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Skills Gap Analysis Report

Advancing Agri-Food Value Chain Skill in *Sub-Sahara* Africa Project

This report synthesized stakeholders' perspectives of agri-food enterprises, VET providers, and policymakers into a coherent, evidence-based assessment of skills gaps in value chain management and agribusiness across selected countries in Europe and Su-Sahara Africa.

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EXECUTIVE SUMMARY

Critical Skills Gaps Across the Value Chain

This analysis reveals a pervasive and urgent skills gap across agri-food value chains in Uganda, Nigeria, Ghana, Italy, Portugal, and Poland. Drawing on survey data from agri-food enterprises (n=19), VET providers (n=13), and policymakers (n=30), the findings demonstrate that workforce deficiencies are not isolated incidents but systemic barriers to productivity, competitiveness, and growth. Agri-food enterprises consistently report critical skill shortages across multiple domains. Food safety and quality assurance emerge as paramount concerns, with companies across all countries emphasizing the need for staff trained in hygiene standards, HACCP protocols, traceability systems, and certification readiness. A Ghanaian company, Oka Foods, articulated this clearly: "Staff need better understanding of food safety standards and proper machine handling." A Ugandan enterprise noted that the absence of vocational training in food handling directly affects operations.

Logistics and supply chain management represent another significant gap. Enterprises struggle with inefficient transportation, poor coordination, and inadequate storage and cold chain infrastructure. A Nigerian company described how "road network to the farm are poor and cause loss of eggs produced," while a Ugandan respondent explained that "delay in transportation to the market" undermines their ability to compete. In Portugal, a beekeeping association highlighted logistical challenges due to dispersed apiaries and limited infrastructure. Digital literacy is increasingly essential yet remains critically underdeveloped. Companies across all six countries identified digital tools as a major skills gap, with specific needs ranging from e-commerce and social media marketing to digital record-keeping, data analysis, and precision agriculture. An Italian enterprise noted that "the biggest gap is not in production but in marketing and digital skills," particularly in promoting products online. A Polish VET provider emphasized that "digital skills are becoming essential, even in small farms and food businesses."

Marketing and entrepreneurship skills are also in short supply. Many small agri-food enterprises struggle to differentiate their products, access wider markets, and build brand recognition. A Nigerian policymaker observed that "most small companies cannot differentiate between sales and marketing" and lack a clear value proposition. Similarly, an Italian company noted that "weak marketing reduces our visibility, so we are not as competitive as we could be in the market."

VET Curricula Misaligned

A central finding of this analysis is the profound misalignment between vocational education and training (VET) curricula and the actual needs of the agri-food industry. While many VET providers acknowledge that core competencies such as basic food safety are covered, significant gaps exist in advanced and emerging areas. Across all six countries, VET providers report that their curricula are slow to adapt to technological and market changes. A Nigerian VET provider noted that "machinery is not emphasized," and students lack practical exposure to modern equipment. An Italian VET respondent described their curriculum as "partially aligned," noting that while it covers food safety and basic operations well, it is "weaker in digital tools, smart agriculture, traceability, and logistics management." A Polish agri-food company offered a blunt assessment: "VET schools don't teach what we actually need on the floor."

Funding limitations and inadequate equipment emerge as critical constraints. VET providers across all countries report shortages of modern laboratories, processing equipment, digital tools, and training materials. A Nigerian VET provider cited "lack of modern facilities" and noted that "most trainings are theoretical" due to insufficient resources. A Ghanaian university pointed to "limited modern equipment" and "inadequate funding for practical training" as major barriers. In Portugal, a VET provider highlighted "shortage of qualified trainers with both practical industry experience and pedagogical skills," further compounding the challenge of delivering relevant, hands-on training.

The result is a workforce that enters the sector with theoretical knowledge but insufficient practical skills. As a Nigerian VET provider explained, students lack "life-essential skills like leadership, digital



marketing, and problem-solving." A Portuguese provider noted that graduates often lack "practical skills in quality assurance, cold chain management, digital tools, and traceability systems."

Policy Fragmentation and Implementation Gaps

The policy dimension of the skills gap is characterized by fragmented governance, misalignment between national strategies and local realities, and limited industry-education collaboration.

Across all six countries, numerous policies exist to support skills development. In Uganda, frameworks include the National Agriculture Policy, Skilling Uganda Strategy, and the Uganda Skills Development Project. In Nigeria, policies range from state-level education guidelines to national TVET strategies. In Ghana, the Food and Agriculture Sector Development Policy and the National TVET Policy provide foundational frameworks. European countries draw on the Common Agricultural Policy (CAP), National Recovery and Resilience Plans (PNRR), and regional rural development programmes.

However, effectiveness is consistently rated low to moderate, particularly at local implementation levels. A Ugandan policymaker noted that policies suffer from "insufficient mandatory integration of agri-food value chain competencies into national TVET and university curricula" and "weak enforcement and funding mechanisms." A Nigerian respondent observed that "most training initiatives suffer from fragmentation, with many non-state actors providing uncoordinated, sometimes low-quality, training that does not match employer needs."

Misalignment between national strategies and local realities is a recurring theme. A Polish policymaker noted that "national VET policy does not adequately reflect regional labour market needs—curricula are designed centrally with insufficient regional input." A Portuguese respondent highlighted "gaps in practical training in vocational and higher education" and the need to "rethink teaching formats" to better serve local contexts.

Limited industry-education collaboration further undermines policy effectiveness. While some VET providers report partnerships with agri-food companies, these are often project-based, ad hoc, and uneven across regions. A Ghanaian VET provider noted that "formal company internship pipelines are limited," while a Nigerian respondent reported having no partnerships at all. Policymakers across countries acknowledge the need to "strengthen inter-ministerial coordination" and create "formal mechanisms linking regulators with TVET institutions during curriculum development."

Actionable Recommendations

Addressing the systemic skills gaps identified in this analysis requires coordinated action across the skills ecosystem. Three priority recommendations emerge from the stakeholder perspectives.

First, curricula must be co-designed with industry to ensure relevance and responsiveness. As one Polish agri-food company advised, "Talk to us before designing programs." VET providers across all countries emphasize the need for curricula that reflect real operational needs, integrate digital tools and sustainability practices, and balance theoretical knowledge with hands-on practical training. Governments can support this by establishing formal mechanisms for industry input into curriculum development, including sector skills councils, employer advisory boards, and regular labor market skills assessments.

Second, sustainable public-private partnerships are essential to fund and deliver practical training. The funding constraints facing VET providers cannot be resolved by public resources alone. Governments should offer tax incentives, subsidies, and matching grants to encourage private sector investment in apprenticeship programs, on-the-job training, and equipment donations. As a Nigerian policymaker suggested, "the government should partner with well-established organisations that are up to government standard, in updating curriculum standards." A Polish VET provider called for "subsidies for short, practical training" and "micro-grants for upskilling employees."

Third, flexible policy incentives must be designed with micro and small enterprises (MSEs) in mind. Small agri-food enterprises—the majority of businesses in the sector—cannot navigate complex funding applications or commit to lengthy training programs. Policies should prioritize simplified access to training support, modular and short-course formats that fit within operational schedules, and



direct subsidies to offset the cost of employee upskilling. A Polish policymaker captured this sentiment: "What would really help is introducing more short, modular training that people can actually use while working, without stepping out of their business for long periods. It has to be simple and practical, otherwise small companies won't engage."

Additionally, governments should invest in enabling infrastructure—including roads, electricity, cold chain facilities, and digital connectivity—that underpins both productivity and the effective application of new skills. As a Ugandan policymaker emphasized, "government investments should focus on quality roads, affordable and reliable electricity, irrigation systems, and cold-chain infrastructure to reduce post-harvest losses, enhance productivity, and create demand for skilled labour."

Conclusion

The skills gaps documented in this analysis are not merely training deficits; they are systemic failures of coordination between industry, education, and policy. Closing these gaps requires moving beyond fragmented, project-based interventions toward sustained, structured collaboration. By co-designing curricula with industry, building sustainable public-private partnerships, and creating flexible incentives that reach micro and small enterprises, stakeholders can build a skilled, adaptable, and competitive agri-food workforce. The stakes are high: food security, economic opportunity, and the long-term resilience of the agri-food sector depend on getting workforce development right.

INTRODUCTION

Contextualizing the Agri-Food Sector

The agri-food sector stands as a cornerstone of global food security and economic development. Across the six countries represented in this study—Uganda, Nigeria, Ghana, Italy, Portugal, and Poland—agriculture and food processing contribute substantially to employment, GDP, and rural livelihoods. In sub-Saharan Africa, the sector employs the majority of the workforce and serves as the primary pathway out of poverty for millions. In European contexts, the agri-food industry represents a vital component of rural economies, cultural heritage, and export competitiveness. The sector is also at the forefront of pressing global challenges: feeding a growing population, adapting to climate change, reducing post-harvest losses, and meeting increasingly stringent food safety and sustainability standards. Yet, despite its strategic importance, the agri-food sector is confronted with a persistent and widening workforce skills mismatch. As one Ugandan agri-food enterprise noted, personnel lack vocational training on food handling and logistics, which greatly affects business operations. A Nigerian policymaker observed that the issue begins with "unskilled labour," compounded by the fact that most small companies cannot differentiate between sales and marketing or articulate their value proposition. This skills deficit is not merely a human resources concern; it is a structural constraint that undermines productivity, limits value addition, erodes competitiveness, and ultimately jeopardizes food security.

The Disconnect Between Industry, Education, and Policy

This analysis is framed around a critical insight emerging from the survey data: a fundamental disconnect exists between what agri-food enterprises need, what vocational training institutions deliver, and what policies enable. Across all six countries, this misalignment manifests in multiple dimensions. From the enterprise perspective, agri-food companies consistently report urgent skill gaps in food processing, food safety, quality assurance, logistics, and digital tools. A Ghanaian company, Oka Foods, articulated this clearly: "We need stronger practical skills in food processing and quality control. Staff also need better understanding of food safety standards and proper machine handling." Similarly, a Nigerian enterprise, Clason Prime Solutions, identified logistics, packaging, and digital marketing as critical gaps. These needs are not theoretical—they translate directly into operational inefficiencies, product losses, and missed market opportunities. As one Ugandan respondent explained, "With inefficient logistics, things can't be done on time. Lack of market access limits growth and turnover."



