



GREEN JOBS FOR WOMEN IN AFRICA



AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE
DE DEVELOPPEMENT



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LIST OF ACRONYMS

AfDB	African Development Bank
ANRC	African Natural Resources Centre
CEO	Chief Executive Officer
ECOCERT	Organic Certification
EU	European Union
GDP	Gross Domestic Product
GHGs	Green House Gases
ICT	Information and Communications Technology
IFC	International Finance Corporation
ILO	International Labour Organization
IMF	International Monetary Fund
IRENA	International Renewable Energy Agency
MSMEs	Micro, small and medium-sized enterprises
NRDC	Natural Research Development Corporation
PET	Polyethylene Terephthalate
R&D	Research and Development
REFACOF	African Women's Network for Community Management of Forests
SMEs	Small and medium-sized enterprises
SSA	Sub-Saharan Africa
STEM	Science, technology, engineering and math
TVET	Technical and Vocational Education and Training
UN	United Nations
UNECA	United Nations Economic Commission for Africa
UNEP	United Nations Environment Programme
US	United States of America
UWA	Uganda Wildlife Authority
WIC	Women Investment Club
WiNRA	Women in Natural Resources in Africa
W-REA	Women in Renewable Energy Sector in Africa
YALI	Young African Leaders Initiative

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About this project

Since 2019, the African Natural Resources Centre of the AfDB and UN Women's Regional Office for West and Central Africa have collaborated to promote women's economic empowerment in the natural resources sector under the initiative WiNRA (Women's Empowerment in the Natural Resources in Africa). WiNRA seeks to provide economic opportunities and drive policy and regulatory reforms that enhance women's participation in the natural resources sector. The overarching goal is to create decent jobs for women, while promoting sustainable and inclusive natural resource management in Africa.

The project 'Green Job Opportunities for Women in Africa' is the first activity under WiNRA. The overall objective of the project is to help shape the strategies driving post COVID-19 recovery in a way that they are gender-responsive, inclusive and sustainable. To that end, this report provides evidence to inform policy advocacy and reform at the regional and national level in the near future.



EXECUTIVE SUMMARY

The transition to a green economy will create many new jobs around the world, including in sub-Saharan Africa. Will women share-in these new jobs, and will the economic transformation help women move into higher-paid, more stable jobs that require more education and skills? The short answer is “yes” – provided countries adopt strong policies and programmes to make it happen.

The United Nations Environment Programme (UNEP) has defined the green economy as one “that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities”. Transition to the green economy will be a major trend shaping socioeconomic outcomes worldwide in the next 50 years. This transition will create new economic opportunities, spawning new jobs and spurring the adaptation of existing jobs. One projection is that 24 million new jobs will be created worldwide just by the changes necessary to hold global warming to 2° C.

The green economy transition is attracting attention in policy circles, but its potential gender impact has been subject to less discussion. Questions such as ‘what share of green jobs will be accessible to women?’ and ‘what types of jobs will they be?’ are worth asking now. The answers will forecast whether the green transition will be fair and equitable or biased against women and girls.

Focusing a gender lens on green jobs. This study applies a gender lens to job creation in the green transition. It assesses opportunities for women’s participation in green jobs in key sectors driving growth in African economies, explores obstacles limiting women’s access to those jobs, and identifies ways to overcome these obstacles and promote job opportunities for women. Starting from the assumption that all jobs can be women’s jobs, it assesses green-job opportunities for women by identifying those sectors likely to offer the most green-job opportunities and examines what could be the mix of high-end and low-end new green jobs created. Then, it uses women’s current labour participation in these sectors to predict which sectors will offer “quick wins” – relatively rapid access to green jobs – or “slow wins”, requiring long-term strategies to remove legal barriers and change social norms. Quick wins can be considered those achievable by 2030, the time frame of the Sustainable Development Goals,

while slow wins might take place by 2063, the time frame of the African Union’s Agenda 2063.

The potential for post-COVID-19 Africa. The study takes place as Africa and the world are looking forward to recovering from a historic pandemic. There is consensus that economic recovery must not take place at the expense of environmental and social progress. Indeed, the reformist drive that is part of post-COVID 19 recovery strategies can be enlisted to advance gender and environmental objectives. The focus on green jobs for women represents an intersection of the concerns of **gender advocates** who want to influence post-COVID 19 recovery (in the short term) and transition to the green economy (in the medium to long term) and of **green economy experts and policymakers** who seek a better understanding of the gender dimensions of the green economy and how to develop fair and gender-responsive green economy policies in the region.

Main findings

Women are well positioned in many of the sectors where green jobs will be created. A range of sectors will create green jobs in sub-Saharan Africa. Energy, construction and agriculture will create the largest number of green jobs. Women are well placed to seize opportunities in all sectors identified in this report – except transportation, construction, and certain areas of energy where women’s participation currently is low (see figure below).

While women are well positioned to access green jobs in many sectors, the report also shows that they are currently overwhelmingly concentrated in sectors that are likely to create more low-end types of green job opportunities than high-value green jobs. Most sectors will create a combination of well-paid, high-skills green jobs and low-end jobs with poor working conditions, remuneration and stability. For the most part, women’s participation is lower in those sectors where the highest

number of 'good' green jobs will be created (solar and wind energy, transportation, and construction), and higher in those that will create low-end jobs (such as greening of conventional agriculture, forestry or waste).

A positive development, however, is that even in **sectors where women are not well represented, they are finding niches**, often as small women-led businesses in indirect jobs in green construction, renovations or energy efficiency.

Women face a number of barriers that may limit their full access to access green jobs in the coming years.

Some barriers to women's participation in green jobs are sector-specific, such as social norms that deem construction jobs inappropriate for women. Others permeate all sectors. These include barriers to women's and women-led businesses' access to land, finance and technology; gender segregation in the education system and labour market; laws that limit women's access to certain tasks and jobs; and structural inequalities reflecting social norms dictating that women should shoulder the majority of unpaid care work, effectively depriving them of opportunities for other jobs.



FIGURE 1
Green jobs potential for women in sectors of the sub-Saharan African economy

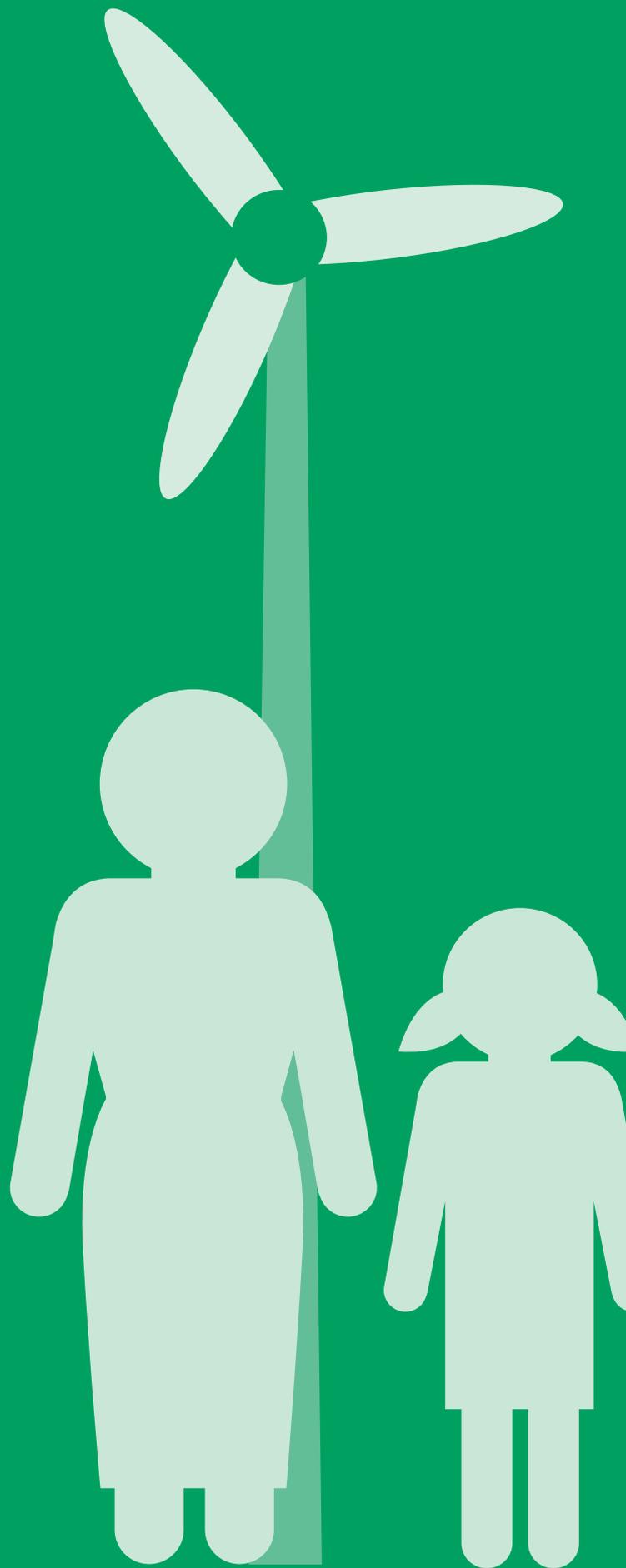
Sector	Potential to create green jobs	Potential to create higher-end green jobs	Quick-win area for women's employment in sub-Saharan Africa
Agriculture (greening of conventional)	●	●	●
Agriculture organic/conservation farming	●	●	●
Fisheries	●	●	●
Forestry (sustainable forestry management and reforestation)	● → ●	●	●
New Green Services	●	● → ●	●
Tourism (greening tourism and nature/eco-tourism)	●	●	●
Waste management/recycling	● → ●	●	●
Transportation	●	● → ●	● → ●
Solar energy	●	●	● → ●
Biomass energy	●	●	●
Wind energy	●	●	●
Construction	●	●	●

Note: This table presents a visual summary of the results of the mapping exercise to identify opportunities for green jobs for women in sub-Saharan Africa. Detailed analysis can be found in section 3 of the report, as well as annex I. The second column of this table classifies sectors according to their potential to create green jobs. The third column presents information regarding the quality of green jobs likely to be created in each sector. The last column, classifies sectors according to their potential as a quick win for women's participation in green jobs in the future, based on current levels of women's labour force participation in the sector in sub-Saharan Africa.

● Low ● Medium ● High

The transition to the green economy offers unique opportunities to reduce gender inequalities in the labour market in sub-Saharan Africa, including through the following:

- **Changing perceptions about what are acceptable male and female jobs.** Many of the jobs in the green economy will be in new occupations that are not yet socially assigned to men or women. Thus, there are opportunities for women to claim new jobs as engineers, architects, energy efficiency advisers, drivers of green buses or green innovators across many different fields. The many women-led small and medium-sized enterprises (SMEs) installing solar panels across the region illustrate how to pierce the 'glass walls' and enter heavily male-dominated sectors such as construction. With the support of strong public policies, these early successes can model new roles for women and have a multiplier effect in coming generations.
- **Assigning economic value to women's unpaid work on behalf of the environment.** This can be accomplished through economic instruments such as carbon credits and payments for environmental services schemes in tourism, forestry and other sectors. Additionally, the transition to green economic activity can be coupled with upgrading and formalizing women's current activities in the informal economy in waste management and agriculture through women-led collectives and networks. Initiatives in these areas can be scaled up to become game-changers for women in sub-Saharan Africa.



Recommendations

Appropriate public policies and programmes are necessary to ensure that women get an equitable share of green jobs. Both short- and long-term strategies are required. In the short term, policies that support and encourage women and prepare them for new green jobs will maximize quick wins in sectors such as agriculture or tourism. Productive strategies may include capacity-building, reskilling and leveraging high-value green sectors where women are already present or well positioned in similar activities. Longer-term efforts will be needed in more male-dominated sectors, such as energy, construction and transportation, to remove structural barriers and set the foundation for slow wins in decades to come.

Action needs to start now – on both short-term and long-term strategies – while there is still time to prevent the outcomes of the green transition from being severely biased against women and girls. Governments and advocates can take immediate advantage of the reformist drive of the post-COVID-19 recovery as well as piggyback on other relevant national and regional policy processes to promote these long-term and far-reaching structural changes. Starting advocacy now is especially important in light of the limited knowledge among policymakers in the region about how to formulate and implement gender-responsive economic policy in general and with regards to the green economy in particular.

Long-term strategies must start now, too, to assure that conditions are in place for women and girls to leapfrog to high-productivity green jobs, skipping the long, slow climb from one low-productivity job to one that is slightly better. Policy initiatives will be necessary to make this happen. In the short term, women will benefit from support to move into high-level jobs. In the long term, girls will benefit from education in new skills and support for long-term social change. Many of the important levers of secular change, particularly desegregating education and changing social norms, can take decades to have full effect.

Recommendations for specific measures and policies to leverage women's green-job opportunities fall into three categories, all of them necessary (see box).

- **First, policies to get women and girls ready for the green economy** through education, skills-development, capacity-building and institutional

support to women-led businesses. **However, a major conclusion of this study is that skills policies**, which comprise the bulk of policy interventions in green-jobs strategies at the national level, **will not be enough for women and girls** to benefit from the opportunities that the green economy is expected to bring about.

- There is therefore a need for **policies to level the playing field for a gender-responsive green economy by addressing structural barriers that women experience in accessing green jobs.** Here, the focus should be on removing gender discrimination from law and business practices (in particular, access to land and lending practices) and on addressing the manifestations and consequences of discriminatory social norms – for example, through policies that recognize, reduce and redistribute women's unpaid care responsibilities or that tackle gender segregation in the labour market.
- Finally, policies focused on **accelerating action to promote a gender-responsive green economy** will also be necessary to ensure that change happens within a reasonable time frame. Examples of successful affirmative action in other policy areas can serve as models for green economic policies and instruments that establish gender objectives and targets.

The Way Forward

This study is a first step towards identifying green job opportunities for women in sub-Saharan African economies and proposing how to enhance them. It identifies a range of green economic opportunities for women in sectors typically found in every country in the region. Its conceptual framework can be applied at city, country or regional levels. While this study lays out the broad picture, more in-depth sectoral analysis and country-level research are needed. The collection of gender-disaggregated data on employment and types of jobs in subsectors with great green jobs potential will be important to inform and direct the attention of policymakers. Equally important will be national-level consultations among policymakers and stakeholders. Representatives of women's employment groups and women's interests generally must be included. These dialogues are the essential next step in drafting the roadmap to a greener future for Africa, and a just and fair transition to achieve it.

Summary of recommendations

Level 1 policies: Getting women and girls ready for the green economy

- Undo gender segregation in education and promote women's participation in science, technology, engineering and math (STEM) fields.
- Reskill and upskill women for green jobs, particularly in agriculture, tourism, waste management and forestry.
- Develop women's networks in male-dominated sectors such as energy, construction and transportation.
- Support the transition towards the formal economy, which can facilitate women's movement into better-paying jobs with better working conditions in key areas of the green economy, such as agriculture, waste management and forestry.

Level 2 policies: Levelling the playing field for a gender-responsive green economy

- Remove legal barriers and address gender discrimination in legislation (for example, access to land, access to certain occupations, and sexual harassment legislation, particularly in male-dominated sectors).
- Balance men's and women's responsibilities for care through policies that recognize, reduce and redistribute unpaid care and focus on education and influencing social norms.
- Invest in role-modelling and focus on youth to change stereotypes about acceptable jobs for men and women.

Level 3 policies: Accelerating action for a gender-responsive green economy

- Promote affirmative green public procurement initiatives through preferential access for women-led businesses.
- Leverage existing green economic policy instruments to ensure that women benefit equally with men.
- Establish tax incentives and business incubators for green innovation and green start-ups, with incentives for women-led micro, small and medium-sized enterprises (MSMEs) to participate.
- Establish targets for female employment in green finance projects and instruments.



1. INTRODUCTION

Africa is shouldering the effects of an unprecedented pandemic. The resulting economic crisis has worsened social conditions and increased economic vulnerabilities, and lockdown measures and social distancing have impeded supply and demand, endangering the livelihoods of countless people.¹ The crisis has affected all sectors, from transport to retail and service sectors to tourism, with large disruptions in supply chains and production and extensive job losses. According to *African Economic Outlook 2021*,² gross domestic product (GDP) contracted 2.1 per cent in 2020. The African Development Bank (AfDB) estimates that, without adequate support, about 39 million more Africans – the majority of them women – could fall into extreme poverty in 2021.

There is broad consensus that post-COVID-19 recovery cannot take place at the expense of the environment or gains in social outcomes and equality.³ This is particularly critical in Africa, where the climate emergency was already severely affecting economies before COVID-19 hit. Some countries were seeing losses of 3 to 5 per cent of GDP⁴ associated with climate change. *African Economic Outlook 2021*⁵ points out that the pandemic could jeopardize hard-won gains in poverty reduction and gender equality. Recent data show a global

increase in the gender gap in poverty as a result of the pandemic.⁶ The scale and nature of the COVID-19 recovery programmes currently underway will influence future climate outcomes,⁷ as well as socioeconomic outcomes, either by contributing to environmental degradation and widening inequalities or by building back better for people and the environment. These recovery programmes present an opportunity to address the social impacts and challenges of the pandemic and to build resilient and inclusive societies and climate-compatible economies.

Post-COVID-19 recovery policies in the African continent need to build on gender-responsive green growth strategies that create new green jobs and transform conventional jobs into green jobs. Well-designed green projects can generate more employment and deliver higher short-term returns than conventional fiscal stimulus.⁸ Green transformation is expected to create 24 million jobs globally in the next 20 years.⁹ The Global Commission on Adaptation calculates that every dollar invested in building climate resilience could result in between \$2 and \$10¹⁰ in net economic benefit.¹¹ Identifying opportunities early on and facilitating women's access to them can reduce gender gaps as part of the post-COVID-19 recovery.

1 International Monetary Fund (IMF). 2020a. Regional Economic Outlook for Sub-Saharan Africa. <https://www.imf.org/en/Publications/REO/SSA/Issues/2020/10/22/regional-economic-outlook-sub-saharan-africa>.

2 African Development Bank (AfDB). 2021a. *African Economic Outlook 2021: From Debt Resolution to Growth: The road ahead for Africa* (2021st ed.). <https://www.afdb.org/en/knowledge/publications/african-economic-outlook>.

