

Demand Sizing for Junior Roles in ESG and Carbon Analysis in Africa

A Strategic Imperative to Unlocking Africa's Green
Workforce Potential



Table of Contents

Executive Summary	3
Introduction	6
Market Trends Driving Supply and Demand	11
Technology for Carbon and CO ₂ related Jobs	17
Detailed Analysis	22
Supply Side Analysis	39
Recommendations for Building Blocks (Green Talent Pipeline)	34
Risk Assessment and Mitigation	38
Conclusion	43

Executive Summary

A Strategic Imperative to Unlocking Africa's Green Workforce Potential

As global demand for Environmental, Social, and Governance (ESG) and carbon analyst roles surges, Africa stands uniquely positioned not only to significantly benefit from the global green economy but also to emerge as a leading global hub for specialised sustainability talent, particularly for junior analyst roles.

This publication is led by Invest Africa Institute, drawing on extensive market research, expert interviews, and operational surveys. Fundamentally, it outlines a business blueprint for Africa's potential to become a major talent hub supporting ESG and related career professional growth. The report was developed in partnership with the African Continental Free Trade Area (AfCFTA).

The global ESG landscape rapidly transforming, driven by new regulatory mandates, including the EU's Corporate Sustainability Reporting Directive (CSRD) and the Paris Agreement. Companies worldwide stand to benefit significantly, organisations worldwide that building green portfolios that aligns with global sustainability trends are poised to thrive. Africa stands to benefit, offering more than a third of non-global assets under management (AUM). As a result, ESG could drive new investment flows of \$1.5 trillion in growing private equity, with Africa equities expected to see growth exceeding 25% by 2030, reflecting the continent's rapid economic growth. However, significant challenges remain, at this rapidly growing economic momentum, Africa's ESG talent pool remains limited, with the continent's talent workforce expected to only 15% by 2030.

While talent is not the sole barrier to growth, it is not enough to simply attract talent for growth. By 2030, the continent is projected to require 10 million new people who possess the skills to support its economic growth, sustainable agriculture, climate change adaptation, and green transition. Investing in the future, Africa's talent development. Investment, strategically targeting high-potential, the growth of the sector, supporting the ESG transition, supporting Africa's growth. Africa's growth is a prime ESG talent hub, offering high quality expertise and career opportunities. To achieve this, it is critical to invest in the education, especially given the Africa's massive and about 100 million of young people every year, the continent must invest in technical training, strengthen academic research, and foster innovation and entrepreneurship. While sectors such as financial services and extractives are emerging as key markets, agriculture, food

¹ The African Continental Free Trade Area (AfCFTA) is the largest trade bloc in the world.

² The African Continental Free Trade Area (AfCFTA) is the largest trade bloc in the world.

³ The African Continental Free Trade Area (AfCFTA) is the largest trade bloc in the world.

⁴ The African Continental Free Trade Area (AfCFTA) is the largest trade bloc in the world.

manufacturing, and transportation sectors would benefit from greater employment and new investment in energy products. The EBC's operational demographics forecast a rapidly growing and diversified economy to be the world's largest middle class by 2030, offering a compelling foundation for investment. Many African economies are poised to experience structural growth. However, without targeted training and career support, the continent will be relying increasingly on expatriate labour, missing out on the benefits of localisation and job creation. The EBC's operational demographics forecast a more robust labour market of local talent, thus driving inclusive economic development. **Designing the pay equity strategic investment Africa talent market.**



Key Message

Successful pilot initiatives, such as LinkedIn's collaborative ESG Analyst Course with the University of Cambridge, demonstrate proven, scalable models for rapidly training young African professionals in carbon accounting and ESG reporting. Scaling these initiatives across African universities, co-developing ESG curricula with industry, and embedding sustainability competencies in national education policies can align training outcomes with market demands.

Expanding inclusive digital platforms also holds immense potential to accelerate green talent uptake, which accounts for 72% of the climate impact¹. A robust, free, publicly accessible career advice providing ESG talent with green pathways, career advice, internships, mentorship opportunities, personal development, structured training programs, and career advancement opportunities, aligned with green competencies, will significantly enhance the green workforce and contribute to Africa's emerging ESG workforce.

Strategic stakeholder, institutional and academic talent retention, and potential expansion is crucial training, especially for rural women and marginalised communities. To foster this talent effectively, aligned through academic modernity, regionalisation, African entrepreneurship, and education, the continent's youth will support a policy framework. The report proposes a three and five-year taxonomy of roles, categorised by operational functions and required skill sets.

<https://www.ebc.africa/en/100>

[illegible]

It is noteworthy, *Motor* holds significant potential to become a positive force for the U.S. and carbon market, aligning closely with the best practices outlined in the guidelines mentioned above. It is a good idea to have a separate section in the report discussing the company's efforts to align its operations with the best practices outlined in the guidelines mentioned above. It is a good idea to have a separate section in the report discussing the company's efforts to align its operations with the best practices outlined in the guidelines mentioned above.

Chapter 1

Introduction



This report is a collaborative effort between Azara and Localized, combining Azara's expertise in climate and sustainability with Localized's platform for connecting emerging talent to industry experts and global opportunity. Together, we examine the evolving global landscape for carbon and ESG (Environmental, Social, and Governance) analyst-related jobs, with a sharp focus on Africa's unique challenges, opportunities, and its potential to lead. This report was produced in partnership with the Mastercard Foundation¹.

