



ETIPWind Roadmap

Skills & human resources

etipwind.eu

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Skills & human resources

The European wind energy sector is rapidly growing. In just 15 years installed capacity increased more than fivefold, from 34 GW in 2004 to more than 190 GW installed in 2019.¹ At the same time the number of employees quadrupled to over 300,000 in 2019.² Job growth in the wind energy sector is driven by two factors. One is a growing market, which sees more turbines being built and installed. The other is the ageing of the existing fleet, as older turbines require more regular and intensive maintenance.

However, the growth of the industry is not supported by an equally stable growth in available skilled labour and excellent scientists. By 2030 there could be a mismatch between demand and supply of up to 15,000 jobs, mostly in operations and maintenance. (hereafter referred to as O&M).³ And more workers

are needed; from 2021, annual installations of close to 20 GW (offshore and onshore combined) will be required to reach Europe's ambitious climate and energy targets.

The skills gap is undermining the future of the wind energy sector as companies struggle to fill in the necessary positions. As a result, companies are increasingly targeting their competitors with aggressive headhunting strategies, especially in the O&M and component manufacturing sectors. For some profiles the needed talent is available outside Europe. This could explain in part why more European companies investment in their non-EU based research and development and manufacturing facilities. Broadening the available European pool of talent could therefore keep significant investments in Europe.

Challenge 1

Ensure a stable pool of skilled and qualified talent

In the short term, industry and educational institutions should come together and map out the required skills on the one hand and the available Vocational Education and Training (VET) qualifications programmes on the other. This skill map should include cross-sectoral dialogues to discover possible synergies and develop joint skills roadmaps. For offshore wind this includes the ocean energy and offshore Oil & Gas sectors. For onshore synergies with regard to the reskilling and retraining of coal workers should be explored.

Whilst certain skills are transversal for the entire energy sector, specific multi-disciplinary profiles such as including project managers, mechanical, electrical and civil engineers, plant operators, logistic experts, and offshore technicians for O&M are in high demand by the wind energy industry. In addition, the sector will need to fill in new profiles related to commerce, stakeholder management and digitalisation (e.g. big data analysts and robotics experts).

In the long term, more investments are needed to support the wind energy academic community. Professors and researchers are essential to form and educate the next generation of wind energy workers. Today many teaching positions are heavily dependent on erratic funding streams. Multi-annual EU grants can significantly strengthen and stabilise academic research and teaching in wind energy.

Universities and higher education institutes should also develop more sector-specific degrees or an integrated umbrella degree (mechanical, electrical engineering, etc.). Where relevant, this should be in joint efforts with industry players who can pass on manufacturing trends and increase focus on product design and digitalisation. As the wind sector demands a highly mobile workforce, universities should offer more mobility schemes to early-stage researchers and students so that future workers can get accustomed to working in different European regions early on.

Wider regulatory requirements

To ensure Europe remains a global innovation hub for renewable energy, and wind energy in particular, the growing skills gap will need to be addressed with immediate effect. To close the gap we recommend that policymakers:

- Establish EU-wide industrial policies for the energy transition that include funding programmes for re-training and skilling of workers from unsustainable sectors such as coal mining and offshore Oil & Gas;
- Strengthen opportunities for industrial learning experiences, support joint initiatives by industry and higher educational institutes for *in situ* training and skill development programmes;
- Harmonise Vocational Education & Training programmes across Europe so that worker qualifications are more easily recognisable across Europe and worker mobility increases;
- Standardise technical training and Health & Safety (H&S) standards to further improve worker mobility between sectors and across Europe within the same sector; and
- Ensure Science, Technology, Engineering and Maths (STEM) skills of students are of a high standard so that young professionals can enter engineering sectors such as the wind energy sector effortlessly.