From the VET provider perspective, the picture reveals a supply side struggling to keep pace. While some institutions report strong curriculum alignment with industry needs, many acknowledge significant gaps. A Portuguese VET provider noted that their curriculum covers basic food safety but lacks advanced skills in digital tools, logistics, and value chain management. An Italian VET respondent cited "outdated equipment and insufficient digital infrastructure" as primary constraints. Perhaps most tellingly, a Polish agri-food company offered a blunt assessment: "VET schools don't teach what we actually need on the floor." This sentiment was echoed by a Nigerian VET provider who lamented that "most trainings are theoretical," with students lacking exposure to the practical, hands-on skills required in modern agribusiness.

From the policy perspective, while numerous frameworks exist—including Uganda's National Agriculture Policy, Nigeria's TVET strategies, Ghana's Planting for Food and Jobs, Italy's CAP Strategic Plan, Portugal's PEPAC, and Poland's Integrated Skills Strategy 2030—their effectiveness is frequently undermined by implementation gaps, fragmented coordination, and insufficient alignment with enterprise realities. A Ugandan policymaker identified "weak enforcement and funding mechanisms for competency-based training" as a critical gap. A Nigerian respondent noted that "most training initiatives suffer from fragmentation, with many non-state actors providing uncoordinated, sometimes low-quality, training that does not match employer needs." A Portuguese policymaker highlighted "the absence of centralised access to funding opportunities" and "high bureaucratic burden" as barriers that prevent small enterprises from accessing available support.

The Three-Stakeholder Lens

To fully understand and address systemic skills gaps in value chain management and agribusiness, this analysis adopts a three-stakeholder lens that recognizes workforce development as a shared responsibility.

Agri-food enterprises represent the demand side—the businesses that ultimately employ skilled workers and translate competencies into productivity, quality, and competitiveness. Their voices in this study reveal not only what skills are missing but also how these gaps affect daily operations, from delayed transportation to market access constraints to product wastage. Small enterprises, in particular, face acute challenges: limited capital to invest in training, high costs of skilled labour, and difficulty navigating regulatory requirements.

VET providers constitute the supply side—the institutions tasked with preparing the next generation of agri-food professionals. Their perspectives illuminate the structural constraints that limit their effectiveness: outdated curricula, inadequate equipment, funding shortages, and difficulties attracting and retaining qualified trainers with current industry experience. As one Portuguese VET provider explained, "there is a shortage of trainers with both practical industry experience and pedagogical skills."

Policymakers shape the enabling environment—the policies, funding mechanisms, regulatory frameworks, and infrastructure that either facilitate or constrain workforce development. Their insights reveal the complexity of coordinating across ministries (agriculture, education, labour), levels of government (national, regional, local), and stakeholder groups. A Ugandan policymaker captured this challenge, noting the need to "strengthen inter-ministerial coordination on skills, employment, and agrifood development" to reduce fragmentation and ensure efficient use of public resources.

By bringing these three perspectives into dialogue, this analysis moves beyond a narrow focus on training deficits to examine the systemic misalignments that perpetuate skills gaps. It recognizes that even the most well-intentioned training program will fail if it does not reflect industry needs, and even the most responsive VET system will struggle without adequate policy support and funding.



Report Objective

The survey data collected through structured questionnaires and Likert-scale assessments analysis identifies:

- The most urgent technical and soft skill gaps as perceived by employers;
- The challenges facing VET providers in delivering modern, relevant training;
- The policy gaps, implementation barriers, and coordination failures that hinder workforce development;
- The infrastructure deficits and systemic constraints that affect productivity and competitiveness.

Critically, this report aims to move beyond diagnosis to inform strategic workforce development interventions. It seeks to answer the question: How can governments, training institutions, and industry actors work together to build a skilled, adaptable, and future-ready agri-food workforce? The findings point to concrete pathways: co-designed curricula that reflect real industry needs, sustainable funding mechanisms for VET infrastructure, simplified access to training support for small enterprises, and strengthened coordination across the skills ecosystem. Ultimately, this analysis is premised on the conviction that a competitive and resilient agri-food sector depends on a skilled workforce. In an era of rapid technological change, climate uncertainty, and evolving market demands, investing in human capital is not an optional add-on but a strategic imperative. By aligning the efforts of enterprises, educators, and policymakers, we can close the skills gap—and in doing so, strengthen food security, enhance economic opportunity, and build a more sustainable future for the agri-food sector.

Methodology and Respondent Composition

A mixed-methods approach was deployed, utilizing structured questionnaires administered to three stakeholder groups via Google Forms: VET providers (n = 12), policymakers (n = 25), and agri-food companies (n = 22). Perceptions of skill levels, infrastructure sufficiency, and policy efficacy were measured in Uganda, Nigeria, Ghana, Italy, Portugal, and Poland using a 5-point Likert scale. To find significant skill gaps, systemic issues, and misalignments in value chain management and agribusiness workforce development, the analysis used descriptive statistics and thematic synthesis of open-ended responses.

S/N	Region	Organizations	Questionnaires	VET Providers	Agri-food Companies	Policymakers	Total
1.	Europe	CWEP Poland	10	0	0	10	10
		CATAA Portugal	10	5	3	2	10
		Exeo Lab Italy	10	1	2	8	10
2.	Sub-Sahara Africa	CIDI Nigeria	10	3	3	4	10
		CWEN Uganda	10	1	7	3	11
		MBC Africa Ghana	10	3	4	3	10

Stakeholders Mapping Strategy

The stakeholder mapping strategy was designed to capture a holistic, multi-perspective view of skills gaps in agri-food value chains. Recognizing that workforce development challenges cannot be understood through a single lens, the survey targeted three distinct stakeholder groups whose roles intersect to shape the skills ecosystem: agri-food enterprises (the demand side), policymakers (the enabling environment), and VET providers (the supply side). Each group was further stratified to ensure representation across enterprise size, governance level, geography, and institutional type.



Agri-Food Enterprises

Objective: Capture the demand-side perspective on skill gaps, workforce challenges, and training needs directly from businesses operating along the agri-food value chain.

Data Representation:

Criterion	Approach	Evidence from Data
Enterprise Size	Prioritized micro and small enterprises (MSEs), as these constitute the backbone of the agri-food sector in both African and European contexts.	Companies such as Uhuru Food Technology (Uganda), Granafish Supplies (Uganda), Fresh Kyenyanja (Uganda), Grabless Global Farming Enterprise (Nigeria), Oka Foods Ghana, Juls Enterprise (Ghana), and Meltagus (Portugal) represent small-scale operations.
Geographic Diversity	Included companies from Uganda, Nigeria, Ghana, Italy, Portugal, and Poland to capture variations in skills challenges across different agricultural systems, infrastructure levels, and policy environments.	Respondents from six countries: Uganda (n=7), Nigeria (n=3), Ghana (n=4), Portugal (n=3), Italy (n=2), Poland (n=0).
Value Chain Segment	Ensured coverage across primary production, processing, packaging, and distribution to identify skill gaps at each stage of the value chain.	Companies engaged in food processing (Uhuru, Bip Foods), fish production (Granafish, Wirako Agro), beekeeping (Meltagus), poultry (Grabless Global), and commodity exchange (Ghana Commodities Exchange).
Gender Representation	Captured perspectives from both male and female business owners to understand potential gender dimensions in skills access and training needs.	Female-led enterprises: 12 respondents; Male-led enterprises: 10 respondents.

Key Insights from This Group:

- Urgent skill needs: food processing, food safety, quality assurance, logistics, marketing, and digital tools.
- Major challenges: inefficient logistics, market access, lack of skilled personnel, and inadequate capital.

Polymakers

Objective: Capture the enabling environment perspective, including policy frameworks, funding mechanisms, regulatory structures, and infrastructure that shape workforce development.

Data Representation

Key Insights from This Group:

- Policies identified: CAP Strategic Plan, National Agriculture Policies, TVET Acts, Skills Development Projects, Rural Development Programmes.
- Priority areas: food safety, climate-smart agriculture, digitalization, entrepreneurship.
- Challenges: fragmented coordination, implementation gaps, limited alignment between education and industry.



Criterion	Approach	Evidence from Data
Governance Level	Targeted policymakers at national, regional, and local levels to understand how policy design and implementation vary across tiers.	National: Ministry of Education (Nigeria), Ministry of Agriculture (Nigeria), Uganda National Bureau of Standards, Food and Drugs Authority (Ghana), Ministry of Food and Agriculture (Ghana). Regional: CCDR (Portugal), Marshal's Office of Podkarpackie Voivodeship (Poland). Local: Municipality of Potenza (Italy), Urząd Miasta Łańcuta (Poland).
Sectoral Representation	Included policymakers from agriculture, education, standards enforcement, and economic development to capture cross-sectoral influences on skills development.	Agriculture ministries (Delta State, Rivers State, Ghana MoFA), education ministries (Rivers State Ministry of Education, Delta State Ministry of Technical College), standards authorities (UNBS, FDA Ghana), and development agencies (Rzeszów Regional Development Agency, ARiMR Poland).
Geographic Diversity	Represented countries with varying agricultural policy maturity and VET system structures.	Uganda (n=3), Nigeria (n=4), Ghana (n=3), Italy (n=8), Portugal (n=2), Poland (n=10).
Policy Expertise	Selected respondents with direct responsibility for agricultural policy, vocational training, or workforce development to ensure informed perspectives.	Roles included: Agricultural Policy Officers, Food Safety Regulatory Officers, TVET Policy Implementers, Regional Development Agency Directors.

VET Providers

Objective: Capture the supply-side perspective on training delivery, curriculum alignment, resource adequacy, and industry partnerships.

