BRIDGING THE CLEAN SECTOR GAP:
EDUCATION, SKILLS, AND WORKFORCE IN OMAN

SUPPORTED BY

وزارة الطاقة والمعادن
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OMAN LABOUR MARKET INTELLIGENCE ANALYSIS

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THE OMAN LABOUR MARKET INTELLIGENCE ANALYSIS (LMIA)

The Oman Labour Market Intelligence Analysis (LMIA) is a national initiative designed to support the implementation of Oman Vision 2040, alongside key national strategies including the Energy Transition Plan and the Oman Net Zero Vision. The initiative aims to support Oman's transition toward a more diversified, resilient, and low-carbon economy while ensuring that this transformation is matched by a skilled, future-ready .national workforce

The LMIA project is guided by the Ministry of Energy, National Hydrogen Alliance (Hy-Fly) and Minerals and the Ministry of Labour, commissioned by the Oman Energy Association (OPAL), and implemented by the Majan Council, with support from a broad range of stakeholders across government, industry, academia, and international .organizations

As renewable energy, clean hydrogen, energy-intensive industries, and other emerging green sectors continue to expand, Oman has a significant opportunity to position itself as a regional leader in the green economy while creating new pathways for economic growth, industrial development, and employment generation. These sectors also hold the potential to strengthen economic diversification, enhance resilience to global economic shifts, and create new value chains rooted in the energy sector that has long .contributed to Oman's development

At the same time, the transition raises critical questions regarding workforce readiness, future employment opportunities, skills development, and national capacity building. Future energy industries require highly skilled talent, yet workforce development, education reform, and technical training require long-term preparation and alignment with evolving market needs. Without a clear understanding of future labour demand, occupational requirements, and industrial growth pathways, there is a .risk of mismatch between emerging sectors and the capabilities of the labour market

In response to these challenges, LMIA provides strategic labour market intelligence and evidence-based insights to support policy planning, workforce development, Omanisation strategies, and educational alignment. Through an inter-ministerial, intersectoral, and interdisciplinary approach, the initiative supports national dialogue and informed decision-making across the energy, economic, industrial, and educational ecosystems, helping Oman convert its energy transition into a long-term human .capital and economic opportunity

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Quality Assurance & Standards of Excellence

This report has undergone a rigorous process of professional fact-checking and copy-editing to ensure the highest standards of accuracy, relevance, and clarity.

Legal Disclaimer

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Executive Summary

Labour Market Pressures and Public Expectations
Rising unemployment and demographic pressures are amplifying public demand for credible, coordinated employment action.

- The jobseeker situation is escalating, with many experiencing **prolonged unemployment** and limited interview opportunities—only 40% report ever being invited to an interview, and **81% name unemployment as one of their biggest life concerns**.
- At the same time, responsibility is widely attributed to central government institutions, signalling the **risk that growing frustration could erode public trust** and create tensions if effective solutions are not delivered.
- Oman's **workforce is steadily expanding** due to a growing youth population and rising female participation, intensifying pressure for job creation.
- **Omanisation is already high in bachelor-level roles** across sectors like education and public administration; it **remains low in low-skilled and highly specialised occupations**, where structural reliance on expatriates persists despite growing national capacity in other areas.
- **Jobseekers are not the root cause of their unemployment**: most university graduates are willing to work across sectors, accept roles below their qualification level, and **consider a monthly salary of 700 OMR sufficient** for employment. Interest is especially high in green sectors such as hydrogen, solar PV, and wind.

Fostering Employment and Effective Omanisation
Persistent employment barriers require targeted, well-calibrated policies that unlock potential, utilise multipliers, and bridge between short-term needs and long-term perspective

- A key perceived barrier to employment is the **lack of accessible opportunities in the green economy**. Entry-level applicants are often excluded by experience requirements, and **employers tend to prioritise upskilling current staff** over recruiting new talent. Suitable incentives may lead firms to focus more on young talents.
- Despite the urgency of the jobseeker situation, **policy responses should avoid reactive labour market interventions** that compromise regulatory standards, introduce red tape, or create investor uncertainty in pursuit of quick gains. Such measures **risk unintended consequences** that could harm the broader economy and ultimately undermine job creation.
- **Instead, a balanced approach** is needed: combining short-term actions—such as well-designed Omanisation efforts and employment programs—with **long-term economic strategies** to generate sustainable employment, particularly in clean energy.
- Jobseekers widely perceive **bias in hiring**, particularly a **preference for expatriate workers** in some firms. Even if not always substantiated, such perceptions weaken trust in Omanisation efforts and state capacity. Rather than broadly tightening Omanisation quotas, policy responses should focus on targeted measures. In addition to **strengthening compliance checks** in priority sectors—particularly energy—policies should prevent the formation of "expatriate lobbies," for example through **complete Omanisation of HR and recruitment** functions or by **capping the share of any single nationality** within private sector companies. These measures apply across clean energy and other key sectors.

Skills Gaps and Workforce Readiness
Skills mismatches span both foundational and sector-specific areas, requiring stronger engagement of education actors to meet evolving labour market needs.

- **Skill mismatches**, a central barrier to employment, appear in two forms: **a priority mismatch**, where education providers emphasise emerging or transversal skills more than employers do; and **a depth mismatch**, where employers seek applied, experience-based skills that graduates lack.
- **Foundational skills gaps**—such as in communication, numeracy, and basic IT—limit employability across sectors. Strengthening these **core competencies** is essential.
- While jobseekers express strong confidence in their education, employers and the current workforce report major gaps in applied skills—suggesting that curricula may lag behind, leaving graduates underprepared without realising it.
- Oman's higher education institutions offer a **solid foundation in core engineering disciplines** relevant to the green economy, **yet sector-specific gaps persist**—especially in vocational training and cross-cutting areas such as economics, policy, and applied methods. Instead of relying on narrow specialisations, the priority should be **to integrate green skills into broad-based programmes**.
- **Re-skilling and upskilling are critical** to meeting workforce needs in clean manufacturing and advanced sectors, yet participation remains low due to financial barriers and uncertainty about employment outcomes. **Support and guaranteed placement** are key to increasing uptake.

Institutional Reform in Education and Training
Improving workforce readiness requires streamlined regulation, stronger domestic training provision, and deeper university–industry partnerships.

- Green economy fields remain underrepresented, as institutions face the **"rent or buy" dilemma**: whether to build domestic capacity now or rely on overseas education for roles with uncertain demand. Cross-sector coordination is key to **avoid bad investments or missed Omanisation windows**.
- Strong preferences for international training providers reflect a **trust gap with domestic institutions**. Improving the quality, relevance, and **credibility of local training**—and the centres delivering it—is essential to boost uptake and reduce dependence on costly foreign providers.
- **Regulatory hurdles inhibit the development of green-sector programmes**: 70% of institutions report curriculum approval takes over a year, with some exceeding two. While public oversight remains essential, **red tape should be reduced**—e.g. by aligning approvals with regular review cycles, simplifying minor updates, and introducing fast-track pathways for priority programmes.
- **Industry partnerships**—such as joint curriculum development, faculty training, and exchange programmes—are far **more effective than passive measures** like guest lectures. Expanding "train the trainer" initiatives is also critical, as limited faculty expertise in green subjects remains a constraint.

Strategic Coordination and Forward Planning
Employment requires coordinated economic and investment planning

- **Workforce development and education investments require clear commitments** and policy signals to ensure alignment with actual sectoral needs. Close coordination across all actors is key to avoid premature programmes and to capture Omanisation opportunities.
- Fostering employment can—neither in the short nor in the long run—be the remit of labour policy alone. Instead, it requires **coordinated action** by economic and financial decisionmakers: short-term **employment programmes through publicly owned companies** able to benefit from workforce expansion and **long-term investment strategies prioritising domestic development** and jobs.

Introduction

As the country experiences sustained demographic growth, the number of young graduates seeking employment continues to rise. At the same time, national stakeholders are working intensively to support young jobseekers into employment, assist current employees in transitioning to the green economy, and align education and training outcomes with future workforce needs.

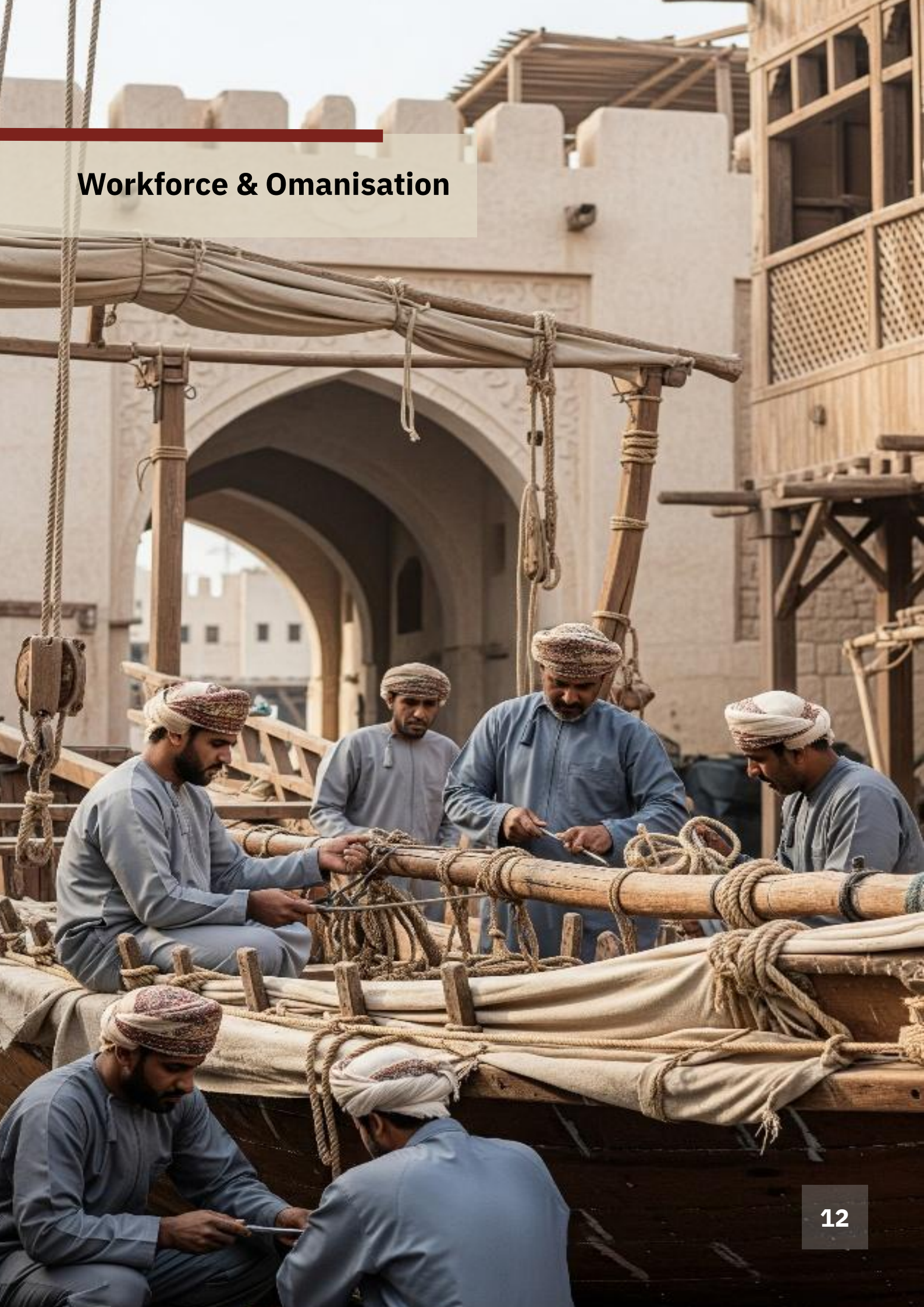
Meeting these challenges will require not just creating jobs in green industries—it will require ensuring that Omani nationals are equipped and positioned to take on these roles. This report, therefore, explores a series of interrelated questions: Where in Oman's labour landscape are green jobs most necessary? How prepared is Oman's workforce and education system to meet the demands of the green economy? What interventions are needed to foster Omanisation in emerging sectors and beyond? And how can targeted labour and education policy accelerate this transition? The results of this report—which are closely connected to and complemented by the findings of the sister report Building Workforce Readiness: The Oman Clean Energy Labour Outlook—highlight areas and issues to focus on, conceptual learnings, and selected recommendations.

The analysis draws on both publicly available and confidential data from national institutions, including the Ministry of Labour, the Ministry of Education, the Ministry of Higher Education, and the National Centre for Statistics and Information. Central to the report are five surveys conducted with key stakeholder groups involved in the workforce transition:

- **An extensive survey of Omani jobseekers** seeking employment in green economy sectors, capturing their preferences, job search dynamics, and self-assessed skill levels;
- **A management survey** among administrators of companies in the energy sector, focused on their assessment of graduate preparedness and workforce requirements for the green transition;
- **A workforce survey** of current employees in the energy sector, examining their skill sets, qualifications, and perceptions of sectoral change;
- **A higher education survey** targeting university programme coordinators, assessing the extent to which green economy content is integrated into curricula and the challenges institutions face;
- **A training institute survey** focused on institutional capacity, curriculum relevance, and the barriers vocational centres encounter in preparing graduates and workers for green economy roles.

The chapters that follow begin by outlining the composition of Oman's workforce and its broader Omanisation potential. Subsequent sections analyse the current pool of jobseekers, the role of skill gaps and mismatches, and the alignment of general and technical education with green sector needs. The report also examines the structural capacity of higher education and vocational systems to adapt to evolving demands and considers the potential for reskilling and upskilling the existing workforce to support Oman's long-term green development objectives.

Workforce & Omanisation



Oman's labour market has expanded considerably over the past decade. However, this growth is largely driven by the continued growth of the expatriate population (Figure 1). While the number of Omani nationals in the workforce has increased, the proportion of foreign workers has nearly doubled between 2010 and 2024. Following a period of stabilisation from 2016 to 2019, expatriate employment rebounded sharply, reaching record levels in 2023. This sustained growth underscores a structural reliance on expatriate labour, particularly across several key sectors.

At the same time, female labour force participation has seen gradual increase. Although men continue to represent the majority—currently outnumbering women by a ratio of roughly seven to one—participation among women has increased among both nationals and expatriates. This trend may signal a shift toward gender balance over time.

Demographic dynamics, however, remains the most decisive factor shaping the labour market (Figure 2). Oman's demographic profile is marked by a pronounced youth bulge, with over 1.2 million Omani nationals under the age of 30. This cohort represents the majority of the national population and underscores the sustained pressure on the labour market to absorb large numbers of young jobseekers. In contrast, the expatriate population is heavily concentrated in working-age groups, particularly between 25 and 44, where male expatriates alone number over 600,000. Expatriates are largely absent from younger age groups, reinforcing their role as a short- to medium-term labour force.

The demographic asymmetry between a young national population and an older, predominantly male expatriate workforce highlights the structural employment challenge Oman faces: ensuring sufficient and timely job creation for nationals while maintaining productivity across key sectors. Labour market characteristics vary considerably across Oman's governorates, both in terms of workforce size, unemployment levels, and the composition of national versus expatriate workers (Figure 3).

According to data from relevant authorities, Muscat is the country's largest labour hub, with over 860,000 workers and one of the lowest unemployment rates. It also has a comparatively high concentration of Omani nationals, with a national-to-expatriate ratio of roughly one to three. North Al Batinah, the second-largest contributor to the workforce (445,000), shows a higher unemployment rate of 4.62% and a significantly lower share of national workers. In contrast, governorates such as Al Dhahirah, South Al Batinah, and Musandam combine lower overall workforce figures with higher unemployment—ranging from 4.53% to nearly 6%—and much lower levels of national representation.

In some areas, the national-to-expatriate ratio falls to as low as one to eight. These structural imbalances—particularly in regions where high jobseeker numbers coexist with large expatriate workforces—highlight the need for geographically targeted Omanisation efforts. Interventions that reflect regional disparities in workforce composition and unemployment dynamics may offer more effective pathways to improving labour market outcomes for nationals.

From a sectoral perspective (Figure 4), the Omani national workforce is almost evenly distributed between the public and private sectors, with 47% employed in the private sector and 44% in the public sector. By contrast, the expatriate workforce is overwhelmingly concentrated in the private sector, which accounts for 79% of expatriate employment. A further 18%—approximately 328,900 individuals—are employed in domestic roles within private households, while only 3% (around 44,000) work in the public sector. This highlights the central role of expatriates in private-sector operations and household labour.

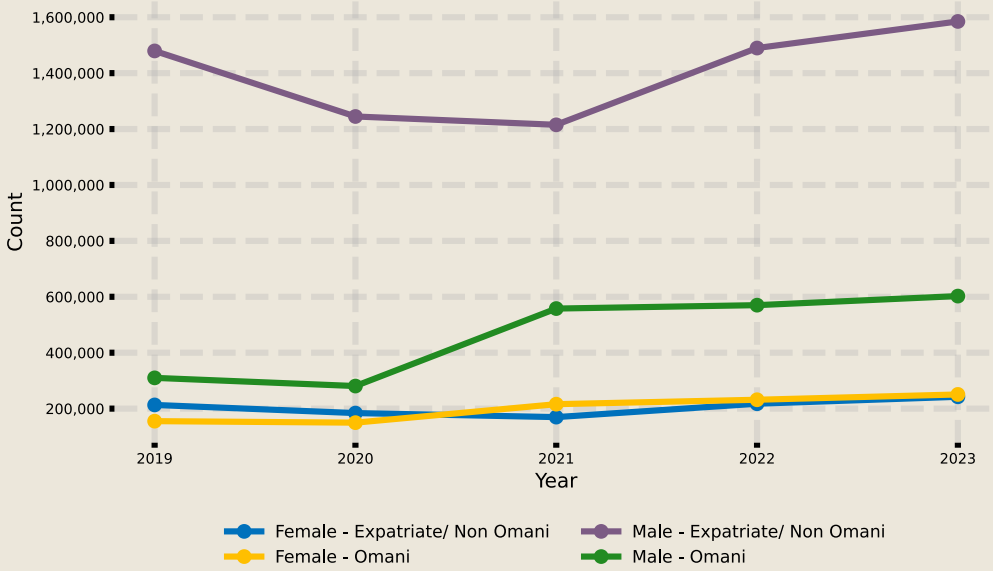


Figure 1: Trends in national vs. expatriate employment by gender 2019–2023, based on public authorities

Figure 2: National vs. expatriate population 2023

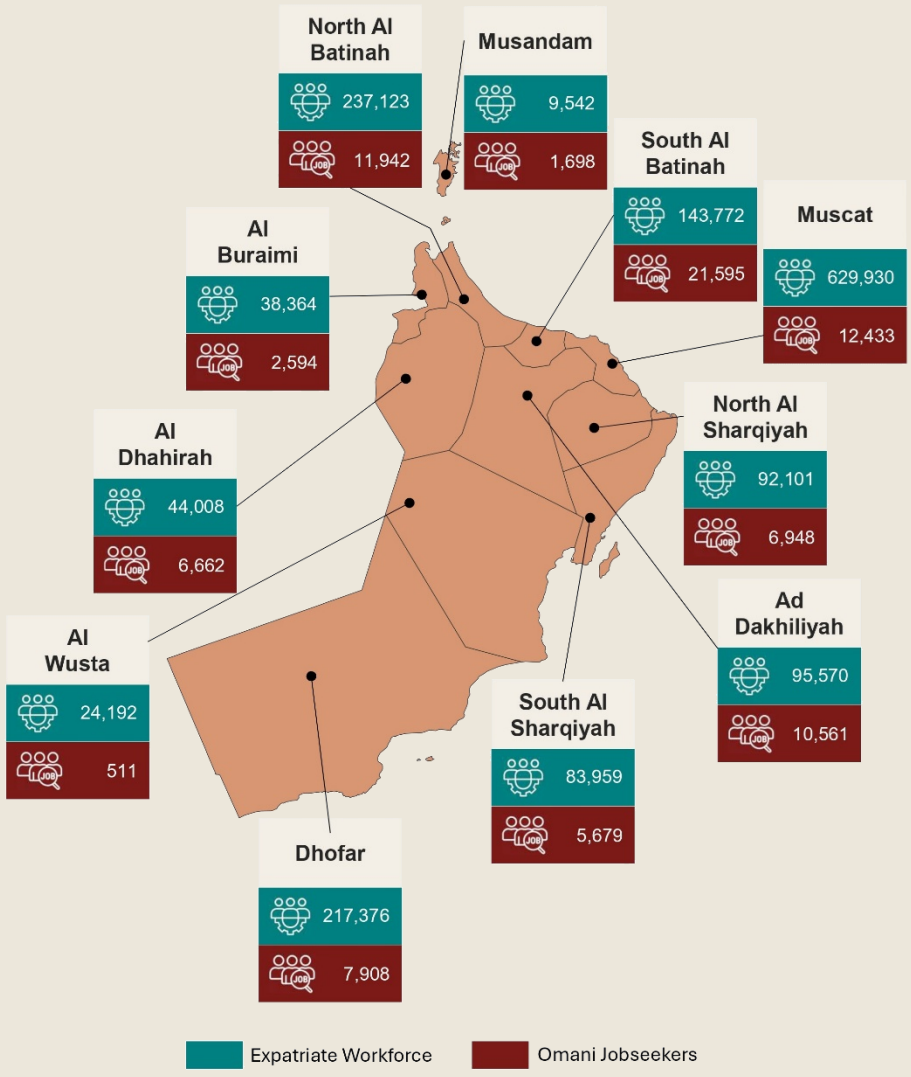


Figure 3: Total workforce and number of jobseekers by governorate, based on official data

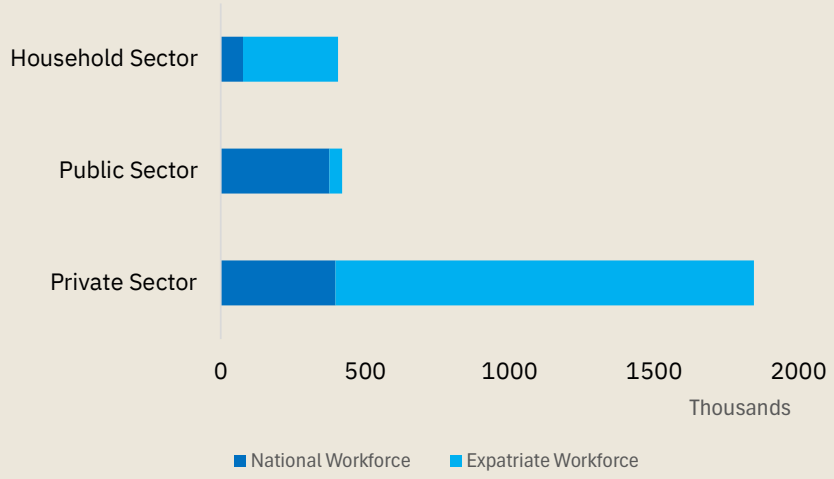


Figure 4: Workforce by sector and origin

The distribution of national and expatriate workers varies significantly across economic sectors (Figure 5). Construction, trade, manufacturing, and accommodation services are heavily dominated by expatriates. In construction alone, expatriate workers outnumber Omani nationals by more than ten to one. This sector remains the largest in Oman by workforce size, followed by trade and, at a smaller scale, manufacturing. By contrast, near parity between nationals and expatriates is observed only in a residual category encompassing public administration and governance-related activities.

Omanisation rates further reflect the segmentation between workforce nationalities (Figure 6). The highest Omanisation levels are found in financial and insurance activities (86%), mining and quarrying (72%), and electricity, gas, steam, and air conditioning supply (67%). These sectors demonstrate relatively successful integration of Omani nationals into specialised or capital-intensive industries. Moderate Omanisation rates are found in education and public administration (around 44%), as well as in professional and technical activities, utilities, and health and social services, which range from 33% to 39%. By contrast, construction, wholesale and retail trade, and manufacturing report the lowest Omanisation levels—between 6% and 12%—signalling continued dependency on foreign labour in labour-intensive sectors.

A clear segmentation by nationality is evident across educational levels (Figure 7). Expatriates dominate at the lowest levels of educational attainment, particularly in construction, agriculture, and retail trade, where Omanis are largely absent. As qualification levels increase, the presence of nationals becomes more visible, especially in public administration, healthcare, and education. At the general education diploma level, Omanis are more likely to work in clerical, administrative, and government positions, while expatriates remain concentrated in production and service sectors. At the diploma level, Omani workers gain traction in technical and semi-specialised roles, particularly in healthcare and the public sector.

The balance becomes more even at the Bachelor's level. Omanis are well-represented in education, public administration, finance, and healthcare, while expatriates retain a strong presence in engineering, construction, IT, and industrial activities. At the Master's and doctoral levels, Omanis are more prominent in public and professional services, but expatriates continue to dominate in highly specialised fields such as advanced engineering and clinical healthcare.

These patterns point to an important nuance for Omanisation strategy. The potential for increasing national workforce participation is strongest in mid- and high-skill segments, especially roles requiring Bachelor's degrees and advanced technical expertise. In contrast, opportunities for Omanisation in low-skill, labour-intensive occupations remain limited. A targeted approach focusing on professional and specialist roles, rather than blanket localisation targets, is likely to yield more effective and sustainable results.

The distribution of the workforce by skill level (Figure 8) further clarifies the structural divide between Omani and expatriate labour. Expatriates continue to dominate in low-skilled and manual occupations, while Omanis are more prominently represented in skilled, technical, and professional roles. This segmentation reflects both historical labour patterns and the focus of national workforce development efforts.

The data underscores the persistent challenge of increasing Omani participation in labour-intensive roles, where Omanisation potential remains limited. At the same time, the growing presence of nationals in higher-skilled categories points to ongoing progress in building local capacity for more specialised functions. As Oman transitions towards a green economy, the emphasis should be on enabling Omanis to access skilled and technical positions across new and emerging sectors, thereby reducing dependency on expatriate labour and supporting broader national employment objectives.

