FEDERAL ENERGY EFFICIENCY CENTER

Empirical Analysis of the Market for Energy Services, Energy Audits and other Energy Efficiency Measures

Summary of the 2022 Final Report – BfEE 20/04

Citation:
Bundesstelle für Energieeffizienz (BfEE) (ed.), “Empirical Analysis of the Market for Energy Services, Energy Audits and other Energy Efficiency Measures”, Summary of the 2022 Final Report – BfEE 20/04, Eschborn, 2023.

Commissioned / conceptual support by:
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1 Background and goals

To meet Germany's climate goals and achieve the *Energiewende* (energy transition), many pieces have to come together. Markets for energy efficiency and energy services are a key part of this effort. These two markets are subject to continuous changes – with new products, and the integration and separation of different business models – and hence cover a wide and heterogeneous range of services and products. According to Section 9(2)(5) of the German Energy Services Act (*Energiedienstleistungs-Gesetz*, EDL-G), the Federal Energy Efficiency Center (Bundesstelle für Energieeffizienz, BfEE) is responsible for monitoring the market for energy services, energy audits and other energy efficiency measures, as well as for developing proposals for the advancement of the market.

The BfEE has studied the market for energy services annually since 2016. This study is the seventh of its kind. As shown in previous studies, the market under review is firmly established in Germany, and generates high sales. The services offered are diverse, and only some can be narrowly defined. This year's report again focuses on the product segments of energy consulting, energy contracting, energy management and energy efficiency information. As in previous years, not only market participants from the supply side, but also demand-side companies and households, and public sector stakeholders were interviewed for this study.

The figures in the marketing year 2021 (survey of 2022, this current report) present a mixed picture. Whereas energy contracting is growing and in fact energy consulting continues to grow strongly, the market volume for energy management has fallen to its lowest level in recent years. Nevertheless, in many cases, the qualitative analysis continues to indicate a high level of satisfaction, prospects for positive development, and growing interest.

2 Survey design

To monitor and assess the market for energy services in Germany, an indicator-based survey design was created to obtain information annually regarding the following overarching issues:

- Standardised key market indicators for all relevant products, enabling the analysis of the market's development over time (market monitoring);
- Supply-side and demand-side motivations, barriers and information channels, as well as expectations regarding the development of the market.

To capture the indicators described above and to create a comprehensive overview of the market, a variety of methods were used. These included:

- Literature and document analysis;
- The collection of empirical data via standardised surveys by means of telephone interviews and an online questionnaire; and
- In previous years, the collection of qualitative information by means of structured interviews with experts.

The survey methods and the questionnaire were continuously developed and refined. The changes reflected findings from previous studies and the involvement of interested experts, but were also limited to what was necessary in order to allow the creation of time series over multiple survey years.

A total of five standardised surveys were conducted. Surveys on the provider side were conducted online and by telephone. The online survey of providers was sent via a distribution list to around 9,000 relevant addresses. A selection of 261 companies on the provider side were interviewed by telephone, and 1,862 participated in the online survey of providers (see Table 1). On the demand side, Kantar Public surveyed 2,753 companies, 2,506

private households and 496 public sector institutions by telephone. In addition, Prognos conducted two interviews with institutions of the Federal Administration.

Table 1: Number of standardised surveys conducted in 2022

	Sample	Short name
Supply side		Providers
By telephone	261	
Online (usable responses)	1,862	
Demand side		
Companies	2,753	Companies
Private households (with/without home ownership)	2,506	Households
Public sector	498	Public sector

With the exception of the public sector, all datasets are given a weighting variable to compensate for potential sample bias and to increase the representativeness of the results. Weighting is based on relevant variables that take into account aspects such as socio-economic criteria in the case of private households or company size in the case of companies. Quantitative analyses (e.g. market volume) are not weighted; qualitative analyses are weighted.

3 Results

The German energy services market, with its three large segments, generated total annual revenues of €11 billion to €13 billion in 2021. Although there is a great range of fluctuation due to the methodology, overall the market is seen to be growing strongly.

The largest absolute increases occurred in the area of energy contracting, where revenue grew from €9.3 billion to an average of €10 billion, representing a growth rate of around 8%. The largest relative growth can be seen in the area of energy consulting. This relative growth is partly due to the methodology adopted (see Section 3.1.1), but also to the fact that the market is growing by around 37%. Due to falling demand, market shares in the energy management segment are declining, and are at the lowest calculated market value since 2016.

Table 2 shows the market volume for the energy services market and the three market segments for the past six surveys. In this instance, it is important to consider that the survey always records the revenue from the previous year, i.e. the revenue generated in 2021 was surveyed for this 2022 market analysis. The methodological developments will be explained in greater detail in the following sections. Detailed market figures and calculations are also presented for the individual market segments in the following sections.

Table 2: Overview of market volume

	2015	2016	2017	2018	2019	2020	2021
Energy consulting (in € m)	Approx. 470–520	Approx. 790–850	Approx. 370–402	Approx. 360–403	Approx. 416	Approx. 654	Approx. 893
Energy contracting (in € bn)	Approx. 7.2–8.4	Approx. 7.7	Approx. 7.2–8.6	Approx. 6.7–9.7	Approx. 7.4–9.0	Approx. 8.8–10.9	Approx. 9.5–10.6
Energy management (in € m)	–	Approx. 107	Approx. 110	Approx. 99	Approx. 88	Approx. 96	Approx. 76
Total energy services market (in € bn)	**7.9–9.1**	**8.9–9.0**	**8.0–9.5**	**7.2–10.2**	**7.9–9.5**	**Approx. 9.6–11.7**	**Approx. 11.4–12.5**

3.1 Energy consulting

3.1.1 Market volume and development

The market volume for energy consulting was mainly calculated based on three variables: for each type of consulting, the average number of cases for every provider of the service offered was offset against the number of full-time equivalents (FTEs) that focus primarily on energy consulting, and the price of such services. This was multiplied by the estimated number of energy consultants who offer each product in Germany.

The basic methodology for determining the current market volume did not change, but there was a significant change in methodology in 2019. As a result, market volume in the time series analysis is not comparable throughout with previous studies.

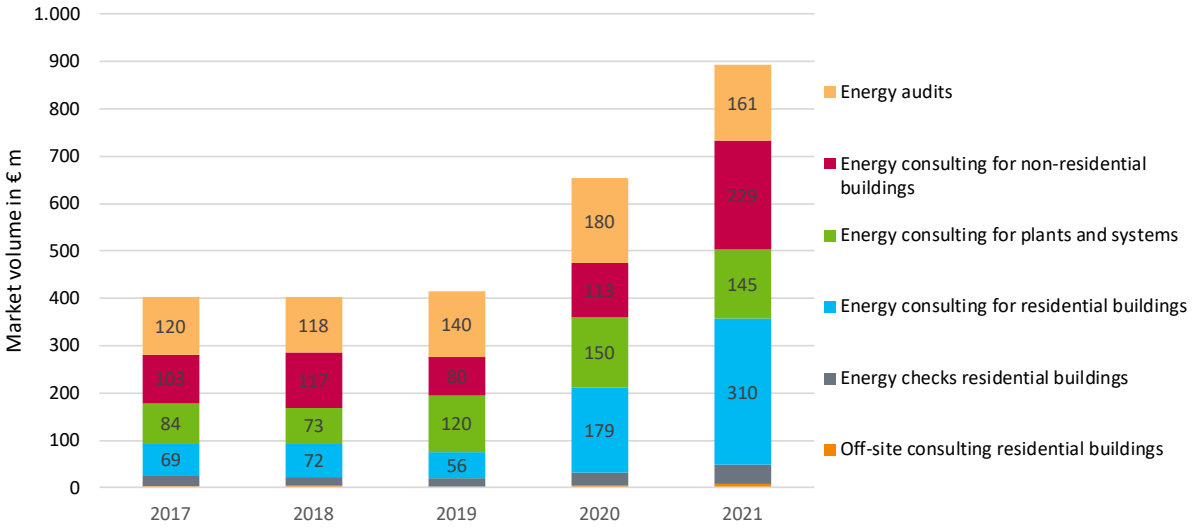
Table 3 provides an overview of the proportions of each type of consulting. As in previous years, energy consulting for companies and the public sector dominate in terms of revenue. These include energy audits, consulting for non-residential buildings and for plants and systems, and to a certain extent energy consulting for residential buildings. The latter now constitute the strongest single sector in terms of revenue.

Table 3: Extrapolated minimum market volume for energy consulting in Germany

Type of consulting	Revenue in € m (generated by 9,600 "active" energy consultants)
Energy audits according to DIN 16247-1	161
Energy consulting for non-residential buildings	229
Energy consulting for plants and systems	145
Energy consulting for residential buildings	310
Energy checks	40
Off-site consulting	8
Total	**€893 m**

The minimum market volume grew strongly again compared to the previous year, reaching a value of €893 million (see Figure 1). This equates to an increase of 37%. Breaking down revenue into the different types of consulting, the market is dominated by consulting for companies, although the importance of consulting for private individuals and residential buildings has increased considerably. The market volume for more extensive on-site consultations for residential buildings almost doubled, and is now the largest energy consulting segment in terms of revenue. The strongest growth, however, was in consulting for non-residential buildings, which grew by 103%.

Figure 1: Minimum market volume, based on the survey of providers, in million euros



EES survey 2018 to 2022. market volume of energy consulting based on provider data

Table 4 shows the average selling prices, the time energy consultants spent working on the task in hours, and the resulting hourly rates, broken down by type of consulting. The more complex and extensive types of consulting for companies fetch higher selling prices and take longer to complete. As a result, there is comparatively little variation in hourly rates between the different types of consulting. Consulting for non-residential buildings yields the highest hourly rates. In contrast, off-site energy consulting for residential buildings generally indicates that aspects such as customer loyalty or the possibility of follow-up orders take precedence over the cost-effectiveness of the individual service.