We focus specifically on carbon and ESG analyst-related roles, the emerging frontier in demand for environmental, social and governance (ESG) talent, and within analyst roles, a rapidly growing specialty area for environmental, social and governance (ESG) talent. Carbon and ESG analyst roles are critical to driving efficiency, reducing emissions, and supporting informed decision-making². Common examples include Carbon Accounting, Inventory Management and Fuel Carbon Accounting (Scope 1 & 2), ESG Reporting (Materiality), where ESG sustainability data aligns with global standards such as GHG Protocol, ISO 26000, and others. Analysts also evaluate the environmental impact of projects and the sustainability of companies and implement corporate sustainability strategies.

¹ <https://www.mastercardfoundation.org/en/our-work/industry-partnerships/africa>
² <https://www.mastercardfoundation.org/en/our-work/industry-partnerships/africa>

ESG Job Categories

Source	Key responsibilities	Typical roles
ESG Data & Reporting Analyst	Collect, analyze, and report ESG data; manage ESG data systems	ESG data analyst, ESG reporting specialist
ESG Strategy & Compliance	Develop ESG strategy and ensure compliance with regulations; manage ESG risk	ESG strategy manager, ESG compliance officer
ESG Stakeholder Engagement	Engage with stakeholders on ESG issues; manage ESG communication	ESG stakeholder manager, ESG communications specialist
ESG Investment & Finance	Integrate ESG factors into investment decisions; manage ESG portfolio	ESG investment manager, ESG portfolio manager

As governments and companies worldwide commit to net-zero targets and transition to sustainable development, the demand for ESG professionals is growing rapidly. This report explores the key responsibilities and typical roles within the ESG field, highlighting the diverse skills and expertise required to drive positive change and ensure long-term sustainability.



There are two major transformations reshaping the future of work. On one hand, the rise of generative AI is automating and transforming many entry-level white-collar jobs, significantly changing traditional graduate employment pathways¹. On the other, climate change, and the growing regulatory, financial, and reputational pressures associated with addressing it, is creating new types of green roles that must be filled urgently².

¹ <https://www.bbc.com/news/technology-67444444>

² https://www.ey.com/en_gl/strategy/insights/2023/03/23/ey-esg-talent-survey-2023

While many ESG initiatives may align closely with policy, frequently implemented by both sectors and more, such as sustainable banking, community, and social skills development, consistent demand exists for sectors including job reclassification in technical training programs, living wages, and sustainable workplace norms. The capacity to create both the good jobs and changing power to address undereducation, C&I and labor law, and highlight voluntary requirements to environmental green labor practices is a requirement for sustainable business.

This report aims to engage a diverse audience, including policymakers, academic and vocational institutions, private-sector employers, development partners, and leaders of educational and skill-building platforms.

The purpose

Our goal is to clarify the key trends driving demand for carbon and ESG analyst roles, map the existing supply-side dynamics and propose a clearly defined taxonomy of analyst-level ESG roles sensitive to national differences.



This report defines systematically, starting by understanding the different demand trends driving ESG job growth that has resulted a global taxonomy of analyst-level roles, examines demand patterns across various sectors and labor conditions, and assesses the current labor quality strengths and gaps. The final conclusion with strategic recommendations and a vision for the framework to guide effective implementation. Together, these insights aim to inform how it can be put effectively into the real world of ESG ecosystem development, not just by facilitating more in understanding, but by actively shaping the ESG development ecosystem.

Chapter 2

Market Trends Driving Supply and Demand

The global job market for ESG and carbon professionals has grown rapidly over recent years, driven largely by regulatory pressure, investor demands, and corporate sustainability targets. Increasingly stringent environmental and climate related disclosure requirements worldwide are significantly expanding demand for skilled analysts and sustainability professionals.

In the European context, for example, the European Sustainability Reporting Directive (ESRS) through four harmonised standards established mandatory disclosure for companies, greatly increasing the breadth and scope of mandatory reporting, including explicit auditing requirements¹⁰. The qualification remains a challenge for companies involved with meeting disclosure requirements¹¹. Similarly, the introduction of mandatory TCFD-aligned ESG reporting via TCFD Sustainability Disclosure Standards effective January 2023, providing a comprehensive global baseline for ESG reporting¹² in the United States, the TCFD has inspired considerable discussion around its focus on material information as to ESG risks and strategies, although assessment remains an uncomfortable subject matter¹³. Whilst most companies are beginning to dig themselves out of the hole, as demonstrated by ESG reporting guidelines introduced by the Financial Disclosures Exchange, providing a valuable backdrop to highlight positive ESG progress, and its focus on ESG reporting guidance for financial disclosure from the launch of the Sustainable GFI Risk Climate Capital Market Academy¹⁴.

Global pressure and investor market demands further underpin the global rise in demand for ESG and carbon-related expertise. By 2022, sustainable investment globally surpassed \$21 trillion, reaching strong investor preference for sustainable performance along ESG parameters as a critical component of long-term risk management and sustainable growth¹⁵. Consequently, there is rising demand for ESG and ESG sustainability specialists, and strong ESG expert's advice and management from private equity funders, and ESG specialists within banks. Additionally, regulatory and stakeholder increasing pressure requires continued to promote and invest positive financing on opportunities and ESG issues across private and ESG due diligence across public and private investment sectors.

¹⁰ European Commission, "EU Corporate Sustainability Reporting Directive (CSRD)", https://ec.europa.eu/economy_finance/eu-corporate-sustainability-reporting-directive.

¹¹ <https://www.esg-advocate.com/2023/01/04/esg-reporting-compliance-challenges/>.

¹² <https://www.efsg.com/en/2023/01/23/tcfds-sustainability-disclosure-standards>.

¹³ <https://www.efsg.com/en/2023/01/23/tcfds-sustainability-disclosure-standards>.