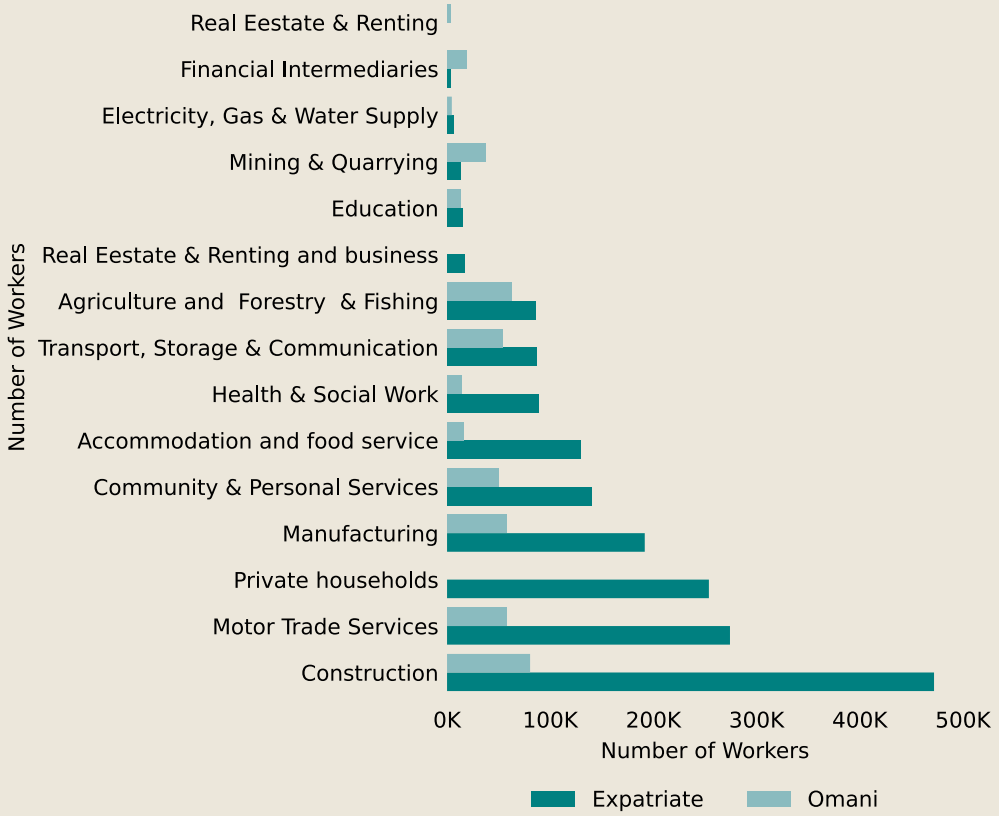


Figure 5: Number of workers by origin across different commercial activities

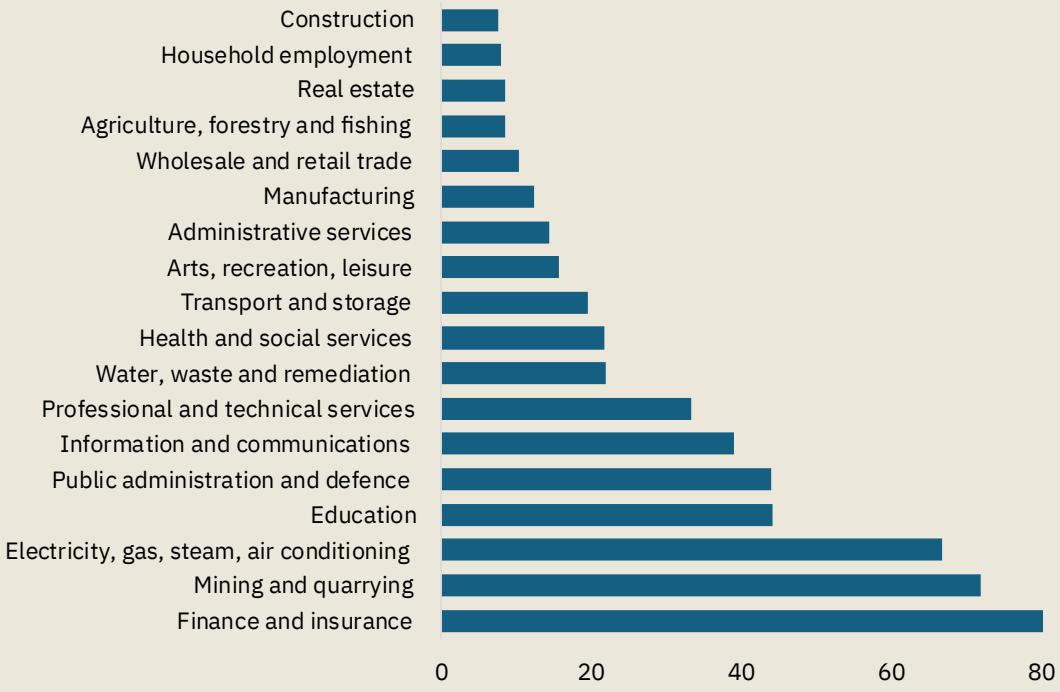


Figure 6: Omanisation rate across different commercial activities

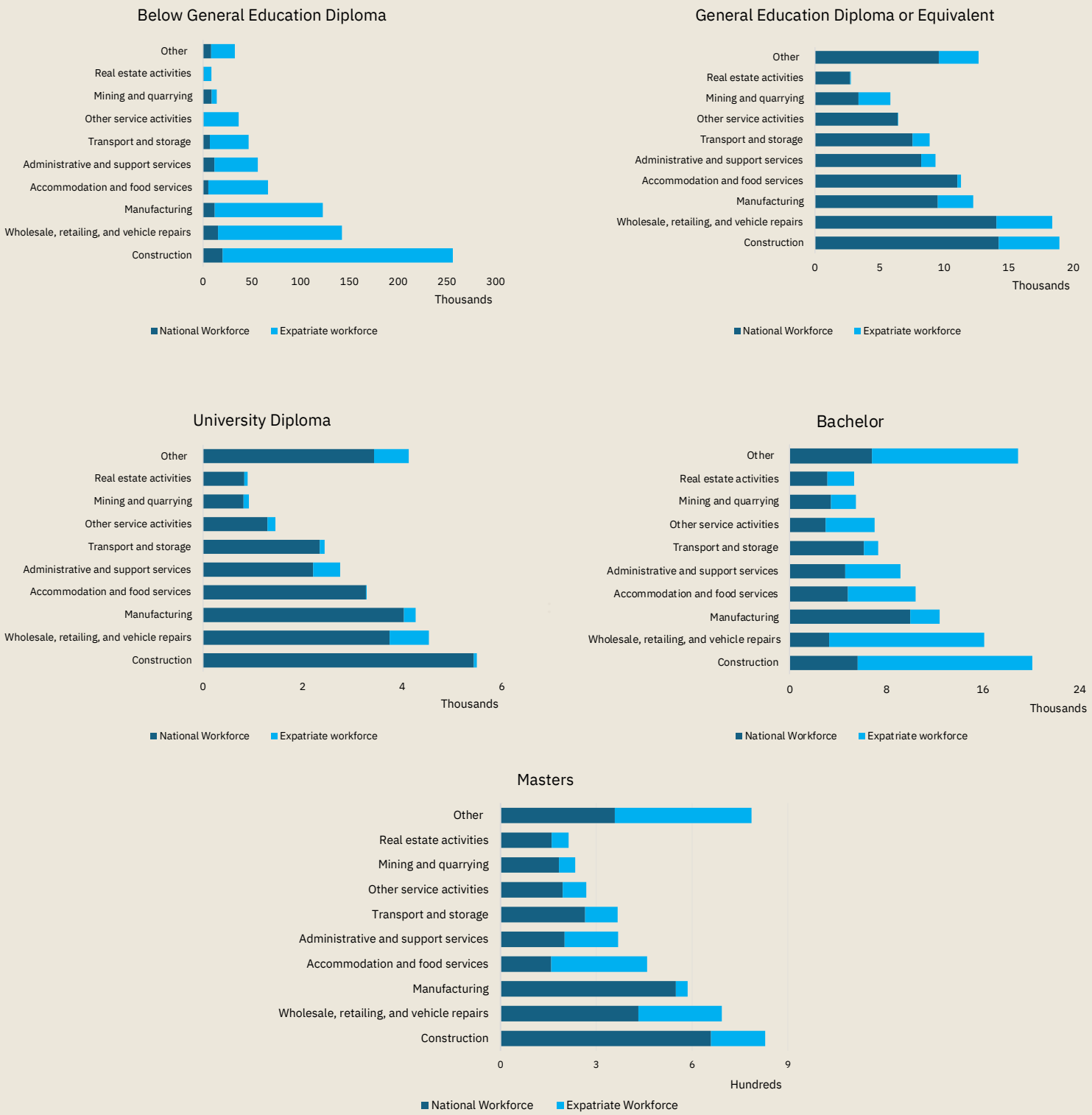
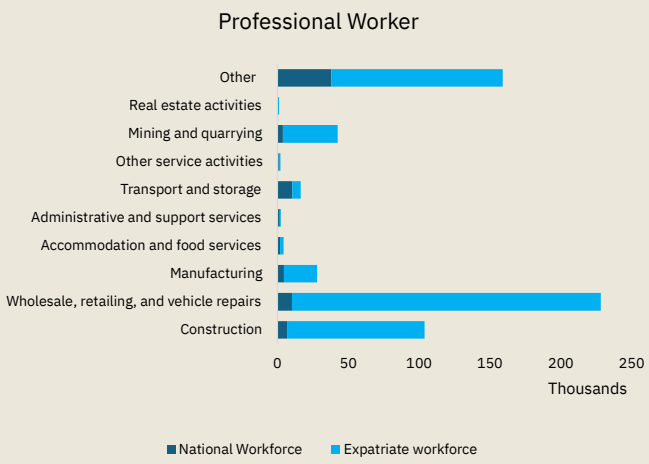
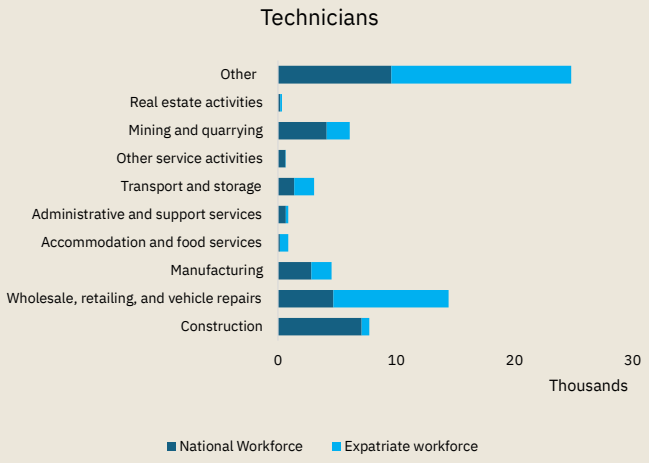
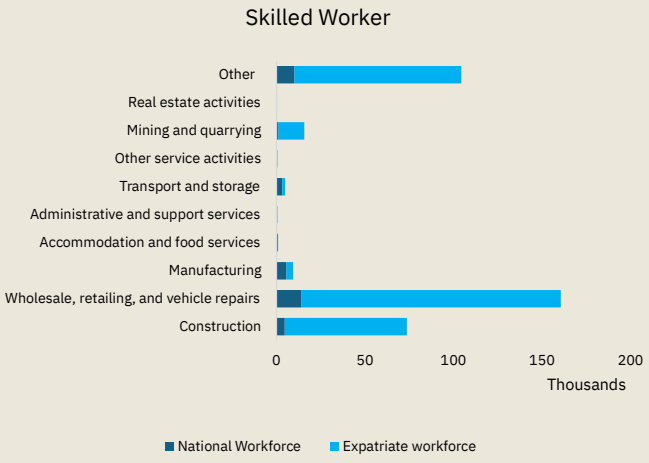


Figure 7: Employment by education level, commercial activity, and origin







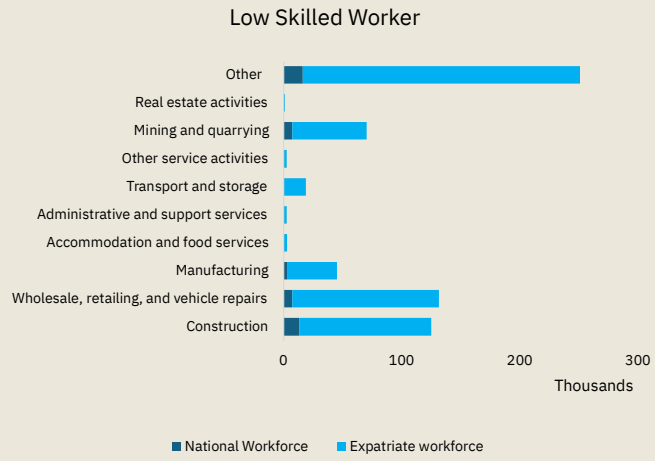


Figure 8: Employment by skill level, commercial activity, and origin

Jobseeker overview and interests

Jobseekers—particularly younger cohorts—occupy a pivotal role in Oman's current and future economy. Their integration into productive employment is not only a key economic imperative but also essential for social stability. A well-functioning labour market helps ensure broad-based prosperity and equitable participation in national development. At the same time, jobseekers represent a valuable asset: many are recent graduates whose education and training can serve as a foundation for building a skilled, future-ready workforce. As such, the green economy transition must prioritise this group, both to harness their potential and to ensure inclusive economic transformation.

Geographically, jobseekers are unevenly distributed across the Sultanate. A significant share is concentrated in a few governorates—particularly Al Batinah North, Dhofar, and Muscat—while others such as Al Wusta, Musandam, and Al Buraimi account for a much smaller portion. Across the remaining regions, including Al Dakhiliyah, Al Batinah South, Ash Sharqiyah North and South, and Ad Dhahirah, jobseekers are more evenly spread, without strong regional clustering.

In terms of qualifications, jobseekers tend to be concentrated in a limited number of academic specialisations. Business, Management, and Information Technology degrees are especially prevalent, while fewer candidates hold qualifications in engineering disciplines or the social sciences. Fields more directly aligned with green sector needs—such as environmental, materials, and chemical engineering—remain underrepresented, pointing to a potential misalignment between current qualifications and the skills demanded in emerging sectors.

Survey-based indicators for application efforts and job search duration (Figure 9) confirm the challenging situation many jobseekers face. Most had been looking for employment for almost a year and had submitted more than 20 applications. Yet only 40% reported ever being selected for an interview. While the average job search duration among green economy jobseekers is somewhat shorter than the nationwide average—as noted in a government memo from early 2024—application intensity remains relatively low. Many respondents had submitted fewer than 20 applications, pointing to moderate overall engagement in the job search process.

The continued difficulty jobseekers face in securing employment—evident not only in survey data but also in internal figures circulated among government stakeholders in 2024—raises a critical question: why are graduates not being more effectively integrated into the labour market?

From a socio-political perspective, addressing barriers to employment is of critical importance. Survey results indicate that jobseekers overwhelmingly view the central government—namely, national leadership and relevant ministries—as primarily responsible for resolving the situation (Figure 10). While educational institutions and private companies were also mentioned, they were cited less frequently, and other actors such as the Majlis al-Shura were seen as having a more limited role.

These expectations are closely tied to a broader climate of institutional trust. According to the survey, 68% of respondent jobseekers report high to very high levels of trust in the government (Figure 11). While this trust provides a valuable foundation for constructive engagement, it also implies that prolonged inaction to address the situation may have far-reaching consequences for confidence in public institutions and leadership. Frustration among jobseekers is already pronounced: 81% cite the lack of employment as a major challenge, and 65% even consider it their single most pressing concern. Fortunately, social cohesion remains relatively resilient. While nearly half of respondents acknowledge visible income disparities within their families and social circles, 60% state that these differences do not affect them—suggesting that, for now, societal relations remain intact.

Nonetheless, while these relations have not yet deteriorated, the risk of eroding trust in the government reinforces the urgency of a decisive and coordinated response to the unemployment situation— to preserve public confidence, uphold institutional legitimacy, and ensure long-term national stability.

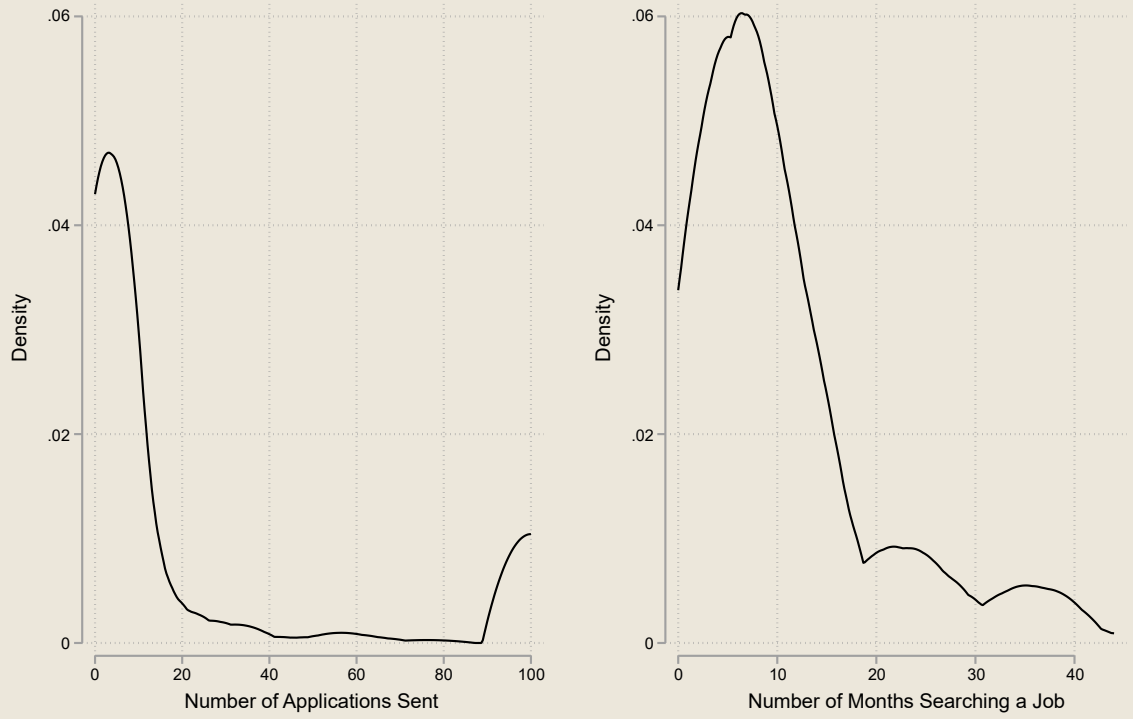


Figure 9: Distribution of jobseekers by number of applications and duration of job search

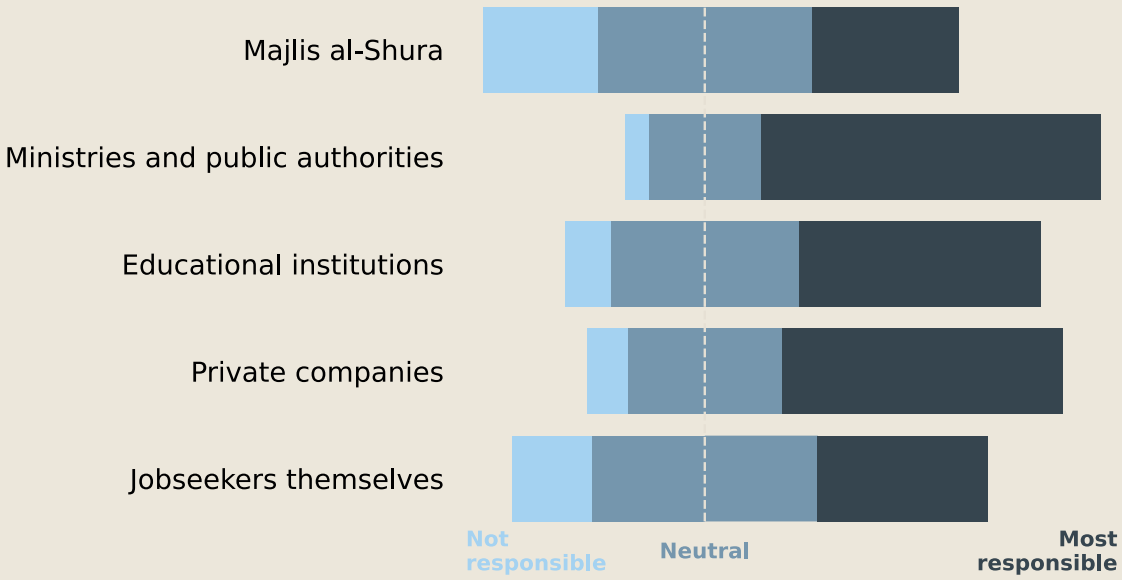


Figure 10: Jobseekers' views on the responsibility of different actors for improving employment in Oman

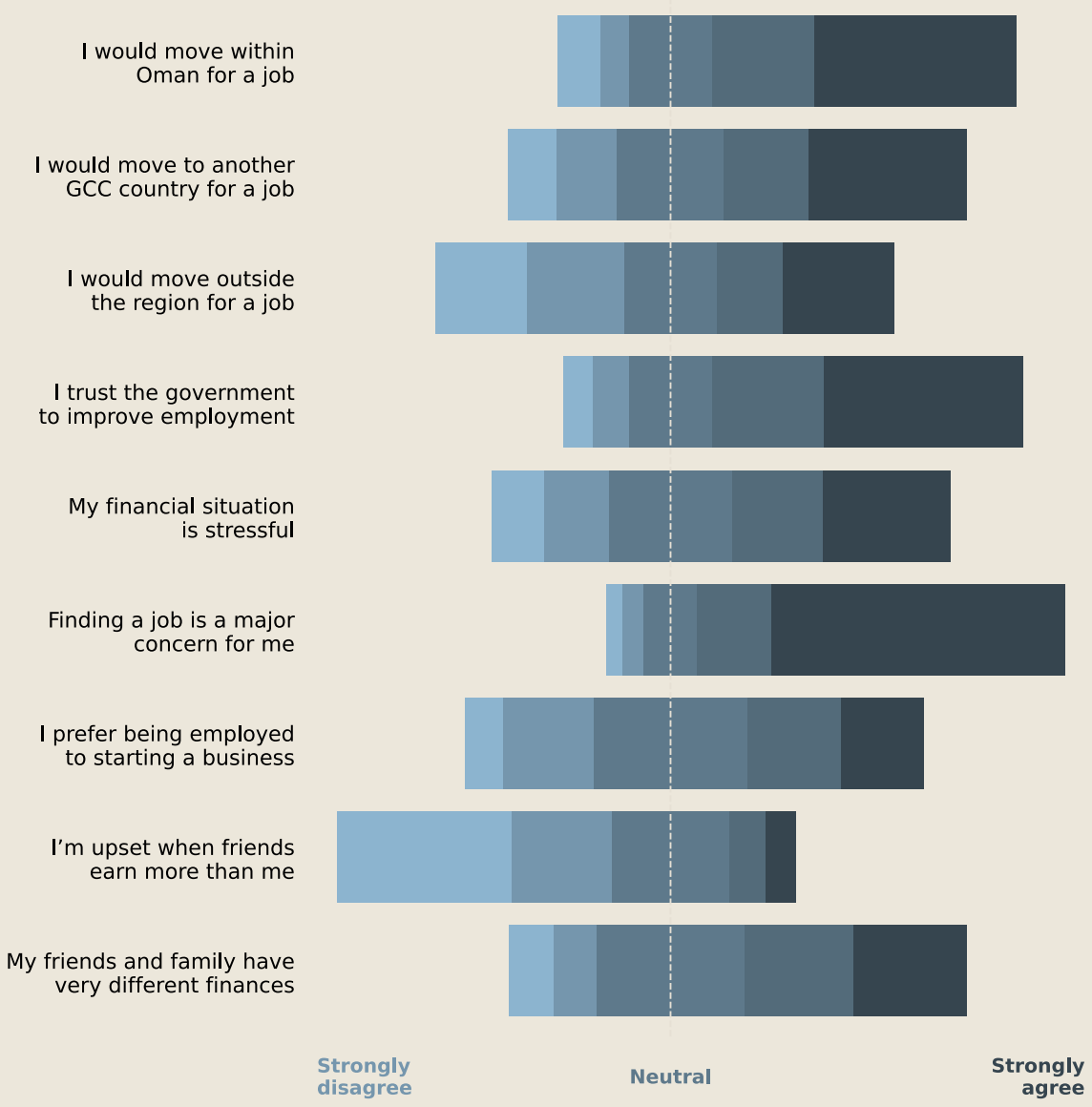


Figure 11: Jobseeker attitudes toward employment, mobility, and financial stress (1–5 Scale)

A relevant hypothesis that is sometimes raised and warrants further examination is the possibility that jobseekers themselves may contribute to unemployment by aiming for salaries or positions that exceed what the labour market currently offers.

However, most jobseekers appear to hold realistic salary expectations (Figure 12). The average expected salary stands at 917 OMR per month, while the average minimum accepted salary is 732 OMR. This alignment suggests that salary expectations are not a major obstacle to pursuing green sector employment and that financial expectations are generally in line with market conditions —instead, a salary in the range of 700 OMR appears sufficient to motivate highly educated jobseekers to enter employment. This should also be viewed in light of the fact that 48% of respondent jobseekers report experiencing financial duress (Figure 11), suggesting that intensively debated issues such as unemployment benefits warrant renewed attention.

Nor does the survey data support the notion that a sense of entitlement among jobseekers is a primary driver of unemployment. On the contrary, a significant majority—nearly 70% of respondents—indicated that they were either willing or entirely open to accepting a job below their current qualification level (Figure 13).

Only around 32% stated that they would rather not, or absolutely would not, consider such positions. These findings suggest that most jobseekers demonstrate a degree of flexibility in their employment expectations, further reinforcing that motivational or attitudinal barriers are unlikely to be the main impediment to job placement—particularly within the emerging green economy. A significant number of jobseekers (Figure 11), even express readiness to relocate. 67% would be willing to move within Oman, while 53% report either being ready or showing some level of acceptance towards relocating to another GCC country. Notably, 39% would even consider moving to another continent if it meant securing employment.

The perception that jobseekers themselves are primarily responsible for their unemployment is therefore unlikely and not supported by the data—including findings from the other stakeholder surveys (see next chapter).

This aligns with the observation that jobseekers show interest in a wide range of sectors. When asked about their interest in 31 specific subfields—grouped into six main categories: Solar Photovoltaic Energy and Concentrated Solar Energy; Wind Energy (both onshore and offshore); Hydrogen (including electrolyser manufacturing); Minerals and Metals Extraction; Bioenergy; and Green & Clean Materials (such as steel, aluminium, concrete, and cement)—the majority of respondents expressed strong interest in key green sectors. Nearly 80% of jobseekers indicated interest in hydrogen, over 60% in solar PV, and close to 50% in wind energy. Bioenergy and green materials attracted interest from nearly 30% of respondents each (Figure 14).

The survey furthermore shows how these interests are socio-demographically distributed. Based on linear probability models (Appendix B, Table 11), relevant patterns emerge across the three in-demand sectors: solar, wind, and hydrogen. In the solar PV sector, interest is particularly high among individuals with vocational training and among non-Omanis, indicating that applications may come from groups with specific skill sets or residency status, raising potential implications for workforce localisation and targeted training

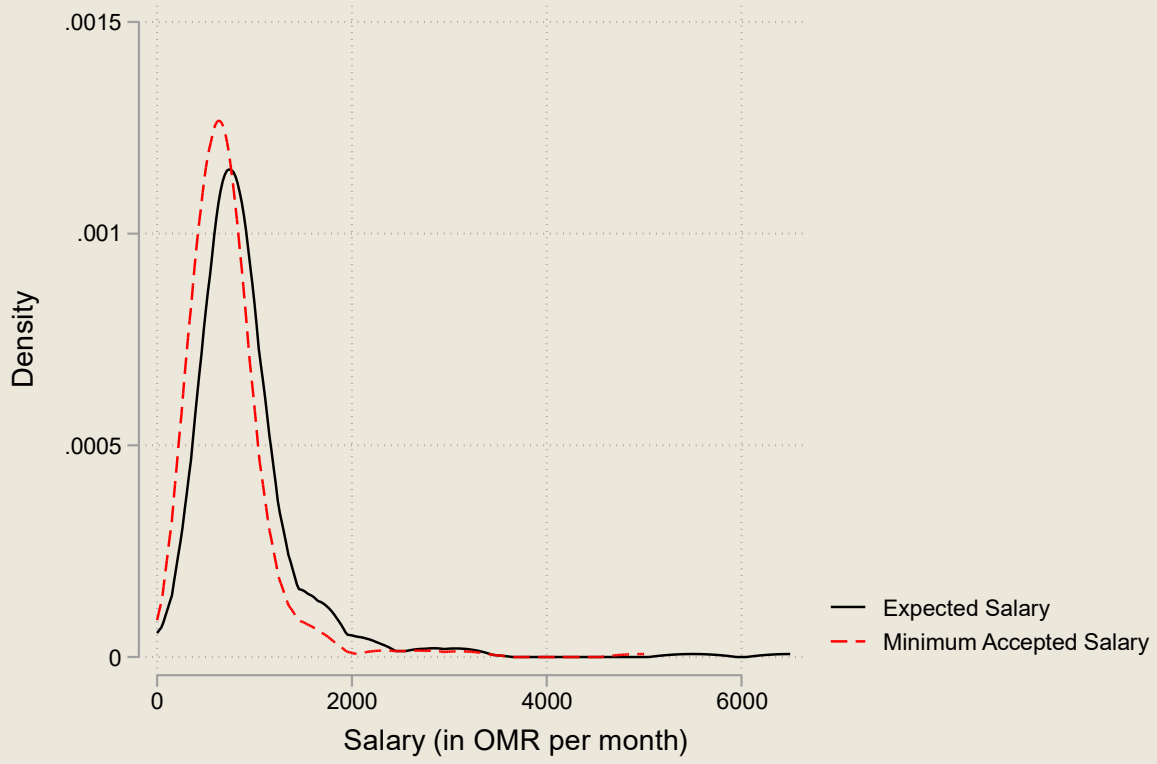


Figure 12: Distribution of jobseekers by expected and minimum accepted salary

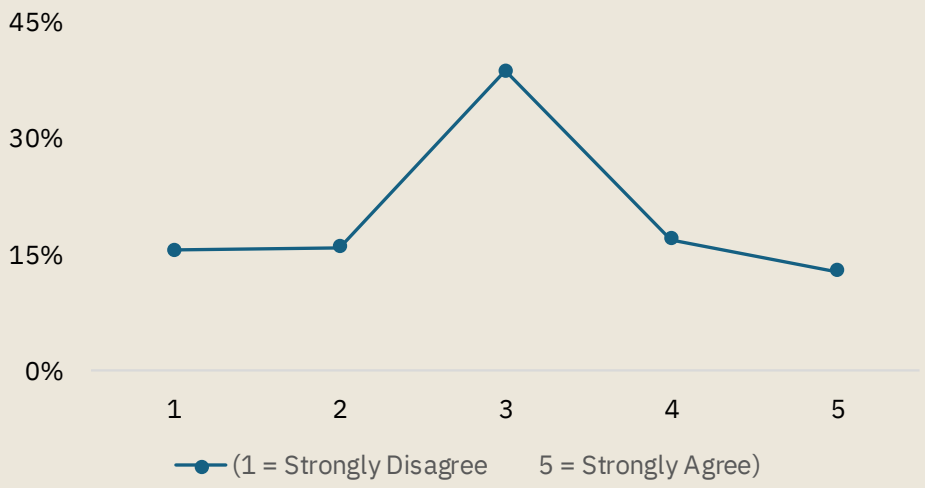


Figure 13: Jobseekers' willingness to accept positions below their qualifications or current job level

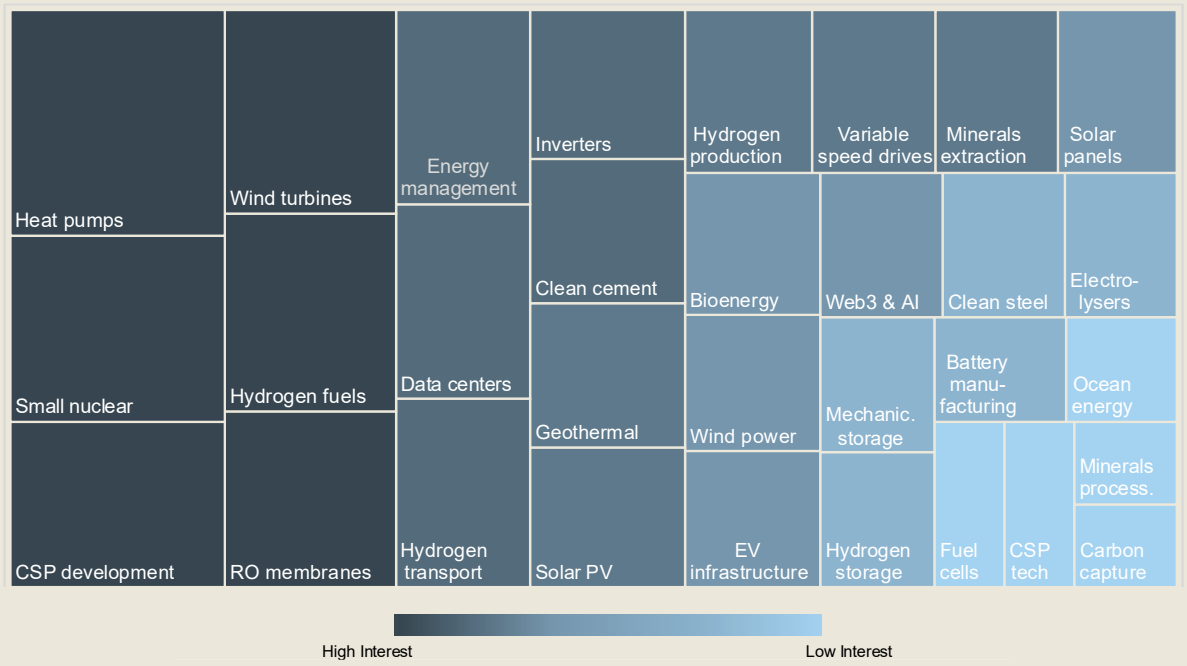


Figure 14: Jobseekers' interests in different technologies and sectors

Wind energy, by contrast, attracts greater interest from male jobseekers and those holding master's degrees, suggesting a more gender-skewed and academically concentrated interest profile. In the case of hydrogen, jobseekers with secondary or diploma-level education show less interest in this sector, while those with vocational training are more likely to express interest. This skewed distribution may pose challenges, as a well-functioning hydrogen industry will require a balanced workforce across education levels and occupational profiles. Taken together, these results underscore the importance of monitoring who is expressing interest in each sector—and, where needed, designing supportive interventions to promote broader participation and alignment with workforce needs.

