



Glocal Ecosystems and Expanded Knowledge for
green skills and capability in the Food Sector

D6.3

Guidelines for Policy Makers,
Academia, and Private Investors to
Support Transformative and
Forward-Looking Training
Investments



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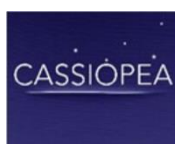
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The information and views set out in this document are those of the author(s) and do not necessarily reflect the official opinion of the European Union. Neither the European Union institutions and bodies nor any person acting on their behalf may be held responsible for the use which may be made of the information contained therein.

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0. Guide to reading this document

This document is a public output from the [GEEK4Food project](#), an EU-funded initiative developing green skills for Europe's food sector.

Whilst produced within a specific project context, the guidelines are designed for practical use by policy makers, universities, and industry organisations who may have no prior knowledge of GEEK4Food.

Acronyms and abbreviations

Project-specific terms

Term	Definition
3P-G4F	Three P GEEK4Food Platform Digital ecosystem connecting learners, employers, educators, and policymakers for green skills matching and monitoring. "3P" refers to Public, Private, and People.
D6.2	Deliverable 6.2. Project report titled "Use cases of policy and training mix/packages to maximise impacts" containing the KPI (Key Performance Indicator) framework referenced throughout this document.
D6.3	Deliverable 6.3. This document: "Guidelines for Policy Makers, Academia and Private Investors to support Transformative and Forward Looking Training Investments".
D6.4	Deliverable 6.4. Project report titled "Impact Finance and PPP models for Skill Fluidity and Green Transition in the Food Sector" detailing financing mechanisms.
GST-G4F	GEEK4Food Skills Tool AI-driven skills intelligence system that forecasts emerging green skills needs in the food sector.
MS1, MS2, MS3, etc.	Milestone 1, 2, 3, etc. Project checkpoints marking achievement of specific objectives. For context: MS3: Labour market analysis report on green skills (Month 6) MS8: Policy pathfinder disseminated (Month 20) MS9: Use cases delivered (Month 30) MS10: Impact investing schemes shared (Month 32)
WP1-WP8	Work Package 1-8 Major project components, each with specific objectives: WP1: Project management and coordination WP2: GEEK4Food skills tool (AI-driven skills forecasting) WP3: 3P-G4F platform (digital ecosystem) WP4: Innovative higher education tools and methodologies

WP5: Teaching and learning activities
 WP6: Impact and policy actions (this deliverable originates from WP6)
 WP7: Quality assurance and evaluation
 WP8: Dissemination, community engagement, exploitation

European policy and funding terms

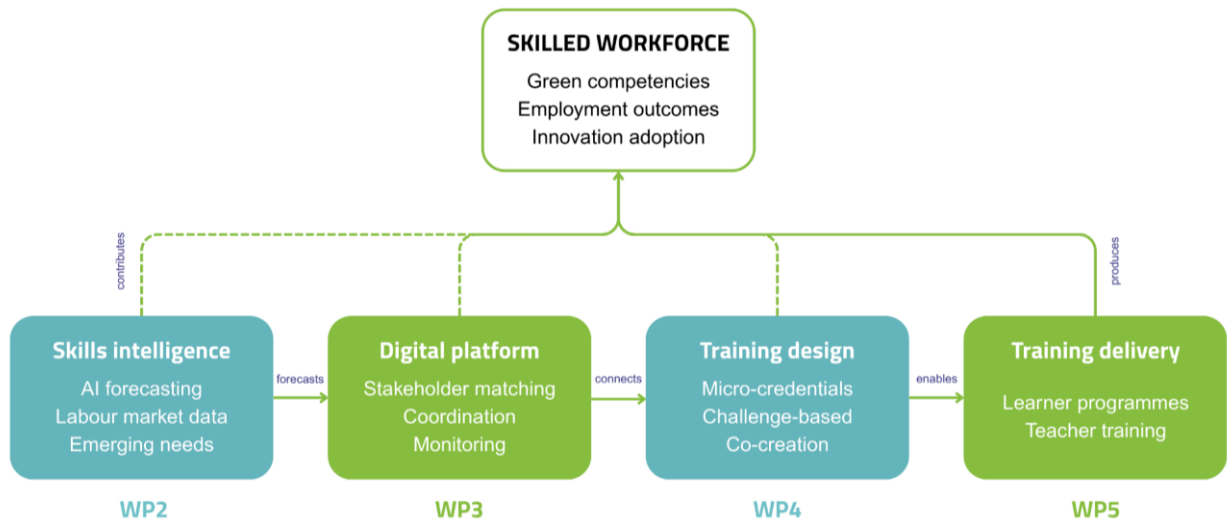
Term	Definition
AKIS	Agricultural Knowledge and Innovation Systems Framework within Common Agricultural Policy for sharing knowledge and innovation in agriculture.
CAP	Common Agricultural Policy EU policy supporting farmers and rural development, includes funding for advisory services and training.
ECTS	European Credit Transfer and Accumulation System Standard for comparing academic achievement across European higher education institutions.
ERDF	European Regional Development Fund EU funding for regional development, innovation, and skills infrastructure.
ESCO	European Skills, Competences, Qualifications and Occupations Multilingual classification system describing skills, competences, qualifications, and occupations relevant to the EU labour market.
ESF+	European Social Fund Plus EU's main instrument for investing in people, supporting employment, social inclusion, and education/training.
FTE	Full-Time Equivalent Standard measure of employee workload (1.0 FTE = full-time position).
GreenComp	European Sustainability Competence Framework Framework developed by EU Joint Research Centre identifying 12 competences necessary for sustainability.
HEI	Higher Education Institution

	Universities, institutes of technology, and other tertiary education providers.
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JTF	Just Transition Fund EU funding supporting regions heavily dependent on fossil fuels or carbon-intensive industries to transition to climate neutrality.
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VET	Vocational Education and Training Education and training focused on practical skills for specific occupations.
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Fig. 1 - GEEK4Food project structure



1. Executive Summary

This deliverable provides a strategic roadmap for European policymakers, academic institutions, and private investors to modernize green skills development within the agri-food sector. Grounded in the GEEK4Food model, the guidelines offer a shift from traditional knowledge push systems to dynamic, AI-driven skills ecosystems.

The core of this report is a Diagnostic Framework identifying five structural hurdles - Superficiality, Scientific Ignorance, Speed, Stakeholder Gaps, and Spin - that currently impede the green transition. To overcome these, the guidelines propose:

- **Policy Integration:** Aligning European funding with measurable competency outcomes rather than mere attendance.
- **Academic Modernization:** Adopting challenge-based pedagogies and stackable micro-credentials to increase curriculum responsiveness.
- **Industry Co-creation:** Utilizing the 3P-G4F platform to bridge the gap between scientific research and industrial application.

