



The wind industry's commitment to STEM education

Wind
EUROPE

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DISCLAIMER:

This paper presents insights from multi-stakeholder dialogues convened by WindEurope in 2025. It reflects shared perspectives on school–industry cooperation and informs the recommendations set out in this document.

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Introduction

Wind energy is a strategic sector, vital to meeting Europe’s climate and energy security goals. With a target of 42.5% renewable energy in the mix by 2030, Europe will need 425 GW of new wind by this date, up from 285 GW today. But this will not happen unless we optimise permitting processes, invest in grids and prepare a **skilled, future-ready workforce**.

The wind industry currently employs more than **440,000¹** people across Europe – a number expected to increase to **600,000 by 2030**. Meeting this demand depends on Europe’s ability to educate and train the necessary workforce. It also means preparing the next generation and equipping young people with strong STEM competences, **promoting science literacy to counter misinformation, and improving participation among underrepresented groups - particularly girls and learners in rural areas**.

The European Commission’s STEM Education Strategic Plan 2025² sets out an ambitious target for STEM competencies.

- 45% of secondary and VET learners in STEM by 2030
- At least one in four learners female

It further highlights persistent challenges, such as shortages of qualified STEM teachers and limited opportunities for students to learn through real-world activities.

1. [Europe’s Wind Workforce Report 2025](#)
2. [STEM Education Strategic Plan 2025](#)
3. [Council Recommendation 2022](#)

The wind energy sector’s commitment in practice

The wind energy sector is committed to helping the EU and Member States deliver these STEM education targets.

From 2024–2025, WindEurope ran wind-energy education pilot programmes in primary and secondary classrooms in Denmark, Ireland, and Poland. The pilots introduced teachers and students to wind-energy topics through:

- curriculum-aligned classroom activities
- tools
- games

This was driven by a cross-sectoral approach. Partnerships between regional authorities, schools, teachers, teacher-training organisations, and companies were set up ahead of the classroom phase to ensure:

- relevance
- alignment
- shared ownership

While the focus here is wind energy, these activities also contribute to wider Education for Sustainable Development (ESD³) by strengthening pupils’ understanding of the green transition.

Alongside the national pilots, WindEurope convened multi-stakeholder dialogues through roundtables and delegation visits. These brought together pilot partners, EU-level associations of parents and students, STEM education networks, schools, NGOs, educational authorities, and a wider group of companies. This document refers to these as “stakeholders.” The discussions offered a comparative view of how school–industry cooperation works in practice and where structural barriers remain.

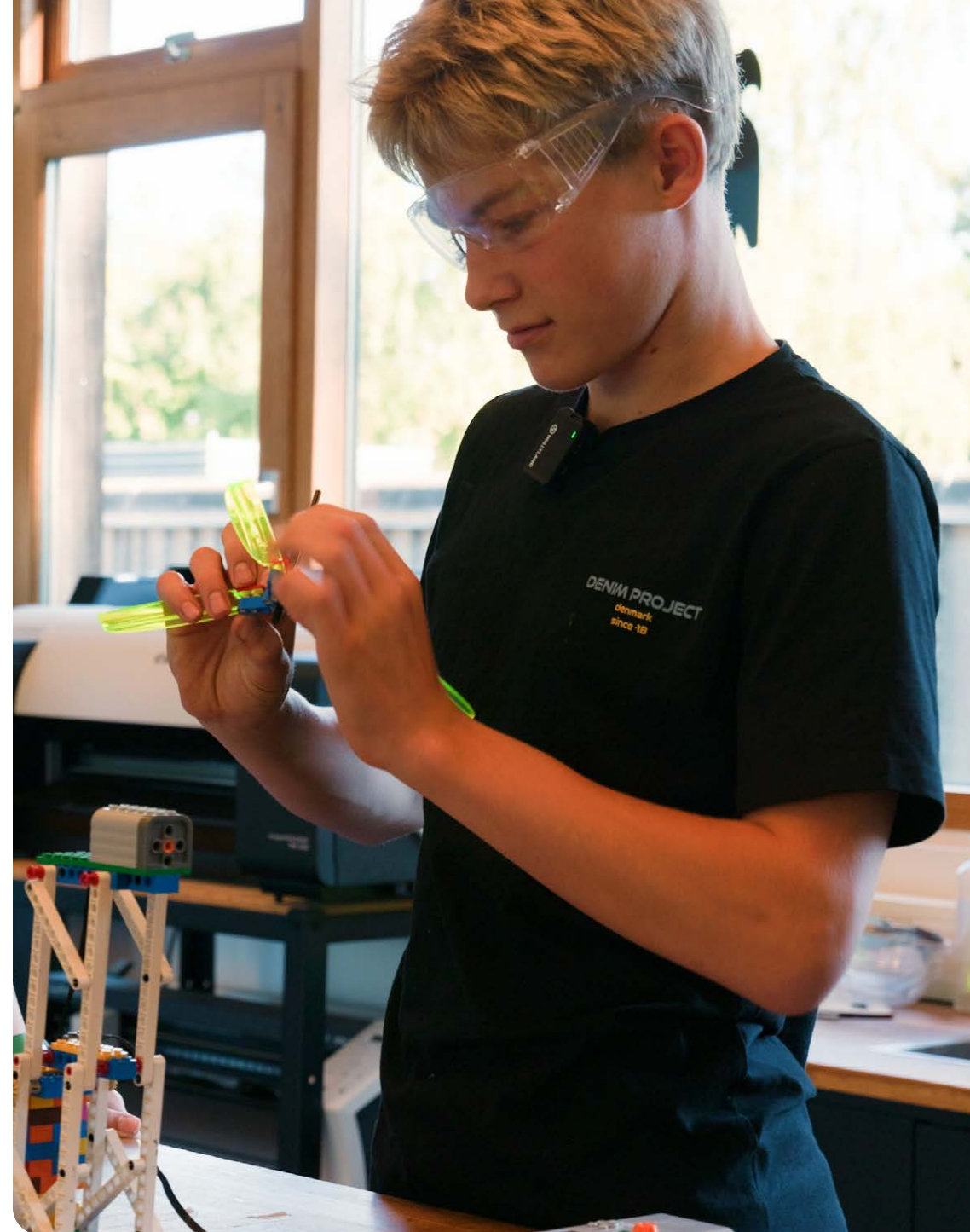
Based on these insights, this paper looks at the main obstacles, what scalable cooperation can look like, and offers recommendations for EU and national policymakers to strengthen STEM education through more structured, long-term partnerships.

