

THE GREEN HORIZON: GREENING THE WORKFORCE

Authors:

Josef Tichanek - Olife Energy,
Laura Alonso Garcia - CT Engineering Group
Olha Hunchak - CECIMO



Co-funded by
the European Union

This project is co-funded by the European Union's Erasmus + Research and Innovation Programme under grant agreement no 101087153. Views and opinions expressed are however those of the author(s) and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them



The imperative to rapidly decarbonize economies raises pertinent questions about the readiness of countries' workforces to navigate the shift toward net-zero emissions, and their ability to seamlessly transition workers from "brown" (polluting) to "green" (environmentally friendly) jobs. The OECD Green Skills Index (GSI) underscores substantial cross-country disparities in the realm of green skills within the workforce. Notably, northern European nations exhibit a higher level of green skills compared to their southern European counterparts. These variations may be attributed to diverse factors, including differences in the education systems across regions.

While it is observed that many workers in brown occupations possess the necessary skills for transitioning to green roles, challenges arise in production occupations due to elevated transition costs.[1]

The green skills held by workers in brown jobs can be comparable to those in green jobs and thus, countries with the highest potential to reallocate workers from brown to green jobs within broad occupations include Northern European countries[2]. Addressing these disparities and facilitating a smoother transition will require strategic interventions, emphasizing education, training and skill development tailored to the evolving needs of the green economy[1].

Green skills are recognized as a catalyst for facilitating a shift towards a green economy, marked by the adoption of eco-friendly practices and technologies to cut down on carbon emissions, preserve resources, and foster ecological equilibrium. In essence, green skills encompass the distinct abilities and knowledge essential to uphold and propel this green transition. With societies actively working towards achieving this transformation, there is a growing demand for these specialized skills[3].

Decoding Green Skills

While many studies classify green jobs broadly as jobs in 'green' sectors, or jobs producing 'green' products, this understanding is often contested. The lack of a commonly accepted definition creates several issues[1]. According to the CEDEFOP[4] definition, green skills are understood as “skills and competencies, but also the knowledge, abilities, values and attitudes needed to live in, develop and support a sustainable and resource-efficient society.” These skills can be categorized into technical ones related to green technologies, renewable energy, energy efficiency, waste management, sustainable agriculture, and other environmentally friendly practices; and transversal ones related to knowledge of sustainability principles, environmental regulations, and the impact of human activities on the environment [5].

Fundamentally, green skills encompass not only the technical expertise and abilities required for proficient use of environmentally friendly technologies and practices—such as resource-efficient technologies and processes that mitigate waste and reduce the environmental footprint of human activities—but also extend to transversal skills. This includes a combination of knowledge, values, and attitudes that empower professionals to make environmentally conscious decisions in both their professional endeavours and personal lives[6].



Sustainability in Every Profession

While the notion of green careers often brings to mind roles directly impacting the climate, such as solar technicians or sustainability managers, the concept goes beyond these explicitly 'green' titles. The key is to leverage skills to transform every profession into a more environmentally conscious and sustainable version, leading to the emergence of what is now called “green skills.” Green jobs can be categorized into two types: the ones that contribute to preserving or restoring the environment (like wind turbine technicians, solar consultants, and sustainability managers) and the ones that do not have a direct environmental purpose but integrate green thinking and awareness into every existing job alongside technical, digital, and economic skills. [7]

For instance, it's not just about the obvious environmental roles; even a procurement analyst needs to possess green awareness skills. This involves finding ways to reduce a company's emissions and contribute to sustainability efforts at all stages of a product/service's lifecycle. The idea is that possessing green skills is beneficial for professionals across various fields, not just those directly linked to climate change.[8]

Since 2020, there has been a consistent rise in the prominence of green skills in the job market. Notably, job postings frequently highlight skills related to sustainable development and energy transition and therefore, manufacturing of electric vehicles, batteries, and green technology is experiencing significant growth [9]. However, despite the growing acknowledgement of the importance of green skills, the demand for these skills will surpass the current supply within a few years. The need for green skills is becoming increasingly apparent, underscoring the urgency for individuals across industries to equip themselves with these valuable skills to meet the evolving demands of the job market[10].

The Bottom Line: Why Corporations Should Prioritize Green Skills

CECIMO's recent skills report[11] emphasizes the pivotal role of green skills in propelling the manufacturing sector toward environmental sustainability. This entails reducing the environmental impact of operational and production processes, including energy usage, waste production, and greenhouse gas emissions.

