wood and wood products	388.8	*3.87%*
Construction	428.0	*4.26%*
Textile and leather	129.1	*1.28%*
Other	451.8	*4.50%*
Total	10,048.2	[7]

Source: Eurostat

Given the nature of the sector, there's a heavy reliance on energy use. In the case of the agri-food segment, most energy is commonly used in the following areas namely ovens (in the case of confectionaries and other baked goods), electric motors and appliances, refrigeration, lighting, cooling and heating, hot water and transportation of raw materials and finished products.

It is therefore clear that the focus needs to be in these areas whether in terms of initiatives or measures to be undertaken:

- Chillers and Heat Pumps: Consider heat recovery from baking ovens or cooling systems to support hot water generation or heating. Furthermore, the operators should ensure proper selection of temperatures for heating and cooling.
- Installation of LED Lighting.
- Roof, walls and apertures insulation.
- Transportation and Green Mobility: In case new vehicles are purchased, take alternatively powered ones (electric, hybrid, CNG, LPG, biofuels) into consideration.

[6] Final energy consumption in industry - detailed statistics - Statistics Explained (europa.eu)

[7] A petajoule, abbreviated as PJ, is a unit of measurement of energy consumption: a petajoule is equal to one million billion joules.

2.1.3 Metalwork Industry

The Metalwork manufacturing sector represented close to 2% of Gross Value Added in 2020, or slightly less than €250 billion in the EU 27 in 2019, according to Eurostat figures.

In terms of employment the sector employs in excess of 2.8 million individuals in 2019 in the nine countries participating in the project. Figures for 2020 and 2021 should be analysed with caution due to the Covid-19 pandemic with 2022 figures not yet released. We estimate that employment figures have remained relatively stable from 2023 onwards.

Total Employment in thousands[8]

Country	2019	2020	2021
Austria	118	115	116
Bulgaria	73	70	69
Cyprus	4.7 (P)	4.6 (P)	4.7 (P)
Estonia	15.8	16	17
France	389	374	367 (P)
Germany	1,205 (P)	1,154 (P)	:
Italy	700	704	708
Malta	1.6	1.6	1.7
Spain	316	302 (P)	:
Total (EU 27)	4,629	4,447	:
Total (9 participating countries)	**2,823**	**2,742**	**:**

The metal and especially the steel industry is renowned for being an energy intensive sector and one of the main contributors in terms of carbon emissions. In relation to energy consumption, iron and steel production represented over 10.2% of total industry FEC in 2021. The sector consumes a high level of energy in terms of heating and processing heat due to the use of furnaces and smelters to melt the different ores.

It is clear that process optimisation in the heating processes and further investment in newer equipment would alleviate the high energy demand from the segment.

In terms of saving measures[9] related to heating some of the following can be applied:

- Optimise the temperature levels.
- Optimise settings according to operating times (summer & winter, weekend, night set-back).
- Respect the periodic service intervals for the heating system.
- Check heating system (e.g. dimensioning, insulation of pipes).
- Use of thermostatic radiator valves.
- Separate heating circuits, if required, and control them individually.
- Use circulation pumps with speed regulation.
- Consider draught proofing windows and doors, or replacing them with energy efficient ones.

[8] Statistics | Eurostat (europa.eu)

[9] EUREMplus | Energieinstitut der Wirtschaft – refer to the Metalworking handbook

- Insulate external walls and top ceiling.

2.1.4 Hospitality and Food Services

The HORECA (Hotels, Restaurants and Catering) sector remains a strong component of the European Union economy. Furthermore, given the presence of key tourist destinations in this project (e.g: Spain, Italy, France, Austria, Cyprus and Malta), it remains a sector that generates a lot of value added, provides employment to millions of individuals directly and indirectly and brings more value to the natural and historical heritage of that particular country.

In terms of Gross Value added[10], the nine countries involved in the project represented almost 75% of total GVA generated by this sector in the EU 27 in 2019 or a total at current prices of €267 billion, with the largest contributor being Spain at an average of €73 billion.

In terms of Tourist arrivals, the nine EE4SMEs project partners represent a total average of approximately 325 million arrivals between 2018 and 2019. In view of the Covid19 travel restrictions in most European countries figures for 2020 and 2021 were not taken into consideration.

Total inbound Tourists (in millions)[11]	2018	2019	2022
Austria	30.82	31.88	26.21
Bulgaria	9.27	7.78	10.89
Cyprus	3.94	3.98	3.2
Estonia	3.23	3.34	2.17
France	89.4	90.91	79.4
Germany	38.9	39.6	28.5
Italy	61.6	64.5	49.8
Malta	2.6	2.75	2.27
Spain	82.8	83.5	71.7
Total (9 participating countries)	322.56	328.24	274.14

Source Eurostat

Furthermore, by 2022 the 9 participating countries registered 83.5% of 2019 levels (the last recorded non-covid impacted year). This denotes a strong recovery in terms of numbers of arrivals at varying degrees with the best performers being Bulgaria which surpassed its 2019 figures by more than 3 million inbound tourists and on the other hand Germany which only managed 72% of its 2019 arrivals.

With regards to employment[12], the sector in question remains one of the largest employers in certain countries, the 9 participating countries represent two thirds of total employment in the sector which indicate the strong reliance on Tourism by the project partners' countries. At an average of 7 million workers in the sector between 2018 and 2019 and a strong drop during the Covid impacted 2020-early 2022 period, we are noticing a strong

[10] GVA Statistics | Eurostat (europa.eu)

[11] Global and regional tourism performance (unwto.org)

[12] Employment figures Statistics | Eurostat (europa.eu)

recovery in terms of employment with forecasts for 2023 showing a full recovery to 2019 levels but unfortunately at the time of writing figures were not yet available.

Total Number of employees by country (in thousands)	2018	2019	2022
European Union - 27 countries (from 2020)	10,471.88	10,747.18	:
Bulgaria	151.77	157.53	:
Germany	1873	1894 (P)	:
Estonia	27.4	27.31	:
Spain	1,600.3	1,689.2	:
France	1258	1276	1364 (P)
Italy	1,674.8	1,696.8	1,616.7
Cyprus	50.78 (P)	52.92 (P)	:
Malta	15.94	18.46	21.47
Austria	304.99	309.31	:
Total (9 participating countries)	6,957	7,121.5	:

Source Eurostat

The Hospitality industry has some of the highest potential for energy savings across all industries. The main energy consuming activities in a hotel and food services segment are:

- heating and cooling of rooms,
- lighting,
- hot water use and other energy consuming activities by guests,
- preparation of meals (especially warm ones),
- swimming pool and other amenities
- others

Energy consumption, especially in the accommodation segment is influenced by **physical and operational** parameters.

The **physical parameters** common to most buildings include size, structure and design of the building (prevailing architectural / construction practices), geographical and climatic location, the age of the facility, the type of energy and water systems installed, the way these systems are operated and maintained, types and amounts of energy and water resources available locally, as well as energy-use regulations and cost.

Operational parameters that influence energy use in hotels include operating schedules for the different functional facilities in the hotel building, the number of facilities (restaurants, kitchens, in-house laundries, swimming pools and sports centres, business centres, etc.), services offered, fluctuation in occupancy levels due to seasonality, variations in customer preference relevant to indoor comfort, on-site energy conservation practices, as well as culture and awareness of resource consumption among personnel and guests.

It is therefore clear that the potential for energy savings is high in this sector. Various studies[13] have estimated that hotels have the potential to save at least 10 - 15 per cent of the energy they consume, depending on the age and size of the hotel, as well as type of equipment installed and the maintenance and operating procedures in

[13] Hotel Energy Solutions (2011), Analysis on Energy Use by European Hotels: Online Survey and Desk Research, Hotel Energy Solutions project publications-9789284414970 (e-unwto.org)

use. An assessment of potential energy conservation in southern European hotels revealed that there is a potential for 25 - 30 per cent energy savings, especially in hotels with high annual energy consumption.

Some potential energy saving measures in the sector include the following:

- Motivate employees and guests not to waste energy.
- Ensure staff know about correct settings for lights, heating and air conditioning and energy efficient room cleaning.
- Check the heating system (e.g. insulation of pipes, pumps, mountings, appropriate size).
- Separate heating circuits, if appropriate, and control them individually.
- Avoid additional electric heating in rooms.
- Insulate roof or top floor ceiling, check tightness of windows.
- Use lighting control strategies such as scheduling, occupancy sensors, dimming etc. to turn lights off or down when not needed.
- Make greater use of daylight.
- Install energy efficient lamps (e.g. LED, use electronic ballasts where appropriate) and install LED in the elevators as it always on and prevents overheating in summer.
- Limit (hot) water consumption for example by installing energy saving taps in showers and washbasins.
- In the toilets introduce two-key flushing system.
- Set the flow temperature to 60°C.
- Check the possibility of using solar installations/or solar water heaters for hot water preparation.
- Choose optimal location for coolers (away from heat sources, air flow to condenser not obstructed).
- Clean evaporator, cooling fins and condensation drain regularly.
- Check insulation of coolers, closing function of door seals and door closers.
- Optimise temperature levels and loads in cold storage rooms (-18°C in deep freeze rooms is sufficient).
- Check possibility of heat recovery. [14]

[14] Euremplus -Hotel and Tourism energy efficiency factsheet EN - Hotels - EuremPlus.cdr (energieinstitut.net)

3 The Financing Landscape

The Financing landscape of the European Union is wide and varied and when one starts analysing Financing options at country or regional level further fragmentation and diversification is also noted. One must also take note of the peculiarities of each country in analysing such options and for this reason a country-by-country high-level analysis has been carried out.

Significant variations among Member States progress towards the EE targets varies strongly from one Member State to another. A number of countries, including some of the largest economies in the EU, need to reduce their primary energy consumption at a higher rate between now and 2030 than in the previous decade in order to reach their indicative targets and to contribute to the achievement of the overall objective for 2030. This forms part of the Fit for 55 package and also the recently agreed upon recast of the Energy Efficiency directive which should be officially published in the coming months.

It is important to note that a major stumbling block to accelerating energy efficiency investment and improving the energy performance of business operators will undoubtedly be the limited financing options available to the same operators. Time and time again, the European Commission argued that "energy renovation pays for itself over time". While this may be true in the long term, in the short-term, energy efficiency may require significant financial investment which businesses, and especially Small and Medium Enterprises (SMEs), may not afford to undertake on their own. Furthermore, the return on investment on energy efficiency may be more uncertain than in aspects such as renewable energy, as energy efficiency also requires behavioural changes from users themselves, aside from the initial technological investment. This may make it more difficult for businesses to tap into traditional modes of financing such as banks and other financial intermediaries, which may not be willing to take on the investment risk.

