Overview

The panel discussion on "Sustainability in African Supply Chains and Beyond" aims to delve into the critical aspects of achieving sustainability within supply chains across Africa and their broader implications globally. The conversation will focus on the challenges, opportunities, innovations, and future strategies needed to foster sustainable practices in African supply chains. Key areas of focus will include economic, environmental, and social sustainability, with an emphasis on how these factors interplay to create resilient and responsible supply chains.

Moderator:

Ron Nolasco, *Sr. Trade Commissioner, International Trade Council*

Speakers:

Leonelle Sandoval - Cofounder of Evegrocer Africa, Member ITC Sustainability & Environment Council
Wonders Pibowei - Cofounder of Evegrocer Africa, Member ITC Sustainability & Environment Council
Chris C. Emejuru - Independent Advisor, Global Brands and Partner Relations at Evegrocer Africa
Ikechi Agbugba - Independent Advisor, Agritech and Agribusiness Innovation at Evegrocer Africa
Ngozi Ikeadigh - Independent Advisor, Compliance Risk and Governance at Evegrocer Africa

EXECUTIVE SUMMARY

Sustainability is defined as meeting the needs of the present without compromising the ability of future generations to meet their own needs (The United Nations Brundtland Commission). A cornerstone of sustainability revolves around meeting our fundamental needs for survival: food, water, clean air, and shelter. Without access to these, human existence is impossible. However, sustainability goes beyond just our immediate needs. It's about ensuring these essentials are available for future generations as well.

The panel discussed role of economic sustainability on supply chains in Africa. We explored how businesses in Africa can balance profitability with sustainable practices. We discussed economic benefits of adopting sustainable supply chain practices for African companies. We also reviewed some opportunities for small and medium-sized enterprises (SMEs) in Africa to access financing for sustainable initiatives.

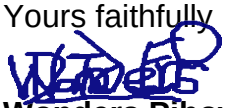
The panel discussed role of environmental sustainability on supply chains in Africa. We discussed the strategies for effectively reducing the environmental impact of supply chains in Africa. We explored how Africa can leverage on renewable energy and green technologies for sustainable supply chains. We also explored the role of circular economy on African supply chains, and how they can be effectively implemented.

The panel discussed role of social sustainability on supply chains in Africa. We explored measures needed to ensure fair labor practices and protect workers' rights within African supply chains. We reviewed how supply chain practices can positively impact local communities and contribute to social development. We explored initiatives needed to promote gender equality and inclusivity in supply chain management in Africa.

The panel discussed role of policy and regulations on supply chains in Africa. We looked at key regulatory challenges facing sustainable supply chains in Africa. We explored how governments and private sector entities can collaborate to create conducive environments for sustainable supply chain practices. We highlighted international standards and compliance requirements that are most relevant to African supply chains, and how can companies meet these standards.

The panel discussed role of innovation and technology on supply chains in Africa. We explored how emerging technologies like blockchain can enhance transparency and traceability in African supply chains. We revealed successful examples of digital tools being used to manage sustainability metrics in Africa. We discussed how technology can be leveraged to overcome logistical and trading challenges in African supply chains.

Yours faithfully



Wonders Pibowei, Board Vice Chair
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A) Economic Sustainability:

- Wonders Pibowei, Ikechi Agbugba

1) How can businesses in Africa balance profitability with sustainable practices?

Frankly, profitability is mostly a short-termed goal quarterly and yearly while transition planning and sustainability are medium or long termed ambitions. The opportunity cost of integrating sustainability into supply chain operations and investments could be harmful without aligning energy independence with interest and inflation factors. It may slightly differ between companies or sectors; but is the foundation to determining cost of production, successfully negotiating contracts, and forecasting annual operational budget, which all influence profits.

- **Energy independence** is critical to aligning profitability targets with sustainable practices in manufacturing, services and trade value chains of African economies. The basic challenge of factories and businesses is not just higher tariffs of electricity but access to about 10 or 15 hours of uninterrupted power during working hours. Assume a producer or trader consumes an annual average of 7000-8000 liters of diesel or petrol at unit cost of 50 cents or 650 naira, to power their supply chain during a power outage. It brings an annual fuel cost-savings of 350-400 million dollars or 500-700 billion naira for every 100,000 trader in the supply chain. And for 10 million businesses in each nation, it gives a 100 multiplier effect of sustainability gains.

