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Green skills in Africa: What Europe and China bring to the table

By Pauline Veron and Katja van der Meer

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African countries find themselves in a global green transition, for which adapted 'green skills' will be paramount. The main purpose of supporting green skills for African countries is to bolster youth employability, promote economic growth and development and strengthen socioenvironmental and economic resilience. This paper takes these priorities as a starting point and looks at how the EU and China respectively approach this in partner countries.

As the EU and China both increase their investments in Africa to source materials for their own green transition, they are key partners in Africa's green transition and engage in different forms of (green) skills development in Africa. The paper outlines the strengths and weaknesses of their respective approaches and lays out some takeaways for future support to green skills development.

Rather than being a traditional 'soft sector', skills are now increasingly linked to hard, strategic priorities related to accessing critical raw materials. Yet there is still some way to go to make green skills development part and parcel of a strategy to build mutually beneficial partnerships with third countries.

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Acronyms

ACQF	African Continental Qualifications Framework
AfDB	African Development Bank
AU	African Union
AUC	African Union Commission
ASCIR	Afro-Sino Center of International Relations
BRI	Belt and Road Initiative
CRM	Critical Raw Materials
CSET	Centre for Security and Emerging Technology
EUD	European Union Delegation
EU	European Union
ETF	European Training Foundation
FOCAC	Forum on China-Africa Cooperation
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IEA	International Energy Agency
ILO	International Labour Organization
MENA	Middle East and North Africa
MOFCOM	Ministry of Commerce
NEVs	New Energy Vehicles
OECD	Organisation for Economic Co-operation and Development
OP-VET	Opportunity-driven Skills and Vocational Education and Training in Africa
RTIA	Regional Teachers Initiative for Africa
STEM	Science Technology Engineering and Mathematics
TEI	Team Europe Initiative
TVET	Technical and Vocational Education and Training
UNESCO	United Nations Educational Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
YES-AFRICA	Youth Empowerment Summit Africa

Executive summary

African countries are navigating a global green transition in which the development of “green skills” – the competencies required to operate, adapt and innovate within a sustainable, low-carbon economy – will be essential. These skills underpin three central development priorities for the continent: **boosting youth employability, driving economic transformation, and enhancing socio-environmental resilience**. Yet despite strong continental policy commitments, substantial gaps remain between training systems and emerging labour-market needs.

As major investors in Africa’s green transition, the European Union (EU) and China have become key partners in shaping the continent’s green skills landscape. Their approaches, while different in design, are increasingly converging.

The **EU’s model** is undergoing a significant shift. Once centred on education cooperation, EU support is now closely tied to **specific investments under the Global Gateway**, particularly in energy, critical raw materials and green industrialisation. Skills are treated as strategic enablers of these investments, with initiatives such as the Team Europe Initiative on Opportunity-Driven TVET (OP-VET) linking training with concrete job opportunities. The EU retains a comparative advantage in systems-level support – qualifications frameworks, teacher training, mobility schemes – but struggles with slow procedures and limited alignment with private-sector timelines.

China, while not traditionally recognised as a green-skills actor, plays a growing – if uneven – role. Its investments in renewable energy, green minerals and clean technologies (such as solar and electric vehicles) inadvertently create demand for local technical capabilities. Chinese ministries, companies and vocational institutions are expanding training offers, including Luban Workshops and short-term technical programmes linked to infrastructure projects. These efforts help familiarise African partners with Chinese standards and technologies, but coordination remains limited and the visibility of China’s support in this area is inconsistent. African interviewees highlight both the benefits (pragmatic, demand-driven training) and the drawbacks (narrow focus around specific projects, limited spillovers).

As green skills grow in strategic importance, the paper identifies some insights for future support as well as potential areas for further analysis.

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1. **Skills are becoming strategically linked to investments** for both partners – a convergence that creates opportunities for more coherent support to African priorities.
 2. **While the EU is traditionally perceived as having a comparative advantage in this area, China's contribution to green skills is larger and more consequential than commonly perceived**, especially due to its dominance in clean technologies.
 3. **Skilled labour in partner countries is a high priority critical** to unlock the green-investment potential of both the EU and China.
 4. The overall landscape and understanding of green skills remains **fragmented**, with limited coordination between external partners and insufficient integration with national systems.

The EU should integrate skills more systematically within its partnerships and ensure skills initiatives support both local development and EU strategic objectives. China and the EU should deepen mutual learning and explore potential areas for cooperation or complementarity.

Ultimately, a well-skilled workforce is indispensable for Africa to seize opportunities in renewable energy, green mobility, critical minerals and climate-smart agriculture – and for the EU and China to build credible, mutually beneficial green partnerships with the continent.

1. Introduction

African countries are seeking or being forced – one way or another – to adapt to the green transition, whether through green industrialisation or adaptation. However countries approach or find themselves in the global green transition, the implications for provision of adapted 'green skills' will be paramount. Indeed, the various green strategies to achieve green industrialisation objectives that are available to African countries – decarbonising existing industries, producing inputs for global green industries, manufacturing green goods for African markets or leveraging brown capabilities to jump to green industries (Medinilla and Byiers, 2023) – all have different skills implications. To take advantage of, or simply adapt to shifting technologies and climate change itself, will require populations to acquire appropriate skills. In the process, this can create more and better jobs, a

primary development need among many African countries.¹ But to get there will require strengthening training pathways into new and changing occupations to ensure that no one is left behind in this transition (Allais, 2023). Estimates suggest that half of the jobs in the 2050 green economy will lack qualified candidates (LinkedIn, 2024). This highlights the relevance of green skilling.

In Africa, acquisition of relevant skills will be key for the realisation of ambitions around local industrial development, value addition and societal transition to a greener economy, or to export goods to help others decarbonise. This encompasses the areas of green mobility, critical raw materials, green energy or smart agriculture. Green skills are also widely recognised as crucial to bolster youth employability on the continent and various policy frameworks related to TVET, youth employment and the green transition at continental level have recognised their importance, with a strong focus on economic and social considerations.