Small and Medium Enterprises will similarly face significant cost challenges which should not be overlooked and which they cannot meet on their own, especially in the context of a post-pandemic recovery and the economic effects of the Russia-Ukraine conflict. Existing national financing mechanisms (e.g. through state aid) should continue to be promoted by governments and business associations. That said, these mechanisms must always consider the business case to ensure that they are designed in the most business friendly format possible, both in relation to the type of funding offered and the bureaucracy involved to apply for them. Traditionally, energy efficiency state aid grants have provided an insufficient incentive for businesses to invest due to the funding support being limited to the difference in cost between an energy efficient solution and a less efficient option.

It is important that when and where possible the state covers the entire capital expense should the different members states aim to accelerate the drive towards energy efficiency. Furthermore, it is to be noted that this concern has been recognised in the discussions tied to the negotiations on the revised EU state aid rules (General Block Exemption Regulation – GBER), finalised earlier in 2023[15] to further facilitate, simplify and speed up support for the EU's green and digital transitions. This is an important development and strong in the member states hands which could be easily applied to different financing mechanisms.

[15] State aid: Commission amends General Block Exemption rules (europa.eu)

3.1 Type of Support

Given the importance of both financial and non-financial support for business operators, the instruments can take the form of cash grants, loans or tax rebates/credits or other forms which are less traditional as follows:

- **Repayable** instruments usually take the form of either loans or repayable assistance such as credit line and reimbursable grants. Financial products containing an unconditional obligation to repay with a clear timing of repayment and quantified amount of repayment should not be treated as repayable assistance.

- **Non-Repayable** instruments are the ones most commonly used across the European Union and its members states and respective regional administrations. These usually take the form of grants which are also the favoured option by the different Funding managing authorities, even financial intermediaries and eligible companies applying for this funding. This is mainly due to the simplicity of the administrative process and also due to an immediate cash grants to the company undergoing an investment in a process, machinery or other asset including building renovations.

- **Non-Dilutive** instruments are the most prominent found across the European Union especially in terms of financing energy efficiency programmes. Business operators and Financial intermediaries as well as state and regional funding authorities tend to prefer this option

- **Dilutive** financing options are the least preferred option as Business operators will need to do away with a portion of their company equity through either share options or other forms of equity sharing.

3.2 Financing Options

Energy efficiency is not only environmentally responsible but also financially savvy. Businesses can significantly reduce energy costs and decrease their carbon footprint by investing in energy-efficient technologies and practices. However, to unlock these benefits, it's essential to understand the financial mechanisms and financing options available. In this section, we will explore various means of funding energy efficiency projects.

Grants and Subsidies:

Governments, at various levels, often offer grants and subsidies to incentivize energy efficiency improvements. These funds can cover a portion of the project costs, making it more affordable for businesses and homeowners to invest in energy-efficient upgrades. The eligibility criteria and application processes vary by location, but these incentives can significantly reduce the financial burden.

Tax Incentives:

Tax incentives are another effective way to promote energy efficiency. Governments may provide tax credits or deductions for businesses and individuals who invest in energy-efficient equipment or technologies. These incentives directly reduce the overall project cost and can enhance the return on investment.

Low-Interest Loans:

Many financial institutions offer low-interest loans specifically designed for energy efficiency projects. These loans provide favourable terms, including extended repayment periods, to make it easier for borrowers to finance their

initiatives. In some cases, these loans are backed by government programmes or initiatives, reducing the risk for lenders and borrowers alike.

Energy Performance Contracting (EPC):

EPC is a financing mechanism where a third-party energy service company (ESCO) designs, implements, and finances energy efficiency projects. The ESCO covers the upfront costs and is repaid from the energy savings generated by the project. EPC arrangements are particularly appealing to businesses and organizations looking to improve energy efficiency without a significant upfront investment.

On-Bill Financing:

On-bill financing programmes allow energy efficiency project costs to be repaid through the energy bill over time. This approach simplifies the payment process and ensures that the energy savings from the upgrades directly offset the financing costs. It can be an attractive option for residential and small commercial projects.

Green Bonds:

Green bonds are fixed-income securities issued by governments, municipalities, or corporations to finance environmentally friendly projects, including energy efficiency initiatives. Investors purchase these bonds, and the proceeds are dedicated to funding green projects. Businesses and governments can tap into the green bond market to finance their energy efficiency efforts.

Energy Savings Agreements:

Some financing options involve entering into energy savings agreements with vendors or Energy Service Companies (ESCOs). These agreements outline the terms of the project, including the repayment structure based on the energy savings achieved. This can be a flexible way to fund projects while ensuring that the cost savings are substantial.

Utility Rebates and Incentive Programmes:

Utilities often provide rebates and incentive programmes to encourage energy efficiency. These programmes offer cash incentives to customers who undertake energy-saving projects, such as upgrading lighting, HVAC systems, or industrial equipment. These incentives can significantly reduce the payback period for investments.

Energy efficiency is an essential component of sustainable and responsible energy management. By understanding the various financial mechanisms and financing options available, businesses can make informed decisions to invest in energy efficiency. These funding opportunities not only reduce energy consumption and lower carbon emissions but also offer significant financial benefits in the form of reduced energy costs and improved operational efficiency.

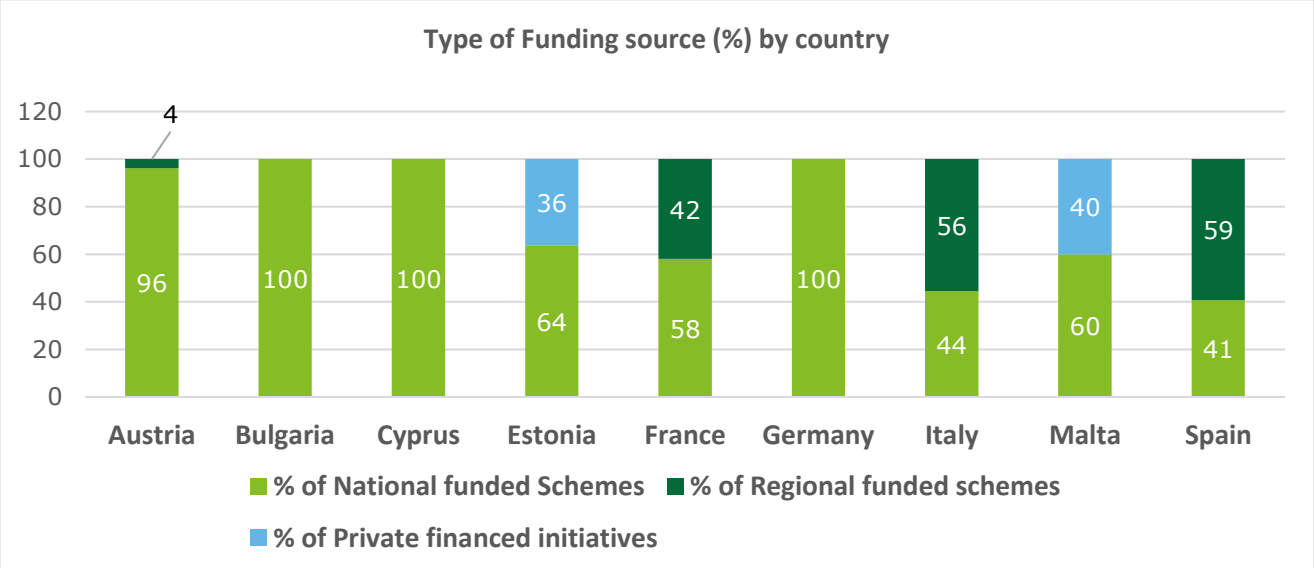
3.3 Project Partners' Inputs on Existing Energy Efficiency Measures

In analysing data about existing and future funding financial mechanisms and measures related to energy efficiency, a total of 158 were investigated. These were identified through reporting by the project partners (as part of Work package 5.1) and further desktop research carried out by Deloitte Malta and the use of Deloitte's proprietary Grants and Incentives programme GI[3].

Below is a summary of the segmentation by country in terms of the source of funding of the different financial mechanisms by country:

Country	Total Number of Financial Mechanisms listed	Number of National funded Financial Mechanisms	Number of Regional funded Financial Mechanisms	Number of Private financed initiatives
Austria	26	25	1	0
Bulgaria	10	10	0	0
Cyprus	7	7	0	0
Estonia	11	7	0	4
France	31	18	13	0
Germany	18	18	0	0
Italy	18	8	10	0
Malta	10	6	0	4
Spain	27	11	16	0
Total	**158**	**110**	**40**	**8**

In total 110 financial mechanisms were analysed, leaving out the regional financial mechanisms from the analysis in view of bias towards a number of regions in certain countries and limited information on all the different opportunities at regional or provincial level.



An average of 80% of these financial mechanisms were either nationally funded or through funds allocated via European Union funding to that particular member state. 11% were funded through Regional Budgets and a further 9% through private means in many cases, Banks and other financial intermediaries. Only Malta at 40% and Estonia at 36%, reported a higher-than-average dependence on the private financed initiatives through local or international banks based in the countries.

In terms of the financing typology, by far, the largest majority of financial mechanisms were non-dilutive and non-repayable; in most instances in the form of grants. In total, 80 grants were noted between all the project partners' countries whilst in terms of non-dilutive and repayable financial mechanisms all those analysed were in a form of a loan at either advantageous interest rates or banks and other private intermediaries offering lower collateral or bank guarantees.

Very few financial mechanisms had some form of sectoral restrictions in relation to the eligibility criteria and no instance was noted which restricted the three sectors under review in the EE4SMEs project. Indeed, restrictions related to the primary sectors (Agriculture and Fisheries) which are assisted through other funding sources and financial services. A full breakdown of the different typology of the financial mechanisms can be found in the table below:

Country	Total schemes (Non-Dilutive/ Non repayable)	Type of Financing			Unrestricted	Restricted	Total schemes Non-Dilutive/ Repayable	Type of Financing	Unrestricted
Austria	24	Grant			22	2	2	Loan/ Collateral Guarantee	2
Bulgaria	4	Grant			2	2	5	Loan	5
Cyprus	6	Grant			6	0	1	Loan	1
Estonia	7	Grant			4	3	4	Loan	4
France	14	Grant	Tax rebate	Non-Cash service	14	0	4	Loan	4
		10	3	1					
Germany	13	Grant			13	0	5	Loan	5
Italy	N/A	N/A			N/A	N/A	N/A	N/A	N/A
Malta	6	Grant			6	0	4	Loan	4
Spain	11	Grant	Non-Cash Service		9	2	0	N/A	N/A
		10	1						
Total	**85**	**Grant**	**Tax rebate**	**Non-Cash service**	**76**	**8**	**25**	**Loans/Collateral**	**25**
		80	**3**	**2**				**25**	

Source: data collected by Project partners and Deloitte proprietary data

3.4 Financing Options - Country by Country analysis

The next section focuses on a country-by-country analysis of the different financing options at present. The analysis was based on desktop research of publicly available data especially Country Specific Reports as part of the EU semester, the National Energy and Climate Plans for each country submitted in 2019-2020[16], Deloitte proprietary data on the different grants and incentives that exist in these countries and feedback received from the individual partners in the project.