- **Inflation and interest rates** are double-edged economic tools for steering companies in today's decarbonizing world. Rising consumer inflation not only erodes purchasing power of individuals or households but also capable of wiping shareholder values or government reserves. For example, in companies and governments who borrowed in foreign currencies, inflation doubles their risk of debt distress and might disrupt their credit ratings in the nearest term. Likewise unstable interest rates do not provide ample opportunity for shareholders and management to plan for successful return on investment from their supply chain or else forecast a potential rebound during market-related failures.

2) What are the economic benefits of adopting sustainable supply chain practices for African companies?

- **Investor trust and loyalty** – Asset owners and institutional investors are incorporating ESG ratings and risks into investment decisions. The net-zero emissions agenda has a potential of over 50 trillion dollars for global growth from 2025 to 2070. By fixing gaps of transparency, reliability and consistency of sustainability related data, it will help boost access to capital, unlock market entry or expansion and enhance global competitiveness of companies in Africa.
- **Emissions control targets** – Multinational petroleum corporations and development finance institutions and private finance companies are divesting interests from fossil fuel powered supply chains in line with their pledges to climate transition planning, green project contracts, and sustainability reporting. This has boosted governance and stakeholder alignment to halving emissions in Africa, especially within the Bank, Manufacturing, Construction and Petroleum supply chains.
- **Loss and damage avoidance** – Communities will thrive better, families will live safely, and governments will suffer less-burdens from climate related emergencies including village landslides, coastal landslides, rising sea levels, urban-rural floods, urban-rural wildfires, damage to properties, loss of human lives, loss of basic livelihoods, loss of farmland or biodiversity, salt-water pollution, amongst others. Almost no country in the world is spared from these consequences.

3) How can small and medium-sized enterprises (SMEs) in Africa access financing for sustainable initiatives?

- Small and medium-sized enterprises can now target multidimensional financial institutions whose strategic focus is on inclusion for women or youths, and empowering climate-led transformation across Africa. Notable examples are National Banks of Industry, National Banks of Agriculture, National Development Banks, African Development Bank Group, African Export Import Bank and others. SMEs can benefit from credit guarantees, lower interests rates and long term facilities.

- First, **AfDB Affirmative Finance Action for Women in Africa** initiative was launched in the May 2016 AfDB Annual Meetings in Lusaka Zambia. It is bridging our 40+ billion dollars financing gap affecting women manufacturers, traders and service providers across over 26 member nations of Africa. It is supported by the World Bank Women Entrepreneurs Finance Initiative, G7 Countries of France Italy and Canada, Government of Netherland and Government of Sweden.

- Secondly, **AfDB Youth Entrepreneurship Investment Banks** initiative launched in its 2022 Annual Meetings in Accra Ghana, delivers credit guarantee schemes, investment funds and non-financial services to 13 African nations. It came with an allocation of 16 million dollars for its set-up in Liberia in 2023, and shall be launched in Nigeria with its existing 50-60 million dollars Youth Investment Fund of 2020. It will reach over 500,000 youth-led businesses, unlock 500 million dollars in lending and create over 2 million jobs across Africa.

- Thirdly, **AfDB Sustainable Energy Fund for Africa** which attracted combined finding of 72 million dollars in 2023 for nine projects with a generation capacity of about 3000 megawatts of renewable power, create over 160000 new jobs, and reduce over 8 million tons of Co2 emissions from supply chains. It hosts Africa Mini-Grids Acceleration Programme with a budget commitment of 7 million dollars to expand private sector investment in the Green Mini-Grids ecosystem.

- Fourthly, **African Energy Bank** jointly established by the African Petroleum Producers' Organization and African Export-Import Bank is being launched with its headquarters in Abuja Nigeria after approval during the 45th Extraordinary Session of APPO Ministerial Council in July 2024. The supranational financial institution backed with initial 5 billion dollars fund is aiming to solve the funding and technical gaps by Africa's oil and gas industry amid the global climate transition.

- Fifth, **Sustainable Energy for All (SE4ALL)** an international organization that works in partnership with the United Nations, to drive faster action towards SDG 7 – enhancing access to affordable, reliable, sustainable and modern energy for all by 2030. Some of its projects include the Universal Energy Facility for Clean Energy Project, African Carbon Markets Initiative, Renewable Energy Manufacturing Initiative, amongst others.

B) Environmental Sustainability:

- Wonders Pibowei, Leonelle Sandoval

4) What strategies are most effective for reducing the environmental impact of supply chains in Africa?