Both the EU and China have increased their investments to source materials for their own green transition, while also supporting upgrading, processing and decarbonisation in Africa. In this context, they are key partners in Africa's green transition and they engage in different forms of (green) skills development in Africa – for example, as a separate area of cooperation or linked to specific productive investments, giving it greater geopolitical relevance. There is an increasing recognition that strategic investments in the Lobito corridor, for example, also need to look at skills to create local value and have a multiplier effect on the economy. Thus, rather than being a traditional 'soft sector', skills are now increasingly linked to hard, strategic priorities related to accessing critical raw materials.² While this link to productive investments may in fact be a point of convergence in the approach adopted by the EU and China, there are also divergences. For instance, upskilling through TVET and higher education typically links to certain technologies and regulatory standards which in turn differ among the two partners.

The increasingly geopolitical nature of international cooperation and Africa's stance – which largely seeks complementarities between, and prefers to work with, different partners – make it a relevant question to delve into whether and

¹ According to ILO, the shift towards sustainability is expected to create 100 million jobs by 2030. The World Economic Forum's Future of Jobs Report 2025 identifies climate change mitigation as one of the most transformative forces shaping employment this decade (Muhammed, 2025).

² EU's supply chain resilience and strategic autonomy objectives identified under its Critical Raw Materials Act (EUCRMA).

how complementarities can be sought between the EU and Chinese approaches to green skills for Africa's green transition, especially industrialisation.

This first paper takes African needs and priorities with regards to green skills as a starting point and looks at how the EU and China respectively approach this in partner countries. It will be followed by a second paper building on three case studies, namely Guinea, Ghana and South Africa. Both papers aim to draw recommendations for strengthening the EU's support to green skills and seeking complementarities between the EU and Chinese approaches to meet African priorities.

Box 1: Conceptual framework for green skills

Concepts like green jobs, green skills, while widely used in policy circles, are often vague and interchangeably used (Vidican Auktor, 2020). While this paper does not intend to make these distinctions clear, it uses the concept of green skills in the following way:

Green skills encompass the knowledge, abilities, values and attitudes necessary to support a sustainable and resource-efficient society (Cedefop 2012). They include both technical (e.g. engineering sciences, compliance and standards) and transversal competencies (e.g. sustainability awareness) needed in all sectors and levels (e.g. operations, management) to adapt to environmental challenges and evolving regulatory requirements. The skills and competences required for the green transition are diverse in nature and continue to evolve (OECD/Cedefop, 2014; ACQF, n.d.-a; ETF, 2022; Arthur, 2022).

According to the African Continental Qualifications Framework, green skills (also referred to as "skills for the green economy", "skills for green jobs" or "skills for the green transition") consist of:

- **Transversal skills**, relevant to all economic sectors and professions;
- **Specific skills**, needed to adopt or implement standards and processes;
- **Highly specialised skills**, on specific green technologies (ACQF, n.d.-a).

From a socioeconomic development perspective, however, apart from the above **cognitive skills**, which are typically the focus on external partners, developing countries also need **character skills** which also inculcate values

such as resilience in the face of failure, proactiveness and perseverance. These character skills are key in enabling learning by doing to not only raise productivity and access technology, but also to adapt technologies to resolve locally identified challenges (Grant, 2025). For most African countries facing the triple whammy of climate change – high vulnerability, limited response capacity or resilience, and insufficient fiscal space or climate finance – this latter aspect is especially relevant.

2. Green skills in Africa: a policy agenda with different purposes

Based on their existing industries and the interests and incentives at play, African countries adopt various ambitions and strategies to achieve green industrialisation objectives. They can be summarised as follows:

Table 1: Proactive green strategies for African green industrialisation

Pro-active green strategies	What
1. Decarbonise existing industries	Invest in clean power to reduce the emissions of existing carbon intensive industries; direct electrification; hydrogen use; Decarbonise logistics through technology and modal shifts
2. Produce inputs for green industries	Expand extraction of CRMs; Encourage investment to move up the value chain to processing of inputs into green RVCs, GVCs and manufacturing
3. Manufacture green goods for African markets	Produce green manufactured parts and consumer goods that address specific African issues, e.g. light EVs, decentralised solar (assembly); building materials; green fertilisers
4. Leverage 'brown' capabilities to jump to green industries	Leverage existing capabilities and downstream linkages to enable green industries like passenger EVs; piloting energy-intensive future technologies, including various H2 carriers

Source: Medinilla and Byiers, 2023.

Each of these will require different types of skills, hence the need for green skills to be better considered and prepared. Development of, and support for, green skills is a priority for many African countries and for the African Union. This support can be through (1) education policies – by integrating environmental issues and sustainable development into curricula, (2) labour and employment policy – by

creating jobs and reskilling workers to support green industries, and (3) green policies – by creating regulations, incentives and infrastructure for environmental sustainability, among which is skills. The main purpose for countries is to generate the much-needed jobs, promote economic growth and development and strengthen socioenvironmental and economic resilience. The following section delves further into these different purposes, noting some examples of policy frameworks within each. In the second brief of this series, we will highlight how these different lenses or rationale are reflected at the country level.

2.1. Bolstering youth employability

Youth in Africa is expected to exceed 800 million by 2050, from over 400 million in 2021 (Bekele-Thomas and Westgaard, 2024). While today some 10–12 million young Africans enter the labour force each year, only 3 million formal jobs are being generated (ILO, 2025). Thus, **African countries need to generate significantly more and decent jobs** than they currently do as their overwhelmingly young population joins the labour force each year. The youth in the continent increasingly see green jobs as a solution to both unemployment and climate change. There were 324,000 renewable energy jobs in Africa in 2023, compared with 16.2 million globally. Greater investments in renewable energy alone could generate around 4 million jobs by 2030, increasing to 30 million if clean energy, energy efficiency and low-emission technologies were considered more broadly, and still further to 60 million by considering energy, waste and natural resource sectors (Malo and Nwamadu, 2024; IEA, 2023). Some 60% of these jobs will be skilled or semi-skilled related to construction and manufacturing (Kimeu, 2024). These jobs however will require training (Payton, 2024).

