Reskilling in the De-globalization Era: Bridging the Skill Gap Between Greece and the Global Market

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1. Introduction

The world is entering an era of profound transformation, where the long-standing path of globalization is being reshaped by geopolitical shocks, fragile supply chains, and shifting patterns of talent mobility. This process of "de-globalization" reflects a move away from global interdependence toward greater regionalization and national self-reliance (James, 2018). For labor markets, the implications are clear: countries can no longer rely as easily on importing talent or outsourcing capabilities abroad. Instead, they must develop the skills they need within their own borders. Against this backdrop, skills emerge as one of the most critical lenses for understanding the impact of de-globalization. Skills determine how economies adapt to change, how businesses remain competitive, and how workers secure meaningful employment (Kavargyris et al.). In Greece, however, persistent skill gaps—particularly in digital and green competencies—threaten to undermine resilience at a time when domestic capabilities are more important than ever. Our contribution is to show that de-globalization is best understood through the diffusion (not just incidence) of green skills across occupations, using Greece as a test case.

2. De-globalization and the Global Skills Landscape

De-globalization refers to the gradual retreat from an era of deep global integration toward one characterized by regionalization, protectionism, and national self-reliance. While globalization enabled countries to rely on cross-border trade, international supply chains, and flows of talent, de-globalization challenges this framework by exposing vulnerabilities (Goldberg and Reed, 2023). The COVID-19 pandemic, the war in Ukraine, and escalating geopolitical tensions have underscored how fragile global interdependencies can be. For labor markets, this shift is particularly critical: in a less globalized world, the easy circulation of talent is no longer guaranteed.

One of the most visible consequences of this transition is the disruption of labor mobility. Many economies, including Greece, have historically experienced "brain drain," (Ifanti et al., 2014) losing skilled workers to higher-paying opportunities abroad. Under globalization, this movement was often offset by the inflow of foreign workers or by the outsourcing of specialized tasks. De-globalization, however, constrains these options. Countries that cannot rely on international hiring must instead foster domestic capacity. This reality makes the cultivation of a skilled national workforce not just desirable but essential for economic resilience. At the same

time, international skill demand is evolving rapidly. Job postings across advanced economies consistently highlight a surge in requirements for digital skills, particularly in artificial intelligence, data science, and cybersecurity (Li, 2024). Yet, the demand for green skills (those related to renewable energy, sustainable manufacturing, and the circular economy), illustrates well the stakes of de-globalization (Junger and Wohlgemuth, 2024). These competencies are now central to competitiveness and innovation worldwide, as governments and businesses invest heavily in the twin digital and green transitions.

The implication for countries like Greece is clear: with green skills appearing in a handful of Greek job postings, compared to significantly higher levels abroad, Greece risks falling behind at the very moment when de-globalization makes dependence on external talent riskier. Under de-globalization, reliance on imported green expertise is increasingly constrained by tighter labor mobility, protectionist policies, and competition for scarce skills across Europe. In this context, developing domestic green expertise is no longer optional; it becomes a matter of national strategy, linking workforce preparedness directly to economic sovereignty, competitiveness, and long-term resilience.

3. Skills Demand in Greece vs. Abroad

To examine how this challenge manifests in practice, we analyzed 57,168 Greek job postings collected from Kariera (Kariera, 2025), the country's leading job portal (founded in 1997 and part of CareerBuilder's global network since 2007), and measured the extent to which they demanded green skills using the 571 green skills from the ESCO taxonomy (European Commission / DG Employment, Social Affairs and Inclusion, 2024). This study aimed to assess whether Greece is keeping pace with international trends or whether gaps are emerging that could undermine resilience in a de-globalizing world. The analysis revealed that only 2,927 postings (5.1%) mentioned at least one green skill, as shown in figure 1.