- The UN Global Compact gives a principle based approach on what a company's value system should be while reducing environmental impact of their operations and investments. This strongly aligns with the Rio Declaration on Environment and Development, ISO 14001 Standard on Environmental Management Systems, ISO 50001 Standard on Energy Management Systems, UNFCCC COP-27 Pledges, amongst other global conventions and national regulations. Businesses are now required by asset owners, contract providers and regulators in Africa or internationally, to develop and comply with in-house Policies and Plans on environmental risks of pollution, losses and damages, amongst others issues.

- Principle 7 of UN Global Compact holds that businesses should support a precautionary approach to environmental challenges. While, Principle 8 holds that businesses should undertake initiatives to promote greater environmental responsibility. Then, Principle 9 holds that businesses should encourage the development and diffusion of environmentally friendly technologies. By following these principles, businesses are more prepared to mitigate with, adapt to and recover from unfavourable environment impact affecting Africa's food and retail supply chain. They also demonstrate readiness and capacity for transition planning in line with expectations of asset owners, contract providers and regulators.

5) How can African supply chains leverage renewable energy and green technologies to enhance sustainability?

- **Optimizing Transport Routes and Speed** – The high volume of vehicles on the road, combined with long distances covered, heavy loads in transit, and bad quality of roads; frequently result in a significant amount of extra costs on transportation and higher carbon emissions. Businesses can optimize transport routes and speed, by adopting inter-state rail transport or shipments, and digitize freight forwarding processes.

- **Investing in Low Carbon Vehicles and Transport** – The use of rail transport and shipments are found to be more fuel efficient and help reduce footprint of carbon emissions with a less delivery vehicles on the road. Businesses can invest additionally in CNG-powered cargo trucks, solar-powered delivery bikes, low-rolling resistance tires, and fuel saving technologies; which leads to an optimal costing and profit margins.

- **Operating Low-Carbon Markets and Warehouses** – The use of bio-compressed natural gas (CNG), and bio-liquefied natural gas (LNG), are very reliable in reducing emissions from fossil-fuel sources including petrol and diesel. Investing in solar-powered battery systems, and wind power farms can provide uninterrupted renewable power supply for warehouses and factories in areas affected by unstable electricity.

6) What role does circular economy play in African supply chains, and how can it be effectively implemented?

Of the 7 billion tonnes of plastic waste globally, less than 10% are recycled. Food production and retail sector makes up the largest waste, ending up in oceans and environment. Much of the plastic waste block major drainages of highways and cause major flooding of offices, factories and homes during consistent rainfall. The rest which find their way into canals run through lagoons, oceans and rivers, sometimes finding their way to beaches and disrupting coastal livelihoods.

- **Investing in Recyclable or Biodegradable Packaging** – Production or procurement of packaging materials that are recyclable, or biodegradable, is a reliable circularity method in food and retail supply chains. They are lighter in weight, require less material to produce, and minimize total cost of production. The companies can also avoid industrial pollution and depletion of natural resources without affecting their bottom-line.

- **Organizing Raw Materials from Trade and Services** – Companies could own 20-30% of their circular raw materials and outsource 60-80% from traders and service providers locally. Notable examples are wine bottles, mason jars, drink cans, paper cartons, sanitary wares, old newspapers, used car tyres, amongst others. This reduces cost of importing packaging raw materials or investing in manufacturing of circular packaging.

C) Social Sustainability:

- Chimene Emejuru, Ngozi Ikeadigh

7) What measures can be taken to ensure fair labor practices and protect workers' rights within African supply chains?

- The United Nations Global Compact gives a principle based approach on what a company's value system should be while advancing fairer labour practices and protection of worker's right. This strongly aligns with the ILO Declaration on Fundamental Principles and Rights at Work, ISO 26000 Standard on Social Responsibility, ISO 45001 Standard on Occupational Health and Safety, amongst other regulations. Businesses are now required by asset owners, contract providers and regulators in Africa or internationally, to develop and comply with in-house Policies and Plans on workers welfare management, amongst others issues.

- Principle 3 of UN Global Compact holds that businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining. Collective bargaining mechanisms such as trade unions, can offer workers stronger representation when negotiating wages and social benefits including health insurance, third party insurance, group life insurance, amongst other things.