In the UK, 37% of advanced manufacturers acknowledge that the growing emphasis on environmental sustainability is reshaping skill requirements in their sector. Green skills integration is vital for companies striving to meet sustainability targets, comply with environmental regulations, optimize manufacturing processes, and foster a more environmentally responsible and sustainable manufacturing sector.

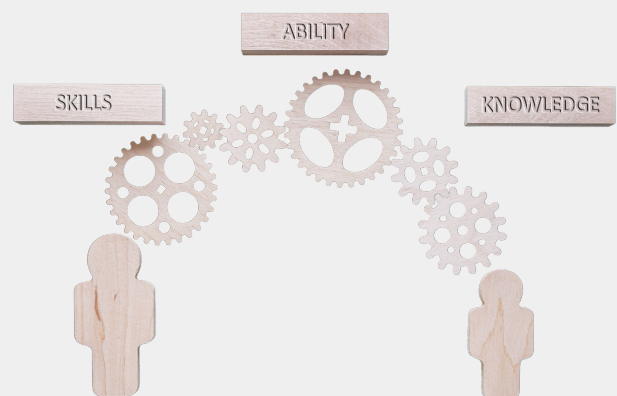


Key green skills include expertise in environmentally sustainable materials, energy efficiency, waste management, sustainable design, and compliance with environmental standards. Professions like Sustainable Energy Expert, Energy Engineer, and Sustainability Manager will play a crucial role in driving the industry toward a greener future, contributing not only to environmental conservation but also to enhancing competitiveness in a changing global landscape.[11]

Several compelling reasons underscore why corporations should actively participate in green skills activities[12]:

- Access to markets and eligibility for green financing: Embracing sustainable practices and securing certifications enhance the appeal of businesses to emerging markets and investors with a strong focus on climate consciousness and portfolio diversification.
- Meeting legal requirements and environmental standards: Taking proactive steps to minimize carbon footprints ensures that companies comply with current and anticipated trade regulations.
- Building resilience: Shifting towards eco-friendly production methods not only enhances a company's competitive edge but also strengthens relationships with clients, providing increased resistance to the impacts of global warming.
- Achieving cost savings and boosting productivity: The adoption of eco-efficient technologies enables small and medium-sized enterprises (SMEs) to increase output

- using the same resources while minimizing waste.
- Gaining a competitive advantage and future-proof workforce.
- Exploring entrepreneurial opportunities and potential job openings.



It's crucial to emphasize that progress towards the green transition is unattainable without proper skilling. Skills and the green economy mutually influence each other. Companies adopting sustainability and environmentally conscious practices are essentially future-proofing themselves. This not only cuts costs and boosts efficiency but also unlocks avenues to explore new markets and opportunities.

Uncommon advantages through investment in cutting-edge learning for green skills:

A key facet of this investment lies in its Continuous Learning Impact. By providing ongoing learning opportunities through innovative frameworks, companies not only enhance employee satisfaction but also reduce turnover. When employees perceive their

company's commitment to investing in their professional growth, they are more likely to remain dedicated to the organization.

This commitment to learning extends to fostering Problem-Solving Excellence. Advanced learning, which often incorporates critical thinking and problem-solving components, equips individuals with invaluable skills for developing innovative, environmentally friendly solutions to complex business challenges.

Additionally, this investment leads to Strengthened Team Collaboration. Participation in collaborative learning experiences within progressive frameworks serves to reinforce team bonds. A cohesive team, adept at effectively collaborating, is better equipped to embrace and adopt sustainable practices collectively.

Furthermore, the investment in cutting-edge learning contributes to Streamlined Compliance and Reporting. Navigating the intricacies of environmental regulatory requirements can be a daunting task. However, utilizing forward-thinking learning frameworks ensures that the workforce is well-informed and compliant with standards, mitigating risks and reinforcing the organization's commitment to environmental responsibility[13].

Building a Robust Talent Pool for Corporate Success

Numerous avenues exist for organizations to enhance their employees' skills in advancing the

green transition. Here are some concrete steps that companies can pursue to promote green upskilling and spearhead the shift towards a more sustainable economy:

- **Conduct a sustainability assessment** and set goals to pinpoint areas with the most significant environmental impact, identifying where green upskilling is essential. This can involve scrutinizing energy and water usage, waste production, and supply chain practices.
- **Create a sustainability strategy** that delineates specific targets and the skills and knowledge necessary to achieve them. The strategy should clearly outline the expertise required to meet these goals.
- **Roll out training and education programs** (apprenticeships, Vocational Education and Training) to educate employees on sustainability and green practices. Regular performance reviews, ongoing education, specialized green upskilling solutions, and facilitating attendance at industry events or conferences can also contribute. Additionally, companies might consider providing certifications or other recognitions for employees who complete sustainability training programs.
- **Motivate and reward employees** who proactively contribute to improving sustainability within the organization. This may involve acknowledging those who propose and implement sustainability initiatives or offering incentives for employees to adopt green habits or practices[14].