These guidelines have been empirically validated through a multi-stakeholder consultation process involving policy experts, educators, and financial institutions. While this document focuses on implementation and governance, the specific qualitative and quantitative results from the expert dialogues and surveys are presented jointly in Deliverable 6.4 (Impact Finance and PPP Models) to ensure a cohesive evidence base for future investment.

2. Introduction and Methodology

Europe's green and digital transition in the agri-food sector requires a workforce equipped with evolving technical, transversal and entrepreneurial competences, and it requires institutional and financial mechanisms capable of responding rapidly to those changes. GEEK4Food addresses this challenge by developing an integrated skills intelligence and training ecosystem centered on the GST-G4F platform and linked to modular training solutions and competency-oriented assessment.

Deliverable D6.3 provides **operational guidelines** to support policy makers, higher education providers and training institutions, enterprises and sectoral bodies, and private investors/finance intermediaries in leveraging the GEEK4Food ecosystem (Figure 1) to accelerate the green transition of the agri-food sector, while maintaining coherence with EU and national policy frameworks and with WP6 outputs.

These guidelines are grounded in:

- findings from MS1–MS4;
- the skills intelligence models and digital ecosystem outputs developed in WP2–WP3;
- training and pedagogical innovations in WP4–WP5;
- the WP6 evaluation architecture and KPI framework provided in D6.2; and
- the finance and PPP mapping and implementation pathways described in D6.4 (with emphasis on existing funding instruments and players, and exploratory models clearly separated).

Together, these elements form a coherent architecture linking skills identification, education design, labour-market relevance, monitoring of outcomes, and financing pathways that can be adopted by institutions and scaled beyond the project lifetime.

The guidelines presented in this deliverable are not merely theoretical; they are the result of an iterative validation process designed to ensure adoption readiness. The methodology comprised three primary pillars of stakeholder engagement:

1. **Expert Questionnaire:** A consultation with 12 specialists in Education, Policy, and Funding to identify urgent 2026–2029 priorities conducted in December 2025. This pillar focused on identifying the most relevant policy levers and education modules for system resilience.
2. **Expert Dialogue and Focus Group:** An interactive stress-test involving 21 institutional representatives. Participants utilized Miro-based "War Rooms" to evaluate the GEEK4Food portfolio against disruptive future scenarios, such as funding collapses or sudden regulatory mandates, conducted in March 2026. The report of the Focus Group is reported in **Annexe 1**.
3. **Financial Institutions Survey:** Targeted outreach to 82 organizations to determine the feasibility of blended finance and de-risking mechanisms required for private sector participation. Despite the large number of contacts, a limited feedback was obtained

in this case (**Annexe 2**). Additional information was achieved by direct and informal contacts of the Task co-leader (4CF)

Integration of Results

To maintain structural clarity, D6.3 utilizes the insights from these sessions to refine the Implementation Pathways (Section 6) and Governance Architecture (Section 7). However, the detailed data sets, SWOT synthesis, and specific feedback from financial operators regarding risk appetite and product parameters are presented jointly in Deliverable 6.4. This allows D6.4 to serve as the definitive evidence base for the Consensus Report required for Project Milestone 10.

3. Policy Context

Europe's agri-food system is at the center of a profound transformation driven by the European Green Deal, the Farm to Fork Strategy, the GreenComp Framework, and the accelerating digitalisation of food production and processing. The sector faces simultaneous imperatives: decarbonisation, circularisation, biodiversity protection, food safety, nutritional health, resilience, and competitiveness. Achieving these objectives requires a workforce equipped with new forms of technical, transversal, and entrepreneurial competences—the capacity not only to comply with new standards but to innovate, adapt and anticipate in an environment of rapid regulatory, technological, and market change.

GEEK4Food responds to this need by establishing an integrated, cross-sectoral skills intelligence and training ecosystem. Deliverables across WP1–WP6 demonstrate the necessity of a systemic approach: the green transition in agri-food requires coordinated action by policy makers, higher education institutions, VET providers, private sector actors, and learners, supported by both digital tools and innovative financing models.

Deliverable 6.3 provides operational guidelines for these actors. It translates project evidence, outputs, and methodologies into actionable recommendations, enabling institutions to adopt and sustain the GEEK4Food model beyond the life of the project.

3.1 Why Guidelines Are Needed

The need for structured guidance emerges from three converging realities identified in Work Packages 1–5 and validated by MS1–MS3:

- Fragmented skills landscapes

Across Europe, agri-food skills development is highly uneven, characterized by disparities in educational offerings, territorial capabilities, and training responsiveness. As shown in the Application Form and MS3, skill shortages are pronounced in circular economy practices, sustainable food production, digital and AI-enabled food systems, fermentation technologies,

and food waste valorisation. These gaps are most acute in regions with limited innovation infrastructure or weaker connections between higher education and industry.

- Limited capacity for rapid curricular adaptation

Higher education institutions face structural barriers in updating programmes, accrediting new modules, and integrating emerging skillsets - especially when rapid reprioritisation is needed due to regulatory or market pressures (e.g., carbon farming, packaging materials shifts, food waste legislation).

- Underdeveloped mechanisms for matching labour supply and demand

Employers face difficulty articulating evolving green skill needs, while learners lack visibility on training pathways and job opportunities. Policymakers, meanwhile, lack an integrated view of which skills will be needed where and when, making it difficult to design aligned funding interventions.

- Insufficient financial mechanisms supporting sustainable skilling

MS4 and D6.4 show that current investment in green skills is heavily grant-dependent and insufficiently aligned with outcome-based financing tools. Sustainable scaling requires blended public-private financing, which supports long-term skill adoption and continuous upskilling.

Given these systemic gaps, Deliverable D6.3 provides guidelines that are strategic, institutionally grounded, and operationally actionable, fully integrated with the AI-based skills intelligence tools (WP2-WP3), challenge-based education models (WP4-WP5), and the evaluation and financing frameworks (WP6).

3.2 Alignment with Policy Frameworks

The guidelines respond directly to the objectives of the Forward-Looking Cooperation Projects call under Erasmus+ (“Supporting education and training systems to adapt for the green transition”). They also align with:

3.2.1 European Level

- **European Green Deal** – requiring new competencies in energy efficiency, emissions reduction, biodiversity-friendly production, and circular systems.
- **Farm to Fork Strategy** – emphasizing sustainable production, food safety, food waste reduction, and nutrition.
- **GreenComp Framework** – defining the 12 key sustainability competences needed across society.
- **Digital Education Action Plan** – promoting digital skills for all learners and professionals.

- **ESCO revision** – incorporating green skills classifications through machine learning, consistent with GEEK4Food’s AI-based methodology.
- **European Skills Agenda** – supporting dynamic upskilling and reskilling ecosystems.

