



Leveraging Emiratization for Green Careers: A Pathway to Achieving UAE's Sustainability Goals

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Abstract

The United Arab Emirates (UAE) is steadfast in its commitment to sustainability, reflected in its ambitious Green Agenda 2030. Central to these objectives is the need to develop a workforce skilled in green careers that can drive the country toward a sustainable future. This study investigated the types of green careers that are critical to the UAE's sustainability targets, including renewable energy, sustainable construction, waste management, and environmental consultancy. By identifying these key areas, the research provided a framework for integrating sustainability into the Emiratization initiative. Furthermore, the study then determined the types of programs and training required to develop the competencies needed for a skilled workforce in these green careers. The authors analyzed existing policies and programs and recommended adaptations to support the training and development of Emiratis in these fields, ensuring that the local workforce is equipped with the necessary skills and knowledge. Through this comprehensive analysis, the study aimed to provide actionable recommendations for policymakers and businesses. These recommendations highlighted how the Emiratization program can be leveraged to meet both employment and sustainability objectives, demonstrating that fostering green careers through Emiratization can enhance the employability of Emirati citizens while achieving broader environmental and economic goals.

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1 Introduction

1.1 Sustainability and Green Careers

Green careers are those that assist in maintaining or improving the quality of the environment. These include jobs that help safeguard biodiversity and ecosystems, reduce energy use, decarbonize the economy, and reduce waste and contamination. The significance of green careers has been emphasized by their role in addressing climate change, advancing sustainable development, and transitioning to a low-carbon economy. Human resources, especially the youth, are considered a nation's most important asset and have a significant impact on its sustainable economic development. Consolidating green hiring is, in fact, an essential step toward building a robust, competitive, and successful economy (Abdusheikh, 2012). Therefore, this study's goal is to investigate the kinds of green jobs that are essential to the UAE's sustainability goals, such as environmental consulting, waste management, sustainable building, and renewable energy. The study offered a framework for incorporating sustainability into the Emiratization drive by identifying five crucial areas.

Green careers, which provide respectable jobs thought to be of paramount importance for community well-being, are also essential for social inclusion. The International Labour Organization (ILO) defines green jobs as respectable occupations that reduce energy and raw material consumption, limit greenhouse gas emissions, reduce waste and pollution, and preserve and rebuild ecosystems (Aceleanu et al., 2015). This concept pinpoints the many benefits of green jobs, which go beyond environmental sustainability to include

increased social fairness and economic flexibility (AGBI, 2023).

Across a variety of industries, green careers play a vital part in the shift to a green economy. Waste management, construction, agriculture, transportation, and renewable energy are important industries. The creation of green jobs has been significantly fueled by the renewable energy industry, which includes solar, wind, and biofuels. In certain nations, integrating environmental policy with skill development has proven successful, particularly in key areas like energy efficiency and renewable energy. However, many nations find it difficult to keep a strong connection between their skills policies and environmental sustainability programs (Al-Waqfi & Forstenlechner, 2013). Similarly, increasing the energy efficiency of buildings and industrial operations can lead to a number of job opportunities in the manufacturing and construction industries.

As far as the agricultural sector is concerned, methods like organic farming and agroforestry are essential for creating jobs and ensuring environmental preservation. Through the creation of electric cars, public transportation, and other low-carbon transportation options, the transportation industry also provides green job opportunities (Albrithen, 2023). Furthermore, the waste management industry—which involves composting, recycling, and waste-to-energy initiatives—plays an essential part in reducing environmental impact and generating employment opportunities.

Conventional sectors cannot create green jobs. Green occupations are growing as a result of emerging businesses like green chemistry, sustainable finance, and smart grids. For example, it is projected that the expansion of smart grids will increase energy efficiency and dependability, which will assist in creating jobs in the information technology and electrical engineering sectors (Aljanahi, 2016).

A variety of crucial policy decisions are of paramount importance to the consolidation of the development of green jobs. These involve, but are not restricted to, expanding training and education initiatives, encouraging green business, and implementing financial incentives. Programs for education tailored to the demands of the green economy are crucial for providing workers with the knowledge and abilities they need. This involves offering green skills-based vocational training programs and incorporating green capabilities into educational curricula (Abdusheikh, 2012).