3 United Nations Sustainable Development Goals. 2020. *SHARED RESPONSIBILITY, GLOBAL SOLIDARITY: Responding to the socio-economic impacts of COVID-19*. March. <https://unsdg.un.org/resources/shared-responsibility-global-solidarity-responding-socio-economic-impacts-covid-19>.

4 Governance Affairs Office of Gabon and UNEP. 2020. *GABON UNEP 5 contribution*. 15 August. <https://wedocs.unep.org/handle/20.500.11822/33483?show=full>.

5 AfDB 2021a.

6 Azcona, G. et al. 2020. *From insights to action: Gender equality in the wake of COVID-19*. UN Women. <https://www.unwomen.org/en/digital-library/publications/2020/09/gender-equality-in-the-wake-of-covid-19>.

7 Zhang, Tao. 2020b. "Opening Remarks: COVID-19: Opportunities for a Green Recovery." IMF website. 22 May. <https://www.imf.org/en/News/Articles/2020/05/22/sp052220-opening-remark-zhang>.

8 Volz, Ulrich. 2020. "Investing in a green recovery: the pandemic is only a prelude to a looming climate crisis." The German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE). September. <https://www.die-gdi.de/en/others-publications/article/investing-in-a-green-recovery-the-pandemic-is-only-a-prelude-to-a-looming-climate-crisis/>.

9 International Labour Organization (ILO). 2018a. *World Employment and Social Outlook 2018: Greening with jobs*. 14 May. https://www.ilo.org/global/publications/books/WCMS_628654/lang--en/index.htm.

10 Throughout this publication "\$" indicates US dollars.

11 Volz 2020.

While the green economy transition is attracting much attention in policy circles, **there is very little attention paid to its gender dimensions and implications and limited understanding of how gender-responsive policies can address them.** This study takes a first step towards identifying and assessing opportunities for women to participate in green jobs in African economies. While more in-depth sectoral analysis and country-level research are needed, this is the time to begin crafting and implementing gender-responsive job policies, while actions can still be taken to avoid widespread bias against women and girls in the outcomes of the green transition.

Following this introduction, section 2 presents the method for this assessment. Section 3 maps women's participation in key sectors of the economy and the potential for green jobs for women. Section 4 discusses the main barriers that women face to participation in green jobs and strategies to lift these barriers. Finally, section 5 draws conclusions and makes policy recommendations.



Photo: Joe Saade/UN Women

2. WOMEN'S ACCESS TO GREEN JOBS: METHOD AND CONTEXT

Method

African economies are anticipating a gradual shift towards producing products and services that are more friendly to the environment and towards using more environmentally friendly production processes. This coincides with planning for recovery from the economic effects of the COVID-19 pandemic.

This study assesses the potential for women's participation in green jobs in sub-Saharan Africa. It identifies and analyses in detail sectors where green job growth is likely to be greatest. In each sector, it uses women's current share of jobs as a proxy to gauge the degree of ease or difficulty for women to access green jobs. It identifies, as well, the barriers women face in the labour market. In particular, the report considers the potential for high-level, well-paying jobs for women in the greening areas of the economy.

As an analytical method, this report follows a step-by-step process:

1. Define green jobs.
2. Identify those sectors likely to offer the most green-job opportunities.
3. Determine women's current labour participation in these sectors.
4. On the basis of step 3, assess the potential for women's participation in green jobs, including the potential for high-level jobs.

The next section establishes the context for each of these steps.

Context

Step 1. Define green jobs

Definitions of green jobs vary, but at their core all refer to jobs that preserve, protect or restore the environment (Box 1). In this study, **“green jobs” are defined as employment directly contributing to, preserving or restoring the environment in the sectors with the greatest greening potential or in green cross-cutting sectors.** As the 2016 definition from the International Labour Organization (ILO) notes, green jobs include both jobs that produce environmentally beneficial goods and services (whether or not their production processes benefit the environment) and jobs that use environmentally friendly production processes (whether or not they produce “green” goods or services).¹²



¹² ILO. 2016. “What is a green job?” ILO website. 13 April. http://www.ilo.int/global/topics/green-jobs/news/WCMS_220248/lang-en/index.htm.

BOX 1.

Green jobs definitions

Organization	Definition of green jobs
ILO. 2016 ¹³	<p>“...decent jobs that contribute to preserve or restore the environment, be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency.</p> <p>“At the enterprise level, green jobs can produce goods or provide services that benefit the environment, for example green buildings or clean transportation. However, these green outputs ... are not always based on green production processes and technologies. Therefore, green jobs can also be distinguished by their contribution to more environmentally friendly processes. For example, green jobs can reduce water consumption or improve recycling systems” even though these production processes do not necessarily produce environmental goods or services.</p>
UNEP, ILO, International Organization of Employers (IOE), and International Trade Union Confederation (ITUC). 2008 ¹⁴	<p>“Green jobs are those that contribute appreciably to maintaining or restoring environmental quality and avoiding future damage to the Earth’s ecosystems.</p> <p>We define green jobs as positions in agriculture, manufacturing, construction, installation, and maintenance, as well as scientific and technical, administrative, and service-related activities, that contribute substantially to preserving or restoring environmental quality. Specifically, but not exclusively, this includes jobs that help to protect and restore ecosystems and biodiversity; reduce energy, materials, and water consumption through high-efficiency and avoidance strategies; de-carbonize the economy; and minimize or altogether avoid generation of all forms of waste and pollution. But green jobs ... also need to be good jobs that meet longstanding demands and goals of the labour movement, <i>i.e.</i>, adequate wages, safe working conditions, and worker rights, including the right to organize labour unions.”</p>

Step 2. Identify sectors with the most green-job opportunities

This definition of green jobs led the researchers to identify green economic opportunities arising from climate change mitigation and adaptation via energy efficiency and reduction of greenhouse gases (GHGs), reduction of waste and pollution, protection of ecosystems, and supporting adaptation. Such opportunities include activities to increase the sustainability of manufacturing and consumption, to green industrial processes and supply chains, to promote biodiversity, to save energy, and to prevent air, soil and water pollution. These activities – and, thus, most green job opportunities – generally fall within certain economic sectors:

- agriculture
- forestry
- fisheries
- tourism
- waste management
- transport
- energy
- construction

This list of sectors with green economic opportunities is not exhaustive; it includes only areas of economic activity where the potential for greening is substantial across the region. In addition, **circular economic activities**, which involve repair, recycling and reuse, including waste-to-energy processes, are a cross-sectoral category singled out here because of the potential to generate a significant number of green jobs. Also, across sectors, the transition to greener processes and the development of new green products will create demand for **new green services** to provide enterprises with the necessary expertise – for example, energy efficiency specialists, green procurement consultants and ecologists.

Green jobs are likely to be concentrated in these sectors and subsectors, and at the same time these sectors are likely to generate or regain the most jobs in the post-COVID recovery in sub-Saharan Africa.¹⁵ Thus, a shift to greener processes and products and overall job growth may have a synergistic effect in these sectors. In general,

13 Ibid.

14 ILO, UNEP, IOE and ITUC. 2008. Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World. September. https://www.ilo.org/global/topics/green-jobs/publications/WCMS_158727/lang--en/index.htm

15 Ibid.

the areas likely to produce the most green jobs are the energy and construction sectors, the circular economy and sectors related to ecosystems – agriculture, forestry and tourism.

Step 3. Determine women’s current labour participation in key sectors

Gender inequalities persist in the labour market in sub-Saharan Africa, which is undergoing significant changes. Nevertheless, the agricultural sector dominates, with around 50 per cent of all jobs. While there are sectoral and country variations, regional statistics paint the picture of gender inequalities (Table 1):

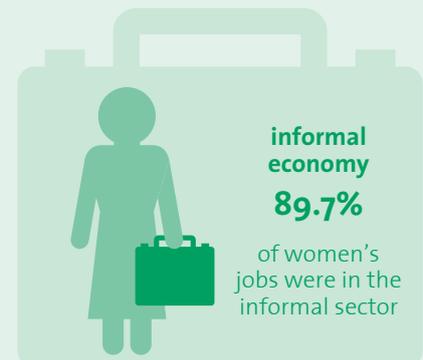
- Women are less likely than men to be part of the **labour force** – 64 versus 74 per cent.
- Women’s share of **vulnerable employment** (that is, own-account workers and contributing family workers) is much higher than that of men (80 per cent of women’s versus 67 per cent of men’s jobs).
- The majority of jobs in sub-Saharan Africa are in the **informal economy**, but women’s jobs are more likely than men’s to be informal. In 2018, as much as 89.7 per cent of women’s jobs in Africa were in the informal sector.¹⁶
- **Across sectors**, women’s representation is highest in agriculture (52.7 per cent), followed by services (39.6 per cent), but it is very low in certain sectors, such as industry (7.7 per cent).
- Women’s **wage employment** is low. The great majority of women are self-employed (81.2 per cent of total female employment).
- Much of women’s work is **unpaid**. Women and girls in sub-Saharan Africa are responsible for the majority of household responsibilities and spend on average nearly three times more time than men in unpaid work. In sub-Saharan Africa, women do three-quarters of total unpaid work.¹⁷ Women’s over-representation in unpaid care work is one of their main obstacles to accessing economic opportunities.

Gender inequalities in labour market in sub-Saharan Africa

female labour force participation



vulnerable employment



16 Joseph, T. E., C. M. Nevo and C. U. Nwolisa. 2020. “Informal Economy and Gender Inequality,” Research Square. <https://doi.org/10.21203/rs.3.rs-64173/v1>.

17 Charmes, J. 2019. *The Unpaid Care Work and the Labour Market. An analysis of time use data based on the latest World Compilation of Time-use Surveys*. ILO. 19 December. https://www.ilo.org/gender/Informationresources/Publications/WCMS_732791/lang--en/index.htm.

TABLE 1.
Gender indicators in the labour market in sub-Saharan Africa, 2019

Indicator	Total	Male	Female
Labour force participation rate (ages 15–64) (%)	69.1	74.2	64.1
Share of labour force in agriculture (%)	53.2	53.8	52.7
Share of labour force in industry (%)	10.5	13.0	7.7
Share of labour force in services (%)	36.3	33.2	39.6
Indicator	Total	Male	Female
% of jobs that are vulnerable employment		67.1	80.1
% of workers who are wage and salaried workers		30.35	18.84
Contribution to total unpaid care work (%)		24.9	75.1

Sources: ILO. 2020a. “ILO modelled estimates version November 2020”. ILOSTAT database. <https://ilostat.ilo.org/>, as cited in World Bank Data. 2021. *World Development Indicators Database* “Vulnerable employment” and “Wage and salaried workers”. <https://data.worldbank.org/indicator/SL.EMP.WORK.ZS?locations=ZG>; World Economic Forum (WEF). 2020. *Global Gender Gap Report*. <https://www.weforum.org/reports/gender-gap-2020-report-100-years-pay-equality>; Charmes, Jacques. 2019. *The unpaid care work and the labour market. An analysis of time use data based on the latest World Compilation of Time-use Surveys*. ILO. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---gender/documents/publication/wcms_732791.pdf

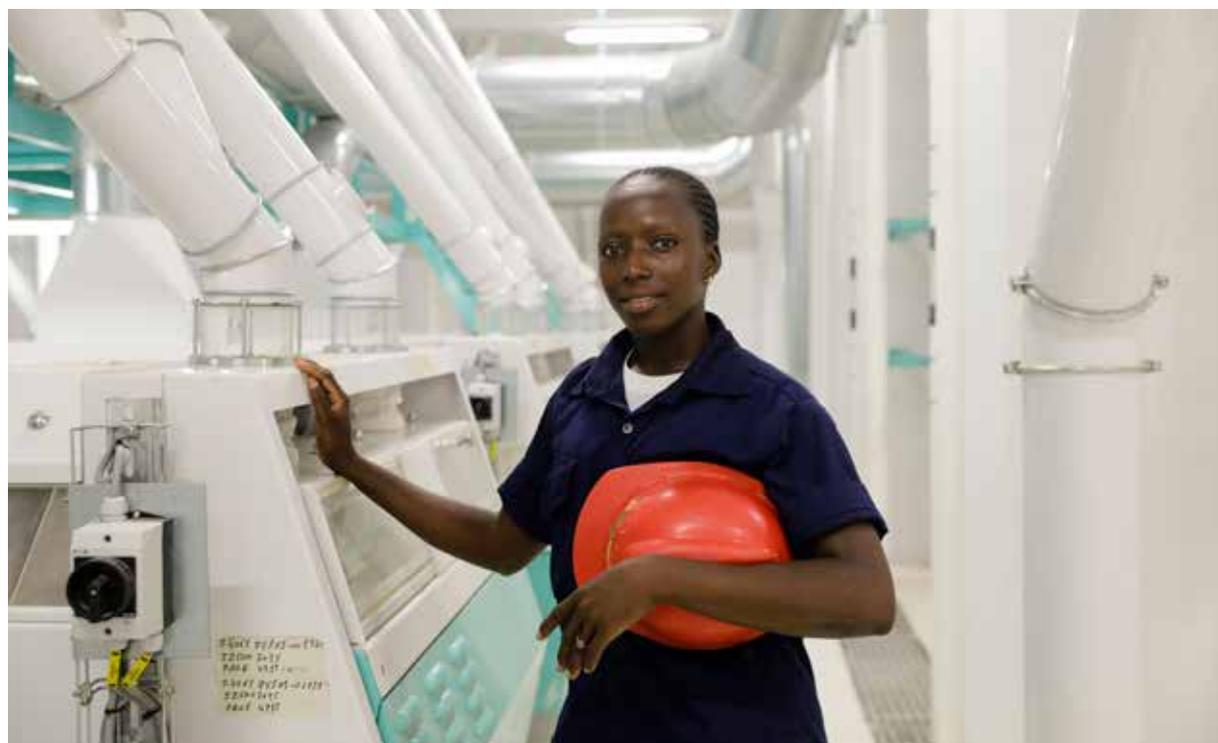


Photo: AfDB

Step 4. Assess the potential for women's participation in green jobs

All green jobs are potentially women's jobs. The authors anticipate that, as the number of green jobs grows, the percentage of these jobs held by women will also grow. At the same time, it is clear that women face gender-based barriers to obtaining these jobs, just as they face gender-based barriers to obtaining jobs generally. This study assesses current patterns of women's labour force participation in the key sectors and activities identified above (in Step 3) and uses these patterns to project the potential for green jobs for women as well as to assess the level of barriers that may prevent women from benefiting from new opportunities.

In certain sectors, women may be well positioned already and can quickly seize new opportunities. In other sectors or jobs, participation may require policy and programmatic interventions to remove structural barriers to women's participation. To account for this difference, this study distinguishes between "quick win" and "slow win" opportunities for women's participation in green jobs. Quick wins can be considered those achievable by 2030, the time frame of the Sustainable Development Goals, while slow wins might take place by 2063, the time frame of the African Union's Agenda 2063.



Data sources

The analysis in section 3 of female labour force participation in the different sectors uses primarily country-level data from ILO databases. Specific areas of analysis regarding the obstacles to women's participation in green jobs rely on other databases, such as the World Bank's *Women, Business and the Law*,¹⁸ or research produced by UN Women and others on how different aspects of social norms influence women's participation in the economy. The recommendations for action are based on an extensive review of good practices on the African continent, offering promising approaches to improve women's participation in different areas of the green economy. The regional analysis has also been informed by six country studies conducted using the same conceptual framework and methodology (Cameroon, Ghana, Namibia, Senegal, South Africa and Uganda). These results are presented in a separate report.

Although this study uses results of the most recent available analyses, green economy analyses in sub-Saharan Africa are still limited, and the proxies used in this report might not reflect the full potential for green job creation in the region. Another limitation has been the lack of consistent and comparable sex-disaggregated data on labour force participation at the subsector level (beyond primary, secondary and tertiary categories) for sub-Saharan Africa. Furthermore, very few analyses and projections of the future for jobs are yet available that take the COVID-19 pandemic into account.



18 World Bank. 2021. Women, Business and the Law Data. <https://wbl.worldbank.org/en/wbl-data>.

3. GREEN JOB OPPORTUNITIES FOR WOMEN IN SUB-SAHARAN AFRICA



The ILO projected in 2018 that the greening of the world economy (to hold global warming to 2°C) would create 24 million new jobs and that job growth would take place across nearly all sectors of the economy.¹⁹ Greening in pursuit of other environmental goals, such as protecting biodiversity and slowing depletion of non-renewable resources, might produce additional jobs. Globally, the shift to a green economy to combat global warming would create 4 per cent more jobs in agriculture than continuing business as usual; 20 per cent more jobs in forestry; and 10 per cent more in transport.²⁰

However, the growth of green jobs in developing countries has been slow. In fact, they are quite exceptional in most developing countries, including in Africa.²¹ Nevertheless, as African economies decarbonize, and as the circular economy grows and is formalized, new green jobs will be created and some conventional jobs will adapt. In most of the sectors identified in section 2, green job growth worldwide is expected to outpace growth in conventional jobs.

This section takes a closer look at each of the economic sectors in sub-Saharan Africa with both the greatest potential for overall growth and for green job creation, and it assesses women's prospects for participation in these jobs.



Photo: Aurelia Rusek/UN Women

19 ILO 2018a.

20 Ibid.

21 ILO, UNEP, IOE and ITUC. 2008.

Agriculture

The agriculture, forestry and fisheries sector, as well as the entire system of food production, is both the highest GHG-emitting sector in sub-Saharan Africa and the most vulnerable to climate change. It is also the largest employer, with 53 per cent of jobs,²² and a large employer of women across the continent. It accounts for an estimated 20 per cent of the region's GDP in 2021.²³ According to the ILO, more than 217 million jobs in Africa relied on agriculture in 2014.²⁴ The number of agriculture jobs in Africa is expected to grow for the next several decades,²⁵ even though other sectors are growing faster.