3.2.2 National and Regional Policy Contexts

Across partner countries, national skills strategies increasingly recognize:

- the role of **Smart Specialisation (S3/S4)** in linking regions’ economic strengths with training needs;
- the importance of **CAP Strategic Plans** in integrating advisory services and skills interventions;
- **Recovery and Resilience Plans (RRF)** emphasizing digitalisation and green transition;
- **ESF+ programmes** prioritising vulnerable workers, skills for the green transition, and labour market adaptability.

The guidelines in D6.3 clarify how these instruments can be mobilised to sustain and scale the G4F model.

3.3 The GEEK4Food Model as a Policy and Practice Innovation

GEEK4Food’s design is based on a shift from traditional “knowledge push” systems, where education offers predefined curricula, to a dynamic skills ecosystem that responds to real-time and forecasted market needs. This is achieved through:

1. AI-driven Skills Intelligence

Developed in WP2–3, the GST-G4F tool forecasts emerging skills, detects gaps, and aligns them with ESCO, GreenComp, and sectoral frameworks. It enables decision makers and educators to design training programmes aligned with actual and future labour market needs.

2. Challenge-Based Pedagogies and Micro-Credentials

WP4 and WP5 show that green skills and transversal competences are best acquired through experiential learning, challenge-based tasks, and modular micro-credentials that support flexible learning pathways.

3. The GST-G4F Platform (Person–Public–Private)

The platform creates a shared digital space enabling:

- learners to assess their competences and find tailored training;
- employers to express skill needs and recruit talent;
- educators to update curricula;
- policymakers to foresee and manage skill interventions.

4. Evaluation and Skills KPIs

D6.2 provides a KPI library (e.g., competency gain, employability, innovation readiness, carbon impact) ensuring guidelines are measurable and aligned with policy outcomes.

5. Financing Pathways

Through D6.4, the project introduces potential outcome-based, blended and public–private finance models enabling sustainable scaling beyond grant dependency.

3.4 Purpose and Use of the Guidelines

The guidelines speak to three distinct but interdependent audiences:

AUDIENCE	PURPOSE OF GUIDELINES	EXPECTED USE
Policy makers	Integrate AI-based skills intelligence, micro-credentials, and co-creation mechanisms into education and labour market policy	Program design, funding calls, regulation, S3 integration
Academia & VET providers	Modernise curricula, adopt challenge-based learning, embed micro-credentials, engage with industry	Curriculum reform, accreditation, partnerships
Industry & Employers	Express skill needs, collaborate in training design, support implementation and financing	Talent development, innovation adoption, recruitment

Each section includes: Guideline boxes, Implementation templates, KPI alignment, Suggested financing mechanisms, Roles and responsibilities, Examples drawn from D6.2 Use Cases.

4. Diagnostic Framework

The green transition of Europe’s agri-food sector is constrained not primarily by a lack of innovation potential, but by five structural hurdles that impede alignment between policy, education, and industry. These hurdles emerged consistently across MS1–MS3, stakeholder

workshops, expert consultations, and baseline analyses within the GEEK4Food consortium. They are barriers to actionability, coordination, speed, and depth of the green skills transformation.

GEEK4Food addresses these barriers through a unified skills-intelligence and ecosystem-building model. The diagnostic framework presented here underpins the guidelines for policy makers, academia, and industry set out in Section 3.

4.1 Purpose of the Diagnostic Framework

This diagnostic framework serves four functions:

1. **Diagnose systemic bottlenecks** slowing green skills deployment in the agri-food sector.
2. **Identify leverage points** for interventions across policy, education, and industry.
3. **Map G4F tools** to real systemic needs.
4. **Provide a logic model** for the guidelines and the financing solutions.

The framework's five hurdles express not only what must change, but how institutions must behave differently to enable a rapid, just, and innovation-oriented transition.

4.2 The Five Hurdles

Hurdle 1: Superficiality

Green transition strategies often remain high-level, narrative-based, and disconnected from measurable skills adoption and institutional change.

Typical manifestations:

- Environmental or sustainability goals published without competency frameworks.
- Curricula that reference “green skills” but lack operational content or measurable learning outcomes.
- Policy documents that remain descriptive rather than prescriptive.
- Industry commitments (e.g., sustainability pledges) that do not translate into training demand signals.

Why it matters:

Superficiality leads to misalignment between ambition and implementation, producing symbolic compliance rather than transformation. Skills strategies become rhetorical rather than operational.

Hurdle 2: Scientific Ignorance

Weak translation between scientific innovation and industry/education practices.

Manifestations:

- Research outputs and innovations (e.g., alternative proteins, fermentation, valorisation technologies) are not integrated into training offers.
- Slow diffusion of scientific tools into SMEs.
- Limited connection between HEI research groups and VET/training curricula.
- Lack of cross-disciplinary integration (biology + engineering + sustainability + entrepreneurship).

Why it matters:

Scientific breakthroughs remain locked in academic or EU-funded projects rather than being deployed into mainstream education and industry practice, slowing innovation adoption.

Hurdle 3: Speed

Curriculum updates, accreditation cycles, and policy adjustment processes are too slow to respond to fast-evolving skill needs.

Manifestations:

- Accreditation cycles of 3–5 years incompatible with rapid technology changes.
- Regulatory signals (e.g., packaging bans, carbon accounting requirements) create immediate industry needs, but training systems lag.
- Slow integration of micro-credentials into national frameworks.
- Employers report new skills faster than education systems can respond.

Why it matters:

Without accelerated responsiveness, skills ecosystems remain reactive and always “behind the curve.”

Hurdle 4: Stakeholder Gaps

Fragmentation between actors prevents shared understanding and coordinated action.

Manifestations:

- Employers do not articulate skill needs clearly or consistently.
- Training providers do not engage industry early enough in curriculum design.
- Policymakers lack integrated skills intelligence to guide funding priorities.
- Learners lack a unified entry point to training and job opportunities.

Why it matters:

Skills development ecosystems fail when they operate in silos. Coordination failures reduce efficiency, quality, and relevance.

Hurdle 5: Spin

Communication and visibility outpace actual capability-building.

Manifestations:

- Institutions highlight sustainability initiatives without demonstrating outcomes.
- Emphasis on branding “green agendas” instead of operational change.
- Lack of metrics and monitoring frameworks.
- Short-lived pilot initiatives without long-term adoption pathways.

Why it matters:

Spin undermines credibility, reduces stakeholder engagement, and erodes trust in public and private sustainability commitments.

