

Environmental technology in numbers

Data of the Austrian environmental technology economy 2023

Executive Summary

A. Kaufmann, P. Luptáčík,
E.-M. Mooslechner, H. W. Schneider

Reports from energy and environmental research

2c/2025

Imprint

Media owner, publisher and editor:

Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology
(BMK)

Radetzkystraße 2, 1030 Vienna

Under the responsibility, coordination and co-operation of:

Department: Integrated Product Policy, Corporate Environmental Protection and Environmental
Technology

DI Andreas Tschulik (Head) and Dipl.Chem. Dr. Dörthe Kunellis, MBA

Department: Energy and Environmental Technologies

DI (FH) Volker Schaffler, MA (Head) and Ing. René Albert, BSc

Federal Ministry of Labour and Economy (BMAW), Stubenring 1, 1010 Vienna

Department: Relocation and Business Services, Industrial Policy

Mag. Sylvia Vana (Head) und DI MMag. Helmut Schernhorst

Austrian Economic Chamber (WKO), Wiedner Hauptstraße 63, 1045 Vienna

Mag. Jürgen Streitner and Mag. Axel Steinsberg, MSc

Authors:

A. Kaufmann, P. Luptáčík, E.-M. Mooslechner, H. W. Schneider

Industrial Science Institute – IWI, Mittersteig 10/4, 1050 Vienna

Phone: +43 1 513 44 11 – 0, E-Mail: schneider@iwi.ac.at Web: iwi.ac.at

Cooperation partners: G. Pöchlhammer-Tröscher, Pöchlhammer Innovation Consulting GmbH

Download of reports within this series:

nachhaltigwirtschaften.at und ecotechnology.at

Excerpts may only be reprinted if the source is acknowledged. Please note that, despite careful editing, all information in this publication is provided without guarantee and the Republic of Austria and the author accept no liability. Terms of use: nachhaltigwirtschaften.at/de/impressum/

Vienna, December 2024

Preface

The environmental technology sector (industrial and service companies) continues to impress with very impressive growth figures in 2023: *In total, 3,326 Austrian companies with around 57,800 employees generated an annual turnover of EUR 21.42 billion Euro. Over the entire domestic economy, a turnover of EUR 41.51 billion was generated in 2023. The average annual growth in turnover between 2019 and 2023 was 8.9%, which is significantly higher than the average annual growth in Austrian GDP. Export turnover in the environmental technology industry also increased to EUR 15.11 billion in 2023 (2019: EUR 10.94 billion). The environmental technology industry is the driving force behind the outstanding performance of this sector, with turnover totalling EUR 17.17 billion in 2023. From 1993 to 2023, turnover in the environmental technology industry has thus increased more than 11-fold, employment figures in the same period have almost quadrupled and export activities have increased more than 9-fold since 1997.*

The environmental technology industry is benefiting nationally and internationally from the need for a green transformation of the economy. However, the fact that this sector of the economy will be so dynamic in 2023 - after the coronavirus crisis - and will shine with such a strong performance, particularly in terms of turnover, is impressive. The environmental technology industry alone, as a key driver of the environmental technology industry, grew significantly faster from 2019 to 2023 with an average annual turnover of 9.5% than in the comparative period from 2015 to 2019, in which an average annual turnover growth of 5.48% was recorded, according to the latest study on the environmental technology industry 2024 (database 2023) by the Institute of Industrial Research (IWI), which was commissioned by the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK), the Federal Ministry of Labour and Economy (BMAW) and the Austrian Economic Chamber (WKO).

The environmental technology industry is aware of its pioneering role: in the fight against climate change, in the preservation of biodiversity and in connection with the scarcity of resources, solutions must be found quickly that require particularly strong innovation efforts. Research, technology development and innovation (RTI) therefore play a major role for the environmental technology industry. Over 64% of companies (environmental technology industry and service providers) introduced at least one innovation (product, service or process) to the market between 2021 and 2023. The application and dissemination of innovative environmental technologies and system services was also supported in a targeted manner by various measures and programmes (Renewable Energy Expansion Act (EAG), Climate Protection Bill, national climate and transformation

offensive, RTI initiative for the circular economy, living labs for 100% renewable energy systems, eco-social tax reform, Economic Stimulus Act, etc.).

Even though employment in the environmental technology industry has been growing at a slower rate than turnover in environmental technology since 2019, at an average of 3.0% per year, highly trained specialists have a very good chance of finding a job in the environmental technology industry in the coming years. In this context, 62% of the companies surveyed are still relying on internal training and further education measures, as more than a third of companies are currently having great difficulty finding qualified people on the labour market, according to the current study, which will also survey the green skills required in this industry for the first time in 2023.

The increase in export sales compared to the previous study shows that the environmental technology industry makes a significant contribution to growth and prosperity in Austria and abroad, with the export share in the environmental technology industry amounting to around 80% in 2023. Further information on the Environmental Technology Economy 2024 study (2023 data basis) can be found online at: ecotechnology.at and nachhaltigwirtschaften.at.

Rückfragen & Kontakt:

Dipl.- Chem. Dr. Dörthe Kunellis, MBA, Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK), doerthe.kunellis@bmk.gv.at

DI MMag. Helmut Schernhorst, Federal Ministry of Labour and Economy (BMAW), helmut.schernhorst@bmaw.gv.at

Mag. Axel Steinsberg MSc, Austrian Economic Chamber (WKO), axel.steinsberg@wko.at

 Federal Ministry
Republic of Austria
Climate Action, Environment,
Energy, Mobility,
Innovation and Technology

 Federal Ministry
Republic of Austria
Labour and Economy

 **WKO**
WIRTSCHAFTSKAMMER ÖSTERREICH

Executive Summary

The Austrian environmental technology economy – often called “green tech” – has developed very positively in recent years. As the results of the most recent study conducted by the Institute of Industrial Research (IWI) in 2024 show, the environmental technology economy has been able to continue its long-standing dynamic development.

Dynamic development of the environmental technology economy

In 2023, the domestic environmental technology economy as a whole, i.e. industrial and service companies combined, comprised 3,326 companies. Compared to 2019, this represents an increase of 21.7%. Extrapolated, the environmental technology economy generates sales revenues of EUR 21.42 billion and employs 57,832 people. This corresponds to an increase in sales of 40.6% compared to 2019 or an average annual sales growth of 8.9% since 2019. Even adjusted for inflation, the annual growth rate is still an impressive 4.4%. If you compare this with the average annual real growth rate of Austrian GDP in this period of 0.6%, this shows the significantly more dynamic development of the environmental technology economy. The development of employment is also clearly positive, albeit with a slightly lower annual growth rate of 3.0% since 2019.