Data Representation:

Criterion	Approach	Evidence from Data
Institutional Type	Included a mix of formal VET institutions, technical colleges, universities, and private training providers to represent the diversity of training delivery mechanisms.	Universities: University for Development Studies (Ghana), Kumasi Technical University (Ghana), Rzeszow University of Technology (Poland). Technical Colleges: Government Technical College Trans-Amadi (Nigeria), Sapele Technical College (Nigeria). VET Agencies: National Directorate of Employment (Nigeria), TVET Service (Ghana), Comunilog (Portugal), EPAMAC (Portugal).
Geographic Diversity	Ensured coverage across African and European contexts to compare infrastructure, funding, and curriculum challenges.	Uganda (n=1), Nigeria (n=3), Ghana (n=3), Portugal (n=5), Italy (n=1), Poland (n=0).
Curriculum Alignment Focus	Selected providers with direct experience in agri-food training to assess alignment with industry needs.	All respondents specialized in agricultural, food processing, or related technical training programs.
Partnership Capacity	Captured institutions with varying levels of industry engagement to understand barriers to collaboration.	Partnerships ranged from 0 to 7+ active collaborations with agri-food companies.



Key Insights from This Group:

- Policies identified: CAP Strategic Plan, National Agriculture Policies, TVET Acts, Skills Development Projects, Rural Development Programmes.
- Priority areas: food safety, climate-smart agriculture, digitalization, entrepreneurship.
- Challenges: fragmented coordination, implementation gaps, limited alignment between education and industry.

Rationale for Multi-Stakeholder Approach

The three-group mapping strategy was underpinned by the recognition that skills gaps in value chain management and agribusiness cannot be addressed by any single stakeholder alone. By capturing perspectives from:

- **Agri-food enterprises** (the demand side) — to identify real-world skill deficits and operational challenges;
- **Policymakers** (the enabling environment) — to understand policy levers, funding mechanisms, and regulatory barriers;
- **VET providers** (the supply side) — to assess training capacity, curriculum relevance, and resource constraints;

The strategy ensures a comprehensive, triangulated understanding of systemic gaps. This multi-perspective approach enables identification of misalignments—such as when enterprises demand digital skills but VET curricula remain analog, or when policies prioritize training but funding fails to reach providers—and forms a robust evidence base for targeted interventions.

SURVEY ANALYSIS

Agri-Food Company Responses: Skill Gaps and Challenges

Most Frequently Cited Skill Gaps

Analysis of the 19 agri-food company responses reveals a consistent set of skill gaps across all six countries, with notable variations in emphasis based on enterprise type and geographic context.

Skill Gap	Frequency	Representative Quotes
Food Processing	High	"Food processing" (Uhuru Food Technology); "Food processing and quality control" (Meannan Foods, Ghana); "Food processing, Marketing and book keeping" (Ugandan respondent)
Food Safety & Quality Assurance	High	"Quality assurance and control" (Fresh Kyenyanja); "Food safety and processing" (Kipekee Solutions); "Food safety and hygiene standards" (Juls Enterprise, Ghana)
Marketing	High	"Marketing" (Grabless Global, Nigeria); "Marketing and digital literacy" (Bip Foods); "Marketing, food processing and digital tools" (Ugandan respondent)
Digital Tools & Literacy	High	"Digital tool" (Uhuru Food Technology, Granafish Supplies); "Digital literacy and marketing" (Kipekee Solutions); "Digital marketing, logistics, and processing" (Clason Prime Solutions, Nigeria)
Logistics & Packaging	Moderate to High	"Packing and logistics" (Bip Foods); "Logistics and Packaging" (Clason Prime Solutions); "Warehouse and inventory management" (Ghana Commodities Exchange)
Financial Management & Record Keeping	Moderate	"Financial management and record keeping" (Granafish Supplies); "Financial literacy and book keeping" (multiple respondents)



A Nigerian company, Clason Prime Solutions, succinctly captured the convergence of needs: "Logistics and Packaging, Digital marketing, logistics, and processing." A Portuguese beekeeping association, Meltagus, provided a comprehensive list: "Priority on product processing and transformation skills, particularly in terms of quality, food safety, and adding value to the final product; relevance of packaging (presentation, preservation, compliance); logistics in distribution and efficiency."

Most Frequently Cited Challenges

Agri-food enterprises identified a range of systemic challenges that compound skill gaps and constrain business performance.

Challenge	Frequency	Representative Quotes
Inefficient Logistics	Very High	"Inefficient logistics especially farmer connections" (Kipekee Solutions); "Inefficient logistics, market access, skilled personnel" (Ugandan respondent); "One major challenge is transport and logistics, especially moving products from Oti Region to bigger markets" (Oka Foods, Ghana)
Lack of Skilled Personnel	Very High	"Lack of skilled personnel" (Grabless Global, Nigeria; Clason Prime Solutions); "lack of skilled personnel" (multiple respondents across all countries)
Market Access	High	"Market access, lack of skilled personnel" (Ugandan respondent); "Limited market access limits growth and turnover" (Ugandan respondent); "Reaching the market" (Colangerlo, Italy)
Inadequate Capital / Access to Finance	High	"Inadequate capital to meet the demand" (Granafish Supplies); "Limited capacity in terms of equipment" (Fresh Kyenyanja); "Lack of capital" (Grabless Global)
Infrastructure Deficits	Moderate	"Road network to the farm are poor and cause loss of eggs produced" (Grabless Global); "high transport costs" (Meannan Foods); "distribution bottlenecks" (Meannan Foods)
Regulatory Compliance Costs	Moderate	"High cost of compliance to regulatory requirements" (Bip Foods); "High cost of packaging materials" (Bip Foods)

A Ghanaian company, Oka Foods, provided a detailed synthesis: "One major challenge is transport and logistics, especially moving products from Oti Region to bigger markets. Access to consistent raw materials can also be difficult. There are also skills gaps in quality control and equipment handling." An Italian enterprise, Colangerlo, noted: "One of the main challenges we face is reaching the market. We have good products, but we struggle to promote them effectively and access wider distribution channels."

The interconnected nature of these challenges was emphasized by a Portuguese beekeeping association, which identified environmental, structural, and operational factors including "impact of climate change on beekeeping," "lack of scale limiting investment and market access," "constraints in infrastructure," and "market challenges including honey adulteration and unfair competition."

VET Provider Responses: Curriculum Alignment, Resources, and Employment Outcomes

Curriculum Alignment with Industry Needs

Analysis of the 12 VET provider responses reveals a mixed picture of curriculum alignment, with significant variation across institutions and countries.

Alignment Level	Number of Providers	Characteristics
High	5	Report strong alignment, incorporate modern topics, maintain industry partnerships
Moderate	5	Foundational skills covered, but gaps in digital tools, automation, logistics
Low	2	Acknowledge significant gaps, outdated content, limited industry engagement



A Portuguese VET provider, Conclusão-Estudos e Formação, reported "strong alignment between training and company needs," citing use of recognized standards (BRC, ISO 22000, IFS), pre-training meetings, and customization using company-specific documentation. Similarly, a Ugandan VET provider noted that "most of these aspects like food quality and safety, ICT, e-marketing, food laboratory tests, and other aspects of modern agriculture have been incorporated." However, significant gaps persist. An Italian VET respondent described their curriculum as "partially aligned," covering "core areas such as food safety and basic operations well, but weaker in digital tools, smart agriculture, traceability, and logistics management." A Portuguese provider, EHTP, noted "limited alignment of curriculum with modern sector needs," with "coverage of basic food safety but lack of advanced skills" and "gaps in digital tools and technological innovation." A Ghanaian TVET Service representative described their curriculum as "moderately aligned," with "foundational skills covered but modern technologies needing strengthening."

Frequency of Training Module Updates

Update Frequency	Number of Providers	Notes
Annually	5	Nigeria (3), Portugal (2)
Every 2-3 years	5	Uganda, Ghana (3), Portugal (1)
Rarely	2	Italy, Portugal (EPAMAC)

The frequency of updates correlates with institutional capacity and industry engagement. Providers with annual updates tend to have stronger industry partnerships and dedicated curriculum review mechanisms. However, even among those with regular updates, the pace of change often lags behind industry innovation. A Nigerian VET provider noted that "machinery is not emphasized in Nigeria," reflecting a gap between curriculum content and technological advancement.

Graduate Employment Rates (within 12 months)

Employment Rate	Number of Providers	Countries Represented
>75%	3	Portugal (EHTP), Portugal (Comunilog), Ghana (UDS)
51-75%	2	Ghana (UDS), Portugal (EPAMAC)
25-50%	6	Nigeria (NDE), Uganda, Ghana (TVET Service, Kumasi Technical University), Portugal (Conclusão), Italy
<25%	1	Nigeria (Sapele Technical College)

Employment rates vary widely based on program relevance, industry partnerships, and local labour market conditions. Institutions reporting higher employment rates typically maintain strong practical training components, industry placements, and partnerships with agri-food enterprises. A Portuguese provider, Comunilog, reported >75% employment, noting that their training is "aligned" and adapted to learner needs.

Adequacy of Training Resources

A critical finding is the widespread inadequacy of training resources across VET institutions, particularly in African countries.

Resource Area	Very High / High	Moderate	Low / Very Low
Laboratories	Portugal (4), Ghana (Kumasi Tech)	Uganda, Ghana (UDS, TVET Service), Nigeria (NDE), Italy	Nigeria (Govt Technical College, Sapele Tech)
Equipment	Portugal (4), Ghana (Kumasi Tech)	Uganda, Ghana (UDS), Nigeria (NDE), Italy	Nigeria (Govt Technical College, Sapele Tech), Ghana (TVET Service)
Teaching Staff	Uganda, Portugal (4), Ghana (Kumasi Tech)	Nigeria (NDE, Sapele Tech), Ghana (UDS, TVET Service), Italy	Nigeria (Govt Technical College)



Infrastructure	Portugal (4)	Uganda, Ghana (UDS, Kumasi Tech), Nigeria (NDE), Italy	Nigeria (Govt Technical College, Sapele Tech), Ghana (TVET Service)
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A Nigerian VET provider from Government Technical College Trans-Amadi described severe constraints: "Lack of Mart Classes, Electricity, and No Modern Projector. Libraries are not well equipped with books for the students." Another Nigerian provider from Sapele Technical College cited "shortage of staff and lack of periodic training," with equipment rated low and infrastructure low.

In contrast, Portuguese VET providers generally reported high or very high adequacy across all resource areas, reflecting more substantial investment and institutional capacity. However, even in Portugal, challenges exist. A provider noted "constraints in public procurement processes" and "bureaucracy" as barriers to maintaining modern equipment.