¹⁴ <https://www.efsg.com/en/2023/01/23/tcfds-sustainability-disclosure-standards>.

Despite significant investments, improved global skills gap remains the effective transition to a sustainable economy.



The United Nations Development Programme (UNDP) projects millions of new jobs globally by 2030 linked directly to the green transition. However, a significant portion of the youth workforce is ill-prepared, lacking necessary green skills¹¹. Unesco research confirms this trend, highlighting a notable mismatch with job postings requiring green skills rose by 13% between 2022 and 2023, the green-skilled talent pool only grew by approximately 12%¹².

Unemployment remains a pressing issue for many nations, such as increasing skilled job demands in emerging energy sector of renewable technologies (RE), demands new skills for talent, especially for new and professionals with more technical/COG standards. This will necessitate new efforts such as comprehensive strategy and an opportunity to improve skills by the workers.

Africa's 250+ economies witness landscapes where significant obstacles impede talent growth challenges. Although Africa accounts for approximately 7% of the global population, the continent contributes only around 16% of global economic output, with young demographics facing vulnerability amidst with significant opportunities toward green economy, but the ground up¹³. Investing in diverse talents is the key to the 2030 Africa green economy vision. Adaptation 1.2 million jobs by 2030 across sectors such as renewable energy, sustainable agriculture, and green construction¹⁴. Additional talents' growth and opportunities must include potential growth in adopting advanced tech to enhance product innovation and high-demand roles, through these talents have been still limited while the World-EPS (2023) indicates, however, Africa is only 30% of green manufacturing investments, significantly below what is needed, requiring 11.8 billion to 15 billion projects to be financed by approximately 12 trillion without sustained financing and support mechanism¹⁵.

¹¹ <https://www.undp.org/africa/development/education/skills>

¹² <https://www.unesco.org/en/education/skills/2023/03/03/2023-03-03-2023-03-03>

¹³ <https://www.undp.org/africa/development/education/skills>

¹⁴ <https://www.undp.org/africa/development/education/skills>

¹⁵ <https://www.undp.org/africa/development/education/skills>

Workforce employment remains a critical success point, yet given sectors offer lengthy employment solutions. Over the 100+ years, workers' rights and property have to be considered in the context of the current labour market, many of the employment, regulatory, and economic implications, and significant social and political impacts. The current labour market is a complex one, with many different sectors, including employment and education, and a wide range of different types of workers. The current labour market is a complex one, with many different sectors, including employment and education, and a wide range of different types of workers. The current labour market is a complex one, with many different sectors, including employment and education, and a wide range of different types of workers.

Other structural changes to the labour supply are particularly important. Employment is increasingly concentrated in the service sector, which is a key source of growth. The service sector is a key source of growth, and the current labour market is a complex one, with many different sectors, including employment and education, and a wide range of different types of workers. The current labour market is a complex one, with many different sectors, including employment and education, and a wide range of different types of workers. The current labour market is a complex one, with many different sectors, including employment and education, and a wide range of different types of workers.

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Level of ESG Maturity Across Different Sectors within Africa

Sector	Maturity Level	Current ESG Initiatives	Future Prospects
Manufacturing	High	Strong governance, environmental compliance	High carbon footprint, need for green tech integration
Resource Extraction	High	Advanced reporting, robust ESG frameworks	Climate change-related challenges
Real Estate	Developing	Green building projects, sustainable procurement	High real estate demand, need for green buildings
Technology and E-commerce	Medium	Robust data security, ethical sourcing	High data privacy concerns, need for digital privacy measures
Finance	Developing	ESG-linked financing products, ethical investing	Need for more ESG expertise
Government	Low	Increasingly embracing ESG principles	Need for strong regulatory frameworks, improved data

Global and African trends indicate strong, rapidly growing demand for ESG and carbon-related professionals, driven by regulatory frameworks, investor pressure, corporate net-zero commitments, and green sector growth.

However, the supply of professionals with the necessary expertise for ESG & carbon remains low, especially for specialized ESG reporting, emissions management, regulatory and compliance skills.

While in particular, governments struggle with such as technical improvement in industrial sectors, weak business strategy integration, and limited access to international resources and expertise. Additionally, many sectors with rapid, organic investment in education, training, and talent development is essential if Africa is to meet the considerable local business demands while integrating ESG and carbon talent, capable of meeting both regional and global sustainability challenges.

Chapter 3

Taxonomy for Carbon and ESG- Related Jobs

A clear understanding of ESO and carbon-related job structures is essential for building effective training programs, guiding career pathways, and ensuring that the skills supply meets employer demand.

Through our review of **transdisciplinary frameworks** have emerged as job-family-effective for connecting **functional, administrative, and knowledge** “vertical” job-family functions with **additional frameworks** distributing the mission required resources and responsibilities. The dual-learning approach offers industry policymakers and employers a comprehensive perspective for identifying a clear, well-defined assessment strategy.

See how we can help you:

From an organizational perspective, ESO and carbon roles cluster around six main functional areas:

01

The first and most strategic is **responsibility, knowledge**. It is the center of the company, such as chief sustainability officer (CSO), or head of ESG. Furthermore, it is the center of the company, such as chief sustainability officer (CSO), or head of ESG. Furthermore, it is the center of the company, such as chief sustainability officer (CSO), or head of ESG.

02

A second key functional area is **compliance, risk, and regulatory**. This includes the functional area of regulatory compliance. Furthermore, such as Compliance Policy, Analysis, Environmental Impact, Compliance and Carbon Footprint. Furthermore, such as Compliance Policy, Analysis, Environmental Impact, Compliance and Carbon Footprint. Furthermore, such as Compliance Policy, Analysis, Environmental Impact, Compliance and Carbon Footprint.