Table E1: Development of the environmental technology economy 2019 until 2023

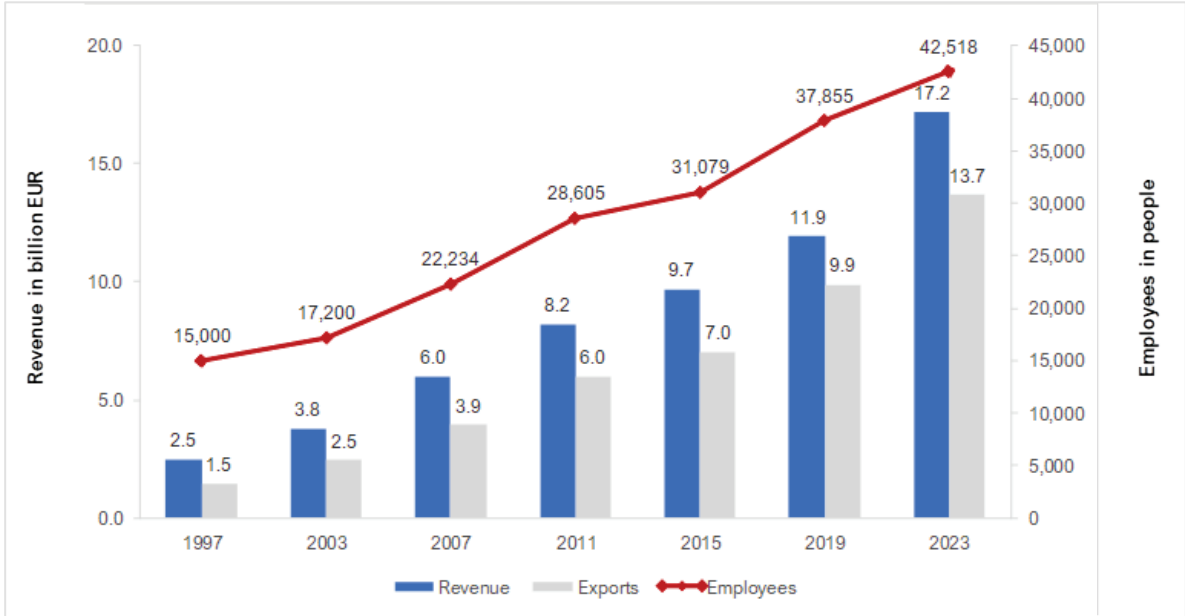
Environmental technology economy	Number of companies	Sales (bn EUR)	Number of employees
2023	3 326	21.42	57 832
2019	2 732	15.24	51 470
Total growth	21.7%	40.6%	12.4%
Average annual growth	5.0%	8.9%	3.0%

Source: IWI survey of the Austrian environmental technology economy 2024, IWI projections.

Measured by sales and employment, the environmental technology industry is the core of the environmental technology economy. A total of 1,198 companies (an increase of 11% compared to 2019) generate sales revenues of EUR 17.17 billion and provide 42,518 jobs. This corresponds to an increase in sales of 44% or an average annual growth of 9.5% since 2019. This development is above the annual increase in sales revenues from the manufacture of goods in Austria of 4.8% during this period. The annual increase in employment in the environmental technology industry is also clearly positive at 2.9%.

The environmental technology industry has shown continuous growth since the 1990s, both in terms of sales, the number of employees and exports. This dynamic has never been permanently interrupted during this period.

Figure E1: Dynamic structural comparison of the the environmental technology industry on the basis of selected absolute indicators



Source: IWI surveys of the Austrian environmental technology economy 2016/2017, 2020 and 2024, IWI projections, WIFO (2000, 2005, 2009, 2013).

But environmental technology service companies also make a significant contribution to the success of the environmental technology economy, with EUR 4.25 billion. Due to the smaller company sizes, the number of companies is slightly higher than in industry at 2,128. The number of companies is also growing faster than in industry (29% higher than in 2019). Annual sales growth since 2019 is 6.6%. The environmental technology service sector is an

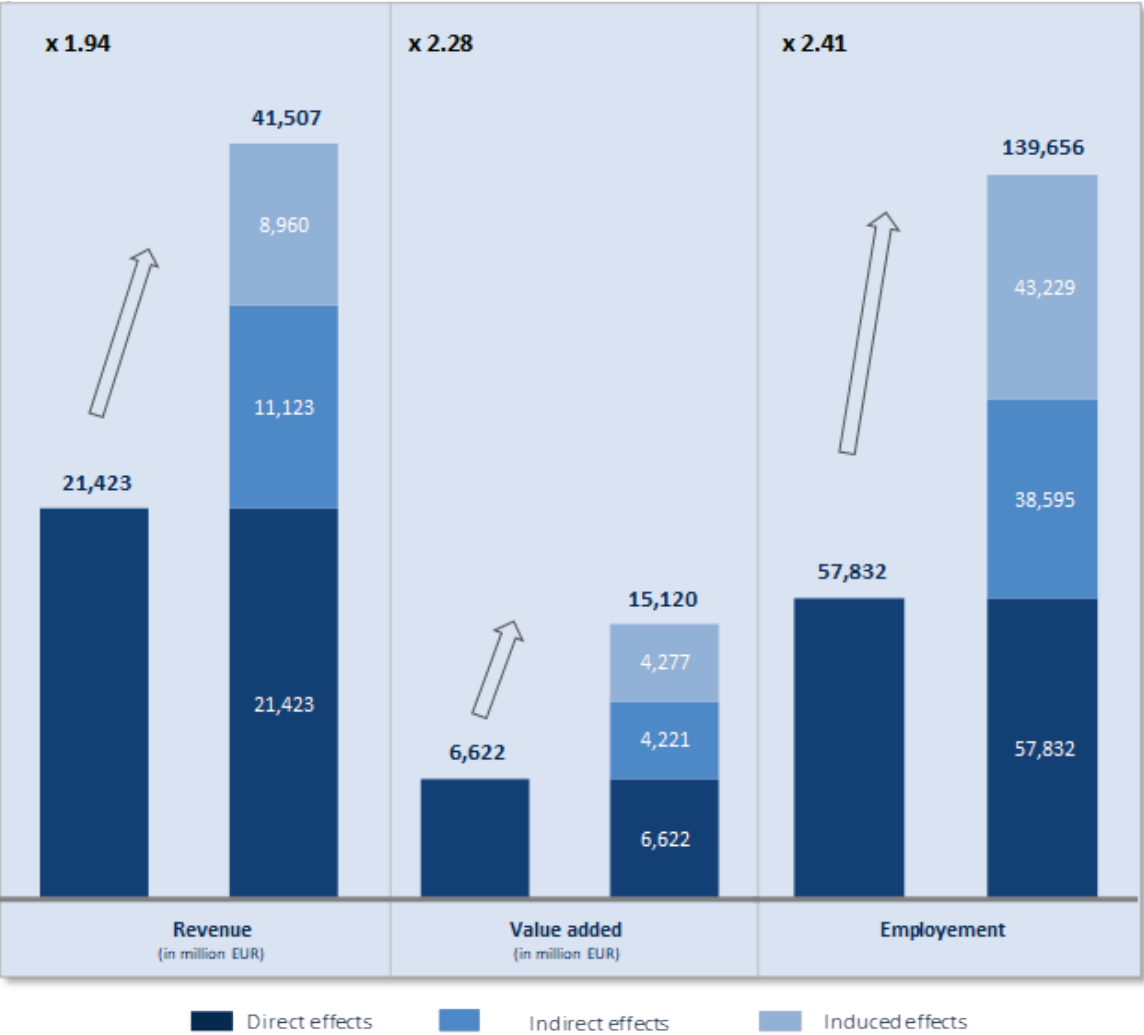
important employer and employs 15,315 people. This corresponds to annual growth of 3.0%.