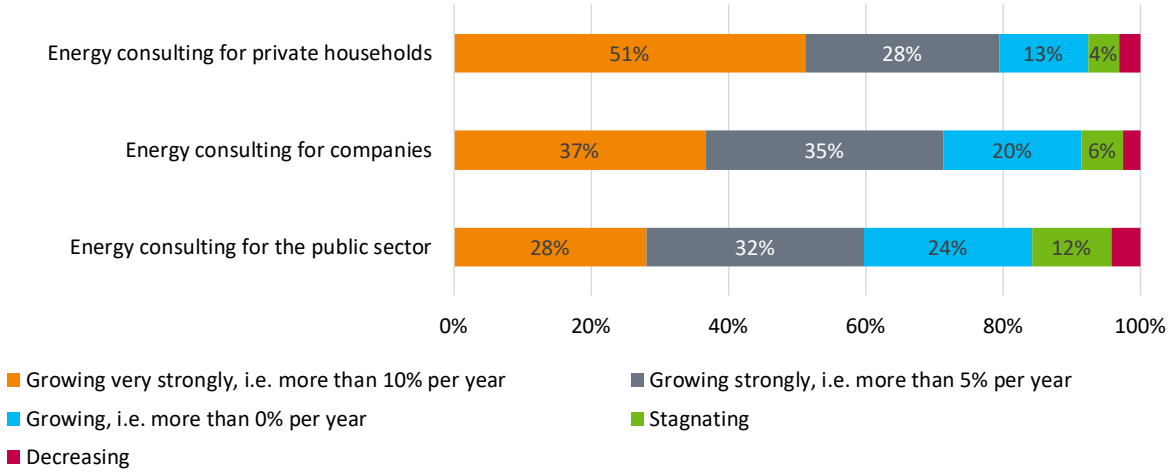
Table 4: The selling price, effort and hourly rate prevailing in the different type of consulting

Type of consulting (averages in each case)	Selling price in €	No. of hours spent on task	Hourly rate in €	Energy consulting offered free of charge
Energy audits according to DIN 16247-1	9,060	67.7	134	0.0 %
Energy consulting for non-residential buildings	6,130	39.4	156	0.9 %
Energy consulting for plants and systems	7,100	52.7	135	2.4 %
Energy consulting for residential buildings	1,620	12.6	128	1.3 %
Energy checks	280	2.3	121	6.2 %
Off-site consulting	130	1.8	72	10.7%

Energy consultants were generally very positive in their assessment of the market development in the coming years (see Figure 2). Such an optimistic market outlook had never been recorded in the market survey before.

The energy consulting market for private households is considered to have the best chances of development. More than 90% of those surveyed anticipated a growing market, with almost 80% of respondents categorising it as a strongly or very strongly growing market. The market outlook for energy consulting for companies was considered to be almost as good. Only the market outlook for public sector consulting was somewhat more subdued, but still very positive.

Figure 2: Providers: assessment of market development for energy consulting



EES survey 2022, providers of energy consulting

The respondents' planning also matched the positive market outlook. Two-thirds of those surveyed planned to increase their revenue from energy consulting and audits, one in four do not plan to do so, and almost 10% are undecided. Further dynamic growth can therefore be expected for the marketing year 2022. This expectation is also reflected in the number of cases in the subsidy programmes.

3.1.2 The supply side

The exact number of energy consultants operating in Germany is not known and cannot be reliably determined due to the lack of nationally agreed definitions and the associated unclear distinction between responsibilities. As mentioned previously, the supply-side figures in this study are based on the statements of a sample generated from a pool of 9,642 individuals in Germany who are known either because they are registered as an energy auditor and/or because they applied to a federally funded consulting programme within the last five years. The study therefore considers a clearly defined section of a total market for energy consulting that is anything but clearly definable. For example, these figures capture only a portion of consulting services provided by chimney sweeps, heating engineers, environmental consultants, municipalities, municipal utilities and sales specialists.

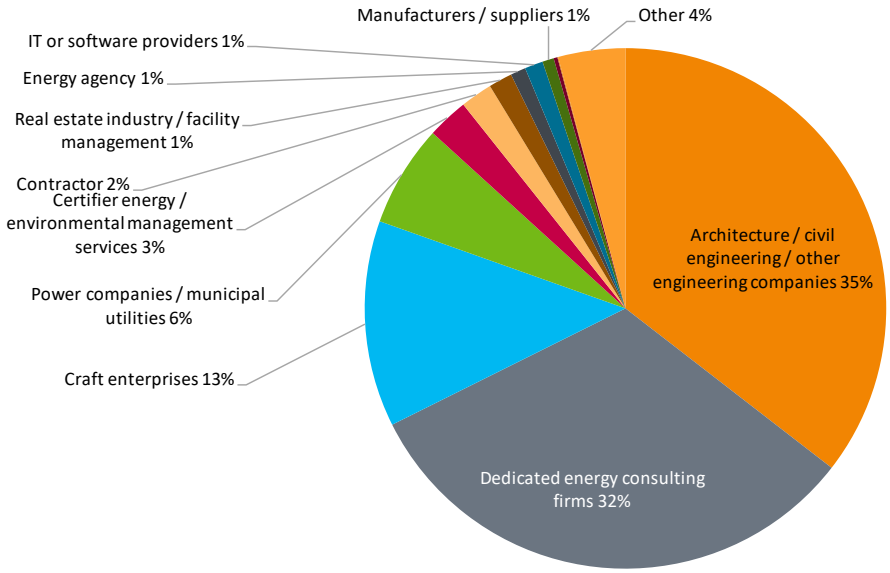
The energy consultants surveyed in this study often offer several types of energy consulting. Based on the total number and factoring in the product ranges respondents gave in the survey results, for the defined consulting products Germany had at its disposal around 2,700 consultants that offered energy audits (-400 compared to the previous year), around 4,000 providing energy consulting for non-residential buildings (+500), some 2,600 for plants and systems (+300), and almost 7,300 offering consulting for residential buildings. The availability of all types of energy consulting has therefore risen significantly compared to the previous year.

Types of companies

The energy consultants interviewed in the context of this study generally assigned their companies to one of two categories. Architecture, civil engineering and other engineering companies on the one hand, and dedicated energy consulting firms on the other, accounted for two-thirds of all companies (see Figure 3). This concentration was found to be at a similar level in the previous years' surveys. Compared to the previous year, however, the proportion of craft enterprises among the respondents grew significantly from 8% to 13%. Power companies and

municipal utilities accounted for 6%. Due to the overall increase in the number of players, however, the absolute operating figures in the survey are not in decline.

Figure 3: Providers: sector structure for energy consulting



EES survey 2022, providers, multiples responses possible, n = 2041

The organisational structure of the providers surveyed shows little change compared to 2021. The majority of those surveyed (53%) indicated that energy services were the core activity of their business. 20% of the respondents had a separate department for energy services, and in another 10%, the responsibilities for providing such services were distributed over multiple departments, sometimes even among multiple companies or subcontractors. The development of the average revenue shares for energy consulting, energy reports and energy audits also indicates a tendency for greater specialisation and professionalism in the sector. The revenue share rose slightly to 36.5% compared to the previous year, increasing for the fourth year in a row.

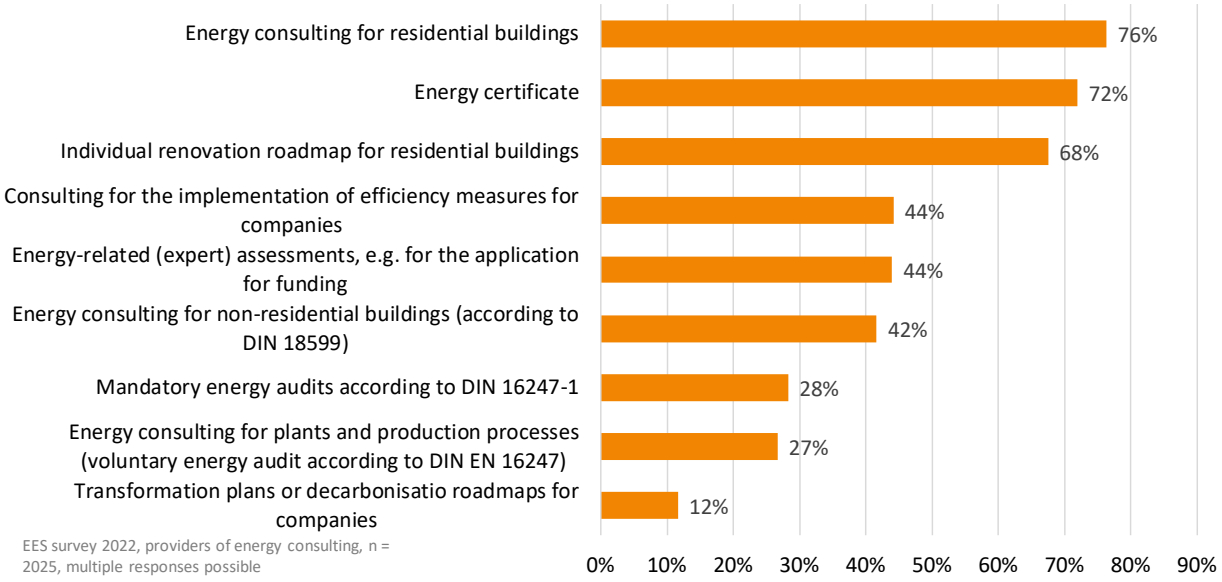
Types of consulting offered

Energy consulting for residential buildings was the most common type of energy consulting, as shown in Figure 4. Around 76% of those surveyed offer this type of consulting, a further increase compared to previous years. The share of respondents that offer energy consulting for non-residential buildings and for plants and systems remained stable, whereas the proportion for energy audits fell again compared to the previous year. Due to the overall higher number of “active” energy consultants, however, there is also generally a wider range of services available for more complex business consultations and audits.

This confirms a trend in recent years towards an expansion of the offer of more comprehensive consulting for residential buildings, without significantly limiting other forms of consulting in the range of services offered.

Due to differences in selling prices and a continued slightly higher hourly rate fetched for consulting for companies, the share of consulting for residential buildings in total revenues is not quite as dominant as suggested by the proportion of those offering this service. However, with the total number of providers continuing to rise, consulting for residential buildings is consolidating its position as the most important type of consulting, also in terms of revenue.

Figure 4: Providers: types of energy consulting offered



3.1.3 The demand side

Target segments

From the perspective of energy-consulting providers, private households were the most important customer group in the market, followed by the real estate industry, which respondents named most frequently as the second most important customer group. Besides those two segments, there was a whole range of other customer groups that were particularly important for specialised companies, as well as for the market as a whole. These included, above all, industry; commerce, trade and services (CTS); and the public sector. In recent years, the relevance of private households as the most important customer group increased further for most respondents. This finding is consistent with its increasing share of the market volume for energy consulting.

The individual areas of demand are considered separately below. For this purpose, the respective survey data of the target groups (households (owners and tenants), companies and the public sector) are used.

Households

The issue of energy efficiency is very important to households. Since the start of the time series measurement, this issue has stood at more or less 7.5 on a scale of 1 (no significance) to 10 (great significance). In 2022, the issue increased in importance slightly to 7.9 among owner-occupied households and to as much as 8.2 among tenant households. In each case, these are the highest values measured since market monitoring began. The development of energy prices could be a key factor in the growth in importance.