03

ESO programs are not managed as a central functional cluster, and instead are managed separately, with each ESO program. Furthermore, such as ESO program, ESO program, and ESO program. Furthermore, such as ESO program, ESO program, and ESO program.

¹ https://www.eia.gov/energyexplained/energy_basics/energy.php
² https://www.eia.gov/energyexplained/energy_basics/energy.php
³ https://www.eia.gov/energyexplained/energy_basics/energy.php



Large brand leaders become integrated in the process, taking responsibility for CSR (and beyond) from strategy and Regulatory Affairs Managers. These legal considerations closely align compliance teams, internal auditing, and HR departments, enhancing policy integration and mitigating legal and reputational risks, including cybersourcing.

04

The fourth stage centers on **collaboration and shared value** ideas. Strong digital, innovation, management, and employee strategies (including stakeholder Analytics, the Capex-Maximizer (CAM) Strategy, and Digital Working Labs). These special business opportunities attract hardware, content, talent, meeting, and design opportunities through perception of an online. Combining these ideas, engineers, designers, and product development solutions that already exist within networks, such as creative packaging, waste, supply, and innovation ecosystems, from performance metrics, such as waste management, production, and supply chain, and efficient network to meet demand with appropriate management.

05

A fifth critical strategic concept is **CSR innovation and teams**, reducing growing integration of innovation into a wider digital network. Performance improvement is achieved through Mayors, 200+ cities, nations, and their local government. CSR has not only improved innovation, but also sustainability, new product, and service development, and financial returns. Their specialized organizations meet project management, regulatory, and digital product development needs.

06

The final functional cluster focuses on **environmental management and systems**, crucial for product sustainability and CSR value, engineering, Product, such as Environmental Manager's, Sustainability Strategy, and Data Innovation (Data Management, Environmental Management systems, product lifecycle management, physical structure, and its data, value, environment, and product lifecycle data for future (3D) innovation and sustainable analysis.

Skills and roles differentiation

Complementing the functional perspective, ESG and carbon roles can be differentiated clearly by the skill levels required, enabling a comprehensive understanding of workforce composition and professional development needs:

01

At the highest skill level, **senior ESG professionals** (20%), are primarily tasked with leading a broad or specialist and often technical degree in goals contributions. Chief Sustainability Officers, Carbon Strategy Leads, and others in this tier ensure that the strategic high-level strategy, vision and business model support. Typically, these roles represent roughly 10% of professionals.

02

Mid-level ESG professionals form a critical layer meant to operationalise roles, typically making decisions over all relevant ESG systems, company-level ESG reporting systems, ESG strategy, carbon Accounting, ESG audits, and various Group Policies. Commonly occupy the majority of time, professionals take a more tactical, enabling, operational role, most of which are ESG audit management. These roles represent roughly 40% of professionals.

03

The third skill level, **general ESG professionals** (30%), includes roles primarily tasked to carry out professional individual tasks including compliance-related ESG Project Evaluation, Sustainability Reporting, ESG Officers, and CO2 Audits. These roles represent approximately 30% of professionals and are typically involved in operationalising 10% of goals deployed. They ensure ESG programs are carried out through the activities, meeting objectives, and being implemented.

04

Finally, at the entry level, **entry-level ESG roles** (20%) are typically involved in the day-to-day and the support functions for various ESG-related and leading. Professionals in this tier are often involved in reporting, data management, ESG issues, external relations, compliance, impact evaluation, or other supporting and evaluation roles. Typically, these professionals represent up to 20% of the green economy, highlighting that this represents the most significant part of building development.

Through shared taxonomies, companies can identify the ESG and system opportunities, assess diversity and non-financial return. Each role plays a distinct and complementary role in delivering a personal sustainability strategy. From strategic leadership to operational execution, all contribute to the company's ESG and non-financial return. The roles are interconnected and support each other in the company's ESG and non-financial return. The roles are interconnected and support each other in the company's ESG and non-financial return. The roles are interconnected and support each other in the company's ESG and non-financial return.

ESG Jobs Taxonomy



Chapter 8

Demand Landscape

Following the exploration of global and African ESO trends, we now examine tangible job demand patterns emerging across sectors and regions. This section clearly maps current ESO and carbon risk demand, identifying organisations that are actively hiring and projecting how these opportunities will evolve in the near future.

Investment in operational or sustainability energy efficiency and climate risk management software is significantly outpacing other supply chain ESG software investments, and software investments across the entire ESG supply chain. In 2024, sustainability ESG software investments were also fast growing, including a record and sustained growth trajectory across sectors, with double-digit percentage growth in 2024. ESG software investments in the ESG supply chain are growing across all sustainability fronts, from ESG Reporting Software, and Compliance Dashboard software, the fastest growing categories in the ESG Supply chain, job postings for sustainability software have more than tripled year-over-year¹¹.



Hiring demand remains concentrated where sustainability clearly aligns with strategic business objectives. Financial institutions and consulting firms continue to lead ESG hiring. At the same time, large corporates across energy, agriculture, manufacturing, consumer goods, and technology are increasingly establishing robust internal ESG teams, driven by regulatory requirements and investor pressures.

Investment in green building efforts are focused on critically exposed ESG issues, such as energy efficiency, which have significantly greater ESG sustainability impact potential, with technology firms and manufacturing sectors comprising 30% of hires¹². As the sector's supply chain decarbonisation strategy, manufacturing, consumer goods, and technology are increasingly establishing robust internal ESG teams, driven by regulatory requirements and investor pressures.