Green jobs potential

The agriculture sector will need to shift fundamentally to more sustainable practices in order to reduce GHG emissions and enhance resilience to climate change. Green agriculture involves shifting both industrial and subsistence farming towards ecologically sound practices such as efficient use of water, extensive use of organic and natural soil nutrients, optimal tillage and integrated pest control. Building green agriculture requires physical capital assets, financial investments, research and capacity-building. In addition to the progressive greening of conventional agriculture by promoting a more efficient use of resources, a shift towards conservation and organic farming is another important path for the greening of the sector. Conservation agriculture is a farming system that encourages minimum soil disturbance, safeguards permanent soil cover and diversifies plant species.²⁶

Organic agriculture entails a holistic production management system which encourages and uses agro-ecosystem health, including biodiversity, biological cycles and soil biological activity.²⁷ Such changes will demand new skills and create new jobs. On the one hand, the shift to conservation agriculture may cost jobs because it requires less labour.²⁸ On the other, it may produce better-paying jobs for more skilled workers.²⁹

In terms of job quality, the shift to sustainable agriculture may boost the productivity of agricultural labour in low- and middle-income countries. Green practices in agriculture help to increase workers' incomes by lowering input needs, increasing yields, and fetching higher prices or a combination of these factors. This has been seen for small farms in Africa, where use of synthetic inputs (fertilizers and pesticides) is limited.³⁰ Uganda is one country where this is happening (Box 2).

Women's jobs in agriculture

Agriculture is the biggest source of women's jobs in sub-Saharan Africa, estimated in 2019 as employing 53 per cent of working women.³¹ Figure 2 shows the share of women's and men's total employment that are found in the agriculture, forestry and fishing sector, by country.³² In many countries, particularly in Central and East Africa, women's participation in the sector is higher than that of men. In four countries with available data for the agricultural sector, women constituted about 46 per cent of the agriculture workforce in Ghana and Uganda, 52 per cent in the United Republic of Tanzania

22 ILO. 2021. ILOSTAT database, as cited in World Bank Data. 2021. "Employment in agriculture (% of total employment) (modeled ILO estimate)". <https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS?locations=ZG>; World Bank Data. 2021. "Labour force participation rate, female (% of female population ages 15+) (modeled ILO estimate) - Sub-Saharan Africa." <https://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS?locations=ZG>.

23 AfDB. 2021b. Weight of the sector in the sub-Saharan economy's GDP. Personal communication. July.

24 ILO 2018a.

25 Christiansen, L., and K. Brooks. 2018. "In Africa, more not fewer people will work in agriculture." World Bank Blogs. 12 November. <https://blogs.worldbank.org/jobs/africa-more-not-fewer-people-will-work-agriculture>.

26 Food and Agriculture Organization (FAO). 2021a. "Conservation Agriculture." <http://www.fao.org/conservation-agriculture/en/>.

27 FAO. 2021b. "Organic Agriculture: What is organic agriculture?" <http://www.fao.org/organicag/oa-faq/oa-faq1/en/>.

28 ILO 2018a.

29 Ibid.

30 ILO. 2013. *Working towards Sustainable Development: Opportunities for Decent Work and Social Inclusion in a Green Economy*. https://www.ilo.org/global/publications/books/WCMS_181836/lang--en/index.htm.

31 ILO, ILOSTAT database, as cited in World Bank. 2021. "Employment in agriculture (% of total employment) (modeled ILO estimate)". <https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS?locations=ZG> & World Bank Data. 2021. "Labour force participation rate, female (% of female population ages 15+) (modeled ILO estimate)." <https://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS?locations=ZG>.

32 Statistics differentiating employment by country in agriculture, forestry and fishing subsectors are not available.

and 55 per cent in the Gambia.³³ Women's prominent role in the sector often does not translate into economic gains, however, as women are employed mostly in informal, vulnerable jobs at the early, low-productivity stages of agricultural value chains.³⁴

Women's green job opportunities in agriculture

Conservation agriculture and organic farming may offer quick-win opportunities for female smallholder farmers to move into green jobs, as women are already well positioned in terms of labour force participation in the sector, and transition to green jobs can be realized in a short time with relatively small investments for training and other skills-enhancement strategies.

Some evidence suggests that the quality of work in green agriculture may be better than in conventional agriculture.³⁵ Returns on economic activities in green agriculture can be high where jobs are linked to 'green'

certification and labelling, which can help to ensure sustained access to profitable global markets. However, to realize this, a number of structural obstacles to women's participation in rural green value chains need to be addressed. Overall, training and skills-development in sustainable agriculture practices, as well as multi-faceted support to women-led business development in agribusiness and entrepreneurship, can enable women to benefit from the green transition of this major sector of the African economy (Box 3).

In sum, greening conventional agriculture will produce green jobs for which women are well positioned to take them. However, these are likely to be low-quality jobs, as the vast majority of jobs in the sector. The shift to conservation agriculture may reduce employment in net terms, but the jobs created are likely to be higher quality, and women are also well positioned to access these jobs.



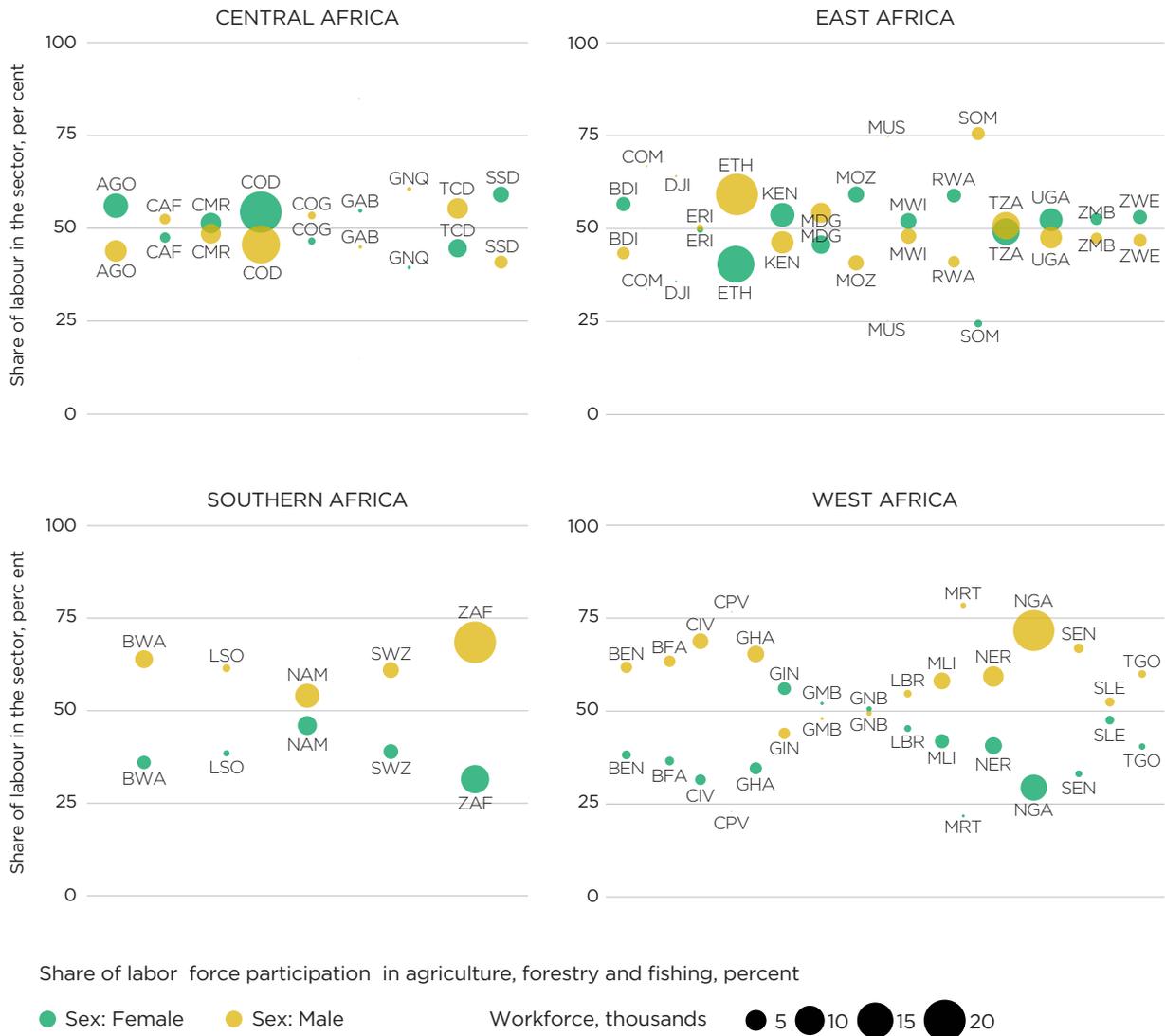
Photo: Aurelia Rusek/UN Women

33 Calculated based on national survey data available from ILO. 2020a. "Employment by sex and economic activity - ISIC level 2 (thousands) – Annual (based on national surveys)." ILOSTAT database. https://www.ilo.org/shinyapps/bulkexplorer53/?lang=en&segment=indicator&id=EMP_TEMP_SEX_EC2_NB_A.

34 ILO. 2020b. Africa's employment landscape. ILOSTAT. <https://ilostat.ilo.org/africas-changing-employment-landscape/>.

35 ILO 2013.

FIGURE 2
Men’s and women’s labour force participation in agriculture, forestry and fishing in sub-Saharan Africa, by region and country



The figure shows the shares of total employment for men and women working in the agriculture, forestry and fisheries sector (percentages of women’s and of men’s total employment). The size of circles shows the absolute number of men and women working in the sector.

Source: ILO. 2020a. “Employment by sex and economic activity -- ILO modelled estimates, November 2020 (thousands) Annual.” ILOSTAT database. https://www.ilo.org/shinyapps/bulkexplorer52/?lang=en&segment=indicator&id=EMP_2EMP_SEX_ECO_NB_A

Box 2. Women in organic farming reform in Uganda

The Ugandan Government is transitioning from conventional agricultural production to an organic farming system by adopting and implementing the Uganda Organic Agriculture Policy. Lack of access to pesticides and other chemicals was turned into a comparative advantage by moving to organic agriculture. The strategy includes measures to enhance women smallholders' participation in organic farming, including through reskilling and technical assistance. The shift has generated considerably higher incomes for women smallholder farmers through certified organic exports, which can bring premium prices.

Source: UNEP. 2010. Green economy: developing countries' success stories. https://www.minambiente.it/sites/default/files/archivio/allegati/rio_20/unep_developing_countries_success_stories_eng.pdf

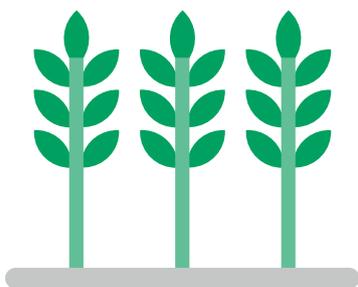
Box 3. Women's jobs in climate-resilient agriculture value chains in Africa

Since 2017 UN Women has implemented the flagship programme Women's Empowerment through Climate-Resilient Agriculture Value Chains to improve African women's participation in green jobs in the agricultural sector. The programme combines programmatic action and policy advocacy and reform to address the structural barriers limiting women's participation in agriculture value chains. It focuses on improving women's access to land, finance, skills and technology for climate resilience as well as women's access to markets. The programme currently operates in 15 countries across Africa, implemented in collaboration with other UN agencies, national and regional governments, financial institutions, civil society organizations and women producers' associations and cooperatives, which are the cornerstone of the programme.

As a result, more than 17,000 women are applying climate-resilient agricultural production techniques. Also, women's right to own land is now recognized in law in a number of these countries, and land officials and community leaders are trained in gender-responsive land governance systems. Women are introducing energy-efficient technologies in a range of agriculture value chains, from solar-powered irrigation systems to processing machinery to drip irrigation.

The programme applies an integrated, scalable approach addressing the multiple bottlenecks that women farmers face to full participation in rural value chains. The focus – on high value-added products (e.g., shea nuts) and food security-oriented value chains (rice, cassava, horticulture) with clear national and export markets – aims at improving women's participation in quality jobs in this key area for the green economy transition in Africa.

Source: Adapted from UN Women. 2021a. *Empowering Women through Climate Resilient Agriculture Value Chains in West and Central Africa*. <https://africa.unwomen.org/en/digital-library/publications/2021/03/women-in-climate-resilient-agriculture-in-wca>.



Forestry

Compared with agriculture, forestry is a relatively small sector of the sub-Saharan African economy. Forestry contributes 1.3 per cent of sub-Saharan Africa's GDP overall but more than 5 per cent in such countries as Liberia, Sierra Leone and Zambia. Cameroon, Republic of Congo and Gabon have the largest forest capital in the region, but forestry makes relatively little contribution to their GDPs.³⁶ In 2014, an estimated 1.6 million African jobs relied on forestry.³⁷ There also appear to be opportunities for job growth in the sector, as demand is growing.³⁸

Green jobs potential

Climate change effects have spotlighted both the urgent need for sustainable forest management and its potential to increase environmental and socioeconomic resilience. Worldwide, deforestation is drawing scrutiny because of its major role in climate change. In Africa, deforestation accounts for almost 90 per cent of carbon dioxide emissions from changes in land use.³⁹

Environmentally friendly forestry plays a crucial role in reducing GHG emissions and mitigating climate change. It has been estimated that a targeted international investment of \$30 billion per year into reduced deforestation and degradation of forests could sustain up to 8 million additional full-time workers in developing countries.⁴⁰ **Sustainable forest management**⁴¹ is the most beneficial GHG mitigation

mechanism in the forest sector in the long term.⁴² **Forest certification** is a tool to promote sustainable management of forests (and any other entity in the forest sector); it ensures that forest-based products reaching the marketplace have been sourced from sustainably managed forests. Forest certification has the potential for formalizing labour and improving working conditions in sub-Saharan African forestry. There is evidence that both sustainable forestry management and forest certification can create higher-quality jobs than the business-as-usual scenario, including more stable jobs and improved working conditions, although wages in the sector, in general, remain low.⁴³

In addition to jobs associated with sustainable forestry management and certification, reforestation can be an important source of new employment. The Great Green Wall Initiative – a \$33 billion effort to plant an 8,000-km-long and 15-km-wide mosaic of trees, grasslands and other vegetation across the Sahel-Sahara region in 11 countries – is expected to create 10 million jobs (and sequester 250 million tons of carbon).⁴⁴ There also could be additional forestry jobs created in urban areas through the greening of public spaces. Worldwide, forest conservation and reforestation could boost formal employment in the forestry sector by 20 per cent by 2050.⁴⁵

36 United Nations Statistics Division (UNSD). 2020. *Country profile- Value Added by Economic Activity*. <https://unstats.un.org/unsd/snaama/countryprofile>.

37 ILO 2018a.

38 Lehtonen, P., and O. Indufor. 2016. "The state of forest plantation investments in Africa – Overview of volumes and investment patterns, Working Conference Forests for the Future – New Forests for Africa, Accra, Ghana." Indufor Group. 16 March. https://induforgroup.com/wp-content/uploads/2017/08/the_state_of_forestry_plantation_investments_in_africa.pdf.

39 Dieng, C., et al. 2009. *Making Sub-saharan African Forests Work for People and Nature: Policy approaches in a changing global environment*. Poverty and Conservation. <https://www.povertyandconservation.info/en/biblio/b1702>.

40 ILO 2013.

41 FAO defines sustainable forest management as "the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems". <http://www.fao.org/3/x6896e/x6896eoe.htm>.

42 Nabuurs, G. J., et al. 2007. "Forestry". In "Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change" B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (Eds.). Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press. <https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg3-chapter9-1.pdf>.

43 ILO 2013.

44 Great Green Wall. 2021. Great Green Wall — 2030 Ambition. <https://www.greatgreenwall.org/2030ambition#:~:text=By%202030%2C%20the%20Wall%20aims,2030%20UN%20Sustainable%20Development%20Goals>.

45 UNEP. 2011. *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*. Sustainable Development. <https://sustainabledevelopment.un.org/index.php?page=view&type=400&nr=126&menu=35>.

Women's jobs in forestry

Women play an important role in forestry, but they are largely excluded from paid jobs linked to forestry. In general, women tend to participate in lower stages of forestry value chains, such as collection, processing and small-scale trade in forest products,⁴⁶ while men predominate in higher-value activities and decision-making positions.

Women's participation in the forestry labour market appears to vary widely among sub-Saharan countries. Among the countries with available survey data, women held from 4.6 per cent of forestry jobs in the United Republic of Tanzania to over 40 per cent in Ghana.⁴⁷

Women's green job opportunities in forestry

Women play a key role in forest conservation in Africa, often through unpaid volunteer roles in the management of community forests. There has been little opportunity to convert these volunteer roles into paying jobs. The green economy offers an opportunity to change this and to translate women's knowledge, expertise and time spent as community managers of natural resources into paying jobs (Box 4). It can do so by creating a market for these otherwise unpaid activities through the use of payments for environmental services (for example, ecotourism) or, more recently, in the form of carbon credits. Also, opportunities in remunerated reforestation schemes as well as indirect jobs as a result of the industrialization of sustainable forestry – such as carpentry or furniture-making – could offer important opportunities for women, in particular through women-led cooperatives and SMEs. The potential for paid work for women exists, as well, in niche areas of the forestry sector that have found high-value markets, such as the shea nuts value chain (Box 5).

Research and development could help scale up such innovative mechanisms and identify other niche markets for women's management of forestry products. Continued support for women's participation in such value chains, from collection through certification, would greatly improve women's access to higher-end green jobs in the forestry sector. Economic instruments leveraging payment for environmental services or carbon credits also can offer women opportunities to monetize their current roles in forestry conservation.

Small-scale forestry initiatives represent quick-win opportunities for women; they can be realized quickly with relatively small investments for training, capacity-building and knowledge-sharing. However, the return on such initiatives might be low.

In sum, data limitations make it difficult to assess the potential of the sector to create green jobs in sub-Saharan Africa and to assess women's participation in certain types of jobs/areas of forestry (for example, reforestation). However, there is evidence that in sustainable forestry working conditions are better and the quality of jobs is higher than in conventional forestry, and women are well positioned in niche markets and as community forestry managers. There are important opportunities through payments for environmental services and other mechanisms to assign economic value to women's unpaid work in this particular sector.



46 Ingram, V., et al. 2016. "Gender and Forest, Tree and Agroforestry Value Chains," in *Gender and Forests*. https://www.cifor.org/publications/pdf_files/Books/BColfer1701.pdf.

47 Calculated based on national survey data available from ILO. 2020a. "Employment by sex and economic activity - ISIC level 2 (thousands) – Annual. (based on national surveys)." ILOSTAT database. https://www.ilo.org/shinyapps/bulkexplorer53/?lang=en&segment=indicator&id=EMP_TEMP_SEX_EC2_NB_A.