- Principle 4 of UN Global Compact holds that businesses should promote the elimination of all forms of forced and compulsory labour. While, Principle 5 focuses on the effective abolition of child labour. Then, Principle 6 focuses on the elimination of discrimination in respect of employment and occupation. By providing workers a fair wage, you improve their quality of life and mitigate underemployment. By prohibiting child labor, the next generation can go to school early in its prime, qualify for decent and well-paid jobs, and live a life of fulfillment in his or her community. Finally with proper training and creating a safe environment for workers, fatality rates would decrease thereby creating a healthier community.

8) How can supply chain practices positively impact local communities and contribute to social development?

- The UN Global Compact gives a principle based approach on what a company's value system should be while impacting local communities and enhancing social development. This strongly aligns with the Universal Declaration of Human Rights, ISO 9001:2015 Standard on Quality Management Systems), the United Nations Convention against Corruption, amongst other global and national regulations. Businesses are now required by asset owners, contract providers and regulators in Africa or internationally, to develop and comply with in-house Policies and Plans on human rights protection, host community trusts, amongst others issues.

- Principle 1 of UN Global Compact holds that businesses should support and respect the protection of internationally proclaimed human rights. While, Principle 2 holds that businesses should make sure they are not complicit in human rights abuses. Then, Principle 10 holds that businesses should work against corruption in all its forms, including extortion and bribery. These are critical for all supply chain players in African, especially those having contractual or financing relationships with international organizations and institutional investors. Failure to uphold human rights can lead to reputational, operational, and financial risks. It is also the role of management to de-risk human rights failures and related damages.

- Businesses must prioritize collaboration across the industry. By forming partnerships with suppliers, NGO's, and governments, companies can pool resources, share best practices, and address shared challenges. Collective efforts can drive systematic change as well as empower workers. By developing in-house suppliers codes of conduct or adapting that of asset owners and contract providers, businesses can lead sustainably. There should be expectations with suppliers in contracts providing them with a concrete framework for managing labor practices and protecting human rights. Governance and transparency is also key.

9) What initiatives are needed to promote gender equality and inclusivity in supply chain management in Africa?

- You can develop an inclusive supply chain by establishing board policies and management guidelines to promote gender equality and inclusion during staff recruitment, board nominations, supplier partnerships, and

client relationships. For example, backing suppliers owned or operated by majority of women, nominating women into board positions with fairer representation and strong voice to values, etc. You can also measure and react to supplier gender data. For example, number of women working with within your supply chain, or turnover of women client relationships. Finally, there is advocacy. You can support your company as well as advocate for gender equality initiatives and outcomes within your country.

D) Policy and Regulatory Frameworks

- Ngozi Keziah Ikeadigh, Chimene Emejuru

10) What are the key regulatory challenges facing sustainable supply chains in Africa?

- Dealing with the myriads of local regulations has been a major hurdle in trading within member states and with foreign investors. AfcFTA is expected to deliver some significant improvement on this. A harmonized regulatory pathway would significantly address this challenge.
- A large proportion of economic contribution from the informal sector of the economy stalls regulatory compliance and monitoring the same. Data and information is largely unavailable to monitor and evaluate for informed decision making.

11) How can governments and private sector entities collaborate to create conducive environments for sustainable supply chain practices?

To ensure compliance with environmental social and governance regulations, businesses can adopt various strategies, including:

- **Enterprise Risk Management**: Implementing a robust risk management framework that constantly assesses regulatory risks relating to strategic pursuits with international and regional investors. This plan should be scalable as the business expands.

- **Regulatory Audits**: Regularly conducting environmental audits, operational audits and regulatory impact assessments to promote compliance with applicable relevant laws, standards and regulations, such as ISO 9001, ISO 14001, ISO 53001, and ISO 53002, amongst others.

- **Training and Awareness**: Providing ongoing training and raising awareness among staff, vendors and stakeholders about regulatory requirements and best practices for ESG compliance.

- **Stakeholder Engagement**: Engaging with regulators, industry groups, supplier unions, host communities, and other stakeholders to stay informed about regulatory changes and compliance expectations. Scalable local regulatory frameworks would be needed to incentivize the informal sector.

- **Sustainability Assurance**: Tracking, assessing, monitoring, evaluating and documenting ESG performance and compliance efforts along the supply chain of organizations, through annual or quarterly sustainability reports to enhance transparency and improve stakeholder trust.