4.3 Diagnostic Framework Table

HURDLE	CORE ISSUE	TYPICAL SYMPTOMS	CONSEQUENCES	G4F TOOL TO COUNTERACT
Superficiality	Goals not linked to skills	Vague sustainability language	Low adoption, low impact	KPI alignment (D6.2), micro-credential, challenge-based learning
Scientific Ignorance	Research-practice gap	SMEs unaware of innovations	Slow diffusion of green tech	GST-G4F tool: skill-knowledge mapping, HEI-industry co-creation
Speed	Slow institutional cycles	Curricula lag behind markets	Training misaligned	Micro-credential, modular pathways, AI forecasting
Stakeholder Gaps	Poor coordination	Fragmented training landscape	Inefficient, duplicative	3P-G4F Platform (Public-Private-People) collaboration

Spin	Communication > capability	Branding over outcomes	Erosion of trust	Evaluation framework + KPIs (D6.2)
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4.4 Link to Project Outputs

The hurdles are addressed by specific G4F outputs:

SPECIFIK G4F OUTPUT	HURDLE ADDRESSED	HOW
AI Skills Intelligence (WP2–WP3)	Speed + Scientific Ignorance	<ul style="list-style-type: none"> • Forecasts emerging skills • Matches HEI offerings to industry needs • Identifies training gaps
Challenge-Based Pedagogies (WP4)	Superficiality + Scientific Ignorance	<ul style="list-style-type: none"> • Embeds real scenarios into training • Accelerates adoption of scientific innovation
Micro-Credentials (WP5)	Speed + Superficiality	<ul style="list-style-type: none"> • Enable rapid curriculum updates • Provide measurable, modular credentials
3P-G4F Platform (WP3)	Stakeholder Gaps + Spin	<ul style="list-style-type: none"> • Connects learners, employers, HEIs, policymakers • Provides transparent matching and monitoring
Evaluation + KPIs (D6.2)	Spin + Superficiality	<ul style="list-style-type: none"> • Links training to outcomes • Establishes measurable impact pathways
Impact Finance Models (D6.4)	Speed + Stakeholder Gaps	<ul style="list-style-type: none"> • De-risk investment in green skills • Provide sustainable funding mechanisms

4.5 Diagnostic Implications for Each Stakeholder Group

STAKEHOLDER	MOST RELEVANT HURDLES	WHY	IMPLICATIONS
Policy Makers	Superficiality, Speed, Stakeholder Gaps	Policy cycles slow; fragmented actors	Require integrated skills intelligence & KPI-driven funding
Academia	Scientific Ignorance, Speed	Curricula lag; research not transferred	Need fast-update mechanisms, micro-credentials, co-creation
Industry	Stakeholder Gaps, Scientific Ignorance, Spin	Difficulty expressing skills needs; trust gaps	Require structured engagement channels and impact metrics

5. Guidelines for Policy Makers, Academia, Industry, and Funding Institutions

This section provides operational guidance linked to the diagnostic framework. Each set of guidelines is designed to be translated into policies, institutional strategies, partnerships, and funding decisions, consistent with D6.2 use cases and with D6.4’s “existing instruments first” approach.

5.1 Guidelines for Policy Makers (EU, National, Regional)

Policy makers should enable faster responsiveness, measurable skills adoption, structured co-creation, territorial coherence, and financing alignment by leveraging existing programmes and governance mechanisms. This can be operationalised through a coherent toolbox that combines: (i) skills intelligence inputs to anticipate needs and steer interventions; (ii) the 3P-G4F platform to monitor delivery and outcomes; (iii) recognition of micro-credentials to support flexible, stackable learning pathways; (iv) KPI-based funding conditions to link resources to verifiable results; and (v) systematic integration of these elements into regional and national strategies, as well as into relevant calls for proposals and implementation frameworks.

Guideline Overview Box – Policy Makers

CHALLENGE AREAS	SUPERCIALITY / SPEED / STAKEHOLDER GAPS
What Policy Makers Must Achieve	Faster curriculum responsiveness, aligned funding, measurable skills adoption, territorial coherence
Key G4F Tools	AI Skills Intelligence • 3P-G4F Platform • Micro-credentials framework • KPI system
Financing Levers	ESF+, ERDF, CAP, JTF, RRF, PPPs

Guideline 1 — Adopt AI-Based Skills Intelligence for Planning and Funding Decisions

Rationale

Traditional labour market analyses are descriptive and slow; WP2–WP3 show that AI can forecast skill needs faster and more accurately, reducing informational asymmetry.

Actions

- Integrate the G4F AI model into national/regional skills observatories.
- Require ESF+/CAP-funded training providers to justify training priorities based on AI skill intelligence outputs.
- Use AI insights in Smart Specialisation (S3/S4) strategies, CAP AKIS systems, and regional innovation policies.

Expected Impact

Better alignment of training supply with real skill demand.

KPI Reference

KPI-1 (alignment rate) and KPI-2 (time to update curricula).

Guideline 2 — Embed Micro-Credentials in Qualification Systems and Training Funding

Rationale

Micro-credentials enable responsiveness and modular learning, addressing the Speed hurdle.

Actions

- Recognise micro-credentials in national qualifications frameworks.
- Make micro-credentials eligible for ESF+ reimbursement.
- Require public-funded training providers to adopt challenge-based modules and clear competency outcomes.

KPI reference

KPI-3 (accredited micro-credentials).

Guideline 3 — Require Co-Creation Mechanisms in Public Training Investments

Rationale

Challenge-based learning and HEI–industry co-design improve relevance (addresses Scientific Ignorance + Stakeholder Gaps).

Actions



- Make co-creation an eligibility condition in ESF+, CAP, RRF calls.
- Integrate industrial partners in curriculum advisory councils.
- Incentivise engagement through tax credits or public co-funding for companies that participate.

KPI Reference

KPI-6 (share of co-created training modules), KPI-10 (co-creation participation rate).

Guideline 4 — Shift from input-based to KPI-based funding and accountability

Rationale

Overcomes Superficiality + Spin by ensuring training produces measurable outcomes.

Actions

- Embed below KPIs in monitoring frameworks and contracts;
- Require providers to report competency gains and relevance;
- Enable transparent dashboards.

KPI Reference

KPI-8 (competency gain), KPI-9 (learner satisfaction).

Guideline 5 — Align and mobilise finance using existing instruments first

Rationale

D6.4 demonstrates that skills ecosystems cannot rely solely on grants.

Actions

- Mainstream G4F training solutions through existing instruments (ESF+, ERDF, CAP/AKIS, JTF, RRF), using KPI conditions;
- Use development finance actors where available to support scale-up through existing mandates;
- Treat outcome-based / blended configurations as exploratory options where permitted and feasible (see Section 8).

KPI Reference

KPI-13 (investment mobilised), KPI-14 (employment outcomes).

Implementation Template for Policy Makers

SECTION	REQUIRED INPUT
Skill Need Identified	Draw from AI model output (WP2–WP3)
Relevant Policy Area	Education, CAP, S3/S4, ESF+, SME support
Funding Mechanism	ESF+, ERDF, CAP AKIS, JTF, RRF
Co-Creation Requirement	(Y/N) and Stakeholders involved
Expected Outputs	Micro-credential(s), curricula, training actions
Expected Outcomes (KPIs)	Select from below KPI catalogue
Financing Complement	PPP, [GS-IB, SBRS to explore]
Monitoring Mechanism	Use G4F KPIs and platform data dashboards

5.2 Guidelines for Academia (Universities, VET, training providers)

Academia must operationalise responsiveness, relevance, and measurable learning outcomes while maintaining quality and transferability.

