

EVI-SICEE RESEARCH BRIEF No. 08

Leveraging Digital Tools to Scale Women and Youth Entrepreneurship in Uganda's Clean Energy Sector

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KEY MESSAGES

- Digital platforms are available but women- and youth-led clean energy enterprises are not yet using them to scale. The main gap is not access, but limited capacity to use digital tools strategically for growth.
- Social media and mobile money dominate enterprise use, while e-commerce, analytics, and advanced payment systems remain underutilized.
- Targeted, gender- and youth-responsive digital support can unlock significant clean energy market expansion.

1. BACKGROUND AND CONTEXT

Uganda's transition to clean and renewable energy is critical to advancing climate resilience, expanding energy access, and promoting inclusive economic growth. Although national frameworks including Vision 2040, the Third National Development Plan (NDP III), and the Revised National Energy Policy (2023) prioritise affordable and sustainable energy for all (National Planning Authority-NPA, 2013; Ministry of Energy and Mineral Development - MEMD, 2023a), progress remains uneven. Only 25% of households are connected to the national grid and 28% rely on off-grid solar, while access to clean cooking technologies stands at just 3.8% (UBoS, 2024; IEA, 2023). More than 90% of Uganda's final energy consumption still comes from solid biomass largely firewood and charcoal with severe consequences for health, the environment, and economic productivity (IEA, 2023). These gaps disproportionately affect women and youth, who bear the greatest burdens of energy poverty while remaining underrepresented in formal energy markets.

Small and medium enterprises (SMEs), particularly those led by women and youth, are central to addressing these challenges across clean energy value chains such as solar, clean cooking, and energy-efficient technologies. Increasingly, digital tools including mobile money, pay-as-you-go (PAYGo) systems, digital marketing platforms, e-commerce, remote monitoring, and data-driven business solutions are reshaping how enterprises reach customers, manage operations, and access finance. Uganda now has over 34.6 million active mobile money subscriptions and 14.2 million mobile internet users (UCC, 2025; DataReportal, 2025), and mobile money penetration among adults exceeds 60% (World Bank Global Findex Database, 2023). For women and youth entrepreneurs, digitalisation offers pathways to overcome persistent barriers related to geography, limited market access, and information asymmetries.

However, despite the growing availability of digital solutions, women- and youth-led clean energy enterprises continue to face structural constraints that limit their ability to use these tools effectively. A 2024 national study found that technology adoption among Ugandan MSMEs stands at only 35%, with over half of businesses owning neither a smartphone nor a computer (Ichuli & IPSOS, 2024). Research by UNCDF found that only 64% of women in Uganda own phones compared to 89% of men, and socio-cultural barriers, fraud concerns, and low digital literacy continue to exclude women and youth from active participation in the digital economy (UNCDF, 2023). Globally, women in low- and middle-income countries are 19% less likely than men to use mobile internet, with the gender gap widest in Sub-Saharan Africa (GSMA, 2023). These dynamics constrain enterprise scalability and impact for women- and youth-led clean energy enterprises in Uganda.

This research brief examines how digital tools can be leveraged to scale women and youth entrepreneurship in Uganda's clean energy sector. Focusing on selected value chains, it assesses the current use and potential of digital solutions, and identifies key gaps in access, capability, and enabling environments. The findings aim to inform policies and programmes that strengthen digitally enabled entrepreneurship, expand access to clean energy services, and promote inclusive, climate-resilient, and sustainable enterprise development.

2. METHODOLOGY

Analytical Focus

The study applied an inclusive innovation framework combined with an innovation hub approach to examine how digital tools and platforms enable or constrain women's and youth participation in clean energy enterprises (CEEs), and how digitalisation supports enterprise growth and scalability.

Research Design

A cross-sectional quantitative survey was conducted using a gender-transformative lens to assess access to, use of, and benefits from digital tools among women- and youth-led clean energy enterprises.