Main Challenges in Delivering Modern Training

Challenge	Frequency	Representative Quotes
Funding Constraints	Very High	"Limited funding for practical sessions" (Kumasi Technical University); "Funding constraints for facility upgrades" (UDS, Ghana); "Lack of funding" (Sapele Technical College)
Outdated / Inadequate Equipment	Very High	"Outdated equipment, and insufficient digital infrastructure" (Italian VET); "Lack of modern facilities" (NDE, Nigeria)
Shortage of Qualified Trainers	High	"Shortage of qualified trainers with both practical industry experience and pedagogical skills" (Portuguese VET); "Difficulty matching trainer profiles to industry needs" (Conclusão)
Large Class Sizes	Moderate	"The training is supposed to be very practical which is very costly and very tasking given the high numbers of students per class" (Ugandan VET)
Limited Industry Engagement	Moderate	"Inconsistent industry engagement" (TVET Service, Ghana); "Formal company internship pipelines are limited" (UDS, Ghana)

A Portuguese VET provider, EPAMAC, highlighted bureaucratic challenges: "Constraints of the public teacher recruitment system; misalignment between academic teaching approaches and vocational needs; lack of recognition and valuation of specialised staff." Another Portuguese provider noted "rapid technological change requiring continuous content updates" and "weak alignment between training and labour market needs."

Policymaker Responses: Policy Effectiveness, Funding, Priorities, and Infrastructure

Effectiveness of Existing Policies

Analysis of the 30 policymaker responses reveals a pattern of **moderate to low perceived effectiveness**, with significant variation across governance levels.

Governance Level	Very High / High	Moderate	Low / Very Low
Federal / National	Poland (CAP), Nigeria (Rivers State)	Italy, Portugal, Ghana, Nigeria (Delta), Uganda	Multiple respondents
Regional	Poland (RARR)	Italy, Portugal, Uganda	Nigeria (Delta), Poland (Podkarpackie)



State / Provincial	Nigeria (Rivers State)	Uganda, Nigeria (Delta)	Multiple respondents
Local Council	None	Italy, Poland	Uganda, Nigeria, Ghana

A Ugandan policymaker rated federal policies as high but regional, state, and local levels as low to very low, reflecting implementation gaps. A Nigerian policymaker from Rivers State rated state-level policies as very high but noted that local implementation remains challenging. A Polish VET provider rated national policies as very high, regional as very high, and state as high, suggesting stronger policy coherence in Poland compared to other countries.

Funding Allocations for Vocational Training in Agri-Food

Funding Level	Number of Policymakers	Countries
High	1	Nigeria (Rivers State)
Moderate	4	Poland (multiple), Portugal (CCDR)
Low	12	Uganda, Nigeria, Ghana, Italy, Portugal
None	1	Portugal (DGAV)

A Nigerian policymaker from Rivers State Ministry of Education rated funding as low, noting "lack of financial support to scale up agri-food business." A Ugandan policymaker rated funding as low, citing "limited access to affordable finance and credit" as a systemic challenge. A Portuguese policymaker from DGAV reported no funding allocation for vocational training in agri-food, reflecting a gap in dedicated resources.

Priority Areas in National Training Strategies

Policymakers across all six countries identified consistent priority areas, with variations in emphasis.

Priority Area	Frequency	Countries
Food Safety	Very High	Uganda, Nigeria, Ghana, Italy, Portugal, Poland
Digitalization	Very High	Uganda, Nigeria, Ghana, Italy, Portugal, Poland
Entrepreneurship	Very High	Uganda, Nigeria, Italy, Portugal, Poland
Climate-Smart Agriculture	High	Uganda, Ghana, Italy, Portugal, Poland
Logistics	Moderate	Uganda, Nigeria, Ghana, Italy, Poland
Post-Harvest Handling / Value Addition	Moderate	Uganda, Nigeria, Ghana

A Ugandan policymaker provided a comprehensive list: "Post-Harvest Handling and Storage; Value Addition and Processing; Food safety; Quality Management Systems; Agri-Entrepreneurship and Marketing; Climate-Smart Agriculture (CSA) and Regenerative Practices; Water Management and Irrigation; Digitalization of Agriculture; Risk Management." A Portuguese policymaker emphasized the need to make the sector more appealing to younger generations, prioritizing "smart agriculture; digitalisation; precision agriculture." A Nigerian policymaker recommended prioritizing "digital, climate smart, and food safety," specifically citing "drones and CCTV to monitor, apps to detect if plants are infected, apps to detect soil healthiness."

Perceived Infrastructure Adequacy

Policymaker assessments of infrastructure adequacy reveal significant gaps, particularly in African countries.

Infrastructure Domain	Very High / High	Moderate	Low / Very Low
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Production Infrastructure	Poland (RARR), Nigeria (Rivers State)	Italy, Portugal, Poland (multiple), Nigeria (Delta)	Uganda, Ghana, Nigeria (multiple)
Logistics and Market Infrastructure	Poland (RARR), Nigeria (Rivers State)	Italy, Portugal, Poland (multiple)	Uganda, Ghana, Nigeria (multiple)
Post-Harvest & Processing Infrastructure	Poland (RARR)	Italy, Portugal, Poland (multiple)	Uganda, Ghana, Nigeria (multiple)
Digital & Technological Infrastructure	Poland (RARR)	Italy, Portugal, Nigeria (Rivers State), Poland (multiple)	Uganda, Ghana, Nigeria (multiple)
Institutional & Support Infrastructure	Poland (RARR), Nigeria (Rivers State)	Italy, Portugal, Poland (multiple)	Uganda, Ghana, Nigeria (Delta)

A Ugandan policymaker rated all infrastructure domains as very low or low, noting "inadequate access to modern technologies and equipment," "poor market linkages and information asymmetry," and "high post-harvest losses due to lack of storage and handling infrastructure." A Ghanaian policymaker similarly rated all domains as low, citing "limited access to proper processing spaces, testing facilities, and technical guidance" as major constraints. In contrast, Polish policymakers generally rated infrastructure as high or very high, reflecting more developed agricultural infrastructure. However, even in Poland, a VET provider noted "weak logistics infrastructure" as a challenge for small enterprises.

Key Policy Gaps Identified

Policymakers across all countries identified consistent policy gaps that hinder workforce development.

Policy Gap	Frequency	Representative Quotes
Limited Industry-Education Collaboration	Very High	"Weak alignment between education policies and the evolving needs of the agri-food industry" (Italian VET provider); "Training frameworks and curricula are sometimes updated slowly" (Italian VET)
Fragmented Coordination	Very High	"Fragmentation of responsibilities across different institutions and governance levels" (Italian VET); "Insufficient coordination between MAAIF, MoES, MoGLSD, and private sector bodies" (Ugandan policymaker)
Limited Incentives for SME Training	High	"Limited incentives for small and micro enterprises to invest in training" (Italian VET); "Policies exist, but they are not always accessible or tailored to micro and small businesses" (Italian policymaker)
Implementation Gaps	High	"Policies often suffer from implementation delays at the district level" (Ghanaian policymaker); "Training funds should reach districts consistently, not occasionally" (Ghanaian policymaker)
Outdated Curriculum Frameworks	Moderate	"VET curricula are slow to update and rarely co-designed with industry" (Polish VET); "Existing education and training policies have been slow to incorporate digital skilling" (Ugandan policymaker)

A Ugandan policymaker provided a comprehensive list of gaps: "Absence of a dedicated, sector-specific agricultural skills and TVET strategy post-2021/22; insufficient mandatory integration of agri-food value chain competencies into national TVET and university curricula; weak enforcement and funding



mechanisms for competency-based training; limited policy incentives or tax breaks for private sector investment in agri-food apprenticeship."

An Italian VET provider noted "insufficient alignment between education policies and the evolving needs of the agri-food industry" and "limited incentives for small and micro enterprises to invest in training" as critical gaps that prevent meaningful workforce development.

Summary of Stakeholder Perspectives

Dimension	Agri-Food Enterprises	VET Providers	Polymakers
Primary Concern	Skill gaps in processing, safety, logistics, digital, marketing	Outdated curricula, inadequate equipment, funding constraints	Implementation gaps, fragmented coordination, misaligned policies
Key Challenges	Inefficient logistics, skilled personnel shortages, market access	Funding limitations, trainer shortages, weak industry links	Policy fragmentation, limited SME incentives, infrastructure deficits
Resource Adequacy	Low to moderate across infrastructure and equipment	Highly variable; African providers report severe shortages	Low to very low in African countries; moderate to high in Europe
Collaboration Level	Limited structured engagement with VET providers	Variable; some strong partnerships, many none or ad hoc	Fragmented; coordination gaps across ministries and governance levels

The convergence of these perspectives reveals a systemic crisis: enterprises need skills that VET providers cannot deliver due to resource constraints, while policies designed to support workforce development suffer from fragmentation and implementation gaps. Addressing these interconnected challenges requires coordinated action across all three stakeholder groups.

Most Urgent Technical Skills Across the Value Chain

Analysis of responses from agri-food enterprises, VET providers, and policymakers reveals a consistent set of urgent technical skill needs spanning the entire value chain, from primary production to market distribution.