Jobseekers also express interest in virtually all types of employers, though to varying degrees (Figure 15). The most preferred option is employment with large private companies, followed by government-owned companies and, in third place, ministries or public authorities. These three categories clearly stand out as the most attractive to respondents. Medium-sized and small private enterprises, as well as educational institutions, are also seen as acceptable by the majority, though with lower levels of interest. The only employment form with notably limited appeal is self-employment or founding a company, which received significantly less support compared to the other options. The core interests of jobseekers, particularly at the sectoral level, differ in some respects from those of the existing workforce, as indicated by the workforce survey. While interest in transitioning to green jobs is generally high—more than 75% of respondents reported being somewhat or highly interested—this interest is concentrated in specific sectors. Existing employees show the greatest enthusiasm for roles in energy efficiency, solar PV development, and hydrogen. In contrast, manufacturing-related sectors attract noticeably less interest from the current workforce (Figure 16). Overall, and across all five surveys, there is a consistently high level of commitment to sustainability and the development of green economy and clean energy sectors. In the management survey, nearly 90% of respondents reported that their company was somewhat or very committed to sustainability, while 96% indicated that their company was considering investments in emerging green industries. This view is broadly shared by the workforce, with 80% of surveyed employees expressing similar sentiments. Universities also report strong interest in engaging with green programmes, with 80% of respondents stating that their institution is planning related initiatives. Training centres reflect the same trend, though at a noticeably lower level of engagement.

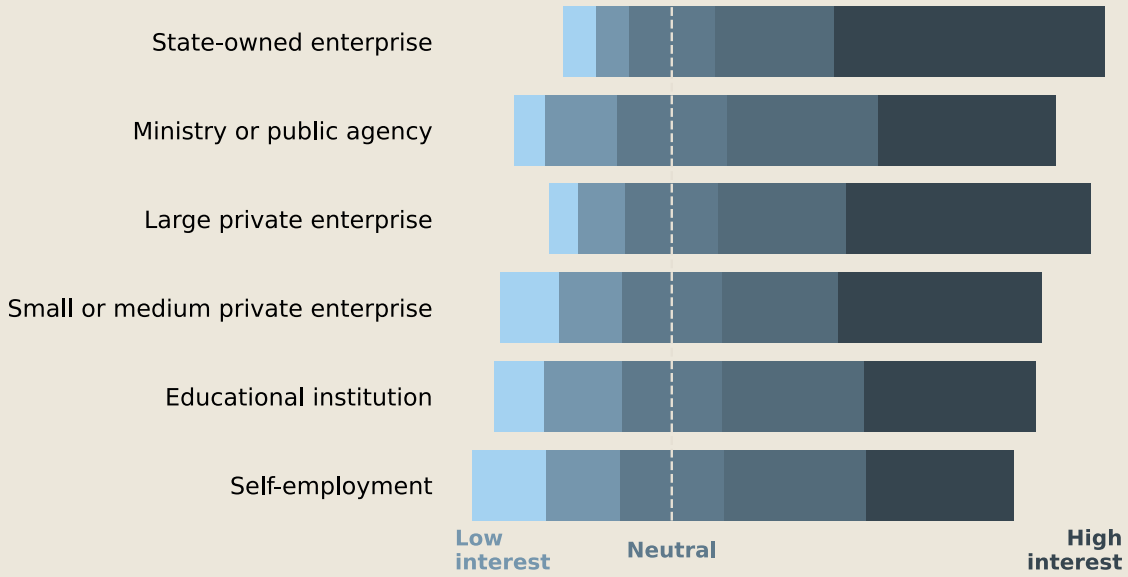


Figure 15: Jobseekers' interest in different types of employers in the green economy

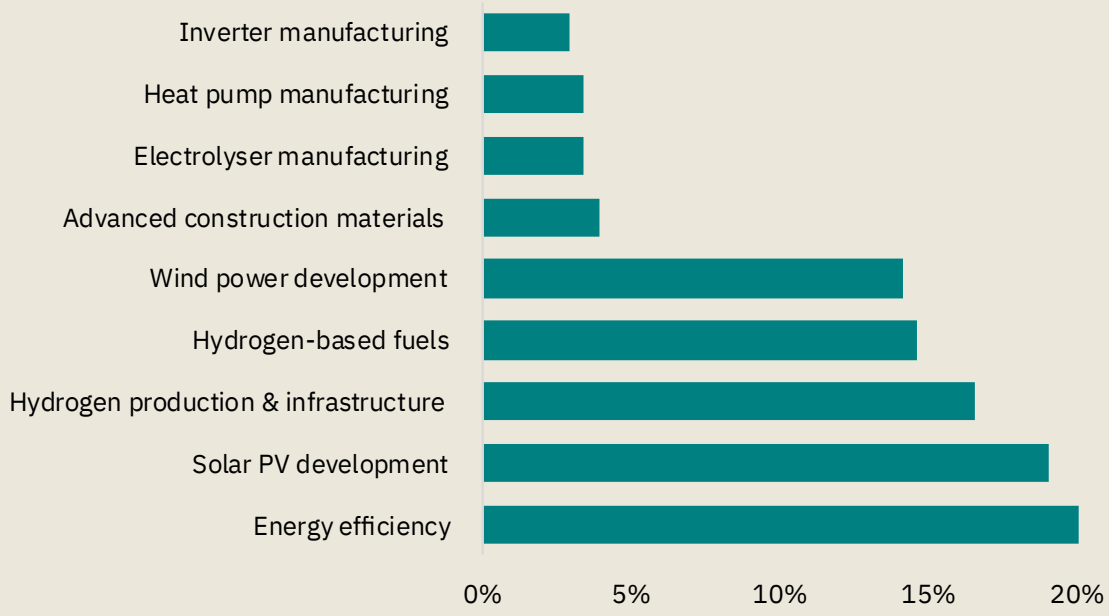
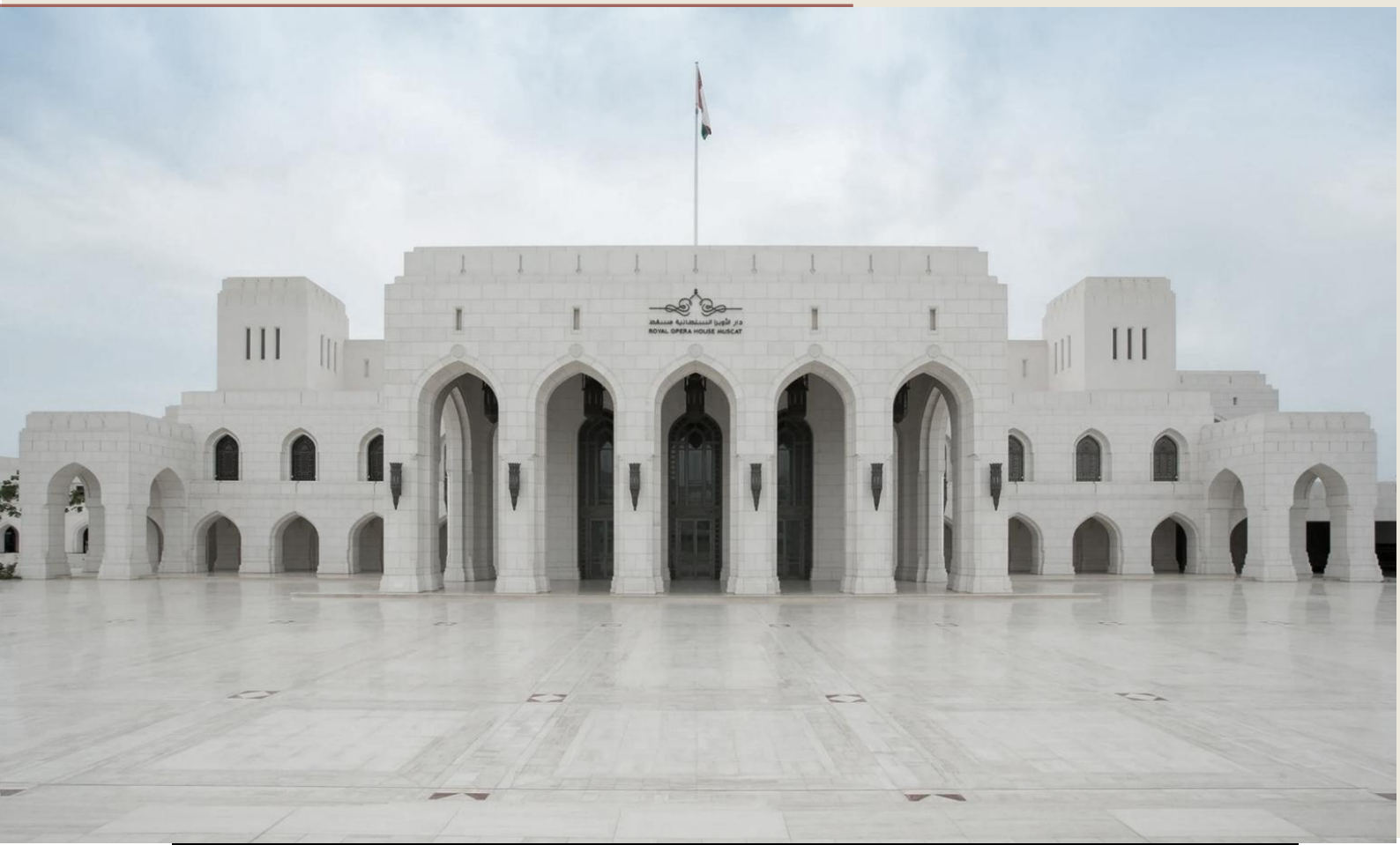
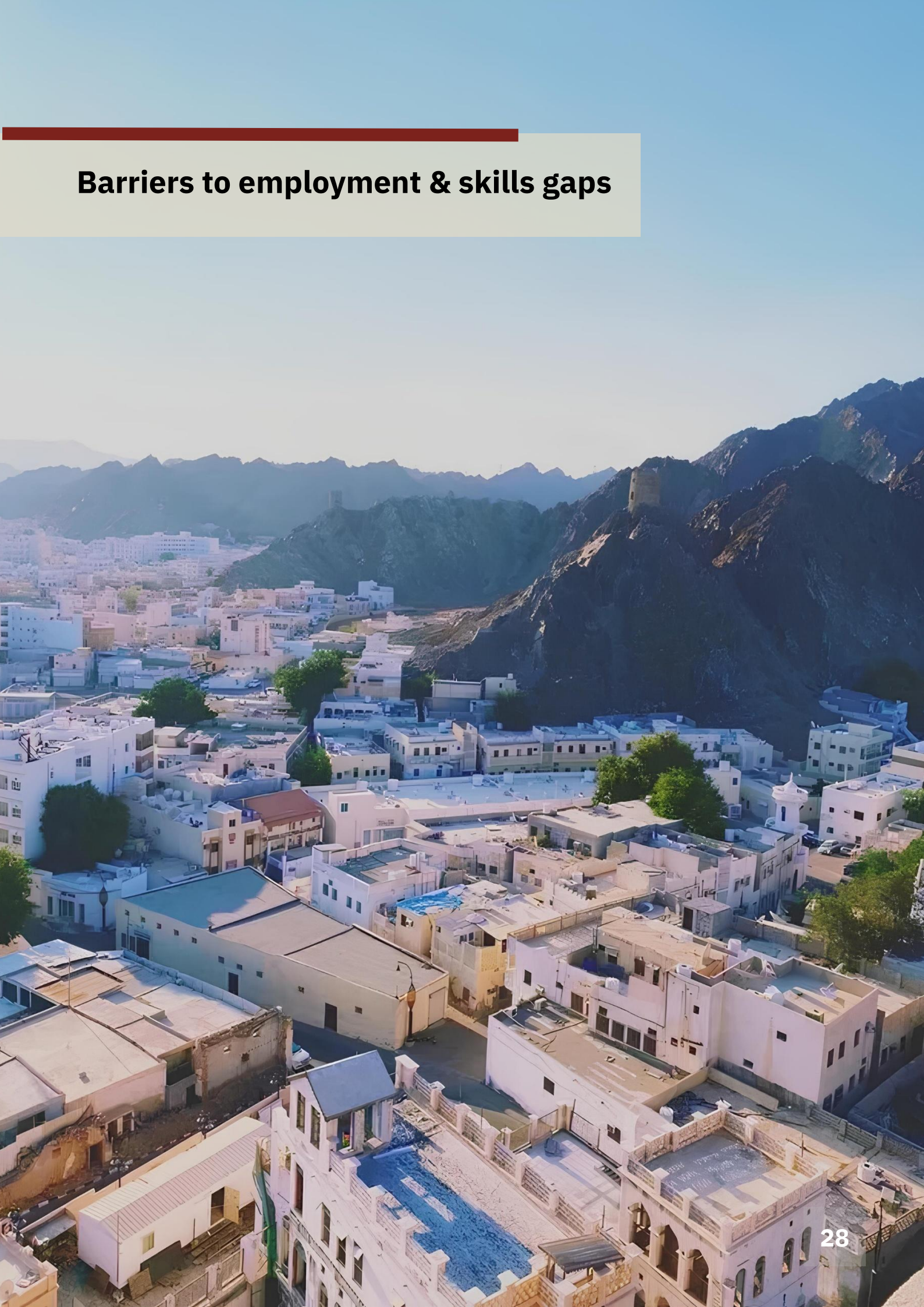


Figure 16: Workers' preferred sectors for employment in the green economy



Barriers to employment & skills gaps



Since overall motivation is well-established—not only among jobseekers but across surveyed groups—the persistence of jobseeker unemployment appears to stem primarily from structural factors. Across all stakeholder groups, limited job opportunities in the green economy are consistently identified as the most significant challenge (Table 1). Management, current employees, and jobseekers all highlight the need for a greater number of green sector roles and clearer pathways. This suggests that the shortage of employment is largely due to the sector still being in an emerging phase. As outlined in the *Oman Clean Energy Labour Outlook*, well-targeted and strategically sequenced investments are essential to expand the sector's absorptive capacity.

A notable caveat to these findings is that respondents in the management survey indicated a clear preference for addressing skills gaps by upskilling existing employees, rather than hiring new staff with relevant qualifications (Figure 18). While this approach may offer benefits for internal workforce development and continuity, it risks reinforcing inertia within the labour market. In particular, it may limit opportunities for recent graduates and jobseekers with emerging skill sets, thereby contributing to persistently high levels of unemployment among new labour market entrants.

To complement the closed-ended results, the jobseeker survey included an open-ended item that invited respondents to freely describe the first and second most important obstacles to employment in the green economy. Unlike the standardised multiple-choice questions used in the other stakeholder surveys, this qualitative format allowed jobseekers to voice their experiences and frustrations in their own words. A machine-learning-based thematic analysis of this dataset reveals a clear structure of perceived barriers, summarised in Table 1, and deepens understanding of how these constraints are felt at the individual level.

The qualitative responses reinforce previous survey findings but also sharpen them. Most notably, jobseekers repeatedly cited the absence of confirmed projects or visible job openings as the main barrier:

"Most green energy projects are still in the planning phase—there is nothing concrete for us to apply to." "Even when projects exist, they are handled by international companies who bring their own staff."

These comments are consistent with earlier observations and reflect a sector in transition: politically prioritised but not yet operational at scale. Without shovel-ready projects or standardised hiring cycles, motivated applicants encounter a vacuum.

A second prominent theme is the perception that experience requirements exclude entry-level applicants. Many respondents described positions demanding five or more years of experience, even in emerging sub-sectors. One jobseeker noted:

"Positions for fresh graduates are extremely rare. They all want experience, but how do we get it if nobody hires us?"

This aligns with employers' stated preference to fill roles internally through upskilling (Figure 18) rather than onboarding new entrants—an approach that reinforces the experience gap and delays the build-up of sector-specific human capital.

A separate but interrelated concern is the perceived preference for expatriate hires. Roughly one-third of respondents explicitly mentioned that foreign nationals are being prioritised, with some alleging that certain nationalities dominate internal hiring chains:

"Once a team is in place, they only hire their own. Omanis are left out." "You see whole departments filled by people from one nationality. It's not a coincidence."

These patterns may persist in areas not typically addressed by existing Omanisation regulations. First, respondents frequently pointed to biases in hiring practices, particularly in international companies operating in Oman.

Table 1: Analysis of Jobseekers' perceived main barriers to employment

Thematic cluster	How often it appears*	Typical wording from replies	Why it matters
1- Scarcity of real vacancies and projects	≈ 70 %	"Few companies", "sector still in concept stage", "no FID yet"	Demand for labour remains thin; even highly qualified youth have limited places to apply.
2- High experience thresholds / preference for proven experts	≈ 40 %	"Fresh graduates not accepted", "ask for 5–10 years' experience", "senior specialists only"	Entry-level candidates face a catch-22; respondents believe employers are filling posts with seasoned hires rather than building local capacity.
3- Nationality-based hiring bias (preference for expatriates)	≈ 30 %	"Employers prefer foreign workers", "العمالة الوافدة تستحوذ", "hire only their own"	Perceived crowd-out of Omani youth frustrates jobseekers and weakens Omanisation outcomes.
4- Informal recruitment practices (wasta & opaque selection)	≈ 25 %	"Reference is needed", "واسطة", "unfair CV filtering"	Lack of transparency adds a hidden barrier even where vacancies exist.
5- Skills mismatch & limited training provision	≈ 25 %	"No specialised curricula", "universities not aligned", "few training slots"	Human-capital readiness lags technological ambition, compounding obstacle no 2 (see above).
6- Salary levels and other financial disincentives	≈ 20 %	"Low pay", "cost of relocation", "financial risk"	Compensation packages often fail to compete with established oil-and-gas norms.
7- Public awareness & social acceptance	≈ 10 %	"Community still prefers fossil energy", "low market demand"	Slower domestic uptake keeps the project pipeline thin.
8- Administrative & regulatory frictions	≈ 10 %	"Complex licensing", "slow approvals"	Red tape delays investment decisions and hiring cycles.

*Percentages are indicative; many respondents mention multiple issues.

Several noted that foreign nationals in HR departments and hiring committees were seen to favour candidates from their own nationality. This was viewed as especially prevalent in technical and expert roles, where certain nationalities were perceived to be consistently overrepresented. One respondent remarked:

"I am Omani and I experienced direct racism and discrimination from the experts and management of the company I used to work for."

Second, responses and follow-up interviews raised concerns about inconsistent enforcement of Omanisation regulations, particularly in large energy-sector firms. While compliance was perceived as stricter in small and medium-sized enterprises, enforcement was described as weaker in larger companies and joint ventures. Respondents pointed to the widespread use of subcontracting—including in oil and gas—as a mechanism that obscures actual hiring practices. Varied ownership

structures and remote operational sites were said to limit regulatory oversight, allowing non-Omani workers to be indirectly employed in roles nominally covered by localisation targets.

Even if these accounts are based on perception, their frequency and specificity suggest that they warrant policy attention. Widespread frustration over perceived unfairness in hiring—particularly when linked to nationality—risks undermining confidence in Omanisation policy and in the green economy more broadly. Given the nature of these concerns, simply tightening Omanisation quotas may not be the most effective response. Instead, more targeted measures may include requiring the full Omanisation of HR functions in large firms to reduce internal bias, strengthening compliance monitoring in the energy sector—including in subcontracting chains and through on-site checks inside facilities—and improving transparency around workforce composition and hiring authority at all operational levels.

Coupled with frequent references to *wasta* and informal CV filtering, the data point to a broader sense of procedural exclusion. Roughly one in four jobseekers expressed the belief that connections or insider access played a greater role than qualifications in landing interviews. One wrote:

"Unless someone inside helps you, you're not even considered." "Even when I apply and qualify, I don't get called. But others from certain countries get hired right away."

The resulting frustration is not just about job access, but about loss of trust in institutional fairness, particularly among younger and better-educated Omanis.

In contrast, salary expectations did not emerge as a central barrier from the perspective of jobseekers. Many acknowledged that green-economy roles may not initially match compensation levels in oil and gas, and stated a willingness to accept modest pay if the role offered credibility and growth (Figure 12).

"We're not asking for oil-and-gas salaries. We just want a real opportunity to start."

This stands in contrast to currently employed professionals surveyed (Figure 19), who often expect salaries exceeding 2,000 OMR (40%) or even 3,000 OMR (25%). The divergence points to an important mismatch in expectations between incumbents and new entrants, with jobseekers appearing more focused on access and recognition than immediate financial reward. This point is particularly relevant, given that companies show an inclination towards internal upskilling rather than employing jobseekers (Figure 18) and offers approaches for improvement.

A smaller number of respondents also mentioned geographic and social constraints, especially for roles located far from urban centres or those requiring relocation to remote project sites. A few referenced family obligations or the lack of female-oriented job structures, though this was not a dominant theme—as mentioned, the majority of jobseekers shows a high degree of mobility (Figure 11).

A determinant among all surveys and detailed responses are, however, skills gaps (Figure 20). Managers point to misalignment between university education and industry needs, particularly with respect to green economy competencies. The employed workforce echoes these concerns, citing limited preparation and unclear career pathways. Jobseekers, meanwhile, acknowledge some specific skill limitations but do not perceive general skills mismatches as the main obstacle—instead, they often identify high experience requirements as a barrier to entry.

Survey-based insights into stakeholder perceptions (Table 2) offer further nuance. Across the five groups—managers, current employees, jobseekers, universities, and training centres—distinct perspectives emerge on the skills most relevant for employment in Oman's growing clean economy. Among employer-side actors (managers and current employees), there is strong convergence on a practical skills bundle. Industry-specific knowledge, project-management capability, business literacy, and technical proficiency are all rated well above group averages, forming a core of applied competencies deemed essential to operational continuity and green-sector expansion.