A second barrier to the insufficiency of decent jobs is the skills gap, particularly the mismatch between skills that workers possess and those required by the job market. Skills mismatch has led to situations in many countries where trained students do not find jobs, while employers struggle to find skilled workers. Closing this (green skills) gap will require targeted investments through formal education and vocational training (Malo and Nwamadu, 2024).

At continental level, the 2006 [African Youth Charter](#) outlines a political and legal framework that seeks to protect the rights of the youth, including on youth employment. The [African Union's \(AU\) Vision 2063](#) places job creation at the heart of its aspiration for 'A prosperous Africa based on inclusive growth and sustainable development'. This requires equipping the continent's growing youth population with market-relevant skills to take advantage of investment

opportunities for the green and digital transition to industrialise and engage in regional and global trade. The [Continental Education Strategy for Africa 2016–2025](#) aims for stronger linkages between work, education and training systems, while the [African Continental TVET Strategy 2025–34](#) seeks to address skills mismatches and shift TVET systems in Africa from being supply-driven to becoming demand-driven in order to bolster employability. Moreover, the [Africa Environmental Education and Training Action Plan 2015–2024](#) sought to promote environmental literacy, capacity building and sustainable development through curriculum development for fostering green skills.

Box 2: Supporting green skills development for women: Opportunities and challenges

Women and girls in Africa are not only among the most affected by climate change, they are also key to delivering solutions and lead in finding innovative ways to cope with climate change, from agriculture to water collection and household energy use (Adeola et al., 2025). Women across Africa play a critical role as managers of natural resources, contributing to the environmental sustainability and resilience of their communities (UN Women and the African Development Bank (AfDB), 2021). However, to keep pace with evolving climate challenges, they must also be equipped with modern, tech-enabled skills (Adeola et al., 2025).

Women's potential is often underutilised in Africa and they face more challenges comparatively to men. They notably face limited access to land, finance, education and decision-making platforms (Adeola et al., 2025). Barriers to equal access to green jobs can either be sector-specific, such as social norms that deem construction jobs inappropriate for women, or permeate all sectors (e.g. unequal family care responsibilities) (UN Women and AfDB, 2021).

Women are well positioned in some of the sectors where green jobs will be created. They currently hold many of the jobs in agriculture, forestry and tourism. However, they are underrepresented in key sectors of the green economy most likely to create higher-end green jobs, such as energy (especially wind and solar), transportation, construction and some niche areas of services (e.g., green advisory) (UN Women and AfDB, 2021).

With access to green skills, women's productivity in the green economy could triple. This is especially the case in agriculture, energy, manufacturing and processing. For women to get these green skills, governments and development partners must design inclusive programmes that prioritise gender equity,

particularly for rural, disabled and marginalised women (Adeola et al. 2025). Productive strategies may include capacity-building, reskilling and leveraging high-value green sectors where women are already present or well positioned. Longer-term efforts will be needed in more male-dominated sectors, such as energy, construction and transportation, to remove structural barriers. Both short-term and long-term strategies are needed to prevent the green transition from being severely biased against women and girls (UN Women and AfDB, 2021).

2.2. Economic transformation

Investment in human capital and skills development is a critical aspect of economic growth and transformation. Skilled labour underpins successful industrialisation pathways, attracts investments and supports entrepreneurship. The structural transformation of African economies requires the availability of sector-specific skills to ensure growth in productivity, beyond the employment of national youth. This is the case, for example, in the agro-industry, in product processing/preservation technologies and in the development of renewable energies and telecommunications infrastructure (AU and ILO 2024). According to the OECD, labour productivity in Africa remains among the lowest globally. But gains are possible: a 10% increase in the share of employees with high school and university degrees leads to an average increase in firm productivity by 4.2% and 4.8%, respectively, in the case of 27 African countries (AUC/OECD, 2024).

Human capital availability is also an important drive of FDIs, including for countries with limited natural endowments. For example, Morocco's policy signals and early investments in talent for renewable energy underpin its attractiveness for utility-scale solar and wind projects (IEA, 2023).

African economies still depend to a great extent on imported technology and knowledge, as is the case for the mining industry, due to limited STEM skills and R&D capability (AMDC, 2024). Shortages of critical skills are high among the factors that hamper African firms moving into higher value activities, while often having to resort to international recruitment due to local unavailability of skilled labour. Technical and managerial skills are also valuable to spur technology uptake, as the case of NEVs show: having a pool of trained technicians able to service NEVs and who understand their technology is a key factor in their adoption, along with cost and energy access factors (The Africa EV Show, 2025).

Continental frameworks such as the [AU/ILO Youth Employment Strategy for Africa \(YES-Africa\)](#), have identified those linkages. The strategy thus calls on countries that look at development opportunities in the digital, green and blue economy to set goals in their national development and sectoral strategies for both decent job creation and (youth) employment, including through increased investments in reskilling and upskilling. [Africa's green minerals strategy](#) includes an objective to develop people and technological capability by identifying skills and technologies needed to capitalise on green minerals opportunities on the continent.

2.3. Socio-environmental and economic resilience

Skills development is also key to empower African countries in the green transition. Africa faces severe ecological crises, such as climate change, resource depletion and biodiversity loss, undermining sustainable development efforts and exacerbating poverty and hunger. Although Africa's contribution to global CO₂ emissions is negligible, the continent faces a disproportionate effect of climate change and extreme weather incidents, with devastating effects on its people and grievous outcomes across the social, economic, and environmental realms (Adebayo, 2025). To meet these challenges head on, the African youth needs future-ready capabilities that include climate adaptation and climate-smart entrepreneurship to reduce vulnerability and enhance resilience (Samat, 2025).