Small Steps, Big Impact - SMEs

Large corporations, with their substantial resources, are well-positioned to invest in the development and integration of green skills. They can establish dedicated departments or teams solely focused on sustainability and environmental initiatives.

On the other hand, despite their smaller scale, SMEs also hold considerable potential in embracing green skills and contributing to the advancement of sustainable practices. Thanks to their agility and adaptability, SMEs can take the lead in pioneering green innovations, particularly in local and emerging markets that might be overlooked by larger corporations[1]. However, SMEs may encounter challenges due to limited resources for investing in green skills development. To overcome this hurdle, they may require support from government initiatives, industry associations, or partnerships with larger

corporations to bolster their capabilities in green skills.

Governments play a pivotal role in championing and supporting the development of green skills across both corporations and SMEs. By offering financial incentives, grants, or subsidies, governments can encourage businesses to invest in green skills training and implementation.

A Blueprint for SMEs' Sustainable Transformation

SMEs have a range of strategies at their disposal to adopt green skills and actively contribute to fostering a more sustainable economy. Here are some avenues that SMEs can explore:

- **Explore Green Business Opportunities:** The shift to a green economy unlocks novel business prospects for SMEs. By venturing into the environmental goods and services market, SMEs can champion resource-efficient solutions and mitigate environmental damage [15].

- **Promote Eco-Innovation:** SMEs can concentrate on championing eco-innovation, encompassing the development and implementation of novel ideas, products, and processes with positive environmental impacts. Collaboration with eco-innovation clusters and fostering the exchange of skills and knowledge are pivotal in achieving this[15].
- **Adopt Sustainable Practices:** SMEs can integrate enduring sustainable practices that not only benefit the environment but also pave the way for business growth. By infusing sustainability into their day-to-day operations, SMEs can allure eco-conscious customers, enhance their reputation, and stand out amidst competition[16]
- **Invest in Green Production:** Green production, incorporating environmentally and socially conscious practices to curtail the adverse effects of manufacturing activities, is a strategic move for SMEs. Adapting green production practices enhances competitiveness, boosts resilience against global warming impacts, and leads to cost reductions and heightened productivity[12].
- **Restructure Towards Greener Technologies:** SMEs can revamp their operations by adopting greener technologies and practices. This may involve transitioning towards environmentally friendly business activities and leveraging sustainability as a competitive advantage. Support and incentives from governments and organizations often facilitate SMEs in making this transition to greener technologies[17].
- **Develop Expertise in Green Skills:** SMEs can invest in nurturing green skills within their workforce. This encompasses providing comprehensive training and education on sustainable practices, resource efficiency, and environmental management. By arming their employees with green skills, SMEs elevate their capability to implement sustainable practices, thereby contributing significantly to a greener economy[18].
- **Forge Collaborative Bonds with Stakeholders:** SMEs can form synergies with various stakeholders, such as government agencies, industry associations, and educational institutions, to gain access to knowledge, cutting-edge technologies, financial support, and market opportunities. These collaborative efforts aid SMEs in overcoming barriers, allowing them to make a substantial and impactful contribution to the transition towards a more sustainable future[19].

Building Resilience: Reskilling and Upskilling

Effective collaboration among governments, businesses, educational institutions, and the workforce is vital for the development and implementation of courses addressing environmental and climate impacts within higher education. Policymakers, businesses, and the global workforce should prioritize the cultivation of green skills, directing investments towards workforce training, educational courses, and local programs. Professionals already in the field can acquire these skills through upskilling and

reskilling initiatives, with collaboration among stakeholders serving as a crucial element in fostering continuous learning opportunities[20].

To rectify the insufficient emphasis on green skills in numerous training institutes, it is imperative to prioritize the reskilling and upskilling of the existing workforce while extending training to new entrants. A transformation of the education system can be achieved by incorporating courses on green technologies and sustainability, seamlessly integrating green skills into existing curricula[21].

Reskilling and upskilling play pivotal roles in ensuring a just and inclusive transition to a green economy. Actively supporting reskilling efforts is essential for employers, and workers can invest in themselves through certifications and courses to enhance their understanding of sustainability fundamentals and job-specific skills. Companies should identify the skills essential for success and embrace a skills-based recruiting approach, selecting individuals based on their abilities.