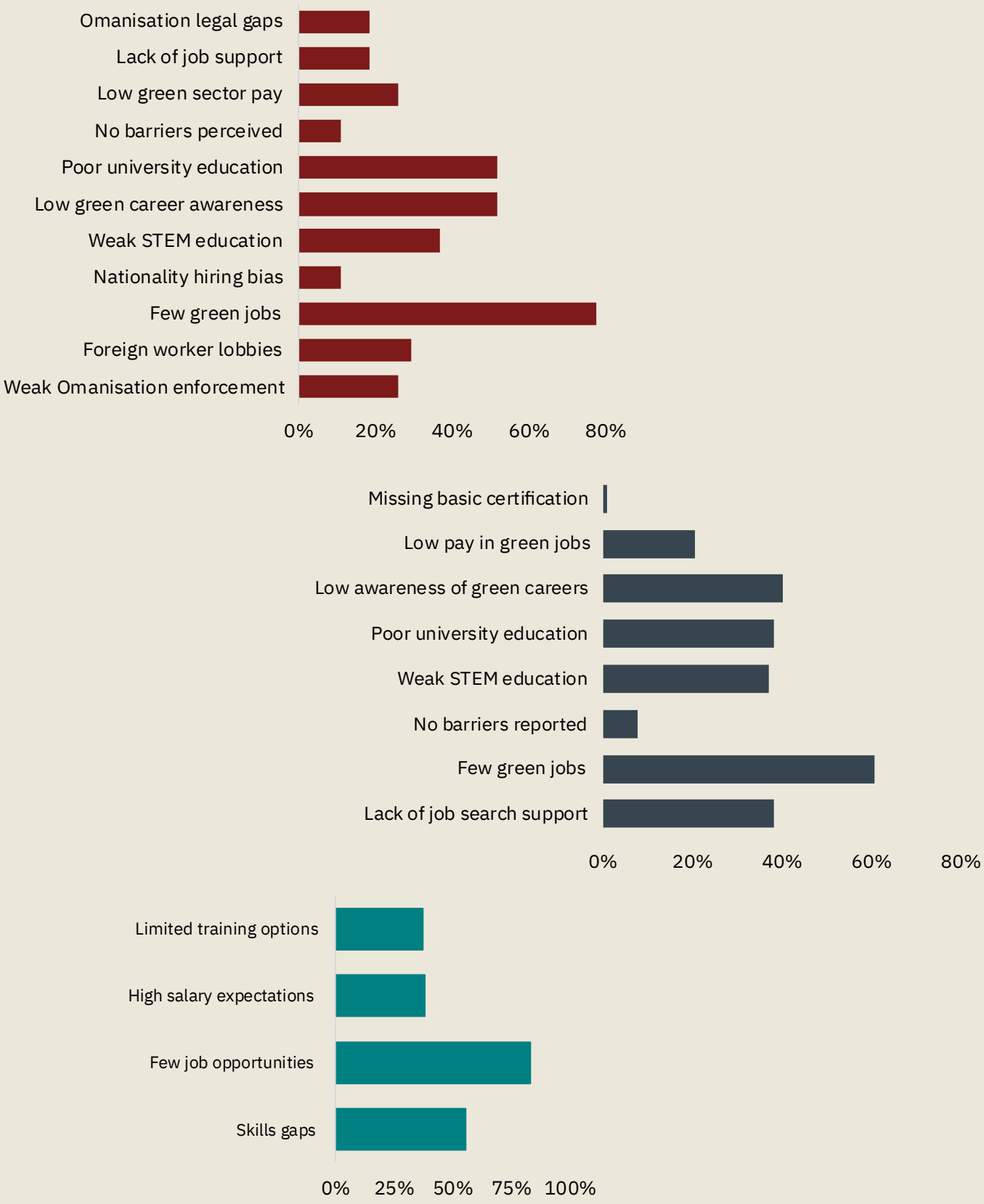


Figure 17: Perceptions of managers, workers, and jobseekers regarding barriers to employment in Oman's green economy

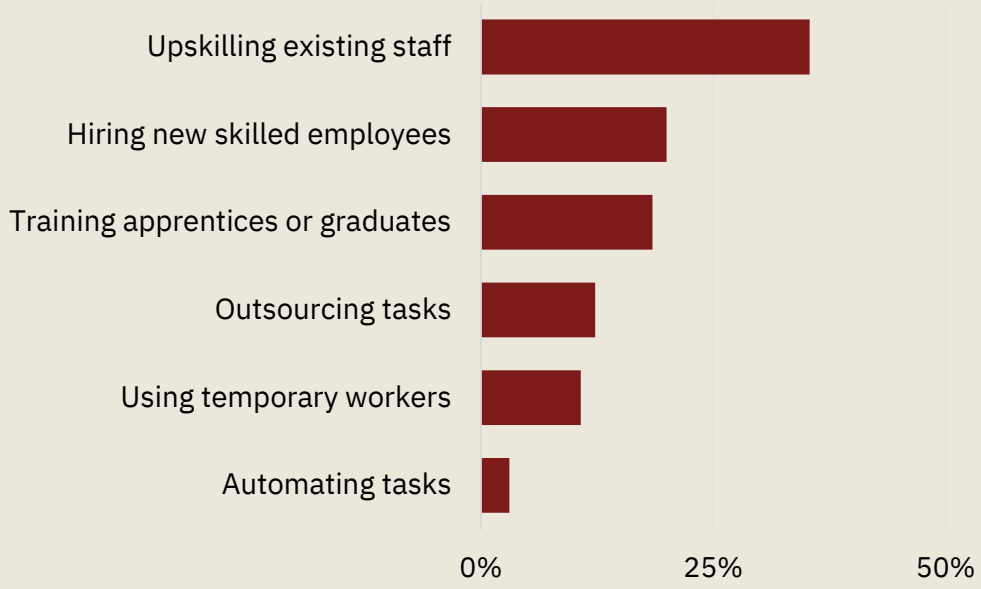


Figure 18: Management's typical responses to skills gaps in the workforce

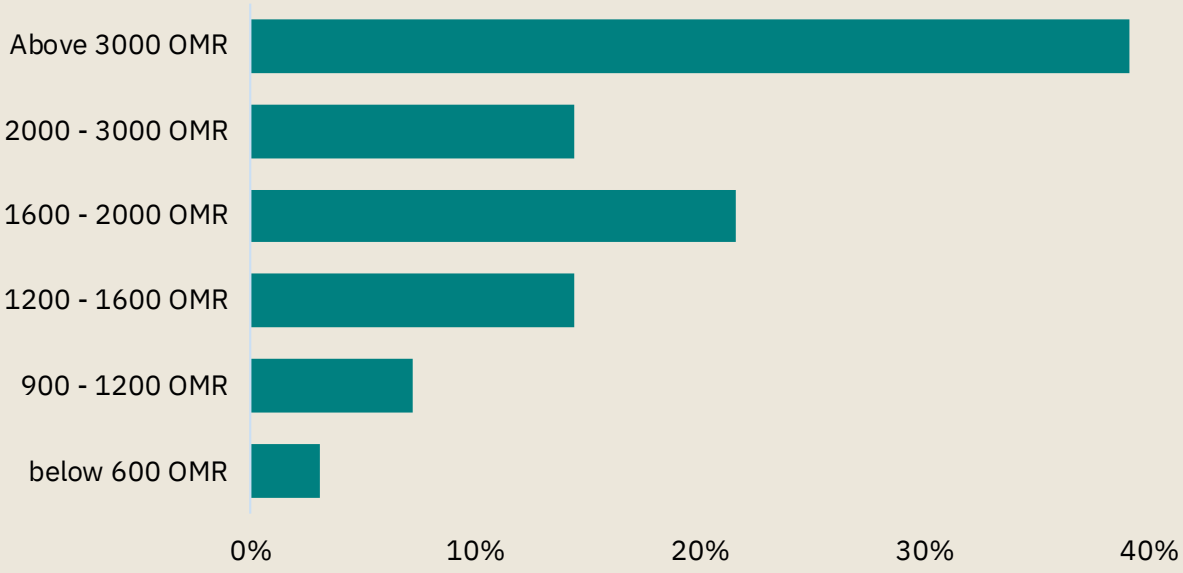


Figure 19: Workers' self-reported expected monthly income in OMR for jobs in the green energy sector

Table 2: Perceived importance of various skills throughout all survey groups

Top 3 perceived skills	Managers	Jobseekers	Workers	Universities	Training centres
Rank 1	Project management	IT	Manual work	Sustainability	Industry-specific knowledge
Rank 2	Technical skills	Management	Management	Industry-specific knowledge	Sustainability
Rank 3	Industry-specific knowledge	Interdisciplinary	Communication	Innovation	Research

(among available data)

Managers and employees diverge, however, in their assessment of communication skills: current employees consider them essential, whereas managers assign them lower relative importance.

By contrast, supply-side actors—jobseekers, universities, and training centres—show a markedly different emphasis. Training centres and universities exhibit broadly similar profiles, placing major focus on industry-specific skills and sustainability, followed by technical and domain-focused competencies, while downplaying the relevance of communication skills. Their outlook appears centred on traditional hard skills, with limited attention to cross-cutting or intersectoral competencies. Jobseekers, on the other hand, prioritise digital literacy and communication (including advocacy), while placing considerably less emphasis on sector-specific expertise.

These divergences point to two distinct types of mismatch. First, a priority mismatch: supply-side actors place greater emphasis on emerging or transversal skills—particularly IT and sustainability—than do employers, for whom these are not yet central. Second, a depth mismatch: employers consistently signal demand for applied, experience-based competencies such as project management and sector-specific know-how.

While universities and training institutes address some of these topics, their offerings often fall short of producing workplace-ready graduates. Communication skills also emerge as a contested area: while jobseekers and employees view them as central, both educators and human resource planners appear to underestimate their relevance.

Moving into the question of readiness across different clean energy and green economy fields (Figure 20), responses from managers and HR professionals indicate an overall mid-level of preparedness. While many believe there is a reasonable foundation of skills to build upon, fewer than 10% consider the workforce to be excellently prepared. The vast majority classify current skill levels as moderate, with some variation across sectors. For example, in areas such as clean cement and concrete, confidence in existing skills is particularly low, whereas for solar PV development, slightly higher readiness is assumed.

Among current employees (Figure 21), scepticism regarding sector-specific skills appears even more pronounced, though with some shifts in emphasis. Compared to management, employees express relatively more confidence in solar PV and energy efficiency measures, but lower trust in areas such as hydrogen-based production, mineral sectors, and final goods manufacturing. Despite these nuances, both groups ultimately arrive at a similar conclusion: the current skills base across most clean economy sectors remains limited.

However, the potential skill gaps and mismatches extend beyond technical competencies (Figure 22) More than one-third of surveyed managers explicitly stated that most job applicants lack sector-specific skills. Even more strikingly, nearly 20% of respondents believe that applicants are missing basic

foundational skills, such as reading and understanding instructions. In addition, around one in ten managers indicated that even writing instructions is a commonly lacking ability among applicants.

The data therefore indicate that skills gaps persist at several levels, with implications for both sector-specific workforce readiness and broader labour market alignment.

i. Technical and green economy–related skills: Across both manager and current workforce surveys, respondents report lacking sufficient preparation for roles specific to the green economy. This suggests a need for re- and upskilling initiatives, and for better integration of technical green skills into vocational and higher education curricula (see relevant chapters).

ii. Diverging perceptions: The surveys reveal misalignment in how different groups perceive priority skills for the green economy. While employers emphasise applied and industry-specific capabilities, other actors—such as jobseekers, universities, and training centres—highlight transversal or emerging skills. These differences risk reinforcing mismatches if not addressed.

iii. Gaps in general and foundational skills: In addition to sector-specific needs, several surveys point to shortcomings in basic competencies—such as communication, numeracy, or IT—that are broadly relevant across occupations. These foundational gaps may contribute to high jobseeker numbers by limiting employability even outside green sectors.

Stakeholder perceptions of why these mismatches persist provide further insight into where corrective action is most urgent (Figure 23). Across managers, higher-education institutions and training centres, two causal factors stand out: misalignment between university curricula and green-sector requirements, and schools that still prepare students inadequately for specialised green skills. In each survey these issues attract the highest average importance scores, signalling broad recognition that the formal education pipeline remains the primary bottleneck to workforce readiness.

The surveys also reveal a shared de-prioritisation of family expectations. All three groups assign "family pressure favouring traditional careers" near-identical, mid-range rankings, collectively regarding it as a secondary—not negligible—constraint. This convergence implies that cultural considerations, while relevant, are unlikely to deliver major improvements on their own without simultaneous reforms to education and labour-market institutions.

Divergence emerges most clearly around the clarity of labour-market signals. Training centres view "private sector unclear about green skill needs" as one of the most critical impediments, whereas managers place it last. A similar, though less pronounced, split appears in assessments of "public sector lacking green career guidance": higher-education providers and training centres consider improved guidance essential, while employers see it as comparatively peripheral. These findings point to information asymmetries as a key driver of mismatches.

Taken together, the evidence highlights two linked levers for reducing skills mismatches. Clearer labour-market signals—through employer engagement, transparent occupational standards and coordinated public guidance—must give education providers timely benchmarks. At the same time, the strongest stakeholder consensus centres on the quality and relevance of formal education itself.

Perceptions of how well universities equip graduates for employment in clean-economy fields are uneven—and in key respects rather unfavourable—once the views of those already inside the labour market are considered. Only about one in five members of the current workforce rate their preparation as "good" or "excellent", and almost half judge it "poor" or "inadequate". Managers are similarly cautious: barely one-third offer a positive assessment, while a comparable share describe graduate readiness as inadequate. Jobseekers, by contrast, express marked confidence, with nearly 60 % awarding favourable ratings.

This optimism reflects trust rather than tested outcomes. Because graduates rely heavily on universities to define what matters in the labour market, they seldom supplement classroom learning with self-directed upskilling. In settings where confidence in university provision is lower, students often compensate through additional certificates or internships; in Oman, the high baseline of trust magnifies the responsibility borne by higher-education providers—if curricula lag, graduates reach the labour market under-prepared yet unaware of the gap.

Overall, the mixed ratings suggest that university programmes do not yet deliver consistent, work-ready skills for clean-economy roles. Given students' strong reliance on their institutions, the onus on higher-education providers to align teaching with industry needs is especially great. Fulfilling this mandate will be critical not only to individual employability but also to the pace at which Oman can capture emerging opportunities in its clean-energy sectors. The next sections therefore examine more closely how well the education system is positioned to meet this responsibility

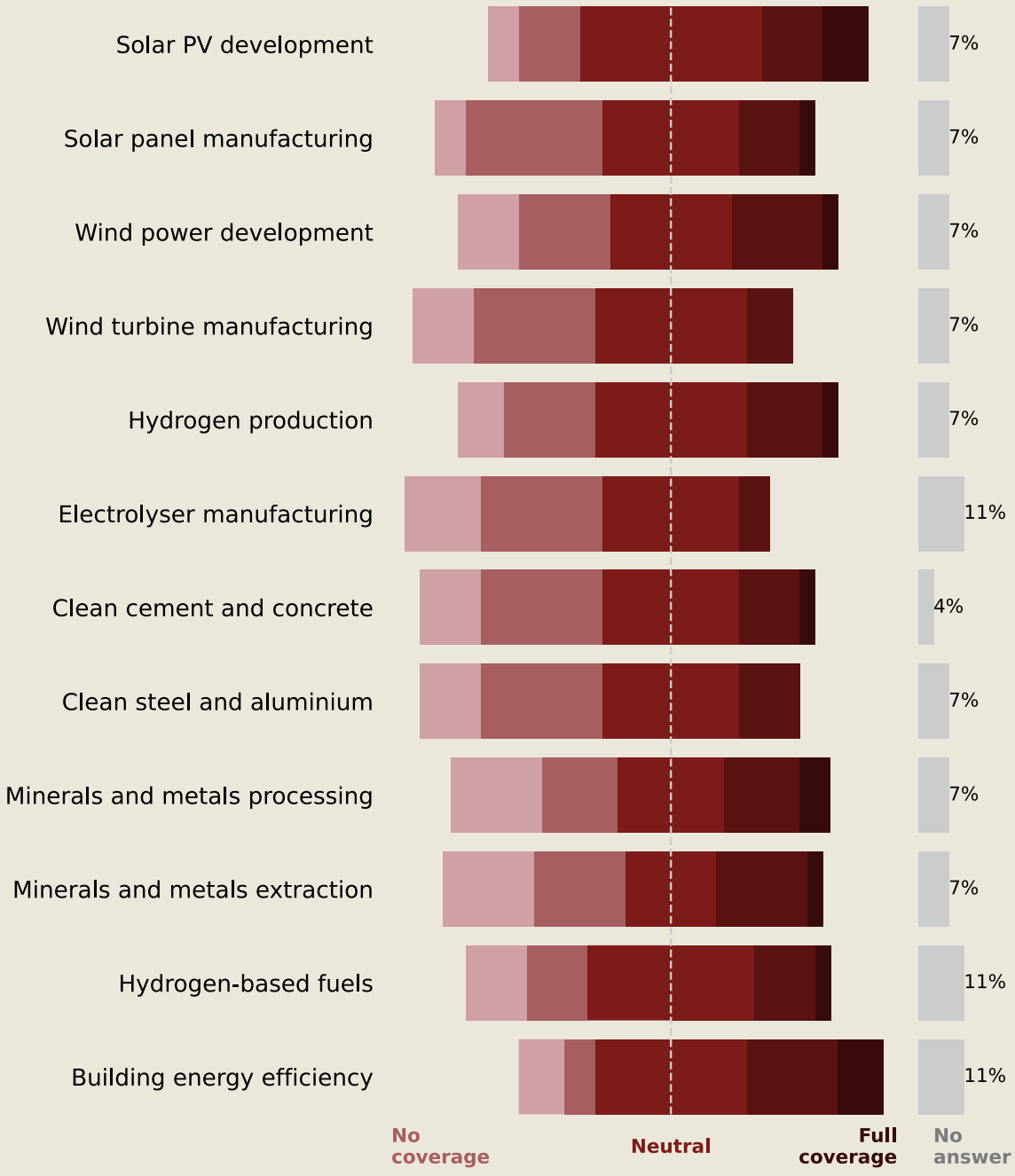


Figure 20: Managers' assessment of current employees' skills, experience, and knowledge in green energy and clean technologies

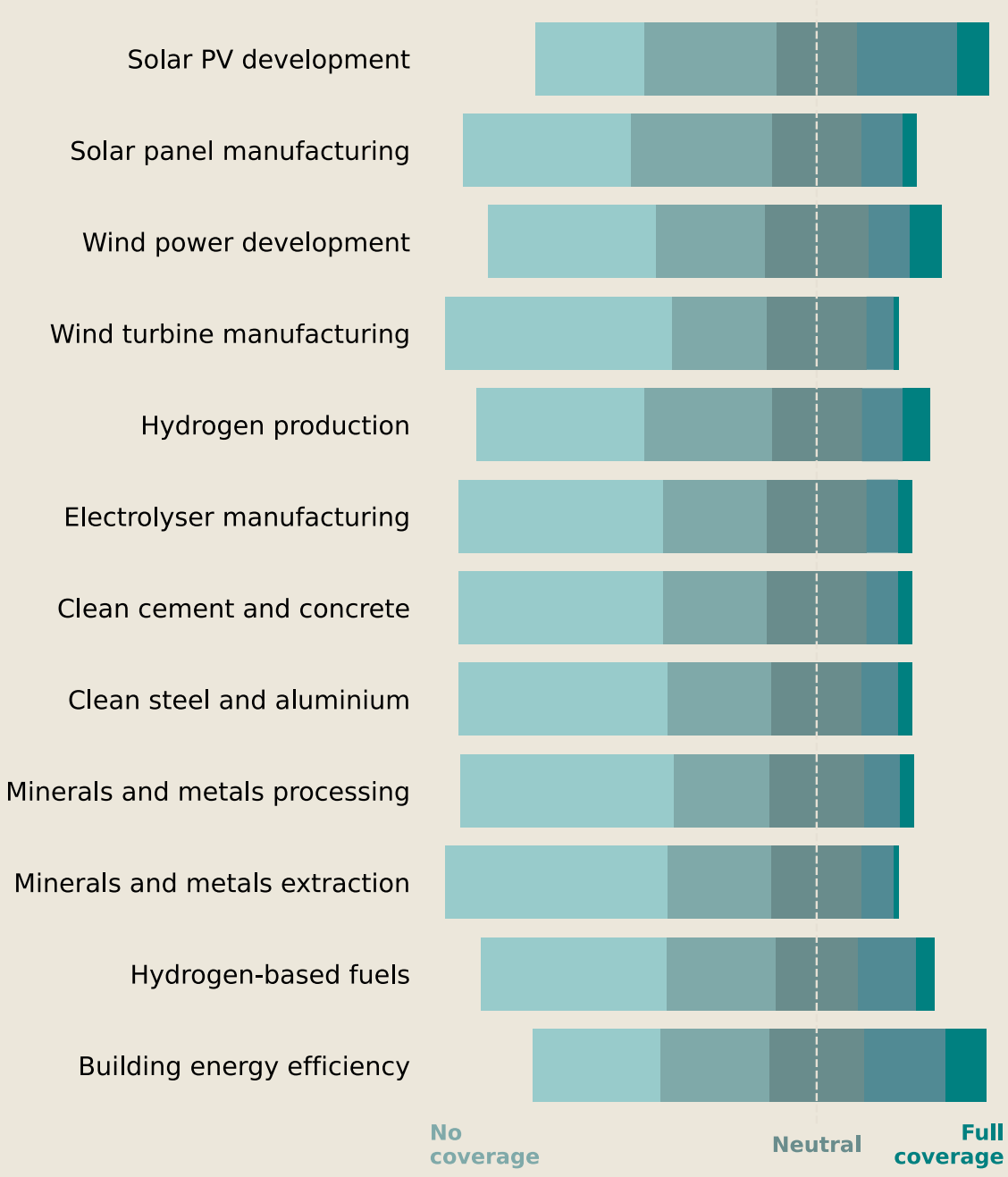


Figure 21:Workers' self-assessed readiness for roles in green energy and clean technologies

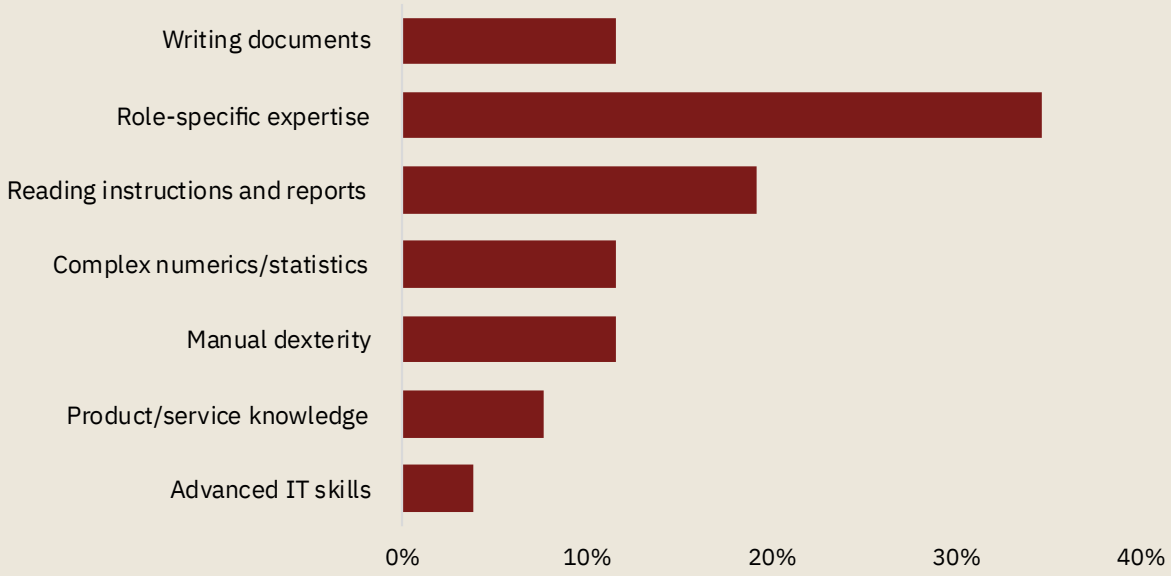


Figure 22: Managers' views on technical skills most commonly lacking among job applicants

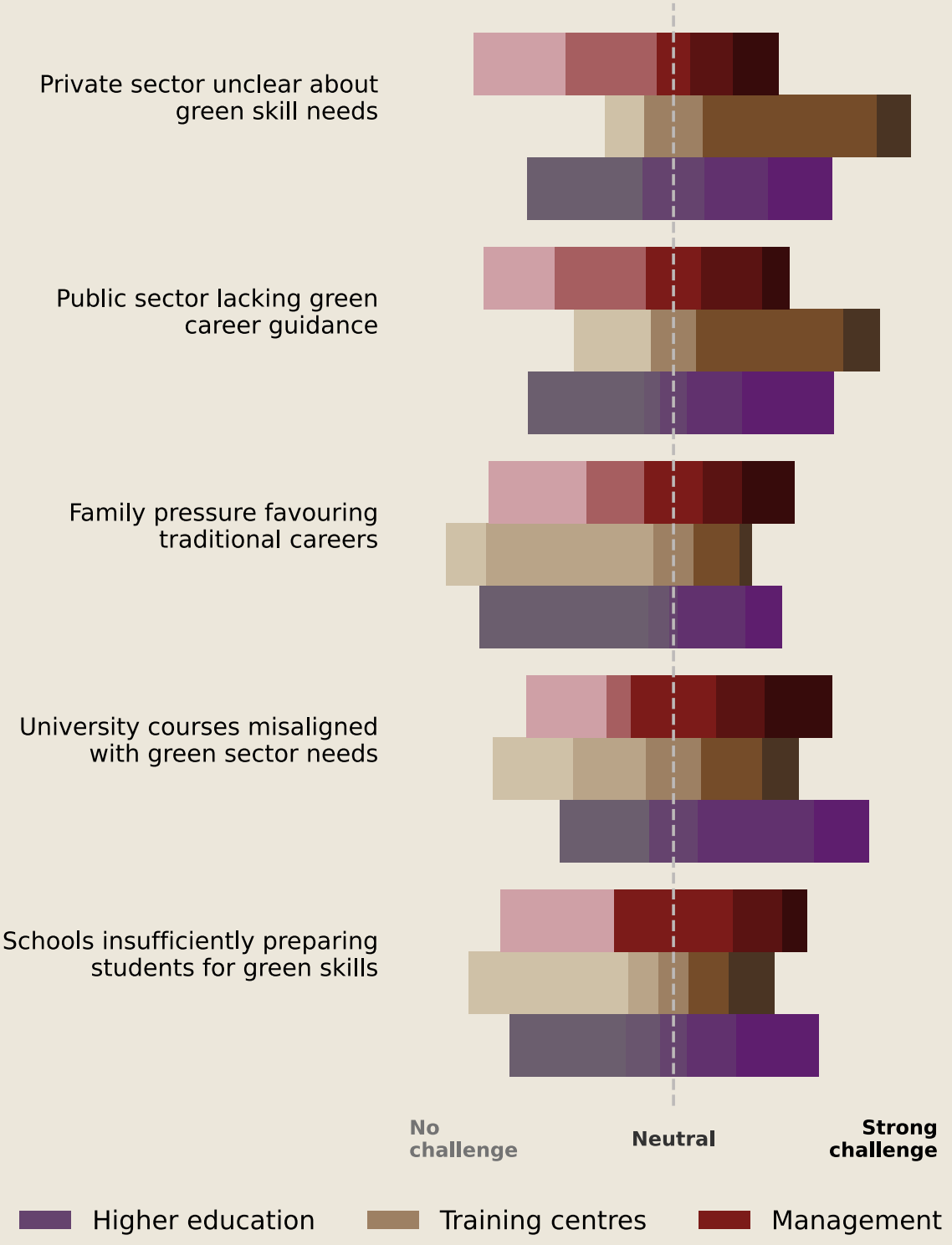


Figure 23: Views of managers, higher education institutions, and training centres on the main causes of skills mismatches in the green economy and clean energy sectors

Green skills in schools and vocational training

Education is fundamental for driving forward the clean economy. As green sectors develop and diversify, the education and training systems must adapt to ensure that both new en trants and existing workers are prepared for emerging roles. This includes not only technical capabilities but also broader competencies in sustainability, systems thinking, and environmental responsibility. Four distinct stages of education prepare students for jobs in the green economy:

i. School education
ii. Vocational colleges and training centres
iii. Higher education institutions
iv. Continuing education and professional development

Whereas the latter two are essential for cultivating advanced knowledge and skills, the former two provide foundations and applied skills.

School education plays a vital role in shaping students' understanding and awareness of green industries from an early age. By integrating green concepts across various subjects—starting in primary school and continuing through middle and high school—students can develop a foundational grasp of sustainability, renewable energy, and environmental stewardship. Early exposure to these topics fosters interest in green skills and sectors, helping ensure that by the time students reach higher education, they possess a strong knowledge base and appreciation for the green economy. In Oman, it is essential that pupils acquire this foundation before entering university, enabling them to contribute meaningfully to the country's green transformation.

Introducing green concepts in a balanced, structured, and realistic manner is also important to ensure that students make informed decisions about their future career paths. Avoiding exaggerated or overly optimistic portrayals of green sectors can help prevent impulsive educational choices that may lead to mismatches with actual labour market needs. Oman has seen recent examples of this challenge: the over-promotion of computer science and software degrees has led to an oversupply of graduates (see next section), while the widespread focus on management studies has not aligned with domestic demand, resulting in high unemployment in both areas. By addressing the fundamentals of green sectors clearly and realistically, schools can help students develop a nuanced understanding of both the opportunities and limitations in these fields—supporting career decisions that align with their interests and with market realities.

The Ministry of Education has taken different steps to prepare students for future roles in the green economy (Figure 24). These efforts include embedding sustainability and renewable energy themes across the national curriculum from primary through secondary levels; collaborating with industry partners on initiatives such as the Green Schools Project; and supporting green-themed competitions and awards. Environmental science has also been introduced as a dedicated subject at the high school level. In addition, the Ministry supports career orientation through guidance centres and supervisors who help students explore pathways into green sectors.

Vocational education is a cornerstone of Oman's strategy to equip its workforce with the technical skills required for emerging sectors, particularly within the clean economy. The landscape comprises Colleges of Technology, government vocational colleges, and private training providers, each contributing to skill development at different levels. Colleges of Technology—now consolidated under the University of Technology and Applied Sciences (UTAS)—offer applied programmes in engineering, IT, and business across seven regions, ensuring geographic alignment with the country's industrial expansion. Government vocational colleges complement this with occupation-specific training for school leavers and jobseekers, focusing on practical, job-ready skills in sectors such as construction and mechanical services.