However, the consolidation of green entrepreneurship is an important policy initiative. Innovation and employment creation in the green economy can be stimulated by supporting the growth of green enterprises via grants, subsidies, and loan availability. The employment market can be significantly improved by policies that stimulate the formation of green businesses and offer assistance to new ventures in green sectors (Basheer, n.d.).

Improving green jobs can also be greatly aided by financial rewards, such as tax exemptions and subsidies for eco-friendly practices and technologies. By lowering the cost of adopting sustainable practices, these financial rewards can encourage firms to invest in green technologies and create green jobs. Additionally, regulations that coordinate green technology research and development help guide innovation and employment creation in the green industry (Albrithen, 2023).

Indeed, international collaboration should be in alignment with universal principles only because dealing with the transboundary nature of environmental concerns is crucial. Programs like the International Trade Union Confederation (ITUC), the United Nations Environment Program (UNEP), and the ILO's Green Jobs Initiative, highlight the significance of internal efforts in improving green employment and ensuring a fair transition for all workers (BCG, n.d.).

1.2 Objective of the Study

The objective of this study is to identify the connection between green careers and the Emiratization initiative, offering a framework for integrating sustainability into the UAE's national workforce strategy, which is aligned with the UAE Green Agenda 2030. The authors will provide several theoretical frameworks that can guide the integration of Emiratization with sustainability initiatives, improving the effectiveness of both strategies.

In addition, the aim of this article is also to contribute to the extant literature by providing practical recommendations for policymakers to consider when implementing the UAE Green Agenda 2023 which could assist in improving UAE nationals' participation in the private sector in green careers that require collaboration between the government, the private sector, and higher education institutions (HEIs).

2 Literature Review

2.1 Emiratization Program

Emiratization is deemed to be a strategic initiative established by the UAE government that seeks to increase the recruitment of UAE nationals in the private sector. This policy is an integral part of the nation's broader strategy to lessen reliance on the expatriate workforce and secure sustainable economic development. In defiance of the huge efforts, Emiratization has encountered many obstacles, and its overall success has been limited (Bocanet & Grassa, 2023).

Emiratization primarily aims at integrating Emirati nationals into the private sector, which is mainly staffed by

expatriates. The policy seeks to provide Emiratis with lucrative employment chances, thereby decreasing national joblessness rates and improving economic participation among locals (Daleure, 2017). Furthermore, it aims at aligning the workforce composition with national demographics and decreasing the socioeconomic influence of high reliance on the expatriate workforce.

Emiratization has encountered several obstacles. One of the crucial issues is the skill gap and education mismatch. Historically speaking, the UAE's education system has been directed toward preparing students for public sector employment, which led to a skill mismatch for private sector requirements. There is a necessity for greater alignment between educational outcomes and market needs (Elbanna & Fatima, 2023). The private sector is often in need of skills that are not adequately covered in the current educational curriculum, like technical and vocational skills (Elo & Kyngäs, 2008).

On the other hand, cultural and social preferences also form a hurdle to Emiratization. Emiratis often favored public sector jobs because of better working conditions, higher salaries, and job security. The private sector is seen as less appealing because of its demanding nature and lower job security (European Commission, 2010). This cultural preference makes it challenging to motivate Emiratis to look for employment in the private sector.

The implementation of Emiratization is also encountered with economic consideration. The cost of giving a job to Emiratis is perceived to be higher compared to expatriates, mainly because of expectations of higher salaries and benefits. Because of its economic burden, many firms in the private sector were unenthusiastic about the Emiratization policy (Daleure, 2017; European Commission, 2011). Furthermore, integrating Emiratis into predominantly expatriate workplaces has created sociopsychological challenges. Expatriates often view Emiratis as different, which affects labor dynamics and integration efforts.

Policy and regulatory issues have also been huge hurdles. The implementation of Emiratization policies has been inconsistent. While the government has mandated quotas and given rewards, enforcement has been weak, and punishments for nonadherence are often seen as a form of taxation rather than a deterrent (Fenech et al., 2020).

Despite all these hurdles, Emiratization has succeeded, and best practices have been developed. The UAE government has constituted many bodies, for instance, TANMIA and the Emirates National Development Program, to oversee and support Emiratization efforts. These organizations provide training and employment support to Emirati job seekers (Elbanna & Fatima, 2023; Feuston & Brubaker, 2021). The educational system has been reformulated to prepare the Emiratis for private-sector employment. Initiatives such as the Dubai Knowledge Village that have aimed to improve the

quality of education and provide vocational training aligned with market needs (Elo & Kyngäs, 2008).