Among the owner-occupied households and tenant households surveyed, 24% and 18%, respectively, made use of energy consulting in the last five years, and for a further 10% and 4%, respectively, consulting was provided more than five years ago. This meant that two-thirds of owner-occupied households and no less than over three-quarters of tenant households had never used the energy consulting services on offer.

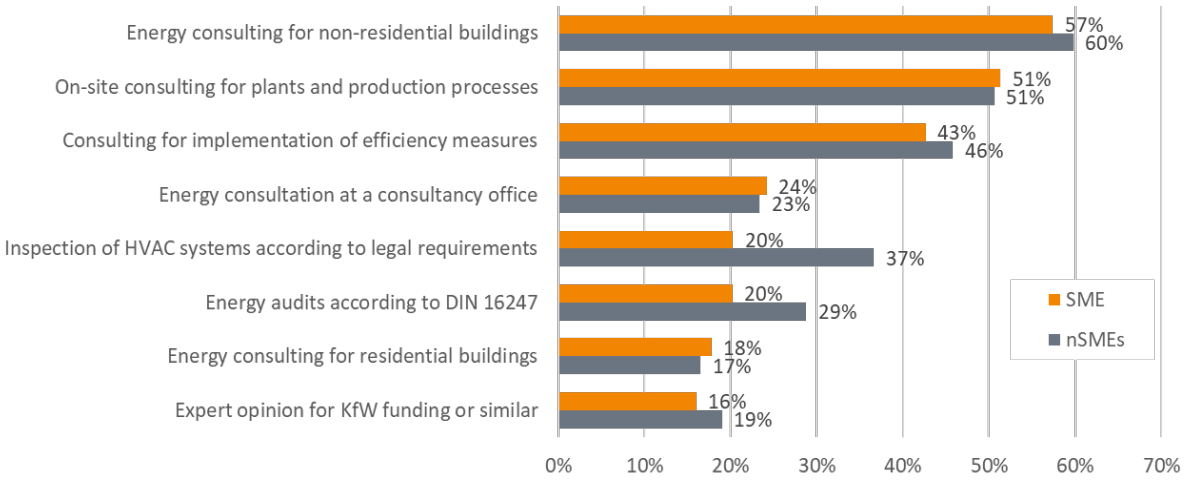
Satisfaction with the energy consulting services used is very high among both tenant and owner-occupied households, with 87% and 86% of the responses being “yes” or “generally yes”, respectively. Compared to the

previous year, however, satisfaction fell slightly by 6% among owner-occupier households and by 2% among tenant households. This trend is also evident among companies and the public sector.

Companies

The entire range of services was requested by companies, as Figure 5 shows. The most frequently used types of consulting were energy consulting for non-residential buildings, consulting for plants and systems, and consulting on the implementation of energy efficiency measures. Differences in use between small and medium-sized enterprises (SMEs) and large enterprises (non-SMEs) were mainly due to legal requirements for energy audits (mandatory for non-SMEs, subsidised for SMEs) and for inspections for air conditioning systems. Compared to the previous year, there were only comparatively minor changes in terms of frequency of use, with only on-site consulting on plants and systems experiencing significant growth, from 41% to 51% among SMEs, and from 45% to 51% among larger enterprises.

Figure 5: Companies: types of consultancy procured



EES survey 2022, companies, multiple responses possible, n = 959

When energy consulting was commissioned, the main reason mentioned was the need for investment planning support. Other important reasons included the wish to better control energy costs or to obtain information on the company's technical status. The corporate strategy for environmental and climate protection and, especially for larger enterprises, the use of energy consulting as a basis for obtaining funding have also become increasingly important aspects in recent years.

Satisfaction with the energy consulting services and energy audits procured continued to be high in 2022 among the companies surveyed. It is striking that large enterprises were clearly more satisfied than small and medium-sized enterprises, with 5% and 7% stating that they were "rather dissatisfied" or "not at all satisfied", respectively. This difference is particularly evident in the case of energy audits (a total of 25% (rather) dissatisfied SMEs). As in the case of households, the level of satisfaction among companies declined slightly compared to the previous year among non-SMEs and even noticeably among SMEs. The same is true for satisfaction with the cost-benefit ratio of energy consulting and energy audits, which continues to be widespread on the whole, but is also declining. SMEs are also more critical of the cost-benefit ratio than their larger counterparts.

On the whole, the use of energy consulting services by companies did not change significantly compared to the previous year. Consequently, the increase in market volume cannot be fully explained by corporate demand. Households evidently play a much more dominant role.

Nevertheless, energy consulting services for companies have a clear growth potential. Two-thirds of the companies surveyed made no use of external energy consulting services in recent years; at the same time, satisfaction with such services is usually high in cases where they have been used. Unlike households, some companies indeed have enough of their own expertise to generally avoid having to rely on external providers. This statement is true for at least half of the companies that made no use of external energy services. Conversely, rising energy costs and ever greater demands with regard to achieving climate goals are reasons that may trigger further growth in energy consulting.

Public sector

Almost two-thirds of the authorities surveyed had made use of external energy consulting and planning services in the previous five years. External support was often sought when it came to technical planning for extensive building refurbishment projects. There was also frequent demand for energy consulting for non-residential buildings, consulting and planning services for property energy concepts, and expert certification.

The main reasons given for using such services were to ease the burden on internal staff and to benefit from the particular expertise offered by the service providers. Municipalities also found it particularly important to use the external service as a basis for claiming funding. The federal state authorities surveyed referred in particular to the function of easing the burden on their staff.

3.1.4 Interim conclusions for energy consulting

The market segment for the energy consulting services explored in this study continues to experience strong growth and amounted to a total volume of almost €900 million in the financial year 2021. The identified market volume increased by 37%, following on from growth of over 50% in the previous year. This growth is based on an increase in the number of "active" energy consultants, a larger number of consulting cases, and higher prices in some instances. The areas of energy consulting for residential buildings and for non-residential buildings in particular reported significant revenue growth, whereas other areas tended to stagnate.

The surge in growth in the area of energy consulting services still did not result in measurable bottlenecks in 2021. There continued to be a sufficient supply for qualified energy consulting. On the one hand, there was an increase in the number of people from the trades engaged in energy consulting, and on the other, providers who offered energy consulting as a secondary line of business expanded their activities. There was little evidence of insufficient supply on the demand side. Satisfaction with the energy consulting services used fell slightly, but remains at a high level.

The outlook for 2022 is very positive among the providers, with further growth expected. This is also especially relevant in light of Germany's national *Energiewende*, which necessitates a substantial increase in energy efficiency efforts across all sectors, especially in the buildings and heating sector. The sharp rise in energy prices in the wake of the war in Ukraine is likely to further strengthen demand for efficiency measures. Professional energy consulting makes a valuable contribution in this context because it initiates and accompanies measures, and improves their quality.

At the same time, the subsidy situation for energy consulting, and also for efficiency measures, has continued to improve in parallel with the increasing requirements. A major boost has come from the "Federal Funding for Energy Advice for Residential Buildings" programme, where the number of applications continues to develop dynamically.

In the light of the above, a market volume above the €1 billion mark is possible and even probable for 2022. However, it remains to be seen whether and when supply bottlenecks will emerge if demand continues unabated.

3.2 Energy contracting

3.2.1 Market volume and development

Market volume

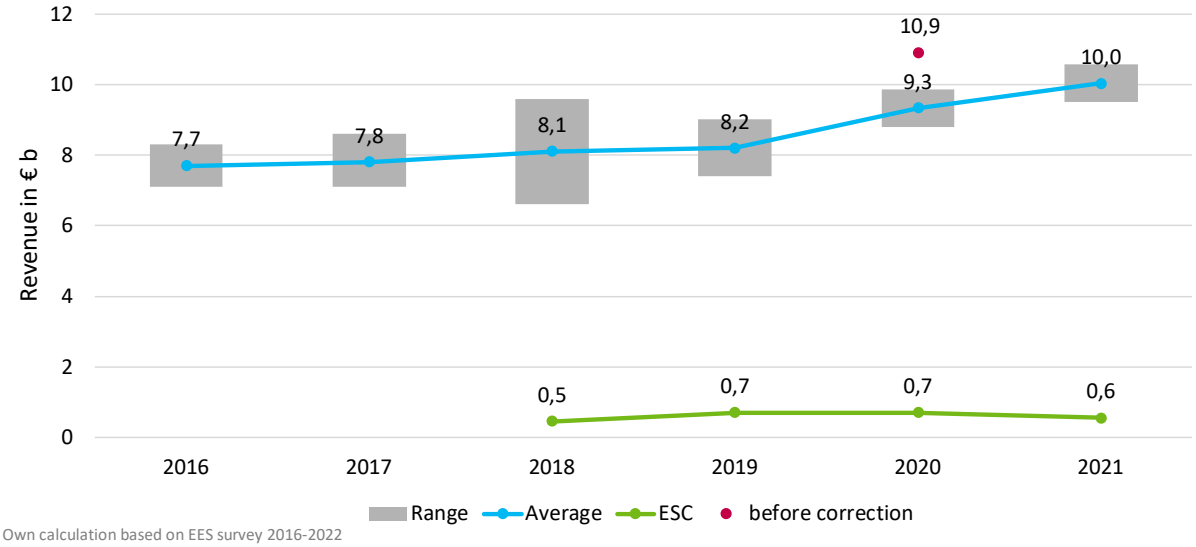
By estimating the total number of providers and their average revenue from contracting per year, it is possible to roughly estimate market volume. In particular, (very) large companies can have a major impact on market volume. In light of the heterogeneity of the market, as well as the quality of available data, the following projections are highly uncertain and only serve to roughly estimate market size.

This study used the following method to determine market volume: first, a web crawler and association data were used to identify dedicated contracting providers. This was followed by obtaining company-specific figures for the sector, including revenue and employee numbers, from the Orbis and Dafne company databases. These figures were offset against the results of the energy services survey, enabling the revenue from contracting and the number of employees who can be assigned to the contracting market segment to be determined.

A total of around 440 energy contracting providers were identified. In 2021, these companies generated a total revenue of around €94 billion, with revenue from contracting accounting for some €10 billion. Compared to the previous years, 2021 indicated a moderate increase in market volume. The providers were assigned to sectors according to the Nomenclature of Economic Activities (NACE codes). Companies that generated most of their turnover from contracting were assigned manually to the "contractor" sector. This makes it a conservative approach.

Company-specific revenues were available for the large contracting providers interviewed as part of the additional contracting survey conducted this year. The findings from the interviews revealed that the contracting revenues of some large providers, especially large energy suppliers with a contracting division, were overestimated last year. For this reason, the contracting revenue for the last year (2020) was subsequently corrected from €10.9 billion to €9.3 billion (see Figure 6). The market volume in the area of energy contracting has steadily increased in recent years, since 2016. Growth has gained momentum in the last two years (2020 and 2021).