The strong growth of the Austrian environmental technology economy is all the more remarkable as it - like the economy in Austria as a whole and worldwide - has been confronted with a particularly challenging environment over the past four years. Two major international crises had to be overcome, first the coronavirus pandemic from 2019 to 2023 and, since 2022, the war in Ukraine, which is unfortunately still ongoing. Both crises have led to and continue to lead to massive disruptions in the economies of Europe and many parts of the world. However, the sharp rise in energy costs as a result of the Ukraine crisis has had a double effect: the increase in factor costs triggered by this is negative. A positive effect is the increased incentive to accelerate the substitution of fossil energy sources with renewable energies. The latter has a positive effect on demand for corresponding offers from the environmental technology economy.

Macroeconomic importance

Through its interlinkages with other areas of the Austrian economy, the environmental technology economy generates considerable multiplier effects. Through direct and indirect intermediate inputs and the resulting employment, consumption and investment effects, the environmental technology economy generates a total economic added value of EUR 15.1 billion, which is 2.28 times the added value of the environmental technology economy itself, and secures almost 140,000 jobs (2.41 times the employment in the environmental technology economy).

Figure E2: Macroeconomic effects of the environmental technology economy in Austria in 2023



Notes: Calculations according to product allocation of the respective environmental technology main product.

Source: IWI (2024) based on the Input-Output-tables 2020 (Statistik Austria).

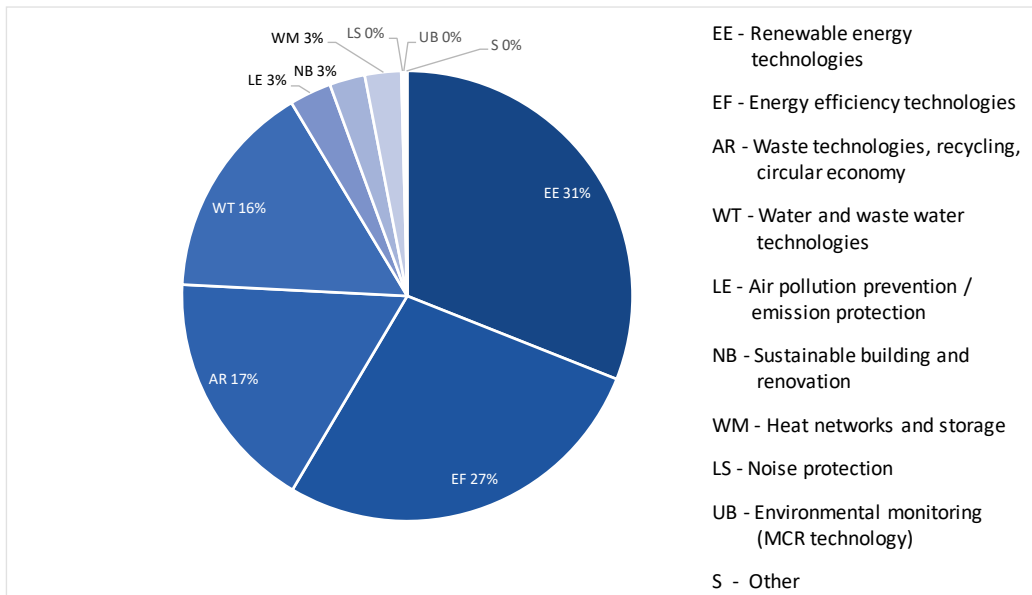
Due to its size, the largest part of these interconnected effects is attributable to the environmental technology industry, which generates total economic value added of EUR 11.9 billion and secures more than 100,000 jobs.

Areas of activity and structural data

In the environmental technology industry, the majority of sales (around two thirds) are generated with clean environmental technologies, a quarter is accounted for by aftercare environmental protection and the rest by environmental monitoring. The distribution of sales is more even among service companies. Here, the areas of clean environmental technologies and aftercare environmental protection are almost on a par (40% and just under) and environmental monitoring is somewhat more strongly represented.

The largest technology areas of the environmental technology economy in terms of sales are renewable energy technologies (31%), energy efficiency technologies (27%), waste technologies, recycling and circular economy (17%) and water and wastewater technologies (16%). Smaller shares (3% each) are accounted for by air pollution control/emission control, sustainable construction and renovation as well as heat networks and storage.

Figure E3: Technology areas of the environmental technology economy (share in sales)



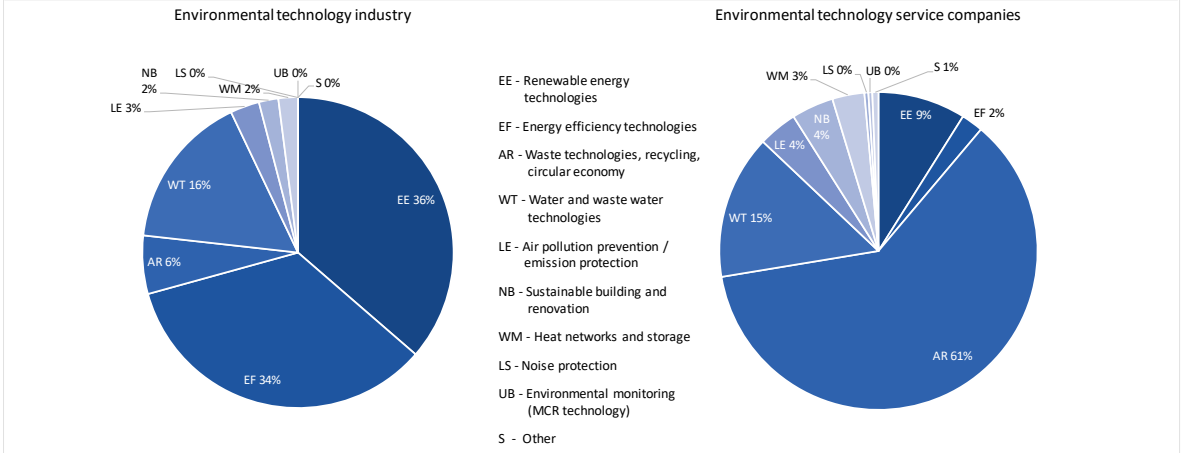
Notes: Stratified projection; rounding difference possible.

Source: IWI survey of the Austrian environmental technology economy 2024.

There are strong differences between the technology sectors of industrial and service companies. In industry, the largest share of sales comes from renewable energy technologies

(36%) and energy efficiency technologies (34%), followed by water and wastewater technologies (16%) and waste technologies, recycling and circular economy (6%). The other sectors (air pollution control/emissions protection, sustainable construction and renovation, heat networks and storage, noise protection, environmental monitoring including measurement and control technology) have shares of 3% or less. In contrast, in the service sector, by far the largest share of sales comes from waste technologies, recycling and circular economy (61%), followed by water and wastewater technologies (15%) and renewable energy technologies (9%).

Figure E4: Technology areas of the environmental technology industry and services companies (share in sales)



Notes: Stratified projection; rounding difference possible.
 Source: IWI survey of the Austrian environmental technology economy 2024.

The environmental technology offering is now complex. Few industrial companies are pure producers. Almost four fifths offer suitable services in addition to their goods and technologies. Furthermore, specialization in just one technology area is rather rare. The majority of environmental technology companies are active in more than one area, 22% in two areas, 15% in three, 8% in four and 12% in more than four. This shows the importance of combining several technology fields in order to be able to offer solutions that require the increasingly complex environmental technology problems. Many companies also offer system solutions with multiple benefits.