Future trends in the governance and regulations of supply chain sustainability are likely to be influenced by several factors, including:

- **Increased Stringency**: Stricter regulations aimed at mitigating evasion of corporate transition pledges and promoting more ambitious environmental targets, particularly in response to climate change.

- Closing the ever-increasing infrastructural deficit in the region, particularly in power supply, material factories, cross-border roads, rail networks, and deep sea-ports being a key dependency for sustainable supply chain is a golden opportunity to embed green practices therein.

- **Technology Integration**: Leveraging advanced technologies such as artificial intelligence for trade, national digital currencies and blockchain networks to enhance compliance monitoring and reporting.

- **Circular Economy Focus**: Shifting towards regulations that promote circular economy principles, emphasizing waste reduction, resource efficiency, and sustainable product design.

- **Global Harmonization**: Efforts to harmonize environmental regulations across countries and regions to facilitate global cooperation and reduce regulatory fragmentation.
- **Climate Adaptation and Resilience**: Developing regulations that not only mitigate environmental impact but also enhance resilience to climate-related risks.

12) What international standards and compliance requirements are most relevant to African supply chains, and how can companies meet these standards?

International environmental regulations and standards set the global framework for sustainable supply chains and their impact on people, planet and prosperity. Notable examples include:

- **World Trade Organization (WTO) Agreements**: This creates an international trade legal framework for more than 164 economies of the world. These agreements cover goods, services, intellectual property, standards, investments and other issues that impact the flow of trade. They include issues of Trade Facilitation, Rules of Origin, Import Licensing, Antidumping of Goods, Subsidies or Countervailing, Dispute Resolutions, Government Procurements, Financial Services, amongst others.
- **African Continental Free Trade Agreement (AfCFTA)**: Established in 2018 and has been ratified by 54 out of 55 member states (except Eritrea). Some of its flagship projects are: the Guided Trade Initiative (GTI) a pilot plan to allow commercially meaningful trading of over 90 products and testing of inter-regional policies across Africa, as well as Pan-African Payment and Settlement System (PAPSS) a real-time gross settlement infrastructure for cross border payments in distinct local currencies.
- **International Standardization Organization (ISO)**: Current frameworks and standards affecting supply chains primarily include: ISO 9001 (Quality Management Systems), ISO 20400 (Sustainable Procurement), ISO 28000 (Supply Chain Security Management System). While those focused on sustainability are emerging: ISO/WD 53001.2 (Management Systems for UN SDGs), ISO/PAS 53002 (Guidelines for contributing to the UN SDGs).

Prior to the issuance of IFRS sustainability disclosure standards known as ISSB Standards, many African nations and businesses have been disclosing their ESG impact, risks and opportunities through diverse laws, codes and principles. Stakeholders have recognized the need for equity, uniformity, and interoperability of environmental, social, and governance (ESG) regulations and standards.

- In **South Africa**, notable examples include the South African Climate Change Bill No.9 in 2022, National Emergency Management Laws Amendment Act No.2 in 2022, Carbon Tax Act No.15 in 2019, National Energy Act in 2008, Disaster Management Act No.57 in 2003, Integrated Coastal Management Act No.24 in 2008, Mineral and Petroleum Resources Development Act (MPRDA) No 28 in 2002, amongst others
- In **Kenya**, notable examples include the Carbon Credit Trading and Benefit Sharing Bill of 2023, Climate Change (Amendment) Act of 2023, Physical and Land Use Planning Act of 2019, Central Bank Guidance on Climate Related Risk Management of 2016, Forest Conservation and Management Act of 2016, Environmental Management and Coordination (Amendment) Act of 2015, National Drought Management Authority Act of 2016, Energy Management) Regulations 2012, Environment and Land Court Act of 2011.
- In **Nigeria**, notable examples include: the Nigerian Climate Change Act 2021, SEC Nigerian Sustainable Finance Principles 2021, Petroleum Industry Act 2021, NGX Sustainability Disclosure Guidelines 2019, FRCN Nigerian Code of Corporate Governance 2018, Standards Organisation of Nigeria Act 2015, Central Bank Principles on Sustainable Banking 2012, National Environmental Standards and Regulations Enforcement Agency Act 2007, Environmental Impact Assessment Act 2004, amongst others.
- In **Rwanda**, notable examples include the Ministerial Order No.04/2021 on Ozone Layer Depletion and Climate Change, Ministerial Order No.05/2021 for National Report on Climate Change, Law No.48/2018 on Protecting Conserving and Promoting the Environment against Climate Change, Law No.19/2016 on Air Quality and Prevention of Air Pollution, Law No.63/2013 on Rwanda Environment Management Authority, Law No.16/2012 on National Fund for Environment and Natural Resources, etc

E) Innovations and Technologies:

Leonelle Sandoval, Ikechi Agbugba

13) How can emerging technologies like blockchain enhance transparency and traceability in African supply chains?