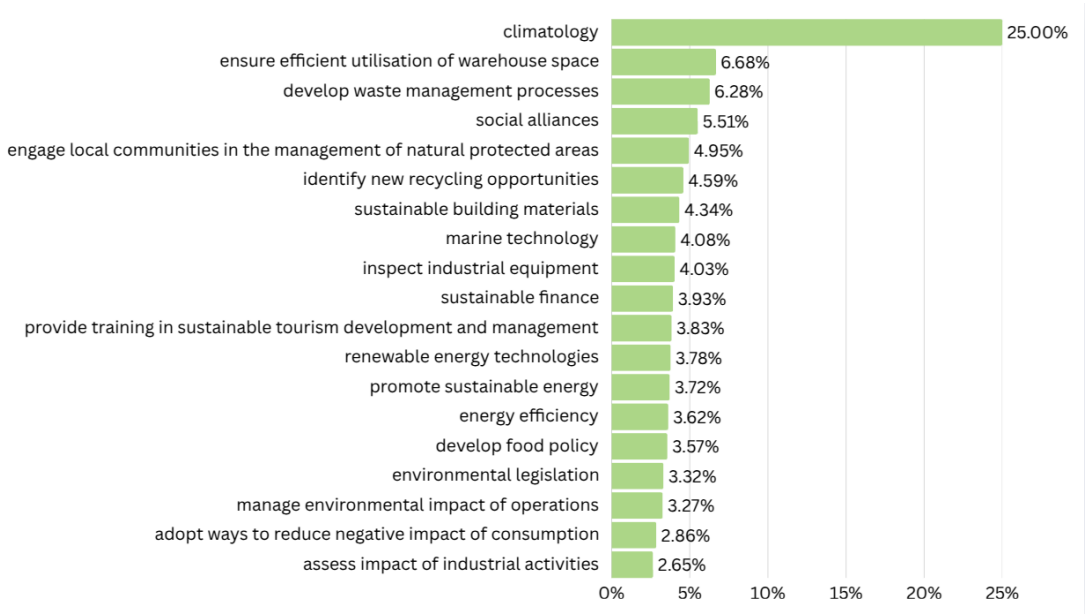

Fig. 1. Top Green Skills in Greek Occupations

The most common was Climatology, appearing in 490 postings. This finding reflects Greece's strong orientation toward environmental and climate-focused professions. At the same time, it reveals a concentration: rather than spreading across multiple industries, green competencies are clustered in specialized roles.

At first glance, these results mirror the international benchmark: across 26 countries and nearly 29 million postings, around 5% were classified as green (Colombo et al., 2023). Yet, the similarity in percentages conceals a striking divergence in how green skills are distributed across occupations. As shown in figure 2, in Greece, the most green-intensive roles are tightly clustered: Environmental Engineer, Sustainability Consultant, Engineer for Biogas Units, Facilities Manager and Technical Adviser. Even when green competencies appear in managerial or sales roles, they remain tied to environmental sectors. This points to a sectoral concentration of green demand, where sustainability is treated as a niche specialization rather than a cross-cutting priority.

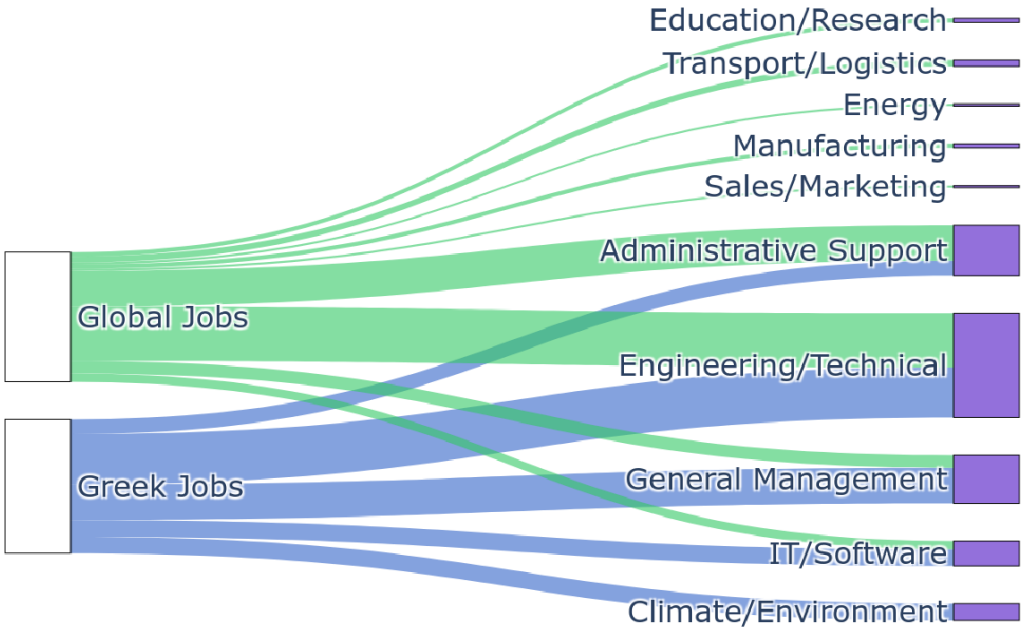

Fig. 2. Greek "green" occupations are mainly environment-focused, whereas the international "green" occupations can be found in a broader range of professions.