3.4.1 Austria

Austria has a developed system in terms of financing options for business operators to undertake either investment of energy efficient processes, improve on existing tangible assets and infrastructure or carry out diagnostics of their operations through energy audits.

In total 26 financing financial mechanisms were noted in the course of this research. Some of these mechanisms are specifically focused on renewable energy sources and green mobility but the vast majority of the programmes specifically focus on energy efficiency or are open financing mechanisms for different types of investment.

The favoured type of financing remains grants with only two[17] financial mechanisms noted to have sectoral restrictions amongst its eligibility criteria. This grant supports the setting up an energy management system (EnMS) through external consultants and is offered by the Austrian promotional bank.

Furthermore, the vast majority of financial mechanisms are non-dilutive and non-repayable with the erp-loan mechanism being one of the few listed as a having a repayable element. The 'erp-loan' mechanism[18] offered by Austria Wirtschaftsservice (AWS) enables investments in setting up a company (start-up phase), modernisation, growth and innovation by means of favourable loans (soft loans) with fixed interest rates, flexible loan periods (flexible terms) and grace periods and maximum project ceiling of €30million.

Other grants of interest relate to the so-called 'Umweltförderung im Inland'[19] managed by Kommunalkredit Public Consulting (KPC) in collaboration with the Federal Ministry of Climate Action. These financial mechanisms are mainly aimed at Domestic users and focus on cooling and ventilation, small LED indoor systems which have capacity of less than 20 kW generation and solar systems aimed for domestic use with an area of less than 100 square meters.

Furthermore, a number of this programme are also offered towards commercial entities of varying sizes such as a grant to invest in absorption and absorption chillers which gener
ate energy from renewable energy sources (eg. biomass, solar thermal energy, etc.) or from industrial waste heat[20], grants for thermal insulation on windows, doors, roof and top floor ceiling[21] and grants for heat recovery from refrigeration systems and ventilation systems with a heat exchanger.

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[16] At the time of writing all EU member states had submitted the updated NECP documents to the European Commission, unfortunately these documents were not readily available.

[17] https://www.aws.at/aws-energie-klima/

[18] https://www.aws.at/en/aws-erp-loan/

[19] Corporate environmental promotion in Germany | Environmental promotion (umweltfoerderung.at)

[20] Adsorptions-,Absorptionskältemaschinen, Free Cooling-Systeme, Prozesskälteanlagen Air conditioning and cooling | Environmental promotion (umweltfoerderung.at)

[21] Thermische Bauteilsanierung Thermische Bauteilsanierung | Umweltförderung (umweltfoerderung.at)

It is also interesting to note, that the vast majority of the programmes are offered mainly by two entities namely by KPC and AWS resulting in less fragmentation at federal level although it must be noted that regional financial mechanisms do exist but for the purpose of this research, we limited ourselves to financing options at a national level.

Furthermore, in view of the ongoing conflict in the Ukraine and reliance on Russian oil and gas, the Austrian Government has taken key measures to provide energy support to the economic operators and households. These include a climate bonus, lump sum transfers to all Austrian residents (Adults and children) and support to companies of all sizes by means of refunds of part of their energy costs above a certain threshold and energy saving campaigns and demand-reduction 'auctions' open to industrial and large-scale consumers.[22]

Lastly, according to the Austrian Government's original National and Energy Climate Plan[23] (NECP) although considerable investments have already been made in the areas of energy, mobility and climate in the country over recent years, this investment must be intensified considerably in the period to 2030. The estimated total investment volume for the period to 2030 is around €166 to 173 billion during the decade leading to 2030, with €30 billion required to be invested in improving the heating and cooling of buildings and Industry through thermal renovations, waste heat usage and heating system renovations.

In terms of financing, it is clear that there is an over dependence on more traditional funding streams especially in terms of public and EU budgets for the achievement of these targets. From the analysis of Austria's financing landscape, more needs to be done to unlock private investment potential through financial and blended instruments. Although references to green financing, eg. green bonds, are made there's no clear structure how to unleash the full potential for financial intermediaries and private equity to be reinvested in energy efficiency.

A more recent development has the establishment of the Green Finance Alliance[24], an initiative under the auspices of the Ministry for Climate Action with the goal to establish a broad alliance for climate protection in the Austrian financial industry. Furthermore, we also noted "The Austrian Green Finance Agenda (GFA)[25]". It contains recommendations for actions aimed at financial markets, companies, and the administration. All of this serves the same purpose i.e.to channel private financial flows into low-emission and sustainable investments and to better manage sustainability risks.

3.4.2 Bulgaria

Energy efficiency in Bulgaria has become a crucial focus in recent years, driven by both environmental concerns and economic considerations. The country has taken significant steps to improve its energy efficiency in various sectors. Bulgaria has implemented several legislative measures and policies to promote energy efficiency. The National Energy Efficiency Action Plan and the Energy Efficiency Law set the framework for energy-saving initiatives.

In terms of Building Efficiency, the residential and commercial sectors in Bulgaria have seen efforts to improve building energy efficiency. This includes retrofitting existing structures and implementing stricter energy

[22] COMMISSION STAFF WORKING DOCUMENT- 2023 Country Report – Austria {COM(2023) 620 final}. AT_SWD_2023_620_en.pdf (europa.eu)

[23] at_final_necp_main_en_0.pdf (europa.eu)

[24] Green Finance in Austria (bmk.gv.at)

[25] "Green Finance Agenda" for achieving climate targets - Federal Chancellery Austria (bundeskanzleramt.gv.at)

performance standards for new buildings. Energy-intensive industries have undergone modernisation to increase energy efficiency. These efforts aim to reduce energy costs and enhance competitiveness.

Some examples of the energy efficiency measures in Bulgaria across the various segments include:

The Operational Programme "Innovation and Competitiveness[26]", co-financed by the European Regional Development Fund, will amongst other things focus on improving energy efficiency in Bulgarian enterprises. It supports projects that enhance industrial processes, promote resource efficiency, and reduce energy consumption mainly through cash grants.

Moreover, the Bulgarian Government has allocated almost 60% of its recovery and resilience plan[27] towards the green transition and climate action valued at €6.9 billion[28].

The energy efficiency part of the plan focuses on the renovation of existing building stock in terms of residential, public and commercial buildings more specifically in the manufacturing, trade and services including hospitality. Around €924 million were allocated for this aim.

This plan's main aims at implementing sustainable integrated high-efficiency energy measures are that of:

- Achieving a minimum of 30% saving of primary energy for each site of the non-residential building stock;
- Reducing energy consumption costs;
- Compliance with the 'principle of no significant harm' (2021/C58/01 within the meaning of Article 17 of Regulation (EU) 2020/852)[29].

Bulgaria has also accessed successfully into the European Structural and Investment Funds (ESIF) under the previous programming period and the current one, in order to finance energy efficiency projects which have funded energy efficiency improvements in public buildings, transportation and industry.

In terms of loans, Bulgarian operators can access loans offered by the European Investment Bank (EIB)[30] which offer very favourable terms and conditions, making them an attractive option for larger-scale investments. Furthermore, Energy Performance Contracting (EPC) financing mechanism is being used in Bulgaria where energy service companies (ESCOs) invest in energy efficiency in public or private buildings and the former are paid from the energy savings being achieved over the contract duration which in itself reduces the financial burdens on the property owners.

Bulgaria has implemented an Energy Efficiency Obligation Scheme (EEOS), requiring energy companies to achieve energy savings equivalent to a certain percentage of their annual energy sales. These savings can be achieved through various energy efficiency measures, such as energy audits, insulation, and efficient lighting.

Various programmes offer support to SMEs for energy efficiency improvements. This includes financing for energy audits, energy management systems, and the adoption of energy-efficient technologies[31] managed by various Ministries

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[26] https://www.mig.government.bg/programa-konkurentosposobnost-i-inovaczii-v-predpriyatiyata/

[27] Bulgaria's recovery and resilience plan (europa.eu)

[28] This amount refers the total budget allocated to the plan and includes the Bulgarian Government's allocation for the plan as well as the €5.7 billion allocated under the RRF grants for Bulgaria.

[29] The collection of proposals for implementation of investments under the selection procedure BG-RRP-4.021 "Support for energy renovation of buildings in the field of production, trade and services" under the National Recovery and Sustainability Plan has started | MRDPW (mrrb.bg)

[30] Bulgaria: EIB and Bulgarian Development Bank sign €175 million loan to improve access to finance, boost employment and accelerate green transition

[31] https://www.moew.government.bg/en/

Despite these efforts, challenges remain, including the need for further investment in infrastructure, more stringent enforcement of energy efficiency regulations, and increasing public awareness. Furthermore, the financial and more recent Covid-19 crises affected all stakeholders and recovery remains slow; with ESCOs and business operators reporting liquidity problems which are limiting the uptake of more energy efficient measures.

Bulgaria also remains one of the most carbon intensive economies in the EU with greenhouse gas intensity is more than four times higher than the EU average. The 2023 country specific recommendations[32] and Commission staff working paper[33] for Bulgaria concluded that more and swifter action is required in order to meet its Final Energy Consumption and Primary Energy Consumption rates by 2030. The European Commission remains sceptical that these targets will be met unless further investment is unleased.

3.4.3 Cyprus

In line with European efforts to reduce energy consumption and combat climate change, Cyprus has placed a strong emphasis on energy efficiency. The financing mechanisms and options available to support energy efficiency projects on the island are analysed hereunder.

Cyprus remains primarily a service-based economy focusing on the banking and tourism sectors (accommodation, restaurants etc) with Industry representing less than 12-13% of the Gross Domestic Product (GDP).

The Cypriot Government adopted several support measures to cushion the impact of energy price inflation on households and businesses. The European Commission's 2023 spring forecast projected the gross budgetary costs of these measures to amount to 0.4 % of GDP in 2023[34]. One of the key measures was to subsidise the increase in the electricity tariffs, covering 50% to 100% of the increase for the period September 2022 to June 2023.