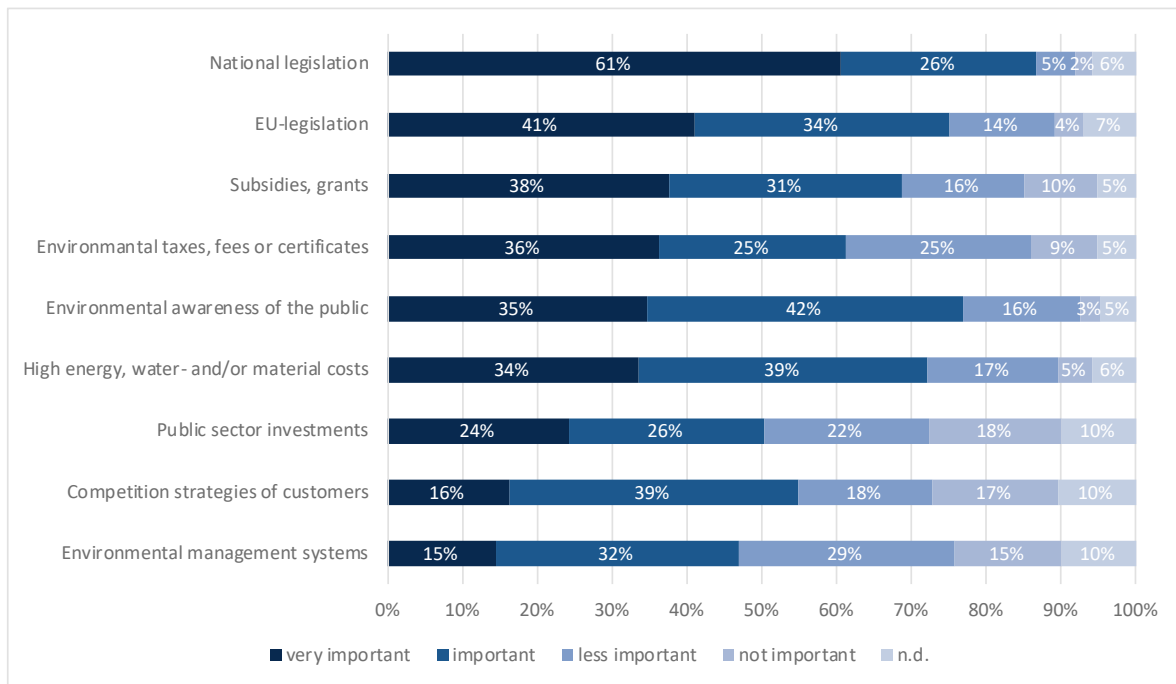
Market position and market expectations

The quality of the product or service is seen as the most important criterion for success in competition (90% of industrial companies, 86% of service companies). Integrated total solutions (65% industrial, 62% services) and service offerings (54% industry, 59% services) are also frequently mentioned. Innovative technologies are an important success factor, especially in the environmental technology industry (66%).

The assessment of the future development of the market for environmental technologies is characterized by optimism. More than four fifths of environmental technology companies (83% of industrial companies, 87% of service companies) expect growth, very often even strong growth of more than 4% in the next three years. These positive market expectations not only affect the domestic market, but also extend to all export regions, especially Asia, North America and Australia/Oceania.

Accordingly, companies' expectations regarding the development of sales and employment in the environmental technology sector over the next three years are positive. A majority (56%) expect sales to increase, while less than a third (31%) expect sales to remain the same. A smaller majority also expects the number of employees to increase (47%). However, compared to sales, constant employment is more often expected here (42%). Falling sales and job cuts remain the exception.

Figure E5: Factors influencing demand for environmental technologies of the industry (share of companies)



Anm.: Rounding difference possible.

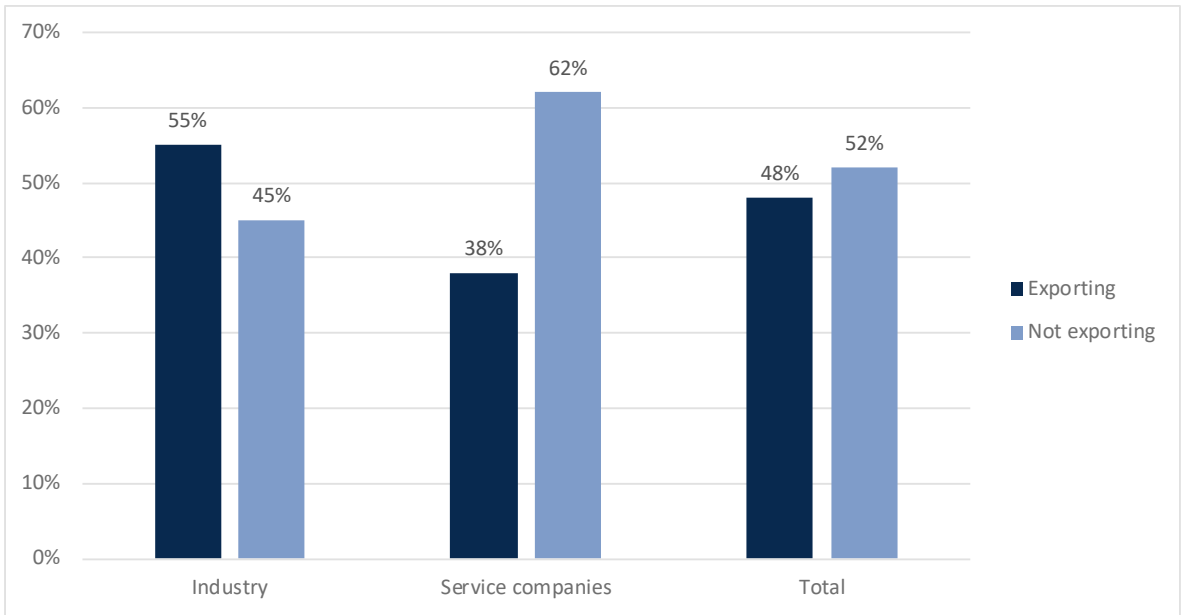
Quelle: IWI survey of the Austrian environmental technology economy 2024, environmental technology industry n=173.

With regard to the factors influencing demand for products and services in the environmental technology economy, national legislation (rated as very important by 61%) and European legislation (41%) are of great importance. If the highest rating of "very important" is taken as a measure, then this demand determinant surpasses all others, including subsidies (38%), environmental taxes and other steering instruments such as certificates (36%), and even high costs for energy, water and materials (34%). The importance of these factors is also expected to increase in the future, most frequently in environmental taxes (59%), national (58%) and European legislation (56%), but also in the environmental awareness of the public (54%). A certain degree of scepticism is evident in the further development of subsidies (38% increasing importance, 15% decreasing) and public investments (27% increasing importance, 14% decreasing). Here too, the expectation of an increase predominates, but here the proportion of companies that fear a decline is also the largest.

Internationalization and exports

The Austrian environmental technology economy is very export-oriented. This is particularly true of industry. Here, the majority (55%) are represented on foreign markets. This proportion is lower for service companies (38%). In industry, the proportion of environmental technology foreign sales to the total sales of export-active companies is also very high at 80%, significantly higher than in the service sector at 30%.