The government has provided rewards for private firms to hire Emiratis, including subsidies for training and development programs. Some companies have successfully integrated Emiratis by providing tailored career development plans and mentoring programs (Daleure, 2017; European Commission, 2010). Furthermore, strategic talent management practices have been suggested to improve the job performance and retention of Emirati employees in the private sector, in critical industries like oil and gas in particular (Forstenlechner et al., 2012).

Grounded upon the literature, many recommendations are proposed to improve the effectiveness of Emiratization. Aligning educational curricula with the needs of the private sector is highly needed and providing vocational training that equips Emiratis with the skills demanded by employers (Elbanna & Fatima, 2023; Elo & Kyngäs, 2008). Strengthening the enforcement of Emiratization policies through stricter penalties for nonadherence and giving additional support to companies that actively seek Emiratization targets is of paramount importance (Goby, 2015). Efforts should be made to rectify perceptions about private-sector employment among Emiratis by highlighting the benefits and chances for career growth and development in this sector (European Commission, 2010; Godwin, 2006).

There is a need to develop programs that ease better integration of Emiratis into expatriate-dominated workplaces, involving cultural sensitivity training and team-building initiatives, which can enhance workplace dynamics. Execution of robust monitoring and evaluation mechanisms to assess the effectiveness of Emiratization policies and make necessary adjustments based on feedback and changing economic conditions is also crucial (Fenech et al., 2020).

Emiratization is deemed to be a crucial policy for the UAE's socioeconomic development. There are huge hurdles, such as strategic reforms in education, policy enforcement, and workplace integration, that can improve the effectiveness of Emiratization. Nonstop government support and collaboration with the private sector are crucial to attaining the desired outcomes of this policy.

2.2 Moving toward Sustainability and Employment

There is a connection between sustainability and employment, which is showcased by different international case studies that provide valuable insights that can be applied to the UAE's Emiratization strategy. For example, the European Union (EU) has displayed a proactive approach to consolidating the green economy, especially through the Europe 2020 Strategy (Hamilton et al., 2023). This strategy concen-

trates on a low-carbon, climate-resilient, and resource-efficient economy, particularly targeting young people who are embracing new notions and adapting resiliently to the requirements of the green economy. This strategy has led to the creation of nearly three million jobs in green industries by 2010, despite the economic crisis (ILO, [n.d.-a](#)). This shows how policy-driven support for green industries can lead to crucial job creation, a principle directly applicable to Emiratization goals.

Germany's green growth strategies have also yielded substantial employment gains. The country's investment in renewable energy, energy efficiency, and sustainable transport has created a robust green job market. For instance, Germany's shift from fossil fuels to renewable energy has not only reduced its carbon footprint but also generated numerous jobs in the manufacturing and installation of renewable energy technologies (Basheer, [n.d.](#)). This showcases the potential for similar outcomes in the UAE if it channels its Emiratization efforts toward these green sectors.

The UN's REDD+ (Reduced Emissions from Deforestation and Forest Degradation) initiative has shown the potential for creating millions of full-time jobs in developing countries through sustainable forestry practices. Although the UAE's environmental context is different, the principle of leveraging international investments to support sustainable job creation can be adapted. By appealing to and facilitating investments in green industries, the UAE can create new employment opportunities for Emiratis that go hand in hand with both Emiratization and sustainability objectives.

2.3 Theoretical Frameworks on Integrating Employment Programs with Sustainability Initiatives

Several theoretical frameworks can guide the integration of Emiratization with sustainability initiatives, improving the effectiveness of both strategies. Stakeholder theory, for example, ensures the essentiality of engaging different stakeholders in improving employability. Bearing in mind the Emirati context, this would include collaboration between government bodies, educational institutions, and private-sector employers to develop curricula and training programs that satisfy the needs of green industries (ILO, [n.d.-b](#)).