Barriers to wind energy's involvement in education

Companies across the wind sector already support STEM education, but a number of systemic barriers still limit their ability to engage at scale and over the long-term:

- **A lack of structured collaboration frameworks:** Multi-stakeholder discussions showed that schools, companies, and education authorities lack formal mechanisms or clear contact points to work together. Without defined processes, cooperation depends on ad hoc relationships, making it hard to build partnerships that are predictable, scalable, and consistent across regions.
- **Limited curriculum alignment:** Across discussions with teachers, NGOs, and companies, stakeholders noted that national curricula offer few opportunities for industry-linked learning. Teachers receive little guidance or support to use practical examples or to work with companies, which limits the industry's ability to bring expertise to STEM education.
- **Engagement is short-term.** Stakeholders were keen to point out that most activities rely on short-term projects, temporary funding, or individual champions. Once these come to an end, cooperation often ends too. Without a long-term structure, effective models cannot be embedded in company strategies or in mainstream education systems.

Despite these barriers, there is clear motivation and interest across education and industry to work together. Stakeholders expressed a need for guidance, structured models, and practical mechanisms to support cooperation.



STEM education for the green transition

Pilot project in Denmark, Ireland and Poland

WindEurope ran pilot projects in Denmark, Ireland and Poland that showed how structured collaboration between schools, companies, and education actors can work in practice. These pilots tested a common model aimed at making cooperation clear, manageable, and relevant for teachers and students.

A shared model underpinning these pilot projects:

- Coordination by a national or regional actor;
- Curriculum adaptation by teachers and NGOs;
- Real-world learning provided by companies; and
- Policy visibility through delegation visits.

Below are three concrete examples of how this worked in practice.



Denmark – Regional coordination model, led by the national wind energy association and the local STEM centre

The Danish pilot tested a STEM centre-driven regional model, in which the Energy & Water STEM centre worked with industry partners to bring wind energy education to students aged 13-15 in schools it serves across the Copenhagen area.

Outcomes:

- **Green Power Denmark**, the Danish national wind energy association, brought partners together at a national level.
- **WindEurope** supported the creation of a cross-sectoral coordination structure and provided a Teacher's Toolkit with 4 interdisciplinary wind energy education modules to the Energy & Water STEM centre.
- **Energy & Water**, a regional STEM centre and joint venture between HOFOR (Copenhagen's utility) and the City of Copenhagen, worked with teachers to adapt WindEurope's Teacher Toolkit to the Danish curriculum, integrate maker-space pedagogy, and embed wind energy education into the school curriculum.
- **Copenhagen Legacy Lab** (Wonderful Copenhagen) created the partnership, facilitated the legacy process, and developed an evaluation approach to track the distribution and use of the Teacher's Toolkit.
- Delegation visits to Copenhagen gave EU and national stakeholders a clearer view of how coordinated regional models operate in practice.

Impact:

What the pilot demonstrated

The pilot showed that a regional coordination hub — a STEM centre working with local schools — can organise regular, reliable activities that support education about wind energy.