EU Funding and Grants:

Cyprus has accessed funding from the European Union (EU) to boost energy efficiency initiatives since joining the EU in 2004. EU programmes like the European Regional Development Fund (ERDF) and the Cohesion Fund have provided substantial financial support for projects aimed at improving energy performance in various sectors, including residential, industrial, and transportation. Below is a high-level summary of measures and programmes aimed at improving energy efficiency in the country.

National Action Plans:

The Cypriot National Energy and Climate Plan (NECP[35]) originally submitted in 2020 and recently updated in June 2023 is still being reviewed by the European Commission for its conclusions and recommendations This plan outlines the country's strategy for enhancing energy efficiency and include provisions for funding through national budgets and the allocation of EU related funds.

[32] COM_2023_602_1_EN.pdf (europa.eu)

[33] BG_SWD_2023_602_en.pdf (europa.eu)

[34] Economic forecast for Cyprus (europa.eu)

[35] Cyprus Draft Updated NECP 2021 2030 (2).pdf (europa.eu)

The Recovery and Resilience plan:

The Cypriot Government's Recovery and Resilience plan[36] stipulates that 41% of total funds, which amount to slightly over €1.2 billion, with €200 million in RRF loans, are allocated to climate action and the green transition. Around €176 million have been allocated towards projects aimed at energy efficiency, renewables and shift towards green mobility in the public, residential and commercial sectors. Furthermore, and in order to eliminate Cyprus' energy isolation, €100 million are being allocated towards the Euro-Asian energy Interconnector[37] between Israel, Cyprus, Crete and mainland Greece.

EPC Contracts:

More recently, Energy Performance Contracting (EPC) is gaining popularity in Cyprus. This financing mechanism involves agreements with Energy Service Companies (ESCOs), which implement energy efficiency projects and are paid back through the energy savings achieved. EPCs reduce the upfront financial burden on project owners.

Utility Rebate Programs:

The Cyprus Energy Regulatory Authority[38] (CERA) and utility companies have introduced rebate programmes that incentivise energy-efficient practices. These programmes offer financial incentives to customers who invest in energy-saving technologies and systems, thus lowering the payback period for such investments.

Commercial Banks and Financial Institutions:

Commercial banks[39] in Cyprus offer loans tailored to energy efficiency projects. These loans typically feature competitive interest rates and extended repayment terms to encourage businesses and individuals to undertake energy-saving initiatives. The Hellenic Bank for example offers reduced interest rates, repayment period of up to 12 years and grace periods for construction related projects.

European Investment Bank (EIB):

Cyprus benefits from loans provided by the European Investment Bank (EIB) for energy efficiency projects. These loans offer favourable terms and conditions, making it easier for private entities to access capital for green initiatives.

Way Forward

Cyprus is making significant strides in its journey toward a more energy-efficient and sustainable future. With an array of financing mechanisms and options available. Whether through EU funding, national action plans, or innovative financing models like EPCs, Cyprus is positioning itself as a regional leader in the pursuit of a greener and more energy-efficient society. Nevertheless, given the small size of most business operators, there are limitations in terms of the private equity that can be injected by these operators in implementing energy efficiency measures. Given the reliance on Tourism, more focus is required from the public entities, financial intermediaries and EU funded programmes in providing the necessary financing to improving cooling and heating, insulation of the hospitality amongst others but furthermore implement more financing measure to carry out deep renovations

[36] Cyprus' recovery and resilience plan (europa.eu)

[37] EuroAsia Interconnector (euroasia-interconnector.com)

[38] Ρυθμιστική Αρχή Ενέργειας Κύπρου - (cera.org.cy)

[39] Business Green Loan (hellenicbank.com)

of existing commercial building stock whether in Hospitality, trade or hospitality which so far remain more focused on the residential market.

3.4.4 Estonia

Estonia is known for its prowess in digital innovation and green initiatives and is actively promoting energy efficiency among businesses to reduce energy consumption and carbon emissions. Estonia suffers from key challenges not least an ageing and decreasing population coupled with shortages in terms of qualified personnel especially in the digital sphere, proximity to the Russian Federation and overreliance on Russian oil and gas and more recently increased inflationary pressures which are resulting subdued economic growth and rising unemployment due to the influx of Ukrainian refugees in neighbouring countries.

In terms of energy efficiency, Estonia has developed a number of measures, a summary of which is listed below:

National Energy and Climate Plan

The Estonian NECP[40] was recently updated and it's still pending approval from the European Commission. The original plan focused amongst others on reaching the 2030 targets by ensuring a 30% gross final energy consumption from renewable energy sources including the transport sector, major renovation of public and private buildings and improvement in terms of energy performance and ensuring Estonia's energy security and diversification in view of potential disruptions.

Estonian Business and Innovation Agency[41] Energy Efficiency Programmes:

KredEx, the Estonian Credit and Export Guarantee Fund, offers a range of financing options to support energy efficiency programmes for businesses. They provide targeted support, including energy audits and loans[42] with favorable terms for implementing energy-saving measures. In 2022, KredEx and Enterprise Estonia (EAS) merged in 2022, to form the Estonian Business and Innovation Agency.

EAS[43], offers a number of grants and incentives aimed at companies which are developing knowledge-and technology-intensive business models or already engaged in Research, Development and Innovation activities in smart and sustainable energy solutions[44].

Environmental Investment Center (KIK):

The Environmental Investment Center, or Keskkonnainvesteeringute Keskus (KIK[45]) in Estonian, offers grants and financial support for projects focused on improving energy efficiency and sustainability. Some example of key initiatives relate to Investment grant supporting efficiency of resource use in companies' production[46] and grants supporting implementation of resource and energy audits. Furthermore, KIK supports with other various grants

[40] Estonia - Draft Updated NECP 2021-2030 (europa.eu)

[41] Estonian Business and Innovation Agency | KredEx

[42] Industry loan | KredEx

[43] Front page - EAS

[44] Supporting intersectoral mobility - Joint agency of Enterprise Estonia and KredEx (eas.ee)

[45] About us | Keskkonnainvesteeringute keskus (kik.ee)

[46] Resource efficiency of companies | Keskkonnainvesteeringute keskus (kik.ee)

including the purchase of new all-electric (including hydrogen fuel cell) passenger cars and light vans (categories M1 and N1), electric cargo bikes[47].

European Structural and Investment Funds (ESIF):

Estonia benefits from EU funding under the European Structural and Investment Funds (ESIF) programme. ESIF provides financial resources to support energy efficiency projects in various sectors, including business and industry.

Commercial Banks in Estonia:

Many commercial banks in Estonia offer loans and credit lines specifically tailored to energy efficiency projects for businesses. Banks such as Swedbank[48] and SEB[49] provide loans and micro-financing with competitive terms to support energy-saving initiatives.

Estonia's commitment to energy efficiency and sustainability is evident through its range of financing mechanisms and programmes designed to support businesses in their efforts to reduce energy consumption and promote a greener future. Whether through government programmes like KredEx, EAS and KIK, EU funding under ESIF, or support from commercial banks and industry associations, businesses in Estonia have access to diverse resources to finance their energy efficiency programs and contribute to a more sustainable and efficient energy landscape.

Nevertheless, there remains discrepancies in terms of the investments required by the private sector especially in terms of deep buildings renovations with the main focus remaining public and residential buildings mostly apartments. With manufacturing representing close to 17% of the Gross Domestic Product, more effort will be required in order to achieve the necessary results. Furthermore, Estonia has a very good support network in terms of assistance to companies, unlocking more opportunities through these programmes and through furthering initiatives from the Recovery and Resilience plan[50] such as investment in green hydrogen technologies and the establishment of a green fund should ultimately see Estonia in a very strong position in achieving its final goals.

3.4.5 France

France is at the forefront of efforts to enhance energy efficiency, both in the residential and business sectors. To support businesses in reducing energy consumption and fostering sustainability, the country has implemented various financing mechanisms and incentives.

France is one of the few EU countries that has invested heavily not only in renewable energy sources but over the last decades in the provision of nuclear energy with renewed focus on investing further in the latter as a key source of energy at approximately 40% of the energy mix in the country. Russia’s invasion of Ukraine led to a surge in energy and commodity prices, but large public support significantly cushioned the shock to the private sector. The impact of the energy crisis on both households and businesses was largely mitigated by the government measures and inflation in France remained far below other EU countries in 2022, at +5.9% against +9.2% for the EU[51]

[47] Purchase of zero-emission vehicles | Keskkonnainvesteeringute keskus (kik.ee)

[48] https://swedbank.ee/business/finance/capital/sustainability;jsessionid=8439607530xfz90xo17bcx13imwaa4dsomo36912.8439607530

[49] https://www.seb.ee/en/business/financing/green-microloan

[50] Estonia’s recovery and resilience plan (europa.eu)

[51] Commission staff working document 2023 - France FR_SWD_2023_610_en.pdf (europa.eu)

In this report, we explore key energy efficiency financing mechanisms available for businesses in France, along with detailed references for further information. For the purpose of this exercise regional and departments led financial mechanisms were not taken into consideration.

The Recovery and Resilience Plan

The French RRF[52] which amounts to €40.3 billion is fully financed by the Recovery and Resilience grants with almost 50% allocated to measures and programmes aimed at supporting climate objectives. 7.7billion euros are aimed towards building renovation mainly in the residential sphere and smaller businesses and €0.6 billion in the decarbonisation of industrial processes. Furthermore, the French Government is investing €1.7 Billion in research and innovation of green technologies including the development of hydrogen.

France 2030 plan

France 2030[53] is a national investment plan endowed with €34 billion, which includes €30 billion in subsidies and €4 billion in financial mechanisms to be deployed over 5 years. €3.5 billion were allocated for the year 2022, of which €2.8 billion in grants and €0.7 billion in equity investments. The budget provisions were voted by the French National Assembly.

France 2030 is composed of 10 objectives, including:

- €8 billion allocated to the energy sector to develop small nuclear reactors (€1 billion), develop green hydrogen projects (€1.9 billion), and to decarbonise the industry (€5.6 billion)
- €4 billion allocated to the transport sector to produce nearly two million electric and hybrid vehicles (€2.5 billion) and low-carbon airplanes (€1.2 billion).