The Emiratization program can adopt the Green Jobs Initiative by the International Labour Organization (ILO), United Nations Environment Program (UNEP), and International Trade Union Confederation (ITUC) to secure a comprehensive framework. This initiative outlines principles for making decent jobs that contribute to environmental sus-

tainability, for example, improving energy and raw material efficiency, restricting greenhouse gas emissions, and protecting ecosystems. The UAE can ensure that Emiratization efforts not only increase national employment rates but also contribute to broader environmental goals by embracing sustainability principles (Kizu et al., 2018).

Human capital theory, which ensures that investing in education and training improves worker productivity and adaptability, is particularly relevant for integrating sustainability into Emiratization. Nonstop learning and skill development are of paramount importance for adapting to the evolving demands of green careers. Programs that put together formal education with practical experience, like apprenticeships and internships in green industries, can fill the skills gap and prepare Emiratis for the job market (Basheer, [n.d.](#)).

The integration of sustainability into employment programs also includes policy measures that support green entrepreneurship and innovation. Governments can implement financial rewards, for instance, tax breaks and subsidies for green technologies, to motivate businesses to adopt sustainable practices and create green jobs. These policies can align market incentives with sustainability goals, fostering a transition to a green economy and creating new employment chances for Emiratis (Abdusheikh, 2012).

The alignment of sustainability and employment provides valuable lessons for enhancing Emiratization in the UAE. Case studies from the EU, Germany, and Australia display the potential for important job creation via targeted investments and supportive policies in green industries. Theoretical frameworks like stakeholder theory, the Green Jobs Initiative, and human capital theory provide insights into how employment programs can be effectively put together with sustainability initiatives.

The UAE can promote green careers as part of its Emiratization strategy, contributing to a sustainable and resilient economy by embracing these frameworks and executing supportive policies. This approach not only deals with the instant goal of fostering Emirati partaking in the workforce but also goes hand in hand with the country's long-term vision of sustainable development and environmental stewardship.

2.4 Methodology

This study is exploratory and utilizes a qualitative content analysis. Qualitative data from secondary sources were gathered and examined utilizing the content analysis method (Krippendorff, [n.d.](#); Lennon et al., 2021). A notable aspect of the current study is its implementation of AI-assisted content analysis with substantial human oversight. The utilization of AI tools, specifically ChatGPT, facilitated the quick process-

ing of extensive secondary data beyond the capabilities of conventional approaches.

Qualitative content analysis (QCA) as a research method is widely used in social sciences considering its systematic and flexible nature in analyzing and interpreting unstructured data such as textual, visual, or spoken data (Marcus & Davis, *n.d.*). Researchers employ this methodology to identify patterns, themes, and meanings in their data and to investigate latent and manifest content (Marshall & Naff, 2024). These features of this methodology allow the researchers to develop a deeper understanding of the phenomenon under investigation.

The following study adopts the QCA methodology advocated by Riffe et al. (Marcus & Davis, *n.d.*). The process starts with the formulation of a clear theoretical framework that serves as the foundation of the study. This framework allows the researchers to categorize the patterns that emerge from the secondary data to the relevant theoretical underpinning of the framework. This is followed by the data collection and preparation process, which is a necessary step to allow for computer-assisted analysis of qualitative data. After the data had been prepared for analysis, the researchers proceeded to the formulation of a coding scheme. Each code represents an operational definition assigned to a specific pattern or theme emerging from within the data.

Codes can be generated by the researchers either using the deductive method (employing predefined codes) or the inductive method (codes are developed from within the data being analyzed). This being an exploratory study adopted the latter method and developed codes from the content being analyzed. Once the codes had been finalized, the researcher proceeded to categorize the codes into coherent themes. The analysis then proceeds to establish linkages between the emerging themes and the theoretical framework developed for the study.

The use of AI tools, such as ChatGPT and NLP-based software (e.g., ATLAS.ti), for performing qualitative analysis is an emerging phenomenon in various fields of research (McClelland, *n.d.*; MOHRE, 2024a). Researchers are employing these tools to facilitate the initial categorization of data, allowing them to focus on the task of performing deeper interpretive analysis. Evidence is emerging supporting the usefulness of these tools in performing preliminary data exploration, thematic exploration, and identification of patterns across large datasets (MOHRE, 2024b; Morgan, 2023). Studies have also shown that these tools can act as accomplished coding assistants that can efficiently generate codes based on predefined themes from large volumes of text (MOHRE, 2024a; Olatunde et al., 2024).