Guideline Overview Box – Academia

CHALLENGE AREAS	SCIENTIFIC IGNORANCE • SPEED
What Academia Must Achieve	Faster curriculum updates, stronger industry partnerships, evidence-based training pathways

Key G4F Tools

AI Skills Map, Challenge-Based Pedagogy,
Micro-Credentials, 3P-G4F Platform

Financing Levers

ESF+, Horizon Europe, RRF, PPPs

Guideline 1 — Use AI Skills Intelligence to Update Curricula Continuously

Actions

- Map existing curricula to the G4F AI-derived skillsets.
- Use quarterly AI updates to adjust learning outcomes.
- Identify content gaps and co-design new modules with industry.
- Document changes and link them to measurable learning outcomes.

KPI Reference

KPI-5 (curriculum responsiveness index).

Guideline 2 — Expand challenge-based pedagogy to build transversal and applied competences

Actions

- Implement industry challenge labs to traditional lectures.
- Use real data/problem statements from industry partners.
- Integrate sustainability scenarios aligned with GreenComp

KPI Reference

KPI-7 (engagement rate in challenge-based learning) and KPI-8 (competency gain).

Guideline 3 — Deploy micro-credentials to create modular learning pathways

Actions

- Design micro-credentials based on AI-identified skills and D4.2 template.
- Submit them to national accreditation bodies.
- Offer them through MOOCs, blended formats, or short cycles.

KPI Reference

Accredited green micro-credentials created.

Guideline 4 — Use the GST-G4F platform as a shared operational layer

Actions

- Publish training opportunities and learning pathways.
- Support matching of learners to employer challenges.
- Use platform logs as evidence for monitoring (attendance is not sufficient; competence is required).

KPI Reference

KPI-12 (cross-sector collaborations launched via platform).

Guideline 5 — Build internal governance for continuous co-creation

Actions

- Establish advisory councils.
- Assign responsibility for employer engagement.

- Organise quarterly update cycles based on AI outputs.
- Maintain a pipeline from research to training content.

KPI Reference

KPI-6 (co-created modules) and KPI-11 (joint pilots).

Implementation Template for Academia

STEP	DESCRIPTION
1. Skills Mapping	Use AI model to analyse programme alignment
2. Co-Creation Setup	Identify industrial partners
3. Curriculum Redesign	Introduce micro-credentials and challenge-based modules
4. Accreditation	Submit micro-credentials for recognition
5. Delivery	Implement blended/online/on-site format
6. KPI Monitoring	Use G4F KPIs and platform data dashboards

5.3 Guidelines for Industry (enterprises, SMEs, clusters, cooperatives)

Industry actors are essential co-producers of skills and must convert evolving needs into structured demand signals and training uptake.

Guideline Overview Box – Industry

CHALLENGE AREAS	STAKEHOLDER GAPS • SCIENTIFIC IGNORANCE • SPIN
What Industry Must Achieve	Express skills needs, co-design training, adopt innovation, support workforce upskilling
Key G4F Tools	AI skills articulation tools, GST-G4F platform, Challenge-based learning
Financing Levers	Tax incentives, Sectoral PPPs, New exploratory financing models

Guideline 1 — Structure skills demand so it is usable

Actions

- Define job profiles and skill needs.
- Provide evidence of changing processes and compliance requirements.
- Collaborate in translating needs into learning outcomes.

KPI Reference

KPI-10 (co-creation participation rate).

Guideline 2 — Participate in co-creation and provide challenge statements

Actions

- Supply real cases and datasets.
- Host challenges or site visits.
- Provide mentors.

KPI Reference

KPI-6 and KPI-11.

Guideline 3 — Treat training investments as innovation enablement and risk management

Actions

- Link training decisions to adoption of technologies and sustainability objectives.
- Measure ROI using competency gains and operational indicators, not only training hours.

KPI Reference

KPI-8 and KPI-4 (innovation adoption rate).

Guideline 4 — Use KPI reporting to avoid “spin”

Actions

- Adopt transparent reporting on competency gains.
- Use dashboards to demonstrate measurable improvements.
- Align workforce development with operational sustainability objectives.

KPI Reference

KPI-15 (carbon impact reduction), where demonstrable and measurable.

Guideline 5 — Support Innovation Adoption Through HEI collaboration

Actions

- Participate in research translation workshops.
- Provide access to pilot lines, machinery, or materials.
- Adopt novel technologies emerging from HEI labs.

KPI Reference

Rate of scientific innovation adoption.

Implementation Template for Industry

STEP	DESCRIPTION
1. Skill Gap Analysis	Use AI + internal HR data to define gaps
2. Training Co-Design	Collaborate with HEIs via GST-G4F platform
3. Workforce Upskilling	Adopt micro-credentials and challenge-based training
4. Financing	Tax incentives, Sectoral PPPs, New exploratory financing models
5. Monitoring	Report KPIs through GST-G4F platform dashboards

5.4 Guidelines for Private Investors and Finance Intermediaries

This subsection is added explicitly to match the deliverable’s required audience (“private investors”) while remaining consistent with D6.4’s approach.

Private investors, foundations, banks with sustainability mandates, and development finance intermediaries can support scaling only where: (i) the training model is operational and measurable (KPIs), (ii) the finance pathway is feasible within existing mandates and programmes (D6.4 Option 1), and (iii) governance and monitoring mechanisms ensure accountability and transparency.

Guideline 1 — Require outcome logic and measurable KPIs as a precondition

Actions

- Use KPI Framework (6.2) as a minimum evidence set.
- Request pre/post competence assessment data.
- Require clear links between training, adoption, and outcomes.

Guideline 2 — Prioritise integration with existing instruments and programme mandates

Actions

- Screen opportunities by compatibility with ESF+, ERDF, CAP/AKIS, JTF, RRF objectives.
- Avoid creating “new instruments” where the mandate is mainstreaming and alignment.
- Finance pilots and scale-up through existing mechanisms where possible.

Guideline 3 — Use exploratory configurations only as separated, testable pilots

Actions

- If outcome-based or repayment-linked models are considered, treat them as pilots inspired by existing practices and subject to legal/operational feasibility checks.
- Avoid assuming returns, default rates, or repayment behaviour without evidence.

6. Implementation Pathways and KPIs

This section translates the guidelines into operational pathways for policy makers, academia, and industry. It also provides a unified KPI architecture (6.2), enabling consistent monitoring and evaluation of GEEK4Food-aligned interventions.