Study Scope

Clean energy value chains covered:

- Solar energy and clean cooking

Digital tools examined:

- Mobile money, pay-as-you-go (PAYGo) systems, digital marketing platforms, e-commerce, remote monitoring, and data-driven business tools

Geographical coverage:

- Central and Eastern Uganda

Target group:

- Women entrepreneurs (all ages) and youth entrepreneurs (18–30 years)

Sampling and Sample Size

A purposive and stratified sampling approach ensured representation by gender, age group, value chain, and region, with snowball sampling used to reach informal and digitally active enterprises. Data were collected from 1,318 clean energy entrepreneurs, exceeding the target sample and strengthening the robustness of findings.

Data Collection

Primary data were collected between April and May 2025 using structured questionnaires administered through Computer-Assisted Personal Interviews (CAPI), capturing enterprise-level data on digital adoption, business performance, and scaling potential.

Data Analysis

Quantitative data were analysed using statistical software, complemented by systems-thinking tools to map digital-enabled interactions within the clean energy ecosystem and identify leverage points for scaling women- and youth-led enterprises.

3. FINDINGS

3.1 Overview of Women- and Youth-Led Enterprises in Uganda's Clean Energy Sector

Harnessing digital tools and platforms presents a significant opportunity for women- and youth-led clean energy enterprises in Uganda to expand their visibility, reach new markets, and accelerate growth. The EVI-SICEE Baseline Survey (2025), covering 1,318 enterprises across 19 districts in Central and Eastern Uganda, confirms that most enterprises have not yet fully leveraged digital resources for promotional outreach consistent with national findings that technology adoption among Ugandan MSMEs remains at 35% (Ichuli & IPSOS, 2024).

Examining how digital tools can be effectively leveraged is therefore critical to enhancing growth, scaling, and market impact. Figure 1 presents respondents' perceptions regarding the role of digital tools and platforms in enabling business scaling among women- and youth-led clean energy enterprises. The findings indicate that a substantial proportion of respondents believe that digital tools and platforms support business scaling, while a smaller proportion disagreed or remained uncertain. This suggests growing recognition of the importance of digital technologies in facilitating enterprise visibility, customer engagement, market access, and operational growth within Uganda's clean energy sector.

The findings imply that digital platforms such as social media, mobile money services, online marketing channels, and digital communication tools are increasingly perceived as important enablers of enterprise expansion. Nevertheless, the presence of respondents who were uncertain or disagreed also points to persistent challenges related to digital literacy, affordability, infrastructure limitations, and uneven adoption of digital technologies among clean energy enterprises.

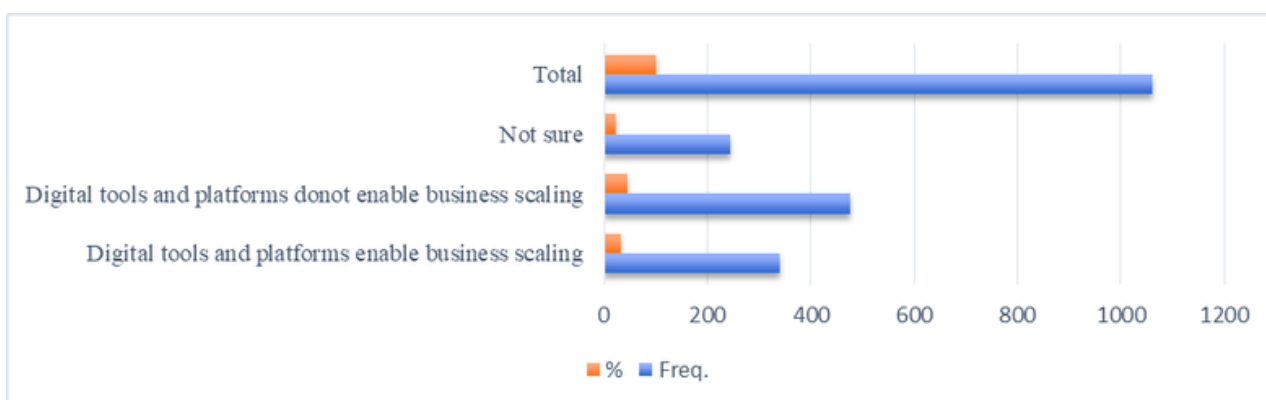


Fig. 1. Respondents' perceptions of digital tools and enterprise scaling

Source: Primary data 2025

3.2 Digital Platform Availability and Uptake

Uganda possesses a relatively mature and diversified digital business ecosystem. With 38.6 million cellular mobile connections (76.2% of the population) and mobile money penetration exceeding 60% of adults (DataReportal, 2025; World Bank Global Findex Database, 2023), the infrastructure for digital enterprise is largely in place. However, despite platform availability, uptake and effective utilisation by women- and youth-led clean energy enterprises remains uneven and, in many cases, limited to basic transactional functions.