¹¹ <https://www.esgnow.com/insights/2024/04/24/esg-software-investments/>

¹² <https://www.esgnow.com/insights/2024/04/24/esg-software-investments/>

¹³ <https://www.esgnow.com/insights/2024/04/24/esg-software-investments/>

Manufacturing and export-oriented businesses represent not least 70% of the country's GDP, and the services sector accounts for 25%. The country's labour force is relatively young, and the unemployment rate is high, but the country has a growing, increasingly educated workforce.¹⁰

Manufacturing and export-oriented businesses represent not least 70% of the country's GDP, and the services sector accounts for 25%. The country's labour force is relatively young, and the unemployment rate is high, but the country has a growing, increasingly educated workforce.¹¹ In contrast, private companies through their activities are contributing to the growth of the country's economy, but they are still facing challenges, such as the lack of infrastructure, the lack of skilled labour, and the lack of access to capital.

Many of the country's important sectors, including the oil and gas sector, are still heavily dependent on foreign investment. The country's economy is still heavily dependent on foreign investment, and the country's economy is still heavily dependent on foreign investment.

Emerging regulatory frameworks and increasing investor scrutiny suggest that even these lower-maturity sectors will see rising ESG job demand in the near future.



Renewable energy stands out as a leading growth sector for ESG roles in Africa. Over approximately 224,000 jobs in 2022, employment in renewable energy is projected to reach about 1.7 million by 2033.¹²

Renewable energy stands out as a leading growth sector for ESG roles in Africa. Over approximately 224,000 jobs in 2022, employment in renewable energy is projected to reach about 1.7 million by 2033.¹³ The country's economy is still heavily dependent on foreign investment, and the country's economy is still heavily dependent on foreign investment.

¹⁰ <https://www.africapeconomicoutlook.com/en/2023/01/01/africa-economic-outlook-2023/>

¹¹ <https://www.africapeconomicoutlook.com/en/2023/01/01/africa-economic-outlook-2023/>

¹² <https://www.africapeconomicoutlook.com/en/2023/01/01/africa-economic-outlook-2023/>

¹³ <https://www.africapeconomicoutlook.com/en/2023/01/01/africa-economic-outlook-2023/>

¹⁴ <https://www.africapeconomicoutlook.com/en/2023/01/01/africa-economic-outlook-2023/>

¹⁵ <https://www.africapeconomicoutlook.com/en/2023/01/01/africa-economic-outlook-2023/>

Corporate and institutional investors have found ESG being “with us” right from environmental activism, at 8 pct, and TMO including like activities in most public events and regulatory channels. However, not necessarily being leading the Big Five and beyond ESG initiatives, are likely seeing their ESG reputation slowly erode the impact of public knowledge among broader investor segments as ESG reputation erodes.¹⁷

Public sector institutions and civil society organizations, through being at stake in 2024, increasingly recognize the importance of delivering ESG professionals, both through education (from grassroots, agency, industry, and business) and through financial channels. Looking for an opportunity to ESG scoring and green finance experts, who have widely used in 2023 and 2024, are likely to see ESG exposure and reputation erode.¹⁸

Geographic concentration of ESG rates aligns closely with sectoral maturity patterns.



Market Environment

South Africa remains the continent's ESG epicenter due to established regulatory frameworks, significant corporate ESG integration, and a comprehensive national governance taxonomy. **Kenya, Nigeria**, and emerging markets like **Egypt, Morocco, China, Rwanda**, and **Ethiopia** are demonstrating rising ESG talent demand driven by renewable energy initiatives, nation market development, and sustainability regulatory reforms.¹⁹

¹⁷ <https://www.esginvestor.com/en/2024/01/2024-esg-reputation-erodes/>

¹⁸ <https://www.esginvestor.com/en/2024/01/2024-esg-reputation-erodes/>

¹⁹ <https://www.esginvestor.com/en/2024/01/2024-esg-reputation-erodes/>



Quantified projections controversy for subnational equity growth
synthesis ESG analysis across Africa – according to recent forecasts by Global and ESG Africa, Africa's growth in many cases is more approximate, for a 1.4 billion increase in GDP, possibly in sustainable energy, sustainable agriculture, and green construction¹⁰. Although countries integrate economic development, notably industrial growth in existing services towards performance indicators and ESG categories over, though these opportunities seem to flourish since the forecasted 2020 GDP Africa data, but others are skeptical when the United Nations' independent and authoritative ESG data contribution is the analysis of indicators. The volume of the data estimated for between many more could account for at least 10,000 megawatts (MW) of solar, wind, geothermal, green, atmospheric growth. In addition, it could not be overestimated, even though much needed to be ESG performance the most recent another 1,500,000 megawatts (MW) energy projects.

Global indicators consideration, the concept of "color" throughout the industry is the lack, pressure, and it is largely required to generate an indication, a growing momentum across the industry is the lack of a clear, early data, engineering, and marketing. Thus, the total volume of the existing financial market is not sufficient to support the way significantly exceeds various defined "good" performance. According to the United Nations' Sustainable Development, together with many of ESG having, globally integrated institutions, and environmental, social and governance, increasingly improving Africa's energy growth factor or sustainable growth¹¹.

¹⁰ Global and ESG Africa, 2020. <https://www.global-esg.com/>

¹¹ <https://www.global-esg.com/2020/08/2020-08-20/>

Chapter 5

Supply Side Dynamics

To effectively respond to accelerating global and African demand for ESG and carbon professionals, understanding and enhancing the talent supply side is essential. Drawing from expert interviews, organizational surveys, and market research, this section synthesizes current sourcing strategies, identifies critical skill gaps, and highlights opportunities for strengthening Africa's ESG talent pipeline.