Box 4. Creating a market for women's unpaid work in community forestry conservation

In Cameroon, the **African Women's Network for Community Management of Forests** (REFACOF) is supporting the reforestation of degraded areas in three coastal community forests: Bopo, Libock and Nguimbock. This women's organization planted more than 68,000 trees over three years.

In Casamance, Senegal, the association **Poumoulindiana**, a women's economic interest group, seeks to reforest more than 50 hectares of mangroves per year. Mangroves are powerful tools for reducing GHG emissions; they store 50 times more carbon in their soils than tropical forests and 10 times more than temperate forests.

The **Mikoko Pamoja project** in Kenya is an example of a mechanism to reward communities financially for sustainable forestry activities. The world's first project to fund mangrove conservation through the sale of carbon credits, it uses certification to compensate the community for reducing GHG emissions through the conservation and expansion of mangrove forests. Since 2017 the project has protected 117 hectares of natural mangrove forest and planted 10 hectares of mangroves. The plan is to plant 2,000 trees annually over a period of 20 years. The carbon benefits of the Mikoko Pamoja project are conservatively estimated at 2,500 tonnes of CO₂ per year. In return, in a two-year period the community received a total of KES 2.6 million (USD 24,000), income that has been reinvested in local projects determined through community consultation.

Source: Mangrove Alliance. N.D. "Mikoko Pamoja – Mangroves together." <http://www.mangrovealliance.org/mikoko-pamoja/>.

Box 5. Improving women's access to niche markets: shea butter

Shea butter provides employment and income to more than three million women in West Africa and generates between \$90 and \$200 million per year in sales.⁴⁸ Shea butter has large markets in Europe, the United States of America and Asia. About 45% of African production is exported, primarily to the European Union (EU). For women to benefit from this high-value-added market, investment in transforming and upgrading quality standards along the value chain are essential. Bio-certification is also crucial as the final requirement to export shea products and so to access the most profitable market segments. Institutional support to create federations and aggregators in this female-dominated sector is also key. In Côte d'Ivoire UN Women has supported 1,900 female shea butter producers in obtaining the ECOCERT organic certification. As a result, they are now able to access the EU and US markets, increasing their price from €1.50 to €3.95 per kilogram.

Profitable niche areas of the agriculture sector such as this can be important sources of quality green jobs for women. Mapping women's presence in such niche markets and providing technical support to women's organizations that enables them to meet international standards is a quick-win strategy to improve women's participation in green jobs.

Source: UN Women. (2021). *Empowering Women through Climate Resilient Agriculture Value Chains in West and Central Africa*. <https://africa.unwomen.org/en/digital-library/publications/2021/03/women-in-climate-resilient-agriculture-in-wca>

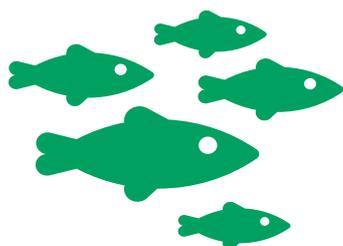
48 FAO. 2017. *The impact of the shea nut industry on women's empowerment in Burkina Faso: A multi-dimensional study focusing on the Central, Central-West and Hauts-Bassins regions*. FAO. <http://www.fao.org/3/i8o62e/i8o62e.pdf>.

Fisheries

The long coast of sub-Saharan Africa makes fisheries an important sector for the livelihoods and food security of millions of people. The sector employs more than 5 million people in the region.⁴⁹ Fishing contributes variously to countries' GDPs, from 0.1 per cent in South Africa to 10 per cent in Mozambique.⁵⁰ Aquaculture, while less developed than in other regions such as Asia, is rapidly growing in Africa, particularly marine aquaculture.⁵¹ The main aquaculture production in sub-Saharan Africa is freshwater farming, particularly of tilapia and catfish. In the maritime sector, Africa's main aquaculture product is seaweed, particularly in East African countries such as United Republic of Tanzania and Madagascar. This sector is set to develop on a large scale in a number of countries due to sustained demand from the pharmaceutical and food industries in particular.

Green jobs in fishery

Overfishing and climate change directly and indirectly affect fisheries resources. Greening of the fisheries sector means applying the principles of sustainable fisheries management. While current overfishing will mean that, in the short and medium term, the shift to sustainable fisheries will reduce employment,⁵² there will be opportunities in the long term as new and different jobs are created or in specific activities such as green (non-fed) aquaculture.



Women's jobs in fishery

In sub-Saharan Africa, small-scale fisheries dominate, and for the most part it is women who carry out post-harvest activities, including processing and marketing. In small-scale marine fisheries, women obtain fish from family and community sources or buy from local sellers and auctioneers. Small-scale fish processing involves low-value addition through methods such as drying, smoking, salting, curing and fermenting. A large proportion of employment in the fisheries sector is informal.⁵³

Women play an increasing role in aquaculture in sub-Saharan Africa. More than 80 per cent of United Republic of Tanzania's 25,000 seaweed farmers are women,⁵⁴ and in Nigeria there are examples of women entrepreneurs who have developed large-scale freshwater integrated fish farms, where products are processed and packaged to suit specific target markets – individual consumers, restaurants, schools, hospitals, etc. Some of these enterprises employ only women in various production, technical and engineering positions.⁵⁵ Fresh water aquaculture, however, generally requires access to land, which is a major constraint for women.

Women's green job opportunities in fishery

Greening of the artisanal fishing value chain would entail improving processing and substituting for traditionally smoked fish, hence reducing deforestation and environmental degradation via the use of solar dryers, for example. This may lead to a change in the way that jobs are done but not necessarily increase the number of jobs available to women. At the upper end of the jobs' spectrum, many women are pursuing advanced studies in marine biology and ecology, and many hold positions in oceanographic and fisheries research institutions. As aquaculture expands, it should

49 ILO 2018a.

50 UN Women. 2020. *Women's economic empowerment in fisheries in the blue economy of the Indian Ocean Rim: A baseline report*. <https://www.unwomen.org/en/digital-library/publications/2020/10/womens-economic-empowerment-in-the-indian-ocean-rim>.

51 Chan, C. Y., et al. 2019. "Prospects and challenges of fish for food security in Africa." *Global Food Security*. 20, pp. 17–25. <https://doi.org/10.1016/j.gfs.2018.12.002>.

52 UNEP 2011.

53 UN Women 2020.

54 Msuya, F. E. 2020. "Seaweed resources of Tanzania: status, potential species, challenges and development potentials," *Botanica Marina*, 63 (4), pp. 371–380. <https://doi.org/10.1515/bot-2019-0056>.

55 FAO. 2020. *The female factor - Farming catfish in Nigeria | FISH4ACP - Unlocking the potential of fisheries and aquaculture in Africa, the Caribbean and the Pacific*. <http://www.fao.org/in-action/fish-4-ACP/newsroom/videos/detail/en/c/1329991/>.

open up jobs for women at both ends of the spectrum – both for harvesters and for women with research and engineering skills in biochemistry and biotechnology.⁵⁶

However, experience in other regions shows that as aquaculture becomes more profitable, there is a corresponding decrease in the involvement of women. In Indonesia's shrimp farming, for example, women's employment tends to be limited to informal, insecure and low-value jobs, such as shrimp sorting and grading, while men assume the better-paid roles of lead operators.⁵⁷ These studies show that men are able to take advantage of government-run programmes for skills-development, but women's domestic duties hamper their participation.

In sum, there are limited data on the green jobs potential of the fisheries sector, but aquaculture seems to be an area where significant opportunities for women could emerge. However, there is a risk of women being marginalized in low-quality jobs, judging by the current high levels of informality in the sector, and co-optation of new opportunities by men, as seen in other countries. This is a critical sector to open up opportunities for women in rural and/or poor areas, and it therefore deserves the attention of policymakers.



Photo: AfDB

56 Chopin, T. and A. G. J. Tacon. 2020. "Importance of Seaweeds and Extractive Species in Global Aquaculture Production." *Reviews in Fisheries Science & Aquaculture*. 29 (2), pp. 139–148. https://www.researchgate.net/publication/344286344_Importance_of_Seaweeds_and_Extractive_Species_in_Global_Aquaculture_Production.

57 UN Women 2020.

Tourism

Tourism is a substantial and – until the COVID-19 pandemic – growing sector of the sub-Saharan African economy, generating many new jobs.⁵⁸ In 2019, it accounted for 6.5 per cent of jobs and almost 7 per cent of Africa's GDP,⁵⁹ with far more significant contributions in countries such as Seychelles, Cape Verde and Mauritius.

As in the rest of the world, the COVID-19 pandemic has particularly devastated the tourism industry in Africa. In 2020, tourism's contribution to GDP was cut in half from its 2019 level (as GDP overall fell almost 2.5 per cent⁶⁰), and employment in tourism fell by 23 per cent, a loss of four million jobs.⁶¹ However, the sector is expected to recover from the shock and continue to play an important role as a driver of economic growth in the region in the next decades.

Green jobs potential

While the growth of tourism has been accompanied by significant environmental challenges – for instance, in terms of GHG emissions, water consumption, discharge of untreated water, waste generation, damage to local terrestrial and marine biodiversity, and threats to the survival of local cultures and traditions – tourists are driving the greening of the sector, as seen by the 20 per cent annual growth rate enjoyed by ecotourism, about six times the industry-wide rate of growth.⁶² In addition to greening 'conventional tourism' through the application of water and energy efficient processes to conventional tourism operations, Africa's potential for nature-based tourism and ecotourism is exceptional, due to the region's biodiversity and wildlife. Before the

pandemic, ecotourism was experiencing the fastest growth in revenue in the tourism industry globally, and nature-related tourism was estimated to provide 2.3 million jobs.⁶³ The greening of the tourism sector is also expected to increase local hiring and sourcing.⁶⁴

Women's jobs in tourism

Currently, the sub-Saharan Africa tourism sector has the highest female labour force participation rate in the world, at 69 per cent, with the shares highest in Western Africa, and more women in high-level leadership and management positions than in the broader economy.⁶⁵ In the four countries with national survey data, women constituted 52 per cent of the tourism workforce in Gambia, 75 per cent in Uganda, 82 per cent in Tanzania, and 87 per cent in Ghana.⁶⁶

While the overall level of women's participation in the sector is high, there are substantial variations across the types of jobs in the tourism sector. In South Africa, for instance, women tend to predominate in accommodations, trade, recreational services, and food and beverage subsectors (more than 50 per cent), whereas the share of women's participation drops to 10–40 per cent in transportation and travel agencies.⁶⁷ Women represent the majority of Airbnb hosts in Kenya and Zambia, 10 per cent of whom use their income from rentals to start new businesses.⁶⁸ While women are more prominent in the tourism sector than in other sectors, women occupy significantly fewer management positions than men: 29 per cent of senior management positions and 17 per cent of board seats are held by women⁶⁹. Another significant issue is informality; as more than 50 per cent of women in Mozambique's

58 UNCTAD. 2017. *Economic Development in Africa Report 2017 Tourism for Transformative and Inclusive Growth*. <https://unctad.org/webflyer/economic-development-africa-report-2017>.

59 World Travel & Tourism Council. 2021. *Economic Impact Reports*. <https://wtcc.org/Research/Economic-Impact>.

60 World Bank Data. 2021. "GDP (constant 2010 US\$) Sub-Saharan Africa Data." <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD?locations=ZG>.

61 World Travel & Tourism Council 2021.

62 UNEP 2011.

63 ILO 2018a.

64 UNEP 2011.

65 UN World Tourism Organization (WTO). 2020. *Empowering Women through Tourism - Implementation of the action plan from the UNWTO Global Report on Women*. UNWTO. <https://webunwto.s3.eu-west-1.amazonaws.com/s3fs-public/2020-06/Report-Women-empowerment-in-Africa-Implementation-of-the-Action-Plan.pdf>

66 Calculated based on national survey data available from ILO. 2020a. "Employment by sex and economic activity - ISIC level 2 (thousands) – Annual. (based on national surveys)." ILOSTAT database. https://www.ilo.org/shinyapps/bulkexplorer53/?lang=en&segment=indicator&id=EMP_TEMP_SEX_EC2_NB_A.

67 WTO. 2019. *Global Report on Women in Tourism second edition*. www.e-unwto.org/doi/book/10.18111/9789284420384.

68 Airbnb. N.D. "Self-reported data from global Airbnb hosts (as of 1 January 2018)."

69 WTO. 2019

tourism sector do not have formal contracts.⁷⁰ At the same time, tourism offers plenty of opportunities for self-employment.

Women's green job opportunities in tourism

Women make up the majority of workers in the tourism sector, and the potential for greening the sector is large. Currently, women's participation in green tourism activities is driven mainly by their entrepreneurship and by community-based tourism initiatives.⁷¹

Women's opportunities for green jobs in the tourism sector are numerous, both as self-employed and wage workers. Women are well positioned, as per their participation in the tourism sector is already high. However, informality and poor working conditions in conventional tourism may indicate that new jobs for

women arising from the greening of the tourist industry may be of low quality. The substantial potential for entrepreneurship, including by women, may mitigate poor working conditions to some extent. Examples of women creating new positions as climbing guides and park rangers suggest that there are also interesting opportunities from the point of view of changing perceptions about women's jobs and for role-modelling (Box 6).

Quick-win opportunities for women can be realized by addressing issues such as informality and lack of financing for micro, small and medium-sized enterprises for women entrepreneurs. Overall, measures to support the development of women-led MSMEs in this sector would help more women take up jobs in this area of the green economy.



Photo: AfDB

70 ILO. 2011. *Toolkit on poverty reduction through tourism in rural areas*. https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/instructionalmaterial/wcms_176290.pdf.

71 Hamilpurka, S. 2021. "Agri-Tourism in Karnataka – Issues, Constraints and Possibilities." *International Journal of Research in Commerce, Economics & Management*. 2 (7). pp. 106–111. <https://www.cabdirect.org/cabdirect/abstract/20133141378>.

Box 6. Green jobs for women in nature tourism

Ecotourism can create numerous green jobs for women and support sustainable livelihoods, particularly through self-employment opportunities. In sub-Saharan Africa, a number of initiatives have helped women enter the sector by setting up and leading local enterprises in conservation tourism. As an added benefit, as the examples below show, women are starting to occupy 'traditional' male jobs in nature tourism as rangers or climbing guides. This can help erode occupational gender segregation in the labour market and set positive role models for young women in the future.

The **Uganda Wildlife Authority**, a semi-autonomous government agency, aims to address women's underrepresentation in management committees and ensure that women benefit equally from ecotourism revenues. The management of Bwindi Impenetrable National Park has committed to applying a gender-aware approach to managing how these communities decide to allocate revenue generated by visitors to the park. Given that 98 per cent of project procurement committee members are men, most revenue allocations did not take account of women's specific interests.

In South Africa, the **Black Mamba Anti-Poaching Unit**, a women-founded, women-led ranger unit, protects the boundaries of the 62,000-hectare Balule Nature Reserve, part of the Greater Kruger Area, to prevent the poaching of rhinoceros. Starting from employing six women in 2013, the unit now employs 23 rangers and seven environmental monitors. The Black Mambas also operate an environmental education programme that has reached more than 2,000 children since 2015.

In United Republic of Tanzania, women are now guiding climbers up Mount Kilimanjaro, a highly paid, high-profile occupation traditionally dominated by men. The **Mountain Lioness Scholarship** supports local women to receive training and become licensed mountain guides. The first 10 young women completed their training in November 2020.

Sources: <https://www.birdlife.org/africa/news/women-conservation-let-women-benefit-ecotourism-revenues-biodiversity-will-benefit-too>; <https://www.standard.co.uk/escapist/femaleled-travel-initiatives-to-support-b922796.html>; <https://www.blackmambas.org/>; <https://www.exodustravels.com/insights/ngumu-the-story-continues-for-mountain-lionesses>.



Waste management

An estimated 70 to 80 per cent of municipal solid waste generated in Africa is recyclable. Currently, however, only about 4 per cent is recycled, and 90 per cent of that recycling is done by individual waste-pickers and itinerant buyers outside the formal economy, who comb uncontrolled dump sites for anything they can use or sell. It is dangerous work that exposes waste-pickers to toxins and chemical hazards, and it is very poorly and sporadically paid. Statistics are few, but in 2013 the ILO reported that waste-pickers accounted for just 0.1 to 0.4 per cent of the urban workforce in seven African cities.⁷² While their numbers may be few, their collective contribution to waste management is substantial. Africa's dire waste management situation has spurred innovation in searching of solutions, and the waste management sector is projected to grow at a compound annual rate of 8.5 per cent between 2019 and 2024.⁷³

Green jobs potential

As the waste management sector in African expands, it needs to grow in directions that reduce environmental impact and promote smarter use and processing of waste. This expansion will require new, greener technology and create diverse new jobs. Green investment scenarios for the waste management sector worldwide have projected job growth rising by 10 per cent over current trends.⁷⁴ The adoption and growth of new approaches could offer a multitude of high-end green jobs – for example, for recycling managers, consultants and environmental engineers.

Recycling, in particular, can create many more jobs – more jobs overall than conventional waste disposal.⁷⁵ In the formal economy, these new jobs are typically higher paid. Moreover, UNEP calculates, the shift to recycling, reuse and recovery could bring \$8 billion to the African economy annually.⁷⁶ The capital investments required to develop large-scale green waste management technology will be large. UNEP recommends that cities and towns start with low-technology, low-capital approaches that are labour-intensive and that encourage the public's propensity for reusing materials and products.⁷⁷

Waste-to-energy processes are another source of potential green jobs in sub-Saharan Africa. These low-cost fuel options use crop and forestry residues and manure to produce biogas and briquettes. Waste-to-energy electricity production has the potential to cover 10 per cent of Africa's electricity demand.⁷⁸

Women's jobs in waste management

There are important data gaps to assess women's participation in the sector. In three countries with available national survey data, women's share of the workforce in waste management ranges widely, from 34 per cent in United Republic of Tanzania to 42 per cent in Ghana to 72 per cent in Uganda.⁷⁹ Among seven West African cities, more waste-pickers were women than men in Bamako and Ouagadougou, but in the other five cities the majority were men.⁸⁰

72 ILO. 2018b. Women and men in the informal economy: A statistical picture Second edition. https://www.ilo.org/global/publications/books/WCMS_626831/lang--en/index.htm.

