

Annual Report 2024

Austria

Photo: *The Tauern Wind Park in Oberzeiring, Styria, is one of the highest wind farms in Europe.* *(Source: Klaus Rockenbauer)*

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In Austria, 36 wind turbines with an output of 159.65 MW were built and 11 wind turbines with 19.8 MW were dismantled in 2024. At the end of the year, there were 1,451 wind turbines with a nominal output of 4,028 MW on the grid.

This output enabled electricity production of 9.3 TWh, corresponding to around 16% of Austrian electricity consumption (ENTSO-e). Records of the financial subsidy system show that not even half of the volume of power received acceptance for the bids between December 2022 and the end of 2024.

Several factors contribute to this reluctance, such as the absence of declared wind-energy areas, regulatory obstacles, and inadequate grid access. A report for 2024 showed an increase in public funding for research in wind-energy.

To increase the growth rate of wind turbine installations, federal states will need to implement key measures: declaring wind installation targets, nominating dedicated wind energy zones, strengthening authority staffing, and improving grid development.

Table 1 displays the installed wind power capacity of 4.028 GW. Compared to year 2023 is this an increase of 3.6%.

Total (net) installed wind power capacity	4.028 GW
Total offshore capacity	n.a. GW
New wind power capacity installed	0.160 GW
Decommissioned capacity (in 2024)	0.0198 GW
Total electrical energy output from wind	9.3 TWh
Wind-generated electricity as percentage of national electricity demand	16 %
Average national capacity factor	26.4 %
Target	100% renewable electricity in 2030
National wind energy R&D budget	EUR 0.8 million

Table 1. *Key Statistics 2024: Austria*

Highlights

- Still waiting for major installation growth.
- Hopes are on the new financing scheme (EAG) to provide stable conditions.
- Improvements in federal states regulatory conditions needed to unlock potential.

Market Development

Targets and Policy

The Austrian scheme to support the production of renewable energy (EAG), approved by the European Commission in 2022, should provide the framework for reaching Austria's goal of 100 % renewable electricity in 2030. Austria provides around 92 % of its electricity production by renewable energy (2023 figure) [2]. Renewables account for 87 percent of electricity consumption. [3].

Furthermore, the ambition is to make Austria climate-neutral by 2040. Austria has taken a step forward by implementing a concrete wind energy target of 21.1 TWh by 2030 through its Integrated Network Infrastructure Plan (ÖNIP) [4]. While the expansion of wind power almost came to a standstill in 2020, expansion continued from 2021 to 2023 and was at a low level in 2024.

Progress and Operational Details

In Austria, a total of 36 wind turbines with an output of 159.7 MW were newly built and 11 wind turbines with 19.8 MW were dismantled in 2024 (see Figure 1).