The French Agency for Ecological Transition (ADEME):

ADEME[54] plays a pivotal role in promoting energy efficiency in France. The agency provides financial support and resources to businesses looking to improve energy performance. ADEME's funding programmes cover a wide range of projects, from industrial energy efficiency to sustainable transportation. In total around 21 intiatives[55] were noted to be managed by ADEME with the main aim of either reducing greenhouse emissions or energy consumption. The main example of these programmes related to the Renewable Heat Fund[56] by supporting enterprises with their investments in producing energy through heating and cooling technologies using for example biomass, geothermal, biogas and solar.

Green Loans (Prêts Verts):

Many commercial banks in France offer green loans tailored to businesses. These loans come with favorable terms, including lower interest rates and extended repayment periods, to support energy efficiency projects. Banks such as BNP Paribas and Société Générale offer such financing options.

BpiFrance[57] for example finances support in ecological and energy transition projects carried out by SMEs with less than 50 employees, supports independent SMEs and mid-caps wishing to finance in ecological and energy

[52] France's recovery and resilience plan (europa.eu)

[53] France 2030 | gouvernement.fr

[54] Home page - The French Agency for Ecological Transition (ademe.fr)

[55] Research | Companies | Acting for the ecological transition | ADEME

[56] ADEME's Heat Fund: a powerful lever for the energy transition

[57] BpiFrance is a French public sector investment bank. It is a joint venture of two state owned enterprises: the Caisse des dépôts et consignations and EPIC BPI-Groupe

transition program and allows companies to acquire equipment to improve your energy efficiency. Some of this support is covered under France's RRP.

Carbon Tax Incentives:

France has implemented a carbon emission tax known as the Contribution Climat Énergie (CCE). While not a direct financing mechanism, it encourages businesses to reduce carbon emissions by taxing energy consumption. This incentivises businesses to invest in energy-efficient technologies and practices.

France offers an extensive range of financing mechanisms and incentives to support businesses in their pursuit of energy efficiency and sustainability. Furthermore, France has one of the most mature equity markets in terms of investments in energy related projects and this is noted by the strong collaboration between the French Government and financial intermediaries. Clearly more can be done in supporting Industry and accommodation in undergoing deep renovations of their premises with very few measures being noted to support this type of investment.

3.4.6 Germany

Germany is one of the global leaders in promoting energy efficiency and sustainability, and it offers a variety of financing mechanisms to support businesses in their efforts to reduce energy consumption and carbon emissions. Germany is renowned for its strong commitment to sustainability and has done so by implementing a range of policies, initiatives and technologies to improve the uptake of energy efficiency measures.

This report provides insights into key energy efficiency financing programmes available for businesses in Germany.

Energiewende

Germany's so called energy transition is a comprehensive policy aimed at shifting the country's energy mix towards renewables, increasing energy efficiency and reducing greenhouse emissions with the final aim being that of moving Germany towards a carbon and nuclear-free energy system[58] by 2045. There has been a lot of criticism of the plan especially since the Russian invasion of the Ukraine limited importation of Russian gas and fuel. In the past year Germany has had to re-open a number of coal mines in order to make up for this loss of supply with many arguing that renewable energy sources are not yet at the level where large energy consumers such as Germany can fully depend on such sources and this could results on destabilisation.

RRP Germany

The German Recovery and Resilience Plan[59] valued at a total €27.8billion has a very strong climate action component amounting to approximately 42% of the total value. Some of the key measures related to the green transition are:

- €3.3 billion devoted to decarbonising the economy, especially industry, with a focus on renewable hydrogen.
- €1.5 billion will be invested to help the German economy make the leap towards renewable hydrogen at all stages of the value chain (including production, infrastructure and use).

[58] The last nuclear energy plant IN Germany was closed in early 2023

[59] Germany's recovery and resilience plan (europa.eu)

- €5.4 billion will be devoted to making the transport sector greener by supporting electric cars, clean buses and rail; the plan will provide financial support for the purchase of more than 560 000 zero- or low-emission vehicles.

Federal Office for Economic Affairs and Export Control:

BAFA (Bundesamt für Wirtschaft und Ausfuhrkontrolle[60]) provides grants and incentives for businesses undertaking energy efficiency projects. These incentives cover a range of measures, from improving insulation in commercial buildings[61], implementing energy-efficient lighting systems, funding for the installation of efficient heat generators and heating support systems and heating optimisation in existing buildings that are more than two years old and, in the case of fossil fuel heat generation, not more than twenty years, which increase the energy efficiency of the system, such as hydraulic balancing or the replacement of the heating pump.

KfW Energy Efficiency Programme:

The KfW (Kreditanstalt für Wiederaufbau[62]) Energy Efficiency Programme provides low-interest loans and grants to businesses aiming to enhance energy efficiency. This program supports a wide range of projects, including energy-efficient building renovations, the installation of efficient technologies, and the optimization of industrial processes.

Energiespar-Contracting:

Energiespar-Contracting[63], often used in the public sector, allows businesses to partner with energy service companies (ESCOs). ESCOs design and implement energy-saving measures, and the cost savings from reduced energy consumption typically repay the ESCO's investment over time.

Energieeffizienzfinanzierung (EEF):

Energieeffizienzfinanzierung, or energy efficiency funding, is a financing solution offered by various German banks. It provides businesses with loans and credit lines specifically designed for energy efficiency projects, often at favourable terms.

Environmental Innovation Programme:

The Umweltinnovationsprogramm (UIP)[64] managed by the Federal Ministry for the Environment and KfW is designed to promote innovative energy-efficient technologies and practices in businesses. It offers grants and subsidies to support research and development, demonstration projects, and the deployment of green technologies of a certain size.

Germany's energy efficiency financing mechanisms offer an extensive suite of options for businesses looking to invest in sustainability and energy conservation. Germany remains one of the key players not only in terms of investment in energy efficiency and more over in the research and development and production of such technologies at a European and global level. To maintain its status as one of the global leaders, further incentives

[60] BAFA - Startseite

[61] BAFA - Refurbishment of non-residential buildings

[62] KfW Energy Efficiency Programme - Funding opportunities for energy efficiency and environmental protection | KfW

[63] Contracting – Deutsche Energie-Agentur (dena)

[64] About Us | Environmental Innovation Programme (umweltinnovationsprogramm.de)

are required to incentivise increased uptake of existing and upcoming programmes by Industry and also hospitality to undertake deep renovations.

3.4.7 Italy

Italy has implemented a range of financing mechanisms to encourage businesses to invest in energy efficiency initiatives. These mechanisms aim to reduce energy consumption, lower greenhouse gas emissions, and improve the overall sustainability of Italian businesses. Increased energy efficiency in industry and tertiary sectors remains key to help boost EU energy independence, competitiveness and decarbonisation. The key enabling measures to increase energy efficiency in businesses are the Italian White Certificate and the positive coverage in terms of the energy audit obligation. However, the public budget support available to increase energy efficiency uptake in businesses, and in particular in micro, Small and Medium Enterprises, is limited by the small capacity of the National Energy Efficiency Fund[65] and the absence of dedicated technical support. This limits the possibility to access low-interest finance and implement energy audit recommendations[66].

In view of the regional and at times provincial implementation of several grants, this below report will provide an overview of the key financing mechanisms available to businesses in the whole of Italy.

The National Plans

Italy's NECP and Recovery and Resilience Plan[67] are the two crucial plans in terms of financing the green transition.

The original NECP, like many other plans in other Member States was criticised for the lack of ambition in terms setting targets for reducing greenhouse emissions, increasing the share of renewable energy and improving energy efficiency across the board in order to address Climate change effectively. The draft NECP[68] published in July 2023 had not been reviewed by the time of writing.

Italy's RRP[69] amounts to €191.5[70] billion with €122.6 billion in RRF loans and €68.9 billion in grants. Almost 38% of the total amount is aimed towards climate action measures and programmes of which 15.3 billion euros towards energy efficiency in residential and public buildings, €34 billion aimed at sustainable mobility and €11.2 billion towards the development of renewable energies and the circular economy and improvement in waste and water management. It is interesting to note that in order to unlock private equity Italy is focusing on financial instruments as for example the Italian Ministry for Tourism in collaboration with the European Investment Bank[71] established a fund in order to assist Tourism related operators to improve their product and support them with their green transition amongst other possible projects and investments.

National and Regional Grant Programmes:

Italian businesses can access grants and subsidies provided by both national and regional governments. These grants are often designed to support energy efficiency projects in various sectors, including manufacturing,

[65] The Italian National Energy Efficiency Fund has a capacity of €310 million to support the financing of energy efficiency measures in businesses and public authorities.

[66] Commission Staff working paper 2023 Country Report – Italy IT_SWD_2023_612_en.pdf (europa.eu)

[67] Home - Italia Domani - Portale PNRR

[68] ITALY - DRAFT UPDATED NECP 2021 2030 (1).pdf (europa.eu)

[69] Italy's recovery and resilience plan (europa.eu)

[70] This value includes also the part of the plan which is financed with national resources.

[71] Fondo dei fondi BEI – Sviluppo e resilienza delle imprese del settore turistico (ministeroturismo.gov.it)

agriculture, and services. For example, the Ministry of Economic Development offers grants through programmes like the "Ecobonus and superbonus[72]" to promote energy-efficient renovations in residential buildings.

Conto Termico Programme

The Government financed Conto Termico[73] is a programme that provides financial incentives for businesses in implementing energy efficiency measures and renewable energy systems. It offers rebates and subsidies to cover part of the investment costs for projects like improving the building envelopes, installing energy-efficient heating and cooling systems and adopting renewable energy solutions.

Energy Efficiency Certificates (White Certificates or ESCOs):

Italy operates a White Certificate financial mechanism[74], where businesses that implement energy-saving projects earn certificates for the energy they save. These certificates can be sold to obligated parties, such as energy suppliers, creating a financial incentive for businesses to invest in energy efficiency. Energy Service Companies (ESCOs) play a crucial role in facilitating these projects.

SACE Green Financing

SACE[75], the Italian Export Credit Agency, provides green financing solutions through the “Green Guarantee”[76] programme to support environmentally sustainable projects, including energy efficiency initiatives with these initiatives mainly aimed at expert-oriented companies.

Soft Loans and Concessional Financing:

Public financial institutions in Italy, such as the Italian Investment Fund (Fondo Italiano d'Investimento[77]), offer soft loans and concessional financing to businesses for energy efficiency projects. These loans often come with favourable interest rates and longer repayment periods, making them an attractive option for businesses seeking to improve energy performance.

Green Bonds and Sustainable Finance:

Italian businesses can explore green bonds and sustainable finance options to fund energy efficiency projects. These financial instruments attract investors looking to support environmentally responsible initiatives, and the proceeds are dedicated to green projects.