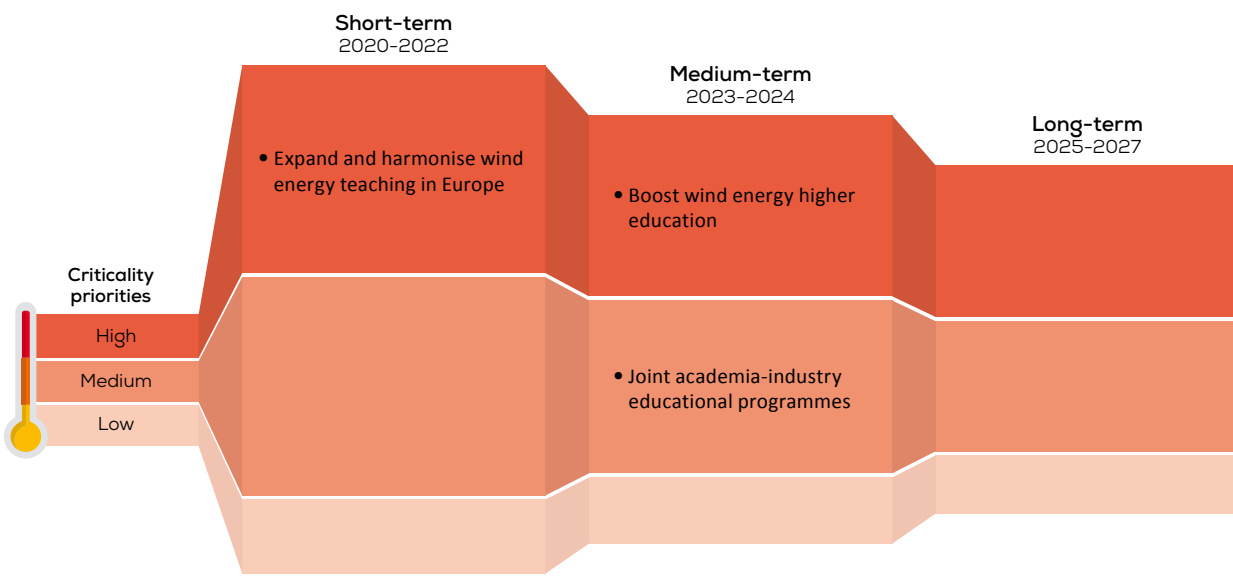




Figure 1 Research & Innovation action areas for skills & human resources



Challenge 1.1

Ensure a stable pool of skilled and qualified talent

Expand and harmonise wind energy teaching in Europe	 Short-term	 High priority
<p>Description and scope</p> <p>The rapid advancement of technology, including challenges and opportunities brought by new advances in digitalisation, artificial intelligence and automation, create a changing employment landscape. Preparing the work force in Europe is of crucial importance to face the challenge ahead. This is of particular importance for the wind energy.</p> <p>Firstly, because the sector will need to grow exponentially in order to meet the climate and energy targets. Secondly, because of its multi-disciplinary character in both blue collar jobs (structural engineering, electro mechanics...) and white collar jobs. In order to have a correctly trained and educated work force for the wind energy sector, the teaching of wind energy at BSc and MSc levels needs to be expanded and harmonised.</p> <p>And Europe will need more academic staff to provide the training. Boosting research funding in wind will help expand the number of professors and academic staff actively involved in wind energy research at European universities. To keep its leadership position, Europe needs to act now to prepare the next generations with the required future skillsets.</p> <p>Recommended research actions</p> <ul style="list-style-type: none">• Start a structured framework programme on wind energy teaching among interested universities, with the following goals:<ul style="list-style-type: none">- Promote multi-disciplinary teaching of wind energy and the understanding of the whole energy sector;- Expand the number of wind energy specific programs at European universities (this is also achieved by expanding the number of professors and academic staff actively involved in wind energy research at European universities, which is primarily obtained by boosting research funding in wind);- Expand the enrolment of students in wind energy courses, with a particular focus on the increase of female students;- Favour student mobility within and outside of the EU;- Start a structured scholarship programme to attract students from inside and outside the EU to wind energy; and- Provide funding for a detailed study on student enrolment and graduation across Europe scheme.	<p>Milestones</p> <ul style="list-style-type: none">• Doubled number of wind energy specific courses at European universities.• Doubled number of recognised courses for Erasmus exchange programs.• Doubled number of enrolled students in wind energy courses.• Doubled number of female students.• Installed scholarship scheme for students in wind energy.	