E-commerce and Digital Marketplaces

Although several national and regional digital marketplaces including Jumia Uganda, Market by MTN MoMo, and Jiji offer mechanisms for product listing, digital payments, and delivery coordination, the majority of women- and youth-led clean energy enterprises do not actively use these platforms for core sales functions. The International Trade Centre (ITC) notes that e-commerce and digital marketing remain underutilised in Uganda, with most SMEs not effectively using social commerce platforms even as customer preferences shift online. Where engagement exists, it is largely confined to passive product visibility rather than integrated logistics, inventory management, or data-driven sales tools suggesting a pronounced gap between platform availability and enterprise capacity to leverage e-commerce for scaling beyond localised markets.

Social Media Platforms

Social media platforms particularly Facebook and WhatsApp are the most commonly used digital tools among women- and youth-led enterprises. However, their use is predominantly informal and transactional, focusing on direct messaging, basic advertising, and order coordination. More advanced functionalities, such as paid advertising, audience analytics, influencer partnerships, and content optimisation on platforms like Instagram and TikTok, are underutilised. This reflects a broader national pattern: Uganda had only 2.40 million active social media user identities at the start of 2025 equivalent to just 4.7% of the total population (DataReportal, 2025) suggesting that while social media lowers entry barriers, it does not automatically translate into sustained market expansion without targeted digital skills and strategic use.

Digital Financial and Payment Systems

Mobile money services including MTN MoMoPay and Airtel Money are widely adopted for receiving payments, reflecting their accessibility and alignment with customer preferences. MTN Uganda alone recorded UGX 195.5 trillion in mobile money transactions in 2025 (MTN Uganda, 2026). In contrast, more sophisticated payment gateways such as Mysol, SunCulture, SunKing, and D-light which enable multi-channel and cross-border transactions, are used by only a small proportion of enterprises. This limits the ability of women- and youth-led clean energy businesses to engage with institutional buyers, online platforms, and regional markets. Gender gaps compound this challenge: women in Uganda face social and legal restrictions on SIM card registration, and studies find that only 64% of women own phones compared to 89% of men (UNCDF, 2023), directly constraining their access to digital financial tools.

4. CONCLUSION

Overall, the research findings reveal a pronounced uptake gap in the use of digital platforms among women- and youth-led clean energy enterprises in Uganda. Although a wide range of digital tools is readily available underpinned by 34.6 million active mobile money subscriptions and 16.5 million mobile internet users (UCC, 2025) their utilisation remains largely basic and transactional. This pattern reflects deeper structural constraints, including limited digital skills, low awareness of advanced platform functionalities, affordability challenges, and varying levels of business readiness (Ichuli & IPSOS, 2024; UNCDF, 2023; GSMA, 2023).

Consequently, improving access alone is insufficient. Effective policy responses must prioritise targeted capacity building, support for platform integration into core business operations, and practical, context-specific interventions that enable meaningful and scalable digital adoption.

5. POLICY RECOMMENDATIONS

To unlock the potential of women- and youth-led clean energy enterprises, we recommend the following integrated package of actions:

Recommendation 1: Move Beyond Access to Targeted Digital Capacity Building

Policymakers and development partners should prioritise practical, sector-specific digital skills training for women- and youth-led clean energy enterprises. Interventions should focus on applied competencies such as e-commerce onboarding, paid social media advertising, customer analytics, digital inventory management, and online customer relationship management, rather than general digital literacy alone.

Training programmes should be embedded within clean energy entrepreneurship support initiatives to ensure relevance and uptake.

Evidence: Rwanda's targeted digital skills programme for SMEs demonstrated measurable improvements in e-commerce adoption and enterprise revenues within 18 months of implementation.