Figure 6: Development of the market volume of energy contracting over time



Own calculation based on EES survey 2016-2022

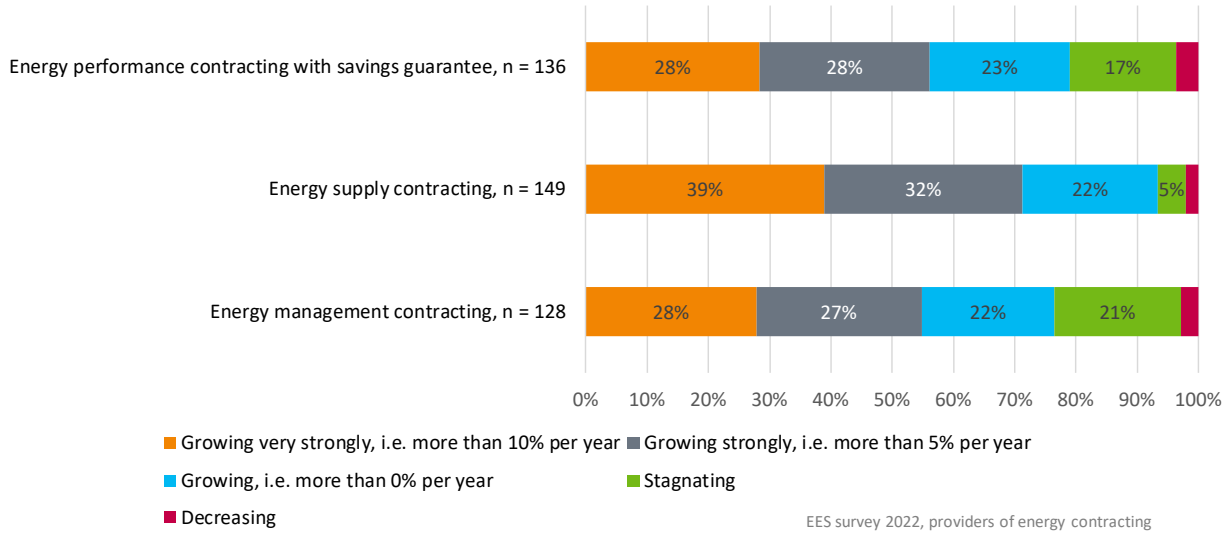
No web analysis was conducted in 2021. Instead, the results from 2020 were used as a basis for updating the provider database based on existing association data and the findings from the additional contracting survey. This database was supplemented by data from the Federal Funding for Efficient Buildings (BEG) and Federal Funding for Energy Efficiency in the Economy (EEW) subsidy programmes, both of which have now been opened up for applications from contractors.

This approach made it possible to determine the population of contracting providers in Germany, which according to these estimates is around 440. A slight reduction in the number of providers was observed in previous years, but in the last two years, this figure plateaued at around 440 providers. This trend suggests that the market is stabilising. In addition, a consolidation of revenue has been observed in recent years: a few (very) large providers are responsible for the bulk of revenue from contracting.

To reflect the uncertainties in market volume and the influence of a few large players on revenue, a lower and an upper estimate were calculated for market volume. Consequently, market volume is between €9.5 billion and €10.6 billion. The lower estimate is considered to be more reliable. It should be noted that the figures represent average values from the entire dataset, so it is not easily possible to calculate the results directly from the data shown. The results were calculated for each company.

The future development of the contracting market appears positive according to players in the industry, as shown in Figure 7. Not only energy performance and energy supply contracting, but also management contracting were considered by most contracting providers (around 80% to 90%) to be growing or (very) strongly growing. Just under 15% of providers expected the market to stagnate. The situation was assessed even more positively for energy supply contracting than for the other areas. Less than 5% of the market players expected a decline in energy contracting, depending on the service. This predominantly optimistic outlook is even more positive than it was in the previous year.

Figure 7: Assessment by energy service providers of the future market development of contracting

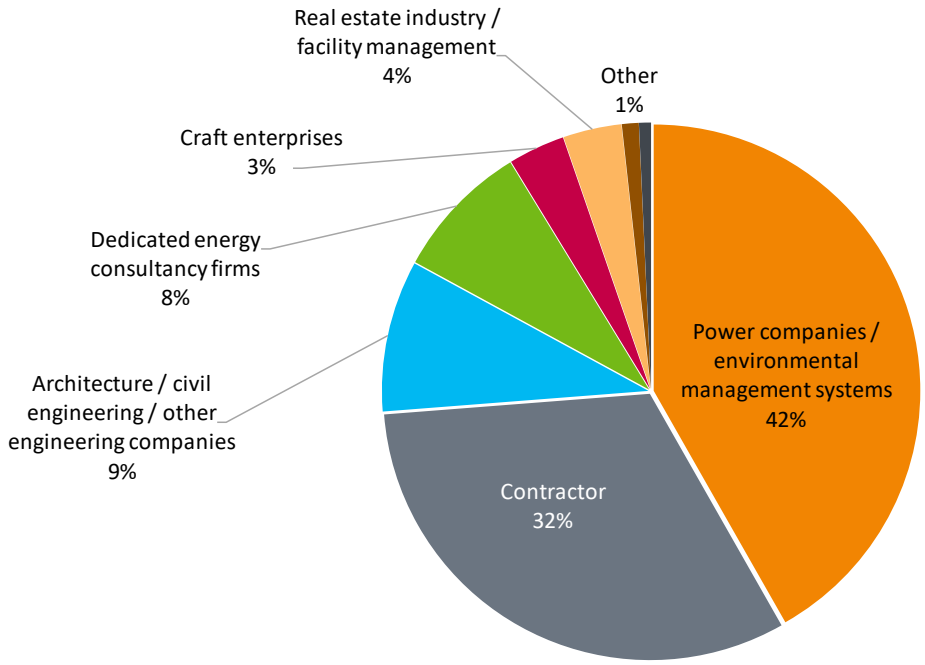


3.2.2 The supply side

Sector structure

Contracting was mainly offered by power companies (municipal utilities and other energy suppliers, 42% of providers) and companies that described themselves as “contractors” (32%) (see Figure 8). Another small provider group comprised architecture firms and energy consulting firms, together making up 17%. Real estate and facility management companies made up another relevant provider group, accounting for around 4% of providers. There was also a group of other providers (2%), comprising companies with a wide variety of key activities, such as energy agencies, IT or software providers, and craft enterprises.

Figure 8: Sectoral distribution of energy contracting providers



EES survey 2022, providers of energy contracting, n=167

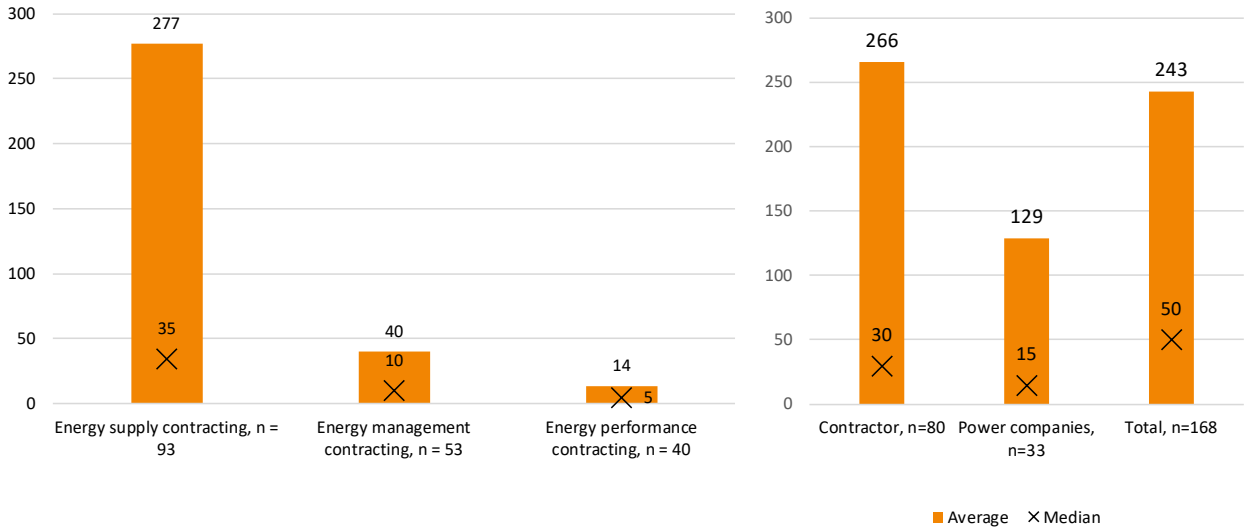
Number and type of contracting contracts

A wide range of responses were given regarding the number of ongoing contracting contracts (see Figure 9). A small number of highly active market participants covered a very large part of the contracting market, whereas there were many small providers with correspondingly low sales figures. In the area of energy supply contracting, the average number of ongoing contracts was around 277 per provider, which was considerably higher than in the previous year (2020: 168). The largest 15 providers held almost 80% of the market. In 2020, the five largest providers held more than 40% of these contracts. In the areas of management and energy performance contracting, there were considerably fewer contracts, with respective averages of 40 and 14 ongoing contracts.

The number of ongoing contracts per company in each sector also exhibited a wide range of responses, which is why the average number of ongoing contracts is only of limited relevance. The median was therefore also identified, which was clearly below the average. The number of energy supply contracting contracts of specialised contractors was above the average for all sectors. In the financial year 2021, the median number of ongoing contracts for specialised contractors was 30, and 15 for power companies. Due to outliers, the average rose to 266

ongoing contracts among contractors. This points towards significant consolidation of the market, and a few major players generating a high proportion of revenue. The large number of providers with only a few ongoing contracts can be explained by a larger number of small players. In most cases, these small players were municipal utilities that offer contracting as a sideline business.