The [Africa Environmental Education and Training Action Plan 2015–2024](#) thus recognised the importance of knowledge and skills for citizens' active participation in the development of an ecologically sustainable, socially just, economically viable and sustainable society. It aimed at enhancing community environmental education and training within the continent, through various formal education, training, lifelong learning and capacity building programmes and projects, encouraging participation of both males and females equally.

The [Plan of Action for the African Decade for Technical, Professional, Entrepreneurial Training and Youth Employment \(2019–2028\)](#) includes a goal to apply digital, blue and green skills at the African TVET systems for the smooth transition to digital societies, and green & blue economies, recognising that the quest for sustainable development (a healthy interconnection among climate, people and planet) requires new skills and knowledge. In Africa, nonetheless, the identification of specific skills development and training requirements for climate change adaptation remains largely unfocused. The Plan of Action thus aims at readying TVET systems for the transition.

These various policy frameworks show that the importance of bolstering green skills for youth employability, economic transformation and socio-environmental resilience is well understood and articulated at continental level. One of our interviewees highlighted the fact that ‘green jobs’ have become a buzzword in policy documents with no real implementation attached to it. While this paper did not look at the implementation of these frameworks, the second paper of this series will look more concretely at how the issue of green skills is prioritised at country level. The next section analyses how the EU and China – as two of Africa’s key partners – approach the issue and could support the three purposes just outlined.

3. European and Chinese approaches to green skills

3.1. Linking skills to investment: The EU’s emerging model for green partnerships in Africa

The issue of skills has become a higher priority on the EU’s agenda in recent years. The [European Year of skills in 2023](#), for instance, was an initiative designed to help companies, in particular small and medium enterprises, to address skills shortages in the EU, and to promote a mindset of reskilling and upskilling, helping people to get the right skills for quality jobs. With the [Competitiveness Compass](#) and the [Union of skills](#) (2025), skills have become a key strategic issue linked to competitiveness. According to some education and training experts, skills development is becoming central to advancing many of the EU’s priorities, including the expected Circular Economy Act, for example, which will be creating demand for new green skills (Santos, 2025).

Already in 2022, the EU had released the [GreenComp](#), aimed at building a common and the first European sustainability competence framework. GreenComp describes ‘sustainability competences’ as covering the knowledge, skills and attitudes needed by learners of all ages to live, work and act in a sustainable manner. ‘Green skills’, according to that framework, relate to professional skills needed by all sectors and at all levels in the labour market for the green transition, including the creation of new green jobs. They also relate to transversal skills needed to enable critical thinking, systems thinking, problem solving and innovation (Council of the EU, 2023).

The Union of skills, the GreenComp and the Competitiveness Compass have a primarily internal focus and are generally not directly referenced in the EU’s external action policy frameworks. However, their principles and approaches –

fostering public–private partnerships for upskilling, anticipating green and digital labour market needs and promoting talent mobility (Council of the EU, 2025a) – are increasingly reflected in the EU’s cooperation with Africa. This is most visible in the Global Gateway’s skills components and in emerging Talent Partnerships with African countries.

The [Global Gateway](#) aims to “build sustainable infrastructure with the support, skills and the finance needed to operate it.” (European Commission and HR/VP 2021). Education and research is one of its five priority areas, and skills feature as part of the Global Gateway’s 360-degree approach which aims at accompanying investments with interventions fostering an ‘enabling environment’ (e.g. regulatory frameworks, norms and ESG standards, technology transfer, know-how, skills and education, investment climate etc.). This is part of the EU approach of offering a ‘comprehensive package’ or ‘offer’ to its partner countries, presented as a strategic advantage of the EU compared to other international partners and one that reflects its commitment to sustainable development.

The framing of skills as strategic to economic performance resulted in a **paradigm shift in the EU’s approach under the Global Gateway**, whereby skills development is now seen as an integral part of investments, rather than a standalone sector, and skills and education are seen as **enablers** of broader Global Gateway investments. The EU’s VET offer is now **reverse engineered** from concrete job opportunities stemming from public and private investments and value chain developments in Global Gateway priority areas. As explained by one EU interviewee, “we do the training because we do the investment”. With this approach, the EU responds to the needs of a specific sector and connects its support to green skills to a specific investment, building on what European companies are already offering (European Commission, 2024).

The **Team Europe Initiative “Opportunity-driven Skills and Vocational Education and Training in Africa” (TEI OP-VET)** and its [VET Toolbox II](#) (Enhanced Delivery of Demand-driven Skills Development for Investment in Africa) – a EUR 75 million TEI launched in April 2024 and led by Belgium, France, Germany and Finland (European Union, n.d.) – seeks to **orient VET and skills development towards concrete opportunities for decent employment arising from investments and related value chain developments facilitated under the Global Gateway**. In practice, the TEI identifies required skills profiles and VET needs linked to specific investments (e.g. on hydrogen, energy etc.) under EU initiatives and makes recommendations for the VET system, which can then be implemented using country envelopes by the EUD (European Union, 2024). The TEI is structured along a competitive funding mechanism to finance regional and multi-country

initiatives; a request-based Technical Assistance Facility to support the EU, its member states and the private sector to better link VET & skills development with concrete employment opportunities; and regional exchanges on Public-Private-Partnerships to promote opportunity-driven VET and skills development (including through mobilisation of Erasmus+ partnerships).³ The TEI OP-VET specifically targets green skills development, as green investments are a relevant component under the Global Gateway and a strategic focus for the EU's economic foreign policy.