Recommendation 2: Promote Platform Integration for Business Scaling

Public and donor-supported programmes should encourage integrated use of digital platforms, linking social media marketing, e-commerce marketplaces, and digital payment systems into cohesive business workflows.

This can be achieved through technical assistance, digital toolkits, and partnerships with platform providers to support end-to-end digital business models, enabling enterprises to transition from informal online selling to scalable, data-driven operations.

Evidence: Kenya's DigiFarm platform linked smallholders to digital payments, markets, and advisory services, demonstrating how integration increases enterprise outcomes beyond standalone tool adoption.

Recommendation 3: Reduce Cost and Complexity Barriers to Advanced Digital Tools

To address affordability constraints, policymakers should explore subsidies, negotiate service rates, or develop bundled digital service packages for women- and youth-led enterprises. This includes reduced transaction fees on marketplaces, discounted access to payment gateways, and free or low-cost access to analytics and social media management tools.

Such measures would lower the financial and technical barriers that currently limit adoption of more advanced digital solutions.

Evidence: South Africa's SME digital voucher programme reduced the cost of digital tool adoption, resulting in a 22% increase in SME uptake of advanced digital services within the first year.

Recommendation 4: Strengthen Linkages Between Digital Platforms and Clean Energy Value Chains

Government agencies and implementing partners should facilitate stronger connections between digital platforms and clean energy value chains by supporting sector-specific digital marketplaces and curated listings for clean energy products and services.

This would improve product visibility, enhance consumer trust, and expand market reach particularly in underserved and peri-urban areas.

Evidence: Tanzania's clean energy digital marketplace pilot improved enterprise visibility and increased sales by connecting rural vendors to urban and institutional buyers through a dedicated online platform.

Recommendation 5: Support Adoption of Digital Payments for Market Expansion

Policies should promote the adoption of multi-channel digital payment systems including mobile money and online payment gateways to enable engagement with institutional, urban, and cross-border customers.

This can be supported through technical onboarding assistance, simplified compliance requirements, and awareness campaigns targeting both enterprises and consumers.

Evidence: MTN MoMo's integration with solar PAYGo systems in Uganda increased customer reach for clean energy enterprises by enabling remote payment collection in off-grid communities.

Recommendation 6: Integrate Digital Adoption Indicators into Enterprise Support Programmes

Monitoring and evaluation frameworks for clean energy entrepreneurship programmes should include digital adoption and usage indicators, such as the extent of e-commerce use, digital marketing sophistication, and payment system integration.

This will enable policymakers to track progress, identify persistent gaps, and adapt interventions based on evidence rather than assumptions of digital readiness.

Evidence: GSMA's Mobile for Development initiative demonstrated that integrating digital KPIs into programme frameworks enabled faster course-correction and improved overall programme effectiveness..

Recommendation 7: Prioritise Gender- and Youth-Responsive Digital Interventions

Digital support programmes should be explicitly gender- and youth-responsive, addressing constraints such as time poverty, limited access to devices, social norms, and differential access to finance.

Flexible training modalities, peer learning networks, and mentorship models should be incorporated to ensure sustained engagement and effective utilisation of digital platforms.

Evidence: USAID's WomenConnect Challenge found that gender-tailored digital interventions combining device access, peer networks, and skills training achieved adoption rates three times higher than non-targeted approaches.

Summary of Policy Recommendations

No	Recommendation	What It Involves	Lead Institution
1	One-Stop Digital Registration Platform	Build a digital portal integrating URSB, URA, and local government licensing, with mobile access for rural areas. Pilot in Central and Eastern Uganda, leveraging existing EFRIS and URSB digital infrastructure.	URSB, URA, Ministry of ICT
2	Targeted Tax Relief for Women- and Youth-Led CEEs	Introduce a three-year tax exemption for newly registered women- and youth-led CEEs, with subsidies for compliance costs. Administer through MEMD and link eligibility to the Parish Development Model for local targeting.	MEMD, Uganda Revenue Authority, Ministry of Finance
3	Preferential Public Procurement	Reserve 20% of public clean energy procurement contracts for registered women- and youth-led CEEs by 2028, with clear and transparent eligibility criteria aligned to the Parish Development Model.	MEMD, Public Procurement and Disposal of Public Assets Authority (PPDA)