By adapting materials, assisting teachers, and coordinating multistakeholders delegations visits the centre made these activities **easy to plan and deliver**. Schools can book a course that **blends learning and play**, with hands-on activities that help teachers introduce wind energy topics in an engaging way.

Why the model works

Its governance as a **municipality–utility joint venture** showed that a shared structure can make cross-sectoral cooperation smoother.

The model is now sustainable:

- wind energy modules are part of the centre's annual programme
- reaching **20,000 students**
- with interest in extending similar coordination to other regions



Ireland – National coordination model led by wind energy association and local STEM education

The Irish pilot looked at how a national association can coordinate school–industry cooperation.

Outcomes:

- **Wind Energy Ireland (WEI)**, the Irish national wind energy association coordinated participating companies, NGOs and schools.
- STEAM Education, the Irish STEAM NGO, adapted WindEurope’s materials into classroom activities linked to the Irish curriculum through its partnership with WEI. The school visits, initiated by WEI, were implemented in counties Cork, Mayo and Donegal, reaching over 200 students aged 10–12.
- Companies such as **Statkraft, SSE Renewables, BnM, ESB and Energia Renewables**, energy developers and operators across Ireland, hosted school groups at their wind farms and introduced students to real-world renewable energy operations.
- WindEurope and WEI organised a delegation visit for policymakers and sector partners, increasing visibility, linking classroom practice to policy discussions, and opening a cross-sector dialogue on scaling the initiative.

Impact:

What the pilot showed

The pilot showed that a national wind energy association can serve as an effective coordination hub, connecting schools, companies, and NGOs in a structured way.

Material aligned with the curriculum saw greater teacher uptake, as schools were more willing to use resources that:

- directly matched Ireland’s national curriculum framework, and
- reduced preparation time for teachers



Poland – Regional coordination model, led by national wind energy association and local authorities

The pilot tested how regional authorities and the national association can support technical secondary schools in integrating wind energy education and coordinating links with industry.

Outcomes:

- The **Polish Wind Energy Association (PWEA)** launched a dialogue with the Lubuskie regional education authorities and got in touch with four technical secondary schools, reaching around 200 students aged 15–17.
- PWEA developed **introductory offshore wind material** for teachers to support the uptake of WindEurope’s secondary school resources in the classroom.
- Companies such as **EDF Renewables Poland** hosted school groups at their wind farm, where students met EDF technicians and site coordinators.
- EDF also convened a meeting with **education superintendents and school leaders** to look at options for more structured collaboration with technical schools.

Impact:

The pilot showed that regional coordination makes it easier for technical schools to integrate wind energy topics and to engage with companies in a structured way. Getting educational authorities involved earlier boosted legitimacy, while companies demonstrated a strong willingness to cooperate through site visits and technician interactions. This served as a foundation for more consistent, long-term collaboration.

Recommendations

1 Make the wind industry an integral part of STEM education at EU level

- ➔ The European Commission should integrate wind energy and renewable energy more broadly as a key sector in the implementation of the EU STEM Education Strategic Plan

Renewable energy reflects Europe's green values, supports our energy security, and aligns with the EU's goal to strengthen European-made technologies and products. Urgent action is needed to counter misinformation about renewables and to help young people understand the green transition and see themselves playing a part in it. Involving the wind industry in the upcoming **European STEM Executive Panel** would ensure these priorities are reflected in curriculum modernisation. This collaboration would help turn EU ambitions on competitiveness, innovation, and the green transition into concrete education outcomes and workforce readiness.

- ➔ The European Commission should ensure that at least one thematic focus of the STEM Education Centres is dedicated to renewable energy, including wind energy

The sector gives strong real-world learning contexts and practical examples for integrated STEM teaching. Its presence in rural and coastal areas, together with its established community engagement, allows it to reach underserved schools and offer learning opportunities that complement limited STEM-teaching capacity.

2 Make the wind industry an integral part of STEM education at member state level

- ➔ Member States should establish national or regional coordination structures for industry–education collaboration

These structures should bring educational authorities, schools, industry and civil society together to ensure systematic cooperation, to reduce fragmentation, and embed partnerships into long-term education and skills strategies as opposed to isolated projects.

- ➔ Member States should ensure that curriculum guidelines are flexible enough to support real-world learning and cooperation with industry

Flexible curriculum frameworks would enable schools to integrate applied learning into everyday STEM education. Flexibility should be matched with support measures at the school level, including training for teachers and supporting school leaders to manage and implement these collaborations effectively. If the cooperation includes industry experts working directly with children, they should receive basic training to ensure activities are age-appropriate and inclusive of all learners. This approach will support predictable and sustainable involvement from all sectors in STEM education, rather than leaving it dependent on individual initiatives.