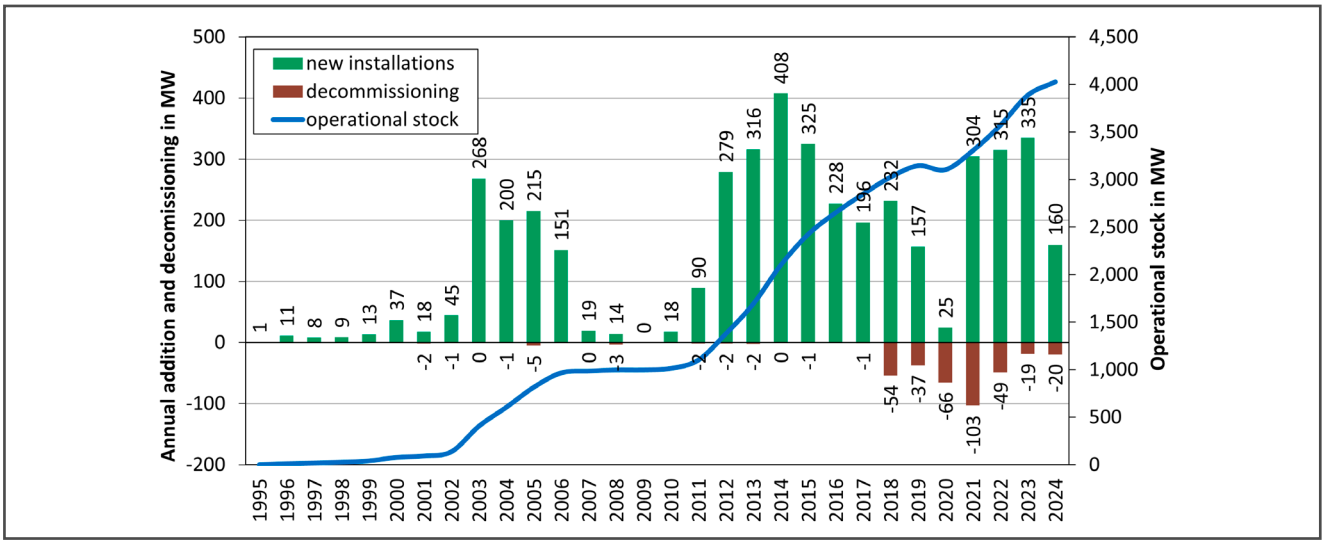

Figure 1: *Figure 1. Market development of wind power in Austria [7].*

Of the total of 36 systems, 26 systems with 117.9 MW were built in Lower Austria and 6 systems with 28 MW were built in Burgenland. 4 wind turbines with 13.8 MW were built in Styria. At the same time, around 11 wind turbines with 19.8 MW of wind power output were dismantled and replaced with modern systems. As of end-2024, the wind energy infrastructure comprised 1,451 turbines delivering 4,028 MW of nominal power to the grid.

The average power per new plant installed decreased to 4.4 MW as shown in Figure 2. The development shows a remarkable increase over the last decades. Decommissioning due to repowering plays of course a significant role in this progress.

The average rotor diameter of new installations decreased from 144 meters in 2023 to 141 in 2024.