Emerging technologies like blockchain can enhance African supply chains via:

- **Supply Chain Visibility**: Blockchain allows for transparency and traceability of products from origin to consumer. This visibility ensures that sustainable practices are followed throughout the supply chain.
- **Proof of Sustainability**: Consumers can verify the sustainability claims of products, such as organic farming practices, fair trade, or ethical sourcing, through immutable records on the blockchain.
- **Data Integrity**: Blockchain's decentralized nature ensures that supply chain data cannot be altered or tampered with, providing a secure and reliable record of transactions and product information.
- **Fraud Prevention**: The transparency and immutability of blockchain help prevent fraud and counterfeiting, ensuring that only genuine and sustainably sourced products are sold.
- **Streamlined Processes**: Smart contracts automate processes and transactions, reducing the need for intermediaries and minimizing administrative overhead expenses in the supply chain.
- **Reduced Waste**: By providing accurate and real-time data on inventory and demand, blockchain can help reduce overproduction and unnecessary waste in the supply chains, including warehousing and marketplace.
- **Verified Claims**: Consumers are more likely to trust products that have verifiable claims regarding their sustainability. Blockchain provides a trusted platform for these claims.

- **Empowered Consumers**: With access to detailed product histories and lifecylce, consumers can make informed choices about the sustainability of their purchased products or services.
- **Audit Trails**: Blockchain creates a comprehensive and accessible audit trail, making it easier for companies to comply with supply chain regulations and disclosure standards related to sustainability.
- **Certifications and Standards**: Blockchain can streamline the verification process for certifications and standards, such as organic products, fair trade practices, or LEED certification for buildings.

14) What are some successful examples of digital tools being used to manage sustainability metrics in Africa?

From sensoring and tokenization, to communication, data processing and visualization, these technology resources help lower throughput times and facilitate process automation. Key examples are

- **Website Carbon Calculator** – This helps provides a methodology for calculating carbon emissions linked to an online blog, ecommerce site and other websites. It additionally raises awareness on offsetting strategies and optimization tools to inspire a more sustainable internet for everyone. Examples are Google Lighthouse Tool, Nature Conservancy, Ecograder by Mightybytes, Digital Beacon Tool by Aline, WholeGrain Digital, etc.
- **Cloud Carbon Footprint Tool** – A free and open source tool that track, measure, review and forecast carbon footprint of your cloud usage, with insights into how it affects the environment, with actionable measures to reduce or mitigate it. Examples are Microsoft Cloud for Sustainability API, IBM Cloud Carbon Calculator, IBM Turbonomic, IBM Envizi ESG Suite, Google Cloud Carbon Footprint, Dell CloudIQ Carbon Footprint, etc.

- **Product Carbon Footprint Tool** – A free and open source tool that track, measure, review and forecast carbon footprint of your product usage, with insights into how it affects the environment, with actionable measures to reduce or mitigate it. Examples are Emissions Impact Dashboard for Azure, Emissions Impact Dashboard for MS 365, AWS Customer Carbon Footprint, HPE GreenLake Platform, Dell Product Carbon Footprint, etc.
- **Code Carbon** – A lightweight software package seamlessly integrated into your Python codebases calculate CO2 emissions generated by the cloud or from your computational activities. It provides developers with insights on monitoring and reducing emissions by optimizing code or choosing cloud infrastructure hosting locations with a reliance on renewable energy sources. While AI can bring various societal benefits, the energy demands of AI computing can impose a significant environmental cost.
- **Cities and Household Emission Tool** – Open source data and insights tool using exclusive data sources and modeling capabilities to help track and measure emission from buildings, rooftops, transportation, shopping, etc. For example, Google Fiber Impact Explorer, Google Data Commons, Nature Conservatory Calculator, UN Carbon Footprint Calculator, US EPA Carbon Footprint Calculator, OCE Global Carbon Footprint Calculator, Gallery Climate Coalition, CoolClimate Calculator, etc.
- **Natural Capital Assessment Tool** – They measure the impact of human activities on biodiversity and other ecosystems including, land-use change, loss of forests, loss of wetlands, soil-level waste pollutions, nitrogen gas emissions, phosphorus emissions, use of pesticides, etc. For example, Google Global Surface Water Explorer, Google Global Fishing Watch, Google Global Forest Watch, Defra Biodiversity Metric 4.0, Stanford University InVEST, Conservation International Carbon Footprint Calculator,