The Road Ahead

Promoting collaboration is crucial for developing and implementing courses on environmental and climate impacts in higher education. Policymakers, businesses, and the global workforce must prioritize the equitable development of green skills, investing in workforce training, learning programs, and local initiatives. Professionals already in the field can acquire green skills through upskilling and reskilling programs. It is essential for governments, businesses, and educational institutions to work together to create continuous learning opportunities[22].

Effectively driving the green transition necessitates seamlessly integrating environmental sustainability into government departments and policies, avoiding its treatment as a standalone issue. Coordination in this transition requires synchronized efforts across government levels and sectors, ensuring alignment of policies, regulations, and incentives for a cohesive approach. Engaging a diverse range of stakeholders, including sub-national governments, businesses, civil society, trade unions, employers, and academia, is crucial for considering multiple perspectives and fostering support, buy-in, and innovation.

To anticipate green technology skills needs, enhancing collaboration between businesses and education providers through measures such as work-based learning, regulatory stimulus, tax breaks, and financial incentives for lifelong learning and job-relevant training is vital.

Establishing sector skills committees within businesses and climate change councils within governments will further facilitate discussions on industry changes and define the specific skills required for the green transition in various sectors.

Sustainability education should be viewed as a fundamental component of high-quality education, seamlessly integrated into the idea of lifelong learning. All educational institutions, from preschool to higher education, as well as non-formal and informal education, must actively foster the cultivation of sustainability competencies. Achieving this necessitates a comprehensive and transformative educational approach that assesses learning content and outcomes, pedagogy, and the overall learning environment.

Consistently gathering skills and intelligence allows nations to enhance the planning of education and training policies, providing learners and workers with up-to-date information on existing and future employment prospects. Precise data on evolving labour demands at regional and sectoral levels can be effectively employed to align local education offerings. To accomplish this, policymakers need to leverage advanced tools such as big data, online job listings, artificial intelligence, and other data analytical technologies[23].



Conclusion

In the pursuit of decarbonizing economies, the OECD Green Skills Index reveals notable disparities in green skills across countries, with northern European nations outpacing their southern counterparts. While workers in brown occupations possess transferable green skills, challenges arise in production roles due to higher transition costs. Addressing these gaps requires strategic interventions, focusing on tailored education, training, and skill development to align with the evolving needs of the green economy.

In various countries, numerous local initiatives are in place to facilitate the development of skills essential for the green transition. These initiatives encompass courses that target both transversal skills and sustainability mindsets across different education levels. Simultaneously, adjustments are being made in both higher education and vocational paths to address the emerging skill requirements.

Despite these efforts, they fall short of achieving a comprehensive, systematic transformation. There is a pressing need for proactive measures to comprehensively comprehend the evolving skill needs across diverse economic sectors and promptly adjust educational provisions to meet these demands.

Professions like Sustainable Energy Expert and Sustainability Manager will play pivotal roles in optimizing manufacturing processes and complying with environmental standards. Engaging in green skills activities not only fulfills legal obligations but also provides access to new markets, enhances resilience, and future-proofs the workforce, demonstrating the necessity of ongoing learning initiatives. Companies across various fields should actively participate in green skills development to cut costs, meet evolving job market requirements, and unlock new opportunities in the evolving landscape.