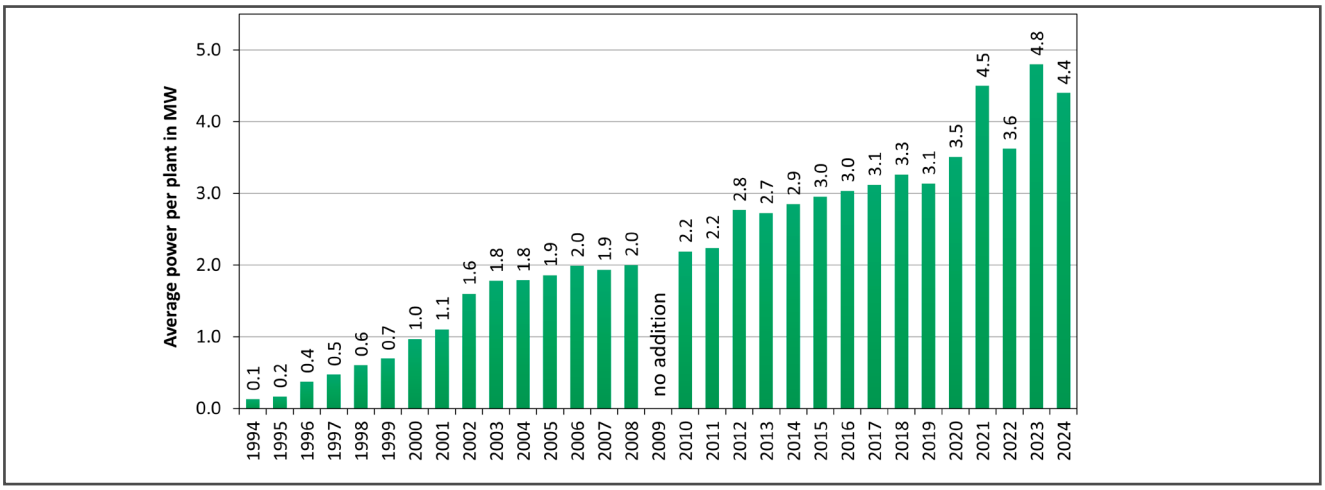

Figure 2: *Average power of new turbines installed [7].*

Matters Affecting Growth and Work to Remove Barriers

Until today most of the wind-projects are located in the east of Austria. First project ideas from the west will still need time to get permits and to receive funding. With the improved law on environmental impact assessments (Umwelt-Verträglichkeits-Prüfungs-Gesetz) the sector now has a framework on a federal level, which supports a swift expansion.

The new Austrian renewable energy support scheme (EAG) is expected to accelerate wind energy expansion. It is expected that about 62 new wind-turbines will be installed in 2025 and the amount of wind-powered electricity increased by approximately 889 million kWh. Still, the expansion will take place in the east of Austria.

Currently, federal countries hold the key to accelerating new wind installations, with actions required under the EU's Renewable Energy Directive (RED III). They must identify new areas for wind parks, streamline the permitting process for new installations, and increase staffing in relevant authorities.

R&D Activities

National R&D Priorities and Budget

Publicly funded R&D activities increased in 2024 and were at a level of EUR 3.017 million. 60% of the funding came from federal ministries, 19% from the Climate and Energy Fund (KLIEN) and 18% from research outside universities (see table 2). Universities and universities of applied sciences finally contributed 3%. R&D expenditure in wind energy is likely underestimated due to the influence of component suppliers on the corporate structure. Many material and component innovations aren't classified as energy research, despite being used in wind power plants, such as blade materials and generators [1].

Austrian wind companies' innovations have had an influence on the wind industry both in their own country and worldwide. They contribute to improving the efficiency and reliability of wind turbines and enable the implementation of the global energy transition.

National Research Initiatives and Results

The Austrian Research Promotion Agency supports a range of research projects in the wind energy field like the following:

SOWINDIC is a research project with the aim of developing an intelligent rotor blade heating control, which incorporates various information, like weather data, meteorological forecasts, as well as market data. The project finished in July 2024.

Project **Space4Wind** aims to develop a system for the highest prediction accuracy of electricity yield for successful planning and operation of small-scale wind energy applications.

INSTITUTION	EURO	%
Federal ministries	1.806.813	60%
Climate & Energy fund (KLIEN)	576.306	19%
Research outside universities	539.239	18%
Universities of applied sciences	37.800	1%
Universities	57.592	2%
Total wind energy	**3.017.750**	**100%**

Table 2. *Distribution of public research funding wind energy in the year 2024. (Source; Indinger A., Bettin F., Rollings M. (2025) [1].)*

Project **VENTUS** follows recent advances in the field of physics-informed and probabilistic-causal artificial intelligence (AI) to reduce costs for operation and maintenance. The aim is to develop a system to reduce losses due to downtime and maintenance by 50%. [5]

Collaborative Research

Austria has been involved in the IEA Wind Technology Collaboration Programme TCP since 2009.

Austria is currently participating in the following TCP tasks:

Task 41: Distributed Wind. (*https://iea-wind.org/task41/*)

Task 51: Forecasting for the weather-driven Energy System. (*https://iea-wind.org/task51/*)

Task 52: Large-Scale Deployment of Wind Lidar. (*https://iea-wind.org/task52/*)

Task 54: Cold Climate Wind Power. (*https://iea-wind.org/task54/*)

Impact of Wind Energy

Environmental Impact

Wind power plays a crucial role in Austria's climate and energy strategy, both currently and in the future, making substantial contributions to national and international climate objectives. In 2024 alone, wind energy could save approximately 4.7 million tons of CO2 emissions. [6]. However, the expansion of renewable energy must go hand in hand with robust nature conservation efforts.