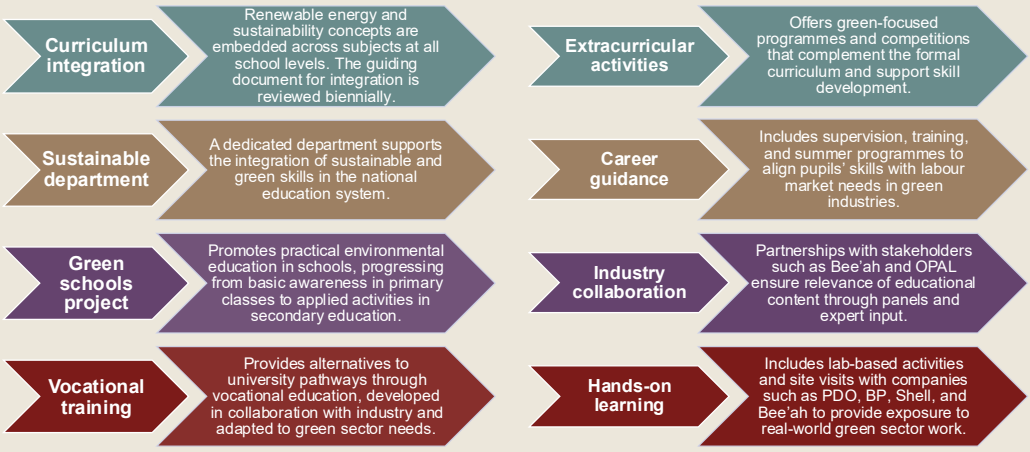


Figure 24: Key Efforts by the Ministry of Education to Prepare the Next Generation for the Green Economy

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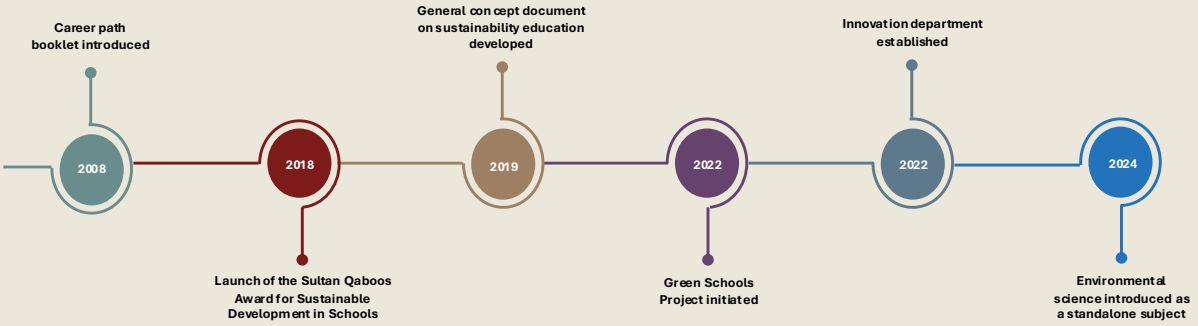


Figure 25: Green Initiatives Milestone by the Ministry of Education

Private training institutes add flexibility to the system through short- and long-term programmes, although quality and alignment with labour market needs vary (Box 1). To ensure consistency across providers, the National Occupational Standards and Testing Centre defines competency benchmarks for various vocations and guides curriculum and assessment development. These standards are now being expanded into high-priority and green economy areas such as solar, wind, and hydrogen. The Labour Market Intelligence Analysis (LMIA) offers the first coordinated framework to inform this effort, aligning vocational training provision with national workforce planning objectives.

While the current training offer includes a range of general technical and support-focused programmes, only a limited number are directly tailored to the needs of green sectors (Table 4). Some courses—such as those on sustainability, environmental management, or renewable energy—are relevant, but much of the provision remains broad and not specifically aligned with occupations in clean energy fields. This points to an opportunity for expanding specialised content in areas such as solar PV installation, energy efficiency in buildings, wind energy maintenance, and hydrogen systems. Developing targeted programmes in these fields could strengthen the contribution of vocational training to Oman's green economy objectives and help address emerging skill gaps in a more structured and proactive manner.

Box 1: Sohar Aluminium Training Institute – Lessons from Employer-Led Training

Responding to local skills gaps in industry:
The Sohar Vocational Training Institute (SITI) was established by Sohar Aluminium in 2008 to address a critical shortage of practically skilled professionals in Oman's industrial workforce. Despite increasing numbers of vocational graduates, the company found that many candidates lacked the applied skills necessary for safe and effective performance in complex industrial environments. To bridge this gap, SITI began as an internal training centre focused on preparing new hires for operational roles. By 2016, it had evolved into a formal institute offering structured programmes aligned with national education and training standards.

Developing a targeted, industry-specific model
SITI's training offer covers eight core technical areas relevant to Sohar's industrial base. These include welding, mechanical and electrical systems, hydraulics, pneumatics, instrumentation, and programmable logic controllers (PLC). The curriculum is designed to meet specific workplace requirements and includes not only technical instruction, but also safety training and soft skills development. Trainers are typically drawn from industry and bring practical knowledge of equipment, processes, and plant conditions. This approach aims to ensure that graduates are prepared to operate effectively in real working environments, without requiring extensive on-the-job retraining.

High upfront investment, long-term workforce development
Establishing the institute involved significant capital expenditure, particularly in developing and maintaining specialised facilities and equipment. These include dedicated workshops and advanced labs that support hands-on training to industrial standards. While such investments are often considered cost-prohibitive, Sohar Aluminium viewed them as necessary to ensure training quality and reduce long-term reliance on foreign expertise. The institute operates under the regulatory oversight of the Ministry of Higher Education, Research, and Innovation, and its programmes comply with relevant national frameworks.

Expanding reach beyond the founding company
Although SITI was created to serve the needs of Sohar Aluminium, its scope has expanded in response to interest from other firms. It now provides training services to additional companies in the Sohar industrial zone and has received inquiries from outside Oman. This broader uptake reflects ongoing demand for applied training that is closely aligned with industry needs, particularly in sectors where general vocational institutions may not offer sufficient technical depth or plant-based exposure.

Lessons for workforce localisation and industrial planning
The SITI model highlights several relevant considerations for Oman's wider training and employment system. First, it shows how targeted employer-led training can reduce dependency on foreign labour in specialised industrial roles. Second, it illustrates the importance of locating training provision within or near industrial zones to improve access and contextual relevance. Third, it demonstrates how curriculum design informed by operational requirements can reduce transition costs and improve job readiness.

Implications for policy and replication
SITI's experience aligns with several strategic objectives under Oman Vision 2040, including workforce localisation, private sector participation in training, and economic diversification. While not all employers may be positioned to replicate such a model independently, the case suggests potential for co-developed training initiatives in partnership with major industrial employers. Similar models may be relevant for sectors such as renewable energy, manufacturing, and hydrogen, where workforce needs are both specialised and evolving rapidly.

Table 3: Classification of Specializations in Vocational Colleges & Relevance to Oman's Future Green Industries

Category	Specialisations	Relevance to Oman's Green New Industries
Electrical and Mechanical Specialisations	• Electronic Instrument Maintenance • Building Electricity • Industrial Electricity • Mechatronics • Automotive Maintenance Technology • Machining Mechanic • Marine Engines Mechanics	• These specialisations are essential for the operation and maintenance of renewable energy systems (e.g., solar and wind), as well as manufacturing plants for electrolysers, solar PV panels, wind turbines, steel, aluminium, cement, and hydrogen infrastructure. • Electricians and mechanical technicians are critical for installing electrical and mechanical systems in green energy projects. • Mechatronics and automation play a key role in the design, operation, and optimisation of energy-efficient systems.
Design and Drafting Specialisations	• Design and Decoration • Draftsman	• Draftsmen and designers are essential for conceptualising and planning renewable energy projects such as solar parks, hydrogen facilities, and wind farms • During the construction phase, drafting professionals ensure efficient design layouts and infrastructure planning for green projects.
Sales and Marketing Specialisations	• Specialised Sale & Marketing	• Green industries, including hydrogen, renewable energy, and clean manufacturing sectors, need skilled professionals to market sustainable products and services. Such as solar PV salesperson. • Sales specialists will play a key role in promoting energy-efficient products and solutions to businesses and consumers.
Agriculture and Fisheries Specializations	• Plant Production • Navigation of Fishing Vessels • Seafood Safety and Quality Control • Aquaculture	• Green Agriculture and Fisheries: Skills in sustainable agriculture, fisheries, and food production are critical for ensuring environmentally friendly practices in line with Oman's green economy vision. • These specialisations support sustainable resource management in fisheries and aquaculture.

Green skills in higher education

Higher education institutions and training centres are pivotal in developing the specialised skills required for employment in clean-economy sectors. Beyond technical knowledge, they act as a bridge between emerging industry needs and the workforce, shaping both sector-specific expertise and broader competencies vital for adapting to evolving technologies and sustainability standards. As Oman advances its clean-economy goals, aligning curricula and training content with practical industry requirements will be crucial to ensure graduates are adequately prepared for green-sector roles.

In 2022, the highest student numbers were in Management and Commerce, Engineering and Related Technologies, Education, and Information Technology. While these fields have consistently attracted high enrolment, this concentration raises concerns about the labour market's capacity to absorb graduates, particularly in commerce-related disciplines (Box 2). Fields essential to Oman's green economy transition, such as Environmental Engineering, remain underrepresented. This is not an immediate shortcoming given current low demand, but should the green economy expand as expected, gaps in human capital could impede the Omanisation of emerging roles.

A key question is whether to establish these emerging disciplines domestically or to send more students abroad for training. This strategic "rent or buy" decision depends on the long-term scale and stability of new sectors. Fields likely to generate significant employment should ideally be taught locally to build domestic expertise, while areas with limited or uncertain demand may be better addressed through figure overseas education to avoid unnecessary investment.

Resolving this uncertainty will require coordinated planning among policymakers, sector stakeholders and educational institutions, or interim measures to absorb graduates until domestic opportunities develop—such as international placement partnerships. In all cases, higher education providers must recognise the growing need to prepare graduates in green-economy fields.

The current oversupply of graduates in areas such as commerce and information technology underscores the need for better alignment between education and labour market demand. In these fields, where skillsets may be transferable (see the report Building Workforce Readiness: The Oman Clean Energy Labour Outlook), targeted upskilling or retraining could help address both existing surpluses and emerging green-sector opportunities. Integrating green-sector content into Oman's higher education and training landscape is a critical step towards preparing the workforce for future demands in the clean economy. However, this does not mean creating narrowly specialised degree programmes focused solely on individual green sectors. Instead, the priority is to embed green-related topics into existing, broad-based disciplines—such as electrical engineering, mechanical engineering or management—so that graduates acquire solid, versatile foundations alongside sector-specific knowledge. Employers ultimately require professionals who possess general technical or managerial skills enriched with relevant green-sector competencies, rather than graduates of highly specialised niche programmes that risk being too narrow for the evolving labour market (see Report Developing Clean Energy Industries and Workforce: Case Study Insights).

Universities identify clear gaps in coverage across several key sectors (Figure 26). While energy-efficiency topics are relatively well integrated, manufacturing-oriented domains—such as solar-panel and wind-turbine production, electrolyser fabrication, and advanced materials processing—remain underrepresented. Mid-stream and downstream hydrogen activities are also only partially addressed. These gaps point to the need for targeted content within general engineering programmes to ensure graduates are equipped for the demands of emerging clean industries.

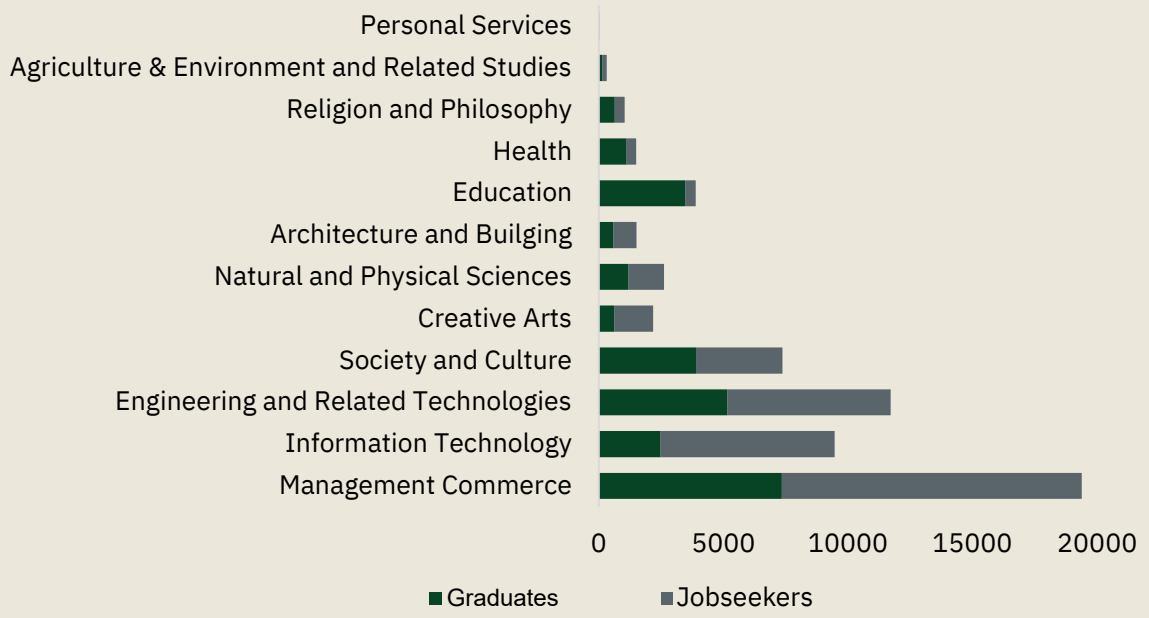
Box 2: Overview of Oman's Higher Education Landscape and Labour Market Linkages

Oman's higher education sector has grown significantly over the past decade. Between the 2009/2010 and 2022/2023 academic years, the number of higher education institutions rose from 58 to 71, comprising public and private universities, university colleges, and specialised institutes. Collectively, these institutions enrol more than 125,000 students—approximately 3 % of the total population—alongside around 8,000 Omani students pursuing studies abroad.

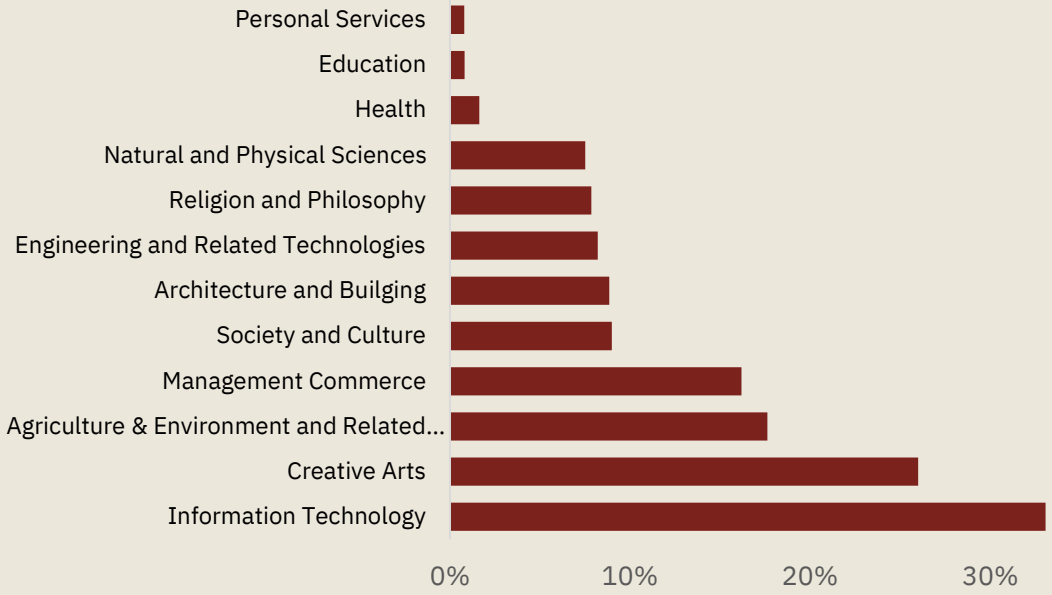
Historically, enrolment in public institutions has exceeded that in private ones. However, this gap has narrowed in recent years, particularly since 2019. As of the 2022/2023 academic year, private institutions accounted for 47 % of total enrolment. Gender distribution in higher education remains notably imbalanced, with women comprising 57 % of all students—a reflection of sustained higher female participation in post-secondary education in Oman.

Most students are enrolled in bachelor's degree programmes, which remain the dominant qualification across the sector. This pattern reflects the structural focus of many institutions on undergraduate education. Nonetheless, there is a case for broader diversification of qualification levels. On one hand, expanding postgraduate programmes could help address labour market needs in fields requiring advanced expertise, where Oman still relies on foreign professionals (see Chapter 1). On the other, shorter-cycle qualifications and applied diplomas may offer greater flexibility and alignment with emerging technologies and sectoral change.

A comparison of graduate numbers with registered jobseekers in 2022 highlights persistent mismatches across several key disciplines. In Management and Commerce, the number of graduates already exceeds the pool of jobseekers, pointing to a serious structural issue and the potential for rising unemployment in the field. Even in disciplines where jobseeker numbers surpass graduate output—such as Information Technology and Engineering—the data signals ongoing absorption challenges and pressures within the employment system. Conversely, areas like Health and Education exhibit a closer balance between graduate supply and jobseeker numbers, suggesting better alignment with labour market demand.



A similar pattern appears when jobseeker figures are compared to the size of the existing employed workforce. In fields such as Information Technology, Creative Arts, and Agriculture and Environment, jobseekers represent a high proportion of the total workforce. In 2022, jobseekers accounted for 33 % of the workforce in Information Technology, 26 % in Creative Arts, and 18 % in Agriculture and Environment. These high ratios may reflect structural oversupply or limited demand for new entrants, depending on broader employment dynamics and sectoral growth.



An initial review of current course content shows that some green-sector topics are already integrated into existing programmes, but gaps remain significant in many areas. For example, Solar PV development, energy management systems and hydrogen technologies (both blue and green) are moderately to strongly covered within several engineering disciplines (Figure 26, Table 4).

Hydrogen sector

Institutional mapping reveals that Mechanical Engineering, Chemical & Process Engineering, and Computer Science & IT currently show among the strongest potential to adapt to mid-stream hydrogen activities such as conversion, storage and transport, while Environmental Engineering also performs well. Natural Sciences offer a moderate foundation, while Civil Engineering displays weaker alignment, indicating a need for targeted curricular updates. Materials Science and Oil & Gas Engineering presently show moderate (rather than minimal) relevance to mid-stream hydrogen applications, underscoring gaps in sector-specific preparation.

In downstream hydrogen activities, disciplines like Mechanical Engineering, Management and Administration, and Project Management align more closely with industry needs and are rated as moderately-to-highly adaptable by many institutions. Conversely, Oil & Gas Engineering and programmes in Public Policy and Energy Policy demonstrate more limited alignment, pointing to areas where further curriculum development would support the hydrogen sector's growth.

Notably, while some programmes are moderately aligned with certain stages of the hydrogen value chain, coverage across upstream, mid-stream and downstream functions remains incomplete. This fragmented alignment suggests that existing educational offerings do not yet fully equip graduates for the complex, multidisciplinary skills required for large-scale hydrogen deployment. Expanding green content in under-represented disciplines will be essential to support Oman's hydrogen strategy effectively.

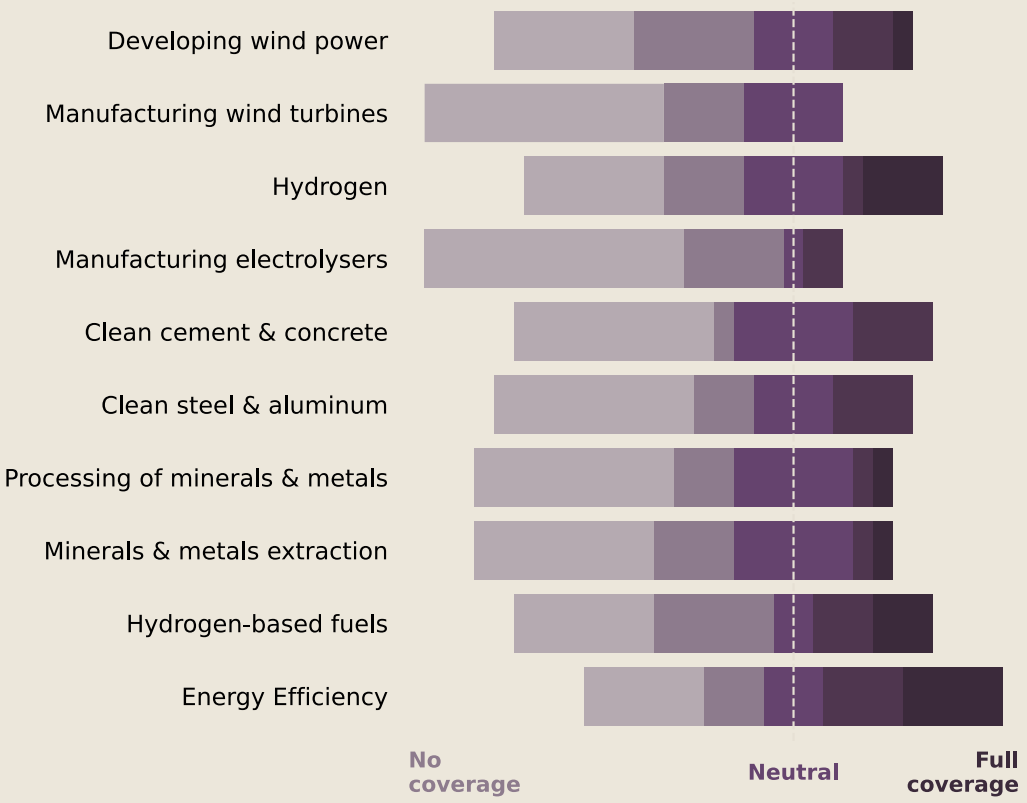


Figure 26: Higher education institutions' perceptions of clean energy sector coverage in current curricula

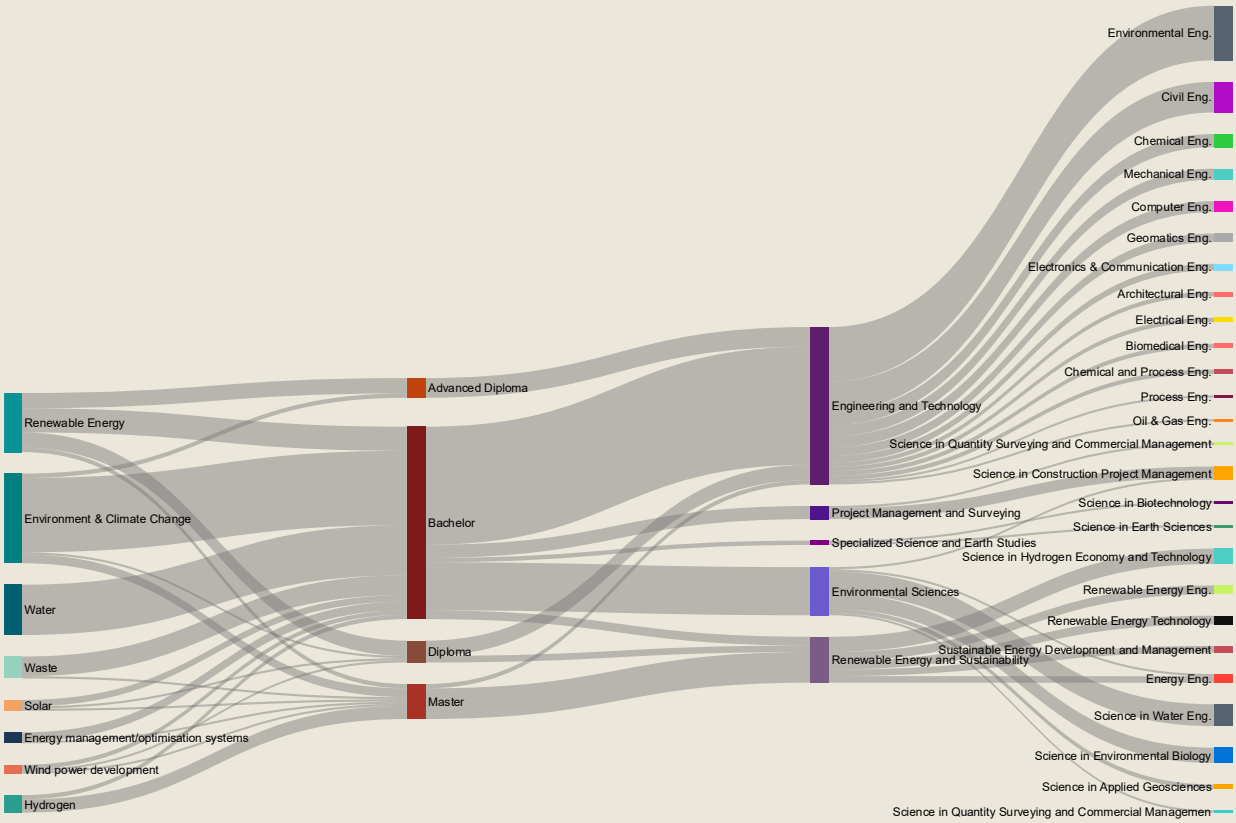


Figure 27: Green curriculum pathways in the higher education system

Table 4: Universities' perceptions of the coverage of different clean energy sectors in degree programmes

	Hydrogen	Energy Efficiency	Solar PV	Wind Energy
Business & Management				
Chemical & Process Engineering				
Civil, Construction & Structural Engineering				
Economics & Public Policy				
Electrical & Electronic Engineering				
Environmental & Water Engineering				
Computer Science & Information Technology				
Materials & Metallurgical Engineering				
Mechanical, Industrial & Manufacturing Engineering				
Other Specialisations				

Solar PV and manufacturing

In solar energy, alignment differs significantly across disciplines. Electrical Engineering and Environmental Engineering offer relatively strong coverage and provide foundational skills useful for solar project development, while Mechanical Engineering shows only moderate alignment. Important disciplines for solar-panel manufacturing—such as Manufacturing Engineering and Materials Science and Engineering—exhibit low alignment, revealing a gap in technical expertise. Geographic Information Systems (GIS), essential for solar site assessment and planning, also remain only partially integrated into current programmes.

Interdisciplinary areas like Economics and Financing, and Public Policy and Energy Policy show mixed alignment with solar-sector needs. Broader aspects of policy, planning and financing are not yet fully embedded in existing curricula, highlighting potential areas for curriculum development.

Wind energy and manufacturing

The wind-energy sector, particularly in turbine manufacturing and project development, faces significant educational gaps. Specialisations such as Wind Engineering and Aerospace Engineering—crucial for turbine design and optimisation—are largely absent from institutional offerings. Other disciplines including Materials Science and Engineering, Meteorology, GIS and Construction Engineering show low levels of alignment, indicating limited capacity to support workforce development in this area.

Energy efficiency

Electrical Engineering emerges as the strongest discipline for both building and industrial energy-efficiency requirements, especially in relation to energy systems and industrial applications. Environmental Engineering follows closely, while Architectural Engineering (where present) contributes usefully to

building-performance topics. In contrast, Construction and Civil Engineering show lower levels of integration of energy-efficiency principles into building design and operations. Mechanical Engineering and Industrial Engineering appear less connected to core energy-management principles, indicating potential areas for curricular improvement to better prepare graduates.

Similarly, energy management and auditing show moderate alignment within Electrical Engineering and Mechanical Engineering programmes. While these disciplines provide foundational technical knowledge, they may require additional focus on auditing processes and comprehensive energy-management practices. Environmental Engineering shows partial alignment but lacks full coverage of auditing competencies. Business Administration programmes (even those with energy-management specialisations) and Data Science and IT fields require further alignment.

As previously discussed, the priority for Oman's green economy workforce development should remain on updating and enriching general programmes to include green-sector content. However, there are cases where certain sectors are of such strategic importance that creating specialised programmes is also warranted. These specialised offerings can provide in-depth expertise in critical fields and serve as important complements—rather than substitutes—to the broader general education pathways. Ensuring that such programmes are carefully targeted and well-integrated with broader sector needs will be essential to avoid fragmentation.

Table 5: Key areas of academic courses

Sector	Courses
Building Energy Efficiency	Energy Conservation and Management, Energy Conversion, System Engineering, Life Cycle and Carbon Footprint Assessment, Problem Solving in Renewable Energy Technology
Environment and Climate Change	Air Pollution, Climate Change, Environmental Biotechnology, Environmental Chemistry, Environmental Engineering, Environmental Geology, Environmental Geotechnics, Environmental Impact Analysis, Environmental Impact Assessment, Environmental Law, Environmental Management Systems, Environmental Measurements, Environmental Microbiology, Environmental Monitoring and Assessment, Environmental Pollution, Light and Noise Pollution, Environmental Science, Global Changes & Sustainable Development, Industrial and Hazardous Waste, Intro to Civil Engineering & Environmental Issues
Renewable Energy	Introduction To Renewable Energy, Renewable Energy Project Development, Renewable Energy & Energy Efficiency, Renewable & Sustainable Energy, Renewable Energy
Solar Energy	Solar Energy Systems, Solar Thermal Processes
Waste Management	Solid Waste Management, Waste and Energy, Waste Treatment Process, Advanced Wastewater Treatment
Water Resources and Desalination	Water Resources, Geoinformatics Applications in Water Resources Engineering, Nanotechnology in Water Applications, Sea Water Desalination, Special Topics in Water Engineering, Water and Wastewater Microbiology, Water Chemistry, Water Cycle, Water Engineering, Water Laws and Legislation, Desalination, Desalination Engineering, Advanced Technology in Desalination, Hydrology and Water Resources
Wind Power Development	Wind and Hydro Technologies, Wind and Hydro Energy Systems, Wind Energy Systems
Hydrogen Technologies	Hydrogen Production, Hydrogen Storage, Transportation & Distribution, Hydrogen Utilization, Hydrogen Safety, Standardization and Regulations, Hydrogen Economy & Markets, Biofuels

*For the sub-majors categorised into five groups: Energy, Engineering and Technology, Renewable Energy and Sustainability, Environmental Sciences, Project Management and Surveying, and Specialised Science and Earth Studies

The current landscape of green-related education in Oman's higher education institutions includes 27 sub-majors and specialisations spanning five broad categories: Engineering and Technology, Renewable Energy and Sustainability, Environmental Sciences, Project Management and Surveying, and Specialised Science and Earth Studies. Among these, Engineering and Technology accounts for a significant share of offerings, particularly in areas such as renewable energy, solar systems, and environmental engineering. Within Environmental Sciences, disciplines like Environmental Engineering provide coverage in fields such as water resources, environmental impact assessment, and waste management

Programmes such as Renewable Energy Engineering, Environmental Engineering, and Energy Engineering align closely with skills required for renewable energy generation, energy efficiency improvements, and waste management services. These areas are central to several emerging green economy subsectors, including solar and wind energy development and energy management systems. While the institutional foundation is relatively strong in these core disciplines, other crucial areas—such as energy efficiency in buildings, clean industrial technologies, and solar PV manufacturing—remain underrepresented in current specialised programme offerings.