As the application of AI tools for performing qualitative data analysis is in its nascent stage, its application sans human oversight is greatly discouraged (McClelland, *n.d.*; Morgan, 2023). The efficiency afforded by these tools can be

marred by their propensity for misinterpretation or even hallucination (Rees et al., 2007). This necessitates the presence of human intervention to ensure accuracy and depth of understanding. The underlying reasoning for this cautionary advice is that AI tools now still lack the contextual sensitivity that might be required to grasp the nuances that can be found in qualitative data.

As a way forward, Marshall and Naff (Morgan, 2023) and Hamilton et al. (McClelland, *n.d.*) suggest a hybrid approach where an AI-driven analysis is followed by a review by the researchers to ensure that the identified themes accurately reflect the context and nuances of the data. The present study also adopted a similar hybrid approach to ensure that the efficiency afforded by employing AI tools did not compromise the depth and integrity of qualitative analysis.

3 Results and Discussion

The following section will describe the results of the content analysis by first providing an overview of the current landscape of green careers in the UAE and how they align with the country's sustainability targets. Secondly, through an extensive content analysis of secondary data (the list of sources analyzed is presented in Table 1) and additional sources, key green careers were identified across several critical sectors, including renewable energy, sustainable construction, waste management, and environmental consultancy. Additionally, the skill recruitment for these jobs is also listed. The study also distinguishes between vocational skills that are delivered through vocational training institutes and skill sets that can only be acquired through the attainment of higher education. The discussion section explores the connection of these green careers with the Emiratization initiative, offering a framework for integrating sustainability into the UAE's national workforce strategy.

The UAE Green Agenda 2030 provides a comprehensive roadmap for the country's transformation into a sustainable and green economy. Since its inception, the UAE has made great strides toward achieving the stated objectives outlined in the agenda. As per the latest data available from the UAE Ministry of Human Resource and Emiratization (MOHRE) in 2023 green jobs constituted 11.69% of the total employment in the UAE labor market, as estimated using an occupational-based approach. This data reflects the positive outcomes being derived from adopting the green agenda and highlights the seriousness of the efforts of the UAE government to meet its commitments to a green economy and its broader sustainability goals.

The content analysis also yielded several important challenges that UAE policymakers should be wary of and opportunities that can be taken advantage of. Most of the challenges were identified by the International Labor Organization

Table 1 Summary of sources utilized for content analysis of green careers and emiratization integration (created by authors)

Title	Source	Nature of document	Brief description	Date of publication/retrieval
World Green Economy Report: Green Jobs—Creating and Sustaining Prosperity in a Changing Global Economy	World Green Economy Organization	Report	Discusses green jobs and the transition to a sustainable green economy	2018
UAE Towards a Green Economy	Ministry of Climate Change and Environment, UAE	Report	Covers UAE's transition towards a green economy from 2010 to 2016	2016
UAE Green Jobs Program: Jobs and Skills for the UAE's Green Economy Transformation	Ministry of Climate Change and Environment, UAE	Program brochure	Outlines the UAE's green jobs initiatives, highlighting job creation and skills development for a green economy	2019
World Employment and Social Outlook 2018: Greening with Jobs	International Labour Organization	Book	Provides global employment trends in relation to the transition to greener economies	2018
The GCC Needs to Make Green Upskilling a Priority	AGBI	Article	Discusses the need for reskilling in green jobs in the GCC to keep up with global energy transitions	2023
Renewables Workforce Nearly Doubles in a Decade	Sarah Townsend, AGBI	Article	Details the global employment growth in the renewable energy sector over the past decade	2023
Mind the Green Gap: Will a 7 M+ Green Energy Worker Shortage Put the 1.5 °C Target at Risk?	Boston Consulting Group	Report	Explores the global green skills gap and its potential risk to climate targets	2023
Skills Development for a Just Transition	International Labour Organization	Policy brief	Focuses on skills development for a just transition to a greener economy	2022
Skills for Green Jobs in the United Arab Emirates	International Labour Organization	Report	Discusses the UAE's green jobs market and skills requirements for transitioning to a greener economy	2018
Green Skills an Important Aspect of Global Agenda for Green Transition	Emirates News Agency (WAM)	News article	Discusses the importance of green skills for the global green transition and the World Bank's role in promoting green jobs	2023
Will a Green Skills Gap of seven million Workers Put Climate Goals at Risk?	Boston Consulting Group	Report	Highlights the global shortage of green energy workers and the potential impact on achieving climate goals	2023
UAE Green Key Performance Indicators	Ministry of Climate Change and Environment	Report	Provides an overview of the UAE's Green Agenda 2030 and outlines key performance indicators for measuring progress in green economy initiatives	2023
Future of Work Forum Explores Prospects for Developing Vision to Enhance Preparedness and Flexibility in National Labour Markets	Ministry of Human Resources and Emiratization (MoHRE)	News article	Covers discussions on labor market transformations, with a focus on green jobs and policy strategies discussed at the Future of Work Forum	2024