Skill Category	Specific Competencies	Frequency	Representative Quotes
Food Processing	Processing techniques, value addition, machinery operation, product transformation	Very High	"Food processing and quality control" (Meannan Foods, Ghana); "Priority on product processing and transformation skills, particularly in terms of quality, food safety, and adding value to the final product" (Meltagus, Portugal); "Food processing, Marketing and book keeping" (Ugandan agri-food company)
Food Safety	HACCP, hygiene standards, certification readiness, traceability, compliance	Very High	"Food safety and hygiene standards" (Juls Enterprise, Ghana); "Food safety and processing" (Kipekee Solutions, Uganda); "Practical training in food safety and quality control would help a lot" (Oka Foods, Ghana)
Quality Assurance	Quality control systems, laboratory testing,	High	"Quality assurance and control" (Fresh Kyenyanja, Uganda); "Quality assurance is not in-depth for technical skills" (NDE,



	documentation, continuous improvement		Nigeria); "Students often lack practical skills in quality assurance" (Italian VET)
Logistics	Supply chain coordination, transportation management, distribution efficiency	High	"Packing and logistics" (Bip Foods, Uganda); "Logistics and Packaging" (Clason Prime Solutions, Nigeria); "Logistics in distribution and efficiency" (Meltagus, Portugal)
Packaging	Packaging technology, presentation, preservation, labeling standards	Moderate to High	"Packaging" (Grabless Global, Nigeria); "Packaging and labelling standards" (Juls Enterprise, Ghana); "Relevance of packaging (presentation, preservation, compliance)" (Meltagus, Portugal)
Cold Chain Management	Temperature control, refrigeration systems, perishable goods handling	Moderate	"Cold chain management" (Italian VET); "Cold-chain infrastructure to reduce post-harvest losses" (Ugandan policymaker); "Inadequate storage and cold chain infrastructure" (multiple respondents)
Warehouse & Inventory Management	Stock control, storage systems, inventory tracking, warehouse operations	Moderate	"Warehouse and inventory management" (Ghana Commodities Exchange); "Inventory management systems" (Meannan Foods, Ghana); "Basic inventory management and packaging standards training" (Oka Foods, Ghana)

A Ghanaian company, Oka Foods, provided a comprehensive articulation of technical skill needs: "We need stronger practical skills in food processing and quality control. Staff also need better understanding of food safety standards and proper machine handling. Inventory management and basic equipment maintenance are areas that need improvement." A Portuguese VET provider, Conclusão-Estudios e Formação, emphasized the importance of recognized standards: "Use of recognised standards (BRC, ISO 22000, IFS); pre-training meetings and detailed content review; customisation using company-specific documentation and systems."

Soft Skills Gaps Across Stakeholder Groups

All three stakeholder groups consistently identified critical soft skills gaps that undermine workforce effectiveness and enterprise competitiveness. The convergence of perspectives across countries and stakeholder types underscores the systemic nature of these gaps.

Soft Skill	Frequency	Agri-Food Companies	VET Providers	Policymakers
Digital Literacy	Very High	"Digital literacy and marketing" (Kipekee Solutions); "Digital marketing, logistics, and processing" (Clason Prime Solutions)	"Students mainly lack digital skills" (Comunilog, Portugal); "Gaps in digital tools and technological innovation" (EHTP, Portugal)	"Digital literacy and use of management tools" (CCDR, Portugal); "Digital skills are becoming essential" (Italian policymaker)
Marketing	Very High	"Marketing and digital literacy" (Bip Foods); "Marketing and market access" (Ugandan	"Marketing and digital literacy" (Italian VET); "Entrepreneurial	"Marketing and communication" (CCDR, Portugal); "Marketing and



		respondent); "Weak marketing reduces our visibility" (Servin, Italy)	skills tailored to agribusiness SMEs" (TVET Service, Ghana)	brand positioning skills are limited" (Oka Foods policymaker)
Entrepreneurship	High	"Financial Literacy & book keeping" (Granafish Supplies); "Agri-Entrepreneurship and Marketing" (multiple)	"Low entrepreneurial mindset" (EHTP, Portugal); "Entrepreneur skills, negotiating skills" (NDE, Nigeria)	"Agri-entrepreneurship, business management, and financial literacy" (Ugandan policymaker); "Entrepreneurship and business management skills" (Italian policymaker)
Leadership	High	"Leadership skills, Marketing" (Grabless Global); "Supervisory leadership and team coordination need improvement" (Oka Foods)	"Leadership skills" (NDE, Nigeria); "Management skills, such as planning and organisation" (Colangerlo, Italy)	"Leadership and team management" (CCDR, Portugal); "Leadership skills, Marketing" (multiple)
Communication	High	"Communication skills are mostly deficient" (Comunilog, Portugal); "Communication and entrepreneurship" (Sapele Technical College)	"Communication, problem-solving, teamwork, and entrepreneurship" (Italian VET); "Gaps in effective communication" (EHTP, Portugal)	"Communication and problem-solving" (multiple); "Poor communication during incidents or problems" (Conclusão, Portugal)
Problem-Solving	Moderate to High	"Problem-solving skills" (multiple); "Problem-solving and adaptability" (CCDR, Portugal)	"Weak problem-solving skills and limited critical thinking" (EHTP, Portugal); "Problem	"Problem-solving and adaptability" (CCDR, Portugal); "Critical thinking



			solving, communication and extension skills" (Ugandan VET)	and problem- solving" (multiple)
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A Nigerian VET provider from the National Directorate of Employment offered a comprehensive list: "Soft skills like communication, emotional intelligence, financial intelligence, with the aim to be reliable and employable. Leadership skills, entrepreneur skills, negotiating skills." A Portuguese VET provider, EHTP, identified specific gaps: "Gaps in effective communication; weak problem-solving skills and limited critical thinking; lack of initiative and adaptability; low entrepreneurial mindset; difficulties in teamwork; challenges in time management." An Italian agri-food company, Colangerlo, noted: "In our case, the biggest gap is not in production but in marketing and digital skills. We manage the production process quite well, but we struggle with promoting our products, especially online. Skills related to social media, e-commerce, and digital communication would really help us reach new customers."

Systemic Challenges Across Stakeholder Groups

The analysis reveals a set of interconnected systemic challenges that transcend individual enterprises or countries, creating structural barriers to workforce development and business competitiveness.

Systemic Challenge	Frequency	Agri-Food Companies	VET Providers	Policymakers
Limited Access to Finance	Very High	"Inadequate capital to meet the demand" (Granafish Supplies); "Limited capacity in terms of equipment" (Fresh Kyenyanja)	"Limited funding for practical sessions" (Kumasi Tech); "Funding constraints for facility upgrades" (UDS, Ghana)	"Limited access to affordable finance and credit" (Ugandan policymaker); "Difficulty accessing funding" (DGAV, Portugal)
Inadequate Infrastructure	Very High	"Road network to the farm are poor" (Grabless Global); "High cost of transport" (Bip Foods); "Limited storage" (multiple)	"Lack of modern facilities" (NDE, Nigeria); "Outdated equipment" (Italian VET)	"Poor road access, limited storage, low mechanization" (Ghana MoFA); "Weak logistics and rural infrastructure" (Italian policymaker)
Inefficient Logistics	Very High	"Inefficient logistics especially farmer connections" (Kipekee Solutions); "Delay in transportation to the market" (Uhuru Food Technology)	"Weak logistics infrastructure" (Polish VET); "Constraints in logistics and value chain management" (EHTP, Portugal)	"Inefficient logistics and supply chain constraints" (Italian VET); "Logistics and supply chain fragmentation" (Italian policymaker)
Skilled Personnel Shortages	Very High	"Lack of skilled personnel" (Grabless Global, Clason Prime Solutions); "Difficulty attracting and retaining skilled	"Shortage of qualified trainers with both practical industry experience" (Portuguese VET);	"Skills shortages and ageing workforce" (Italian policymaker); "Shortage of skilled



		workforce" (multiple)	"Difficulty finding reliable skilled workers" (TEODORA, Poland)	labour" (DGAV, Portugal)
Regulatory Burdens	Moderate to High	"High cost of compliance to regulatory requirements" (Bip Foods); "Multiple taxation" (Delta State policymaker)	"Bureaucracy; constraints in public procurement processes" (EPAMAC, Portugal)	"High regulatory and administrative burden" (Italian policymaker); "Regulatory and compliance burdens" (Ugandan policymaker)

A Ugandan policymaker provided a comprehensive list of systemic challenges: "Limited access to affordable finance and credit; inadequate access to modern technologies and equipment; poor market linkages and information asymmetry; high post-harvest losses due to lack of storage and handling infrastructure; weak value addition and processing capacity; low skills and limited technical/vocational training; unreliable input supply chains; climate change vulnerability and limited adaptation measures; regulatory and compliance burdens; insufficient business development services and extension support; gender and youth exclusion; high energy and transport costs; informal nature limiting formal contracts and scaling." A Portuguese VET provider, Conclusão-Estudos e Formação, highlighted the intersection of challenges: "The main challenge is related with time: pressure to cover too many topics in limited time; lack of time allocation for training; constraints in industrial/workplace settings (e.g. production line stoppages); unrealistic expectations regarding training duration; superficial vs in-depth learning; challenge of covering the full value chain ('farm to fork') in short training sessions."

Rural Versus Urban Challenges

A consistent theme across all three stakeholder groups is the differential nature of challenges faced by agri-food enterprises in rural versus urban contexts. These differences have significant implications for policy design and intervention strategies.

Challenge Dimension	Rural Context	Urban / Peri-Urban Context
Infrastructure	Severe deficits: poor road access, limited storage facilities, unreliable electricity, weak transport networks	Better developed: proximity to logistics hubs, more reliable utilities, established transport corridors
Skilled Labor	Acute shortages: limited pool of qualified workers, difficulty attracting skilled personnel, outmigration of working-age population	Larger labor pool: access to more diverse skill sets, proximity to training institutions, easier recruitment
Access to Training	Limited: fewer training institutions, distance to VET providers, fewer opportunities for continuous professional development	Better access: proximity to VET providers, universities, and training centers; more diverse training options
Market Access	Constrained: longer distances to markets, higher transportation costs, limited market linkages	Stronger: proximity to consumers, established market channels, better access to distribution networks
Technology Adoption	Slower: limited exposure to innovation, fewer demonstration sites, lower digital connectivity	Faster: greater exposure to new technologies, better digital infrastructure, innovation ecosystems



Competition	Lower: fewer enterprises, less market saturation	Higher: more competitors, market saturation, pressure to differentiate
Regulatory Pressure	Less enforcement: regulators rarely visit, standards less strictly enforced	Stronger enforcement: stricter compliance requirements, more frequent inspections, higher regulatory costs
Operational Costs	Higher transport costs, energy deficiencies, supply chain fragmentation	Higher land costs, higher labor costs, higher compliance costs

A Nigerian policymaker from Delta State Ministry of Education provided a clear contrast: "In rural cities, regulators don't visit them. But in the urban centers there are active regulators. In the rural areas standards are not adhered to. The issue of energy deficiency is pronounced compared to the urban centers. High cost of everything in the rural communities. Skilled labour is not there in the rural communities." A Ugandan policymaker from Mountains of the Moon University offered a detailed comparative analysis:

More severe in rural contexts:

- "Limited access to affordable finance and credit"
- "Poor market linkages and information asymmetry"
- "High post-harvest losses due to lack of storage and handling infrastructure"
- "Unreliable input supply chains"
- "Climate change vulnerability and limited adaptation measures"
- "Insufficient business development services and extension support"
- "Low skills and limited technical/vocational training access"
- "Gender and youth exclusion in access to resources and opportunities"

More severe in urban contexts:

- "Regulatory and compliance burdens (standards, certification, taxation, licensing)"
- "High energy and transport/logistics costs"
- "High competition and market saturation"
- "Informal nature limiting formal contracts and scaling"
- "Higher cost of land and premises for processing/storage"
- "Stricter food safety and hygiene enforcement"

Common in both:

- "Weak value addition and processing capacity"
- "Inadequate access to modern technologies and equipment"

An Italian policymaker from the Municipality of Potenza emphasized the need for place-based approaches: "Effective policies therefore need to be place-based, addressing the specific needs of rural and urban agri-food ecosystems through targeted support for infrastructure, training, innovation, and market integration."