73 Mordor Intelligence. (2021). *Africa Waste Management Market 2020–2027 Industry Report Covid Insights*. <https://www.mordorintelligence.com/industry-reports/africa-waste-management-market>; UNEP, International Environmental Technology Centre (IETC), and the Council for Scientific and Industrial Research (CSIR). 2018. *Africa Waste Management Outlook*. <https://wedocs.unep.org/handle/20.500.11822/25515>.

74 UNEP 2011.

75 Waste Watch. 1999. Jobs from Waste: Employment Opportunities in Recycling. Waste Online. www.wasteonline.org.uk/resources/WasteWatch/JobsFromWaste.pdf.

76 UNEP, IETC and CSIR 2018.

77 Ibid.

78 Scarlat, N. et al. 2015. Evaluation of energy potential of Municipal Solid Waste from African urban areas. *Renewable and Sustainable Energy Reviews*, 50. Pp. 1269–1286. <https://doi.org/10.1016/j.rser.2015.05.067>.

79 Calculated based on national survey data available from ILO. 2020a. "Employment by sex and economic activity - ISIC level 2 (thousands) – Annual. (based on national surveys)." ILOSTAT database. https://www.ilo.org/shinyapps/bulkexplorer53/?lang=en&segment=indicator&id=EMP_TEMP_SEX_EC2_NB_A.

80 ILO 2018b.

Women's green job opportunities in waste management

As the sector becomes greener, there are quick-win opportunities for women to access jobs and set up businesses in waste collection and disposal. Recycling and waste-to-energy activities will provide various employment options for women that will be better paid than conventional waste sector jobs. Measures to support the development of women-led MSMEs in this sector and women's formal participation as wage workers would contribute to the higher participation of women in this green economic activity. Investments in waste management infrastructure and capacity-building around recycling can also create opportunities in this sector for women. In particular, the expansion and greening of municipal waste management systems could be a source of stable and well-paying jobs for women with skills and knowledge in science, technology, engineering and math (STEM) fields.

The circular economy can generate numerous economic opportunities for women in recycling and waste management. The transition towards a circular economy is projected to create 6 million jobs worldwide by 2030⁸¹. The growth of the circular economy is expected to raise women's share of employment and the number of highly skilled jobs.⁸² Case studies in sub-Saharan Africa have shown that waste-to-energy technology improvements create various employment options for women.⁸³ Applying a gender lens to the

circular economy concept can help recognize and value the jobs that women often perform informally, create employment and boost green growth. Many women have established small businesses in waste management and recycling (Box 7).

Waste picking is one of the most exploitative areas of the economy. Organizing informal waste-pickers into women-led cooperatives and networks can promote and organize women's participation in the sector and improve the welfare of some of the very poor, especially in rural areas.

In sum, while the number of green jobs created are not comparable to other sectors, the circular economy can create significant high-quality jobs. Women are important actors in the sector, and while data to assess the full extent of their participation are lacking, women will be well positioned to access jobs in the sector in a number of cities across sub-Saharan Africa. A number of opportunities in sustainable waste management and waste-to-energy will also exist for women. The quality of those jobs will depend on the extent to which policies and programmes to support formalization in the sector take place. Innovative women-led SMEs are very active in the recycling sector in the region. With the necessary economic incentives from governments, this could be another quick win for women.



81 ILO 2018a.

82 Ibid.

83 Njenga, M. and R. Mendum (eds.). 2018. *Recovering bioenergy in sub-Saharan Africa: gender dimensions, lessons and challenges*. Colombo, Sri Lanka: International Water Management Institute (IWMI). CGIAR Research Program on Water, Land and Ecosystems (WLE). Resource Recovery and Reuse: Special Issue. doi:10.5337/2018.226.

Box 7. Women creating jobs in the circular economy

Africa has numerous women-led small businesses in the circular economy. These are a few:

- In South Africa, women are running successful recycling programmes that create jobs and protect the environment. In 2014, Nokubonga Mnyango started collecting plastic waste from taverns, shops and schools. Now her company, **Uthando Solutions and Trading**, collects up to 8,000 PET plastic bottles and 25,000 kg of recyclable material overall per month and sells to large businesses that reprocess the plastic. She employs two permanent employees and about 60 seasonal workers.

Charlotte Lamprecht, is another example. She approached the Municipality of Riversdale to implement a new policy that would help make recycling easier. Her project, **Henque Waste**, now employs 81 people, 48 of whom are women. Each week the team collects roughly 120 tonnes of recyclable materials. Also, Henque Waste operates a buy-back centre that supports approximately 400 entrepreneurs per month.

- In Kenya, **Pine Kazi**, a women-led fashion design business, uses pineapple waste produced after harvest to craft eco-friendly shoes. Their model encourages pineapple farming communities to move from a linear model of plant-harvest-dispose to a circular model of plant-harvest-reuse. They connect waste managers with product designers to use pineapple-leaf waste as clothing material, creating green jobs for unemployed youth. Pine Kazi was a winner in the African Development Bank's Fashionomics Africa Initiative, which supports producers of sustainable fashion.
- In Senegal, a young woman, Yaye Souadou Fall, established **E-Cover**, a company that recycles used tires into rubber aggregates, tiles, shoe soles and flooring for businesses, households, sports complexes, schools and town halls. In 2020, the company collected over 834 tonnes of tires and employed 25 people. They have recently secured funding to expand through WIC Capital, an investment fund for women-led MSMEs in West Africa.

Sources: Farrell, M. 2019. "Everyday heroes weigh in on the war on plastic." *The Beach Co-Op*. 26 July. <https://www.thebeachcoop.org/2019/07/25/everyday-heroes-weigh-in-on-the-war-on-plastic/> ;

Uthando Recyclers. N.D. "Background." Uthando Solutions. <https://www.uthandosolutions.co.za/> ;

Henque Waste. 2021. *Henque Waste – Minimizing Waste by Maximizing Recycling*. <http://henquewaste.co.za/> ; <https://climatelaunchpad.org/finalists/pine-kazi/>; E-Cover. 2020. "E-COVER – Rien ne se perd, tous se transforme." <https://e-cover.co>.

Transport

Given the long-term growth in the global economy, urbanization and population, the demand for mobility of goods and people also will grow rapidly, and especially in sub-Saharan Africa. Employment in the transportation sector is diverse, consisting not only of the workers who move people and products but also of those who build and maintain the vehicles and the routes they travel. Across the board the need – and thus the potential – for job growth in the sector is large. In 2021, transport and communications combined currently account for an estimated 9.6 per cent of the sub-Saharan African region's GDP.⁸⁴

Green jobs potential

The African road transport fleet can be characterized as old and inefficient. As current vehicles are retired, a shift towards more efficient and sustainable modes of transportation is needed – for example, electric, hybrid and biofuel vehicles, or, more feasible for the region in the short term, more and better public transport. The move towards sustainable transport will shift some current conventional jobs to green as well as create new green jobs that reflect technological and social change. On a global basis, improving the energy efficiency of all transport modes and shifting from private to public or non-motorized transport are projected to increase sector employment by 10 per cent over business as usual.⁸⁵ The nature and extent of employment changes will vary greatly from country to country. For example, electric vehicles may not soon be feasible in much of sub-Saharan Africa, and short-term investment might focus instead on sustainable municipal transport.



Women's role in transport

Currently, few women work in transportation in sub-Saharan Africa. In all but a few countries in the region, less than 2.5 per cent of all women in the workforce were employed in transportation, storage and communication in 2019 (Figure 3). Men predominate in the transportation sector. For example, in Gambia only 7 per cent of transport workers are women; in Ghana, 4 per cent; in United Republic of Tanzania, 3 per cent; and in Uganda, less than 1 per cent.⁸⁶

Women's green job opportunities in transport

Transport is a sector where opportunities for women might be slow to materialize. There have been public initiatives in many African countries to increase women's participation in the public transport workforce. For example, in Kinshasa, Democratic Republic of Congo, the public bus company, City Train, has started hiring women again some years ago (as it had in the late 1970s). This decision was based on the constitutional law on parity between men and women.⁸⁷ However, in general, issues of security, the cost to obtain licenses (to drive taxis, for example) and restrictive social norms have slowed women's participation in transport in sub-Saharan Africa.

The right combination of public policy and investment could have an important demonstration effect, however, and contribute to opening up opportunities for women in green jobs in the sector in the future. As cities renew and green their public transport fleets, there is an opportunity to position women as drivers and operators of the new vehicles, under a strategy that combines sustainability, safety and customer orientation. For example, women can receive training to become bus drivers and obtain drivers' licenses to drive the new low-carbon fleet. Positioning these jobs as new jobs, available to both women and men, may be strategic.

84 African Development Bank. 2021. Weight of the sector in the sub-Saharan economy's GDP. Personal communication.

85 UNEP 2011.

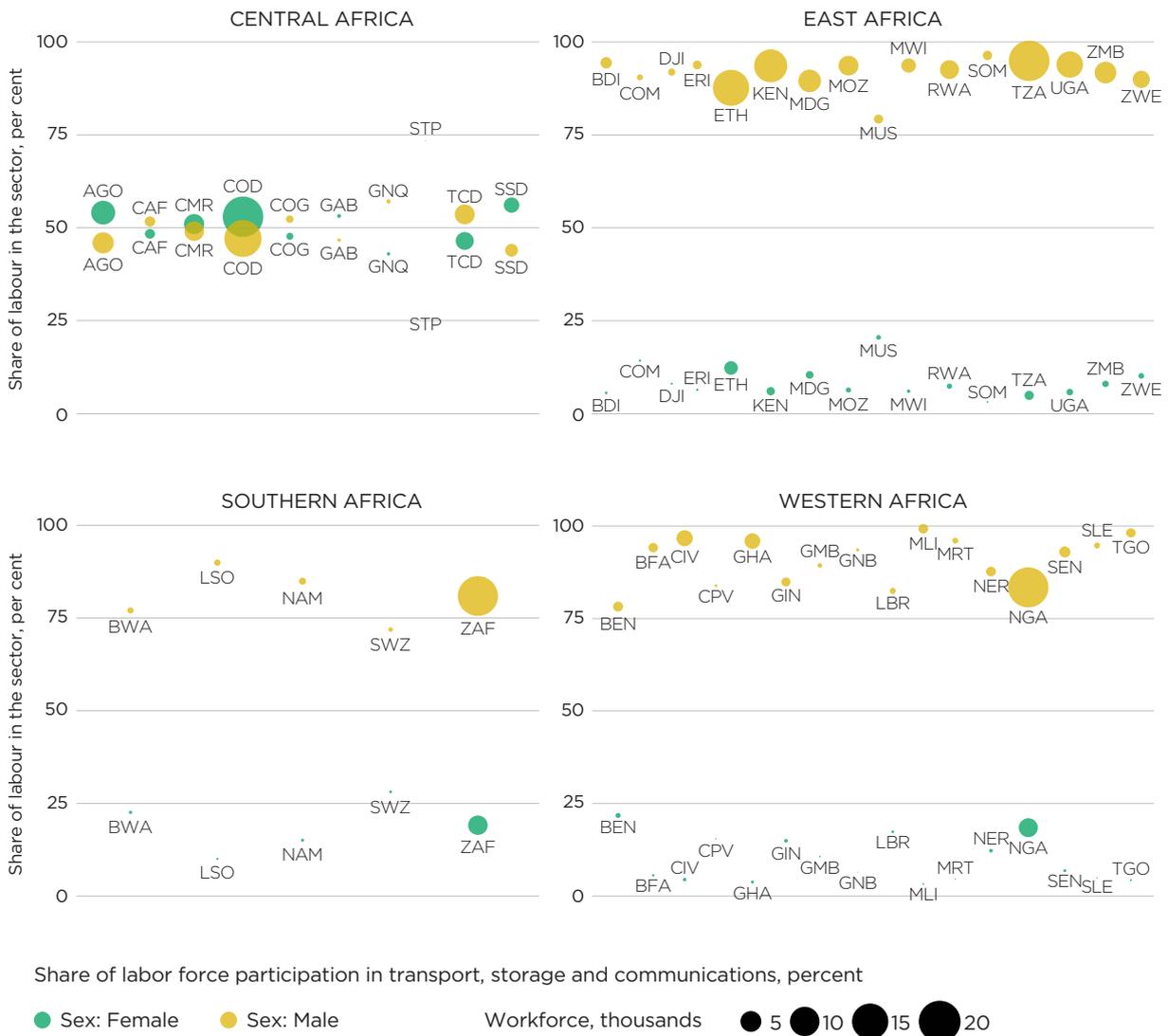
86 Calculated based on national survey data available from ILO. 2020a. "Employment by sex and economic activity - ISIC level 2 (thousands) – Annual. (based on national surveys)." ILOSTAT database. https://www.ilo.org/shinyapps/bulkexplorer53/?lang=en&segment=indicator&id=EMP_TEMP_SEX_EC2_NB_A.

87 Duchene, Chantal. 2011. "Gender and Transport." *International Transport Forum Discussion Papers*. OECD Publishing, Paris. N.2011/11. <https://doi.org/10.1787/5kg9mq47w59w-en>.

In sum, the shift to more and more efficient public transport will create some new green jobs in sub-Saharan Africa, but not a large number. These jobs will be to some extent good-quality jobs (for example, public bus drivers) but ones for which women are not necessarily well positioned, given their very limited participation

in the sector currently. Promoting women’s entry into public transport, particularly sustainable municipal transport, might have value however, by creating very visible positive role-models of women’s incursion into a male-dominated area of employment.

FIGURE 3
Women’s and men’s labour force participation in transport, storage and communications in sub-Saharan Africa, by region and country



Note: The figure shows the shares of total employment for men and women working in the transport, storage and communications sector (percentages of women’s and of men’s total employment). The size of circles shows the absolute number of men and women working in the sector.

Source: ILO. 2020a. “Employment by sex and economic activity -- ILO modelled estimates, Nov. 2020 (thousands) Annual.” ILOSTAT database. https://www.ilo.org/shinyapps/bulkexplorer52/?lang=en&segment=indicator&id=EMP_2EMP_SEX_ECO_NB_A.

Box 8. New green advisory services – a new source of jobs for women

Innovating, adopting and implementing new sustainable green practices and technologies often requires specialized knowledge. Thus, as the transition to the green economy takes place, there will be an increasing demand in sub-Saharan Africa for green advisory services. These services will advise or perform specialized tasks for businesses, governments and communities in such areas as renewable energy, energy efficiency, efficient water use, environmental health, green finance, environmental compliance and corporate sustainability. Also, there will be a need for local pools of experts, researchers, professors and community educators to inform and promote more sustainable practices among different stakeholder groups, including communities and consumers, to increase awareness and to spur innovation.

Due to the novelty of these services for the region, green advisory services can be opportunities for women's participation and market transformation. Women's high participation in the advisory services industry, particularly in urban areas, can be an indication of a potential transition into this new area of advisory services. These are also new jobs, not yet claimed by men, which might facilitate women's access. Moreover, these are likely to be qualified jobs on the higher end of the green jobs' spectrum.



Photo: Alex Bonnemaïson/AfDB

Energy

The energy sector is critical in the transition to the green economy. In sub-Saharan Africa, energy is a relatively small sector and thus not a big employer. The African Development Bank estimates that in 2021 electricity, gas, and water activities account for an estimated 1.8 per cent of GDP in sub-Saharan Africa.⁸⁸ However, certain areas, such as renewable energy, continue to grow rapidly. Both direct and indirect employment worldwide in renewable energy have expanded significantly, from an estimated 2.3 million jobs in 2007–08 to almost 5 million jobs in 2009–11.⁸⁹

Green jobs potential

In 2014, African jobs relying on renewable energy sources such as biofuels totalled an estimated 123,000, just 6 per cent of the world's renewable energy jobs in a subcontinent with 15 per cent of the world's population.⁹⁰ At the same time, the International Renewable Energy Agency (IRENA) estimates that renewable energy could contribute 40 per cent of the electricity needed by sub-Saharan Africa.⁹¹ Thus, growth in renewable energy has great potential for green jobs creation. Furthermore, there will be a multiplier effect on employment; globally, renewable energy, including waste-to-energy biofuels, has been projected to employ 20 per cent more people by 2050 than business as usual.⁹² The number of energy jobs worldwide was projected in 2018 to increase by a net 18 million by 2030 if sustainable energy practices were adopted to meet the goal of limiting global warming to 2° C.⁹³

The quality of jobs in green energy is likely to be mixed, in part because of the diversity of the energy sector in general and of green energy sources and technologies specifically. Solar energy from photovoltaic panels – offers medium-skilled work for installers and high-end work ranging from management of installation firms to jobs in technological innovation for those with skills and education in STEM. Wind will also offer a combination of high-end and medium-skilled work in the area of production. Biomass is the area where the quality of employment is likely to be lower.

Women in the renewable energy sector

While the conventional energy sector is male-dominated, women's employment in renewable energy is higher than in conventional energy. Throughout the energy sector in sub-Saharan Africa, men hold the great majority of jobs. In United Republic of Tanzania, women hold only 6 per cent of energy jobs; in Uganda, 9 per cent; in Gambia and Ghana, 21 per cent.⁹⁴ While there are no data available for sub-Saharan Africa as a whole, at the global level IRENA reports that the share of women employed in the renewable energy sector (32 per cent) is much higher than in the oil and gas industry (22 per cent).⁹⁵ At the global level, women comprise 45 per cent of administrative jobs in the sector, 35 per cent of non-STEM positions, and 28 per cent of STEM-related jobs.⁹⁶ The same report, based on a survey of 1,440 respondents in 144 countries reports perceptions of gender roles, cultural and social norms and prevailing hiring practices (in turn influenced by social norms) as the main barriers for the entry and retention of women in the renewable energy sector.⁹⁷

88 African Development Bank. 2021. Weight of the sector in the sub-Saharan economy's GDP. Personal communication. July.

89 ILO 2013.

90 ILO 2018a.

91 International Finance Corporation (IFC). 2019. "Energy2Equal: Empowering Women in Africa's Renewable Energy Sector."

https://www.ifc.org/wps/wcm/connect/news_ext_content/ifc_external_corporate_site/news+and+events/news/energy2equal-africa.

92 UNEP 2011.

93 ILO 2018a.

94 Calculated based on national survey data available from ILO. 2020a. "Employment by sex and economic activity - ISIC level 2 (thousands) – Annual." (based on national surveys)." ILOSTAT database. https://www.ilo.org/shinyapps/bulkexplorers53/?lang=en&segment=indicator&id=EMP_TEMP_SEX_EC2_NB_A.