Figure 9: Number of ongoing contracts per type of energy contracting and provider group



EES survey 2022, providers of energy contracting, n = 168

3.2.3 The demand side

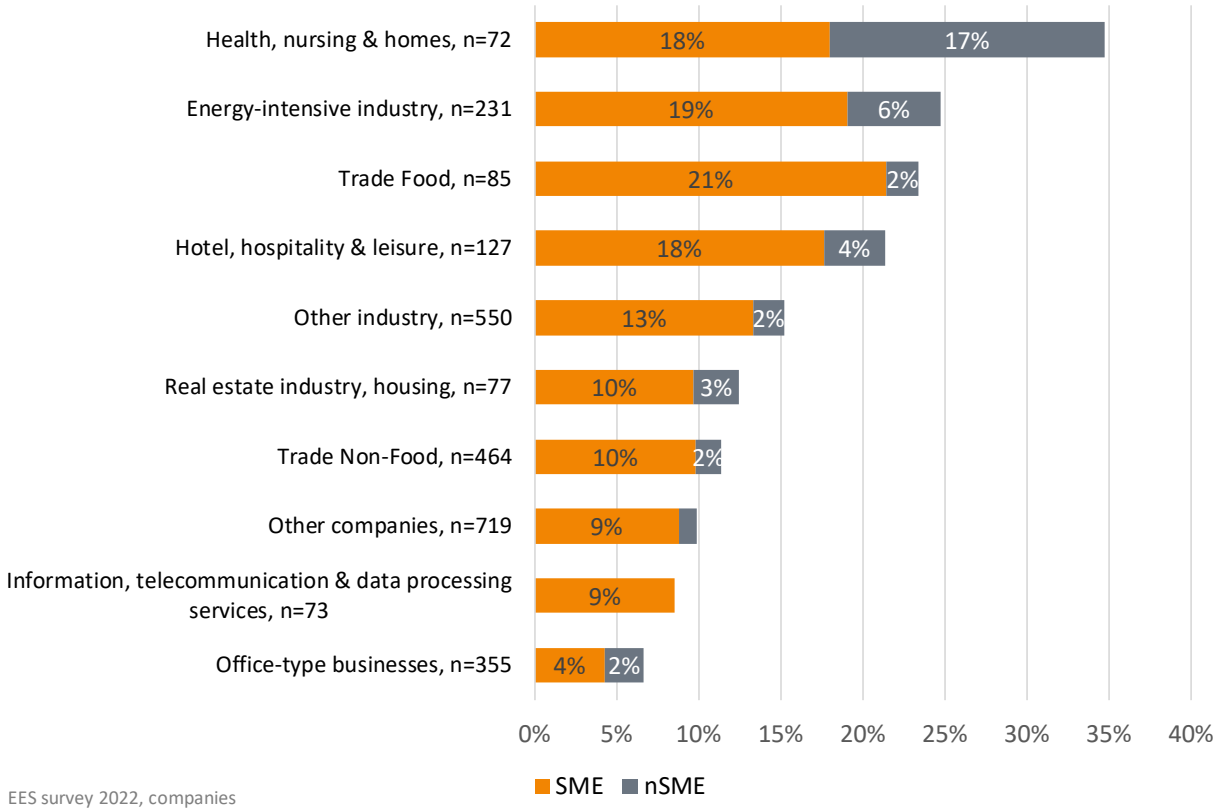
Target segments

The most important target group for contractors according to the provider-side survey remained, as in previous years, the real estate industry. More than 50% of contracting providers considered this segment to be one of their two key customer groups. The second most important customer group was private households, which gained in importance compared to the previous year (48% compared to 36% in 2020). Considering the rather limited number of contracting projects in owner-occupied residential buildings, respondents may have understood this to include projects in the property market (e.g. landlord-to-tenant electricity supply). The interviews conducted with large contractors revealed that heating contracting in the small power range for private households is also growing in importance. The third most important customer group was the public sector, which represented an important customer group for 36% of contractors. Other key customer groups were commerce and industry, as well as energy-intensive industry, which has gained in importance in recent years.

Utilisation of contracting

In the survey of energy service users, the health sector ranked first in terms of the utilisation of contracting. The real estate industry, which for several years made the most frequent use of contracting, declined in importance over the last two years, and is now in sixth place. Among the SMEs surveyed, however, the “Energy-intensive industry” and the “Food trade” made the most frequent use of contracting, at around 20% (see Figure 10). Other large groups were SMEs from the hotel and hospitality sector and “Other industry”. The overall number of non-SMEs surveyed was significantly smaller. In this case, the health sector and “Energy-intensive industry” predominated.

Figure 10: Utilisation of energy contracting



EES survey 2022, companies

The percentages given in the figure are based on the absolute number of companies per sector that used contracting. For example, 35% of the 72 companies surveyed altogether from the health sector utilised contracting, with SMEs accounting for 18% and non-SMEs for 17%.

In contrast, private households used contracting much less frequently. Around 5% of the condominium owners surveyed stated that they had used heating rental or similar rental and lease models in the previous five years. This share represents an increase of 1% compared to the previous year.

The majority of the SMEs surveyed that utilised energy contracting made use of energy supply contracting (68%), followed by energy performance contracting (23%) and leasing or management contracting (9%). In comparison, among the non-SMEs that utilised energy contracting, 63% used energy supply contracting, 27% energy performance contracting and 9% leasing or management contracting. Compared to the previous year, the utilisation of energy supply contracting increased slightly, whereas the utilisation of energy performance contracting decreased somewhat.

3.2.4 Interim conclusions for energy contracting

As in previous years, a lower and an upper estimate were calculated for market volume in the market survey of 2022, to reflect any potential uncertainties. According to the 2022 survey, the market volume for contracting in the financial year 2021 was between €9.5 billion and €10.6 billion, which represents an increase compared to the previous year. The results indicate a total number of around 440 providers.

A large share of the contracting providers surveyed this year were (very) large companies with revenues of more than €10 million (around 55%). Small companies with revenues of up to €30,000 were represented less frequently

(less than 10% of all providers). The majority of providers were power companies or specialised contractors. On average, power companies generated 15% of their total revenue from contracting; for contractors, the figure was almost 60%. The revenue shares of energy suppliers remained at the high level already observed last year. The majority of providers (around 80%, and even 90% in energy supply contracting) predicted that market volume would continue to at least grow positively.

As in previous years, the market for contracting predominantly consisted of energy supply contracting. Energy performance contracting, as well as leasing and management contracting, were also important. Contracting's strongest market penetration was found in the health sector, energy-intensive industry, hotel, and the food trade sector. The use of contracting by the real estate industry – a demand sector that has been growing for years – has declined in recent years. From the providers' perspective, however, the most important customer group continues to be the real estate industry; the second and third most important groups were private households and the public sector, as well as segments with the largest energy sales. Due to new legal requirements, especially for new heating systems, many providers are increasingly switching their services to renewable energies and district solutions with a sector coupling approach.

For around 70% of those surveyed, the main reason for using contracting was to take back control of energy consumption and to save energy, respectively. The main barriers were the lack of stability in the legal framework, the high level of complexity surrounding subsidies, and skills shortages within the company. The additional cost of energy efficiency technology was considered less of a barrier. Most providers felt that poor quality or too much competition were not important obstacles to contracting.

In the public sector, the main reason for using energy contracting was to reduce energy consumption, which grew in importance compared to previous years. Other important reasons for this segment included strategic aspects, and the desire to ease the burden on their staff and to utilise the service providers' particular expertise. The varying intensity of use of contracting services in the federal states and municipalities is due, on the one hand, to the scope for decision-making and, on the other, to the staff situation in the relevant institution. The complexity and scale of contracting projects require staff commitment in the form of established contact persons and "drivers", as well as support and consensus among all relevant municipal stakeholders.

3.3 Energy Management

3.3.1 Market volume and development

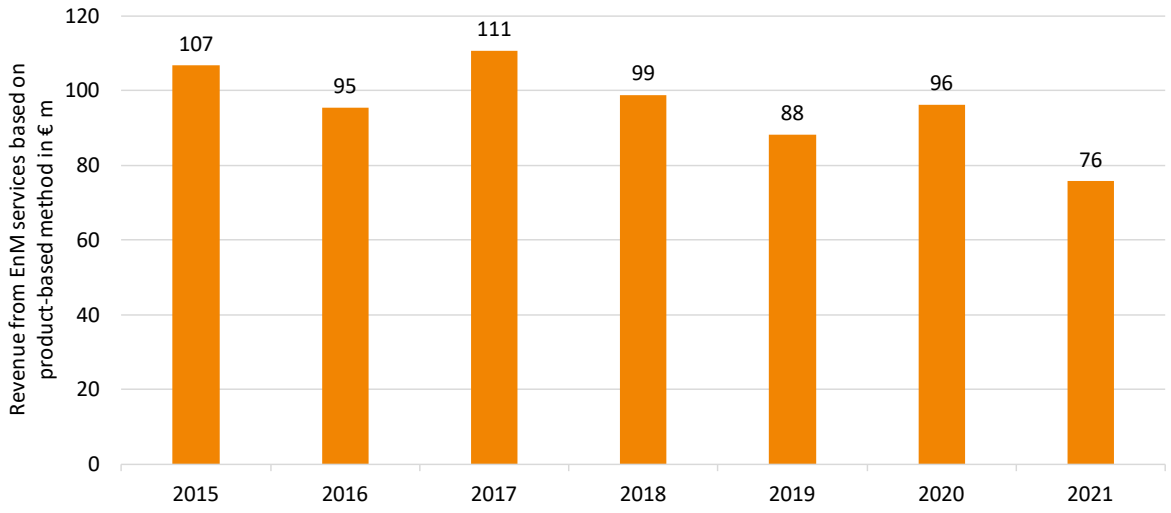
In previous years of the survey, two different approaches for calculating the market volume for energy management services were taken in parallel, which continue to be pursued with improved methodology. The two methods and the results obtained from them are presented in this section.

Product-based method

The chosen method refers only to clearly defined energy management products[1]. In this regard, providers were asked about the quantity sold and the respective prices. The demand side was also asked about the prices of these same products, enabling prices to be captured more accurately. The numbers of sales and certifications were extrapolated from the sample to the population using external statistics. Zeros and outliers that exceeded ten times the average were omitted from the calculation.

This method focused only on specifically defined products. This can only show us a part of the market, not representing all activities, in contrast to the otherwise open question of how much revenue was made from "energy management", which is not precisely defined; this makes it a conservative approach. As expected, the results for total market revenues were lower, and are shown in Figure 11 below. A significant reduction of around 21% was observed this year compared to the previous year. A glance at the products surveyed shows that the demand figures for all energy management products, and especially in the areas of consulting, initial certification and energy management software, decreased compared to the previous year. This decrease can be partly explained by the four-year cycles resulting from the obligation to perform an energy audit. The increased requirements under the amended ISO 50001 standard mean that companies must invest more time and effort in order to obtain certification. This is why some companies decide against certification and opt for an energy audit instead. In addition, however, the Covid-19 pandemic delayed the performance of external certification audits, in some cases by a year or more.