- **Smart Infrastructure Management Software** – Helping organizations involved with facilities, operations and property management, to manage smart infrastructure and improve utilization of hard assets such as buildings, power and vehicles. Examples of vendors are General Electric, Johnson Controls, Schneider Electric, Siemens Energy, IBM, and others.
- **Enterprise Carbon and Energy Management Software** – Designed to monitor, manage and report all carbon footprint and resource consumption across executive and operational roles of a company or startup. Examples of vendors are IBM Environmental Intelligence Suite, OneTrust ESG and Sustainability Cloud, SAP Cloud for Sustainable Enterprises, Salesforce NetZero Cloud, IFS Cloud Sustainability Hub, Diligent GRC, and others.

15) How can technology be leveraged to overcome logistical and infrastructural challenges in African supply chains?

From route optimization to real-time monitoring, inventory management, customs automation, quality verification, fraud control, national digital currencies, and cross-border payment systems, the incorporation of technology can significantly facilitate speed and moderate cost of production in African supply chains.

The **Pan-African Payment and Settlement System (PAPSS)** connects African banks, payment service providers and other financial market intermediaries to enable instant and secured payments from any local currency while simplifying the historical processes and costs of making payments. It has been adopted by Central Banks of Comores, Djibouti, Ghana, Kenya, Liberia, Malawi, Nigeria, Republic of Guinea, Sierra Leone, The Gambia, Tunisia, Zimbabwe and Zambia. It is used 50 deposit money banks and merchant banks in Africa, such as ABSA Bank, Access Bank, Ecobank, First Bank, GT Bank, Keystone Bank, Lotus Bank, Polaris Bank, Providus Bank, Stanbic IBTC, Standard Chartered, Sterling Bank, UBA, Unity Bank, Union Bank, WEMA Bank, Zenith Bank, and others.

The **Single Window for Trade** eases completion, submission and processing of import and export related applications such as Customs declaration, Customs permit, Customs licenses, shipping manifests, fees settlement, taxes settlement, and revenue tracking. Acting both as a data collector and transactional portal, it verifies documents for consistency and traceability, while mitigating significant errors and fraud incidence. This trade digital automation has proven to be a high valuable safeguard under the harshest conditions especially during the Covid-19 pandemic and lockdown which halted physical operations across supply chains.

The adoption of **electronic visa and passports** has emerged as one of the most innovative services enhancing the freedom of movement and people-to-people contacts. E-Visa allows the management of VISA application processes entirely online, including visa fee payments, and feedback decisions. It enhances cost savings on Embassy visits and time savings by Embassy staff. 23 African nations adopted e-visa system as at 2022, including Angola, Benin, Cote d'Ivoire, Camerooon, Djibouti, Egypt, Ethiopia, Gabon, Guinea, Kenya, Lesotho, Malawi, Madagascar, Morroco, Mozambique, Nigeria, Rwanda, Tanzania, Sao Tome and Principe, Sierra Leone, South Africa, Uganda, Zambia, Zimbabwe, and others.

ABOUT THE SPEAKERS

1) Wonders Ebimotimimowei Pibowei - Cofounder of Evegrocer Africa

Principal and Board Vice Chairman of Lowase Management Consulting from 2021 to date
Formerly a Contracts, Finance and People Executive at Strides Energy and Maritime Limited,
Holds a Ph.D. Taxation (2024), M.Sc. Financial Accounting (2020), B.Sc. Accountancy (2016),
Diploma in National Health Laboratory Systems at Empower School of Health, Geneva (2021)
Urban Agriculture Soilless Program Certificate at University of the District of Columbia (2021),
Financial Modelling and Valuation Analyst at the Corporate Finance Institute Vancouver (2022),
Women Entrepreneurship Certificate at the Cornell University Bank of America Institute (2023),
Sustainable Finance Certificate at University of Oxford Public & Third Sector Academy (2024),
Judge at the Kellogg Morgan Stanley Sustainable Investing Challenge USA (2022 to 2024),
Sustainability & Environment Business Council Member at the International Trade Council