A limited number of institutions offer degree programmes explicitly labelled as relevant to the green economy, including bachelor's degrees in environmental engineering, Sustainable Energy Development and Management, and Environmental Biology. However, these programmes remain modest in depth and scope. At the postgraduate level, offerings such as the Master's in Renewable Energy Engineering and Hydrogen Economy and Technology indicate emerging readiness in certain technical areas. Nonetheless, the overall availability of specialised programmes does not yet cover the full range of competencies required across Oman's diverse green economy sectors.

Table 6: Overview of academic qualifications across various majors and their descriptions

Sub-Major	Description	Academic Qualification
Renewable Energy Engineering	This major focuses on the design, development, and optimization of systems that generate energy from renewable sources such as solar, wind, hydro, biomass, and geothermal. Students learn about energy conversion technologies, power systems, energy storage, and grid integration. The curriculum also includes aspects of environmental impact, sustainability, and economic feasibility.	Master
Environmental Engineering	Environmental Engineering focuses on developing solutions to environmental challenges such as pollution, waste management, and resource sustainability. Students study water and air quality control, wastewater treatment, solid waste management, environmental impact assessments, and renewable resource management. It integrates principles from civil engineering, chemistry, biology, and environmental science to promote sustainable environmental practices.	Master Bachelor
Sustainable Energy Development and Management	This major explores the development and management of sustainable energy systems to address global energy challenges. It includes courses on energy policy, economics, sustainability practices, and renewable technologies. Students learn to evaluate and implement sustainable energy solutions, ensuring that energy systems meet current needs while preserving resources for the future.	Master Bachelor
Science in Biotechnology	Biotechnology involves the application of biological processes for industrial, medical, and environmental purposes. This major covers areas like genetic engineering, bioprocessing, molecular biology, and bioinformatics. It prepares students to work in fields such as pharmaceuticals, agriculture, environmental conservation, and industrial biotechnology, focusing on the development of innovative biological products and solutions.	Bachelor
Science in Environmental Biology	This major focuses on the study of biological systems and their interactions with the environment. Students explore ecology, conservation biology, environmental health, and biodiversity. It prepares graduates to work in environmental protection, conservation, research, and policy development, often addressing issues such as habitat destruction, climate change, and species conservation.	Bachelor
Energy Engineering	Energy Engineering covers the engineering principles applied to the production, conversion, and efficient use of energy. The curriculum includes renewable and non-renewable energy systems, energy efficiency, thermodynamics, and power generation. It also covers the economic, environmental, and societal implications of energy use, aiming to optimise energy systems.	Bachelor
Renewable Energy Technology	This major focuses on the practical applications of renewable energy systems. Students learn about the design, installation, and operation of renewable energy technologies, including solar, wind, and biomass systems. The program emphasises hands-on training, preparing students for careers in the renewable energy sector, focusing on innovation, deployment, and technical support.	Diploma
Hydrogen Economy and Technology	A Programme that explores the role of hydrogen in the global energy transition. The course covers key aspects of hydrogen production, storage, distribution, and its application as a clean energy source. Students will learn about hydrogen technologies, including electrolysis, fuel cells, and hydrogen infrastructure, as well as the economic and environmental impacts of hydrogen. The program also addresses global policies, safety standards, and the integration of hydrogen with renewable energy systems. Graduates are prepared for careers in sustainable energy, technology development, and policy sectors.	Master

Upskilling the workforce

As previously discussed, beyond preparing new generations of students for their first roles in clean energy and green sectors, re-skilling and upskilling are essential components of workforce development for Oman's green economy.

The term re-skilling refers to equipping individuals with the knowledge and competencies required to move into an entirely different sector from the one in which they were previously trained or employed. In contrast, upskilling involves building on a person's existing skills and experience to prepare them for more advanced or specialised roles within their current field.

Both approaches are integral to Oman's green workforce strategy. On the one hand, certain advanced positions in clean industries will demand levels of experience that recent university graduates may not yet possess, making upskilling of existing professionals crucial to fill these roles. On the other hand, given the significant number of jobseekers and graduates facing skills mismatches, re-skilling is equally important. It provides a pathway for individuals to transition into green sectors by acquiring entirely new skillsets, thereby helping to reduce unemployment and better align the workforce with emerging industry needs. Re- and upskilling can occur through various channels; however, in most cases, specialised training centres and vocational institutions will be responsible for delivering these programmes (see Appendix A).

The potential necessity for large-scale re-skilling and upskilling is further underscored by findings from the management survey (Figure 29). While perceptions of workforce readiness vary slightly across different clean sectors, the overall picture is clear: for the vast majority of sectors, either extensive re-skilling or a complete overhaul of existing skills is considered necessary. Notable exceptions include the minerals and metals sector, as well as aluminium and cement, where current employee readiness is viewed more favourably.

Based on management perceptions, strong measures to re-skill and upskill the workforce will be particularly crucial in the manufacturing of clean economy technologies, including electrolyser production and wind turbine manufacturing. Even in sectors often perceived as more established—such as energy efficiency, solar panel development, and wind power—significant efforts in workforce development are deemed necessary to ensure employees possess the specialised skills required for these evolving industries.

In contrast, the majority of the current workforce does not plan to enrol in new specialised training courses (Figure 28). Among those who do express interest, hydrogen and solar energy emerge as the most attractive areas, whereas fields such as AI and data science—despite their significant relevance across multiple sectors—are considered relevant by only a minority of respondents.

According to employees themselves, the primary reasons for their reluctance to engage in further training relate to financial constraints, limited time availability, and potential course fees (Figure 30). Notably, current employees do not view information gaps as a significant barrier to pursuing additional training opportunities.

Reluctance among many employees to engage in further training is also reflected in jobseekers' views on public policies that could support the green energy transition and facilitate employment growth in the sector (Figure 31). When asked which policies they would favour to help them gain new skills for the green economy, jobseekers indicated strongest support for financial transfers, such as monthly allowances, and for employment guarantees after completing training. Approximately 60 % highly support financial assistance, while around 69 % favour job guarantees (see Figure 31). Certifications recognised by industry leaders and free or subsidised training also receive considerable support, with about 54 % and 52 % of respondents rating them highly. By contrast, career counselling and networking events are less prioritised.

These results suggest that financial barriers and uncertainty about employment outcomes are central concerns limiting willingness to pursue further training. Jobseekers appear willing to undergo training for green sector roles but remain cautious about whether such efforts will secure stable employment. The preference for industry-recognised

certifications further indicates a desire for clear signals that additional qualifications will translate into real job opportunities. Meanwhile, lower support for counselling and networking implies that many jobseekers already know their target sectors and primarily seek assurances that training will deliver practical results.

Another important issue, beyond identifying motivators and incentives to encourage participation in re-skilling and upskilling, is how such training programmes should be conducted (Figure 32). A comparison between the current practices preferred by management and the formats that the workforce is most willing to attend reveals both convergence and gaps.

Overall, there is broad agreement that in-person, on-site, and on-the-job training formats are strongly preferred, significantly outperforming online training options of any kind. Notably, employees appear less inclined to engage in apprenticeships and similar schemes. While such programmes are not a top priority for management either, they nonetheless tend to enjoy a somewhat better reputation among employers than among employees.

When asked about the ideal actor to conduct re-skilling and upskilling programmes, it is notable that both management and current employees overwhelmingly favour international professional training bodies (Figure 33). While this convergence is, on one hand, a positive sign of shared expectations, it also highlights a broader challenge regarding trust in domestic institutions. Government entities rank near the bottom of the list of preferred training providers, as do local professional training centres.

This finding is significant because local training centres are expected to play a substantial role in delivering much of the re-skilling and upskilling needed for Oman's green economy transition. It is therefore crucial to investigate why these institutions currently suffer from a poor reputation. One possible explanation is that the widespread culture of mandatory training within larger corporations in Oman has led to the proliferation of numerous training providers. Not all of these offerings are of high quality, and many may be perceived as repetitive, of limited practical value, or disconnected from genuine skills needs. Such experiences could understandably erode confidence in local training institutions. Improving the quality, relevance, and reputation of local training centres will be essential to make them credible and attractive options for workers considering re-skilling or upskilling initiatives.

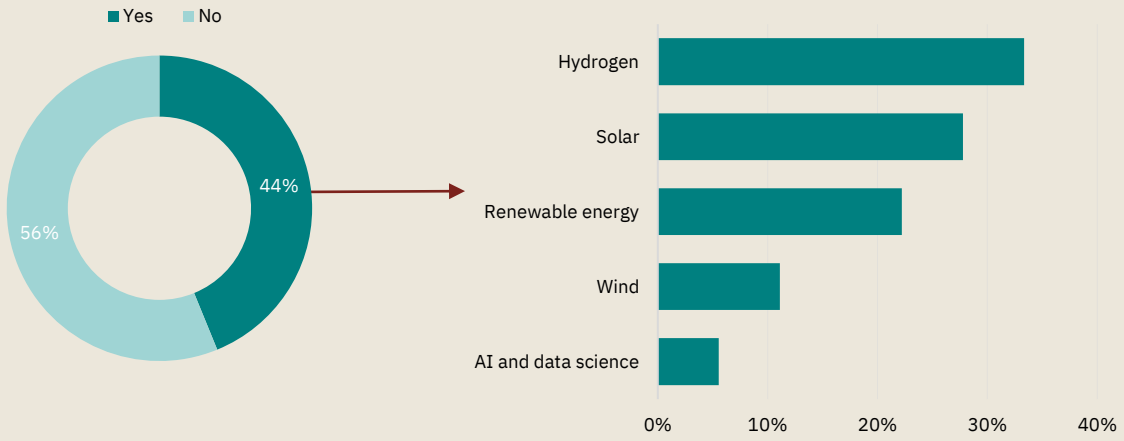


Figure 28: Workers' participation in training programmes related to renewable energy and green industries

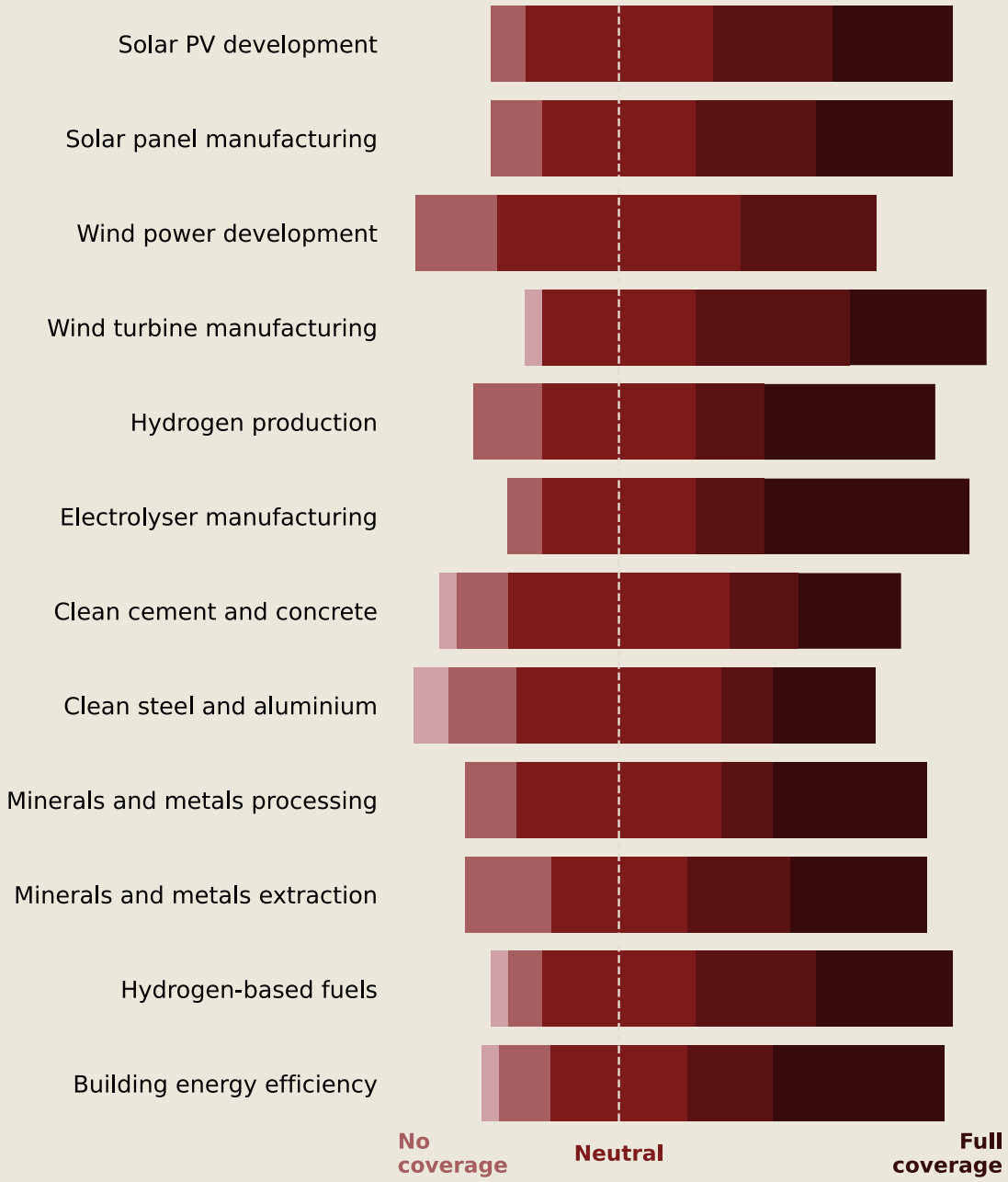


Figure 29: Managers' views on the need for upskilling or reskilling of current employees for green energy and clean technology roles

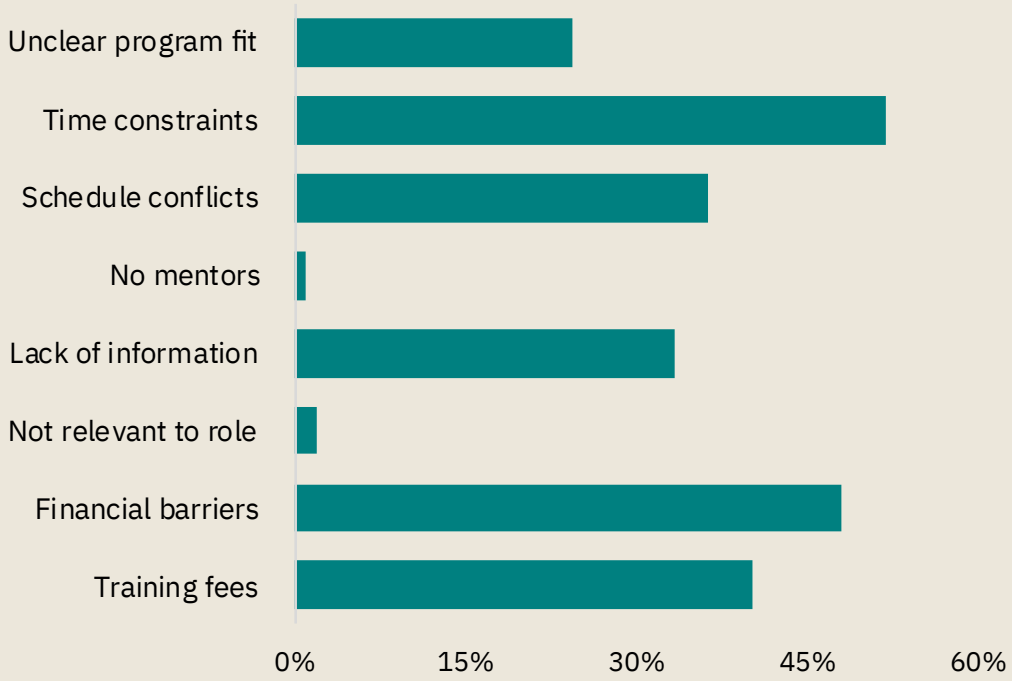


Figure 30: Barriers reported by workers to enrolling in green training programmes

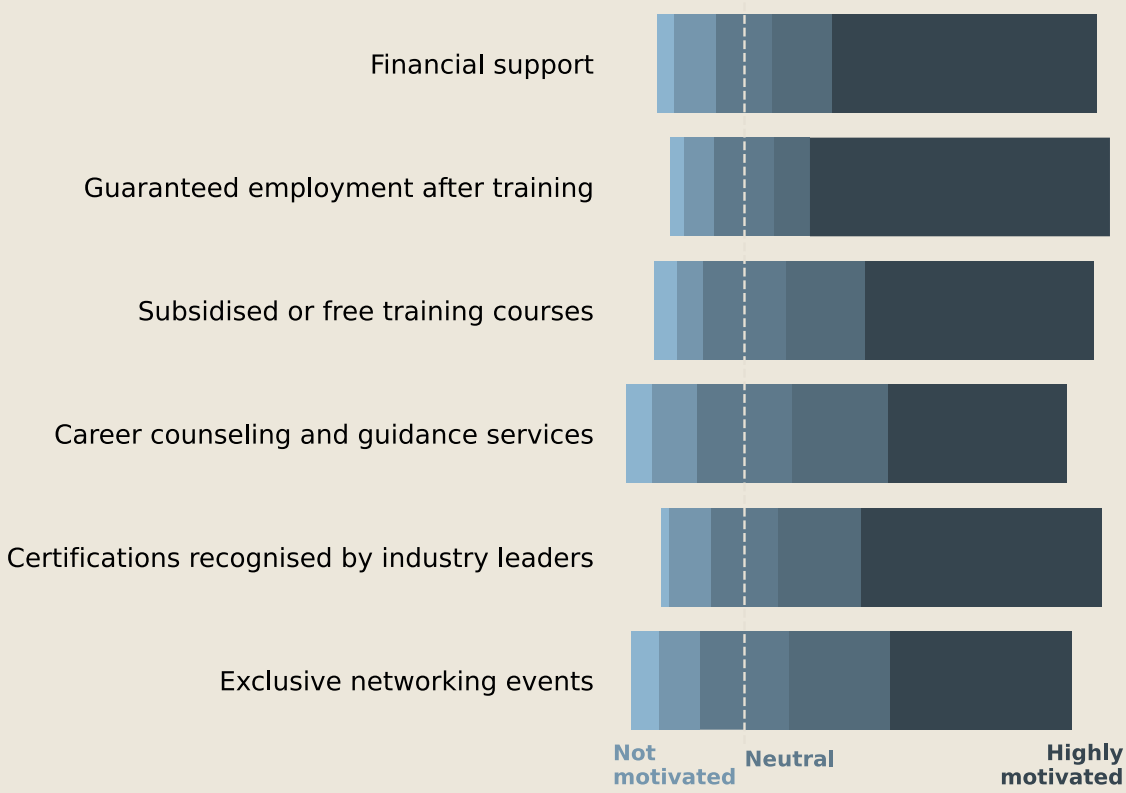


Figure 31: Motivation of jobseekers to engage in skills development through different support measures

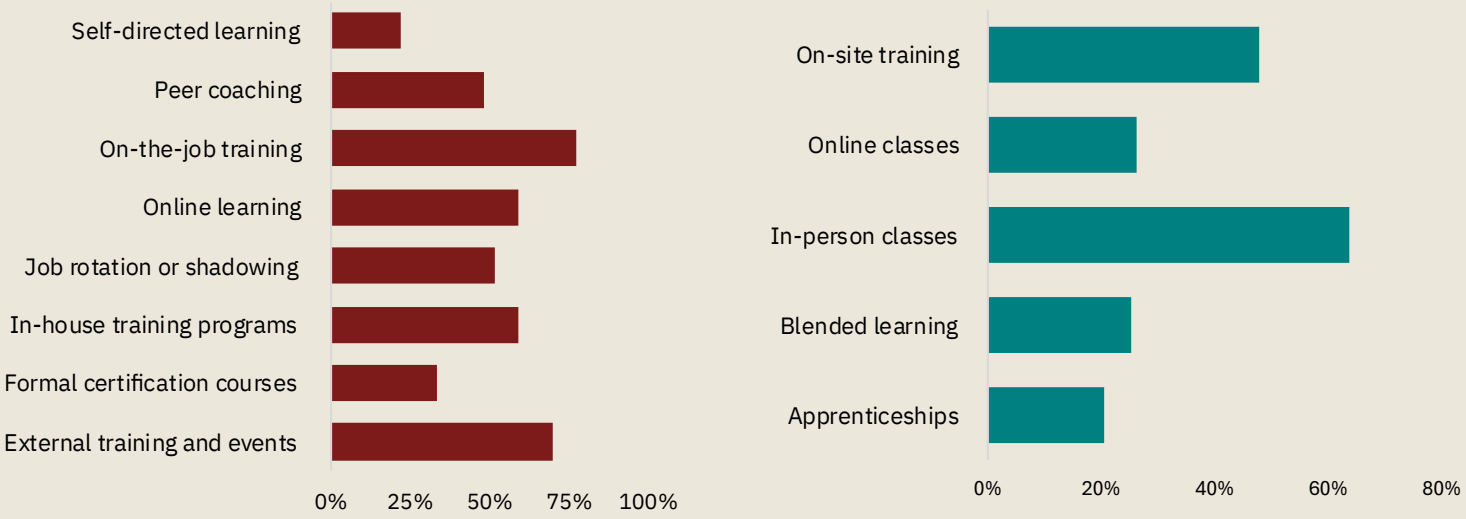


Figure 32: Training formats currently used by management and preferred by workers for skills development

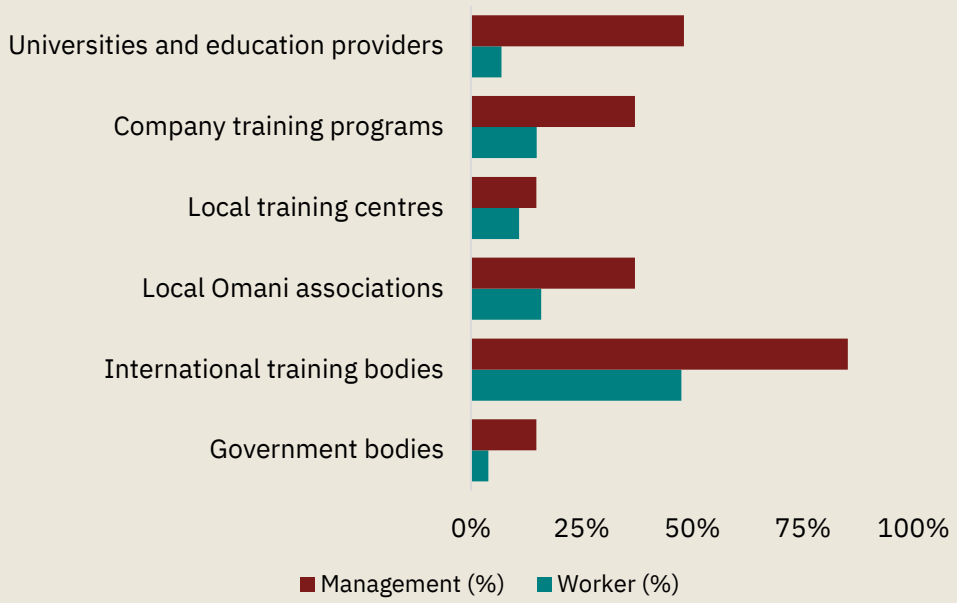


Figure 33: Organisations considered effective by management and workers for delivering green economy training

Developing education

However, preparing new programmes comes with numerous challenges, which partly explains the gap between ambitions and the current reality within the education sector. Among the issues previously cited is the need for a credible commitment to the relevant sectors, including final investment decisions and strong coordination between industry and policy actors to catalyse programme development.

In the context of in-house training, management respondents in companies unambiguously identify rapid changes in industry standards and technologies as the single most significant challenge (Figure 35). By contrast, factors such as funding constraints or lack of employee interest are viewed as less significant barriers—or, in some cases, not barriers at all. The prominence of rapid technological and standards shifts as the primary obstacle underscores the need for greater alignment and coordination between the bodies that set such standards and the industries expected to implement them. It also suggests the importance of announcing potential changes well in advance, rather than relying on ad hoc decision-making.

Nonetheless, while these challenges are significant, they are viewed as manageable with effective collaboration and planning.

However, when examining the specific challenges faced by training institutes (Figure 37) and higher education institutions (Figure 38) in developing green curricula, the picture becomes more complex. In this context, rapid changes in industry standards and technologies appear to be less of an obstacle. This may reflect the closer connections these institutions often maintain with standard-setting bodies.

Instead, other and more pronounced issues dominate. A major concern, particularly among training centres and to some extent among universities, is the limited expertise of current faculty in green-sector topics. In this context, "training the trainer" becomes a crucial requirement rather than a secondary consideration.

Both types of institutions also report a lack of student interest in green-sector programmes, although this challenge is still regarded as manageable.

The two most significant challenges identified by these stakeholders, however, are insufficient funding for developing new programmes and, especially among higher education institutions, regulatory barriers related to course approvals by public authorities.

When asked how significant a challenge the public approval process for new curricula poses—especially for programmes related to green jobs—a substantial majority of 70 % of respondents from higher education institutions described this issue as medium to highly significant.

Data on the time required to develop new curricula provides further evidence of this challenge (Figure 38). Among higher education institutions, approximately 70 % report that developing a new curriculum—from initial concept to full implementation—takes more than one year. In 16 % of cases, this process extends beyond two years.

For training centres, the process tends to be faster, likely reflecting lower regulatory requirements and the smaller scale of training programmes. Here, only around 70 % of respondents indicate that curriculum development requires more than one year, while in approximately 40 % of cases, the process takes less than six months.

However, when focusing specifically on accreditation, the timeline becomes even more pronounced. The majority of both higher education institutions and training centres report that the accreditation process alone typically takes more than a year, signalling a significant bottleneck in the timely development of new programmes for the green economy.

Being dynamic in updating course requirements is particularly crucial in fields closely linked to technology and industry, such as engineering. Given the rapid pace of technological advancement and changing market requirements, higher education institutions and training centres must be able to respond swiftly and develop or revise programmes within competitive timeframes.

While it is entirely valid that accreditation authorities seek to ensure the quality and standards of new educational offerings, a careful balance must be struck between maintaining rigorous oversight and enabling agility in curriculum development. Quality assurance by public actors remains essential. However, universities and training institutions often possess significant expertise in their respective fields, and public stakeholders could consider placing greater trust in these institutions' capacity to update and enhance their curricula effectively.

Several measures could help achieve this balance:

- General streamlining: Reducing or simplifying accreditation requirements for certain types of programme adjustments, especially minor updates that do not fundamentally change the programme's scope or objectives.
- Structural streamlining: Moving curriculum accreditation checks into regular and periodic institutional review cycles—for example, every five years—instead of requiring separate approvals for every new curriculum adjustment. This approach, used in many European universities, relies more heavily on internal quality assurance mechanisms while maintaining standards.
- Process innovation: Introducing fast-track accreditation pathways for programmes directly aligned with national strategic priorities—such as green economy sectors—where institutions could follow a simplified approval process if specific quality benchmarks are met. This would help accelerate the rollout of urgently needed programmes without compromising quality.

Such steps would help preserve educational standards while allowing for more responsive curriculum development to meet the evolving demands of Oman's green economy.

Another, albeit less prominently perceived, issue among higher education institutions (Figure 36)is their ability to align curricula with actual skills requirements in the green sector. When examining which forms of collaboration the industry itself considers feasible and preferable (Figure 40), the leading approaches

When asked which strategies they consider most effective in achieving such alignment (Figure 39), universities cited government incentives as the leading factor, followed by industry collaborations and career guidance programmes.