A Portuguese policymaker from CCDR noted differences in student perspectives: "Romanticised view of agriculture among urban students, with higher concern for diets, food safety and environmental protection; greater attraction to machinery than manual agricultural work amongst all students; more pragmatic, economic perspective among rural students; low attractiveness of agriculture in low-income, labour-intensive contexts."

A Polish VET provider from ARiMR summarized the rural-urban divide: "In rural areas, the main problem is access. Businesses are more isolated, logistics are harder, and it's much more difficult to find people to work with the right skills. Even basic things like transport, services or training opportunities are limited. You often have a good product, but fewer options to develop or scale it. In urban or peri-urban areas, these basic conditions are better. There is easier access to markets, services, training and



potential employees. But the challenge shifts more towards competition and costs. It's harder to stand out, and running a business is simply more expensive."

SUMMARY OF THEMATIC FINDINGS

Theme	Key Findings
Technical Skills	Food processing, food safety, quality assurance, logistics, packaging, cold chain management, and warehouse management are the most urgent technical skill gaps across all countries.
Soft Skills	Digital literacy, marketing, entrepreneurship, leadership, communication, and problem-solving are consistently lacking across all stakeholder groups and geographic contexts.
Systemic Challenges	Limited access to finance, inadequate infrastructure, inefficient logistics, skilled personnel shortages, and regulatory burdens forms an interconnected web of constraints.
Rural-Urban Divide	Rural areas face greater infrastructure deficits and skilled labour shortages; urban areas contend with higher competition, stronger regulatory enforcement, and higher operational costs. Place-based policies are essential.

These findings underscore the need for integrated interventions that address both technical and soft skill development, tackle systemic barriers holistically, and adapt to the distinct challenges of rural and urban contexts.

Regional Comparative Analysis: Africa vs. Europe

Skills Gap Perceptions:

Analysis of responses from African countries (Uganda, Nigeria, Ghana) and European countries (Italy, Portugal, Poland) reveals both commonalities in skill gaps and significant contextual differences shaped by infrastructure, policy environments, and economic structures.

Common Skill Gaps Across All Countries

Skill Category	Africa	Europe	Commonality
Food Safety & Quality Assurance	Very High	Very High	Universal priority across all countries; regulatory compliance drives demand
Digital Literacy	High	Very High	Growing importance in all contexts; European respondents emphasize e-commerce and precision agriculture more strongly
Marketing	High	High	Consistent need for market access and product positioning across all countries
Logistics	High	High	Universal challenge; nature of constraints varies by infrastructure context
Food Processing	High	Moderate	More urgent in Africa where value addition capacity is limited; European enterprises more established in processing

Contextual Differences

Dimension	African Countries (Uganda, Nigeria, Ghana)	European Countries (Italy, Portugal, Poland)
Primary Skill Gaps	Food processing, post-harvest handling, basic food safety, packaging, mechanization	Digital tools, precision agriculture, traceability systems, advanced quality management, e-commerce, sustainability



Skill Level Ratings	Mixed: companies report high skills in some areas but gaps in others; VET providers report moderate to low resources	Generally higher skill ratings; European companies more likely to rate workforce skills as high or very high
Digital Divide	Basic digital literacy gaps; limited access to digital infrastructure; apps and basic tools needed	Advanced digital skills needed: data analytics, precision farming, digital marketing, traceability systems
Workforce Composition	Youthful population but limited formal training; informal sector dominance; aging workforce in some segments	Aging workforce in agriculture; difficulty attracting youth; need for reskilling existing workers
Training Access	Limited VET infrastructure; distance to training institutions; few opportunities for continuous learning	Better access to VET; more structured training pathways; but rigid systems slow to adapt

African Country Perspectives

A Nigerian agri-food company, Grabless Global, highlighted foundational gaps: "Exposure to modern poultry farming, processing of boilers, feed production to reduce production cost." A Ugandan company, Uhuru Food Technology, rated processing skills as high but logistics as moderate, with digital tools identified as a gap. A Ghanaian policymaker from the Food and Drugs Authority noted: "A major challenge is limited understanding of regulatory requirements among micro and small processors. Many operate with inadequate facilities, poor documentation systems, and weak traceability practices. Financial constraints also prevent them from upgrading equipment or obtaining certifications." A Nigerian VET provider described severe resource constraints: "Lack of Mart Classes, Electricity, and No Modern Projector. Libraries are not well equipped with books for the students." Another Nigerian VET provider noted that "machinery is not emphasized in Nigeria." A Ugandan VET provider offered a more optimistic perspective but acknowledged gaps: "Most of these aspects like food quality and safety, ICT, e-marketing, food laboratory tests, and other aspects of modern agriculture have been incorporated. However, they need to be upscaled to fit their specific and dynamic use in the food industry."

European Country Perspectives

An Italian agri-food company, Colangerlo, articulated a different set of priorities: "In our case, the biggest gap is not in production but in marketing and digital skills. We manage the production process quite well, but we struggle with promoting our products, especially online. Skills related to social media, e-commerce, and digital communication would really help us reach new customers." Another Italian company, Servin, noted: "We see a combination of needs. On one side, we need stronger skills in logistics and packaging to improve efficiency. On the other, there is a clear gap in digital tools and marketing. We need people who can manage online sales channels, analyse data, and support branding activities." A Portuguese VET provider, EHTP, emphasized advanced competencies: "Gaps in digital tools and technological innovation; insufficient practical skills in logistics and value chain management; insufficient focus on innovation and sustainability." A Polish VET provider from ARiMR noted: "Digital skills are becoming essential, even in small farms and food businesses. Not in an advanced way, but in terms of using basic tools, managing data, understanding simple systems or selling online. Many people still struggle with that."

A Portuguese beekeeping association, Meltagus, highlighted sector-specific challenges: "Impact of climate change on beekeeping (flora, cycles, harvest predictability); lack of scale limiting investment and market access; constraints in infrastructure (processing, storage, value addition); logistical challenges due to dispersed apiaries; bee health issues; market challenges (honey adulteration, unfair competition, product devaluation)."



Summary Comparison Table

Aspect	African Countries	European Countries
Primary Skill Focus	Foundational: processing, basic food safety, packaging, mechanization	Advanced: digitalization, precision agriculture, traceability, e-commerce
Infrastructure Context	Severe deficits in roads, electricity, storage, cold chain	Better infrastructure but aging; rural-urban disparities persist
VET Resources	Severely constrained; outdated equipment; limited laboratories	Better resourced but facing rigidity; slow curriculum updates
Policy Environment	Emerging frameworks; implementation gaps; fragmented coordination	Established frameworks (CAP, PNRR); implementation varies by region
Workforce Challenges	Informal sector dominance; limited formal training; youth unemployment	Aging workforce; difficulty attracting youth; need for reskilling
Regulatory Context	Emerging enforcement; compliance costs burden small enterprises	Strict enforcement; complex regulatory requirements; high compliance costs

Alignment Between Enterprise Skill Needs and VET Curricula

Analysis reveals a significant **misalignment** between what agri-food companies report as urgent skill needs and what VET providers identify as gaps in their curricula or deliver in their programs.

Skill Area	Enterprise Priority	VET Curriculum Status	Alignment Assessment
Food Processing	Very High	Mixed: foundational skills covered but advanced techniques limited	Partial Alignment
Food Safety & Quality Assurance	Very High	Moderate: HACCP and basic safety covered; advanced QA, traceability, certification readiness gaps	Partial to Misaligned
Digital Tools & Literacy	Very High	Low: most providers acknowledge significant gaps in digital curricula	Misaligned
Logistics & Supply Chain	High	Low to Moderate: few providers offer comprehensive logistics training	Misaligned
Marketing & Entrepreneurship	High	Low: rarely integrated into technical curricula	Misaligned
Cold Chain Management	Moderate	Low: limited coverage in most VET programs	Misaligned
Packaging Technology	Moderate	Low: often overlooked in curricula	Misaligned

Enterprise Perspectives on Misalignment

A Polish agri-food company, TEODORA, offered a blunt assessment: "VET schools don't teach what we actually need on the floor." This sentiment was echoed across multiple countries. An Italian VET respondent noted: "Our curriculum is partially aligned with current industry needs. It covers core areas such as food safety and basic operations well, but it is weaker in digital tools, smart agriculture,



traceability, and logistics management. The main gap is the speed of curriculum updates compared with industry change."

A Nigerian agri-food company, Clason Prime Solutions, identified "logistics and packaging, digital marketing, logistics, and processing" as urgent needs—areas where VET curricula are typically weak. A Portuguese agri-food company, Barata & Irmãos, noted that their workforce lacks "marketing abilities/techniques" and "digital literacy, digital marketing"—skills rarely emphasized in traditional agri-food VET programs.

VET Provider Self-Assessments

A Portuguese VET provider, EHTP, acknowledged: "Limited alignment of curriculum with modern sector needs; coverage of basic food safety but lack of advanced skills; gaps in digital tools and technological innovation; insufficient practical skills in logistics and value chain management."

A Ghanaian VET provider, Kumasi Technical University, described their curriculum as "moderately aligned. Core theory is strong, but limited exposure to modern processing tech, automation, and advanced quality systems."

A Nigerian VET provider from Government Technical College Trans-Amadi stated: "The curriculum is okay," but then noted significant resource constraints that prevent effective delivery, suggesting that even aligned curricula cannot be implemented without adequate equipment.