Figure E6: Export activities in the environmental technology economy (share)

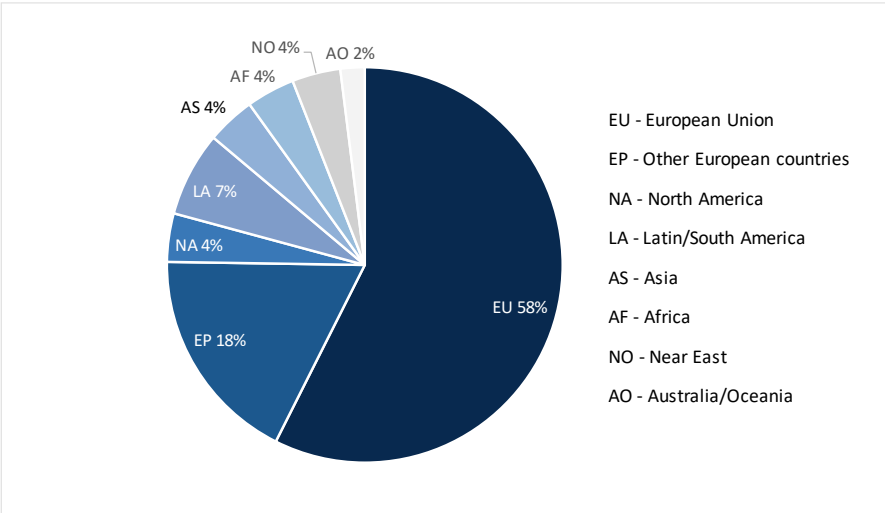


Notes: Rounding difference possible.

Source: IWI survey of the Austrian environmental technology economy 2024, environmental technology industry n=152, environmental technology service companies n=113, environmental technology economy n=265.

The geographical distribution of foreign sales shows a clear dominance of Europe, especially the EU area. A total of 58% of the environmental technology economy's foreign sales are generated in the EU. The other European countries contribute a further 18%. A total of a quarter of foreign sales are generated in the non-European regions.

Figure E7: Export regions of the environmental technology economy (foreign sales)

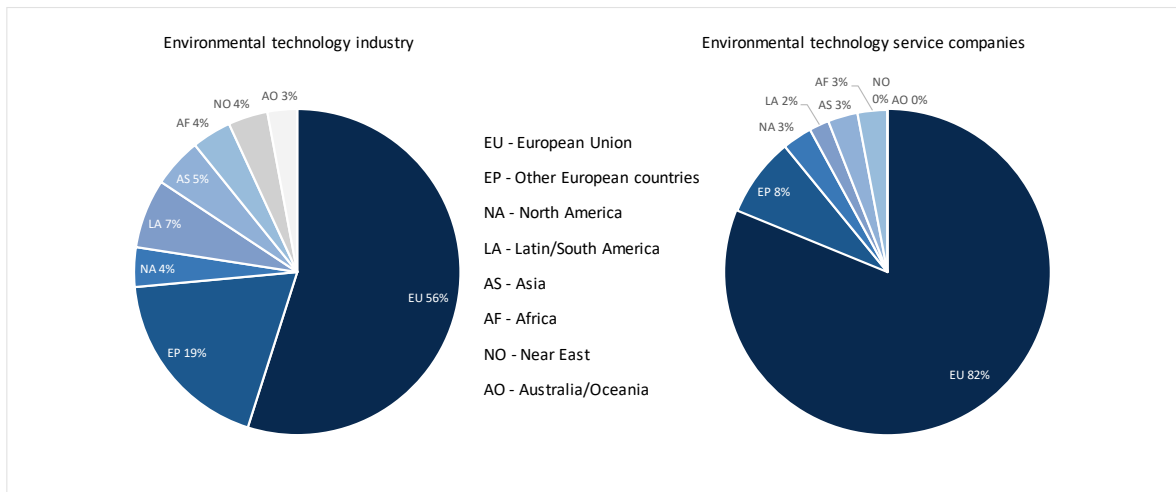


Notes: Rounding difference possible.

Source: IWI survey of the Austrian environmental technology economy 2024, environmental technology economy n=96.

The dominance of the EU is particularly pronounced in the services sector. Here, the EU's share of foreign sales is as much as 82%. Europe's share - the EU countries and the rest of Europe taken together - then amounts to 90%. In the environmental technology industry, the share of non-European regions is significantly higher at 27%.

Figure E8: Export regions of the environmental technology industry and service companies (foreign sales)



Notes: Rounding difference possible.

Source: IWI survey of the Austrian environmental technology economy 2024, environmental technology industry n=66, environmental technology service companies n=30.

In the list of the ten most frequently mentioned export countries for the environmental technology economy, Germany is the undisputed leader (mentioned by 59% of export-active companies), well ahead of Italy (22%) and Switzerland (18%). This is followed by Slovenia (11%), the USA (10%), the Czech Republic and Croatia (8% each), Romania (7%) and Hungary and Slovakia (6% each). It is striking that eight of them are neighbouring countries of Austria. Promising markets, such as those in Asia, are currently rarely mentioned by companies and are seen more as a future opportunity.

A similar picture emerges for the foreign branches of the environmental technology economy. Overall, 15% named at least one branch abroad (23% of the environmental technology industry). Again, the EU area is clearly in the lead (70%), ahead of the rest of Europe (30%), North America, the Middle East (22% each) and Asia (19%).

A look at future export activities shows that the willingness to expand geographically among companies that already export is much greater than the willingness to start exporting. Of all export-active companies in the environmental technology industry, 59% are planning to expand, and in the service sector 45%. In contrast, the proportion of companies that are not yet export-active and want to start exporting is very low at 8% and 5% respectively. The hurdles that stand in the way of starting export activities are perceived as relatively high. The most frequently mentioned target region for future exports continues to be the EU area

(55%). This is followed by the rest of Europe and Asia with 16%, ahead of North and South America (12% each) and the Middle East (10%). The majority also plan to increase foreign investment (55%), while around a third want to keep it constant (34%).

Expanding exports to regions other than Europe is undoubtedly important. However, it should not be overlooked that some of the countries in these regions, such as China and India, are already entering the environmental technology market themselves and are also starting to export them. This means that these countries are not only worthwhile export destinations, but are also increasingly becoming serious competitors in the environmental technology market.

According to companies, the biggest obstacle to export activities is excessive transport costs (mentioned by 48% of companies). The other obstacles follow at some distance: high competition (31%), high market entry costs (29%), difficult legal and administrative framework conditions in the target countries, a lack of local contacts (26% each) and inadequate export financing and insurance options (25%).

This is reflected in the export promotion measures that are considered to be particularly important. Subsidies are mentioned most frequently (58%). This is followed by corporate cooperation (49%), events abroad, export financing and guarantees (each 38%), adequate market information (36%) and EU trade agreements (31%). This shows the importance of good local business contacts, comprehensive information about the respective export markets and sufficient financing options in order to be successful in the export business.