This response potentially coincides with earlier findings that funding remains a significant challenge. However, it also relates to concerns about regulatory burdens and the broader perception that universities lack sufficient incentives to undertake proactive curriculum updates.

Nevertheless, it is important to emphasise that developing new curricula should not be contingent solely on additional subsidies. Financial support is certainly necessary to implement programmes effectively, but universities should, by their very mandate and accountability frameworks—including KPIs monitored by public authorities—be committed to continuously reviewing and updating their programmes. Achieving this requires both an enabling environment from policymakers and an internal institutional culture focused on ongoing improvement. If such a culture is lacking, it reflects a gap within universities themselves.

At the same time, industry collaborations play a crucial role in ensuring that university content remains current and relevant. Interestingly, universities considered initiatives such as inviting guest speakers, organising job fairs, and establishing career assessment roles to be less significant strategies for aligning their curricula with sector needs.

Industry collaborations were also highlighted as an important issue by both higher education institutions and training centres (Figure 36 and Figure 37), although the emphasis is stronger for universities than for training institutes. This difference is unsurprising, given that training institutes are typically more closely linked to industry by design. However, especially in the context of transferring new skills into educational programmes, such partnerships are crucial.

include industry partnerships, faculty exchange programmes, direct training initiatives for faculty, and the co-development of

curricula. By contrast, initiatives such as guest speaker programmes and broad, non-targeted funding schemes rank lower in priority.

This pattern aligns well with the perspectives of educational institutions. Both universities and training centres have identified gaps in faculty expertise as a critical barrier to effectively delivering green-sector education. In this regard, it is important to recognise that for clean sectors, education institutions should not be viewed only as providers of knowledge and skills, but also as recipients. Developing a culture of openness to learning from industry partners is essential, particularly since many companies have a vested interest in ensuring that the skills required in their sectors are embedded in academic programmes. This mutual knowledge transfer reduces the burden on companies to conduct extensive in-house training, creating a win-win situation for both sides.

Another related issue highlighted by both education actors (Figure 36 and Figure 37) is the importance of securing practical placements for graduates. While companies often see internships as a primary tool to facilitate such exchanges, educational institutions are also deeply focused on ensuring that their graduates can be successfully placed into employment. Here, job guarantees from the private sector could play a valuable role. Nonetheless, the challenge of placement is closely tied to the emerging nature of green sectors. In many cases, these industries are still under development and require substantial support through industrial policy and credible commitments from policymakers to create the conditions necessary for sustainable employment opportunities.

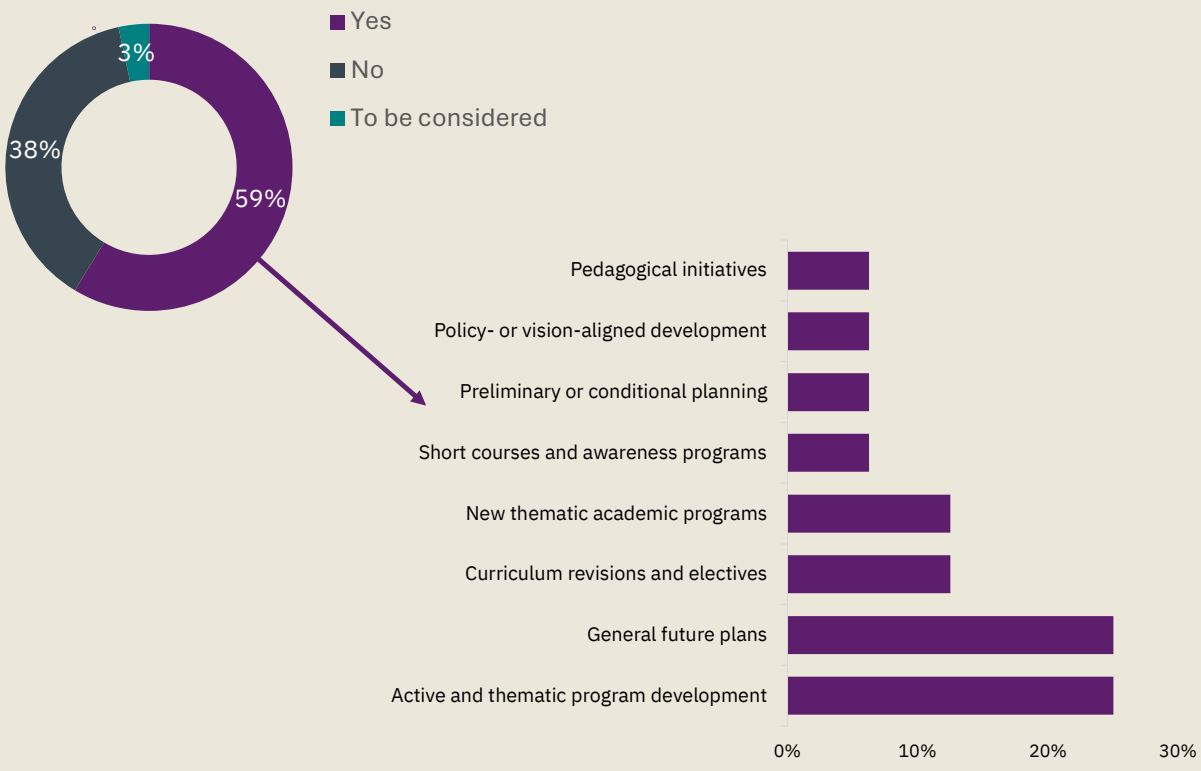


Figure 34: Implementation of green content revisions in higher education programmes

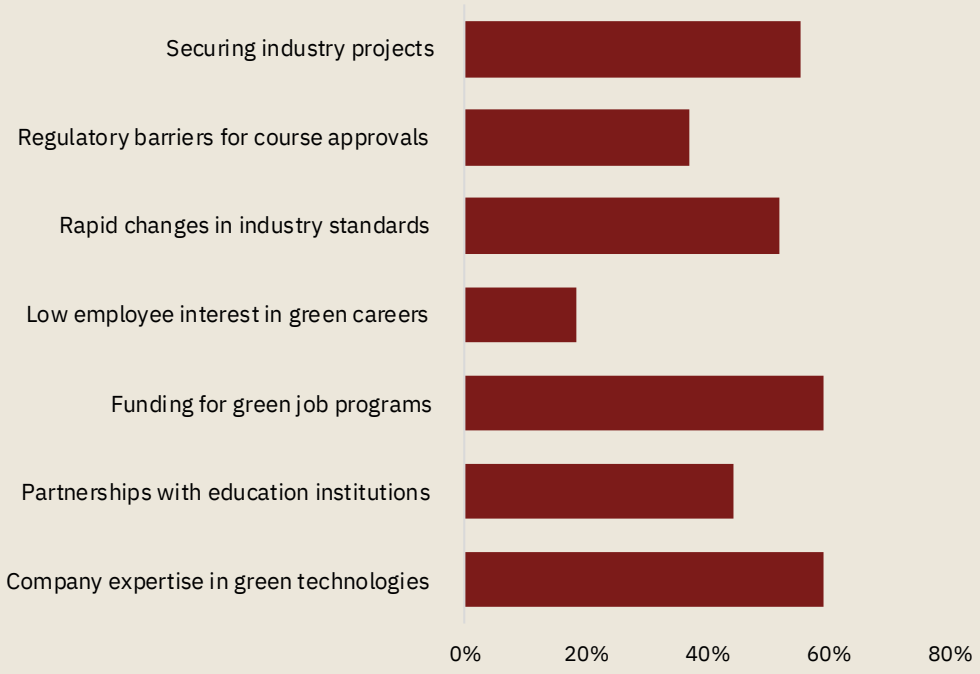


Figure 35: Challenges faced by management in planning skills development for green industries

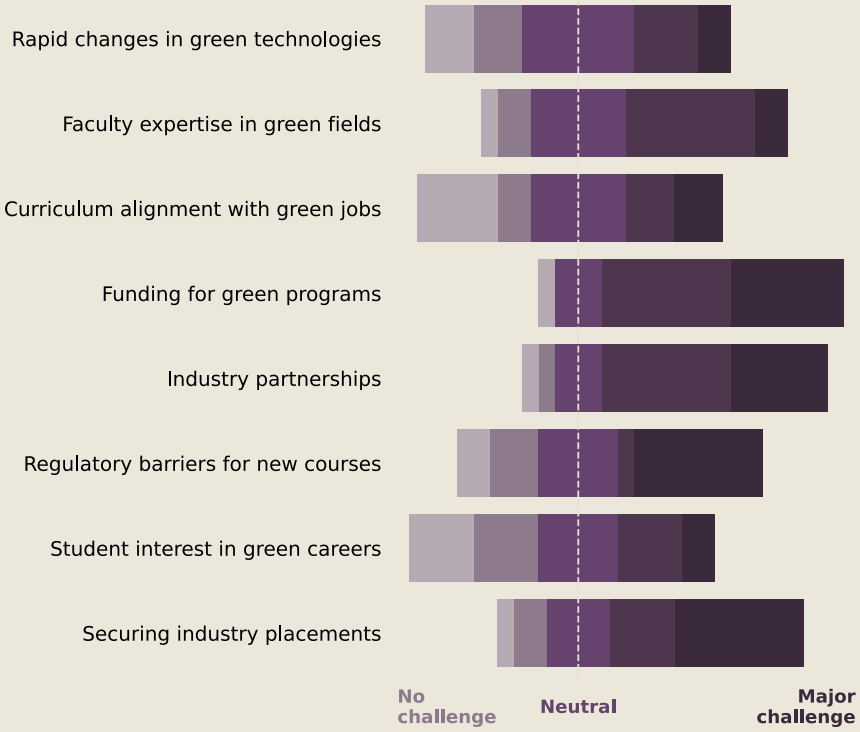


Figure 36: Challenges faced by higher education institutions in developing curricula for green jobs

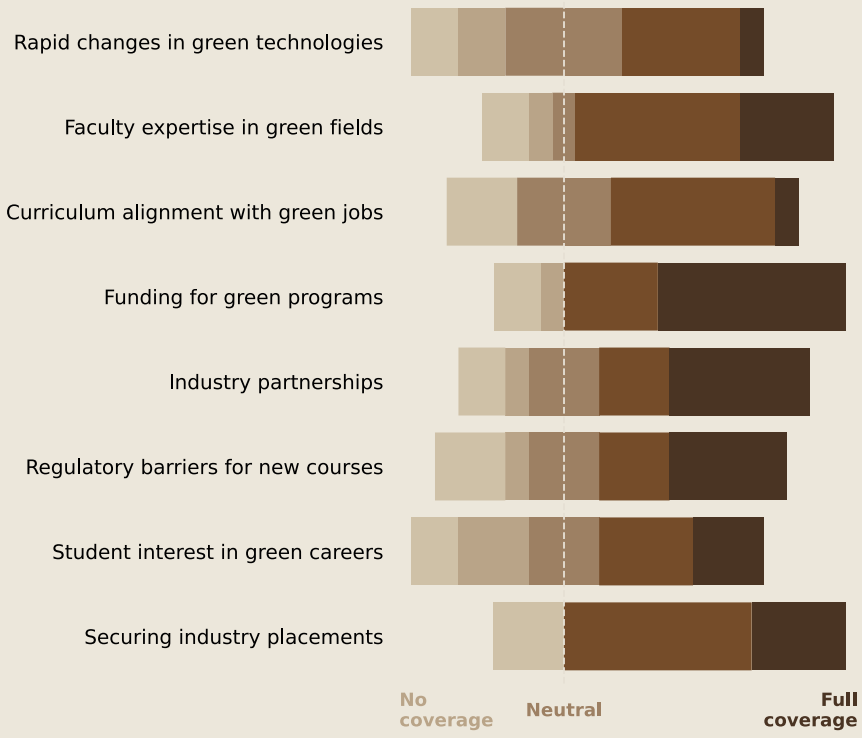


Figure 37: Challenges faced by training centres in developing curricula for green jobs

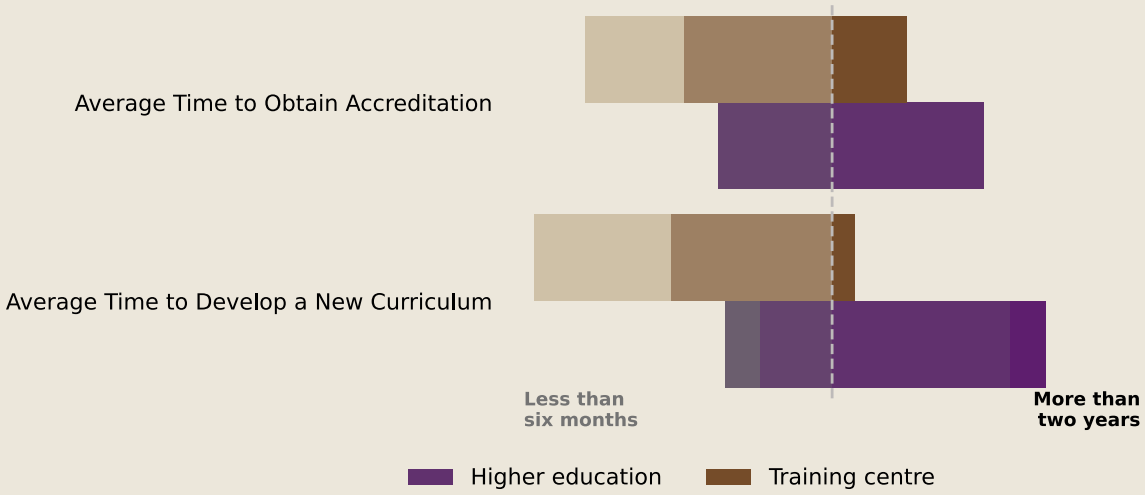


Figure 38: Time required for higher education institutions and training centres to develop and accredit green curricula

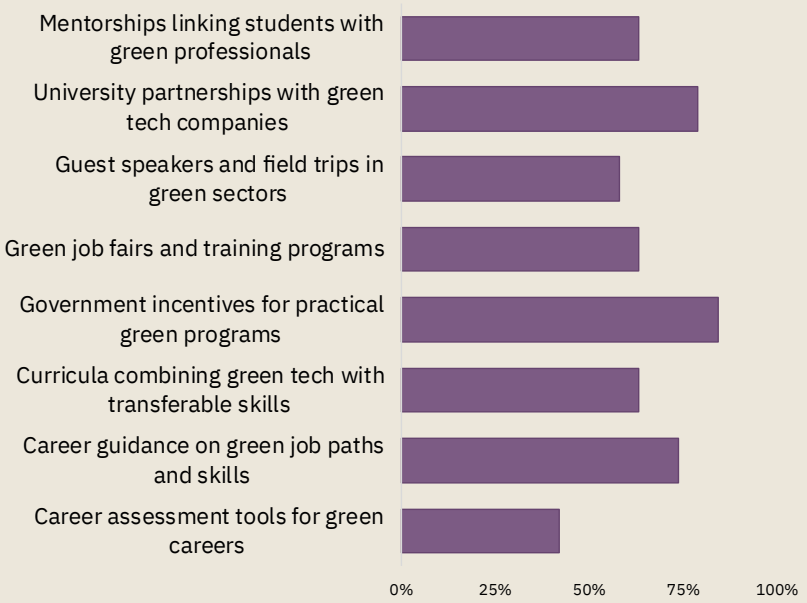


Figure 39: Higher education institutions' views on strategies to better align programmes with green job market needs

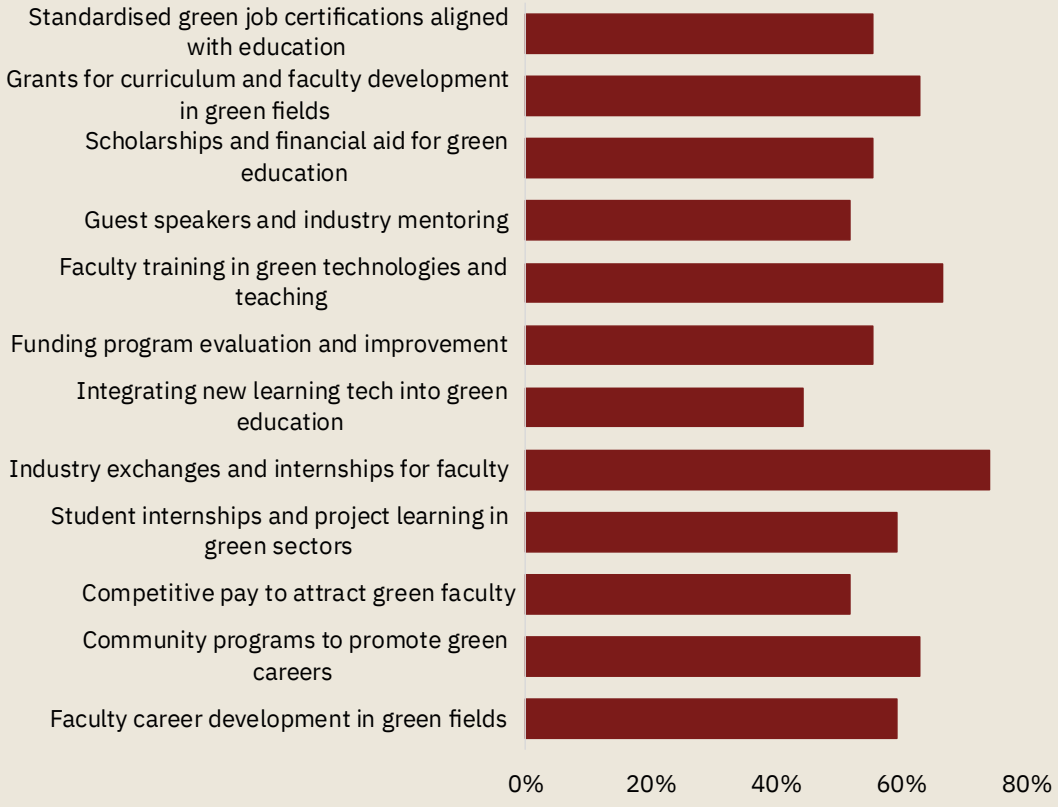


Figure 40: Managers' preferred collaborations to advance green education

Appendix A: Overview of the Omani Education System

Education is a cornerstone of the green economy. As green sectors develop and diversify, the education and training systems must adapt to ensure that both new entrants and existing workers are prepared for emerging roles. This includes not only technical capabilities but also broader competencies in sustainability, systems thinking, and environmental responsibility. Four distinct stages of education prepare students for jobs in the green economy:

School education provides the foundation by introducing sustainability, renewable energy, and environmental stewardship from an early stage. Basic awareness begins at the primary level and becomes progressively more detailed through middle and high school. Curriculum integration of environmental science, along with extracurricular programmes such as eco-clubs or the Green Schools Project, can help foster early interest in green careers. This enables students to enter higher education or vocational training with a sound understanding of core green economy concepts.

Vocational colleges and training centres play a central role in preparing job-ready talent for the green economy. They provide targeted, hands-on instruction in areas such as solar panel installation, wind turbine maintenance, energy efficiency auditing, and other renewable technologies. These shorter training programmes allow learners to quickly enter the labour market, particularly in fast-growing areas such as renewable energy, sustainable agriculture, and environmental management. They also serve individuals who may not pursue university degrees but seek meaningful employment in the clean economy.

Higher education institutions are essential for cultivating specialised knowledge and leadership skills. Universities offer degree programmes in disciplines such as environmental engineering, renewable energy systems, and sustainable development, combining theoretical foundations with practical training. Graduates are equipped to assume advanced roles in project management, policy, research, and innovation. In addition, universities drive research and development in green technologies, contributing to long-term innovation and strategic capacity in Oman's green economy.

Continuing education and professional development further support the transition by reskilling the current workforce. Short-term programmes and certifications—such as in energy auditing, green building design, or renewable energy systems—enable professionals to acquire recognised credentials and adapt to evolving industry needs. On-the-job training and industry partnerships also play a role in keeping workers up to date with emerging technologies and practices.

This annex outlines the current state of Oman's education and training systems as they relate to the green economy and clean energy sectors. It examines the roles and contributions of different educational levels—ranging from schools to higher education institutions and vocational training centres—and assesses the extent to which they are providing relevant, actionable skills. In doing so, it highlights both the strengths and limitations of existing structures, with a focus on areas where further development and targeted reform could enhance the country's capacity for workforce localisation, innovation, and long-term competitiveness in the clean economy (Table 8).

To support informed career choices and reduce future labour market mismatches, it is essential to introduce green economy topics in a balanced and realistic way from an early stage. The Ministry of Education has taken several steps to equip students with a foundational understanding of sustainability and renewable energy. These include integrating green themes across the school curriculum, launching initiatives such as the Green Schools Project in collaboration with industry, and promoting student engagement through competitions and awards. Environmental science is now offered as a standalone subject at the high school level, and career guidance efforts have been strengthened to help students explore green sector opportunities in line with actual market trends.

Table 7: Qualifications, Skill Category and Qualifications Frameworks in Oman

Institution	Duration	Qualification	Skill Category
Universities and Government Colleges / Private Colleges	1 week – 9 months	Certificate (no high school diploma required)	Semi-skilled
School	12 years	High school diploma	Skilled
Vocational Training Centre	6–9 months	Vocational certificate	Technician
Vocational Training Centre	2 years	Vocational diploma	Technician
College of Technology	2 years	Technical diploma	Technician
College of Technology	3 years	Advanced diploma	Technician
College of Technology	4 years	Bachelor of Technology	Professional
Universities / Colleges / Industry Associations / Online Learning Platforms	1–12 months	Professional certificate (post-bachelor)	Professional
Universities / Colleges	4–5 years	Postgraduate diploma	Professional
Universities	1–2 years	Master's degree	Professional
Universities	1–2 years	PhD	Professional

1. Green Schools Project

The Green Schools Project, introduced in the 2022–2023 academic year, supports the integration of sustainability principles across school communities. It engages educators and students while also involving families and institutions from both the public and private sectors. The initiative aims to foster a generation capable of addressing environmental challenges and contributing to Oman's broader green economy goals.

The project builds competencies across three domains: cognitive (covering key concepts such as sustainability, the circular economy, and green economy principles), behavioural (translating knowledge into action), and attitudinal (promoting environmental responsibility). Schools implement a range of activities—including recycling, tree planting, and small-scale solar installations—that promote sustainability as part of daily school life. Green-themed competitions and awards complement these efforts and help sustain engagement. While the programme does not provide formal technical training, it strengthens environmental awareness and introduces practical applications that form an early entry point into green topics.

2. Sustainable Development Department

A dedicated Sustainable Development Department has taken the lead in embedding sustainability throughout the school system. It develops educational content, oversees programme delivery, and supports alignment with Oman Vision 2040. Current efforts focus on fostering broad competencies—including environmental awareness, social responsibility, and digital literacy—within subject-based learning and cross-curricular initiatives.

The department also coordinates with national stakeholders to expand green education and skills-related content. These activities lay the institutional groundwork for more structured green skills training in the future, particularly as labour market needs evolve and new sectors mature.

Table 8: Educational Levels and their roles in Preparing Workforce for Future Green Projects

Level	Duration	Type of Contribution	Key Features of Contribution
School Education	Long-term (12 years: primary, middle, and high school)	Fundamental knowledge, extracurricular activities, and introductory green concepts	Foundation Building: Introduces pupils to sustainability, renewable energy, and environmental stewardship. Progressive Learning: Builds from basic awareness in primary school to deeper understanding in middle and high school. Curriculum Integration: Embeds environmental science and green concepts across multiple subjects. Extracurricular Activities: Offers programmes such as the Green Schools Project, hands-on learning, and eco-clubs to engage pupils. Career Interest Development: Sparks early interest in green careers, preparing students for higher education or vocational pathways in green sectors.
Vocational Colleges	Short- to medium-term (1–3 years, depending on the programme)	Practical training programmes and specialised skill-building	Hands-On, Job-Ready Skills: Delivers practical training in green sectors such as solar panel installation, wind turbine maintenance, and energy efficiency auditing. Specialised Training: Emphasises renewable energy technologies and sustainability practices. Quick Skill Acquisition: Prepares learners for entry-level roles through targeted short-term training. Immediate Industry Response: Aligns training with the needs of fast-growing sectors such as renewable energy and environmental management. Fast-Track Option: Provides an alternative to university for those aiming to enter the green workforce promptly.
Higher Education Institutions (Colleges and Universities)	Long-term (typically 4–6 years for undergraduate and postgraduate degrees)	Educational programmes, research, and advanced knowledge development	Specialised Knowledge & Leadership: Develops in-depth expertise and leadership capabilities in the green sector. Comprehensive Degree Programmes: Offers programmes in environmental engineering, renewable energy technologies, and sustainable development. Theoretical & Practical Experience: Combines academic learning with applied skills to prepare students for leadership roles. Research & Development (R&D): Promotes innovation in green technologies and sustainable solutions. Strategic Influence: Equips graduates to shape Oman's green economy through advanced technical and analytical roles.
Continuing Education and Professional Development (Training Centres)	Short-term (varies from weeks to months)	Professional development courses, certifications, and on-the-job training	Skills Upgrading: Supports current workers in transitioning to green jobs through targeted skills enhancement. Short-Term Programmes: Provides concise, focused training aligned with emerging green technologies and practices. Industry-Recognised Certifications: Offers credentials in energy auditing, green building design, and renewable energy systems to enhance employability. On-the-Job Training: Facilitates applied learning through apprenticeships and industry partnerships. Keeping Workforce Updated: Ensures professionals stay current with evolving green sector demands and innovations.

3. Extracurricular Activities

Environmental education is further reinforced through extracurricular activities designed to match students' interests. These include school radio programmes, theatre productions, photography clubs, and awareness campaigns centred on sustainability themes. By creating informal learning environments, such activities encourage student-led engagement and reinforce behaviours aligned with sustainability.

Though these experiences do not deliver job-specific skills, they allow students to apply environmental knowledge in practical settings and develop a deeper personal connection to green values. Over time, such engagement can influence study and career choices in sustainability-related fields.

4. Environmental Science Subject

Environmental Science has been introduced as a core subject for Grade 11, offering students a structured understanding of sustainability, ecosystem dynamics, and environmental management. The curriculum covers a range of topics—from water cycles and marine ecosystems to research methods and resource governance—that support environmental literacy and systems thinking.

This subject provides an academic foundation for students interested in pursuing further education or careers in green sectors. Curriculum updates are undertaken regularly to reflect emerging sustainability challenges and ensure continued alignment with national priorities. While the course is still conceptual in nature, it plays a critical role in preparing students to explore more specialised training or university programmes in the green economy.

5. Competitions and Awards

Competitions and awards serve as a complementary tool for promoting green awareness and engagement among high school students. By encouraging participation in initiatives focused on conservation, recycling, renewable energy, and biodiversity, these programmes help translate classroom learning into practical action. They also offer a platform for students to develop soft skills—such as problem-solving, teamwork, and innovation—that are increasingly relevant in green sectors.

Award ceremonies reinforce these efforts by recognising outstanding student achievements, thereby sustaining motivation and encouraging wider participation. These initiatives support early exposure to green topics and promote environmental stewardship in ways that align with broader educational reforms and sustainability goals. Although their direct link to occupational pathways is limited, they contribute to building a culture of sustainability within the education system.

6. Vocational and Technical Education Pathways

In response to the Cabinet's decision of 26 February 2023, vocational and technical education pathways were introduced at the upper secondary level and rolled out in the 2023–2024 academic year. Four schools in Muscat and North Al Batinah began offering specialisations in Business Administration and Information Technology. For the following academic year, six engineering and industrial programmes were added—covering fields such as Mechanical Manufacturing, Engineering Maintenance, Occupational Health and Safety, and Welding. This expanded the pilot to nine schools in total.

Programmes in Information Technology and Business Administration are taught in English and lead to internationally accredited Pearson certificates, while engineering specialisations are delivered in Arabic and currently limited to male students. These vocational pathways span Grades 11 and 12

and include a strong practical component, with approximately 70% of instruction in technical specialisations dedicated to hands-on learning.

The introduction of these pathways represents a significant shift in school education policy, aiming to diversify options for students and support alignment with Oman Vision 2040. By offering applied, job-oriented training, vocational tracks enable students to develop core competencies that facilitate direct labour market entry after graduation. However, the effectiveness of these programmes will depend on close coordination with industry stakeholders to ensure that specialisations match current and projected sectoral demand.

At present, access remains geographically limited to two governorates. Expanding availability across the country is essential to ensure equity and provide all students with the opportunity to pursue vocational education. In parallel, broadening the range of specialisations—particularly in underrepresented sectors such as services, healthcare, security, tourism, and hospitality—would strengthen alignment with the national skills agenda and emerging green and clean economy needs.