In contrast, across Europe, the top green occupations are largely operational and industrial roles, including Power Plant Operators, Nuclear Reactor Operators, Heavy Truck Drivers, Machinists, and Transportation Inspectors (O*NET Resource Center, National Center for O*NET Development, 2025). For instance, Machinists are expected to have skills such as "maintain industrial equipment," "perform green machining," "metallurgy," and "mathematics." This illustrates that even in jobs not explicitly focused on the environment, core tasks increasingly require green skills, highlighting the broader integration of sustainability competencies across operational occupations. These positions span essential sectors such as energy, transportation, and manufacturing, showing that green skills are integrated into the core functions of mainstream industries rather than confined to niche environmental roles. Europe is therefore not only

producing “green specialists” but also embedding sustainability across the broader workforce, as shown in figure 3.

Fig. 3. Even though the percentages of green skills in job postings are the same in Greece and abroad, Greece’s green skills remain confined to climate-focused roles, unlike abroad where they span multiple sectors.

This divergence underscores a national vulnerability for Greece. While European countries are greening a wide range of occupations, Greece’s green-intensive roles remain concentrated in environmental engineering, sustainability consulting, and select facilities management positions. The prominence of Climatology, as shown in figure 1, exemplifies this pattern: a strength in climate-related expertise, but also a signal of narrowness compared to Europe’s broader integration of green skills. In a de-globalizing context, this narrowness becomes more consequential: countries that diffuse green skills across multiple sectors are better shielded from external shocks and less dependent on importing specialized labor. Under globalization, Greece could have relied on importing specialized expertise to fill gaps. In a de-globalized world, however, this option is increasingly constrained. Without broad embedding of green skills across diverse occupations, Greece risks developing a narrow sustainability niche while lacking the systemic competencies required for competitiveness and resilience in the twin green and digital transitions.

4. Implications for Greece’s Labor Market in a De-Globalizing World

These findings point to a deeper structural challenge. What appears at first as quantitative parity with European trends—5% of postings classified as green—masks a qualitative divergence in how sustainability is embedded into labor markets. In Greece, green demand is still treated as a specialization, tied to a narrow set of professions, rather than a horizontal competency required across industries.

This distinction becomes especially consequential in a de-globalizing world. Competitiveness no longer hinges on a small elite of green experts but on the widespread diffusion of these skills across whole sectors. Countries such as Germany have already moved in this direction: German vocational training (VET) and apprenticeship curricula incorporate green skills across

multiple sectors through revised regulations and sustainability modules in logistics, energy, and manufacturing (Chen, 2025). The Nordics similarly are enhancing competencies through continuous learning programs, modular green-skill courses, and validation systems under EU initiatives to ensure that occupations beyond core environmental roles integrate sustainability competencies (Eurydice, 2019).

For Greece, the risk is twofold. First, the concentration of green expertise in climate-related and consulting roles limits the ability of key economic sectors—shipping, tourism, agriculture (Prandeka and Zarkos, 2014) —to adapt sustainability into their core operations. Second, reliance on this narrow skill base heightens vulnerability at a moment when external sourcing of talent and knowledge is more constrained. In a context where many EU countries are mainstreaming green skills across transport, manufacturing, and industrial occupations, Greece cannot afford a model that privileges specialists while neglecting systemic capacity. The potential cost is lower innovation, reduced access to investment, and weaker alignment with EU climate and trade norms.

5. Strategic Directions for Greek Businesses in a De-Globalizing Context

Addressing the narrow concentration of green skills in Greece requires concrete action from businesses. If sustainability is to move from a niche specialization to a cross-cutting capability, companies must mainstream green competencies, like these shown in figure 4, across core functions, especially in sectors such as shipping, agriculture, construction, and logistics.

Fig. 4. Framework to mainstream green skills across company HR functions: Recruitment, Training & Reskilling, Evaluation, Strategic Planning.

Recruitment. HR departments should revise job descriptions to explicitly include relevant green skills beyond environmental roles. By signaling these requirements, companies align labor market demand with available talent and encourage educational institutions to adjust curricula to meet evolving skill needs. For instance, logistics managers could require knowledge of energy-efficient transport practices, while construction supervisors could be assessed for sustainable

material management.