Figure 11: Revenue from energy management services per year, based on the product-based method



EES survey 2016 - 2022, revenue energy management services based on product-based method

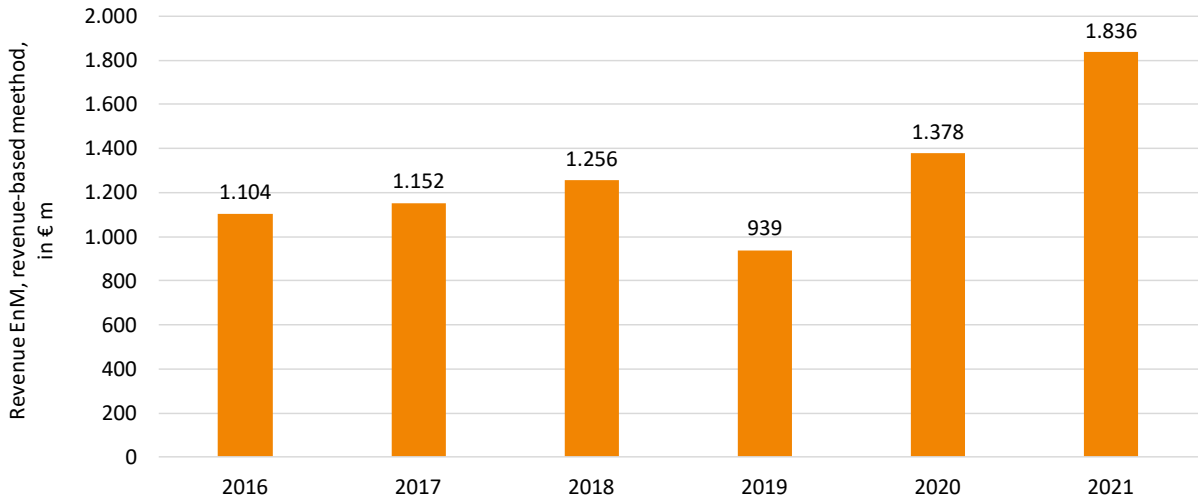
[1] Initial certification EnMS, Re-certification EnMS, proof of an alternative system as per SpaEfV, consulting and support for the implementation of an energy / or environmental management system, energy monitoring and energy management software

Revenue-based method

The estimation of the market segment for energy management using provider data from the survey follows a top-down approach. The method focuses on the number of providers and their respective revenue figures. Data on the distribution of providers among the sectors, as well as their revenues and revenue share for energy management, are available from the survey. These figures are then supplemented by external statistics and expert estimates in order to be able to extrapolate from the sample to the population of all energy management providers.

In the survey of 2022 (marketing and financial year: 2021), this revenue-based method led to revenues that once again increased to a new high compared to the previous year (see Figure 12).

Figure 12: Revenue from energy management services per year, based on the revenue-based method

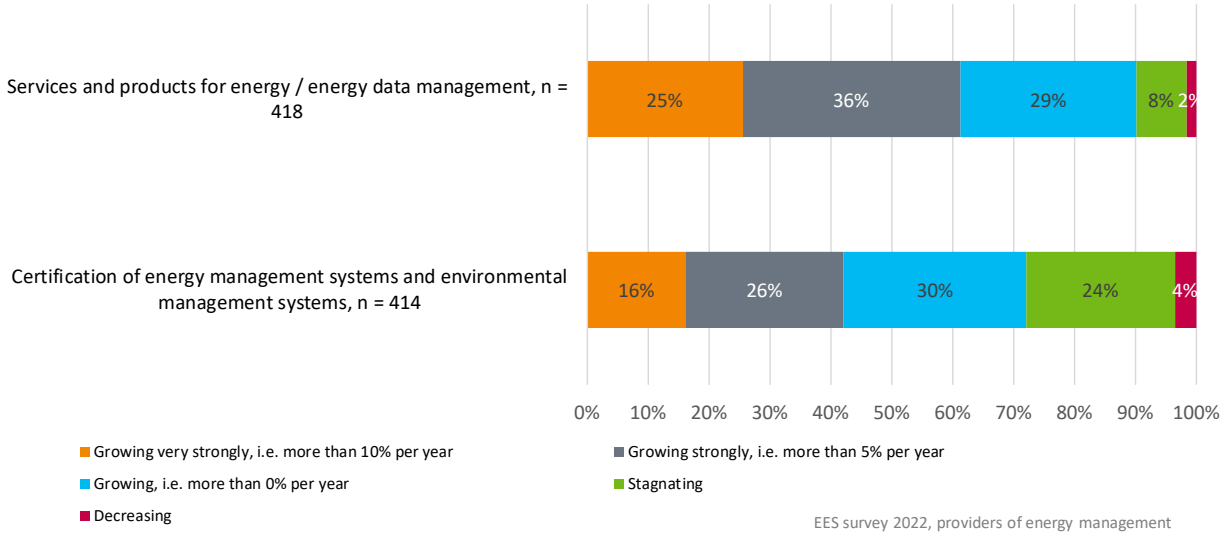


EES survey 2017-2022, revenue based on revenue-based method

This approach should therefore still only be regarded as a supplement to the product-based method. The more than 20-fold higher revenue resulting from the revenue-based method can be explained above all by the fact that energy management in general was surveyed, and not specific products. Many companies that provide energy management services understand this to mean considerably more of their services than can be represented in these surveys and the definitions given above. This method should be seen as an upper bound estimate, whereas the product-based method provides a better and more reliable calculation of the core market. It should be noted that the revenue-based method, in contrast to the product-based method, demonstrates growth in the current survey. The increasing awareness of climate action and efficiency, as well as rising energy prices, is driving the market for the various solutions in the wider area of energy management, with or without certification.

Suppliers of certifications, as well as additional services and products in the area of energy management, continued to estimate that the further development of the market will be generally positive (see Figure 13). Compared to the previous year, responses indicating at least strong growth in the market for other energy management services rose sharply (from 48% to 61% of respondents), and a “growing” market was now expected in this area, similar to the situation in the previous year (2020: also 41%). The dynamics in the market for certified energy management services were similar, but less pronounced.

Figure 13: Assessment of market development in the area of energy management

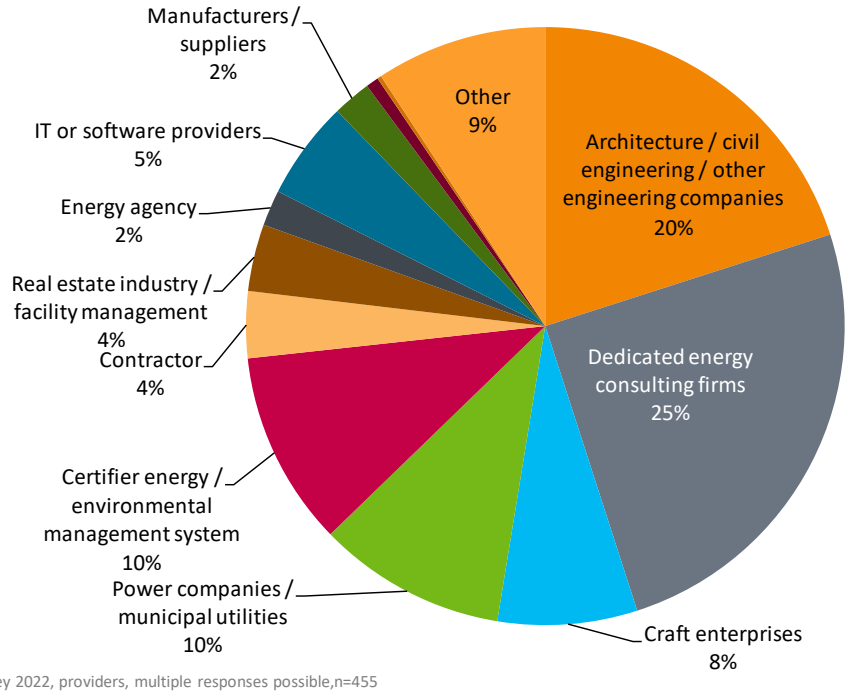


EES survey 2022, providers of energy management

3.3.2 The supply side

The supplier structure in the energy management market segment continued to be broadly diversified. However, as in previous years, the largest shares were concentrated on planning and consulting firms, as well as energy suppliers and certification companies (see Figure 14).

Figure 14: Distribution of sectors across energy management service suppliers

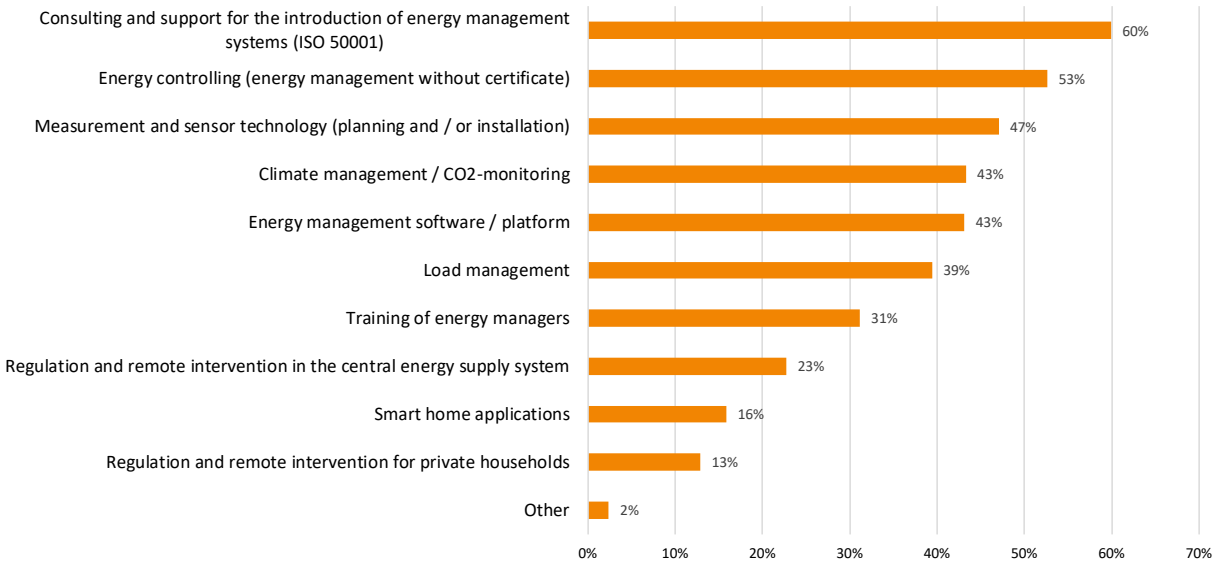


EES survey 2022, providers, multiple responses possible,n=455

The products sold in the energy management sector varied widely. The most common products were energy management solutions with certification (60%), as in the previous year, and energy management without

certification (energy controlling, 53%) (see Figure 15). Energy management with certification was the most frequently offered service again this year. Planning and/or installation of measurement and sensor technology (47%) moved down one place to third place compared to the previous year. On the whole, however, the differences continued to be minor, and no long-term trends were discernible. Climate management or CO_2 monitoring (a new service) came fourth, followed by more technically sophisticated solutions such as energy management software or load management. Energy management continued to play a subordinate role in private households (16%), but we have observed a continuous increase in the range of smart home solutions in recent years (with the exception of the marketing year) (2018: 6%; 2019: 16%; 2020: 18%; and 2021: 19%).