This shift towards an opportunity-driven approach is aligned with the African Union Continental Strategy for Technical and Vocational Education and Training (TVET) to Foster Youth Employment, which advocates for a more demand-driven and holistic VET policy approach that better reflects market conditions. African partners could also benefit from this approach through more integrated interventions of the EU institutions and member states and a stronger alignment with African priorities by bringing all actions together and 'connecting the dots' (Interview, June 2025).

Despite this potential, OP-VET faces challenges to meet private sector interests. ECDPM research shows a mismatch between the current project selection procedure and the private sector's investment planification and timeline. More agile procedures and funding would be instead necessary.

Skills development is also **one of the five pillars identified under the CRM partnerships**. For example, in Namibia, the EU seeks to promote the development of renewable hydrogen through strategic investments together with EU companies and offers skills development through TVET and university cooperation. Furthermore, the Global Gateway Strategic Partnership with Namibia on Sustainable Raw Materials Value Chains and Renewable Hydrogen includes one pillar on capacity building, training and skills development. It includes identifying training and skills needs (an important part of skills building albeit only one aspect of the chain) along the raw materials and green hydrogen value chains and enhancing Team Europe's training offer, in cooperation with the industry (European Commission, n.d.; European Commission, 2023).

EU engagement with Africa on education and skills has been extensive and occurs under multiple EU programmes that incorporate the Global Gateway approach to

³ Under the first call for proposals of this initiative, the following projects were expected to be contracted in June 2025: Green Hydrogen in Namibia, Green Hydrogen in Kenya, Urban Transport in Senegal, Renewable Energy in Côte d'Ivoire, Renewable Energy in Mozambique, Agribusiness in Uganda.

a lesser extent, including through budget support. **ERASMUS+** facilitates academic exchanges, institutional cooperation and policy reforms under a single umbrella, aligned with Global Gateway priorities.⁴ While other mobility and exchange programmes exist, one interviewee signalled that ERASMUS+ is a “European specificity” due to its transnational dimension and comprehensiveness.⁵

In April 2024, at the Global Gateway High-Level Event on Education in Brussels, the European Commission launched the [Africa-Europe Youth Academy](#) and 15 Intra-Africa Mobility Scheme projects, which do have a green skills component but have a much less prominent link to investments (European Commission, 2024). The EU is a long-term supporter of the African continental framework that strengthens the comparability, recognition, quality and transparency of educational and professional qualifications. Implemented by the European Training Foundation, in collaboration with the African Commission and national governments, the [African Continental Qualifications Framework \(ACQF\)](#) plays an enabling role for the integration and harmonisation of green skills and competencies into national, regional and continental frameworks. This is particularly important given the novelty and transversality of green skills, to allow clear pathways for vertical progression and horizontal comparability and strengthen the coherence between educational production in green skills and the needs of the labour market (ACQF, n.d.b.). The 'greening' of National Qualification frameworks remains a complex and multidimensional process (ACQF, n.d.a.) but it is an example of the comprehensive, continent-wide support that the EU and Africa have established in this field.

Similar approaches are detectable in initiatives like [GRETA \(Greening Responses to Excellence through Thematic Actions\)](#), that fosters peer learning among vocational training centres to adopt sustainable practices and technologies, aligning education systems with the demands of a green economy.

Finally, green skills are embedded in the [Regional Teachers Initiative for Africa \(RTIA\)](#) – a partnership between the EU, EU member states (France, Belgium and Finland), UNESCO and the African Union Commission, designed to tackle the critical shortage of qualified teachers in Sub-Saharan Africa.

⁴ Erasmus+ for instance encourages projects that develop green skills. See <https://erasmus-plus.ec.europa.eu/about-erasmus/programme-priorities> and https://international-partnerships.ec.europa.eu/document/download/28c075e9-fd0d-4714-949e-4fc69fdc5b0_en?filename=GG_Factsheets_Africa_Education.pdf

⁵ HORIZON EUROPE, the EU research framework programme, and DG INTPA's support to capacity-building actions include cooperation with African institutions.

3.2. China's expanding but uneven role in Africa's green skills development

China is a longstanding partner for many African countries and a key player in their green transformation. Its role ranges from green energy investments and lending to its leading role as a green technology provider, including solar panels, wind turbines and NEVs (Kiryakova et. al, 2025). China's energy-related construction and investment deals in 2025 set a record as the greenest since the BRI's inception in 2013, reaching about 22% (US\$9.7 billion) of total energy engagements in quarter 1 (Nedopil Wang, 2025).⁶ Comparatively, engagements in oil and gas amounted to USD 30 billion, 70% of the total. China is also heavily involved in mining of green minerals in some African countries, for example in the Democratic Republic of Congo, Zambia or Guinea. China's green footprint is particularly large, amounting to an estimated 1.5%, or about 350m tonnes (MtCO₂) cut in future emissions, of which 200m tonnes (MtCO₂) arising from clean tech exports. While avoided emissions in Africa are small, given the low regional carbon footprint, sub-Saharan Africa is set to cut emissions by 3% on an annual basis thanks to Chinese clean tech exports, preceded only by the MENA region (4.5%) (Myllyvirta, 2025).

Despite this clean tech supremacy and growing clean energy engagements, China does not appear to be a big player on green skills development, at least at first glance.

One major analytical challenge is that, contrary to the EU, China does not have an officially agreed-upon definition of what green skills entail nor a single policy as such.⁷ Skills development strategies are indeed not systematically included in national climate change and green transition policies in China, despite the integration of environmental and climate change imperatives into its overall development and growth strategies. This can be attributed to weak internal coordination, as well as a traditional focus on the quantity rather than the quality of the workforce. Thus, there is currently almost no policy specifically designed for green skills development in China (ILO, 2018).

There are, however, a number of terms used in the Chinese policy discourse that refer to ecological development, green education, environment education and related guidelines on workforce development. For example, the **Ministry of Education's Action Plan for Strengthening the Construction of Carbon Peak and**

⁶ Green energy includes wind, solar and waste-to-energy projects.