Training and Reskilling. Businesses cannot rely solely on new hires to close gaps; they must invest in developing the capabilities of existing employees. Structured programs in energy efficiency, waste reduction, and sustainable supply chain management can ensure that green skills permeate departments beyond specialized environmental roles. Projects like the SKILLAB EU-funded initiative (Georgiou et al., 2024), which monitors skill demand and supply in real time, are particularly relevant in a de-globalizing context. By analyzing labor market data, extracting, categorizing, and forecasting skill demands (Kavargyris et al., 2025), SKILLAB reduces structural mismatches and strengthens the ability of national labor markets to adapt internally rather than relying on imported expertise. This capacity is crucial for Greece: HR departments can identify gaps in real time, design targeted upskilling initiatives, and align workforce development with national priorities and EU standards, thereby building domestic resilience at a time when global talent flows are increasingly constrained.

Evaluation. Performance evaluation systems should integrate sustainability indicators, ensuring that green competencies are treated as integral to success. Clear metrics and incentives can encourage employees to adopt sustainable practices, while regular skills audits ensure alignment with emerging requirements.

Strategic Planning. Finally, embedding green skills into long-term business strategy transforms sustainability from a compliance obligation into a source of innovation and competitiveness. This approach positions companies for regulatory readiness, international market access, and systemic resilience, turning isolated expertise into a workforce-wide capability critical in a de-globalizing world.

6. Linking Business Needs with Education and National Policy

To sustain business-driven green skill development, education and national policy must provide complementary support. Higher education, vocational programs, and technical schools should embed green competencies across disciplines, ensuring logistics, industrial management, manufacturing, and other key sectors develop foundational sustainability skills—not just environmental engineering or consulting. Standardized certifications can provide clear indicators of competency and facilitate internal mobility, reducing Greece's dependence on external talent in a de-globalizing economy.

Recruitment pipelines should prioritize graduates from programs with sustainability-related modules aligned with international skill demand. For occupations underrepresented in Greece but expected abroad, companies could prioritize candidates whose degree programs include relevant sustainability courses. This mirrors developments in Germany, where over 21% of jobs are classified as green-driven occupations (OECD/Cedefop, 2014), and job descriptions increasingly integrate green requirements across diverse roles.

Career development and performance frameworks should reinforce green skills, using incentives and mobility tied to sustainability contributions. Austria, France, and Sweden systematically embed green modules in transport, energy, and construction curricula (for Economic Co-operation and , OECD).

Education institutions can forecast emerging skill needs using labor market data. Germany's

shortage of qualified workers in renewable energy and manufacturing (Alkousaa, 2025) illustrates the risks of failing to anticipate labor demand—an important lesson for Greece, where reliance on external expertise is less viable in an era of de-globalization.

Finally, public policy and industry-education collaboration—through training incentives, EU-aligned reskilling initiatives, and national competency standards—can accelerate the diffusion of green skills. By integrating education, business, and policy, Greece can build a broad-based skill foundation, strengthening competitiveness and resilience in a de-globalizing economy shaped by the twin green and digital transitions.

7. Conclusion

The presented analysis demonstrates that while Greece matches the EU average in terms of the overall presence of green skills in job postings, a closer look reveals a structural gap: green competencies are concentrated in specialized environmental and consulting roles, rather than diffused across critical sectors of the economy. In a de-globalizing world, where reliance on imported talent is increasingly constrained, this narrow distribution poses a risk to competitiveness, innovation, and resilience.

Addressing this challenge requires a coordinated approach that integrates business strategy, education, and public policy. Greek companies must mainstream green skills across core functions, leveraging structured upskilling and reskilling programs, performance evaluation systems, and long-term workforce planning. Projects like SKILLAB (Georgiou et al., 2024) demonstrate how data-driven insights can guide these efforts, ensuring that skills investments are aligned with both national priorities and emerging EU standards.

Equally, education systems must adapt to evolving labor market needs. Curricula across universities, vocational schools, and technical programs should embed sustainability and environmental competencies across a wide range of disciplines, and recruitment pipelines should align with programs that provide graduates with the relevant foundational skills. Public policy and industry collaboration further reinforce this integration, enabling incentives for continuous training, standardization of green skill certifications, and coordinated forecasting of future skill demands.

By implementing these strategies in concert, Greece can move beyond cultivating isolated green specialists toward building a systemic, workforce-wide capability. Such a transformation not only strengthens resilience in the face of de-globalization but also positions the country to participate competitively in the twin green and digital transitions shaping the European and global economy.

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