Beyond this, wind energy can offer new opportunities for nature conservation. Through collaboration with environmental organizations and targeted actions, wind projects can positively impact biodiversity. Wind turbines are often built on agricultural or forestry land without significant loss of usable area (about 99% remains available for farming or forestry). This multi-use approach benefits conservation efforts by allowing for additional ecological measures like compensation areas.

Furthermore, operators are legally required to mitigate environmental impacts. This includes creating compensation and restoration areas that serve as valuable habitats for endangered species, supporting biodiversity and climate resilience. These areas are carefully designed to provide shelter and food sources for affected flora and fauna.

Other mitigation measures aim to protect wildlife, particularly birds and bats, through research, adaptive planning, and smart shutdown systems that reduce collision risks. These practices demonstrate the wind energy sector's commitment to ecological responsibility.

Over the past years, numerous studies have been conducted on the interaction between wind power installations and wildlife, particularly birds. These studies increasingly demonstrate the potential for wind energy and nature to coexist.

Importantly, the combination of rigorous environmental oversight and growing ecological knowledge has contributed to the recovery and even growth of many previously endangered or extinct bird populations (Figure 4). Austria's experience proves that advancing renewable energy while protecting ecosystems isn't just possible—it's necessary for building a genuinely sustainable future.

Special attention is also paid to bats. In Austria, approximately 30 species are native. To prevent conflicts, surveys on bat behavior at project sites are carried out in advance and during the first years of turbine operation.

Protection measures include planning the wind turbines according to project specific circumstances to avoid bat habitats, adaptive shutdown protocols during peak bat activity periods, and creating alternative habitats. This integrated approach helps minimize fatalities and ensures the preservation of

their populations, supporting a balance between renewable energy development and biodiversity conservation.

While nature protection remains vital, excessive and overlapping regulations are undermining urgent renewable energy expansion. Protracted discussions about landscape impacts across multiple administrative levels significantly delay wind project approvals, sometimes taking up to ten years. This regulatory burden contradicts broader climate goals, as renewable energy is essential for long-term environmental protection.

To achieve meaningful balance, regulations must weigh wind power's long-term environmental benefits against local concerns while enabling rather than obstructing the green transition. Streamlined permitting processes are crucial for deploying the renewable infrastructure needed to meet climate targets.

Current EU regulations, particularly the Renewable Energy Directive (RED III), offer significant potential for accelerating renewable permitting. Member States must designate acceleration areas for wind development and establish comprehensive mitigation measures to offset environmental impacts. The Austrian Wind Energy Association has proactively compiled a catalogue of mitigation measures combining established practices with innovative approaches.

As 2025 progresses, this year must serve as a pivotal moment for advancing the energy transition while addressing biodiversity challenges.

Economic Benefits and Industry Development

The Austrian wind power industry consists of approx. 250 companies with around 7,600 employees, including wind turbine operators, planning offices, and component suppliers for international wind turbine manufacturers [6]. In 2024, the annual turnover of existing wind park operators was EUR 628 million (USD 650 million), which is a decrease of about 10% compared to 2023 due to the much lower electricity price in 2023 [see also 5]. Cooperatives and private companies own 60% of Austria's existing wind turbines, while the other 40% are owned by utilities.

One wind turbine (7 MW) generates EUR 4.5 million (USD 4.7 million) in domestic added value during installation and creates an additional EUR 7.3 million (USD 7.6 million) in added value plus 2 permanent jobs over its 20-year lifespan [6]. In 2024, the installation of 159.65 MW represented an investment volume of EUR 233 million (USD 241.2 million) [7].

Austrian companies excel in both onshore and offshore wind sectors, with crane manufacturers, planning offices, and software designers operating extensively abroad. Austrian suppliers lead internationally in electricity conduction, generators, turbine design, and high-tech materials, while operators successfully manage projects across Central and Eastern Europe and beyond. Although Austria lacks major turbine manufacturers, it produces small and micro-sized turbines.