⁷ According to one Chinese interviewee, China's understanding of green skills is "shaped by Europe".

Carbon-Neutral Talent Training System in Higher Education (2022) offers guidelines on training a national talent in areas such as energy storage, hydrogen, wind, solar and nuclear to meet industry demands and to increase educational materials that deal with carbon peaking and neutrality (CNESA, 2022; UNESCO, 2022). The working plan for 2022 of the same ministry integrates “green skills and low carbon education” into general education – as part of a more cross-cutting effort to mainstream climate education in curricula. This is to underpin planned emissions reductions and is part of what the Chinese government often refers to as ecological civilisation (UNESCO, 2022).⁸ The **14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives for 2035**, one of the overarching plans that sets Chinese policy direction, also commits to “build a market-oriented green technology innovation system, implement green technology innovation research initiatives, and carry out benchmarking and improvement initiatives for the resource efficiency of key industries and key products” as part of the objective to “Accelerate the green transformation of the development model” (CSET, 2021). [China’s 15th Five-Year Plan Recommendations](#) highlight a trajectory in which technological and industrial sectors will remain at the core of China’s development, not only to foster economic growth but the quality of the national economy. This may have implications for how China approaches green capabilities at different educational levels.

These national concepts and policies are unevenly translated into China’s international engagement, and in Africa in particular. A detailed tracing of these aspects is beyond the scope of this paper. But it is worth noting that, along its green technology footprint, China has invested in making its projects more sustainable also in other areas, for example issuing **Green Development Guidelines for Overseas Investment and Cooperation in 2021** and **Guidelines for Ecological Environmental Protection in Foreign Investment Cooperation and Construction Projects in 2022**. These documents mention that Chinese contractors and developers should strengthen human resources development, ecological and environmental protection training and capacity building, but they do not specifically refer to local workers or strengthening similar capabilities in local communities (Nedopil et al., 2021; Ministry of Commerce and Ministry of Ecology and Environment, 2021).

Educational cooperation and people-to-people exchanges, including on green skills, have become a growing area of cooperation between China and Africa,

⁸ For a discussion of the use of the term ‘civilisation’: <https://decodingchina.eu/key-term/civilisation/>

though one poorly studied so far (China-Africa Business Council, n.d.).⁹ For example, 2026 will be the China-Africa Year of People-to-People Exchanges. At the Forum of China-Africa Cooperation (FOCAC) in 2024, China pledged to “strengthen capacity-building and joint research in such areas as disaster prevention, mitigation and relief, bio-diversity protection, environmental improvement, and desertification treatment” and continue China-Africa cooperation on VET and education,¹⁰ in line with its strong domestic focus on “education for innovation” (ASCIR, 2025). Ahead of the summit, in September 2024, a roundtable hosted by the China-Africa Environmental Cooperation Center brought together officials and experts from China and African countries to discuss collaborative strategies in energy optimisation, low-carbon technologies, green finance and green skills (Shujuan, 2024; FECO, 2024). Furthermore, since 2021, the [Global Development Initiative](#) – the “strategic guide to China’s development policy” (Interview, June 2025) – has 8 areas of cooperation, one of which is climate change and green development. While skills are not an explicit priority, our interviews with Chinese researchers revealed that this is an issue that is growing on China’s development cooperation agenda,¹¹ also partly related to learning from its own as well as the European approach when it comes to capacity building, nurturing local talent, skills and entrepreneurship (Interviews, June 2025).

Under BRI 2.0, the link between Chinese community support projects (“small and beautiful projects”) funded through aid and economic endeavours is to be strengthened, with some instances of green skills training (China International Development Cooperation Agency, 2025).¹² Capacity building and training of local workers in Africa have reportedly increased in Chinese green projects to respond to the demands from developing countries, with Chinese companies highlighting

⁹ Ehizuelen (2018) refers to five main modalities used by the Chinese government to contribute towards education and skills development in Africa, namely: 1) Scholarships for some, and offering places for self-funded students, in Chinese universities; 2) Training courses to officials and technicians; 3) Sending experts to African countries to do specialised training; 4) Building education infrastructure; and 5) Partnership programmes implemented by various Ministries as well as universities.

¹⁰ https://2024focacsummit.mfa.gov.cn/eng/hyqk_1/202409/t20240906_11486213.htm (para 2.2.8 and 2.2.9). See also a commitment to enhance skills and technical training for the least developed countries in Africa stated in the [China-Africa Changsha Declaration on Upholding Solidarity and Cooperation of the Global South](#) of 11 June 2025.

¹¹ The List of Outcomes of the Beijing Summit of the Forum on China-Africa Cooperation mentions a “China-Africa Green Ambassador Program” implemented to promote the improvement of green skills and the sharing of knowledge on sustainable development between China and Africa (MFA, 2025).

¹² Hannah Ryder keynote speech, [CGF-ODI-AERC Conference 2024 | China-Africa Economic Interactions: Past, Present and Future](#).

in the media how many jobs, scholarships and training opportunities they have provided during the construction of a project (Jiang, 2025). Certain training programmes offered by companies are funded through the Ministry of Commerce's (MOFCOM) foreign aid budget. For instance, the China Hydropower Training Institute was established in relation to the construction of the Lower Kafue Gorge Hydropower Station by Sinohydro in Zambia, with its training courses supported by MOFCOM (Jiang, 2025).

The Chinese government (mostly the Ministry of Commerce, sometimes in collaboration with European actors such as GIZ) also invites international experts to follow seminars and short training sessions in China, including on topics related to the green industry, green value chains, cultivation techniques, agriculture, energy and green city construction (China South-South Cooperation Network, 2024). The Ministry of Ecology and Environment has established a fund for South-South cooperation for climate change, under which some seminars and training programmes are organised. Finally, other ministries and government agencies, such as the Ministry of Science, the National Energy Administration, and provinces that are experienced in renewable energy development, also organise short-term training programmes and courses for developing country officials where they share China's experiences in climate governance and renewable energy development (Interview, June 2025; Jiang, 2025).