95 IRENA. 2019. *Renewable Energy: A Gender Perspective*. <https://www.irena.org/publications/2019/Jan/Renewable-Energy-A-Gender%20Perspective#:~:text=Renewable%20energy%20employs%20about%2032,lower%20than%20in%20administrative%20jobs>.

96 Ibid.

97 Ibid.

Women's green job opportunities

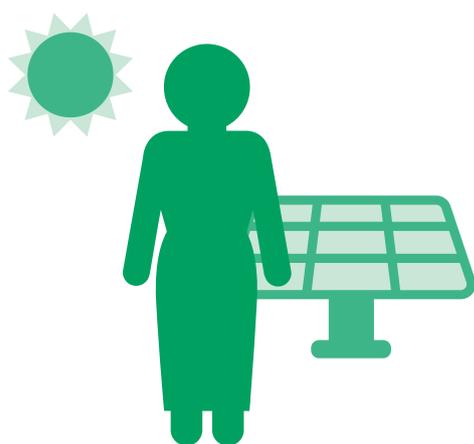
Transition to renewable energy and its projected growth in the near future provides an opportunity to change the status quo of women's participation in the energy sector as new technologies and practices (wind, solar, etc.) will become commercialized in the region. Moreover, the multidimensionality of renewable energy (when compared with conventional energy production) presents more employment opportunities for women in administrative and other non-STEM positions. The multidisciplinary nature of the sector can attract experts in finance, law, environmental sciences, economics, etc. Moreover, a range of support services, such as consulting, research and development, and the creation of permits, regulations and policies, will emerge along with the sector's development.

The most promising green energy subsectors for women in the region are related to bioenergy and solar energy.

- **Solar energy** is projected to create more than 600,000 new jobs in sub-Saharan Africa by 2050.⁹⁸ Apart from STEM and construction-related jobs, which might be more accessible to men, there are numerous entry points for women in solar energy. In addition to wage jobs in large-scale energy generation, there is great potential for women in renewable energy sources at

a smaller, decentralized scale in rural areas. These can involve smaller enterprises that require less initial capital investment – for example, off-grid community-based energy production and distribution, mini-grids, solar panels for households and businesses, or solar pumps for drinking water and irrigation. Women-led businesses are already positioning themselves in this new market (Box 9) and taking jobs in this new area of the green economy.

- In **bioenergy**, a 2010 study estimated that up to 13 million jobs can be created in sub-Saharan Africa.⁹⁹ IRENA estimates are more conservative but still high in terms of employment generation (1.5 million jobs by 2050).¹⁰⁰ Women are well positioned for these jobs due to their involvement with feedstock as farmers. These opportunities can be realized at different scales, from household-based production combined with agricultural activities to community-based organization and large-scale operations. However, most of these opportunities are less skill-intensive, and the quality of jobs will be lower. Many will involve harvesting and collecting plant materials for energy generation. For example, in the ethanol industry in Brazil, 60 per cent of jobs are unskilled, mostly as sugar-cane-cutters.¹⁰¹



98 IRENA. 2018. *Energy Transformation: sub-Saharan Africa*. https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Apr/IRENA_GRO_R10_SubSaharan_Africa.pdf?la=en&hash=DB067EF85E0FDB6B8762833E77CC80F3975E46DC.

99 Openshaw, K. 2010. "Biomass energy: Employment generation and its contribution to poverty alleviation." *Biomass and Bioenergy*, 34 (3), pp. 365–378. <https://doi.org/10.1016/j.biombioe.2009.11.008>.

100 IRENA 2018.

101 ILO 2013.

• **Wind energy** will generate approximate 85,000 jobs by 2050.¹⁰² Unlike other renewable energy areas, women's participation in the wind energy sector is lower, at 21 per cent globally and even less in Africa, at 8 per cent.¹⁰³ However, keeping in mind the growth potential of the sector – one of the fastest-growing renewable energy industries,¹⁰⁴ with large possibilities in sub-Saharan Africa (with Kenya, Ethiopia and South Africa currently leading the development of wind power), the region still has an opportunity to address gender barriers and promote women's participation in the wind energy sector. About a third of all positions in the sector are related to construction, a quarter in manufacturing, whereas the rest (about 40 per cent) are professional services (e.g., project management, advisory, finance, administration and so on).¹⁰⁵ The highest proportion of women employed in the sector are in administration, followed by non-STEM positions, STEM, management and senior management.¹⁰⁶ A survey in the sector conducted by IRENA in 72 countries found that skills were not a barrier for

women's entry and retention in the wind industry, but rather social norms and perceptions, followed by lack of suitable corporate policies, including work-life balance, care solutions, etc.¹⁰⁷

In sum, renewable energy, as a distinct subsector within the energy sector, may open up opportunities for increased women's participation and for breaking into male-dominated areas of employment. Existing data support this potential: Women's participation is higher in renewable energy than in conventional energy. Investments in mentoring and promoting women's organizations in the sector (see examples in Box 9) can help consolidate this trend. The quality of jobs varies across renewable energy subsectors, and women are better positioned to seize opportunities in solar power, which is expected to create a number of high-quality jobs, and bio-energy, where the jobs are likely to be low-quality. Women are less well positioned in the wind industry in the region, but the growing potential of this subsector provides long-term opportunities for increasing women's presence, if the right policies are implemented.



Photo: Fabio Jafet/ILO

102 IRENA 2018.

103 IRENA. 2020. *Wind Energy: A Gender Perspective*. IRENA, Abu Dhabi.

104 Ibid.

105 Ibid.

106 Ibid.

107 Ibid.

Box 9. Supporting women's participation in the renewable energy sector

Men predominate in energy sector employment. Initiatives such as those featured in this box are critical to helping women break the 'glass walls' and overcome the barriers of the energy sector in sub-Saharan Africa. The focus on training and apprenticeships for young women, as well as mentoring and networking to support current female professionals, can overcome barriers in this male-dominated sector and build a pipeline of women ready to take up jobs in the growing green energy sector.

- The **Women in Renewable Energy Association Uganda** was started in 2018 with the aim of increasing women awareness and involvement in the renewable energy sector. The Association aims to create a space where women can be mentored and gain access to opportunities in the sector.
- Also in Uganda, in 2021 the International Finance Corporation (IFC) launched the **Women in Renewable Energy Sector in Africa** (W-REA) to build a strong network of women in the growing green energy sector in sub-Saharan Africa. To ensure that women are not left behind, the network seeks to develop a pipeline of women leaders and enable them to become board members in renewable energy companies and to assume other leadership roles. It also aims to support women's access to high-paying technical jobs in the sector by increasing access to career information, building leadership skills for women, and scaling up mentorship opportunities in the sector.
- **Green Girls in Cameroon** is educating young women from rural communities on the use of renewable energy and raising awareness about nature conservation. Since its creation in 2015, Green Girls has trained nearly 800 women from 23 communities across Cameroon to generate solar energy and biogas from human waste, championing the inclusion of women and girls in the renewable energy sector. In addition to being trained how to produce biogas, these young women learn how to promote sustainable development and become financially independent.
- The **Young Women in African Power Leadership training programme** is an initiative of Power Africa in collaboration with the Young African Leaders Initiative (YALI) to improve women's work in the energy sector. In 2021, the programme expanded to East and West Africa, including 40 young women from 17 West African countries in the first francophone training, in Dakar, Senegal. In East Africa, 45 women from six countries graduated from the programme. The programme enhances leadership skills and builds energy sector knowledge. Power Africa also launched several apprenticeship programmes to help women gain skills and build their professional networks as they forge careers in the sector. In Rwanda, 62 graduates benefited from three-month apprenticeships at 11 energy companies. In Kenya, 15 interns took on roles in Kenya's electricity transmission company, electric utilities and the Geothermal Development Company.

Sources: WREAUG. 2019. "Women in Renewable Energy Uganda." <https://www.wreaug.org/?fbclid=IwAR3M4SjclY3Rzwzypg11vPt8b4LSPuu2a3FFk2PmEIDjBiHOhoYhKRG036U> ; IFC. 2019. "Energy2Equal: Empowering Women in Africa's Renewable Energy Sector." <http://wrlld.bg/4PpM3orBSii>; World Wildlife Federation (WWF). 2019a. "Monique Ntumngia, founder of 'Green Girls' in Cameroon, is the recipe." Cameroon Panda. <https://cameroon.panda.org/?28603/Monique-Ntumngia-founder-of-Green-Girls-in-Cameroon-is-the-recipient-of-this-years-WWF-International-Presidents-Youth-award> ; United States Agency for International Development (USAID). 2021. "Empowering and Powering Women: Power Africa." <https://www.usaid.gov/powerafrica/gender>.

Construction

The construction sector is expected to grow and create many jobs as sub-Saharan African countries rapidly urbanize. The sector's contribution to the region's GDP has increased steadily during the last two decades, from 3.4 per cent in 2000 to 6.4 per cent in 2021.¹⁰⁸ Construction is a labour-intensive sector and an important generator of jobs in other sectors through backward and forward linkages. It is also one of the largest contributors to GHG emissions, given that buildings contribute as much as one third of total global emissions.¹⁰⁹

Green jobs in construction

Green building could become a major source of jobs.

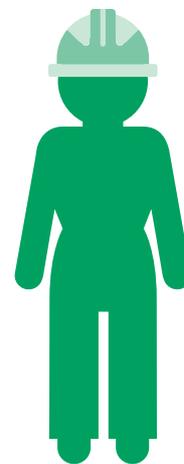
Green building applies resource- and energy-efficient processes and materials to the design, construction, renovation and destruction of buildings, thus covering the entire life cycle of a structure. Jobs come not only from on-site construction or retrofitting of buildings but also from related activities, ranging from the manufacture of building materials and components that contribute to energy efficiency (such as insulation), to the operation and maintenance of green buildings once they are occupied.

Many of the green jobs in construction will require new skills. Thus, they will be higher-quality jobs. However, lack of enough workers with appropriate skills may hold back green job growth in construction. The construction industry has traditionally absorbed unskilled labour. The labour-intensity of the construction sector is typically much higher in low- and middle-income economies than in more industrialized countries.¹¹⁰ In many developing countries, building trades workers learn their skills through apprenticeship or on the job, and few attend vocational training schools, where new green skills might be learned.¹¹¹

Women in the construction sector

The construction sector in sub-Saharan Africa (as well as elsewhere) is heavily dominated by men. The majority of countries have almost no female representation in the sector. In 2019, construction jobs as a percentage of all women's jobs stood at about 2.5 per cent in a few southern African countries and were even lower elsewhere (Figure 4). In Gambia, just 2 per cent of the construction workforce is women and in Ghana, 2.7 per cent, while in United Republic of Tanzania women account for 4 per cent of construction industry workers and in Uganda, 4.5 per cent.¹¹²

A study that sampled 138,000 construction female workers in South Africa paints a comprehensive picture of the types of jobs and skills that women tend to have in the sector: 53 per cent of women worked as on-site construction workers. Women represent 2 per cent of all construction professionals, 7 per cent of senior and management positions; and 5 per cent of associate and technical positions. More specifically, women account for about 20 per cent of architects, 12 per cent of surveyors, 3 per cent of project managers and 2 per cent of civil engineers.¹¹³



108 AfDB data.

109 International Energy Agency (IEA). 2010. *Energy Technology Perspectives 2010 – Analysis*. IEA. July. <https://www.iea.org/reports/energy-technology-perspectives-2010>.

110 ILO 2013.

111 Ibid.

112 Calculated based on national survey data available from ILO. 2020a. *“Employment by sex and economic activity - ISIC level 2 (thousands) – Annual. (based on national surveys).”* ILOSTAT database. https://www.ilo.org/shinyapps/bulkexplorer53/?lang=en&segment=indicator&id=EMP_TEMP_SEX_EC2_NB_A.

113 Ozumba, A. and C. Ozumba. 2012. *“Women in Construction in South Africa: Investigating the Feminine Footprint of the South African Construction Industry.”* *Journal for the Advancement of Performance Information and Value*. 4 (1), 28. <https://doi.org/10.37265/japiv.v4i1.97>.

Women's green job opportunities in construction

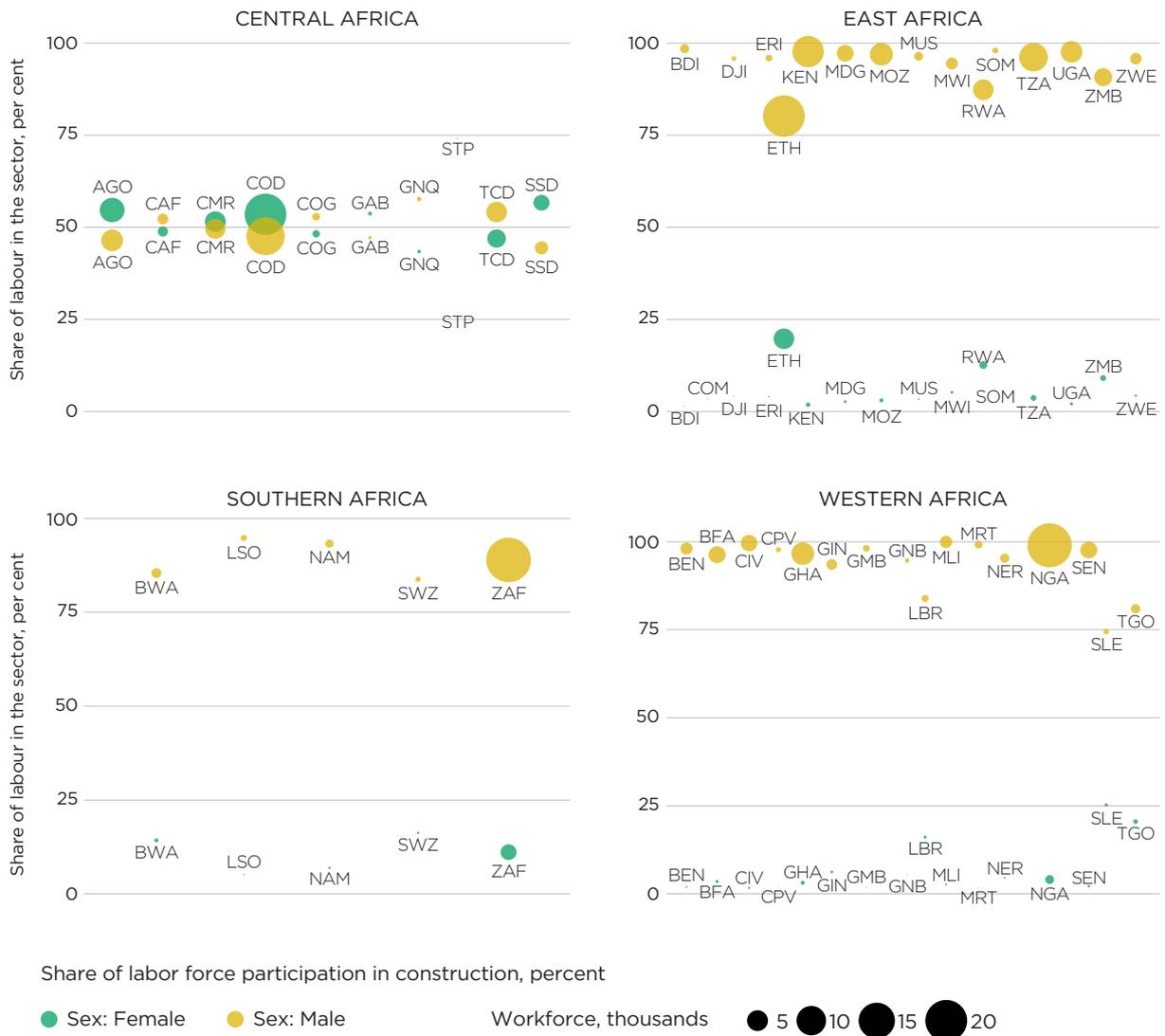
Although a difficult sector for women to enter, the coming shift to green building will create opportunities for women. Areas such as renovation, solar panel installation, insulation and energy efficiency are likely to grow as the green building market expands. These areas may present much lower entry barriers – an advantage to women entrepreneurs – than large construction projects. Women also may find job opportunities in indirect jobs associated with construction, many of which are mid- to high-level jobs in terms of pay, stability and working conditions, such as jobs in architecture, landscape design, urban

planning, energy auditing, solar panel installation and sustainability consulting. The new green skills required will be learned mostly through training rather than on the job, as most conventional building trades skills are learned. Some of these jobs require advanced academic qualifications, while a high school or a technical and vocational education and training (TVET) diploma might suffice to enter other jobs. The need for schooling should put women on a more equal footing with men competing for construction jobs in the green building sector. A number of women-led businesses are already seizing this opportunity across the region (Box 10).



Photo: ILO

FIGURE 4
Men’s and women’s labour force participation in construction in sub-Saharan Africa, by region and country



Note: The figure shows the shares of total employment for men and women working in the construction sector (percentages of women’s and of men’s total employment). The size of circles shows the absolute number of men and women working in the sector.

Source: ILO. 2020a. “Employment by sex and economic activity -- ILO modelled estimates, Nov. 2020 (thousands) Annual.” ILO STAT database. https://www.ilo.org/shinyapps/bulkexplorer52/?lang=en&segment=indicator&id=EMP_2EMP_SEX_ECO_NB_A.

Box 10. Indirect jobs for women as a result of green buildings development

Dorah Modise is the CEO of the **Green Building Council South Africa**, a membership organization for businesses, organizations and individuals. The Council certifies clients' buildings as green, offering non-profits a reduced fee. The Council has increased the number of buildings in South Africa certified as "green" and is advocating for the adoption of net-zero carbon, waste, water and technology for all new builds. In her role, she supports work in sustainable development in other African countries. The Council also offers access to professional development training.

Solar Mamas in Zanzibar, United Republic of Tanzania, is a women-led small business that has installed solar panels in rural coastal communities in Zanzibar, where less than 4 per cent of the population has access to the electricity grid.¹¹⁴ As of 2016, the group of 13 non-literate women trained in a six-month course at India's Barefoot College, had installed more than 800 solar units. Recipients pay a monthly fee set to be less than the average monthly cost of kerosene, the most common source of light. The panel installer receives half the fee and the other half goes to community projects.