Organizations in Africa increasingly leverage employees' talent through internal training, mentorship, and redeployment to specialized specialties. African talent strongly prefers ESG specialization and is often assigned to existing staff, such as Project or HR managers. Another major challenge relating to managing currently existing through internal, the internal upskilling approach frequently results in limited effectiveness due to insufficient levels of sustainability expertise. In our research-based survey interview, "After working in various roles across departments, a better business sustainability may may be integral lack of lack of understanding" across existing internal ESG projects". Redressing ESG responsibilities is essential, shifting from siloed departmental activities (such as HR and other social project). However, gaps in understanding the long-term viability of employee-related or siloed, highlighting and highlighting and ensuring that a strong, ongoing, transparently be reduced ESG risk is increasing, with organizations with a sustainable capacity capacity to sustain the long ESG in direct aspects will be the most successful one".

¹ https://www.un.org/development/desa/policy/2022/05/20220501_esa-policy-note-01-2022-01.pdf



Despite the growing importance of ethics, significant preparation for the job readiness of professionals across technical and non-technical skills areas remains largely an unmet need. According to a survey by [Open Skills](#), the leading professional skills organization for CIOs globally, companies value education and training to promote innovation, productivity and environmental engineering backgrounds frequently lack [relevant accounting capabilities](#), which often necessitates turning to external providers for training in [specialized finance-related](#)¹¹. Given the importance of education to the field as it makes the foundation for long-term productivity, having such options available is critical, where [skilled and working-qualified CIO professionals](#) face even challenges in [corporate finance programs](#) and even impact in [support the United Nations Global Goals of job growth and economic capabilities](#) necessary for global building.



Technical Skills

Although reporting platforms indicate much of the progress, [skilled professionals who can effectively use software tools like Excel, Python, and dedicated ESG platforms](#) remain scarce. As one expert noted, “[Software can automate reporting, but staff must still have time to use them effectively](#),” emphasizing the broader challenge in [digital ESG implementation](#)¹².

[Non-technical skills](#) also pose significant challenges, particularly [language fluency and effective communication](#). [Knowledge of professional ESG reporting frameworks such as the Global Reporting Initiative \(GRI\), the Task Force on Climate-related Financial Disclosures \(TCFD\), and various industry-specific standards, including Joint Industry Project \(JIP\) climate change guidance, is critical](#). Furthermore, [effective communication and reporting skills](#), including the ability to convey complex information effectively and present data clearly to various stakeholders, are essential. Multiple report reviews also noted that [improving the ability to integrate ESG reporting with traditional financial reporting](#), using best practices and reporting capabilities, would be [strongly expected among firms expected to perform well](#)¹³.

¹¹ [Open Skills](#), [Global Skills Outlook 2023](#), p. 10.

¹² [Open Skills](#), [Global Skills Outlook 2023](#), p. 10.

¹³ [Open Skills](#), [Global Skills Outlook 2023](#), p. 10.

¹⁴ [Open Skills](#), [Global Skills Outlook 2023](#), p. 10.

Geography, education, and talent mobility further complicate ESG workforce dynamics in Africa. ESG talent is predominantly concentrated in the coastal and metropolitan, mostly south-west, urban regions (Ghana, Kenya, Egypt, and Morocco) in contrast to the underserved countryside. Urban residents have significantly less developed ESG talent pools, as a result of reduced resources. Moreover, experienced ESG professionals, following regions in continental development in Europe, the Gulf, or US corporations, contributing to a persistent “brain drain” effect. However, emerging centers of “brain circulation”—making diaspora professionals returning or traveling outside already saturated—global centers, as well as urban centers for working remotely, ESG capabilities, for one reason or another, “have still largely not been fully processed, and perhaps it is not clear if this trend is the best.”¹¹

The culture for ESG in Africa is still shaped in key of business objectives. The emerging corporate ESG capabilities are a combination of genuine desire to improve ESG, meeting corporate objectives, and growing government-led demand for ESG-related education at colleges and universities. As a result, despite these factors, the ESG talent pool is not robust enough to meet the demand, particularly in post-pandemic business recovery, complicate it, and to equip ESG expertise beyond core areas primarily in the health industry, with one specialist remarking, “There is definitely a gap. Skills will be more significant for policy and policy enforcement and financing the sector.”¹²

In conclusion, Africa's ESG workforce is rapidly emerging and evolving, yet strategic investments in targeted training, global-standard certifications, and international industry partnerships are essential for the continent to fully realize its potential as a leading global ESG talent hub. Overcoming structural challenges—such as inadequate technical training, weak academia-industry collaboration, and limited access to internationally recognized ESG certifications—will be critical for unlocking the full potential of Africa's emerging ESG and carbon talent pool.

¹¹ <https://www.africapest.com/en/2022/05/09/2022-05-09-01>

¹² <https://www.africapest.com/en/2022/05/09/2022-05-09-01>

Chapter 6

Recommendations for Building Africa's Green Talent Pipeline

Addressing Africa's rapidly increasing demand for ESG and carbon professionals requires targeted strategic action across multiple interconnected domains. Drawing from successful pilot initiatives, expert insights, and global best practices, this section outlines an integrated roadmap to bridge the continent's emerging green talent gap effectively.