6.1 Implementation Pathways Overview

6.1.1 Implementation Pathway – Policy Makers

Policy Maker Implementation Steps

STEP	NAME	IMPLEMENTATION
Step 1	Use AI Skills Intelligence for Planning	<ul style="list-style-type: none"> ● Use quarterly AI updates (WP2–3) to identify skill shortages. ● Map to ESCO, GreenComp, S3 priorities, CAP AKIS needs.

Step 2	Design Funding Interventions Using KPIs	<ul style="list-style-type: none"> ● Adopt the 6.2 KPI Framework in ESF+, ERDF, CAP, JTF, RRF calls. ● Require co-creation and micro-credentials as eligibility criteria.
Step 3	Mandate HEI–Industry Collaboration	<ul style="list-style-type: none"> ● Require training providers to demonstrate industrial engagement. ● Use the 3P-G4F platform as the coordination hub.
Step 4	Finance Using Blended Tools	<ul style="list-style-type: none"> ● Capitalise on blended financing and emerging financing models. ● Use ESF+ and RRF to de-risk private investment.
Step 5	Monitor via G4F Dashboards	<ul style="list-style-type: none"> ● Providers must report KPIs through the platform.

6.1.2 Implementation Pathway – Academia

The goal is rapid curriculum responsiveness, scientific transfer, and co-creation with industry.

Academia Implementation Steps

STEP	NAME	IMPLEMENTATION
Step 1	Map Curricula to AI Skills Data	<ul style="list-style-type: none"> ● Identify gaps and misalignments. ● Use skill descriptors to revise learning outcomes.
Step 2	Integrate Challenge-Based Pedagogy	<ul style="list-style-type: none"> ● Design real-world challenges from industry data. ● Include sustainability and circularity context.
Step 3	Develop Micro-Credentials	<ul style="list-style-type: none"> ● Follow WP4/WP5 templates. ● Ensure accreditation through national bodies.

Step 4	Deliver Training via Blended Models	<ul style="list-style-type: none"> Combine on-site labs, digital learning, mentoring, and community challenges.
Step 5	Evaluate Learning Outcomes Using KPIs	<ul style="list-style-type: none"> Competency gain, skills relevance, learner engagement.

6.1.3 Implementation Pathway – Industry

Industry becomes an active co-producer of skills.

Industry Implementation Steps

STEP	NAME	IMPLEMENTATION
Step 1	Define Skills Needs Using AI Tools	<ul style="list-style-type: none"> Upload job profiles to identify shortages.
Step 2	Co-Create Training with HEIs	<ul style="list-style-type: none"> Provide challenge statements, datasets, and mentoring.
Step 3	Implement Workforce Upskilling Plans	<ul style="list-style-type: none"> Partner with HEIs and micro-credential providers.
Step 4	Adopt New Technologies	<ul style="list-style-type: none"> Overcome Scientific Ignorance by integrating R&D outputs.
Step 5	Monitor ROI	<ul style="list-style-type: none"> Use KPI Framework (6.2) for investment measurement.

6.2 KPI Framework

D6.2 provides a modular KPI library, which is expanded here to support D6.3 guidelines.

KPIs are organised in four categories:

1. Skills Alignment & Responsiveness

2. Training Quality & Adoption
3. Innovation Transfer & Co-Creation
4. Economic, Social, and Environmental Impact

6.2.1 KPI Category 1: Skills Alignment and Responsiveness

KPI CODE	KPI DESCRIPTION
KPI-1	Alignment rate between training and AI-forecasted skill needs
KPI-2	Time to update curricula after market signals
KPI-3	Number of accredited micro-credentials developed
KPI-4	Rate of innovation adoption in training programmes

6.2.2 KPI Category 2: Training Quality & Adoption

KPI CODE	KPI DESCRIPTION
KPI-5	Curriculum responsiveness index
KPI-6	Share of co-created training modules
KPI-7	Engagement rate in challenge-based learning
KPI-8	Competency gain (pre/post assessment)
KPI-9	Learner satisfaction index

6.2.3 KPI Category 3: Innovation Transfer & Co-Creation

KPI CODE	KPI DESCRIPTION
KPI-10	Co-creation participation rate (industry)
KPI-11	Number of joint innovation pilots
KPI-12	Cross-sector collaborations launched via 3P-G4F

6.2.4 KPI Category 4: Economic, Social & Environmental Impact

KPI CODE	KPI DESCRIPTION
KPI-13	Investment mobilised for green skills
KPI-14	Employment outcomes (jobs gained/retained)
KPI-15	Carbon impact reduction through skills adoption

6.3 Monitoring Templates & Dashboards

Template 1 — Provider KPI Reporting Sheet

FIELD	DESCRIPTION
Programme Name	Micro-credential or training module
Target Skills	ESCO/GreenComp mapping

Delivery Mode	Online/Hybrid/Challenge-based
KPIs	KPI-1, KPI-8, KPI-11 etc.
Evidence	Assessment data, platform logs
Funding Source	ESF+, PPP etc.
Outcome Rating	Achieved / Partially Achieved / Not Achieved

Template 2 — Policy Funding Dashboard

INDICATOR	SOURCE	FREQUENCY	NOTES
Skills alignment	AI model	Quarterly	Core G4F metric
Co-creation rate	Platform logs	Quarterly	Required for ESF+
Outcome-based funding released	Section 8	Annual	Linked to KPIs
Territorial coverage	HEI data	Annual	S3 alignment

6.4 Use Case Examples

Below are three example pathways showing how the guidelines, KPIs and implementation templates work in practice.

Use Case 1 — Sustainable Packaging Micro-Credential (Italy)

Signals (AI): AI detects emerging skill needs in bioplastics, LCA, regulatory compliance.

Actions

- HEI designs 4 micro-credentials (materials science, circular systems, packaging regulation, entrepreneurship).
- Industry provides challenge problems (packaging redesign, barrier testing).
- Policy maker funds via ESF+.

KPIs

- KPI-1: 82% alignment with AI forecast
- KPI-6: Co-creation rate 70%
- KPI-8: Competency gain +25%

Use Case 2 — Circularity Training for SMEs (Ireland)

Signals (AI): AI identifies the need for skills in food waste valorisation and upcycling.

Actions

- VET providers build short-cycle modules.
- Enterprise Ireland co-funds participation.
- Challenge-based labs run with Irish SMEs.

KPIs

- KPI-12: Investment mobilised €1.2M
- KPI-14: 50 jobs supported

Use Case 3 — Fermentation Skills (Poland)

Signals (AI): Growing demand for fermentation technologists.

Actions

- Polish universities co-design training with local industry.
- PPP-financing via regional fund.
- Micro-credentials stack into degree pathways.

KPIs

- KPI-5: Curriculum updates twice yearly
- KPI-8: Skill gain +30%

7. Governance and Territorial Integration

The green transition requires governance spanning EU, national, regional and institutional levels, coordinating stakeholders, and aligning funding streams and accountability mechanisms. The G4F ecosystem is inherently multi-level and must be implemented through existing governance structures wherever possible (e.g., S3/S4, CAP AKIS, ESF+/ERDF programming).