Challenge 1.2

Ensure a stable pool of skilled and qualified talent

Boost wind energy higher education	 Medium-term	 High priority
<p><u>Description and scope</u></p> <p>To remain the world leader in wind energy, Europe needs a sufficient number of scientists working in academia, research centres and industry. The training of scientists is not keeping up with the development of the sector. For example, within the Horizon 2020 program, less than 30 Early Stage Researcher positions were funded. Such numbers are insufficient to generate the positive effects needed to keep EU companies competitive in the global market and EU universities at the forefront of research and education. Additionally, EU wind energy funding seems to be dwindling, which has the effect of reducing the number of people in academia who are actively engaged (and, hence, competent) in this field.</p> <p><u>Recommended research actions</u></p> <ul style="list-style-type: none">• Increase EU R&I funding in wind energy, which has a cascading effect on competence in academia, number of professors and staff involved in wind energy, and consequently also on education.• Increase funding opportunities for Marie Skłodowska-Curie Actions (MSCA) in wind energy.• Include educational activities (similar to those already present in MSCAs) also in regular EU-funded research projects to improve existing education-by-research.• Fund post-doc positions, to boost the number of top researchers pursuing academic careers in wind energy, with the effect of increasing research and competence on the topic at European universities.	<p><u>Milestones</u></p> <ul style="list-style-type: none">• Achieved a doubling in EU R&I funding for wind energy.• At least two active Innovative Training Networks on wind energy at all times throughout Horizon Europe's lifetime.• Change of rules of regular EU-funded programs to allow for educational, mobility and training actions.• Established wind energy post-doctoral program, with at least 20 positions per year.	

Challenge 1.3

Ensure a stable pool of skilled and qualified talent

Joint academia–industry educational programmes	 Medium-term	 Medium priority
<p><u>Description and scope</u></p> <p>Education is one of the key pillars for propelling the advancement of wind energy, to ensure the European industry maintains its leading position and that people can enjoy useful and rewarding employment in this sector. Education has a very broad range, which includes classical university courses (BSc and MSc), higher education at the PhD level, continuing (post-secondary) education, as well as post-high school professional education. All these various forms of education require a continuous dialogue and collaboration between academia (the primary vehicle for education) and industry (the primary end-user).</p> <p><u>Recommended research actions</u></p> <ul style="list-style-type: none">• Implement a structured academia–industry framework programme (similar for example to the International Energy Agency (IEA) Wind Technology Collaboration Programme (TCP) Task) on education and training, with the following goals:<ul style="list-style-type: none">- Define the required skillsets now and in the future, and update them based on the development of technology; -- Identify skills gaps with respect to peer competitors outside of Europe;- Promote industry-academia collaboration in training (at the BSc, MSc, PhD, continuing education (post-secondary) and professional levels);- Promote and help to implement joint educational programmes;- Identify needs for retraining of the workforce, for example by proposing and coordinating ad hoc continuing education activities;- Identify ways to retain trained and skilled workforce; and- Increase the attractiveness of the sector for women.• Organise dedicated regular workshops on education and training, for example every year at the WindEurope annual event.	<p><u>Milestones</u></p> <ul style="list-style-type: none">• Kick-off meeting of structured framework program (or IEA Wind TCP Task) on education and training.• Yearly workshop on education and training.• At least one collaboration project implemented every year.• Doubled number of women employed in the sector.	

References

¹ Based on WindEurope market analysis. By the end of 2018 there was 189 GW of capacity installed in Europe.

² WindEurope, *Local Impact Global Leadership*, 2017

³ TPWind, *Workers wanted. The EU wind energy sector skills gap*, 2013

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