Industry-Specific Programmes:

Certain industries in Italy, such as agri-food, have specific financing programs tailored to their unique energy efficiency needs. These programmes provide targeted support for businesses operating in these sectors.

Way Forward:

In conclusion, Italy offers a diverse range of financing mechanisms to facilitate energy efficiency investments by businesses. These mechanisms which include grants, tax incentives, soft loans, and innovative financial

[72] Ecobonus and Sismabonus up to 110% for energy efficiency and safety of buildings - Italia Domani

[73] Conto Termico (gse.it)

[74] COSA SONO (gse.it)

[75] SACE - About Us

[76] SACE - Prodotto Garanzie Green: finanziamenti per Green Economy

[77] Homepage | Fondo Italiano

instruments, play a crucial role in achieving Italy's energy efficiency and sustainability goals. Nevertheless, as it has been pointed in many cases Italy's over-reliance on Russian gas became a crucial issue during the last two winters with calls for less dependence on Russian gas and oil moving forward. Italy's RRP is one of the plans which is most ambitious amount to almost 38% of the total fund allocated towards the plan across the EU 27[78], but the Italian government has been reported to be falling behind in terms of implementing the measures. This is in view the renowned bureaucratic administration, fragmentation of the implementation amongst regions, limited human resources and a system ill equipped to manage such a task. This is an opportunity not to be missed and it will be crucial moving forward for the right administrative structure to be put in place in order to make use of all available financing sources and modernise the country.

3.4.8 Malta

Malta, the smallest EU member state and a Mediterranean island nation, is also striving to keep up with the developments happening at European level and also do its part in becoming more sustainable. Given its insularity, this country has remained heavily dependent on fossil fuels with limited territorial space to invest in large projects related to renewable energy sources. More recently investment in its energy policy focused on connecting its grid with mainland Europe via the investment of an electricity interconnector with southern Sicily and investment in a new gas-powered plant. Nevertheless, both RES and energy efficiency measures have remained very subdued due to the policy shift towards security of supply at subsidised prices.

Malta like other EU member states has nevertheless implemented a range of financing measures that support businesses and individuals in their pursuit of energy-saving solutions, albeit at a slower pace than other EU countries.

Driving Energy Efficiency in Malta

As stated, Malta faces unique energy challenges due to its limited domestic energy resources and dependence on imported fuels. To address these challenges, the country has introduced several energy efficiency financing measures:

Malta's RRP and NECP

Malta's recovery and resilience plan[79] is one of the greenest in terms of the percentage allocated towards climate objective. Indeed, out of the total value of €336million, almost 69% were allocated towards the green deal objectives. Some of the key measures include:

- An investment of €60 million will promote the purchase of zero-emission electric vehicles for the public and private sector.
- The purchase of 102 electric buses for public transport for €34 million and a reform granting free public transport to more than 100,000 Maltese citizens will boost the use of public transport and help address congestion.
- A large-scale energy-efficiency programme for public schools, hospitals and offices, as well as private buildings worth €52.2 million will lead to a sizable reduction of greenhouse gas emissions.

[78] European Union countries' recovery and resilience plans (bruegel.org)

[79] Malta's recovery and resilience plan (europa.eu)

In terms of the original National Energy and Climate Plan[80] (NECP) 2021-2030, the European Commission[81] commented on the lack of ambition and clarity of these plans in terms of for example the 2030 renewable energy targets with the main focus being decarbonisation and reduction of greenhouse emissions. At the time of writing Malta had just submitted a new draft plan to the EC. This will require further analysis during the duration of the EE4SMEs project.

EU Funding Programmes

Malta benefits from EU funding programmes dedicated to energy efficiency projects. EU funds support initiatives in various sectors, including public buildings, transportation, and renewable energy. These programmes align with Malta's efforts to improve energy performance and reduce carbon emissions. The main Government agency managing these funds include the Measures and Support Division, the following examples were noted:

- the SME Enhance[82] under the ERDF 2021-2027 programming period aimed to support SMEs through non-repayable Grants to part-finance investment towards expansion, diversification, innovation of the operations and initial investment, aimed at potentially improving the productivity of the enterprise.
- SME Digitalisation Grant Scheme[83] which may include support for energy monitoring and building management systems.
- Digital Intensification Grant[84] which may include support for energy monitoring, building management systems.

Most of these programmes are on an open rolling call.

Furthermore, the Government is investing heavily in the distribution and energy supply infrastructure and is planning the development of a second electricity interconnector with a capacity of 225 MWs, between Malta and Sicily at the tune of around €165 million and should be finalised by 2025.

Support for Energy Efficiency Improvements by Malta Enterprise and EWA[85]

Malta Enterprise[86] in collaboration with the Malta Energy and Water Agency (EWA) [87]offers aid to businesses that wish to replace equipment and machinery with more energy efficient ones, improvement of energy efficiency of existing illumination systems and renovation or upgrading of equipment of existing installation for heating (or cooling) systems. The aid can go up to 50% of total expenses in the case of small enterprises.

Furthermore, EWA offers two other grants namely the Energy Audit[88] and Research and Innovation Grant Scheme[89]. The energy audit grant assists operators with carrying energy audits by external consultants. The

[80] MT-NECP-FINAL-2020-10-05_Corrigendum.pdf (gov.mt)

[81] necp_factsheet_mt_final_0.pdf (europa.eu)

[82] FONDI.eu | SME Enhance (de minimis)

[83] FONDI.eu | SME Digitalisation Grant Scheme

[84] FONDI.eu | Digital Intensification Grant

[85] Investment Aid for Energy Efficiency Projects | Malta Enterprise

[86] Malta Enterprise is s the country's economic development agency, tasked with attracting new foreign direct investment as well as facilitating the growth of existing operations. Malta Enterprise |

[87] EWA is a Government of Malta organisation whose mission has been to ensure the security, sustainability and affordability of energy and water in Malta. They formulate and coordinate the implementation of the Government's national policies for energy and water, as well as EU legislation for energy and water sustainability. They also act on laws and set in motion policies related to renewable energy, Energy and Water Agency - EWA (gov.mt)

[88] Energy Audits for SMEs - EWA (gov.mt)

[89] R&I Grant Scheme – 2023 - EWA (gov.mt)

maximum amount of support (€5,000) is allocated towards medium sized Manufacturing plants and hospitality sectors.

The R&D grant in its fourth year of existence supports focuses on supporting the expansion of the potential or introduction of novel implementations of solar and wind energy systems and integration of energy sources into the grid and storage, with a focus on renewable energy with the maximum amount of aid set at €200,000.

Malta Enterprise further offers a grant[90] of up to €100,000 capped at 50% of eligible costs in machinery and equipment resulting in the applicant becoming more sustainable. A further tax credit of up to €40,000 may be awarded if criteria established in the guidelines are met.

Green Loans and Financing Packages

Several local banks offer "green loans" and financing packages with favourable terms for energy efficiency projects. These loans help businesses and individuals access capital for energy-saving initiatives, such as building renovations or the installation of energy-efficient technologies. Some examples include the APS Bank's Green Finance[91] and Eco Loans[92], Bank of Valletta's Business Energy Loan[93] and BOV SME Invest loan[94] in collaboration with the Malta Development Bank[95].

Way Forward

Malta's commitment to energy efficiency is evident through its range of financing measures. Nevertheless, Malta's lack of ambition in terms of its plans and reaching the 2030 targets remains of concern. There are a number of financing mechanisms that could be better utilised if smaller operators especially in the industry segment whilst we note too much fragmentation between the entities involved in managing EU funded mechanisms and a concerted effort is required to reduce the administrative burdens placed on enterprise in applying for such funding. Also, many of the financial mechanisms have very small or limited budgets which will limit the possible uptake of these measures.

Lastly, the country needs to support extensively the deep renovation in buildings, not only in the residential space but also in the commercial one. So far, the lack of enforcement of existing building regulations and improvement in the way new builds are designed and constructed are limiting the energy efficiency investment component. A concerted effort is required in improving the existing and new building stock through further enforcement of existing rules and incentives for operators to improve their building envelope whether in terms of insulation, heating/cooling, lighting and so on and so forth.

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[90] Smart & Sustainable Investment Grant | Malta Enterprise

[91] Be the Difference with the APS Green Finance Loan - APS Bank

[92] Go Green and Benefit with APS Eco Loans - APS Bank

[93] BOV Business Energy Loan - Bank of Valletta - BOV Group

[94] BOV SME Invest - Bank of Valletta - BOV Group

[95] The Malta Development Bank is a fully Government owned bank which offer financing facilities that support productive and viable operations where the market is unable or unwilling to accommodate such activities About Us - Malta Development Bank Malta Development Bank (mdb.org.mt)

3.4.9 Spain

Spain, a country known for its diverse landscapes is also making significant strides in the realm of sustainability. Central to this effort is a strong focus on energy efficiency and investment in renewable energy sources. To encourage businesses and individuals to invest in energy-saving solutions, Spain has introduced a range of financing measures. In this report, we will delve into these energy efficiency financing measures offered at a national level.

Spain faces the challenge of transitioning to a low-carbon, energy-efficient economy while ensuring economic growth and environmental protection. To address these challenges, Spain has put in place several energy efficiency financing measures:

Spanish Recovery and Resilience Plan

With a value of 69.5billion euros, the Spanish Recovery and Resilience Plan[96] is fully financed through RRF grants with 40% allocated to climate objectives and the green transition. The plan supports:

- The decarbonisation of the energy sector by investing €6.1 billion in clean technologies and infrastructure (including storage and electricity grids) and accelerating the development and use of renewables, including renewable hydrogen.
- It also includes a Renewable Hydrogen Roadmap, new strategies for building rehabilitation, decarbonisation and energy storage, and new procurement auctions for renewable electricity.
- And a Law on climate change and energy transition establishing into law the renewable targets for 2030 and the objective of climate neutrality by 2050, including a 100% renewable electricity system.

IDAE Energy Efficiency Fund (Fondo Nacional de Eficiencia Energética[97])

Spain promotes renewable energy adoption through various financing mechanisms, including feed-in tariffs and subsidies for renewable energy projects. These incentives encourage the transition to cleaner and more energy-efficient power sources.

Managed by the Institute for Diversification and Energy Saving (IDAE), the energy efficiency fund provides grants and subsidies to support energy efficiency projects across various sectors. Businesses, municipalities, and individuals can access these funds for initiatives such as building renovations, efficient lighting, and heating system upgrades.