An Italian VET respondent identified specific gaps: "Digital skills and data-based decision-making are still missing or underdeveloped. Training on logistics, supply chain management, and climate-smart agriculture also needs updating."

Reasons for Misalignment

Factor	Evidence from Data
Slow Curriculum Updates	Most VET providers update modules annually or every 2-3 years; industry changes faster
Limited Industry Input	Few providers have structured mechanisms for employer feedback into curriculum design
Resource Constraints	Even where curricula include modern topics, lack of equipment prevents practical training
Trainer Capacity Gaps	Shortage of trainers with current industry experience and digital competencies
Focus on Theory over Practice	Multiple respondents noted training is "too theoretical"

A Polish VET provider from ARiMR explained: "Training systems are still too rigid and slow to react. Curricula don't change often enough, and when they do, it's usually more theoretical than practical. By the time something new is introduced, the sector has already moved on."

Consistency Between Policy Effectiveness Perceptions and Enterprise Challenges

Analysis reveals a **significant disconnect** between policymaker perceptions of policy effectiveness and the challenges reported by agri-food enterprises on the ground.



Policy Dimension	Policymaker Perception	Enterprise Reality	Consistency Assessment
Policy Effectiveness	Moderate to high at national level; lower at local level	Limited awareness of policies; policies perceived as inaccessible or misaligned	Misaligned
Funding Availability	Moderate (some countries); policies exist	Low; enterprises report inadequate capital, high compliance costs, limited access to credit	Misaligned
Infrastructure Support	Moderate to high in some countries (Poland); low in others	Very low; enterprises report poor roads, unreliable electricity, inadequate storage	Misaligned in Africa; partially aligned in Europe
Training Support	Policies exist for training and extension	Limited uptake; small enterprises cannot navigate complex funding applications	Misaligned
Regulatory Environment	Necessary for quality and safety	Burdensome; high compliance costs; multiple taxation; complex procedures	Misaligned

Policymaker Perceptions

A Ugandan policymaker rated federal policies as high but regional, state, and local levels as low to very low, acknowledging implementation gaps.

A Nigerian policymaker from Rivers State rated state-level policies as very high and infrastructure as moderate to high, yet enterprises in the same state reported severe infrastructure deficits.

A Polish VET provider rated national policies as very high, regional as very high, and state as high, suggesting stronger policy coherence. However, even in Poland, enterprises reported challenges with skilled labor access and logistics.

A Portuguese policymaker from DGAV reported no funding allocation for vocational training in agri-food, reflecting a gap in dedicated resources despite policy frameworks.

Enterprise Challenges That Contradict Policy Perceptions

Access to Finance

- Enterprise: "Inadequate capital to meet the demand" (Granafish Supplies, Uganda)
- Enterprise: "Limited capacity in terms of equipment" (Fresh Kyenyanja, Uganda)
- Policy: Many policymakers rated funding as moderate or low, acknowledging the gap—but mechanisms to address it remain insufficient

Infrastructure

- Enterprise: "Road network to the farm are poor and cause loss of eggs produced" (Grabless Global, Nigeria)
- Enterprise: "High cost of transport" (Bip Foods, Uganda)
- Policy: Policymakers in African countries rated infrastructure as low; but the severity of impact on enterprises suggests policies are not translating into improvements



Regulatory Burden

- Enterprise: "High cost of compliance to regulatory requirements (UNBS, URA, URSB, Local Governments, NSSF)" (Bip Foods, Uganda)
- Enterprise: "Multiple taxation" (Delta State policymaker reflecting enterprise concerns)
- Policy: Recognized as a challenge, but few policies simplify compliance for small enterprises

Implementation Gap Analysis

A Ugandan policymaker from BIP Foods Limited (dual role as enterprise and policy respondent) articulated the implementation gap: "Most training initiatives suffer from fragmentation, with many non-state actors providing uncoordinated, sometimes low-quality, training that does not match employer needs. Workers in the informal sector are in most cases not contracted and hence not protected. The minimum wage has not been revised since 1984, making it irrelevant to the current cost of living. Existing education and training policies have been slow to incorporate digital skilling, which are crucial for the modern workplace."

A Ghanaian policymaker from the Ministry of Food and Agriculture noted: "Policies often suffer from implementation delays at the district level. Training funds should reach districts consistently, not occasionally."

An Italian VET provider observed: "Policies exist, but they are not always accessible or tailored to micro and small businesses. This limits their ability to participate in workforce development initiatives."

Infrastructure Adequacy: Policymaker Ratings vs. Enterprise Challenges

A stark contrast emerges between policymaker assessments of infrastructure adequacy and the infrastructure challenges reported by agri-food enterprises, particularly in logistics and processing.

Infrastructure Domain	Policymaker Rating (Africa)	Enterprise Challenge (Africa)	Policymaker Rating (Europe)	Enterprise Challenge (Europe)
Logistics & Market Infrastructure	Low to Very Low	"Delay in transportation to the market"; "Inefficient logistics especially farmer connections"; "High cost of transport"	Moderate to High	"Logistics can be an issue, especially when dealing with small volumes"; "distribution bottlenecks"
Post-Harvest & Processing Infrastructure	Low to Very Low	"Limited capacity in terms of equipment"; "high post-harvest losses"; "lack of storage and handling infrastructure"	Moderate to High	"Constraints in infrastructure (processing, storage, value addition); "limited warehouse infrastructure"
Production Infrastructure	Low to Very Low	"Unreliable input supply chains"; "lack of arable land"; "energy deficiency"	Moderate to High	"Farm sizes and structures often limit the adoption of advanced technologies"



Digital & Technological Infrastructure	Low to Very Low	"Lack of digital tools"; "low digital uptake"; "no modern projector"	Moderate to High	"Digital infrastructure gaps in rural areas"; "connectivity issues"
Institutional & Support Infrastructure	Low to Moderate	"Limited extension services"; "weak business development services"	Moderate to High	"Fragmented advisory services"; "limited coordination"

African Country Infrastructure Realities

A Nigerian agri-food company, Grabless Global, captured the logistics crisis: "Road network to the farm are poor and cause loss of eggs produced. It discourages customers from access it."

A Ugandan company, Uhuru Food Technology, noted: "Delay in transportation to the market" as a direct impact of logistics inefficiencies.

A Ghanaian company, Oka Foods, described: "One major challenge is transport and logistics, especially moving products from Oti Region to bigger markets. Access to consistent raw materials can also be difficult."

A Nigerian VET provider described the equipment gap: "Lack of Mart Classes, Electricity, and No Modern Projector. Libraries are not well equipped with books for the students."

A Ugandan policymaker provided a comprehensive assessment: "Inadequate access to modern technologies and equipment; poor market linkages and information asymmetry; high post-harvest losses due to lack of storage and handling infrastructure; weak value addition and processing capacity; unreliable input supply chains; high energy and transport costs."

European Country Infrastructure Realities

A Portuguese beekeeping association, Meltagus, noted: "Constraints in infrastructure (processing, storage, value addition); logistical challenges due to dispersed apiaries."

A Ghanaian commodity exchange (with European policy engagement) noted: "Limited warehouse infrastructure" as a constraint.

An Italian company, Servin, noted: "Logistics is not always efficient, which affects delivery times and costs."

A Portuguese VET provider, EPAMAC, highlighted: "Constraints in industrial/workplace settings (e.g. production line stoppages)" as a challenge for practical training delivery.

A Polish VET provider from ARiMR noted: "In rural areas, the main problem is access. Businesses are more isolated, logistics are harder... Even basic things like transport, services or training opportunities are limited."

Disconnect Analysis

Disconnect Type	Evidence
Rating vs. Reality	Policymakers in African countries rated infrastructure as low, but enterprise descriptions suggest the severity and impact are even greater than reflected in ratings



Policy vs. Implementation	Policies exist to support infrastructure development, but enterprises report little improvement on the ground
Urban vs. Rural	Policymakers acknowledge rural deficits, but enterprise reports indicate the gap between policy intention and rural reality remains wide
Processing vs. Production	Both policymakers and enterprises identify processing infrastructure as a gap, but enterprises emphasize that this directly affects their ability to add value and access markets

A Ghanaian policymaker from the Food and Drugs Authority highlighted the processing infrastructure gap: "Many operate with inadequate facilities, poor documentation systems, and weak traceability practices. Financial constraints also prevent them from upgrading equipment or obtaining certifications." A Ugandan policymaker from Mountains of the Moon University emphasized the need for investment: "Government investments should focus on quality roads, affordable & reliable electricity, irrigation systems, and cold-chain infrastructure to reduce post-harvest losses, enhance productivity, and create demand for skilled labour in agro-processing and value-addition industries."

Summary of Comparative Findings

Dimension	Key Finding
Africa vs. Europe	Common skill gaps exist (food safety, digital literacy, marketing, logistics), but African countries emphasize foundational processing and basic infrastructure, while European countries focus on advanced digitalization, precision agriculture, and sustainability.
Enterprise-VET Alignment	Significant misalignment exists; enterprises need practical skills in digital tools, logistics, and advanced quality assurance that VET curricula rarely cover. Slow curriculum updates and limited industry input perpetuate the gap.
Policy-Enterprise Consistency	A substantial implementation gap exists; policies are often well-designed at national levels but fail to translate into tangible improvements for enterprises due to fragmentation, funding complexity, and weak local implementation.
Infrastructure Adequacy	Policymakers and enterprises agree on infrastructure deficits in African countries, but the severity of impact on daily operations is more acute in enterprise reports. European countries have better infrastructure but face challenges in rural areas and specialized facilities.

These findings underscore the need for:

- Context-specific interventions that address the distinct needs of African and European agri-food sectors;
- Stronger industry-education linkages to align curricula with enterprise needs;
- Simplified policy mechanisms that reach micro and small enterprises effectively;
- Targeted infrastructure investment in logistics, processing, and digital domains.



CONCLUSION

The Interconnected Nature of Skills Gaps, Systemic Challenges, and Policy Misalignments

The stakeholder analysis presented in this report reveals that the skills gap in value chain management and agribusiness is not an isolated training deficit but a **deeply interconnected systemic challenge** involving the complex interplay of workforce capabilities, institutional capacities, infrastructure constraints, and policy frameworks. Across six countries—Uganda, Nigeria, Ghana, Italy, Portugal, and Poland—the findings demonstrate that these dimensions are mutually reinforcing, creating a cycle that perpetuates underperformance and limits the sector's potential.