This section establishes the governance structure and territorial integration model required to sustain and scale the G4F guidelines presented in Section 5.

7.1 The Governance Challenge

Green skills adoption is slowed by fragmentation in three dimensions:

1. Vertical Fragmentation (EU → National → Regional → Local)

Policies, standards, and funding instruments originate at European level (ESCO, GreenComp, CAP, ESF+, etc.), but implementation occurs regionally (S3 strategies, CAP AKIS systems, regional operational programmes) and training delivery occurs locally/institutionally (HEIs, VET centres). Without alignment, skills initiatives become inconsistent, duplicative, or mismatched to territory-specific needs.

2. Horizontal Fragmentation (Education ↔ Industry ↔ Policy)

Stakeholders operate in silos:

- Policymakers set strategies but lack granular skills data.
- HEIs/VET providers offer training that may not reflect labour market needs.
- Industry struggles to articulate fast-evolving green skill demands.

G4F resolves this through the 3P model (Person–Public–Private) and shared platforms.

3. Temporal Fragmentation (Policy Cycles ↔ Training Cycles ↔ Market Cycles)

- Regulatory requirements change within months (e.g., packaging rules).
- Curricula take years to reform.
- Industry needs evolve quarterly.

AI-driven skills intelligence is essential to improve synchronisation.

7.2 G4F Governance Architecture (Multi-Level)

The governance model has **four layers**, each with defined responsibilities and coordination mechanisms.

Layer 1 — EU Level Governance

Primary Roles

- Define overarching frameworks (ESCO, GreenComp, Digital Competence Framework).
- Provide guidance on micro-credentials (Council Recommendations).
- Fund systemic transformation via ESF+, ERDF, Horizon Europe, Erasmus+, RRF, CAP.
- Support cross-national intelligence via the G4F AI model and data standards.

Integration Requirements

- Ensure Member States align skills policies with EU frameworks.
- Encourage cross-border mobility of learners and workers through micro-credentials alignment.
- Support transnational innovation networks (EIT Food, thematic S3 partnerships).
-

Layer 2 — National Governance

Primary Roles

- Recognise micro-credentials in national qualification frameworks (NQFs).
- Integrate G4F skills intelligence into national skills councils or observatories.
- Shape national training funding through ESF+ programmes and CAP Strategic Plans.
- Coordinate ministries (education, agriculture, digitalisation, labour).

Key Functions

- Embed KPIs into national monitoring frameworks.
- Link national policy to regional strategies (S3/S4).
- Use financing tools to crowd-in private capital.

Layer 3 — Regional Governance

Regions are the critical level for innovation alignment because:

- Smart Specialisation (S3) is set at NUTS2 level.
- CAP AKIS systems operate regionally.
- Regional development agencies (RDAs, CCDRs, Polish voivodeships, Italian regions, Romanian ADRs) manage agricultural, innovation, and ESF+/ERDF programmes.

Primary Roles

- Identify territorial skill needs based on AI and economic specialisations.
- Coordinate HEIs, VET providers, clusters, and industries.
- Fund regional G4F training initiatives using ESF+/ERDF/JTF.
- Participate in blended financing vehicles.

Implications for G4F

Regions must function as skill ecosystem orchestrators.

Layer 4 — Institutional & Local Governance

Universities, VET centres, clusters and companies implement training.

Primary Roles

- Adopt micro-credentials and update curricula.
- Host challenge-based learning modules.
- Provide data to the 3P-G4F platform.
- Measure KPIs and evaluate impact.

Institutional Requirements

- Internal governance mechanisms for rapid curriculum adaptation.
- Staff development for challenge-based pedagogy.
- Dedicated units for industry engagement.

7.3 Territorial Integration through S3/S4 Strategies

Smart Specialisation (S3) and new Sustainable Smart Specialisation (S4) strategies are the single most important vehicle for territorial adaptation of G4F.

Why S3/S4 are crucial

- They focus on region-specific strengths and innovation domains.
- They guide regional ERDF and ESF+ investments.
- They create governance platforms connecting HEIs, industry, and public authorities.

G4F Contribution to S3/S4

- AI skills intelligence provides evidence for priority selection.
- Micro-credentials support flexible adaptation of training pathways to S3 subdomains.
- Regional skills linked to entrepreneurial discovery processes.

Example

- A region with S3 specialisation in "bio-based materials" could adopt G4F guidelines to create a regional training hub for sustainable packaging, funded via ESF+ and supported by existing funding instruments and players and by impact investors.
- Additionally, outcome-based / repayment-linked models can be further investigated to widen financing options.

7.4 Integration with CAP Strategic Plans & AKIS

CAP Strategic Plans and AKIS provide training/advisory pathways. Integration points retained: skills needs assessments, micro-credentials for farmer/advisor training, and challenge-based learning for advisory innovation.

CAP Strategic Plans (CSPs) and the Agricultural Knowledge and Innovation Systems (AKIS) provide critical advisory and training pathways in food, agriculture and rural contexts.

G4F integration points:

- AI skills intelligence supports CAP needs assessments.
- Micro-credentials align with farmer and advisor training schemes.
- Challenge-based learning supports innovation intermediaries (advisory services).
- Existing funding options and impact investors can fund new advisory and skills programmes.

Outcome:

CAP-funded training becomes more targeted, competency-based, and aligned with innovation adoption.

7.5 Regional case examples (partner countries)

ITALY (REGIONS AS MANAGING AUTHORITIES)	POLAND (VOIVODESHIP-LEVEL MANAGEMENT)	IRELAND (ENTERPRISE AGENCIES + REGIONAL SKILL FORA)	PORTUGAL (CCDRS & REGIONS)
Regions integrate AI forecasts into ERDF/ESF+ calls.	16 voivodeships use regional innovation strategies to tailor micro-credentials.	Enterprise Ireland and Regional Skills Fora translate industry needs into training.	CCDR-led S3 strategies drive regional G4F pathways.
Regional universities co-create micro-credentials with clusters (e.g., Emilia-Romagna agro-industrial).	Regional Skills Councils feed training priorities into ESF+ ROPs.	Micro-credentials stack into national qualifications.	VET centres integrate challenge-based pedagogy tied to regional innovation domains.