Some examples of these financial mechanisms include the following:

- Grants[98] for the realisation of thermal renewable energy installations in the industrial, agricultural, services and other sectors of the economy, including the residential sector and implementation of thermal renewable energy installations in non-residential buildings, establishments and infrastructures of the public sector.
- Grants for the development of innovative renewable energies, integrated into building and production processes
- Incentive programmes linked to own-consumption and storage linked to renewable energy sources, as well as the implementation of renewable thermal systems in the residential sector and others

[96] Spain's recovery and resilience plan (europa.eu)

[97] Fondo Nacional de Eficiencia Energética | Idae

[98] For the implementation of thermal renewable energy installations in different sectors of the economy (RD 1124/2021. PRTR) | Idae

- Renovation of existing buildings that are being used for tourist accommodation, in order to reduce their energy consumption and CO2 emission levels[99]

Tax Deductions for Energy Efficiency Investments

Spain offers tax deductions[100] to businesses that invest in energy-efficient equipment, machinery, and vehicles. These deductions encourage companies to modernise their operations and reduce energy consumption.

Green Financing Initiatives

Spanish financial institutions offer "green loans" such as in the case Banco Santander[101] and financing packages in the case of Banco Sabadell[102] tailored to energy efficiency projects. These loans provide favourable terms, including low-interest rates and extended repayment periods, making energy efficiency upgrades more accessible to businesses and homeowners.

Conclusion

Spain's commitment to energy efficiency is reflected in its comprehensive range of financing measures. These initiatives empower businesses and individuals to invest in sustainable energy practices while contributing to the country's broader environmental and economic goals. By harnessing grants, tax incentives, green financing, and European funding opportunities, Spain is paving the way for a more energy-efficient and sustainable future.

[99] Ayudas y financiación | Idae

[100] Tax Agency: Deductions for housing energy efficiency improvement works (agenciatributaria.gob.es)

[101] Green loan: energy efficiency for your home – Banco Santander

[102] EIB Financing Lines - BANCO SABADELL (bancsabadell.com)

4 Key Challenges and Barriers to Investment in Energy Efficiency

Energy efficiency is a crucial aspect of sustainability and cost savings for businesses, offering the dual benefits of reducing environmental impact and improving the bottom line. However, many companies still face significant challenges and barriers when considering investments in energy efficiency. In this section, we will explore some of the key obstacles that businesses encounter and ways to overcome them.

Upfront Capital Costs:

The initial investment required for energy-efficient technologies and equipment can be substantial. For many businesses, especially small and medium-sized enterprises (SMEs), this financial barrier can be daunting. To address this challenge, various solutions are available, including grants, subsidies, and low-interest loans offered by governments and financial institutions. Businesses can also explore energy performance contracting (EPC) agreements where the upfront costs are covered by a third-party and paid back through energy savings.

Lack of Awareness:

Many businesses, particularly SMEs, may not be fully aware of the potential energy-saving opportunities within their operations. Raising awareness and providing education on energy-efficient practices and technologies is essential. Governments, industry associations, and energy consultants can play a role in disseminating information and offering guidance to businesses.

Complexity and Uncertainty:

Energy efficiency projects can be complex, involving technical and regulatory challenges. Business operators may be uncertain about the potential return on investment and the risks associated with such projects. To address this, companies should conduct comprehensive energy audits to identify opportunities and develop a clear business case. Engaging with experienced energy consultants or service providers can help navigate complexities and uncertainties.

Split Incentives:

In some cases, the entity responsible for energy expenses i.e. tenants may not be the same as the one investing in energy efficiency improvements i.e. landlords or owners of a commercial building. This "split incentive" problem can lead to a lack of motivation to invest in energy-efficient upgrades. Solutions include lease agreements that share the benefits of energy savings, thus aligning incentives for both parties.

Short-Term Focus:

Businesses often prioritise short-term financial goals over long-term investments. Energy efficiency projects typically have longer payback periods, making it challenging to gain buy-in from decision-makers. To overcome this barrier, it's crucial to emphasize the long-term cost savings and resilience that energy-efficient measures can provide. Businesses should also consider incorporating energy efficiency into their sustainability goals and corporate social responsibility initiatives.

Regulatory and Policy Challenges:

Inconsistent or unclear energy efficiency regulations and policies can deter businesses from investing. Governments can address this by creating a stable regulatory environment that promotes energy efficiency through incentives, tax breaks, and supportive policies.

Technological Risks:

The rapidly evolving nature of energy-efficient technologies can create uncertainty for businesses. To mitigate this risk, companies should conduct thorough technology assessments and stay informed about industry trends and advancements. Pilot projects can also help test new technologies on a smaller scale before full-scale implementation.

While there are undoubtedly challenges and barriers to business investments in energy efficiency, proactive measures can help overcome them. Collaboration between Governments, industry stakeholders, and financial institutions is essential in providing the necessary support and incentives to drive energy efficiency adoption. As businesses increasingly recognise the long-term benefits of reduced energy consumption and a smaller environmental footprint, investing in energy efficiency is becoming not only a responsible choice but also a strategic one for future success.

Below is a summary of the key challenges segmented as Financial and Non-financial barriers to investment.

Financial Barriers	Non-Financial Barriers
• **Long pay-back period** of several Energy Efficient (EE) interventions. • **Difficulties to obtain financing based on cash flows** generated by EE activities. • **Limited financial resources** to devote to EE initiatives. • **Limited financial returns of EE interventions** (in particular for **deep renovations**). • Vast majority of companies in the 9 partnering countries are **micro enterprises** limiting their financial capacity. • High corporate debt in a number of countries. • Banks and other financial intermediaries requesting **high collateral.** • **Lack of experience of financial institutions with EE.** • First the financial and then the Covid induced **recessions have reduced appetite for investments in EE.** • In some countries participating in this project **energy is heavily subsidised with Renewable Energy Sources (RES) being heavily promoted over EE.**	• **Limited awareness about benefits of EE** interventions and difficulties in structuring EE interventions. • **Reluctance of enterprises to use their borrowing capacity for non-core activities** (like EE). • A **high amount of commercial property is either being leased from the public or private sector** limiting the incentive to invest from tenants. • **Difficulties to include EE interventions into wider development projects / investments.** • Limited **access to skilled workforce.** • **High percentage of companies are in the broader service sector** rather than manufacturing or hospitality. • **Small size of projects** leads to **high transaction costs.**

5 High-level Policy Recommendations Related to Financing

Policy Recommendations

- **Awareness raising** and coaching/mentoring activities are required. Chambers of Commerce and other entities have a strong role to play in this space.
- **Instruments combining grants and repayable component** could be better received.
- **Dedicated financial instruments for EE could also support the development of the EPC model** in the industry sector.
- **Payment by results financial mechanisms** (or EPC-type mechanisms) could help EE interventions.
- **Financial mechanisms related to deep renovations of older building stock** are crucial.

Public funds alone cannot finance all the necessary energy efficiency measures. The public sector needs to act as a catalyst, boosting private financing to close the investment gap by:

- Tailor-made solutions provided by closer public-private collaboration
- **SMEs need special focus** - through intelligent project pooling structures and bundling mechanisms.
- **Innovative financing mechanisms** such as energy performance contracting (EPCs) offered by Energy Service Companies (ESCO) and green bonds.

6 Appendices

6.1 Questionnaire – Self-assessment on the energy efficiency measures in companies

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QUESTIONNAIRE SELF - ASSESSMENT ON THE ENERGY EFFICIENCY MEASURES IN COMPANIES

GENERAL INFORMATION
NACE SECTOR:

Accommodation and food sector (NACE codes: I55 to I56.3.0)

Metalwork manufacturing (NACE Codes: C24 to C25.9.9)

Agrifood manufacturing (NACE Codes: C10 to C11.0.7)

COUNTRY:

REGION:

NAME AND CONTACT OF THE COMPILER:

CHARACTERISTICS OF THE COMPANY:

TOTAL REVENUE (€):

NUMBER OF EMPLOYEES:

i. 1-50
ii. 51-249
iii. >250

1. What successful efficiency measures have you implemented in recent years that you think should be presented?

_____

2. How much savings have you obtained from each of the above-mentioned measure? (please specify the unit)

   _____

3. How much does the investment cost for implementing each of the above-mentioned measures?

   _____

4. How long is the payback time of the measures you have implemented?

   _____

5. Do you have an energy efficiency plan?
   a. no
   b. yes

6. Have you ever done an energy audit or an energy check?
   a. no
   b. yes

7. Were you advised on existing fundings?
   a. no
   b. yes

8. Does the company have an internal ‘energy office’ or does it hire a consultant?
   a. Internal staff
   b. External staff/consultant

9. Which energy carrier do you use in your company?
   a. Only natural gas
   b. Only electricity
   c. Both natural gas and electricity
   d. Oil
   e. Wood
   f. Other

10. Does your policy include raising awareness on energy efficiency?
    a. no
    b. yes

11. Have you ever used a tool for energy provider comparison?
    a. no
    b. yes, please specify _____

SPECIFIC QUESTIONNAIRE FOR AGRIFOOD SECTOR

1. Have you replaced / upgraded any pumps in recent years for liquid circuits?
    a. no
    b. yes we replaced them
    c. yes we upgraded them

2. Have you replaced fans in recent years for air circuits?
    a. no
    b. yes

3. Have you replaced lighting fixtures with LED technology in recent years to make the lighting more efficient?
    a. no
    b. yes

4. Have you redone your compressed air lines in recent years?
    a. no
    b. yes

5. Do you have a heat recovery system on the compressors?
    a. no
    b. yes

6. Have you already carried out an electrical peak reduction?
    a. no
    b. yes

7. Do you use inverter technology for machinery?
    a. no
    b. yes

8. Have you installed a cogeneration or trigeneration unit?
    a. no
    b. yes, cogenerative power
    c. yes, trigenerative power

9. Do you have a ventilation system?
    a. no

b. yes

10. Do you have process cooling systems?
    a. no
    b. yes

11. Do you have sterilisation systems?
    a. no
    b. yes

12. Do you have industrial washing systems?
    a. no
    b. yes

13. Do you have in-house ovens?
    a. no
    b. yes

14. Have you installed solar thermal panels?
    a. no
    b. yes

15. Have you replaced boilers?
    a. no
    b. yes

16. Have you improved the efficiency of your spatial cooling (air conditioning) equipment?
    a. no
    b. yes
17. Do you use heat recuperators for heat recovery within processes?
    a. no
    b. yes