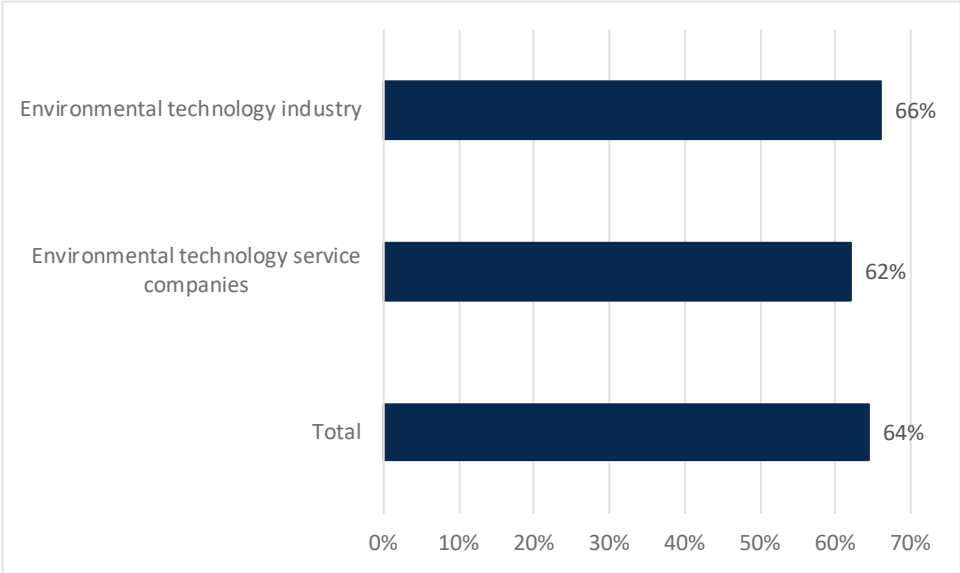
Although there are many funding instruments available, export subsidies are only used by a minority of export-active companies. In the environmental technology industry, 31% of companies say they use export subsidies. In the service sector, the proportion is extremely low at 6%. The most frequently used funding programs for the environmental technology export industry are those of the Austria Wirtschaftsservice (aws), the Austrian Kontrollbank and the internationalization initiative "go-international".

Research and innovation

The environmental technology economy is very innovative. 64% of companies stated that they had introduced at least one innovation in the last three years. This is above the innovation rate of 57% recorded for the Austrian economy as a whole (CIS 2022). The proportion

of innovative companies is slightly higher in the environmental technology industry (66%) than in the service sector (62%).

Figure E9: Introduction of at least one innovation into the market between 2021 and 2023 (share)

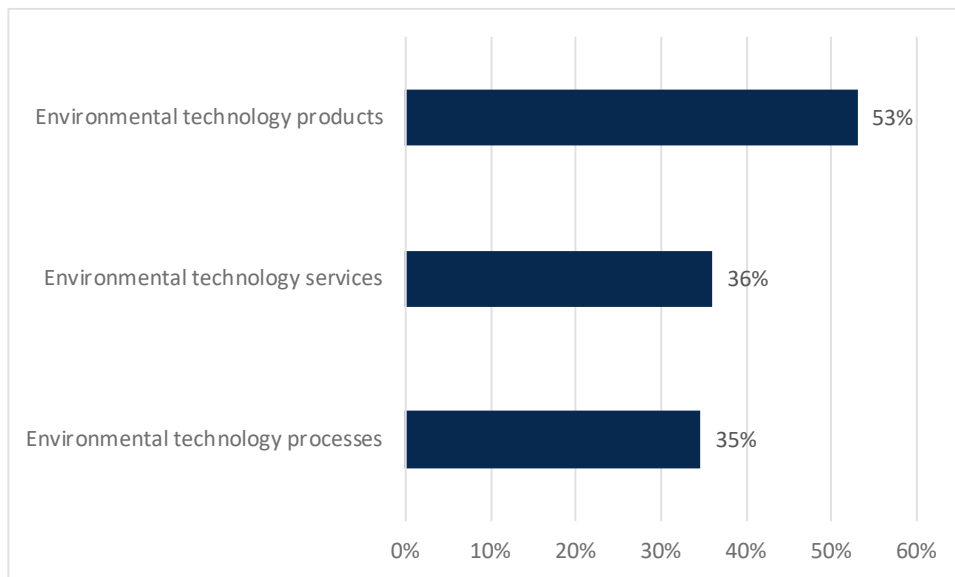


Source: IWI survey of the Austrian environmental technology economy 2024, environmental technology economy n=247, environmental technology industry n=147, environmental technology service companies n=100, multiple response possible.

The strong innovation activity is accompanied by a high R&D-intensity. In the environmental technology industry it is 7.2%, in the service sector 6.3%. The intensity of 7.2% in the environmental technology industry is thus significantly higher than the intensity of the Austrian industrial sector in general (3.0%).

In the environmental technology industry, most innovations relate to the goods and technologies offered (53%). But innovations are also common in the associated services (36%). This is closely followed by innovations in the processes and procedures used (35%). The most common innovation goals are technological improvements (74%) and the development of new products or services (70%). Market innovations are also common (45%).

Figure E10: Subject of innovations between 2021 and 2023 in the environmental technology industry (share)

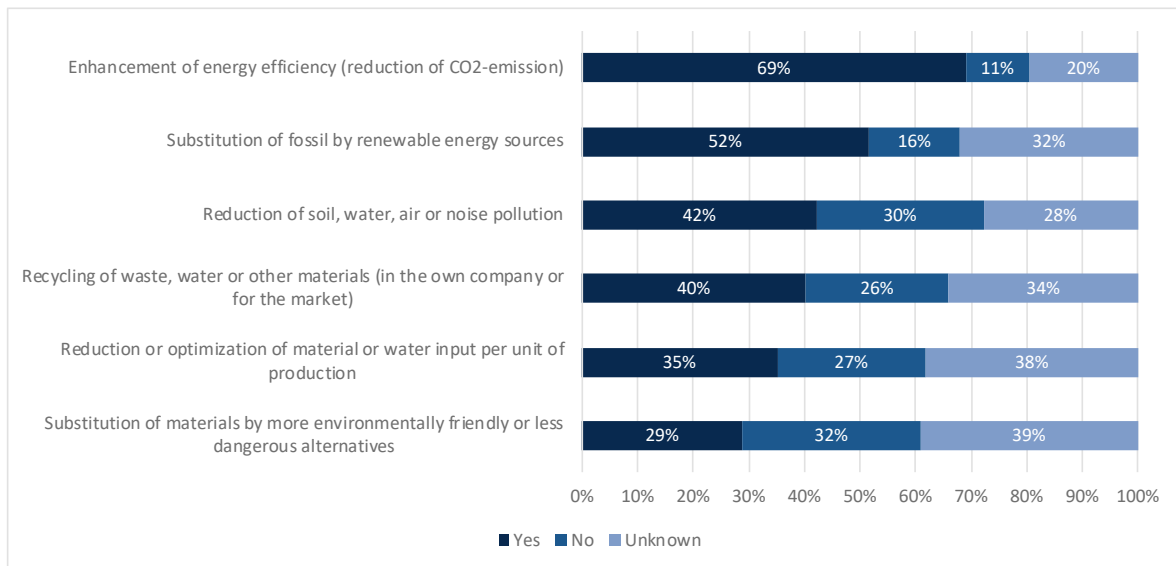


Source: IWI survey of the Austrian environmental technology economy 2024, environmental technology industry n=147, multiple response possible.

Almost half of the industry companies plan to expand their innovation activities in the next three years (48%), only a few (2%) want to scale them back. Due to innovation activities, 68% of environmental technology industry companies see positive effects on competitiveness at home and 60% abroad. The assessment is more cautious when it comes to employment. 48% of companies see positive employment effects at home, but only 38% abroad.

The most common positive impacts of innovations on the environment are energy-related: increasing energy efficiency or reducing CO₂ emissions (69% agreement) and replacing fossil fuels with renewable energy sources (52%). Also frequently mentioned are reducing soil, water or air pollution and noise pollution (42%) and recycling waste, water or other materials (40%). Somewhat less common are effects on the efficiency of resource use (materials, water) and replacing environmentally harmful or dangerous substances (29%).