Vera Shaba is an award-winning engineer and entrepreneur who founded **Shaba & Ramplin Green Building Solutions** in South Africa. Shaba & Ramplin works with green building councils across Africa and provides both engineering and green building services to companies, advising them how to apply an integrated green design approach to design energy- and water-efficient and low-waste building engineering systems.

Sources: Thomas Reuters Foundation. 2019. *Constructing a greener world can't happen without women*. World Green Building Council. <https://www.worldgbc.org/news-media/constructing-greener-world-cant-happen-without-women> ; Alum, B. K. 2016. *Women at the Forefront; Scaling up Solar in Rural Africa*. NRDC. <https://www.nrdc.org/experts/kaitlin-brazill/women-forefront-scaling-solar-rural-africa> ; Hawken, M. 2017. "Vere Shaba, a South African entrepreneur harnessing the power of engineering to minimise the environmental effect of construction." *Lionesses of Africa*. 22 October. <https://www.lionessesofafrica.com/blog/startup-story-of-vere-shaba>.



Photo: AfDB

114 Brazil, Kaitlin. 2016. "Women at the Forefront; Scaling up Solar in Rural Africa." NRDC. <https://www.nrdc.org/experts/kaitlin-brazill/women-forefront-scaling-solar-rural-africa>.

4. BARRIERS TO WOMEN'S PARTICIPATION IN GREEN JOBS

This section reviews structural obstacles that women may face to realizing those green economic opportunities as entrepreneurs and business-owners or as waged employees.

Mismatch between new jobs and women's skills and qualifications

Skills mismatch is probably one of the major obstacles women face to obtaining green jobs, particularly as wage employees and especially in higher-end jobs. The analysis in section 3 has shown that a number of new jobs with a technical profile will be created across different sectors (for example, as engineers and architects). Given current gender segregation in education systems and labour markets in most African countries, these new opportunities are currently accessible to a narrow pool of women who have the necessary skills and qualifications. For example, in 2013, women represented only 7 to 12 per cent of engineering students in Africa.¹¹⁵ Approximately 30 per cent of tertiary-level engineering students in Niger are women, while in Mali women constitute just 6 per cent of engineering students. In South Africa, only 10 per cent of the engineering workforce is female, and in Kenya, 8 per cent.¹¹⁶ Across sectors, the gender gap in skills training is more evident in certain areas, such as construction, transport and certain areas of energy, where women currently participate in very low proportions. These also are some of the sectors where the highest numbers of green jobs, including higher-end jobs, will be created.

Barriers to green opportunities facing women-led businesses

All of the sectors discussed in this study have potential for women entrepreneurs. These women can serve as change agents to further promote women's participation in green jobs. However, for women to realize opportunities in green businesses, the business conditions for women-led businesses need significant improvement. Many women-led businesses find themselves in low-productivity sectors, and have limited access to information, capital and other economic assets. These obstacles limit access to high-value-added markets in the green economy and in the economy generally.

Finance. The gender gap in access to finance in the continent is estimated at \$42 billion.¹¹⁷ This gap has widened in recent years. Today, 37 per cent of women have a bank account, compared with 48 per cent of men.¹¹⁸ Even though sub-Saharan Africa is one of the regions of the world with more women entrepreneurs,¹¹⁹ women find it particularly difficult to secure financing for their businesses.¹²⁰ This barrier is strongly linked with social and cultural norms as well as access to land, especially important as collateral for loans to small businesses owned by women.

115 United Nations Educational, Scientific and Cultural Organization (UNESCO). 2017. "Improving access to engineering careers for women in Africa and in the Arab States." UNESCO website. <http://www.unesco.org/new/en/natural-sciences/science-technology/engineering/infocus-engineering/women-and-engineering-in-africa-and-in-the-arab-states/>.

116 UNESCO. 2020. 2020 GEM Report: *Inclusion and education*. <https://en.unesco.org/gem-report/>.

117 AfDB. N.D. "Why AFAWA?" <https://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/afawa-affirmative-finance-action-for-women-in-africa/why-afawa>.

118 Morsy, Hanan. 2020. "Access to Finance: Why Aren't Women Leaning In?" *Finance and Development*. 57 (1). <https://www.imf.org/external/pubs/ft/fandd/2020/03/africa-gender-gap-access-to-finance-morsy.htm>.

119 UN Women. 2016. *Stimulating Opportunities for Women Entrepreneurs through Public Procurement, Investment and Supply Chain Policies*. Flagship Brief.

120 Phiri, L. 2020. *Investing in women entrepreneurs in Africa*. Africa Global Funds. <https://www.africaglobalfunds.com/analysis/analysis-and-strategy/investing-in-women-entrepreneurs-in-africa/>

Land. The Food and Agricultural Organization (FAO) estimates that women farmers in Africa own only 1 percent of farm land.¹²¹ Access to land and secure land rights are essential to realize any agricultural business venture and to facilitate women's access to quality jobs in agriculture, including green jobs. In the past decade, there has been significant progress in legislation giving women rights to land ownership. Still, in 10 of 49 countries in sub-Saharan Africa, women and men do not have equal rights to ownership of immovable property; and in 14 countries sons and daughters do not have equal rights to inherit assets from their parents.¹²² Furthermore, in practice, most women have no control over land management, which is often governed by customary land tenure systems.

Information and communications technology (ICT). The COVID-19 pandemic has made clear how important ICT is to the functioning of the economy. It has accelerated the trend towards doing business digitally and emphasized the importance of digitalization as a strategy for growth in African economies.¹²³ Leveraging existing ICT, as well as fostering green innovation, design and technology development, will create new green jobs that can be available to African women. While it still has far to go compared with industrialized areas, digitalization has been transforming African economies through retail payments systems, financial inclusion, sustainable business models, access to e-commerce and revenue administration. However, access to ICT in Africa is unevenly distributed for men and women. For example, 34 per cent of Internet users are men, while 23 per cent are women.¹²⁴ Unless strategies to support private-sector development take account of this gap, digitalization may leave many women-led businesses at the lower end of the green economy.

Social norms

Discriminatory social norms underlie many of the obstacles that women face in accessing green jobs – and jobs generally – including barriers to access to land, finance and skills-building opportunities. They also constrain women's participation in certain sectors by dictating which ones are considered male-oriented areas of employment and which are perceived as offering acceptable jobs for women. Still, enterprising women are finding niche markets for green employment within male-dominated sectors or positions – for example in tourism, such as park rangers or climbing guides, or in construction through solar panel installation. In time, these first advances into male-dominated fields may change norms and, in doing so, open doors for women.

Gender biases in the law. Discriminatory social norms are sometimes enshrined in national legislation. Some of them directly bar women from accessing jobs in certain sectors or activities (for example, night shifts, underground operations in the mining sector), while others limit women's mobility or access to key economic resources needed to grow their economic activity or hamper the retention of women in male-dominated areas of green employment (e.g., limited sexual harassment legislation). According to the 2021 edition of the World Bank's *Women, Business and the Law* report, discriminatory legislation limiting women's access to jobs has been found in the majority of countries in sub-Saharan Africa. Cameroon, Republic of the Congo, Equatorial Guinea, Eswatini, Gabon, Guinea-Bissau, Mauritania, Mali, Niger, Nigeria, and Somalia score the lowest on the Women, Business and the Law index (Box 11).

121 FAO. 2011. *The State of Food and Agriculture 2010–2011: Women in Agriculture Closing the Gender Gap*. <http://www.fao.org/3/i2050e/i2050e00.htm>.

122 World Bank. 2021d. *Women, Business and the Law 2021 - Gender Equality, Women Economic Empowerment - World Bank Group*. <https://wbl.worldbank.org/en/wbl>.

123 AfDB. 2021a.

124 UNCTAD. 2020. "Equipping East African women digital entrepreneurs with skills to thrive." 6 July. <https://unctad.org/news/equipping-east-african-women-digital-entrepreneurs-skills-thrive>.

Box 11. Removing legal barriers to women's access to green jobs in sub-Saharan Africa: Analysis of the Women, Business, and the Law 2021 report

Removing restrictions on women's access to employment can significantly enhance their access to green jobs. The World Bank database *Women, Business and the Law 2021*, identified the following reforms for improving women's equal opportunities to participate in the economy in sub-Saharan Africa.

Land ownership. Removing legal barriers to women's access to and ownership of land can enhance women's economic opportunities in the agriculture sector and enable them to use land as collateral and invest in climate-resilient agriculture, with associated investments in agricultural technology and inputs. However, in 10 sub-Saharan African countries women and men do not have equal rights to own immovable property, and in 13 countries sons and daughters do not have equal rights to inherit assets from their parents.

Labour codes. Removing discriminatory labour code restrictions also can enhance women's access to green jobs. Removing outdated legal provisions that were meant to protect women – such as restrictions on women's ability to work at night or in jobs or tasks deemed hazardous – can enable women to access high-paying, highly-skilled green jobs in traditionally male-dominated sectors such as transportation and construction. **Senegal** has recently enacted legislation explicitly prohibiting gender-based discrimination in employment.

Sexual harassment. Adopting legislation that prevents sexual harassment in the workplace is key to retaining more women in the workplace, particularly in male-dominated sectors and certain areas of the economy, such as tourism, where women may face heightened risks of sexual harassment. **Madagascar** enacted legislation in 2021 establishing criminal penalties for various forms of gender-based violence in both the private and public spheres. **Sierra Leone** has also introduced specific definitions and penalties for sexual harassment offenses in employment.

Overall, there is much room for improvement in the various areas measured by the Women, Business and the Law report. Addressing the unequal distribution of unpaid care, for example, by introducing and/or increasing the length of paternity leave, can help equalize women's and men's access to green salaried jobs and jobs in general. Ethiopia has increased paid maternity leave from 90 to 120 days and introduced three days of paid paternity leave.

Freedom of movement. Freedom of movement is necessary for conducting many businesses, and for women it can allow entry into green areas of the economy through entrepreneurship. **Benin** has allowed women to apply for a passport on the same terms as men, no longer requiring women to provide copies of their marriage certificates.

Source: World Bank. 2021. *Women, Business and the Law - Gender Equality, Women Economic Empowerment - World Bank Group*. <https://wbl.worldbank.org/en/wbl>.

Care work. The unequal distribution of unpaid care work between men and women is a significant barrier to labour market access for women. Women's household and caregiving responsibilities (in the form of unpaid labour) severely restrict their economic opportunities. In sub-Saharan Africa, prime-age women living alone have a higher labour force participation rate (92 per cent) than women who are married (77 per cent) and women with children (80 per cent).¹²⁵ Women are still responsible for the vast majority of sub-Saharan Africa's unpaid domestic and care work, spending more than twice the time on household chores and care responsibilities as men. Indicatively, in Cameroon, while women spend 16 per cent of their time on unpaid domestic and care work, men spend only 5 per cent. In Liberia, women spend 6 per cent of their time on such activities compared with 3 per cent for men.¹²⁶ In Senegal, women do seven times more unpaid domestic tasks than men.¹²⁷ In rural areas particularly, water and wood collection are time-consuming tasks done largely by women and girls, keeping them from opportunities to earn money. In Malawi, women spend on average 54 minutes per day collecting water, while men spent only 6 minutes on average. In Guinea and United Republic of Tanzania, women spend on average 20 minutes a day collecting water, double the time that men spend.¹²⁸ Women's disproportionate care work burden limits their ability to participate in the labour market overall, and has been shown to affect women's ability to enter green areas of employment. According to IRENA, lack of adequate work-life balance, care solutions and flexible working measures is a critical impediment to retain women in the wind energy industry.¹²⁹

Women's underrepresentation in leadership roles and limited participation in decision-making further constrain women's access to economic opportunities. Without deliberate action, this could persist in the green economy. Despite progress over the last few decades, women's representation and leadership in political, economic and business spheres lag well behind that of men.

Rising female business leadership in sub-Saharan Africa is a positive trend, faring slightly better than in other regions: At the level of boards of directors, in 2016 African women held 14 per cent of seats (while the world average was 13 per cent).¹³⁰ However, there are significant variations across sectors and countries.¹³¹ Overall representation of women in senior management positions across industries remains low and lack of adequate corporate practices remain responsible for women's low progression in many industries. Concerted efforts to increase women's representation in leadership positions are needed, moving beyond quantitative goals and ensuring that women are involved in decision-making processes and operations. Female leadership in all spheres of life, and female role-modelling across all areas of the economy and the labour market, can play a catalytic role in encouraging women and girls to enter new areas of the economy, including strategic segments of the green economy.



125 Gammarano, R. 2020. Having kids sets back women's labour force participation more so than getting married. ILOSTAT. 3 March. <https://ilostat.ilo.org/having-kids-sets-back-womens-labour-force-participation-more-so-than-getting-married/>.

126 Government of Senegal. 2019. National Strategy for Women's Economic Empowerment.

127 Dramani, L. 2012. Domestic Work in Senegal: 30% of GDP to valorise. CREFAT. https://www.researchgate.net/publication/273204791_Unpaid_Domestic_Work_in_Senegal_30_of_GDP_to_valorise.

128 UNICEF. 2016. "UNICEF: Collecting water is often a colossal waste of time for women and girls." 29 August. <https://www.unicef.org/press-releases/unicef-collecting-water-often-colossal-waste-time-women-and-girls>.

129 IRENA 2020.

130 Randolph, K. 2020. "The Potential of Women's Leadership in Africa." The Borgen Project. 17 December. <https://borgenproject.org/the-potential-of-womens-leadership-in-africa/>.

131 Ibid.

5. CONCLUSIONS AND POLICY RECOMMENDATIONS

This report has identified sectors of the economy and jobs in those sectors that offer women opportunities in Africa's transition to a green economy. In the next few decades, the transformation of African economies will generate many green job opportunities. Agriculture, energy and construction, followed by circular economy activities, are the more promising areas in terms of green job creation, followed by green services and other areas, such as forestry.

Will women be able to access these new green jobs? Our analysis uses women's current position in a sector's workforce to indicate where women might most readily find green jobs. Based on this criterion, **women are well placed to seize opportunities in all sectors identified in this report, except transportation, construction and certain areas of energy**, where women's participation is currently low.

But this picture may well improve. This report identifies niches in every sector that can facilitate women's entry – for example, in sustainable municipal transport systems or indirect green construction jobs in renovation/insulation and energy efficiency. Women's participation in these niche segments, even if small at first, can have a demonstrative effect, paving the way for women's greater participation in the future.

While women are well positioned to access green jobs in many sectors, the report also shows that they are currently overwhelmingly concentrated in sectors that are likely to create more low-end types of green job opportunities than high-value green jobs. Most sectors will create a combination of well-paid, high-skills green jobs and low-end jobs with poor working conditions, remuneration and stability. For the most part, women's participation is lower in those sectors where the highest number of 'good' green jobs will be created (solar and wind energy, transportation and construction), and higher in those which will create low-end jobs such as greening of conventional agriculture, forestry or waste.

Without immediate major reforms, there is a high risk of women missing out on green jobs.

However, this picture may also improve if governments take action now. Without immediate policy action, there is a high risk of women missing out on green jobs, particularly on high-end jobs. Significant structural barriers for women to high-end jobs include less access to land, finance and technology and gender segregation in the education system and labour market in most African countries. Furthermore, persistent structural inequalities linked to social norms and women's roles in society and the economy will still shoulder women with a disproportionately large share of unpaid care work, thus limiting their involvement in the economy, or it will constrain their participation in areas of employment that are perceived as male-oriented. This means that policies focused on skilling and reskilling, while important to prepare for the green transition and a major instrument of green jobs policy, will not be enough to ensure a just transition for women. Specific policies and interventions to address women's obstacles to green jobs that spring from social norms should be prioritized in parallel with those focused on skills.

Policies focused on skilling and reskilling will not be enough to ensure a just and gender-responsive green transition.

Policy action now, while changes can still be made, is crucial to assure that the opportunity for jobs in the coming green transition in sub-Saharan Africa is fair and gender-responsive. Indeed, women and girls may be able to leapfrog from low-productivity jobs to high-productivity, well-paid and stable green jobs, skipping

over a long, slow climb through low-productivity green jobs that will be detrimental to their welfare and a missed opportunity for societies and economies. But for that to happen, bold policy action is needed now to ensure that both today's and tomorrow's women – today's girls – have the same chances as men and boys to seize the employment gains of the green transition.

In general, a strategy to leapfrog women into good green jobs in Africa should combine short-term policies to realize quick wins through skilling, reskilling, capacity-building and formalization in areas of the economy where women are well positioned, on the one hand, and, on the other, a strong and ambitious effort to remove structural obstacles that create 'slow wins' for women in many areas of the green economy. A focus on youth through education, role-modelling and innovation policies can also contribute to leapfrogging.

Policy recommendations

Leveraging women's opportunities to access green jobs requires a variety of policies. The reformist drive of the post-COVID-19 recovery offers an opportunity to implement a set of policies designed to ensure that women can access green jobs in the near term (by maximizing opportunities in quick-win sectors) but also to set the foundations for women and girls to access longer-term opportunities that will arise in the next decades.

This report makes recommendations for three types of policies. Action is needed on all three types.

- **Getting women ready to join the green economy** (Type 1). These actions focus on education, skills-building, capacity-building and institutional support to women-led businesses.
- **Levelling the playing field to nurture a gender-responsive green economy** and addressing structural barriers that women face in accessing the economy and to specific green jobs (Type 2). Here, the focus is on removing gender discrimination from law and business practices – for example, ensuring women's businesses access to financing. "Levelling" policies also include addressing the consequences of discriminatory social norms through, for example, recognizing, reducing and redistributing unpaid care responsibilities.
- **Accelerating action for a gender-responsive green economy** (Type 3). Types 1 and 2 policies are critical but, by themselves, may take a long time to make a difference. Quick progress requires not only removing

barriers but also supporting positive change. A number of good examples of affirmative action in other policy areas show how gender objectives and targets can be applied in green economic policy and instruments.