Evaluating the pilot phase of vocational and technical education remains a critical step before scaling these pathways nationwide. A systematic review of implementation challenges—such as logistical constraints, curriculum alignment, and teacher capacity—will help ensure that expansion efforts meet their objectives and deliver real labour market value.

Alongside these structural reforms, the school system has introduced a range of initiatives to support students in identifying career options and aligning their skills with future job market needs. Vocational training is increasingly promoted as a viable alternative to academic tracks, particularly in sectors such as energy, environment, and infrastructure where hands-on expertise is essential. Career guidance is delivered through supervisors, elective classes, forms, and summer programmes, helping students assess their interests and navigate emerging fields.

Curriculum relevance is further enhanced through collaboration with industry actors such as Be'ah and the Oman Energy Association (OPAL), who provide feedback on training content and emerging skills demand. Practical exposure is also built into the system: partnerships with companies like PDO, BP, Shell, and Bee'ah facilitate site visits and laboratory work, linking classroom concepts to real-world applications in the energy and environmental sectors.

In general, **vocational education** plays a central role in Oman's efforts to align workforce capabilities with the evolving needs of the national economy. As the country expands its industrial base and develops new sectors, particularly within the clean economy, there is growing demand for applied technical skills at various qualification levels. The vocational education landscape includes a range of institutions and mechanisms aimed at addressing this demand—namely the Colleges of Technology, government vocational colleges, private training providers, and the framework of occupational standards and testing.

Colleges of Technology form a key pillar of Oman's technical education system, offering applied programmes in engineering, information technology, business studies, and applied sciences. These institutions are designed to equip students with market-relevant competencies and to support sectoral workforce planning, particularly in fields tied to Oman's industrial strategy. In 2020, seven colleges were merged under the umbrella of the University of Technology and Applied Sciences (UTAS). These institutions are distributed across seven regions of the Sultanate, encompassing the following campuses: the Higher College of Technology in Muscat, and the Technical Colleges in Musannah, Nizwa, Ibra, Salalah, Shinas, and Ibri. The geographic diversity and widespread presence of these colleges highlight their vital role in supporting the expansion of the industrial sector across the various governorates of Oman.

Complementing this system, government vocational colleges provide hands-on, occupation-specific training aligned to sector needs. With programmes structured around diploma pathways,

apprenticeships, and short courses, these institutions serve jobseekers, school leavers, and individuals pursuing career transitions. Their focus on job readiness and practical instruction is particularly important for supporting local employment in construction, mechanical services, and emerging green sectors.

Private training institutions offer additional flexibility and reach. Spread across Oman's governorates, these providers deliver short- and long-term programmes in a range of fields, from administration and IT to hospitality and industrial trades. Although quality and labour market alignment vary, the sector remains a significant component of the vocational training landscape, particularly for short-cycle upskilling and employer-driven training.

To support consistency and quality across these institutions, the National Occupational Standards and Testing Centre plays a regulatory and developmental role. The Centre is responsible for creating occupational standards that define the competencies required across a wide array of vocations. These standards form the basis for curriculum development, workforce testing, and the alignment of training provision with actual workplace needs. Recent efforts have extended to high-priority areas such as oil and gas, as well as coordination with green economy sectors—including solar, wind, and hydrogen—where emerging roles require tailored training models. The Labour Market Intelligence Analysis (LMIA) represents the first practical step toward achieving this vision and provides a clear roadmap for the development of the National Occupational Standards

Table 9: Pathway of Vocational Education and Training System in Oman

Pathway	Target Group	Duration	Certificate Awarded	Training Locations	Age Requirement	Additional Notes
Vocational Diploma Pathway	General Education Diploma graduates	3 years	Vocational Diploma Certificate (equivalent to Technological Diploma)	Government Vocational Colleges	General Education	Enables entry into the labour market or further study at Colleges of Technology.
Vocational Apprenticeship Pathway	School drop-outs and job seekers	2 years (may vary depending on training level)	Professional Competence Certificate (semi-skilled, skilled, professional)	Government Vocational Colleges and Workplaces	Grade 9 and above; below 18 years old	Training is delivered under a tripartite agreement between the vocational college, the workplace, and the trainee.
Vocational Training Courses Pathway	Job seekers, career changers, community members, individuals with special needs	1 week – 9 months	Training Course Certificate	Government Vocational Colleges	18 and above	Courses focus on skills development, community inclusion, and rehabilitation. Designed for job seekers and those transitioning careers.

Technology colleges

Oman's Colleges of Technology play a central role in preparing a workforce with applied and technical skills aligned to national labour market demands. Originally established to serve General Diploma graduates, these institutions offer a wide range of specialisations, including engineering, information technology, business, applied sciences, pharmacy, photography, and fashion design. Programmes are designed to develop both occupational competencies and transferable skills, enabling graduates to enter the workforce with relevant and practical qualifications.

Eight Colleges of Technology operate across Oman, located in Seeb, Sohar, Sur, Ibri, Shinas, Buraimi, Salalah, and Khaboura. Until 2020, these colleges—along with the Technical College in Al Musannah—were overseen by the Ministry of Labour. In August 2020, they were integrated with the Colleges of Applied Sciences (previously under the Ministry of Higher Education) into the University of

Technology and Applied Sciences (UTAS). This consolidation aimed to streamline governance and enhance the delivery of technical and applied education nationwide.

The Colleges of Technology offer Diploma and Advanced Diploma qualifications, with curricula regularly updated based on labour market needs and technological developments. Engineering accounts for the largest share of student enrolment (48.6%), followed by information technology and business studies. Student allocation is guided by sector-level employment forecasts, helping to align training pathways with actual job opportunities.

These colleges offer a wide range of accredited specialisations across four core programme areas: engineering, information technology, business studies, and applied sciences. Engineering remains the most diverse stream, with disciplines spanning civil, mechanical, electrical, oil and gas, and chemical engineering, as well as more specialised areas such as biomedical, mechatronics, and aircraft engineering. Information technology programmes typically include software development, database systems, networking, and information security. Business studies cover areas such as accounting, marketing, office management, and human resources. Applied sciences programmes feature subjects like applied biology, environmental sciences, chemistry, and occupational health and safety. Some specialisations are offered under specific conditions, while others have been discontinued or revised. Although the exact set of programmes may evolve, the current structure provides a strong foundation for adapting vocational curricula to the emerging skills needs of Oman's green economy.

In addition to technical instruction, the colleges promote entrepreneurship and socio-economic development. Continuous investment has improved laboratories, workshops, and IT infrastructure, ensuring students have access to modern technological tools and learning environments. With approximately 40,000 students enrolled, the Colleges of Technology are a cornerstone of Oman's technical and vocational education system, supporting national goals for workforce localisation and readiness for a technology-driven economy.

Strengthening the link between institutional training structures and green labour market demand, vocational and technological education programmes are now increasingly expected to deliver the skills base required for Oman's clean economy. Many jobs in areas such as renewable energy, energy efficiency, and environmental management require a combination of specialised technological knowledge and strong technical skills. Programmes offered by the Colleges of Technology—particularly in engineering, information technology, and applied sciences—align closely with these requirements. Graduates from these disciplines are increasingly well-positioned to take up roles in solar and wind energy, energy auditing, and other clean technology fields.

To strengthen this contribution, the Colleges of Technology are gradually adapting their curricula to incorporate green skills and sustainability content. Ensuring that graduates are equipped with relevant competencies will support workforce localisation in green sectors and help Oman remain competitive as sustainability becomes more central to global economic development.

Vocational colleges & training centres

Government vocational colleges also play a critical role in supplying job-ready talent to both public and private sectors, particularly in occupations where expatriate labour remains dominant. Operating under the supervision of the Ministry of Labour, these institutions focus on practical instruction and labour market alignment. Their training covers fields such as electrical wiring, plumbing, construction, and increasingly, green trades such as solar installation and sustainable construction techniques. Leadership and entrepreneurship are also embedded in programme delivery, encouraging graduates to contribute as both skilled workers and future business owners.

To provide accessible and structured vocational pathways, the system offers three distinct routes, defined under Ministerial Decree No. 244/2015. The Vocational Diploma Pathway targets students who have completed their General Education Diploma, offering a three-year training programme that

leads to a certificate equivalent to a Technological Diploma. The Vocational Apprenticeship Pathway serves school leavers and job seekers through a tripartite agreement between colleges, employers, and trainees, combining on-the-job learning with institutional instruction. The Vocational Training Courses Pathway supports short-term upskilling, career transitions, and entrepreneurship through modular and flexible formats.

Seven public vocational colleges operate across Oman—in Seeb, Saham, Sur, Ibri, Shinas, Al Buraimi, and Salalah—alongside the Vocational College for Marine Sciences in Al Khaburah. These institutions are positioned to support green workforce development by expanding training offers in areas such as wind turbine maintenance, solar energy systems, and environmental management. Ensuring programme relevance to clean economy sectors requires closer alignment with labour market needs, targeted curriculum development, and consistent coordination with employers. As technological change continues to reshape industry requirements, sustained investment in both technical capacity and institutional flexibility will be essential to maintain the effectiveness of Oman's vocational training system.

The private training sector supports workforce development and helps meet labour market needs across a range of specialisations. In the past decade, the number of private training institutions in Oman has grown substantially. As of the most recent figures, roughly 480 licensed institutes and centres operate across the country, with concentrations in Muscat, Dhofar, and North Al Batinah.

Private training provision takes several forms:

- **Private institutes:** Standalone facilities established for vocational training in accordance with national regulations.
- **In-house training centres:** Internal facilities operated by companies to train their employees through customised programmes.
- **Training services offices:** Entities offering short-term courses—such as lectures, workshops, or seminars—typically under 25 hours in duration.
- **Training units within private higher education institutions:** Programmes embedded in private universities and colleges, offering vocational instruction alongside academic education.

Licensing for private training institutions in Oman is structured around four main areas. The commercial field includes administrative, financial, information technology, and language training. The industrial field covers technical trades such as mechanics, carpentry, electrical work, and construction. The crafts field comprises manual and service-oriented skills, including tailoring, hospitality, and cosmetology. The special programmes field includes sectors that require external regulatory oversight, such as agriculture, fisheries, veterinary assistance, meteorology, and medical support services.

The process to obtain a license involves several regulatory steps to ensure compliance and quality assurance. Investors begin by submitting an application through the Ministry of Commerce and Industry's "Invest Easy" portal, including required documentation and payment of fees. Following document verification, the application is referred to the Ministry of Higher Education. A site inspection is then conducted—either by the Ministry of Higher Education or the Ministry of Labour, depending on the type of institution—to assess compliance with physical and operational criteria. Final approval is granted once all regulatory requirements are met. Subsequently, both administrative and training staff must be accredited in line with applicable bylaws, and training programmes must be approved for compliance with national standards. Upon completion of training, certificates are issued following verification of trainee data and identity documentation.

Supervision and quality assurance in vocational training rely on structured field visits and technical oversight to ensure effective programme delivery. These include licensing visits for new institutions, follow-up inspections to monitor compliance with staffing, training plans, and quality standards, as

well as counselling visits provided upon request. Classification visits assign institutions to one of four categories based on their performance. Institutions in the first category may implement international programmes and open specialised branches. Second-category institutions can also operate branches and offer special programmes, while third-category institutions are restricted to general training activities. Those placed in the fourth category are subject to reassessment after six months and may face licence revocation if performance does not improve.

This classification system, supported by a structured licensing framework, allows training providers to adapt their offerings to changing labour market needs. In principle, the system can support the introduction of new programmes and professional certifications in areas such as solar PV, wind energy, hydrogen technologies, and energy management. By streamlining procedures for programme approval and trainer accreditation, the framework creates space for more responsive skills development—particularly in sectors where demand is expected to grow rapidly.

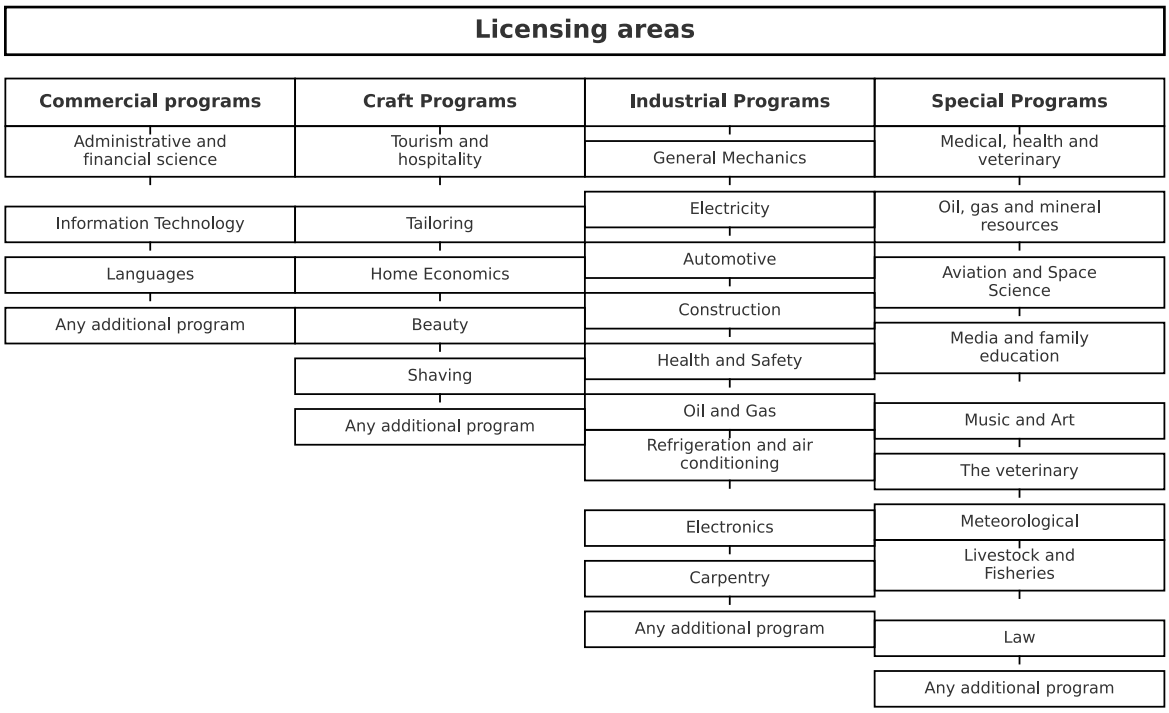


Figure 41: Area of licensing programs for private vocational and training institutes

Table 10: Key Areas of Training Courses

Technical and Engineering:	Business and Management:	Information Technology:	Health, Safety, and Environment:	Language and Communication:	Personal and Professional Development:
• Mechanical Engineering • Electrical and Electronics Engineering • Heating, Ventilation, and Air Conditioning (HVAC) • Precision Instruments • Electrical Motor Control • Production Operation • Process Operation • Maintenance (Mechanical, Electrical, Instrumentation) • Mechatronics • Mining • Plastic Processing Machine Operator • Renewable Energy • Training Programme for the Airline Transport Pilot Licence (ATPL)	• Digital Marketing • Supply Chains and Logistics Operations • Logistics Management • Management Skills • Building Investment Opportunities • Budgeting and Financial Statements Preparation • Administrative Skills • Paralegal Studies • University Training • Introduction to Securities and Investments	• Computer Skills Development Programme • IT Infrastructure • AI Applications and Data Analysis in the Workplace • Graphic Design • IT Cybersecurity and Cloud Networking	• Occupational Health and Safety • Environmental Health and Safety • Sustainability and Environmental Management	• Preparatory Course for the International English Language Testing System (IELTS) • General English • English Language Courses • Arabic Language Skills	• Effective Communication, Influence, Persuasion, and Negotiation Skills • Personal and Professional Development • Soft Skills • Other Specialised Areas

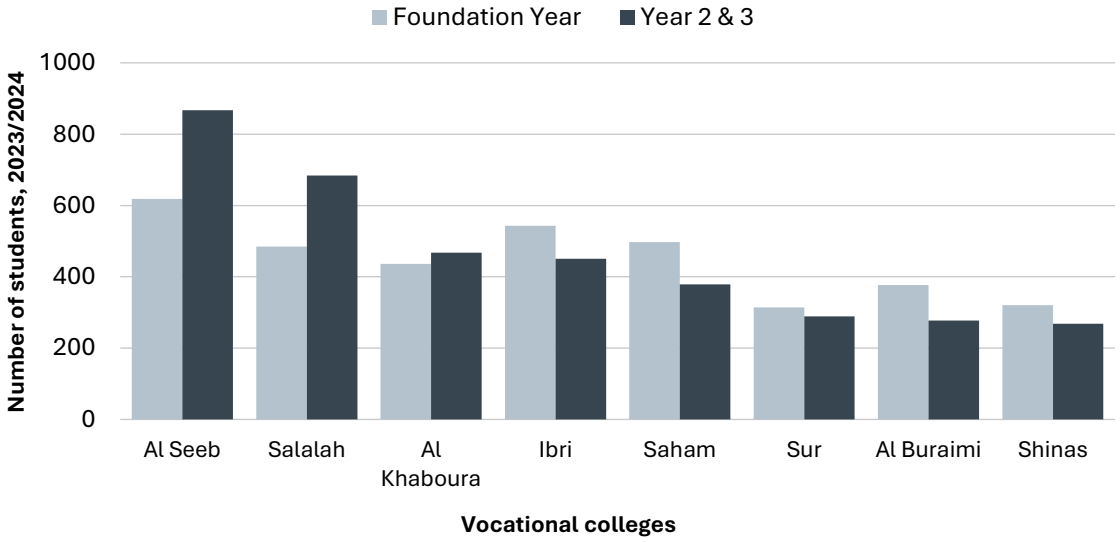


Figure 42: Overall number of students in government vocational colleges

Occupational standards are formal descriptions of the competencies—such as skills, knowledge, behaviours, and performance expectations—that individuals must demonstrate to carry out specific job roles effectively. These standards support workforce preparation, employment, and mobility by defining the requirements for skilled performance across occupations.

While sometimes mistaken for job descriptions, occupational standards are more comprehensive. Job descriptions typically outline specific duties, responsibilities, and qualifications for a given position. In contrast, occupational standards provide a broader framework, including job tasks, required competencies, implementation steps, tools and equipment used, applicable safety regulations, and in some cases, associated training approaches. This structure helps ensure that workers are not only aware of job expectations but are also equipped to meet them through appropriate education and training pathways.

Oman's vocational education and training (VET) system, which shares many features with international models, has long aimed to produce a skilled national workforce aligned with labour market demands. Emphasis is placed on practical, workplace-oriented training over theoretical instruction, with the goal of improving employment outcomes and reducing skills mismatches.

Occupational standards are increasingly viewed as a useful tool in supporting both traditional and emerging sectors. Many stakeholders consider them important for navigating the effects of technological change, workplace complexity, and shifting skill requirements. The emergence of new occupations—driven by developments in digitalisation, energy systems, and sustainability—has highlighted the potential value of clearly defined and regularly updated standards. In particular, the growth of green sectors such as renewable energy and energy efficiency may benefit from more targeted frameworks to guide training and qualifications. Developing or adapting such standards could help ensure that Oman's workforce is better positioned to respond to evolving labour market conditions and long-term development priorities.

The National Occupational Standards and Testing Centre was established in response to Royal Directives aimed at strengthening the training and qualification of Oman's national workforce. As labour market demands expanded, the need arose for a dedicated institution to develop occupational standards across multiple skill levels, helping ensure that vocational education responds effectively to sector needs. Between 2005 and 2011, the structural framework of the centre was developed in collaboration with the German International Cooperation Agency (GIZ). The centre was formally established by ministerial order in 2011, with a mandate to develop occupational standards, oversee competency-based testing, and contribute to performance improvement in both the production and service sectors. It serves stakeholders in the public and private sectors as well as training and education institutions, helping align vocational curricula with structured, industry-informed methodologies.

The most recent cycle of occupational standards development, led by the Ministry of Labour and the centre, focused on 60 occupations across a range of skill levels. These cover fields such as IT services, engineering drawing, tourism, sales, hospitality, agriculture, media technology, mechanical services, and more. In several areas—including hospitality, air-conditioning and refrigeration, mechanical services, electricity, vehicle maintenance, and carpentry—both occupational standards and competency tests have been developed. Construction accounts for the highest number of occupational standards (seven), although tests for this field have not yet been finalised. In total, ten occupational tests have been introduced as part of this development cycle.

The centre has also recently updated its occupational standards methodology to reflect current industry needs, particularly in the oil and gas sector. This work, carried out in coordination with the Oman Energy Association (OPAL), resulted in standards for seven professional areas: drilling operations, welding and fabrication, lifting operations, HSE, engineering maintenance, mechanical manufacturing engineering, and QA/QC. The development process involved over 165 experts and included visits to more than 30 business sites to ensure relevance and coverage. Coordination is also underway to extend this standards development to emerging clean economy sectors, including solar PV, wind, and hydrogen, with input from relevant project developers and industry actors.

As part of this initiative, an occupational mapping exercise was conducted to identify key job roles and competency requirements in green sectors such as renewable energy, energy efficiency, hydrogen, steel, aluminium, and mining. This mapping is expected to support future development of occupational standards tailored to the needs of green industries. By providing a clearer view of evolving workforce requirements, the mapping offers a basis for structured collaboration among stakeholders in training, industry, and government. It may also support the development of new qualifications and training programmes aligned with the labour demands of Oman's clean economy and broader national development objectives, including those under Oman Vision 2040.

Appendix B: Additional Tables

Table 11: Regression table for logistic regression of jobseekers' sociodemographic backgrounds on sectoral interests

	Solar PV	Wind Energy	Hydrogen	Min. + Met. Extraction	Bioenergy	Green Materials
Diploma	-0.049	-0.022	-0.416***	-0.225**	-0.076	-0.102
	(0.101)	(0.101)	(0.097)	(0.092)	(0.077)	(0.088)
Secondary education	-0.212	0.105	-0.418**	0.222	0.461**	-0.022
	(0.186)	(0.196)	(0.191)	(0.159)	(0.178)	(0.180)
Vocational training	**0.356*** **	-0.026	0.142***	-0.064	0.247	0.172
	(0.051)	(0.359)	(0.040)	(0.356)	(0.365)	(0.356)
Master's Degree	-0.038	0.399**	0.077	0.081	0.078	-0.175**
	(0.197)	(0.169)	(0.142)	(0.222)	(0.203)	(0.070)
Age	0.006	-0.004	-0.000	-0.007	0.002	-0.006
	(0.009)	(0.009)	(0.010)	(0.008)	(0.007)	(0.007)
Non-Omani	0.255**	0.204	-0.111	-0.065	0.218	-0.221***
	(0.112)	(0.171)	(0.164)	(0.182)	(0.192)	(0.053)
Male	0.065	0.173***	0.038	0.192***	0.018	0.018
	(0.065)	(0.065)	(0.051)	(0.066)	(0.057)	(0.061)
N	240	240	240	240	240	240

Notes: Marginal effects from linear probability models of sector interest indication. Standard errors in parentheses. The base category is defined by individuals with the characteristics: female, bachelor's degree, Omani. Base categories were selected based on how many observations are in a respective category.
Stars indicate level of statistical significance: * p<0.1, ** p<0.05, *** p<0.01

Appendix C: List of survey questions included

Figures Number	Question
Figure 10	Jobseeker Survey: Improving the employment situation is a central task for the Sultanate of Oman. As a jobseeker, how responsible do you consider each of the following actors in this process, on a scale from 1 (Not Responsible) to 3 (Most Responsible)?
Figure 13	Jobseeker Survey: Would you consider working in a position that is below your qualifications or current job level?
Figure 14	Jobseeker Survey: In which of the following sectors would you be most interested in working? Please select all that apply
Figure 15	Jobseeker Survey: Please indicate your level of interest (1 = low interest, 5 = high interest) in working for different types of employers in the green energy and related sectors.
Figure 16	Workers Survey: In which of the following sectors would you be most interested in working? Please select all that apply.
Figure 17	Managers, Workers, and Jobseekers Surveys: What do you consider to be the main barriers to finding employment in green industries and related sectors in Oman? Please select all that apply.
Figure 18	Management: How does your organization typically respond when faced with skills gaps in your workforce?
Figure 19	What is the approximate monthly income do you expect when moving to new job in the green energy sector you are interested in?
Figure 20	Management Survey: Based on your observations, how strong are the skills, experience, and knowledge of your current employees in the following areas of green energy and clean technologies?
Figure 21	Worker survey: How well do your current skills and experience cover the following areas of green energy and clean technologies?
Figure 22	Management survey: Which technical skills do you believe the majority of job applicants lack?
Figure 23	Managers, higher education institutions and training centres: In your opinion or experience, what are the main causes of skills mismatches in the labour market for the green economy and clean energy sector? Please rank the causes from 1 (least important) to 5 (most important).
Figure 26	Higher education institutions: How well do your existing programs and courses cover the knowledge and skills required for the following areas of green energy and clean technologies?
Figure 28	Workers: What do you believe are the biggest challenges preventing you from enrolling in and starting training programmes? (Select all that apply)
Figure 29	Management Survey: Based on the experience and knowledge of your current employees, to what extent do you believe they would need upskilling or reskilling to work in the following green energy and clean technology areas?
Figure 30	Jobseekers: Assuming the government were to offer support in helping you gain new skills, please rate from 1 (low motivation) to 5 (high motivation) how motivated you would be by the following examples of support measures
Figure 32	Management and workers: Which types or formats of training does your organisation currently use or plan to use over the next five years, and which formats do you personally prefer for upgrading your skills?

Figure 33	Management and workers: In your opinion, which types of organisations are best positioned to deliver training for skills relevant to the green economy?
Figure 34	Higher education institutions: Based on your programme evaluations, have you recently implemented any revisions to include green knowledge in updated programmes? If yes, please provide examples.
Figure 35	Management: What specific challenges does your company face when developing capacity-building or skills development plans for green industries? (Select all that apply)
Figure 36	Higher education: What specific challenges does your institution face when developing curricula for green jobs? Please rank each cause from 1 (no challenge at all) to 5 (very significant challenge)
Figure 37	Training centres: What specific challenges does your institution face when developing curricula for green jobs?
Figure 38	Higher education institutions and training centres: On average, how long does it typically take your institution or centre to develop a new green curriculum, from initial concept to implementation?
Figure 39	Higher education survey: Which strategies do you believe would help universities better align their programmes with the needs of the green job market?
Figure 40	Management survey: How should key stakeholders in Oman's green industry collaborate with educational institutions to enhance the development of green educational programmes over the next five years? (Select all that apply)

الجمعية العمانية للطاقة
Oman Energy Association

ABOUT OPAL

Oman Energy Association (OPAL) is a prominent business society in the Sultanate of Oman. An NGO and a non-profit organization focusing on the Energy & Minerals sector. The organization was originally formed in 1998 when like-minded companies embarked on a common desire to promote industry standards and create a forum to resolve common problems and share best practices. Initially known as the Oil Industry Training Board (OITB), it was later amalgamated with Oman Oil & Gas Contractor Forum to form the Oman Petroleum Alliance (OPAL). The industry's business society was officially registered on the 27th of October 2001, under the regulations governing the formation of societies at the Ministry of Social Development.

OPAL aims to strengthen its services through a single platform for agreeing and promoting work standards to increase competencies and professionalism. The long-term target of OPAL is to have the Oman's Energy Industry in a world class level, internationally competitive and as a figurehead in the sustainable management of Hydrocarbons and Renewable energy. OPAL aspires to be the foremost facilitating body to align stakeholders' objectives and moderate and address common challenges for the benefit of its members.

The value "Voice of the Industry" inspiring capable and resilient businesses to sustain prosperity in Oman's Energy & Minerals sector.

Uniquely serving member companies by promoting "synergies", "In Country Value creation" and "Capacity Building" to enhance the sustainability of the Energy & Minerals and the national economy.

The Human Capital Development Scheme prioritizes employers' needs and focuses on targeted training aimed at enhancing competence and work ethics. Employment is the primary objective, with training serving as the enabler. Over the past 25 years, OPAL has facilitated the training and employment of more than 15,000 Omanis and has successfully redeployed over 9,700 during the last several years.

مجلس مجان
THE MAJAN COUNCIL

ABOUT THE MAJAN COUNCIL

The Majan Council for Foresight, Strategic Affairs, and Energy, standing out as the Gulf's first Think and Do Tank, uniquely bridges cutting-edge applied research with practical decision-support and project implementation for policymakers and business leaders. Rooted in local expertise and identity, the Majan Council is a proud Omani enterprise based in Muscat, dedicated to leveraging local knowledge and collective decision-support to drive development, advancement, and innovation across the GCC. We empower policymakers, business leaders, and societies with actionable insights and foresight on emerging issues, providing them with the strategies they need to navigate the future. With an extensive international network, the Majan Council collaborates with representatives from leading think tanks, decision-makers, and institutions worldwide, enhancing its global perspective.

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