The Ministry of Education promotes TVET in developing countries, for instance through **Luban workshops** – a flagship capacity building initiative aiming at sharing China's vocational education models and vocational skills with other countries and cultivating competitive local skilled talents. The initiative also involves student exchange and mutual recognition of academic qualifications (Yan, 2023; Haoyi, 2024; Luban Workshop, n.d.; Global Times, 2024). First launched in 2016, the Luban Workshop network is part of China's global strategy to improve its image while serving its economic interests by promoting its technologies (Lemon and Jardine, 2025). The Luban Workshop thus reportedly "conforms to the demand for industrial development in host countries" (Yan, 2023). China has established 17 Luban Workshops around Africa and ten in Asia and Europe.¹³ Generally, China has been enhancing its support to vocational education in various African countries in recent years and China's "advancements in

¹³ In Cambodia, Indonesia and Egypt, the courses cover new energy vehicles, and some are in collaboration with Chinese companies, which offer internships and employment. The China-Southeast Asia Clean Energy Luban Workshop Egret Class sends Southeast Asian students to China to learn about electricity, wind turbines, photovoltaics, project construction, construction management and so on, and some of the education is under contract with a Chinese company so that the students can work in the company as clean energy engineers upon graduation (Jiang, 2025).

education and technology” have been highlighted by Nigeria, for example, as key factors in the choice of China as a partner (Ifunanya, 2023; Jinhua University of Vocational Technology, 2024; Ajayi, 2025; Guardian Nigeria, 2024; Luban Workshop, 2022).

China has also emerged as a leading destination for African students seeking diverse educational and training opportunities. The Chinese government’s initiatives, including the pledge to provide 60,000 training places for African women and youth in 2024 at the FOCAC, have significantly increased the accessibility and appeal of Chinese education and training programmes (Afro-Sino Ctr. of Int’l Relations, 2024).

These findings reveal some nuances and potential contradictions in (perceptions of) China’s approach to (green) skill development, as also highlighted in our interviews. Some African interviewees leveraged the critique that China’s approach tends to be hiring a few local staff (if at all) around a specific infrastructure project, thus limiting the diffusion of skills to the wider economy, while others highlighted the fact that local African workers tend to move from one Chinese project to another within a country, though Chinese actors do not communicate a lot about their approach to local labour. Most interviewees, though, were of the agreement that green skills and jobs are not a high priority for China at the moment.

There is still a lot to unpack and analyse. Indeed, it seems that China is paying greater attention to these issues, partly due to a “more nuanced strategy that fuses investment with education and infrastructure with human capital” (Lemon and Jardine, 2025), and partly due to a domestic interest, as more and more Chinese companies and industries are investing or trading overseas. Market acceptance of their technologies depends on the capacity to conveniently maintain and repair Chinese clean tech. Local employment has become a CSR/ESG strategy to gain the support of local communities and avoid pushbacks (Interviews, June 2025). However, **there seems to be a disconnect between China’s growing attention to these issues at HQ level and the perception of China’s support to skills development at partner country level.**

Despite perceptions, though, our interviews underlined that, given China’s significant footprint in the green transition of African countries, its role in terms of standard setting and skills development should not be understated. Solar panels and NEVs are a good example: as the charging equipment and different parts come from China, the technical skills associated with using and repairing the equipment have to be learned from Chinese actors.

China's future support for (green) skills development seems likely to reflect not only its investment and trade patterns but also its efforts to position itself as a pragmatic partner in human capital development offering in-demand skills and opportunities (Lemon and Jardine, 2025). Yet how well this support will align with African priorities remains to be seen.

4. Takeaways for European and Chinese approaches

The previous two sections have outlined some of the characteristics of the EU's and China's approach to green skills development in partner countries – which the second brief will test based on the case study countries. This section aims to lay out a number of questions and issues which would deserve further analysis and discussion.

First of all, our interviews with African and Chinese interviewees highlighted the fact that **Europeans have a comparative advantage (compared to China) when it comes to skills training and capacity building, particularly in relation to the green transition**, stemming from longstanding and comprehensive support in this field. The EU's shift towards a focus on employment opportunities was seen as a positive development, as one of the weaknesses of the EU's approach in the past was precisely the lack of job opportunities after training and the missing link with the private sector. The Chinese approach, in comparison, was seen as more pragmatic, as people are trained based on needs.

However, **the European and Chinese approaches seem to be moving closer to each other**. This may be counterintuitive, given the efforts on both sides to pitch their engagements as distinctive. On the one hand, the EU's approach to (green) skills development is evolving from an offer of education and training as part of cooperation projects to increasingly revolve around its investments and hard infrastructure development in partner countries. This shift brings the European approach closer to the one mostly adopted by China, which also embeds skills development in its construction projects and investments. On the other hand, China increasingly focuses on capacity building and training of local workers and human capital development, often to address the concerns raised by local communities and to meet African demands for such activities. This research could not delve in detail into what motivates this approximation on both sides, most likely a mix of market-based, geopolitical and local factors. Still, the question of whether the EU and China are learning from each other emerges – Europe from China's traditional focus on investments and hard infrastructure, China from

Europe's comparative advantage in skills development and soft infrastructure generally.