- ➔ Member States should secure sustainable funding for cross-sector STEM partnerships

Long-term, coordinated funding is needed to support enduring partnerships, teacher–industry exchanges, and regional STEM initiatives that strengthen local innovation ecosystems and future workforce development. Taken together, these actions would establish a more structured and scalable approach to STEM education that leverages the capabilities of Europe's wind-energy sector. Clear frameworks, long-term partnerships and coordinated EU and national support will help ensure that Europe develops the STEM skills needed for its competitiveness, energy security and green transition.

Case studies – Wind energy and education partnerships

Across Europe, wind energy companies already deliver a wide range of STEM education activities, from classroom workshops to wind farm visits and hands-on engineering projects.

The wind industry's commitment is clear:

- to inspire young people
- to support local communities by reaching out to girls and students in rural areas
- to build a workforce capable of delivering the green transition
- to work with education partners to scale and sustain impact.

These efforts show that the industry is a willing, trusted, and already active partner for schools. But because most programmes operate independently, their reach is limited and difficult to sustain. The examples below illustrate what companies are doing today and highlight the opportunity to achieve a far greater impact through coordinated structures, curriculum alignment, and long-term support, as recommended in this paper.



GE Vernova

National

STEAM Girls (Spain)

STEAM Girls is a GE Vernova initiative that inspires 10–12-year-old girls to pursue STEAM pathways, drawing on more than a decade of international experience, hands-on learning, and support from employee volunteers as real industry role models. Since 2011, it has reached more than 3,500 girls worldwide. In Spain, STEAM Girls was launched

in 2022 and is now entering its fifth edition. Delivered with public schools in low-income communities and hosted at the Madrid office, each edition engages around 40 girls in four days of play-based STEAM activities that build early confidence, address the gender gap, and connect participants with female professionals in the energy sector.



Jan De Nul

international

Energy School Package (Flanders, Belgium)

A STEM programme delivered in primary and secondary schools, mainly in Belgium but also in 10 other countries where Jan De Nul operates. Aimed at pupils aged 10–13, Jan De Nul employees deliver a two-hour interactive lesson on renewable energy and offshore wind, using videos, practical materials, and a small turbine-building exercise.

Co-developed with Artevelde University of Applied Sciences, the programme brings industry expertise directly into classrooms and has reached thousands of pupils, including 41 schools in 2024–25.



Mountlucas Wind Farm School Programme (Ireland)

BnM

Local

A school partnership programme offering free, curriculum relevant visits to Mountlucas Wind Farm. Suitable for 3rd class and upwards, the two-hour visit includes a guided introduction to how wind farms are built and operated, a virtual-reality tour inside a

turbine, and interactive hands-on activities in the Learning Hub focused on renewable energy and engineering. Students also visit a turbine up close, with the option to explore the on-site nature trail.

The tours are free of charge, BnM provides transport contributions to support school participation, and the programme reaches more than 1,000 students each year.



FOUNDATION OFFSHORE WIND ENERGY

WIN(D)SCHOOL (Germany)

Offshore Wind Energy Foundation Germany

Regional

Offshore Wind Education in Schools in Hamburg and Northern Germany WIN(D)SCHOOL is a STEM initiative primarily targeting students in Hamburg from grades 5 to 10. The project aims to spark interest in STEM subjects and offshore wind energy. Activities are tailored to different age groups, ranging from hands-on learning with model wind turbines

in practical workshops and career-orientation sessions in year 9 and 10. The project also addresses broader topics such as climate change, sustainability and the energy transition. Beyond classroom activities, WIN(D)SCHOOL connects students with companies and universities, providing insights into training programmes and study pathways in the offshore wind sector. Furthermore, the curriculum incorporates digital teaching methods. For instance, training videos produced in collaboration with leading offshore companies provide students with an inside look at the industry and are shown directly in schools. In addition, a dedicated website and Instagram channel offer targeted information on the Windschool, specifically designed for both teachers and students.

The current funding period runs from 2024 to 2027 and reaches more than 1,000 students in various schools in Northern Germany each school term.

VidenOmVind

Wind in School (DA: "Vind i skolen") (Denmark)

VidenOmVind

National

Wind in School (DA: "Vind i skolen") is designed for students aged 10–12 and 12–15 and provides access to live data from wind turbines across Denmark. The platform allows students to read, analyse, and work with real-time information on wind energy production.

It offers easily accessible educational materials on wind turbines and climate solutions, supporting a deeper understanding of wind technology and the energy supply today and in the future. In addition, Wind in School includes assignments and exercises that teachers can freely integrate into their classroom teaching.

Location: <https://vindiskolen.dk/>

Annex - List of stakeholders involved in cross-sectoral dialogues



Department of Education and Youth (Ireland)



Naturvidenskabernes Hus

EudaOrg