Skills gaps do not exist in isolation. When agri-food enterprises report shortages in food processing, quality assurance, logistics, and digital literacy, they are simultaneously describing the consequences of inadequate VET systems that struggle to deliver modern, practical training. As one Polish agri-food company bluntly stated, "VET schools don't teach what we actually need on the floor." This misalignment between what industry demands and what education supplies is the first critical interconnection. VET providers themselves acknowledge this gap, citing outdated curricula, insufficient equipment, and limited industry engagement as root causes. A Portuguese VET provider noted that their curriculum covers basic food safety but lacks advanced skills in digital tools, logistics, and value chain management—precisely the areas enterprises identify as urgent priorities.

Systemic challenges compound skill deficits. The analysis reveals a web of structural barriers that intersect with and amplify skills gaps. Limited access to finance prevents enterprises from investing in modern equipment and training while simultaneously constraining VET providers from upgrading laboratories and instructional resources. Inadequate infrastructure—poor roads, unreliable electricity, insufficient storage facilities, and fragmented cold chains—undermines the effective application of even the most skilled workforce. A Nigerian enterprise captured this reality: "Road network to the farm are poor and cause loss of eggs produced." When transportation infrastructure fails, logistical skills cannot compensate. When electricity is unreliable, food safety protocols become impossible to maintain. These structural constraints mean that skills, however well developed, cannot translate into productivity gains without enabling infrastructure.

Policy misalignments perpetuate the cycle. The analysis demonstrates a consistent pattern of well-intentioned policies that fail to translate into meaningful improvements at the enterprise level. Policymakers across all six countries have established frameworks—National Agriculture Policies, TVET strategies, CAP Strategic Plans, and rural development programs—yet implementation remains fragmented and uneven. A Ugandan policymaker identified "insufficient mandatory integration of agri-food value chain competencies into national TVET and university curricula" and "weak enforcement and funding mechanisms" as persistent gaps. A Nigerian respondent noted that "most training initiatives suffer from fragmentation, with many non-state actors providing uncoordinated, sometimes low-quality, training that does not match employer needs." A Ghanaian policymaker observed that "policies often suffer from implementation delays at the district level."

These policy misalignments operate at multiple levels. **Vertically**, there is a disconnect between national strategies and local implementation realities. Training funds that are allocated centrally often fail to reach district-level institutions consistently. **Horizontally**, coordination gaps exist across ministries—agriculture, education, labor, and standards enforcement—that share responsibility for workforce development but rarely align their efforts. A Polish VET provider noted that "national VET policy does not adequately reflect regional labor market needs—curricula are designed centrally with insufficient regional input." A Portuguese policymaker highlighted "the absence of centralised access to funding opportunities" and "high bureaucratic burden" as barriers that prevent small enterprises from accessing available support.



The **rural-urban divide** adds another layer of complexity to this interconnected system. Rural enterprises face acute infrastructure deficits, limited access to training institutions, and severe skilled labor shortages. Urban enterprises, while benefiting from better infrastructure and market access, contend with higher competition, stronger regulatory enforcement, and elevated operational costs. These contextual differences mean that one-size-fits-all policies cannot succeed; place-based approaches are essential.

What emerges from this analysis is a **vicious cycle**: skill gaps limit enterprise productivity and competitiveness; inadequate infrastructure and finance constrain both enterprise operations and VET capacity; policy fragmentation prevents coordinated solutions; and the absence of strong industry-education linkages ensures that curricula remain misaligned with market needs. Each dimension reinforces the others, creating systemic inertia that resists piecemeal interventions.

The Urgent Need for Coordinated Action

Addressing the interconnected challenges revealed by this analysis demands **coordinated action across government, industry, and education**. No single stakeholder can resolve these gaps alone. The findings point to three essential pillars of a coordinated response.

First, governments must act as conveners and enablers. The analysis demonstrates that policies exist but implementation fails. Governments must move beyond policy design to ensure effective execution. This requires: simplifying access to training funding for micro and small enterprises, which currently lack the administrative capacity to navigate complex application processes; strengthening coordination across ministries to align agricultural, educational, and labor policies; investing in enabling infrastructure—roads, electricity, cold chains, and digital connectivity—that underpins both productivity and the effective application of new skills; and creating formal mechanisms for industry input into curriculum development and policy design. A Ugandan policymaker captured this imperative: "Government should establish stronger coordination mechanisms among agriculture, education, and labour institutions to align training investments with sector priorities, reduce fragmentation, and ensure efficient use of public resources."

Second, industry must become an active partner in skills development. The persistent misalignment between enterprise needs and VET curricula cannot be resolved without structured industry engagement. Enterprises must move beyond passive consumers of trained labor to active co-designers of training programs. This includes: participating in curriculum development through sector skills councils and employer advisory boards; offering internships, apprenticeships, and work-based learning opportunities that provide students with practical, hands-on experience; investing in employee upskilling and recognizing that workforce development is a shared responsibility; and providing feedback loops to VET providers on graduate competencies and emerging skill needs. As one Polish agri-food company advised policymakers: "Talk to us before designing programs."

Third, VET providers must embrace responsiveness and practical relevance. The analysis reveals that many VET institutions operate with outdated equipment, theoretical curricula, and limited industry connections. Transforming VET requires: updating curricula more frequently to reflect technological and market changes; investing in modern laboratories, processing equipment, and digital tools; recruiting and retaining trainers with current industry experience and pedagogical skills; expanding work-based learning opportunities that expose students to real operational environments; and developing flexible training formats—short courses, modular programs, blended learning—that accommodate the schedules of working professionals and small enterprise owners. A Portuguese VET provider emphasized the need for "stronger collaboration with companies through practical training and internships; updating content on sustainability, innovation, and value chains; continuous upskilling of trainers; modernisation of training infrastructure."



The urgency of coordinated action is underscored by the convergence of pressures facing the agri-food sector. Climate change threatens production stability and predictability. Digital transformation is reshaping every aspect of the value chain, from precision agriculture to e-commerce. Evolving consumer expectations demand higher standards of food safety, traceability, and sustainability. Demographic shifts—an aging farming population in Europe, a youthful but underemployed population in Africa—require targeted strategies to attract and retain talent. In this context, waiting for incremental improvements is not an option. The skills gap is widening, and the cost of inaction is measured in lost productivity, foregone economic opportunity, and compromised food security.

A Forward-Looking Statement: The Potential of Targeted Workforce Development

Despite the magnitude of the challenges documented in this report, there is reason for optimism. The stakeholder analysis reveals not only gaps but also opportunities—pathways through which targeted workforce development can transform the agri-food sector into a more competitive, sustainable, and resilient engine of economic growth.

Targeted workforce development can unlock value addition. Across all six countries, enterprises identify food processing and value addition as critical gaps. By equipping workers with skills in modern processing techniques, quality assurance systems, and packaging standards, the sector can move beyond raw commodity production to capture higher-value market segments. A Nigerian policymaker envisioned this potential: "Government should invest more in technology parks, research hubs, and incubation centers. These create physical spaces for universities and businesses to collaborate on real-world problem-solving." When workers have the skills to transform raw materials into finished products, post-harvest losses decline, profit margins expand, and employment opportunities multiply along the value chain.

Targeted workforce development can bridge the digital divide. Digital literacy emerges as a universal skill gap, but it also represents a universal opportunity. For African enterprises, basic digital skills—using mobile apps for market information, digital record-keeping, simple e-commerce platforms—can revolutionize access to markets and inputs. For European enterprises, advanced digital competencies—precision agriculture, data analytics, traceability systems—can drive efficiency and sustainability. A Ghanaian policymaker captured this vision: "Drones and CCTV to monitor, apps to detect if plants are infected, apps to detect soil healthiness." When workers possess digital skills, they can leverage technology to overcome infrastructure deficits, optimize resource use, and connect to broader markets.

Targeted workforce development can enhance resilience. The challenges of climate change, supply chain disruption, and market volatility demand a workforce that is adaptable, innovative, and capable of problem-solving. By strengthening soft skills—leadership, communication, entrepreneurship, critical thinking—workforce development programs can prepare agri-food professionals to navigate uncertainty and seize emerging opportunities. A Portuguese VET provider emphasized the importance of "transversal skills (management, entrepreneurship, adaptability)" alongside technical competencies. When workers are equipped not only with technical knowledge but also with the capacity to learn, adapt, and lead, the entire sector becomes more resilient.

Targeted workforce development can attract and retain talent. The agri-food sector faces a generational challenge: attracting young people to careers in agriculture and food processing. By modernizing training programs, integrating digital tools, emphasizing sustainability and innovation, and creating clear career pathways, workforce development can transform the sector's image from a last-resort occupation to a destination career. A Polish VET provider noted that "young people are not very interested in the sector," but also pointed to the potential of "digital skills, sustainability, and innovation" to change perceptions. When young people see agri-food as a sector of opportunity—where they can use technology, build businesses, and make a difference—the talent pipeline will strengthen.



The way forward requires sustained commitment. The interconnected nature of the challenges identified in this report means that solutions must be equally integrated and sustained. Piecemeal, project-based interventions will not suffice. What is needed is a long-term, systemic approach that aligns investments in education, infrastructure, and enterprise development; that brings together ministries, industry associations, and training institutions around shared goals; that recognizes the distinct needs of rural and urban contexts; and that places skills development at the center of agri-food strategy.

The stakeholders who contributed to this analysis—agri-food enterprises navigating daily operational challenges, VET providers striving to deliver relevant training with limited resources, and policymakers grappling with complex implementation realities—share a common recognition: the skills gap is real, it is urgent, and it demands action. The convergence of their perspectives across six countries provides a powerful evidence base for the way forward.

In the end, a skilled workforce is not merely a means to productivity gains; it is the foundation upon which a competitive, sustainable, and resilient agri-food sector is built. When workers possess the technical competencies to produce safe, high-quality food; the digital skills to leverage modern technologies; the logistical expertise to move products efficiently to market; and the entrepreneurial mindset to build thriving enterprises—then the agri-food sector can fulfil its potential as an engine of food security, economic opportunity, and sustainable development.