Policies to get women ready for the green economy

Reducing horizontal segregation in the labour market, to allow women access to all green jobs on equal terms with men, will require a combination of education policies, strong female role models and support mechanisms for women in male-dominated sectors. Such efforts should:

- **Undo gender segregation in education and promote women's participation in STEM fields.** If women are going to reap the benefits of the green transition in sub-Saharan Africa, there needs to be strong leadership and investment to improve women's and girls' access to education in technical and STEMs subjects and careers at all levels of the education system. The effort should encompass all areas of the education system from primary to tertiary, including vocational education and training.
- **Reskill and upskill.** Retooling the labour force for the future of work is a priority for Africa in the strategy for recovery from COVID-19-related economic shocks. According to the African Economic Outlook 2021, governments need to scale up efforts to retrain and reskill the labour force as quickly and broadly as possible to facilitate workers' transition from low-productivity, obsolete sectors and jobs to new and emerging ones. This is particularly important in the context of women's access to green jobs in the region. Reskilling and upskilling strategies will be needed to ensure that women can access new green opportunities in sectors where women are already well positioned but the greening of jobs will require new skills – for example, agriculture and services. The offer of trainings should reflect the current and future needs of the labour market, economy and environment.
- **Develop women's networks in male-dominated sectors.** Such networks can be key to enhance women's participation in those sectors, including through the nurturing of female role models. Establishing professional women's networks and business associations in key sectors of the green economy with higher barriers to entry by women are a mechanism to support existing female professionals and encourage other to join. They can be instrumental in advocating

for corporate policies adapted to women needs to increase the recruitment and retention of female employees. These sectors include construction, energy and transportation. Professional women's networks can also facilitate investments in women-owned businesses and start-ups in these sectors particularly, as well as being a source for mentoring and coaching of women. Overall, support to women's business associations in green sectors, through increased access to information and training in leadership skills, is also key to ensure that they can serve as supportive change agents and role models.

- **Support the transition towards the formal economy**, which can facilitate women's movement into better-paying jobs with better working conditions. Steps in that direction include:
 - **Organizing women** for economic activities – for example, waste-pickers or farm workers – into women-led cooperatives and networks, and aggregating these organizations into national federations so that they can compete and access markets.
 - **Establishing incentives** to support the formalization of women's informal economic activity, as well as education on the advantages of formalization.
 - **Investing in research and innovation**, leveraging women's knowledge, to identify and move into new market niches around agriculture and forestry products and recycling opportunities.
 - **Supporting product development and meeting quality standards** to women's businesses and organizations, including support to meet certification and export requirements.
 - **Facilitating market entry** for women's groups and businesses by building their capacity to access certification and labelling schemes, digital platforms for e-commerce, and public procurement and corporate supply chains.

- **Developing financial products** (and delivery channels) adapted to the needs of women's cooperatives and micro-enterprises, including using digital communication for access to finance, especially for small-scale farmers and entrepreneurs who do not have well-established relationships with financial institutions.

Policies to level the playing field for a gender-responsive green economy

Addressing social norms and improving the enabling environment for women's participation in the green economy is crucial. In the previous section this report described the different ways that social norms limit women's ability to access green jobs, from the unequal distribution of unpaid care work, to male biases in certain areas of the workforce, to laws that particularly limit women's access to resources and means to undertake economic activities.¹³² In the context of this report, specific recommendations include:

- **Remove legal barriers** and address gender discrimination in legislation. This is a relatively straightforward action that can be taken in the short term. Key areas for reform include: 1) Amending legislation to ensure women and men equal rights to ownership of immovable property (land)¹³³ as well as to equalize the inheritance rights of sons and daughters¹³⁴; 2) Introducing legislation that prohibits sexual harassment in the workplace, which should help women to stay in the workforce¹³⁵ and enhance enforcement mechanisms, especially in male-dominated sectors such as construction, transportation and certain areas of energy; 3) Amending legal provisions that do not allow women to open a bank account or move freely in the same way as men,¹³⁶ which is required for doing business and for holding jobs on an equal basis with men; and 4) Removing legal restrictions on women's access to specific jobs and tasks.¹³⁷

132 For detailed analysis of options and recommendations to address social norms and remove gender discrimination in the labour market, see: UN ECOSOC. 2017. *Women's Economic Empowerment in the Changing World of Work*. Report to the Under-Secretary General. Commission on the Status of Women. <https://digitallibrary.un.org/record/856760>.

133 Discriminatory legal provisions exist in Cameroon, Chad, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Guinea-Bissau, Mauritania, Niger, Republic of the Congo and South Sudan. Information in the footnotes for this paragraph come from: World Bank. 2021a. *Women, Business and the Law report 2021*. <https://wbl.worldbank.org/en/reports>.

134 Discriminatory legal provisions exist in Botswana, Burundi, Comoros, Djibouti, Eswatini, the Gambia, Lesotho, Mauritania, Niger, Senegal, Somalia, Sudan, Uganda and United Republic of Tanzania.

135 There is no such legislation in Angola, Botswana, Equatorial Guinea, Eswatini, the Gambia, Guinea-Bissau, Mali, Mauritania, Republic of the Congo, Somalia or Sudan.

136 Legislation needs to be amended in Cameroon, Chad, Equatorial Guinea, Eswatini, Gabon, Guinea-Bissau and Niger.

137 Current restrictions exist in Cameroon, Chad, Equatorial Guinea, Eswatini, Gabon, Guinea-Bissau, Mauritania, Niger and Sudan.

- **Balance men’s and women’s responsibilities for care.** Addressing inequalities in the distribution of unpaid care will have a large impact on enabling women to take paid jobs, including in the green economy. Governments should invest in expanding care services, investing in infrastructure and implementing policies to recognize, reduce and redistribute unpaid care. A focus on recognition and making visible women’s unpaid care work is particularly important in Africa, where a large part of care work is informal. Changing social norms through education and communication and the involvement of men and boys are important means to affect change in this area in the medium term.
- **Invest in role-modelling and focusing on youth to change stereotypes about acceptable jobs for men and women.** Entrenched gender segregation in education and the labour market is an important barrier for women’s access to high-quality green jobs in certain sectors. In large part, this segregation results from social perceptions about what is acceptable work for women. Such perceptions evolve slowly, but governments, civil society and community leaders can take the lead through education, social communication and awareness-raising that leverages positive role models of women working in male-dominated sectors and by addressing young men and women from an early age. Involving men and boys, including traditional leaders, in this work will be essential.

Box 12. Expanding the definition of green jobs: a win–win scenario for women and the planet

One proposal emerging in discussions about “engendering green transition” is to expand the understanding of the green economy and define green jobs as those that do not harm the environment and/or those that produce low emissions. The care services sector (providing household services such as cooking, cleaning, child and elderly care) would score high in this new conceptualization. Expanding the definition could lead to important public investment in the care sector as part of green transition strategies. This could create a large number of quality green jobs for which women are extremely well positioned – 80 per cent of domestic workers in Africa are women.¹³⁸ This would also have multiplying effects in increasing other women’s access to the labour market (access to care services being an important determinant for women’s labour force participation, particularly in households with children). UN Women estimates that investments to achieve free universal childcare could generate 0.9 million jobs in Senegal, 1.2 million in Côte d’Ivoire, 17 million in Nigeria, 1.4 million in Rwanda, and 7 million in United Republic of Tanzania. The study also shows that the majority of jobs would be for women, reducing the gender gap in employment by up to 7 percentage points in some countries.

Source: UN Women. 2021b. *Investing in universal childcare in five sub-Saharan countries*.

138 ILO. 2018c. *Care Work and Care Jobs for the Future of Decent Work*. https://www.ilo.org/global/publications/books/WCMS_633135/lang--en/index.htm.

Policies to accelerate action for a gender-responsive green economy

Affirmative action to integrate gender targets and objectives into existing and new economic policy instruments can accelerate women's access to green jobs. Through regulation, governments can open up opportunities for women in areas of the green economy that have the potential to generate many green jobs but have high entry barriers for women and thus increase the speed with which change takes place. As countries explore and identify the appropriate combination of taxes, subsidies, incentives and other economic instruments to encourage a transition to the green economy, such measures can be designed in a way that also supports women's employment objectives. Recommendations include the following:

- **Promote affirmative green and sustainable public procurement initiatives.** By greening their own procurement processes, governments can contribute substantially to a cleaner, greener environment and set a powerful example. In Kenya, Senegal, South Africa and elsewhere, procurement reforms are promoting preferential access for women-led businesses to public contracts and building their capacity to access

public tenders. Such initiatives, when applied to green procurement processes, can accelerate women-led businesses' access to new green public markets.

- **Leverage existing green economic policy instruments.** Governments have available a number of economic instruments to foster the transition towards a green economy – for example, the removal of fossil fuel subsidies, loans or subsidies to invest in renewable energy or energy-efficient technologies, and feed-in tariffs. In some cases, these measures will increase the number of green jobs. Specific provisions can be incorporated into the design of these instruments to carve out specific employment targets for women-led businesses, or for women directly (Box 13). Green climate finance projects and other instruments, such as green bonds, can also stipulate targets for female employment. The development of carbon-credit mechanisms, particularly in sectors where many women currently work without pay, such as sustainable forestry and waste management, can expand high-end green jobs in quick-win areas of women's green employment.

Box 13. Leveraging green economic instruments for women's access to green jobs

Feed-in tariffs and other green policy instruments are expanding green markets and providing incentives for small electricity providers, including women-led businesses. Such feed-in tariffs promise small-scale producers of the renewable energy – such as solar or wind energy – an above-market price for the power that they deliver to the grid. In South Africa, for example, the **Renewable Energy Independent Power Producer Procurement Programme** offers incentives to private investors in renewable energy. This programme has enabled women to find employment selling and installing rooftop-to-rooftop solar equipment, either as employees or independent contractors. Establishing specific targets for women-led businesses providers could improve women's penetration of the sector even further.

Source: UNECA and UNEP. 2016. Enabling measures for an inclusive green economy in Africa. *ECA Policy Brief*. 008. <https://www.greengrowthknowledge.org/research/enabling-measures-inclusive-green-economy-africa-0>; UNEP. 2015. *Green economy: success stories from developing countries*. Green Policy Platform. <https://www.greengrowthknowledge.org/case-studies/green-economy-developing-countries-success-stories>.

Box 14. Gender in Ghana's National Green Jobs Strategy

The Government of Ghana is pioneering in many areas of the green-economy transition, including in green jobs. It recently approved its National Green Jobs Strategy for the period 2021–2025. The strategy envisions a just and socially inclusive transition to a green economy. The overall objective is to support the creation of green jobs through coherent and effective policy coordination and a multisectoral approach. It establishes measures to build government capacity, coordinate efforts and harmonize ongoing green-economy interventions so as to create green jobs, develop green skills and occupations, and promote green enterprises.

The strategy identifies women as a priority group, particularly for skills development. It sets quotas for women's participation in green skills trainings and support women's participation in green entrepreneurship development through business development services and finance. Collection and analysis of sex-disaggregated data on green skills-training programmes is envisioned throughout the strategy.

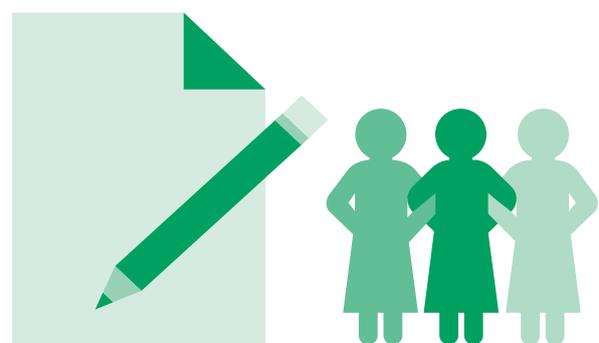
While the strategy could have established more ambitious objectives for women's participation in green jobs and could have promoted measures to address some of the structural obstacles that women may find to access green jobs, the prioritization of women to benefit from the green jobs' strategy is a good practice and can serve as a reference for other countries developing similar strategies.

Source: Ministry of Employment and Labour Relations of Ghana. 2021. *National Green Jobs Strategy*. Ghana. ILO. 22 March. https://www.ilo.org/africa/WCMS_776631/lang--en/index.htm.

The way forward

This report has provided examples of how public policy and governments' leverage can improve women's access to jobs in the green economy in sub-Saharan Africa. It takes a first step by mapping the sectors of the economy in which women's access to green jobs is likely to be quick or slow, and it assesses what the quality of those jobs may be. However, this is just a first step. Improving women's access to green jobs must begin with country-level conversations in the context of national processes of green economy transition. Also, more analysis is needed to find specific solutions that fit each country's green economic transition, specific post-COVID-19 fiscal realities, and gender dynamics in national labour markets. The formulation of national green jobs strategies, currently underway in a number of countries in the region, presents an opportunity to contextualize and apply some of the high-level recommendations of this report (Box 12).

In this process, it will be important for States to build their capacity to formulate and implement gender-responsive green-economy strategies. This includes their capabilities to collect and analyse sex-disaggregated data – a major gap identified by this report – to formulate gender-responsive economic policy, planning and budgeting. It also will be critical to increase women's participation in green economy decision-making forums and technical task forces; and to create institutional spaces for dialogue and the co-creation of policy solutions where women's advocates can actively participate.



ANNEX I. MAPPING OPPORTUNITIES FOR WOMEN IN GREEN JOBS IN SUB-SAHARAN AFRICA

The table below presents a visual summary of the analysis included in section 3 of this report. The analysis is based on the information available and is a first approximation to a regional mapping of women's opportunities in green jobs across sectors in sub-Saharan Africa (SSA). More research and data collection are needed, however, particularly at the sector and subsector level, both on the extent and quality of green jobs to be created, as well as on female labour force participation. This is essential to understand the real extent of such opportunities, particularly at the country level.

TABLE 2.
Mapping Opportunities for Green Jobs for Women in sub-Saharan Africa

Sector	Potential to create green jobs	Potential to create higher-end green jobs	Quick-win area for women's employment in sub-Saharan Africa
Agriculture (greening conventional)	 Based on the importance of the sector in job generation in the region	 Majority of non-qualified jobs	 High female labour force participation
Agriculture Organic/conservation farming	 Shift to organic/conservation will destroy employment	 Evidence of more qualified jobs than conventional agriculture	 High female labour force participation
Fisheries (sustainable fisheries management)	 Shift to sustainable fisheries will destroy employment	 Majority of non-qualified jobs	 Moderate labour force participation (low in capture, high in processing and marketing)
Fisheries (aquaculture)	Data gap	Data gap	 Low in industrial aquaculture, high in artisanal aquaculture

Sector	Potential to create green jobs	Potential to create higher-end green jobs	Quick-win area for women's employment in sub-Saharan Africa
Forestry (sustainable forest management, reforestation)	 <p>Currently 1.6 million jobs in forestry in SSA (e.g., 10 million jobs to be created around Green Wall reforestation project in SSA)</p>	 <p>Preliminary evidence of improved working conditions with respect to conventional forestry but wages in the sector remain low. Certain potential to access paid jobs in forestry management through green economy instruments. Some potential to access jobs in niche higher-value areas around forestry products (e.g. shea, argan, etc.)</p>	 <p>High female labour force participation in forestry management</p>
Tourism (nature/ ecotourism)	 <p>Currently 2.3 million jobs in nature tourism in the region but this is an employment-intensive industry with growth of ecotourism higher than the growth of conventional tourism. More data needed for this sector.</p>	 <p>Potential for qualified jobs as guides and ecotourism SMEs</p>	 <p>High female labour force participation</p>
Waste management/ recycling	 <p>Based on low weight of the sector in the regional economy \$6-8 million to be created worldwide in the circular economy More data needed for this sector</p>	 <p>Depending on ability to formalize waste-pickers into SMEs and access circular economy markets</p>	 <p>Limited data but indication of high female labour force participation</p>
Transportation (sustainable public transport)	 <p>Based on low weight of the sector in the regional economy</p>	 <p>Qualified public employment</p>	 <p>Low female labour force participation</p>
New green services	 <p>This is a small proportion of jobs in the services sector</p>	 <p>Qualified jobs (e.g., advisory services)</p>	 <p>High female labour force participation in professional services, particularly in urban areas</p>

Sector	Potential to create green jobs	Potential to create higher-end green jobs	Quick-win area for women's employment in sub-Saharan Africa
Solar energy	 <p>One of the sectors where the largest number of green jobs will be created (e.g., 600,000 new jobs in SSA by 2050)</p>	 →  <p>Combination of medium- and highly-qualified, technical jobs (construction, installation, etc.)</p>	 →  <p>Moderate female labour force participation albeit higher than in conventional energy</p>
Biomass energy	 <p>One of the sectors where the largest numbers of green jobs will be created (e.g., 13 million new jobs in SSA)</p>	 <p>Low-qualified jobs linked to agriculture</p>	 <p>High female labour force participation in agriculture</p>
Wind energy	 <p>One of the sectors where the largest number of green jobs will be created (85,000 new jobs in SSA by 2050)</p>	 <p>Qualified technical jobs</p>	 <p>Low female labour force participation</p>
Construction	 <p>One of the sectors where the largest number of green jobs will be created worldwide, emphasized by rapid rates of urbanization in SSA</p>	 <p>Medium- to highly-qualified technical jobs</p>	 <p>Low female labour force participation</p>

 Low
  Medium
  High



UN Women supports UN Member States as they set global standards for achieving gender equality and works with governments and civil society to design laws, policies, programmes and services needed to ensure that the standards are effectively implemented and truly benefit women and girls worldwide. It works globally to make the vision of the Sustainable Development Goals a reality for women and girls and stands behind women’s equal participation in all aspects of life, focusing on four strategic priorities: Women lead, participate in and benefit equally from governance systems; women have income security, decent work and economic autonomy; all women and girls live a life free from all forms of violence; women and girls contribute to and have greater influence in building sustainable peace and resilience, and benefit equally from the prevention of natural disasters and conflicts and humanitarian action. UN Women also coordinates and promotes the UN system’s work in advancing gender equality.

The African Development Bank Group (AfDB) has the overarching objective to spur sustainable economic development and social progress in its regional member countries (RMCs), thus contributing to poverty reduction. The AfDB’s Ten Year Strategy 2013–2022 identifies gender equality among areas of special focus. The AfDB’s African Natural Resources Centre (ANRC) was established in 2013 with the mandate to assist the Bank’s Regional Member Countries (RMCs) harness their natural resources for sustainable development. The Centre provides knowledge, policy advice, capacity building, technical assistance and policy advocacy on best practices in natural resource management. The Centre promotes gender equality through its work on good governance in the natural resource sectors, women’s economic empowerment, social participation, and gender mainstreaming in natural resources policies, strategies and investments.



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