Austrian component suppliers serve as hidden champions globally. Key players include Bachmann Electronic (turbine control systems), Hexcel Composites (blade materials), and Elin EBG Motoren (generators), alongside international companies with Austrian competence centers like SKF and NKE.

Innovation thrives through startups like Eologix (ice detection systems), Aero-Enterprise (drone inspections), and Speedpox (fiber composite research). MIBA AG has tripled wind sector sales, producing brakes, gearings, bearings, electronics, and offshore tower construction machinery, positioning wind energy as a core growth driver [8].

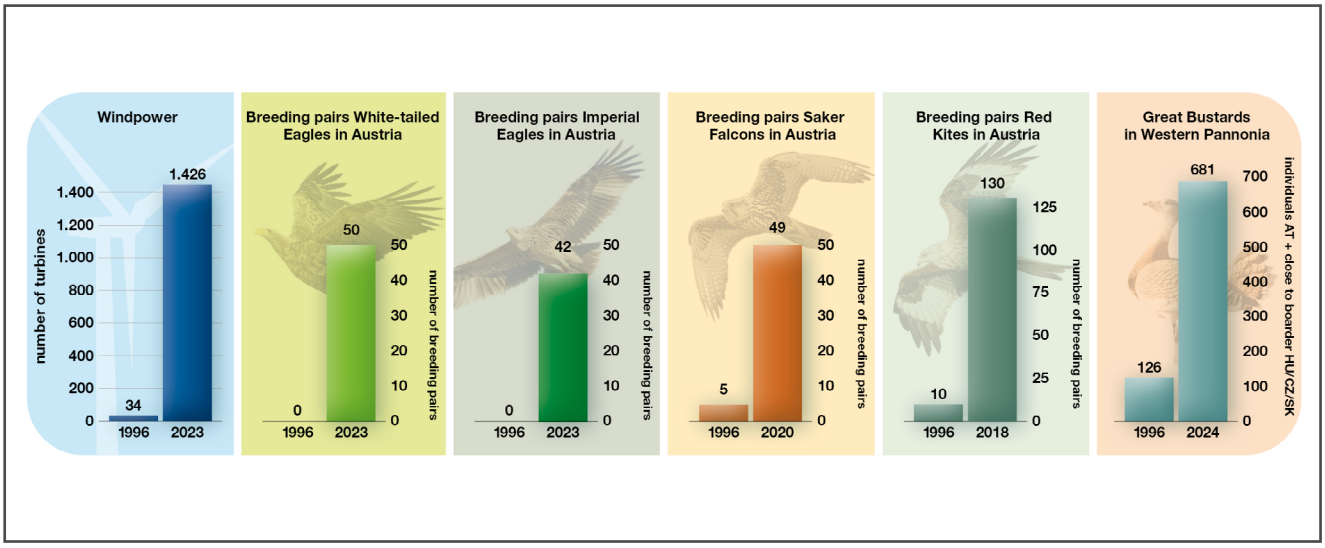

Figure 3. *Wind turbines and Bird of Prey Development. (Source: IG Windkraft.)*

Next Term

An important development regarding legislation is the new electricity industry act, Elektrizitätswirtschaftsgesetz (ElWG).

The proposal of the law is currently still under discussion. Hopes are high that this law will improve the situation regarding flexible grid connection, optimize the topic of energy storage and grid expansion etc.

The proposal of the law "Erneuerbaren-Ausbau-Beschleunigungs-Gesetz" (EABG) is currently still under discussion, too. This law is intended to regulate the legal framework for the approval of smaller wind farms. In addition, it will implement the national transposition of the RED III Directive and create the allocation of the target values to the federal states.

The RED III Directive must be implemented in all federal states. It is already foreseeable that this will not be completed on time. Current projections regarding new wind power installations are approx. 400 MW in the year 2026.

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