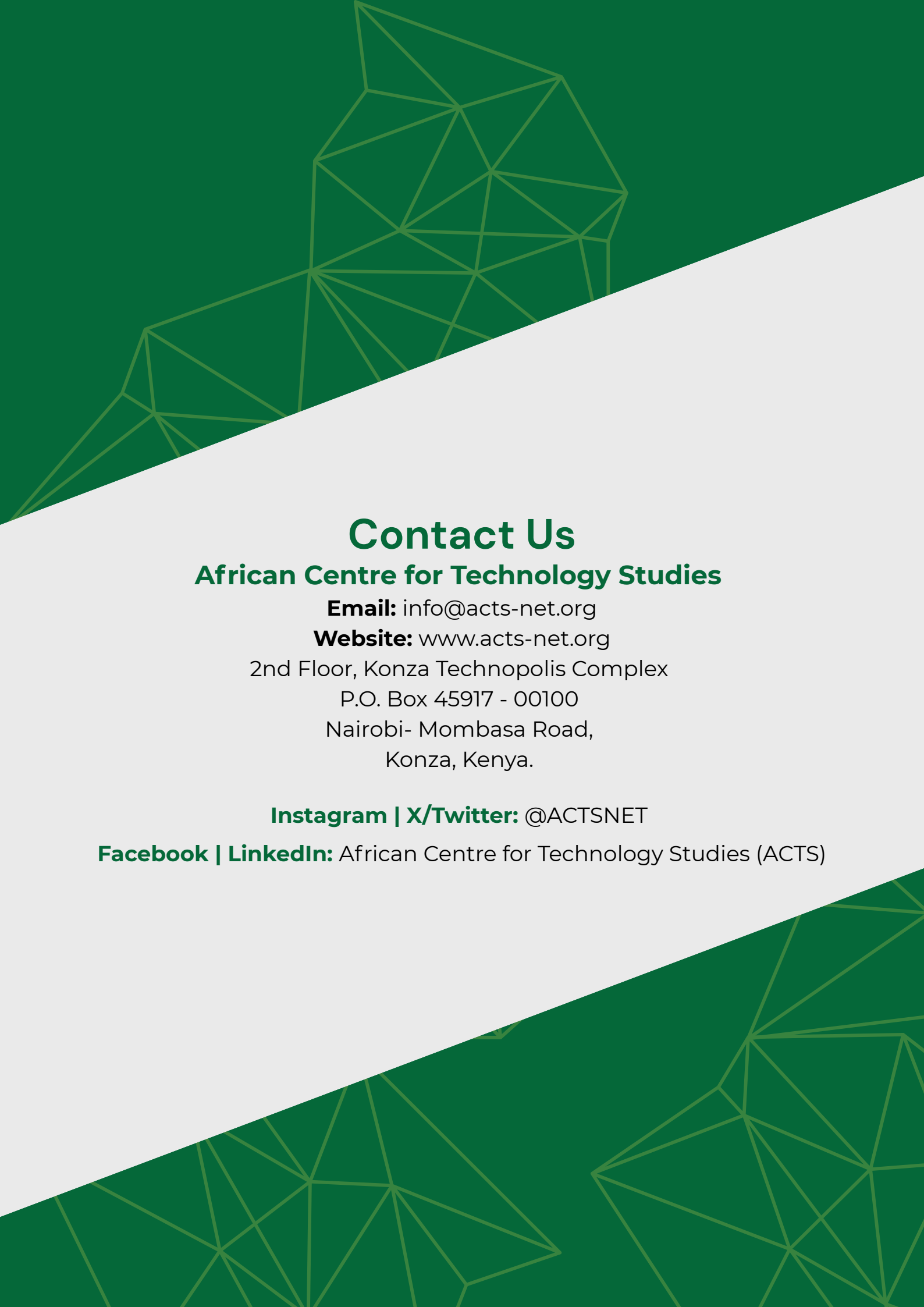
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