Figure E11: Positive effects of innovation on the environment in the environmental technology industry (share)



Notes: Rounding difference possible.

Source: IWI survey of the Austrian environmental technology economy 2024, environmental technology industry n=97, multiple response possible.

The most important barriers to innovation are technical, economic and administrative hurdles and insufficient funding budgets (56% strong or very strong obstacle). This is followed by a lack of financing options from cash flow (44%), a lack of qualified specialist staff (43%) and a lack of financing through loans or venture capital (31%). In contrast, the environmental technology market itself is less often seen as a source of problems such as uncertain market demand (24%) and too much competition (21%).

Among the innovation-promoting initiatives considered to be particularly important, an international initiative is at the top, the "European Green Deal" (mentioned by 45% of innovative companies). However, a national law, the „Erneuerbaren-Ausbau-Gesetz“, EAG (43%), follows closely behind. This confirms the previously mentioned importance of regulatory framework conditions for the demand for environmental technology products and services. Other important national initiatives are the „Klimaschutzmilliarde“ (35%), the national „Klima- und Transformationsoffensive“ (30%) and the RTI-initiative „Kreislaufwirtschaft“ (26%). Other influencing factors, however, are mentioned less frequently, such as the eco-social tax reform (22%) and the EU's "Net-Zero Industry Act" (NZIA) (15%). The latter shows that, from the perspective of environmental technology companies, these activities are still too small or too vague to provide significant incentives.

The support landscape for research and innovation is extremely rich, especially at national but also at European level. This offer is also well taken up. 46% of companies in the environmental technology industry receive subsidies for their innovation projects, and 40% of service companies. The most common R&D subsidies are from the Austrian Forschungsförderungsgesellschaft (FFG). This applies to 69% of the companies receiving funding. This is followed by subsidies from the Austria Wirtschaftsservice (aws) with 41% and the Klima- und Energiefonds (KLIEN) with 34%. Immediately after this come subsidies from the EU (Horizon Europe or 2020, LIFE) with 31%. The federal states are also very active in supporting innovation (30%). The most common support purpose is industrial research (48%), followed by experimental development (41%), investments (38%) and demonstration and pilot plants (36%).

Research and innovation subsidies play a role in the sales development of innovative companies. Companies with supported innovation projects grew significantly more (16.6% per year) during the innovation activity period (2021 to 2023) than those without subsidies for their projects (5.6%). This difference is very pronounced in the service sector.

According to companies, the most frequently cited barrier to claiming funding is the high administrative effort involved in applying for and processing funding. This was mentioned by 74% of innovative companies. Other hurdles include a lack of information about the funding offer or a lack of overview (38%) and long periods of time until funding is received (36%). Insufficient funding or gaps in the funding system are mentioned relatively rarely as hurdles (between 21% and 24%).

In the innovation processes of most companies in the environmental technology industry, cooperation takes place with external partners. The most common cooperation partners are universities, technical colleges and non-university research institutions. Such cooperation was mentioned by 62% of innovative companies. This is followed by supplier and customer companies (51% each). Cooperation within the group (with affiliated companies) is also common (40%). Cooperation partners that are used less frequently are consulting companies (32%) and other competing companies (28%). Environmental technology clusters or networks are still rarely cooperation partners as independent organizations (17%).

The most important function of environmental technology clusters and networks (associations, interest groups) is to network companies and research institutions in environmental technology. This also stimulates joint innovation projects. Overall, the strongest positive effects of clusters and networks can be seen in the innovation sector. The most important

effect here is improving the company's visibility and market access. Other effects, such as on competitiveness, export activity or the establishment of a new business model, are rare. According to companies, concrete projects on the circular economy, energy efficiency and the substitution of fossil fuels with renewable energy sources are also rarely stimulated by a cluster. The part of the environmental technology economy that actively participates in such clusters and networks is also still quite small. A total of 12% of companies in the environmental technology economy are members of at least one cluster or network. As expected, membership in the "Green Tech Valley Cluster" and "Cleantech Cluster" clusters that specialize in environmental technology was mentioned most frequently. However, it should not be overlooked that clusters with other thematic orientations, but which have environmental technology links, also play a role in the networks of the environmental technology economy.

Business creation and start-ups

There is a lot of start-up activity in the environmental technology economy. A quarter were founded after 2010, and a third have been active in the environmental technology sector since 2011. Of all environmental technology companies, 13% consider themselves to be start-ups.

Most start-ups have already reached the growth phase (55%), slightly less than a third (30%) are still in the actual start-up phase. The proportion of companies in the earliest start-up phase (pre-seed / seed) is low at 9%. The remaining companies have already reached the more mature phases at the end of the start-up period.

Start-ups are very innovative. More than a third (68%) start their business with innovative products or services. The majority of start-ups (59%) also operate in foreign markets early on.

The most important source of financing for start-ups is the founders' own funds (46%). This is followed by bank loans (38%) and internal financing from existing business activities (29%). For a quarter, national subsidies also make a significant contribution to financing. Venture capital still plays a small role. Only 13% mentioned business angels, and venture capital is almost insignificant with a share of 2%. More available venture capital and a generally greater importance of the capital markets would be of great importance for start-up financing.

Subsidies are by far the most important factor for the continued growth of startups (62%). This is followed by the opportunity to work with mature companies (38%), legal regulations in the environmental sector (36%), other or additional forms of financing (31%), qualified workers and networking in clusters (26% each). In addition to sufficient financing, cooperation or networking and competent employees are therefore of great importance.

Green skills

The need for qualifications and skills for the production of environmentally-technological goods and the provision of corresponding services (“green skills”) is very high. In the area of technical and other professional (e.g. legal) skills, 86% of companies currently lack the relevant skills, meaning that they cannot be adequately covered by the existing workforce. For management skills, this proportion is still a considerable 48%. And there are also major deficits in personal and social skills such as communication and teamwork skills, language skills and environmental awareness (35%), particularly in service companies.

Environmental technology is often a cross-sectional subject. This is also reflected in the variety of technical disciplines that are in demand. It is important that high levels of competence in one discipline are complemented by the ability to build on other specialist skills or to integrate several specialist skills. Competence in dealing with environmental and sustainability problems goes beyond the environmental technology economy. Green skills are in demand in all industries.

Environmental technology companies try to cover the skill requirements primarily through internal training and further education (62% approval). The quality of the skills taught by training and further education institutions is viewed more positively than negatively (41% approval, 29% rejection). The job market is viewed somewhat more skeptically. 39% of companies agree with the possibility of recruiting fully trained specialists, but rejection is just as common. Many companies (38%) are willing to cooperate with training and further education institutions for targeted training, which certainly shows potential for improvement.

Further development of the environmental technology economy and recommendations for action

The further development of the environmental technology economy is facing major challenges. Other countries have also recognized the importance of environmental technology and are investing not only in the purchase of corresponding products, but also increasingly

in their production. International competition for the Austrian environmental technology economy industry is increasing. The environmental technology economy is confronted with a generally weak economy in Central Europe. Even if it has succeeded so far, there is no guarantee that it will continue to be able to decouple itself from weak economic development in Austria and Central Europe. High factor costs are also a burden on the environmental technology economy and impair its competitiveness. Against the background of increasing international competition, the factor cost disadvantage is also becoming an ever greater problem for the environmental technology economy.