(ILO) in its 2018 report. These included skill gaps and shortages, lack of data coordination among the various stakeholders, and the challenge of attracting and retaining global talent.

Globally there is a significant and growing gap between the skills needed for green jobs and the available workforce. This gap is particularly acute in sectors like solar, wind, and biofuels (Riffe et al., [n.d.](#); Sulich et al., [2021](#)). A 2023 report predicts a shortage of seven million green workers globally by 2030, with a large concentration of this shortage in high-emitting countries like the UAE and Saudi Arabia (Riffe et al., [n.d.](#)). The rapid pace of the UAE's green transition exacerbates this challenge, as the demand for skilled workers

often outstrips the capacity of the education and training systems to adapt (Aceleanu et al., [2015](#)).

The ILO also reported on the need to improve the collection and coordination of data concerning green careers among the various stakeholders. A uniform policy in this regard would be helpful in accurately assessing the scope of the skills gap and developing targeted policies (Swann, [2020](#)). To overcome this challenge, there needs to be improved coordination between government, industry, and educational institutions (Swann, [2020](#)). This improved coordination will help align education and training programs with industry needs and enhance the effectiveness of skills development initiatives.

As a policy matter, the UAE wants these new green positions to be occupied by UAE nationals as part of their Emiratization program. The UAE government seems to have had an interest in attracting recent Emirati graduates, but the bottleneck they have encountered is in attracting and retaining experienced mid-career professionals (Swann, 2020). What is contributing to this challenge is the general lack of awareness about green career paths and a perceived lack of competitive salaries compared to other sectors.

In terms of opportunities, the UAE government can explore opportunities for investment in proactive and large-scale skills development programs to equip the workforce with the necessary skills. A possible step in this direction can be the incorporation of green skills into existing technical and vocational education and training (TVET) programs. Further, education providers can be incentivized to design and offer new specialized courses in high-demand areas like solar energy, energy efficiency, and green building. The UAE government seems adamant in seizing this opportunity, as it has set a goal for itself to train 10 Emiratis with vocational skills for every university graduate produced (Taberham, *n.d.*).

The most recent data available, in the public domain, with regard to the green jobs in the UAE is the 2019 report published by the UAE Ministry of Climate Change & Environment (MOCCAE). In an appearance at the summit in 2024, the Minister of Human Resources and Emiratization, Dr. Abdulrahman Al Awar, alluded to a survey conducted by his ministry (UAE, 2024), although the study is not available in the public domain, some data points from this survey appear on the observatory platform of MOHRE (Urban et al., 2023). According to the MOHRE observatory, the percentage of green jobs in the UAE labor market in 2023 was 11.69%. Table 2 lists the top sectors by concentration of green jobs. The above two data points indicate that there are concurrent efforts underway at collecting data about green jobs and that the frequency of this data being made public is also on the lower side.

The above hints at an opportunity for strengthening collaboration between various stakeholders, including the various government ministries, industry, and educational

institutions. A collaborative effort would be essential for aligning skills supply with industry demand and ensuring the effectiveness of skill development initiatives.

The content analysis also provided details on specific green sectors experiencing notable growth in the UAE. These include renewable energy, waste management, transportation, and energy efficiency. The renewable energy sector has been highlighted as a key driver of green job creation in the UAE. This is in line with the UAE's ambitious renewable energy goals, aiming for 50% clean energy capacity by 2050, with 44% from renewables. The efforts have led to large-scale investments in solar energy projects, and it is estimated that renewable energy jobs in the UAE will rise from 49,000 to 81,372 by 2030 (Urban et al., 2023).