Expanding and tailoring specialized green skills, including carbon and ESG, training programs as standards rapidly build for tomorrow's *South Africa's efforts, such as the Green Skills Development Framework developed with the University of Cape Town, demonstrate effective models that should be replicated across the continent. Strengthening and refining existing, nascent green skills, incorporating globally recognized educational trends significantly enhances potential employability, as highlighted by LinkedIn's recent finding: companies actively engage employees who possess relevant skills for tomorrow's market.¹⁰ In many regions, education and training systems remain siloed and largely offer no pathway into the green sector beyond university, including Africa, Europe, and Mexico. **Developing a sustainable ecosystem of ESG education** across a continent that lacks state-of-the-art training is inseparable from meeting global sustainability standards, which require the United Nations' Sustainable Development Goals, including Targets 4, 8, 13, and 17, and others related, all of which require increased "quality and sustainability." As a result, education must be able to meet **demands of ten to four years, including or extra EU skills with no green wage premium, ESG talent shortages, and climate finance financing, based on rapidly changing environmental scenarios such as Green House Gases, Deep Tech, Digital, Water and Energy. Furthermore, the** *contemporary era greatly amplifies educational innovation's value for addressing the challenges and opportunities inherent in sustainability.**

¹⁰ <https://www.linkedin.com/company/linkedinlearning>

¹¹ <https://www.linkedin.com/company/linkedinlearning> (2023), <https://www.linkedin.com/company/linkedinlearning> (2023)

¹² <https://www.linkedin.com/company/linkedinlearning>



Employment assistance activity: Although the Local Councils that educational programs often poorly address market needs, labor organizations do not address their own problems. Regularly tested and validated instrument to assessing technical competence is lacking industry demands. The establishment of advisory boards comprising employers, employees, and government can help improve educational performance and relevant degree programs and at current, low, beginning, or joint work. **Building partnerships and apprenticeship programs**, ranging from free to no benefit, is an add to providing young professionals with practical, business skills experience. Labor education can be institutional through partnerships between it, mostly targeted to workers' interests, local employers, CIOs, unions, Public sector apprenticeship opportunities with direct, systematic, regularly update and joint Union initiatives to the building sector apprenticeship training standards provided by sector¹¹.

[illegible]

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Developing these links starts with identifying and articulating existing mechanisms capable of effectively using CSR as a business management framework (Larmer, 1994). Existing programs, leaders, laws, standards, development systems, government agencies, and academia in finance, sustainability, technology, innovation, and ethics can bring significant expertise to explicitly embedding CSR commitments into national policy frameworks, institutional standards, international agreements, and national leaders' public profile as a catalyst of CSR uptake. Effectively, that responsibility is increasingly falling on organizations. Governments can act to create enabling conditions by providing targeted incentives such as tax relief or tax exemptions for businesses that meet CSR targets (UN, 2007). Additionally, changing market frameworks by awarding CSR as a firm capability is a way within which the market can build and internalize environmental organizations' social efforts and actions. India's strategy for CSR Orchestration Development, recognizing that business performance is influenced by its labor market, health, knowledge, education, security, alignment with government goals¹⁷.

Aligning smart infrastructure with smart demand through transparent incentives. (PJM's partial pathway to a market with smarter input resources, better, more-motivated, and decentralized smart institutions, etc.) should be the primary focus. Smart resources—such as 1) smart demand in all-star gas plants—4) others (e.g. battery, green hydrogen, etc.)—are essentially free-market. Additionally, **handling gas's prepayment** (to meet its sustainability targets) (i.e. ensuring environmental and economic and clean energy efficiency) is important. "Smart energy" (to meet its sustainability targets) (i.e. ensuring environmental and economic and clean energy efficiency) is important. "Smart energy" (to meet its sustainability targets) (i.e. ensuring environmental and economic and clean energy efficiency) is important.

[illegible]

Together, these recommendations present a comprehensive and actionable roadmap for building a robust, inclusive, and globally competitive ESG and carbon talent pipeline in Africa. By strategically strengthening educational and training programs, fostering cross-sector collaboration, leveraging digital infrastructure, and aligning supportive policy frameworks, Africa can effectively meet growing local and international demand for ESG and carbon expertise, positioning itself as a leading contributor to global sustainability efforts.

Chapter 7

Risk Assessment and Mitigation

Continuity during crises poses both unique and significant opportunities, and careful management of several critical risks is essential to ensure robust and resilient national financing and funds based and skills of dynamic, maintaining the quality and availability of training programs, protecting national education infrastructure, and maintaining systems coordination strategies. Functions such as setting and assessing goals that are in line with existing policy agendas is a critical and essential role for education-based groups.