2) Leonelle Sandoval – COfounder of Evegrocer Africa

Founder and Chief Executive Officer at Evegrocer Zero Waste Corporation in Philippines, Asia
Holds a MBA at Southville Int'l School, and BA in Industrial Psychology at De La Salle University
Certificate in Founders Program at Western Morrissette Institute for Entrepreneurship Canada,
18 years track record of leading international trade value chains and environmental companies,
Alumni at UNDP ISIP Social Impact Accelerator Program for Filipino Social Enterprises 2022,
Global Finalist in Rhode Island 2023, and 2021 2nd Place Runner-up at Go Global Awards,
Organizer Climathon Paranaque in 2020 and 2021, Alumni Techne Summit Alexandria 2023,
Finalist at Climate Launchpad 2020, and National Champion at ECW100 Startup Pitch 2020,
Sustainability Member at the International Trade Council and GIZ Prevent Waste Alliance.

3) Ngozi Keziah Ikeadigh - Independent Advisor, Compliance Risk and Governance

Risk and Compliance Manager at UAC Property Development Company, Nigeria (2019 to date)
Consults for startups and companies on business facilitation and corporate governance issues
Trustees Training Certificate at Institute of Chartered Accountants England and Wales, 2024
Certificate in Macroeconomics of Climate Change at the International Monetary Fund, 2023
Certificate in Project Management for Development at the PM4DEV Organization USA, 2019
Diploma in Management Accounting at Chartered Institute of Management Accountants 2014
Bachelor of Science B.Sc. degree in Accountancy at University of Nigeria Nsukka (1999 to 2004)
Formerly, Internal Auditor, and Finance Analyst at JAGAL Group, Lagos Nigeria (2011 to 2019)
Formerly, Treasury and Accounts Officer at Maxim Drugs Limited, Lagos Nigeria (2007 to 2011)

ABOUT THE SPEAKERS

4) Chris Chimene Emejuru - Independent Advisor, Global Brands and Partner Relations
Managing Partner and Board Member at Lowase Management Consulting, USA from 2021 to date
BBA Communications at Walden University and Management Associate at Santiago Canyon College
Certificate in UN Sustainable Development, Climate Change Reporting, and Sustainability Reporting
Certificate in Fundraising Management, Investment Foundations, and Mentor Driven Capital Program.
Business Council Member in Venture Capital, Foreign Direct Investment at International Trade Council
Mentor, VC4A Challenge Fund for Employment with Palladium, Randstad & VSO Netherland in 2024.
Mentor, United Nations SDSN Youth Investment Readiness Program with Think Bikes Limited, 2022.
Mentor, Venture Capital for Africa (VC4A) Mentor-Driven Capital Program with Grill & Chow , 2022.

5) Ikechi Kelechi Agbugba - Independent Advisor, Agritech and Agribusiness Innovation
Consultant and International Adviser at the Food Security Consortium in United States and Africa (2024)
Chairman of AOTA Committee at the International Conference on Business Models in Agriculture (2024)
Honorary Associate Professor in Food Security and Development at University of Birmingham (2023 …)
Faculty at Tennessee State University, York St John University, Lovely Professional University (2023…)
Consultant on CD4D2 training in Horticultural Seedlings Production at IOM UN Migration (2021 to date)
Faculty at Rome Business School (2019 - date), Senior Lecturer at Rivers State University (2016 to date)
Post-Doctoral Fellow on Smallholder Development at University of Forte Hare, South Africa (2015 - 2017)
Ph.D., M.Sc. and B.Sc. degrees in Agricultural Economics, at University of Nigeria Nsukka (2000 to 2014)

Evegrocer Africa - A global subsidiary of Evegrocer Zero Waste Corp. Philippines. It serves as a net-zero food aggregator that designs, develops and deploys low-cost clean power-sources and green technologies in 100 food supply chain hubs per country, with potential of serving 250k target B2B2C buying population annually. We help to: 1) Combat hunger and food insecurity, with over 5-million prospective final consumers, 2) Cut-off 4-5 billion kg Co2 of GHG emissions per annum from logistics and retail sector, 3) Combat post-harvest farm losses with cost-savings of over 1.05 billion dollars annually, and 4) Control any environmental and ocean-related pollution in packaging wastes by millions of customers.

Website: https://evergocer.com ***Venture Capital:*** https://vc4a.com/ventures/evegrocer-africa

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