18. Have you installed photovoltaic panels?
    a. no
    b. yes

19. Have you installed geothermal plant?
    a. no
    b. yes

20. Do you purchase certified renewable electricity?
    a. no
    b. yes

21. Have you replaced company vehicles with electric vehicles/ plug-in hybrids?

    a. no
    b. yes

22. Do you use car sharing in your company?
    a. no
    b. yes

23. Do you have electric car charging points in your company?
    a. no
    b. yes

29. Do you have a centralised consumption control system (e.g. a Building Management System)
    a. No
    b. Yes

30. Do you use any energy management or remote consumption monitoring service?
    a. no
    b. yes

31. Have you implemented any other energy initiative that you would like to share?

_____

32. Which are the next initiatives that you are going to implement in the sector of energy efficiency?

_____

SPECIFIC QUESTIONNAIRE FOR METALWORK SECTOR

1. Have you replaced / upgraded any pumps in recent years for liquid circuits?
    a. no
    b. yes we replaced them
    c. yes we upgraded them

1. Have you replaced fans in recent years for air circuits?
    a. no
    b. yes

2. Have you replaced light fittings with new LED fittings in recent years to make lighting more efficient?
    a. no
    b. yes

3. Have you rebuilt your air lines in recent years?
    a. no
    b. yes

4. Do you have a heat recovery system on the compressors?
    a. no
    b. yes

5. Have you already carried out an electrical peak reduction?
    a. no
    b. yes

6. Do you use inverter technology for machinery?

a. no
b. yes

7. Have you installed a cogeneration or trigeneration unit?
    a. no
    b. yes, cogenerative power
    c. yes, trigenerative power

8. Do you have a ventilation system?
    a. no
    b. yes

9. Do you have process cooling systems?
    a. no
    b. yes

10. Do you have industrial washing systems?
    a. no
    b. yes

11. Do you have in-house ovens?
    a. no
    b. yes

12. Have you replaced boilers?
    a. no
    b. yes

13. Have you improved the efficiency of spatial cooling equipment (air conditioning machines)?
    a. no
    b. yes

14. Do you use heat recuperators for heat recovery within processes?

a. no
b. yes

15. Have you installed photovoltaic panels?
    a. no
    b. yes

16. Have you installed solar thermal panels?
    a. no
    b. yes

17. Have you installed geothermal plant?
    a. no
    b. yes

18. Do you purchase certified renewable electricity?
    a. no
    b. yes

19. Have you recently upgraded the forklifts in your company?
    a. no
    b. yes

20. Have you replaced company vehicles with electric vehicles / plug-in hybrid
    a. no
    b. yes

21. Do you use car sharing in your company?
    a. no
    b. yes

22. Do you have electric car charging points in your company?
    a. no
    b. yes

23. Do you have a centralised consumption control system (e.g. a Building Management System)?
    a. no
    b. yes

24. Do you use any energy management or remote consumption monitoring service?
    a. no
    b. yes

25. Have you implemented any energy initiatives that you would like to share?
    _____

26. Which are the next initiatives that you are going to implement in the sector of energy efficiency?_____

SPECIFIC QUESTIONNAIRE FOR ACCOMMODATION AND FOOD SECTOR

1. Have you replaced any pumps in recent years for liquid circuits?
    a. no
    b. yes

2. Have you replaced fans in recent years for air circuits?
    a. no
    b. yes

3. Have you replaced light fittings with LED technology fittings in recent years to make lighting more efficient?
    a. no
    b. yes

4. Have you installed a cogeneration or trigeneration unit?
    a. no
    b. yes, cogenerative power
    c. yes, trigenerative power

5. Do you have a ventilation system?
    a. no
    b. yes

6. Do you have in-house kitchen?
    a. no
    b. yes

7. Do you have in-house swimming pools or wellness centres?
    a. no
    b. yes

8. Have you installed solar thermal panels?
    a. no
    b. yes

9. Have you replaced boilers?
    a. no
    b. yes

10. Have you improved the efficiency of summer air conditioning machines?
    a. no
    b. yes

11. Have you installed photovoltaic panels?
    a. no
    b. yes

12. Do you purchase certified renewable electricity?
    a. no
    b. yes

13. Do you have electric car charging points in your company?
    a. no
    b. yes

14. Do you have a centralised consumption control system (e.g. a Building Management System)?
    a. no
    b. yes

15. Do you have Room Management System?
    a. no
    b. yes

16. Do you use any energy management or remote consumption monitoring service?
    a. no
    b. yes

17. Have you implemented walls or roof insulation in your building?
    a. No
    b. Yes

18. Have you installed double or triple glazing windows?
    a. No
    b. Yes

19. Have you implemented any other energy initiatives that you would like to share?

_____

20. Which are the next initiatives that you are going to implement in the sector of energy efficiency?

_____

6.2 List of Sectors and sub-sectors falling under the NACE codes in the EE4SMEs project

C10 - Manufacture of food products
C10.1 - Processing and preserving of meat and production of meat products
C10.1.1 - Processing and preserving of meat
C10.1.2 - Processing and preserving of poultry meat
C10.1.3 - Production of meat and poultry meat products
C10.2 - Processing and preserving of fish, crustaceans and molluscs
C10.2.0 - Processing and preserving of fish, crustaceans and molluscs
C10.3 - Processing and preserving of fruit and vegetables
C10.3.1 - Processing and preserving of potatoes
C10.3.2 - Manufacture of fruit and vegetable juice
C10.3.9 - Other processing and preserving of fruit and vegetables
C10.4 - Manufacture of vegetable and animal oils and fats
C10.4.1 - Manufacture of oils and fats
C10.4.2 - Manufacture of margarine and similar edible fats
C10.5 - Manufacture of dairy products
C10.5.1 - Operation of dairies and cheese making
C10.5.2 - Manufacture of ice cream
C10.6 - Manufacture of grain mill products, starches and starch products
C10.6.1 - Manufacture of grain mill products
C10.6.2 - Manufacture of starches and starch products
C10.7 - Manufacture of bakery and farinaceous products
C10.7.1 - Manufacture of bread; manufacture of fresh pastry goods and cakes
C10.7.2 - Manufacture of rusks and biscuits; manufacture of preserved pastry goods and cakes
C10.7.3 - Manufacture of macaroni, noodles, couscous and similar farinaceous products
C10.8 - Manufacture of other food products
C10.8.1 - Manufacture of sugar
C10.8.2 - Manufacture of cocoa, chocolate and sugar confectionery
C10.8.3 - Processing of tea and coffee
C10.8.4 - Manufacture of condiments and seasonings
C10.8.5 - Manufacture of prepared meals and dishes
C10.8.6 - Manufacture of homogenised food preparations and dietetic food
C10.8.9 - Manufacture of other food products n.e.c.
C10.9 - Manufacture of prepared animal feeds
C10.9.1 - Manufacture of prepared feeds for farm animals
C10.9.2 - Manufacture of prepared pet foods

C11 - Manufacture of beverages
C11.0 - Manufacture of beverages
C11.0.1 - Distilling, rectifying and blending of spirits
C11.0.2 - Manufacture of wine from grape
C11.0.3 - Manufacture of cider and other fruit wines
C11.0.4 - Manufacture of other non-distilled fermented beverages
C11.0.5 - Manufacture of beer
C11.0.6 - Manufacture of malt
C11.0.7 - Manufacture of soft drinks; production of mineral waters and other bottled waters

C24 - Manufacture of basic metals
C24.1 - Manufacture of basic iron and steel and of ferro-alloys
C24.1.0 - Manufacture of basic iron and steel and of ferro-alloys
C24.2 - Manufacture of tubes, pipes, hollow profiles and related fittings, of steel
C24.2.0 - Manufacture of tubes, pipes, hollow profiles and related fittings, of steel
C24.3 - Manufacture of other products of first processing of steel
C24.3.1 - Cold drawing of bars
C24.3.2 - Cold rolling of narrow strip
C24.3.3 - Cold forming or folding
C24.3.4 - Cold drawing of wire
C24.4 - Manufacture of basic precious and other non-ferrous metals
C24.4.1 - Precious metals production
C24.4.2 - Aluminium production
C24.4.3 - Lead, zinc and tin production
C24.4.4 - Copper production
C24.4.5 - Other non-ferrous metal production
C24.4.6 - Processing of nuclear fuel
C24.5 - Casting of metals
C24.5.1 - Casting of iron
C24.5.2 - Casting of steel
C24.5.3 - Casting of light metals
C24.5.4 - Casting of other non-ferrous metals

C25 - Manufacture of fabricated metal products, except machinery and equipment
C25.1 - Manufacture of structural metal products
C25.1.1 - Manufacture of metal structures and parts of structures
C25.1.2 - Manufacture of doors and windows of metal
C25.2 - Manufacture of tanks, reservoirs and containers of metal
C25.2.1 - Manufacture of central heating radiators and boilers
C25.2.9 - Manufacture of other tanks, reservoirs and containers of metal
C25.3 - Manufacture of steam generators, except central heating hot water boilers
C25.3.0 - Manufacture of steam generators, except central heating hot water boilers
C25.4 - Manufacture of weapons and ammunition
C25.4.0 - Manufacture of weapons and ammunition
C25.5 - Forging, pressing, stamping and roll-forming of metal; powder metallurgy
C25.5.0 - Forging, pressing, stamping and roll-forming of metal; powder metallurgy
C25.6 - Treatment and coating of metals; machining
C25.6.1 - Treatment and coating of metals
C25.6.2 - Machining
C25.7 - Manufacture of cutlery, tools and general hardware
C25.7.1 - Manufacture of cutlery
C25.7.2 - Manufacture of locks and hinges
C25.7.3 - Manufacture of tools
C25.9 - Manufacture of other fabricated metal products
C25.9.1 - Manufacture of steel drums and similar containers
C25.9.2 - Manufacture of light metal packaging
C25.9.3 - Manufacture of wire products, chain and springs
C25.9.4 - Manufacture of fasteners and screw machine products
C25.9.9 - Manufacture of other fabricated metal products n.e.c.

I55 - Accommodation
I55.1 - Hotels and similar accommodation
I55.1.0 - Hotels and similar accommodation
I55.2 - Holiday and other short-stay accommodation
I55.2.0 - Holiday and other short-stay accommodation
I55.3 - Camping grounds, recreational vehicle parks and trailer parks
I55.3.0 - Camping grounds, recreational vehicle parks and trailer parks
I55.9 - Other accommodation
I55.9.0 - Other accommodation

I56 - Food and beverage service activities
I56.1 - Restaurants and mobile food service activities
I56.1.0 - Restaurants and mobile food service activities
I56.2 - Event catering and other food service activities
I56.2.1 - Event catering activities
I56.2.9 - Other food service activities
I56.3 - Beverage serving activities
I56.3.0 - Beverage serving activities

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