Waste management has also been identified as a sector experiencing substantial growth. The impetus behind this growth is the UAE's goal to recycle 75% of municipal solid waste by 2021. New investments directed toward the establishment of recycling facilities and waste-to-energy plants are creating an increased demand for skilled professionals in the sector. These developments indicate that waste management, including recycling, will be one of the dominant sectors for green jobs in the UAE toward 2030.

The two other sectors identified as contributing to the creation of green jobs are the transportation and energy efficiency sectors. Although these sectors have not contributed as many jobs as the previously mentioned sectors, they still have the potential to contribute toward job creation in the future. For example, the transportation sector's share is predicted to increase its share of overall green jobs from 10.9% in 2018 to 17.7% by 2030 (WGEO, *n.d.*). This growth is expected because of the introduction of a greener mass transport system and the increasing adoption of electric vehicles.

It's important to note that the quantification of green jobs in the UAE is still evolving, and the content analysis did highlight the lack of comprehensive data. However, the information available suggests that the sectors mentioned above, driven by ambitious government targets and investments, are experiencing the most significant growth in green employment opportunities in the UAE.

This study also set out to develop a list of green careers within each sector that would contribute to the UAE's sustainability targets. These careers were identified by augmenting the findings from the content analysis and additional sources. These careers identified are spread across multiple sectors, including renewable energy, sustainable construction, waste management, and environmental consultancy. The complete list of careers and associated training needs is presented in Table 3.

With regard to green careers in the renewable energy sector, careers like solar photovoltaic (PV) installers, wind turbine technicians, and energy storage specialists emphasize technical and mechanical expertise. The common skill set

Table 2 Top sectors by concentration of green jobs in the UAE (2023)

Sector	Concentration of green jobs (%)
Manufacturing	36.06
Construction	23.86
Professional, Scientific, and Technical Activities	17.13
Information and Communication	12.33
Water Supply; Sewerage, Waste Management, and Remediation	10.62

Note: Data from the UAE Labour Market Observatory (<https://observatory.mohre.gov.ae>), last updated August 30, 2024

Table 3 Green careers and associated skills (created by authors)

Sector	Key careers	Skills/competencies required
Renewable energy	– Solar photovoltaic (PV) installer	Technical knowledge in solar systems, installation, and maintenance; ability to work at heights
	– Wind turbine technician	Mechanical and electrical skills, knowledge of turbine operations, and safety standards
	– Energy storage specialist	Expertise in battery technologies, grid storage solutions, and energy management systems
	– Renewable energy project manager	Project management, financial planning, and understanding of renewable technologies and regulations
	– Bioenergy production operator	Skills in agricultural and industrial processes related to biofuel production, plant operation, and waste management
Sustainable construction	– Green building architect	Knowledge of sustainable design, energy-efficient materials, and environmental certifications (e.g., LEED, BREEAM)
	– Sustainable construction manager	Expertise in eco-friendly construction techniques, waste minimization, and sustainable project management
	– Energy efficiency consultant	Skills in energy auditing, building retrofitting, and advising on energy-saving technologies
	– Urban planner	Planning for sustainable urban infrastructure, transportation, and community development
	– Eco-materials specialist	Expertise in sustainable building materials, lifecycle analysis, and procurement of eco-friendly resources
Waste management	– Recycling coordinator	Knowledge of waste sorting, recycling processes, and waste management regulations
	– Waste-to-energy plant operator	Skills in mechanical engineering, plant operations, and energy recovery technologies
	– Environmental technician	Monitoring and sampling skills, data analysis, and regulatory compliance in waste and environmental impact
	– Circular economy specialist	Expertise in closed-loop production systems, material reuse, and reducing waste across industries
	– Hazardous waste manager	Skills in hazardous waste management, safety protocols, and legal compliance with environmental regulations
Environmental consultancy	– Environmental consultant	Expertise in environmental impact assessments, compliance with environmental laws, and sustainable project development
	– Climate change analyst	Analytical skills in climate data, understanding of global and regional climate policies, and climate risk assessment
	– Ecological consultant	Knowledge in biodiversity, ecosystems, and advising on ecological restoration projects
	– Sustainability consultant	Skills in corporate sustainability reporting, advising on green business practices, and developing sustainability strategies
	– Environmental policy analyst	Expertise in environmental laws, policy development, and government regulations for sustainability practices

required to master these careers is proficiency in installing, maintaining, and operating renewable energy systems, often requiring vocational training in specialized technologies. There are also some supervisory-level careers identified, such as project management positions, which necessitate higher-level skills such as financial planning and regulatory knowledge, typically developed through higher education institutions (HEIs).