Risk and Mitigation Framework

Topic/Chapter	Key Concepts	Recommended Resources
Machine Learning Fundamentals	Introduction to ML, supervised/unsupervised learning, performance metrics, bias/variance tradeoff, overfitting/underfitting	- Andrew Ng's Machine Learning course on Coursera - John D. Schumaker's <i>Machine Learning: A Probabilistic Perspective</i> - Stanford CS229: Introduction to Deep Learning
Deep Learning & Neural Networks	Neural network architecture, backpropagation, convolutional neural networks (CNN), recurrent neural networks (RNN)	- Geoffrey Hinton's <i>Deep Learning</i> book - François Fleuret's <i>Deep Learning with Python</i> - DeepMind's <i>Algorithms for Deep Reinforcement Learning</i>
Reinforcement Learning	Markov Decision Processes (MDP), Bellman optimality, Q-learning, policy gradient methods	- David Silver's <i>Reinforcement Learning</i> book - OpenAI's <i>Reinforcement Learning</i> course - John B. Schumaker's <i>Reinforcement Learning: An Introduction</i>
Generative Models & Variational Autoencoders	Generative models, Variational Autoencoders (VAE), Generative Adversarial Networks (GAN), Variational Recurrent Neural Networks (VRNN)	- Diederik P. Kingma's <i>Generative Models</i> book - OpenAI's <i>Generative Models</i> course - John D. Schumaker's <i>Generative Models: A Probabilistic Perspective</i>
Computer Vision & Image Processing	Image classification, object detection, facial recognition, image segmentation, video analysis	- Andrew Ng's <i>Computer Vision</i> course - John D. Schumaker's <i>Computer Vision: A Probabilistic Perspective</i> - Stanford CS231n: Deep Learning for Computer Vision
Natural Language Processing (NLP)	Text classification, sentiment analysis, machine translation, word embeddings, sequence-to-sequence models	- Andrew Ng's <i>Natural Language Processing</i> course - John D. Schumaker's <i>Natural Language Processing: A Probabilistic Perspective</i> - Stanford CS224n: Natural Language Processing with Deep Learning
Robotics & Autonomous Systems	Robot kinematics, sensor fusion, motion planning, control systems, autonomous navigation	- John J. Craig's <i>Introduction to Robotics: Mechanics and Control</i> - John D. Schumaker's <i>Robotics: A Probabilistic Perspective</i> - Stanford CS237: Introduction to Deep Learning for Robotics
Game Theory & Decision Making	Game theory, decision trees, dynamic programming, reinforcement learning, multi-agent systems	- John von Neumann's <i>The Theory of Games and Economic Behavior</i> - John D. Schumaker's <i>Game Theory: A Probabilistic Perspective</i> - Stanford CS237: Introduction to Deep Learning for Game Theory

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Increasing relevant training quality and professional credibility is another education training system reform, particularly in IET with international capacity areas. Many European countries of IET training have rising education standards. In higher education, not only qualifications and technical competence for employee require, the comprehensive and complex work is also required. Increasing sustainability is a significant contribution to manufacturing sector or industrial mobility, having a green economy. Improving these economic sector, policy effect, comprehensive social contribution. National economy sustainable growth and productivity is the first goal of innovation, the IET mobility, or sustainable innovation engineering (e.g., IM, 2000). Continuous investment in human development, regular update does with progress and history, and global local employment, two stages, increasingly, not adequate. IET learning activities for maintaining training quality and economic development are up to building of IET credibility and highlighting performance practices through public recognition and incentives for the relevant field in IET professional development.

Talent retention and increasing inclusion remain as development's most significant challenges: 122 senior survey respondents (100 senior HR) identified talent retention as the top challenge, with 100 respondents identifying "inclusion" as the second biggest challenge. Inclusion was defined as "ensuring that all employees feel they belong and are able to contribute fully to the organization's success." Inclusion was also defined as "ensuring that all employees feel they belong and are able to contribute fully to the organization's success."



Meeting these challenges involves redefining G20 energy pathways with innovation, facilitating cross-industry and plurilateral to state collaboration. Building robust climate resilience and business engagement initiatives are essential to ensure future high-growth economic recovery is an inclusive one that includes all. Success comes through mutually beneficial cooperation and high ambition, broadly in land deals, mineral portfolios to support infrastructure such as pipelines, hydrocarbons, ramps, and finally energy storage, are significantly positive signals across G20 energy for both supply and demand groups. Key areas for meeting its climate goals – including global, potential of innovation, and accelerated action – require robust investment and regulatory policies to ensure future participation and positive multiple business development.

Systemic coordination represents another critical challenge with 100+ G20 talent pipelines, as high-level initiatives among governments, donors, academia, and private sector involve a lot of coordination, sufficient, positive impact with investments. Addressing these systemic coordination challenges requires a multi-stakeholder platform such as national and global climate policy hubs, business, to align climate as a priority measure, and to integrate climate G20 leaders a systemic approach to promote. First impact and low-regime regulator provide membership, which offered funding and application. These countries transition from economic and market to a sustainable pathway to future success is to establish alignment, and coordinate across various global G20 working objectives across Africa.

Effectively managing transnational risks, water systems, taking quality and stability, clear objectives, accountability and system coordination, will be essential for achieving African sustainable growth and development. Addressing these risks requires high ambition of the strategic objectives, with policies aligned to increasing investment and regionalized communities, a joint policy to be implemented for and better to amplify African leadership potential in G20 and other global partnerships. Perhaps, a coordinated engagement will ultimately ensure that African energy G20 initiative is linked, inclusive, and consistent with built trust and good sustainability framework.

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Conclusion



Africa stands at a defining moment in shaping global sustainability leadership, uniquely positioned to become a central global hub of ESG and sustainability expertise. The global surge in demand for talent specialized in sustainability, energy efficiency, and climate-related management, combined with Africa's dynamic young workforce, creates an unprecedented opportunity to bridge global green skills gaps while advancing inclusive economic development at home. Although challenges persist—from training pipelines to market awareness—the momentum is tangible and growing.

To maximize this opportunity, further research could strengthen our understanding of local parameters, closely integrating the ESDs and talent analysis with the broader growth potential. Enhancing the depth of regional skills, innovation, and economic ecosystem analysis—particularly youth training, sector-specific economic priorities—will greatly enhance the relevance and effectiveness of talent pipelines. A comprehensive assessment of existing ESG training across the continent, such as identifying critical gaps, offering targeted new programs designed around issues facing youth, supporting women, and nurturing access for young women and marginalized communities.

The journey to building Africa's green workforce will not be linear, yet it is already underway.

With targeted investments in education, practical experience, cross-sector collaboration, and sustained strategic vision, Africa can fully seize this historic opportunity, emerging not merely as a beneficiary of the global green transition, but as a critical **global supplier and leader of ESG expertise**, driving sustainable growth for generations to come.

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