Figure 15: Supply of energy management services



EES survey 2022, providers of energy management, n = 365

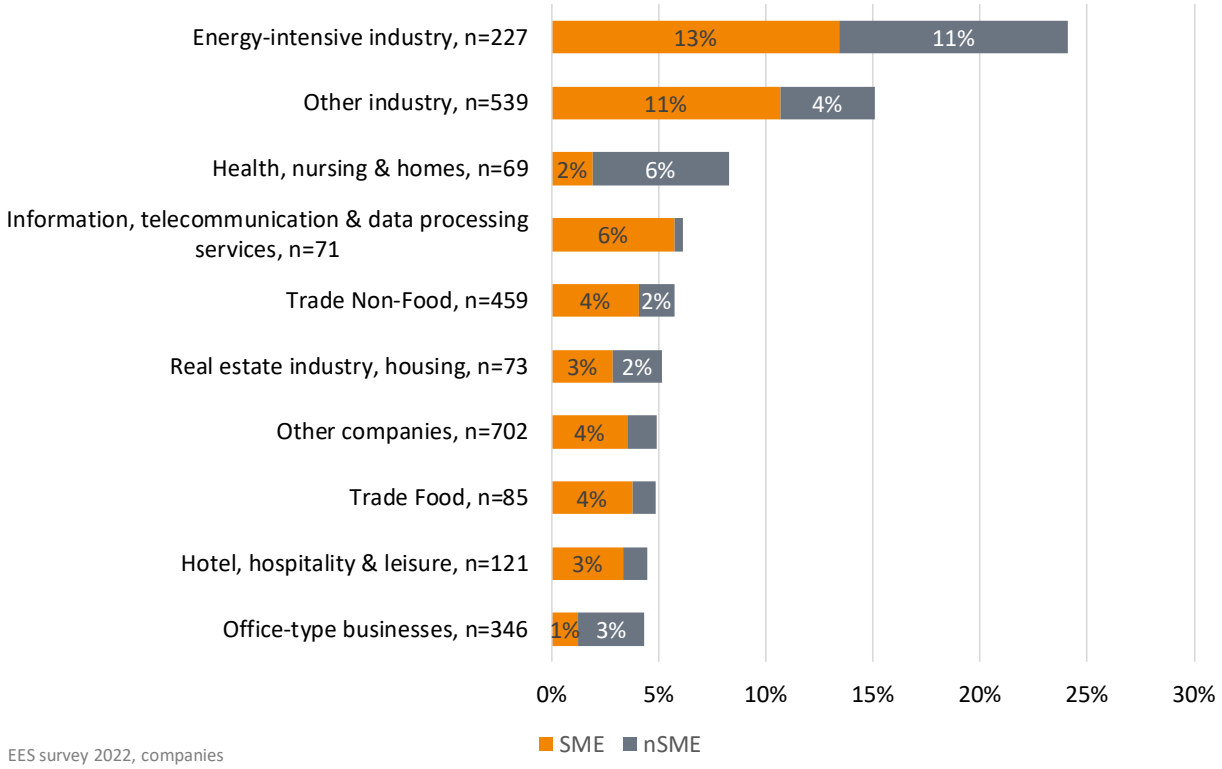
3.3.3 The demand side

As with the previous two energy services products, the demand side for energy management services among companies and in the public sector was likewise investigated in more detail. The results for companies on the demand side have been weighted.

Companies

As in previous surveys, the sectors with the highest utilisation of services in the certification/validation of energy and environmental management systems within the last five years were energy-intensive industry (24%) and other industry (15%), as shown in Figure 16. Both sectors indicated a less frequent use of certified energy management services in part compared to the previous year (2021: 25% energy-intensive industry; other industry 19%). Uptake within the health and care sector decreased significantly, from around 14% in the previous year to 8% this year, returning to 2020 levels. Utilisation rates in companies from various other sectors was between 5% and 10%. Certification played a minor role in food trade, hotels and office operations. In the information and telecommunications sector, the use of certified energy management services was mentioned by more than 6% of the companies surveyed. This is a significant increase compared to the previous year (2021: 3%).

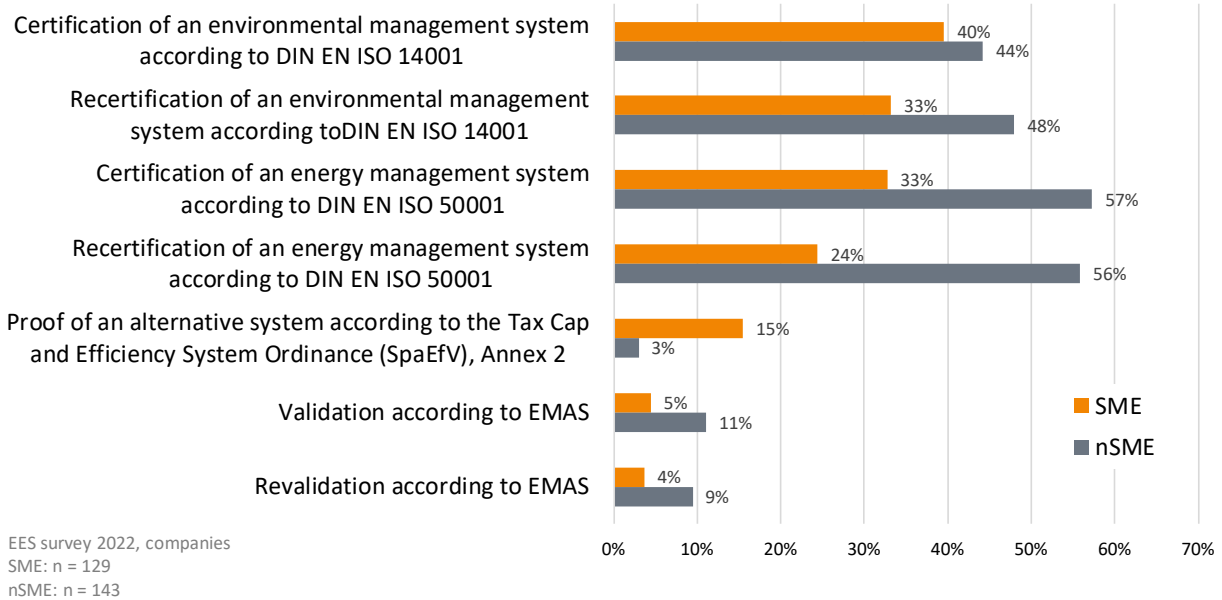
Figure 16: Utilisation of certification/validation by companies



EES survey 2022, companies

The use of DIN EN ISO 50001 remained very high, especially among non-SMEs (see Figure 17). Above all, their certification and recertification showed a slightly lower level compared to the previous year, at 57% and 56%, respectively (2021: 62% and 61%). The number of mentions among both SMEs and non-SMEs declined slightly, especially for certification and recertification in accordance with DIN EN ISO 14001. Revalidation under EMAS was conducted less frequently in 2021.

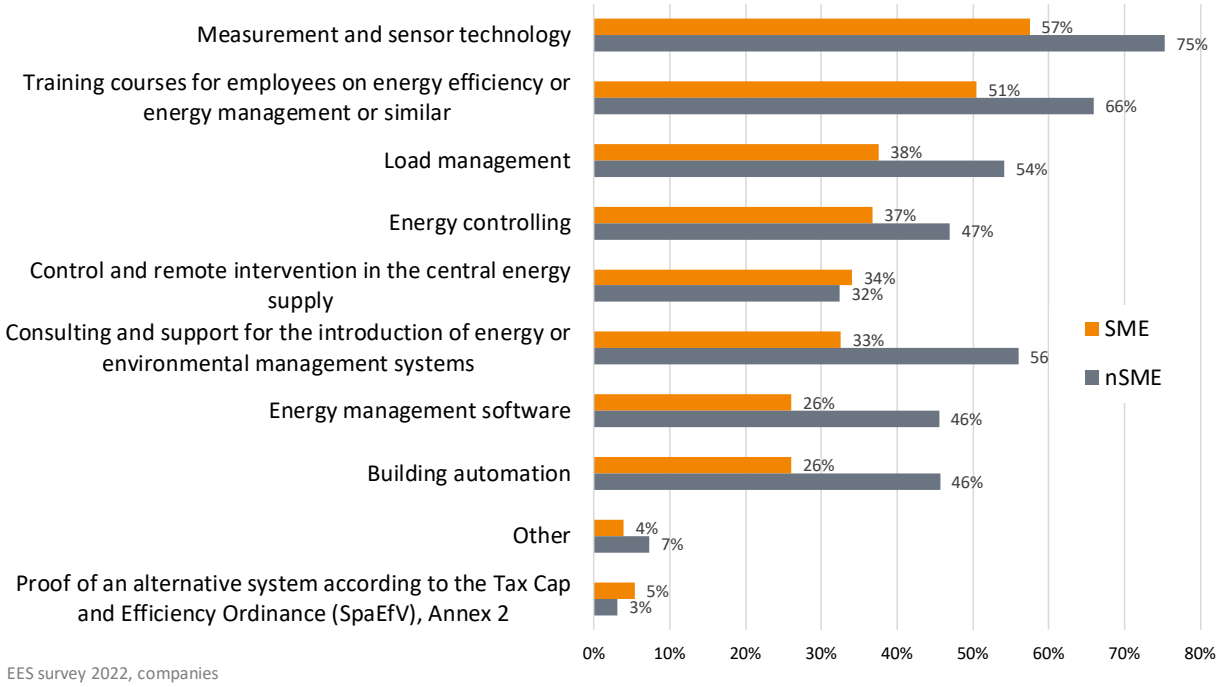
Figure 17: Utilisation of energy management services



EES survey 2022, companies
SME: n = 129
nSME: n = 143

Other energy management services offered in addition to certification were utilised to different degrees (see Figure 18). Above all, the installation of measurement and sensor technology was the service used most frequently by both SMEs (57%) and non-SMEs (75%). Training for employees was among the most widely used services for large enterprises, in contrast to small companies (non-SMEs: 66% and SMEs: 51%). A sharp increase compared to the previous year was recorded for the use of consulting and support for the introduction of energy management systems (from 45% to 56%), as well as load management (from 38% to 54%) for non-SMEs.