Secondly, and relatedly, **the fact that China is not widely perceived as an actor investing in (green) skills development might lead EU actors to jump to conclusions and overlook China's contribution in this field.** Yet, other research has shown the tangible value that initiatives like the Luban Workshops offer to local economies, namely certified skills in fields that matter, for example, high-tech sectors. This not only responds to the needs and demands of partner countries,¹⁴ but it also “subtly acclimate[s] [participants] to Chinese technological standards, tools, and educational norms.” By shifting the public focus from controversial megaprojects to human development and higher-value investments, the Luban Workshops and other Chinese skills initiatives address one of the most common complaints about Chinese investment globally – overreliance on Chinese labor (Lemon and Jardine, 2025). This highlights the geopolitical dimension of investing in skills, beyond the response to partner countries' needs. The short-term courses organised by Chinese ministries and government agencies not only facilitate the expansion of Chinese technology but also Chinese norms in development and green transition (Jiang, 2025). This can in turn deepen dependency, as “most [workshops] are designed and operated by Chinese institutions, using Chinese equipment and software. [...] In effect, they lay the groundwork for a China-centric technical ecosystem in which Chinese companies, equipment, and standards become deeply embedded in national development strategies.” (Lemon and Jardine, 2025). In a European political environment that is not favourable to China's dominance, this should be a key consideration in terms of not seeing green skills solely as an ‘add-on’ or a soft sector parallel to the EU's strategic interests, but as part and parcel of its strategy to build reliable partnerships with third countries (Simon Arboleas, 2025).

Thirdly, **a “base level of good skills” is crucial in partner countries for investors and the private sector to go ahead with green investments** (Kimeu, 2024). This is a key consideration going forward, as green energy is set to be an area of strategic investments for both the EU and China in Africa and beyond, despite some short-term setbacks (Medinilla and Dekeyser, 2024; ECDPM 2024; Reuters 2025). There is also a virtuous circle dimension, whereby the more investments flow, the more jobs are created, thus feeding skills development as well. This is thus a key area for win-win partnerships going forward.

¹⁴ This is one of key criticisms around the EU's Global Gateway so far (Bilal and Teevan, 2024; Veron, 2025).

Fourthly, **the provision of green skills development – while considered highly strategic by all stakeholders we talked to – seems to be highly fragmented and not well known and understood.** Both the EU and China would benefit from having more coherent approaches in their respective support (beyond individual investments) as well as a better understanding of what other actors are doing in this field, particularly as these skills will grow in importance in coming years.

It is clear that there is a lot of learning happening on both sides. As much as the EU is learning to implement mutually beneficial partnerships in a more competitive world through its Global Gateway strategy, China is also learning to adapt, with a more nuanced strategy that fuses investment with education and infrastructure with human capital development (Lemon and Jardine, 2025). However, there is still room for mutual learning, according to one interviewee. The next section will provide some ways forward for the African, European and Chinese stakeholders.

5. Conclusions and recommendations

New job opportunities requiring green skills development will emerge due to technological advancements, both in Europe and Africa (ETF, 2023). Strategic investments in reskilling could not only have a transformative impact on the green transition, but also on economies more broadly.

5.1. For partner countries

Green skills development ultimately requires a cross-sectoral approach and integrated approach.

- Foster **coordination and coherence across sectors and actors** (education, labour, environment/energy and industry representatives);
- Ensure **sufficient integration of labour market needs in the content and design of TVET** (requiring private sector involvement). At the same time, an adequate balance between public sector TVET reform ambitions, and short-term, narrower private sector partner needs should also be found.
- Foster **green partnerships between VET providers, employers, industry associations and government agencies** to identify skill needs, develop relevant training programmes, and provide support for green businesses (ETF, 2023).

5.2. For the European Union

Skills development and TVET reform is currently supported by the EU in many countries, yet more efforts are needed to ensure synergies between development cooperation and investment approaches under the Global Gateway. The EU is currently launching many different initiatives to solidify its partnerships with third countries¹⁵, yet at this stage the extent to which green skills development will be embedded in these efforts remains unclear.

- **Treat green skills and the upskilling and reskilling of the workforce as crucial to achieve the shift to a modern, resource-efficient and competitive economy in partner countries¹⁶**, instead of simply “relegating” them to development cooperation or framing them as part of the ‘flanking measures’ and providing a ‘conducive environment’ for investments (Karaki et al., 2022). This requires having a well-resources skills pillar in the various partnerships that the EU is establishing, which would help strengthen the host countries’ TVET systems while also contributing to the EU’s objectives.
- **As part of the EU’s skills-investments approach under the Global Gateway, work closely with European companies.** These provide skills development and training for their own purposes and so would add value to EU’s support to green skills programmes. Yet, the EU will have to ensure that its support to green skills development does not just serve the private sector’s profit-oriented interests but also strengthens the institutional capabilities of the state and brings broader economic benefits through job creation and strong linkages with local value addition endeavours. Indeed, **the impact on local economies should be part and parcel of the Global Gateway ‘package’ and its 360 degree approach for projects to be truly “mutually beneficial”.**
- **Learn from the benefits and costs of a stronger skills-investments link based on the Chinese experience and work closely with African partners** on what a sensible demand-driven approach could look like.

5.3. For the EU and China

Partner countries will work with whichever partner is prepared to help them tackle their skills deficit. While the EU is traditionally seen as better placed to create a

¹⁵ Including critical raw materials partnerships, Clean Trade and Investment Partnerships (CTIPs) as well as tech sovereignty partnerships (Medinilla, Teevan and Karaki, 2025; Jackson et al., 2025; Karkare, 2025)

¹⁶ Similarly to how the 2023 Council conclusions on skills and competences for the green transition frame them internally (Council of the EU, 2023).

'local ecosystem' of skills, China is also increasingly investing in human capital and due to its dominance in green technology, has a key role to play:

- **Ensure a degree of coordination (and, where possible, trilateral cooperation)** so that the EU's and China's respective skills initiatives do not run parallel to national systems and to each other;
- **Recognise green skills as a strategic asset to advance the global agendas on which they keep working together, such as climate change**, despite frictions in other areas. The China-EU climate statement, the only concrete outcome of the 2025 summit, refers to a shared commitment to a global just transition – of which decent green jobs are a key aspect (Council of the EU, 2025b).

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