In sustainable construction, careers range from green building architects to sustainable construction managers, focusing on eco-friendly design, energy efficiency, and sustainable material usage. These roles blend vocational

skills (e.g., energy auditing, eco-material sourcing) with academic knowledge from HEIs, particularly in architecture and engineering. The waste management and environmental consultancy sectors highlight both technical and analytical skills, with roles such as recycling coordinators and environmental consultants requiring vocational training for operational tasks, while consultancy and policy-oriented roles rely on HEIs for expertise in environmental impact assessments and sustainability strategies. This blend of vocational education and higher-level academic programs is essential for developing the skills needed for a sustainable workforce across all sectors.

4 Recommendations

The present study offers several practical implications for policymakers to consider. First, it is proposed that policymakers need to further strengthen education-industry alignments. This will require encouraging collaborations between vocational training institutes, higher education institutions (HEIs), and chambers of commerce (representing the industry) to assess current programs and devise new training programs that reflect the current and future demands of the green economy. It is also recommended that new specialized courses are designed with elements of apprenticeships with the industry partner in high-demand green careers, such as solar energy installation, energy efficiency consulting, and waste-to-energy plant operations.

There is also a need to enhance public awareness of green careers. Policymakers might launch a national campaign to enhance awareness among Emiratis, particularly mid-career professionals, regarding opportunities in green careers. By emphasizing the competitive advantages and opportunities for professional progression afforded by green careers, more Emiratis would be motivated to consider career paths in these professions. This can also be reinforced by offering financial incentives, including scholarships, grants, and tax reductions for Emiratis engaging in education and professions within green industries.

It is also recommended to adopt a competency-based approach to developing green skills. This will involve the identification of the relevant competency for each job family and then integrating these green competencies into existing technical and vocational education and training (TVET) programs. At the higher education level, the government of the UAE can encourage HEIs to enhance their focus on developing research and training programs that specifically focus on the development of advanced green skills. These higher-level programs would be especially useful in environmental consultancy and sustainability management domains.

Policymakers in the UAE can also benefit from strengthening their collaborations with international organizations and foreign governments for knowledge transfer. What is also important is to develop a comprehensive system that ensures the contextualization of this knowledge and its adoption in local policy making. Without a robust system of learning in place that takes advantage of international collaboration, these efforts would not deliver to their full potential. This initiative can be supplemented by skills-based migration programs in green sectors, particularly in areas like renewable energy and sustainable infrastructure development.

By implementing these recommendations, the UAE can successfully integrate sustainability into its Emiratization efforts, creating a robust green workforce capable of supporting the nation's long-term environmental and economic goals.

5 Conclusion

The present study was conducted using secondary data to assess the progress on the UAE Green Agenda 2030, specifically in terms of the progress toward the creation of green jobs. Secondary data regarding the green jobs within the UAE's growing sectors of renewable energy, sustainable construction, waste management, and environmental consultancy were collected and analyzed. These sectors were identified as being key to the attainment of the UAE's sustainability goals. The second object was to determine how the UAE government's Emiratization initiative was taking advantage of these new green careers. The findings highlight the diverse skill sets required for these careers, ranging from technical and vocational training to higher education qualifications, emphasizing the need for a multifaceted approach to workforce development. While substantial progress has been made, with green jobs constituting 11.69% of the total labor market in 2023, the UAE still faces challenges such as skill gaps, the need for mid-career professionals, and improving the overall attractiveness of green careers.

The findings from this study point toward the need for strategic alignment between educational institutions, government policies, and industry. This alignment can be attained by creating a centralized dataset on green career classification and skill development requirements for these jobs. This centralized dataset would foster greater collaboration between the stakeholders and guide the combined efforts that currently seem to suffer from redundancies. A workgroup of all the stakeholders can be assigned the ownership of this proposed dataset.

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