Figure 18: Utilisation of energy data management services

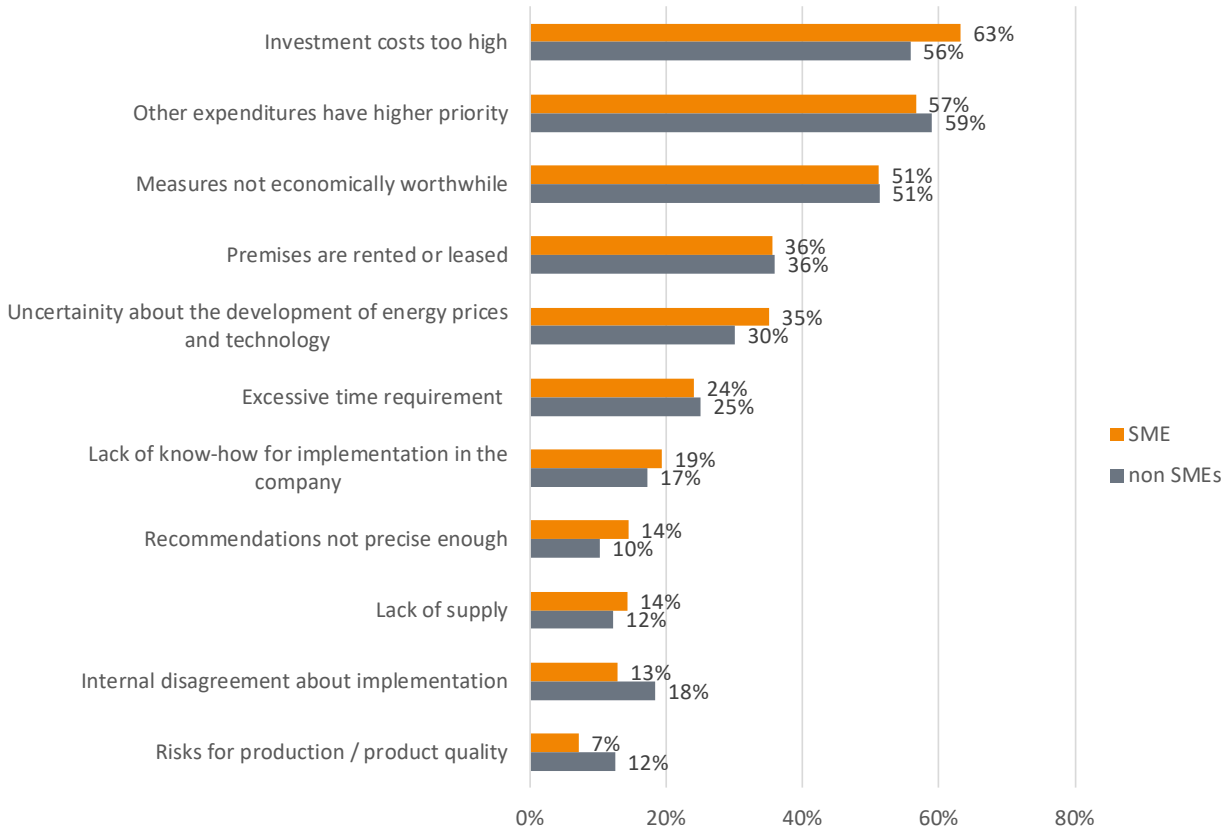


EES survey 2022, companies
SME: n = 154
nSME: n = 118

Many energy management services entail suggesting measures that could lead to greater energy efficiency in the client's company. About a third of those companies surveyed had already fully implemented these measures. In total, nearly 80% had at least partially implemented such measures. The difference between SMEs and non-SMEs was negligible. The number of companies that had not implemented any measures remained at the same level as in the previous year. Other changes compared to the previous year were marginal.

For both large and small enterprises, the economic viability of measures was a crucial reason why suggested measures were not implemented, according to their responses (see Figure 19). Organisational reasons, such as time or hierarchical challenges, were also cited frequently. Obstacles on the supply side, such as technical or commercial uncertainty, were only rarely mentioned.

Figure 19: Reasons for not implementing measures



EES 2022, companies
SME: n=613
non SMEs: n=195

3.3.4 Interim conclusions for energy management

This year, the market volume in the energy management sector was determined using the product-based approach and the revenue-based approach. The result from the product-based approach, almost €76 million in the marketing year 2021, was around 20% below that of the previous year. The revenue-based approach yielded a market volume of just under €1.8 billion as the upper bound estimate, which corresponds to an increase of around 33% compared to the previous year. The revenue figures calculated using the two approaches continued to develop in opposite directions, increasing the spread between the results.

Apart from the market volume calculations, the market changed only slightly compared to previous years. The product range was supplied by similar sectors, and sold at similar prices to the same customer groups. Generally, the market segment of energy management can be described as rather stable and robust. The decline in the number of companies providing such services will have to be monitored further before any reliable statements can be made about trends.

Demand by companies is mainly led by sectors with high energy demand: industry in general, but also energy-intensive industry in particular, a sector where nearly a quarter of the companies surveyed use energy management services. The high investment costs for energy management are currently cited by companies as a barrier to increased demand. The costs are either not seen as a priority, or they are considered uneconomical.

In the public sector, mainly the federal and regional authorities demonstrate a strong demand for energy management services. Energy management is less prescriptive for municipalities, which often perceive less need for it because they consume less energy.

4 Summary and outlook

4.1 Summary

Market-oriented energy services represent a broad market segment, in which numerous *Energiewende* players are active in different sectors. It is a mix which is dominated – especially for consulting – by small architecture firms and engineering companies, or specialised energy consulting firms. Power companies, municipal utilities and increasingly specialised companies with energy services as their core business operate in segments with more complex and demanding business-to-business (B2B) products. However, other provider groups come from more technologically oriented sectors (such as measurement, control and regulation technology; technical building equipment) as well as from service-oriented sectors (the real estate industry, facility management). While a few providers in the energy services sector employ hundreds, sometimes thousands, of employees and have a mid-seven-digit turnover, our study found no strong market concentration: the supply side continues to be primarily characterised by small and medium-sized enterprises. However, trends in the energy contracting and energy management market segments can be observed over the years that point to a slightly consolidating market.

For every market segment, the regional availability of providers was analysed by processing site and delivery radius. Energy service providers in Germany are generally evenly distributed across all regions, with higher concentrations in economically and demographically strong regions in the south and west of Germany, such as Baden-Württemberg, Bavaria and North Rhine-Westphalia. There are still no regions in Germany with a supply shortage.

As in the previous studies, the critical weakness in the market remains on the demand side. This implies that the quotas for using energy services have not been exhausted. In all product groups, utilisation rates are far below 50%, indicating that there is significant untapped market potential. Although energy services are highly relevant to the issue of energy efficiency, in-house implementation remains the biggest competitor to the utilisation of external energy services. Private and public sector investors remain hesitant about using energy services. This reflects a general hesitancy, which has also been observed in the case of energy efficiency products: they are mainly products that would be useful and helpful for achieving Germany's energy and climate goals; however, there is not much pressure on players to act. This changes noticeably when looking at more energy-intensive industries, or those sectors in which there are specific incentives or requirements to use energy services.

Growth can again be observed this year, especially in the areas of energy contracting and energy consulting. The surveys were conducted in the summer of 2022, i.e. in the wake of the energy crisis and the Russian war of aggression on Ukraine. Despite the fact that the questions explicitly addressed the market situation in 2021, this new reality was already visible in many parts of the qualitative survey data. The next survey will show whether this situation will also be reflected in market volumes. At all events, the external pressure to implement efficiency measures has increased noticeably, and energy services will continue to make a decisive contribution to achieving these goals in the years to come.

An indication that the market players also see it this way are the growth expectations, which are also shaped by last summer's exceptional situation. In all product categories, more providers than at any time since the survey began anticipate a growing market, with strong growth in some cases.

4.2 Drivers and barriers for the future energy services market

Several political projects are currently underway with the intention of making significant progress in the heating sector as part of the *Energiewende*.

The German Federal Cabinet passed the **Energy Efficiency Act (EnEfG)** in April 2023, with the parliamentary procedure expected to be completed before the summer recess. The EnEfG transposes key requirements of the European Energy Efficiency Directive, in particular the overarching requirements to save primary energy (max. 2,252 TWh) and final energy (max. 1,867 TWh in 2030).

The amended **Buildings Energy Act (GEG)** is currently the subject of political debate. At the centre of the debate lies the requirement for newly installed heating systems to use at least 65% renewable energy in the future. At the same time, the Federal Ministry for Economic Affairs and Climate Action (BMWK) presented the first draft of the **Heat Planning Act (WPG)**. The WPG is intended to be a key tool for implementing the heat transition, in particular to increase the share of climate-friendly heat grids and to gradually decarbonise district and local heating.

These current political projects show that the German Government is determined to make headway in the *Energiewende*, particularly on the demand side and in the heating market. Regulation affects the buildings, industry and public sectors. Specific energy services such as the establishment of energy management systems and energy consulting (especially energy audits) are explicitly required in certain segments. The implementation of the projects will require (more) complex technical solutions in the future, generating additional demand in the energy services markets.

Irrespective of the political process (which is still open-ended to some extent), the regulatory framework offers promising opportunities and growth potential for all energy service providers. However, the shift towards a provider market also highlights the underlying challenges: the framework conditions and the solutions required are becoming more complex. Supply bottlenecks are emerging not only for technical products (heat pumps, PV systems) – the skills shortage is also having an impact on the entire value chain, from consulting and planning to, above all, implementation. Although standardisation and digitalisation may increase productivity, the requirement profile of skilled workers is also shifting. Moreover, there is a need to further work on equal opportunities between energy services and in-house solutions in some areas. This applies to the seamless integration of subsidies into energy services offers, some of which can only be used to a limited extent under state aid legislation.

From a demand perspective, challenges also remain that vary depending on the product and target group: companies state that they are able to perform energy services themselves and that it is too expensive to externalise them; households also prefer to address these issues without using an energy advisor or often see no need to implement efficiency measures. In the case of energy contracting, on the other hand, the highly complex funding landscape is a major reason for non-utilisation, while in the case of energy management, a variety of economic reasons play a role. However, one reason frequently cited in the past will only play a minor role in 2022: that energy costs are low.

Either way, the *Energiewende* is becoming tangible, and has therefore entered an important phase. Energy services can play a crucial role in this process.