References

- [1] OECD 2023, "Doing green things: skills, reallocation, and the green transition," available at <https://dx.doi.org/10.1787/286a5007-en>.
- [2] Vona, F., Marin G., Consoli D. & Popp D. (2018) 'Environmental Regulation and Green Skills: An Empirical Exploration', Journal of the Association of Environmental and Resource Economists 5(4). DOI: [10.1086/698859](https://doi.org/10.1086/698859).
- [3] WEF (2022) 'The Green Skills Imperative: How can we create a future that works for all?' available at: [Why green skills are key to creating a better future for all | World Economic Forum \(weforum.org\)](https://www.weforum.org/articles/2022/07/why-green-skills-are-key-to-creating-a-better-future-for-all/).
- [4] Janta, B., Kritikos, E., and Clack, T. (2023), 'The green transition in the labour market: how to ensure equal access to green skills across education and training systems,' available at https://eenee.eu/wp-content/uploads/2023/01/EENEE_AR02_Green-skills_Final-report-without-identifiers.pdf.
- [5] OECD/Cedefop (2014), 'Greener Skills and Jobs, OECD Green Growth Studies, OECD Publishing,' available at: <https://doi.org/10.1787/9789264208704-en>.
- [6] Inter-Agency Working Group (2022), "Work-based Learning and the Green Transition,' available at https://unevoc.unesco.org/pub/wbl_green_transition.pdf.
- [7] ETF (2022) Policy briefing, "Skilling for the Green Transition," available at: https://www.etf.europa.eu/sites/default/files/2022-11/Edited%20green%20transition%20policy%20brief_EN.pdf
- [8] Mark C. Perna (2023), 'Demand for Green Skills Outpacing What the Workforce can Deliver - But there's Hope,' available at: <https://www.forbes.com/sites/markcperna/2023/09/21/demand-for-green-skills-outpacing-what-the-workforce-can-deliver-but-theres-hope/?sh=3f42a8045f24>.
- [9] Matthew Channell (2022) 'What are Green Skills and Why is it Important to Bring them into your Business?' available at: <https://www.tsw.co.uk/blog/environmental/why-bring-green-skills-into-your-business/>.
- [10] 365 Talents, 'A Green Skills Guide to the Sustainability Transformation,' available at <https://www.365talents.com/en/resources/green-transition-sustainability-skills>.
- [11] Rosie Frost (2023), 'Millions of Green Jobs are Open to People with the Right Skills. The Problem is Many Don't Have Them,' available at: [Millions of green jobs are open to people with the right skills. The problem is many don't have them | Euronews](https://www.euronews.com/stories/2023/07/21/millions-of-green-jobs-are-open-to-people-with-the-right-skills-the-problem-is-many-dont-have-them).
- [12] CECIMO (2023) Report on "Transformation of Manufacturing: the emergence of digital and green skills." Available at: <https://www.cecimo.eu/wp-content/uploads/2023/07/Final-Skills-Paper-1.pdf>.
- [13] Liz Keller, Market Links (2022), 'Four Ways to Support Green Production in SMEs,' available at: <https://www.marketlinks.org/blogs/four-ways-support-green-production-smes>.
- [14] Manavi Agarwal (2023), 'Green Skills 101: A Strategic Guide For Company Growth,' available at: <https://blog.mentoriam.com/green-skills-101-a-strategic-guide-for-company-growth/>.

- [15] Licia Genghini (2023), 'Green Upskilling: Why Companies Need to Train Employees to meet the Demand of Sustainable Economy,' available at: <https://2030.builders/green-upskilling-why-companies-need-to-train-employees-to-meet-the-demand-of-a-sustainable-economy/>.
- [16] Shashwat Koirala (2018), 'Why SMEs Matter for Green and Inclusive Growth,' available at: <https://www.greenpolicyplatform.org/blog/why-smes-matter-green-and-inclusive-growth>.
- [17] Switch2green, 'Green Action Plan for SMEs – Turning environmental challenges into business opportunities,' available at: <https://www.switchtogreen.eu/green-action-plan-for-smes-turning-environmental-challenges-into-business-opportunities/>.
- [18] FinLab and UOB (2021), '5 tips for SMEs to go green in an endemic world,' available at: <https://www.uobgroup.com/techecosystem/news-insights-5-tips-smes-go-green-endemic-world.html>.
- [19] SkillsFuture Singapore (2021), 'The Green Economy Explained: Trends, Skills & Jobs You Need to Know About,' available at: <https://www.myskillsfuture.gov.sg/content/portal/en/career-resources/career-resources/job-skills-insights/the-green-economy-explained--trends--skills---jobs-you-need-to-k.html>.
- [20] SME Green Skills HUB, 'Supporting the implementation of the SDGs in SMEs through VET,' available at: <https://smegreenskillshub.eu/>.
- [21] ILO, 'Greening SMEs,' available at: <https://www.ilo.org/empent/areas/greening-smes/lang-en/index.htm>.
- [22] IPCC Sixth Assessment Report (2022), 'Impacts, Adaptation and Vulnerability,' available at: <https://www.ipcc.ch/report/ar6/wg2/resources/spm-headline-statements/>.
- [23] ADB (2023), 'Preparing the Workforce for the Low-Carbon Economy: A Closer Look at Green Jobs and Green Skills,' available at: <https://www.adb.org/publications/workforce-low-carbon-economy-green-jobs-skills>.

CONTACT



<https://greenvetnetwork.eu/>



info@greenvetnetwork.eu

FOLLOW US



[GREEN VET NETWORK](#)



[@NetworkVet](#)



Co-funded by
the European Union

This project is co-funded by the European Union's Erasmus + Research and Innovation Programme under grant agreement no 101087153. Views and opinions expressed are however those of the author(s) and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them