In order for the Austrian environmental technology economy to continue to develop dynamically and play its role as an important pillar of the Austrian economy, active measures are required from the state in the field of environmental technology itself, but also in general economic and industrial policy. It will be very important to ensure a good balance between the environmental technology economy and the other areas of the economy. To this end, the following recommendations are derived from the results of the study:

1. **Robust public demand and investment:** The environmental technology economy's remarkable resilience to crises is largely due to the stable demand for environmental technology solutions due to the pressure to act to achieve sustainability and climate goals. Stable public demand for environmental technology products and services continues to be of great importance for the continuous dynamic development of the environmental technology economy. This requires not only the state as a direct demander, but also wherever it has a significant influence on procurement and investment decisions. In addition to private investments by the economy and the population, sustained public investment activity is essential to achieving sustainability and climate goals. The more stable and predictable public investment activity is, the better the plannability of the environmental technology economy's production and investment decisions and the greater the investment security.
2. **Balanced further development of the legal framework:** Legal framework conditions are the most important factor influencing the demand for products and services in the environmental technology economy. As far as national legislation is concerned, the rules and regulations relevant to environmental technology should be implemented consistently and quickly, more quickly than is currently the case in many cases. A slow transition from government announcements to concrete measures is generally an obstacle to environmental technology investments. Since EU legislation is also of great (and increas-

ing) importance for the legal framework conditions affecting the environmental technology economy, Austria should consistently work at EU level for the rapid implementation of EU regulations. Care must be taken to ensure that a sufficient balance is maintained between the advantages for the environmental technology economy as a provider of environmental technology products and services and the disadvantages for other sectors of the economy in the form of increased costs to meet regulatory requirements.

3. **Increasing the efficiency of approval procedures:** For many environmental technology investments, long and complex approval procedures are extremely obstructive. This applies to both operating and plant approval procedures and environmental impact assessments. The substantive necessity for detailed assessments cannot be questioned. However, the length and complexity of the procedures should be significantly reduced. This helps the environmental technology economy, but also supports the necessary green transformation.
4. **Supporting the competitiveness of the Austrian environmental technology economy:** This is a general economic and industrial policy perspective that is just as important for the environmental technology economy. The competitiveness of the domestic economy is under great pressure. The main reason for this is the very high labor and energy costs compared to other countries. Austria should pursue the phase-out of fossil energy sources (which is absolutely necessary from a sustainability and climate perspective anyway) with much more emphasis. Due to Austria's small size and the associated limited influence, it will be necessary to advocate for a European-coordinated approach in this regard and to contribute constructively accordingly. In order to relieve the burden on the production factor 'labor', further developing the eco-social tax reform would be very desirable. The already mentioned danger that many countries and regions seen as export opportunities could become threatening competition is also great in the environmental technology economy. Economic and industrial policy reforms are unavoidable in order to maintain or regain competitiveness.
5. **Consistent and focussed support of export activities:** Exports are an important part of the turnover of the environmental technology economy. When supporting export activities, however, more consideration should be given to the specific needs and possibilities of companies. Smaller companies have little opportunity to work in large markets such as China, regardless of how much support they receive. However, smaller foreign markets are within their reach. The expansion of export activities into large and dynamic

regions should not overshadow the importance of the European market and the immediate neighborhood. Many export activities begin with initial steps into neighboring countries and later expand further into other regions of the world. A focus on supporting intra-European and neighboring exports is therefore a very sensible addition to promoting exports to more distant regions of the world.

6. **Explicit support of taking up export activities:** Most export plans of environmental technology companies concern an expansion of the target countries of companies already active in exports. The proportion of companies that want to start exporting is comparatively small. It would therefore be helpful to explicitly support overcoming the hurdle of starting exports. Such "export start-up support" would be particularly helpful for smaller companies in order to acquire the necessary skills or to hire skilled personnel to be able to start exports. It could be integrated into the existing export promotion instruments without having to establish a new support program. In contrast, expanding the target countries of companies already active in exports requires much less support and is more likely to be based on region-specific measures, especially on site.
7. **Streamlining the support of research and innovation:** There is now a wealth of funding programs on offer in Austria. This is not about the amount of funding used for research and innovation. It is more about the problem of fragmentation into numerous, often small, funding measures tailored to very specific topics. The aim should be fewer, but larger, funding programs. The aim should also be to not formulate the funding measures too narrowly in terms of topics, so that there is scope for radical innovations. The aim should also be to make the process more efficient (particularly with regard to the time between the application for funding and the granting of the funding) and to reduce the bureaucratic effort involved in applying and processing. These are often funding hurdles that are difficult to overcome, especially for smaller companies.
8. **Consideration of the complexity of environmental technology innovations in funding:** When it comes to thematic funding, the cross-sectional nature of many innovation projects relevant to environmental technology should always be taken into account when determining the evaluation criteria. One example of this is the circular economy. Many innovations in this area are characterized by the linking of numerous materials, product groups and industries and the integration of several technology fields. Selection criteria that are too narrow can hardly do justice to this diversity. A second, closely related, aspect that must be taken into account when funding and environmental technology innovations is the increasing complexity of many innovative solutions. These are often

integrated overall solutions that usually also have multiple benefits. This should be taken into account when formulating the selection criteria.

9. **Expansion of venture capital finance:** Venture capital is still not available in sufficient quantities in Austria. Startups in particular suffer from the limited supply of venture capital financing. Due to the small size of the Austrian capital market and the still low importance of institutional investors, national funds will probably only be available to a limited extent for some time to come. It is therefore important to support the brokerage of foreign funds, i.e. access to foreign venture capital. This is particularly important for small companies, which are often overwhelmed by dealing with international venture capitalists. The financial requirements to enable the green transformation require a lot of additional capital that cannot be covered exclusively by traditional financing models. The importance of an extensive venture capital scene is impressively demonstrated by its importance in the Anglo-Saxon world.

10. **Build-up of the innovation brokerage capacity of environmental technology cluster organizations:** Environmental technology clusters are successful in networking business and research partners and in making environmental technology companies visible. However, they rarely stimulate concrete innovations in environmental technology products, services and business models. This shows that they have already established themselves as network nodes in environmental technology, but their services could and should still be expanded. In concrete terms, the proactive mediation of partners from business and research for innovation ideas and projects seems to be an attractive additional function of cluster organizations. The proactive networking of cluster companies with regard to the establishment and expansion of export relations could also be an attractive service for member companies.

11. **Supporting the teaching of green skills:** The skills required to manufacture environmental technology products, provide the relevant services and develop innovations require a wide range of skills that must be available in high quality. Many companies have a need for such skills and are therefore currently unable to cover them in full. Technical and professional (e.g. legal) skills are most frequently required (86%). A lack of management-skills indicate 48%, a lack of personal and social skills (z.B. communication and team capabilities, foreign languages, environmental awareness) 35% of the companies. To solve the problem, many of them rely on costly internal training and further education. But that alone will not be enough. Since there is also often a willingness to cooperate with training and further education facilities, this enables educational activities to

be designed in a targeted and needs-oriented manner. As a prerequisite for this, educational institutions must be given the flexibility they need to design the educational program. If this is the case, then support (often not financial, but rather organizational) for the cooperative design of the training or further education program between companies and educational institutions would be useful.

Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology

Radetzkystraße 2, 1030 Vienna

+43 800 21 53 59

servicebuero@bmk.gv.at

bmk.gv.at