Regional development banks support pilots.	Industry challenge-labs established via regional funds.	R&D-driven training for sustainable food innovation.	Skills-financing tools piloted with Banco Português de Fomento.
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7.6 Governance Template for Territorial Implementation

GOVERNANCE ELEMENT	REQUIRED ACTIONS	STAKEHOLDERS
Skills Intelligence Integration	Use AI insights for regional planning	RDAs, HEIs, Skill Councils
Training System Reform	Introduce micro-credentials and challenge-based models	HEIs, VET, national bodies
Funding Alignment	Use ESF+/ERDF/CAP with KPI requirements	Regional/national authorities
PPP Skills Financing	Align existing funding sources and partnership models; where legally feasible, pilot performance-based configurations as exploratory models (Option 2).	Investors, regions, HEIs, industry
Monitoring and KPIs	Collect data via 3P-G4F platform	Providers, policymakers
Governance Bodies	Create regional G4F Steering Committees	All actors

7.7 Multi-Level Governance Checklist (For Adoption)

EU LEVEL	NATIONAL LEVEL	REGIONAL LEVEL	INSTITUTIONAL LEVEL
Alignment with ESCO and GreenComp	Micro-credentials formally recognised	Skills needs integrated into S3/S4	Curricula mapped to AI outputs

Use of micro-credential principles	National Skills Observatories integrate G4F AI	CAP AKIS incorporates micro-credentials	Challenge-based pedagogy adopted
Integration with EU-level skills agendas	KPI-based funding adopted	Regional PPP financing mechanisms piloted	Co-creation mechanisms functioning
Coordination with EIT Food and thematic alliances	Policy coherence across ministries	Coordination mechanisms established (steering groups)	KPI reporting embedded

8. How to Finance Green Skills Development

8.1 Finance pathways using existing instruments and existing players

8.1.1 Why finance matters for G4F implementation

G4F implementation requires sustained investment in recurring costs: micro-credential delivery, challenge-based learning operations, industry co-creation units, skills intelligence maintenance, continuous curriculum updates, regional coordination, and monitoring systems. These are not one-off costs.

8.1.2 Core limitation addressed (funding gap + accountability gap)

As evidenced in WP6 logic and reflected in D6.2/D6.4, the challenge is not necessarily a lack of available instruments, but the fragmentation of programmes and weak linkage between funding and competency outcomes. The “existing instruments first” pathway therefore emphasises: alignment, coordination, KPI conditions, and implementation templates that managing authorities and institutions can deploy immediately.

8.1.3 Policy integration: how existing funding instruments support G4F

The following mapping is retained and reframed explicitly as existing instruments that can embed G4F solutions:

- **ESF+**: supports micro-credentials, VET upskilling, HEI–industry cooperation; can fund KPI-based delivery and monitoring requirements.
- **ERDF**: supports training infrastructures, innovation centres and regional ecosystems.

- **CAP Strategic Plans / AKIS:** funds advisory services, farmer skills, rural innovation, and training delivery channels.
- **JTF:** supports retraining in transition territories.
- **RRF:** supports reform and digitalisation accelerators (short-term).
- **InvestEU:** can provide guarantees within existing windows where relevant and legally feasible; applicability to skills investments should be checked case-by-case.

8.1.4 Existing PPP cooperation models (within current rules)

PPP in the WP6 sense is not a “new instrument”, but a structured cooperation arrangement that aligns: (i) public funding streams, (ii) training providers and institutional capacity, (iii) private sector demand and co-investment where possible, (iv) monitoring and accountability via KPIs and platform data.

8.1.5 Practical template “Existing instruments + KPI conditionality”

Instrument: ESF+/ERDF/CAP/AKIS/JTF/RRF

Eligible actions: micro-credentials, challenge labs, advisory training, SME upskilling

Conditions: co-creation evidence + KPI reporting

Monitoring: platform logs + competency assessment evidence

Governance: regional steering group aligned with S3/S4 and CAP/AKIS nodes

8.2 Performance-based and blended configurations (exploratory)

This subsection is retained to reflect the consortium’s exploratory work but is explicitly separated and described as optional, feasibility-dependent, and not assumed as a required deliverable output under the “existing instruments first” compliance pathway.

8.2.1 Exploratory model A — GS-IB (Green Skills Impact Bond)

A GS-IB is an exploratory model / concept of outcome-based financing vehicles designed to scale regional or national green skills programmes, thus it should be validated legally and operationally in each country/region.

8.2.1.1 What is a GS-IB?

A GS-IB is thought as a public–private partnership in which:

- Private investors provide upfront capital to deliver green skills programmes.
- Training providers / HEIs implement micro-credentials and challenge-based modules.

- Outcome payers (usually public authorities, regional development banks, or EU funds) repay investors only if KPIs are achieved.

KPIs are based on competency gain, innovation adoption, training completion, employment outcomes, carbon reduction).

8.2.1.2 When GS-IBs Could Be Used

GS-IBs could be suitable for:

- large-scale regional reskilling efforts
- systemic transitions (circularity, carbon farming, packaging reform)
- multi-provider ecosystems (universities, VET, NGOs)
- innovation-focused skills (fermentation, biotech, AI in agri-food)

8.2.1.3 Potential KPI Families for GS-IBs

OUTPUT KPIS	OUTCOME KPIS	IMPACT KPIS
Number of micro-credential completions	Competency gain (pre-post assessment)	Carbon reduction attributable to training
Number of SMEs engaged	Skills alignment index	Innovation adoption rate (industry-side)
Number of challenge-based learning units delivered	Employment rate in green jobs	Productivity increase in green processes

8.2.1.4 Hypothetical Example GS-IB Use Case

CATEGORY	DESCRIPTION
Region	Italy (Emilia-Romagna)
Skills Needed	Sustainable packaging engineering

Investment	€X million over 4 years
Outcome Payer	Regional government via ESF+/ERDF
Investors	Foundations + impact fund + regional development bank
Expected Return	X% based on KPIs achieved
Output	X00 learners trained
Impact	X% improvement in packaging circularity metrics across X00 SMEs

8.2.2 Exploratory model B — SKILLS-BASED REPAYMENT SCHEME (SBRS)

SBRS might be a financing mechanism for individual learners, particularly adult workers and SME employees.

8.2.2.1 What is SBRS?

A Skills-Based Repayment Scheme would allow learners to:

- Access training (micro-credentials) with no upfront cost
- Repay only if they experience income improvement or employment stability
- Benefit from risk-sharing with public and philanthropic actors

It is inspired by Income-Share Agreements but adapted for green skills, vocational training, and moderate-income earners.

8.2.2.2 How SBRS Could Support G4F Goals

- Makes green skills accessible to disadvantaged workers
- Encourages continuous upskilling
- Mobilises private capital for education
- Reduces risk for learners
- Can be blended with ESF+ to reduce repayment burden

8.2.2.3 SBRS Hypothetical KPI Framework

FOR LEARNERS	FOR PROVIDERS	FOR PUBLIC AUTHORITIES
Income uplift	Completion rate	Cost per successful learner
Employment stability	Transition-to-employment rate	Socioeconomic value creation
Competency gain		

8.2.2.4 Hypothetical Example SBRS Use Case

CATEGORY	DESCRIPTION
Country	Ireland
Target Group	SME workers in food waste valorisation
Average Training Fee	€X per learner
Repayment Structure	X% of monthly income for 18 months, conditional on income rise
Public Support	X% guarantee from ESF+
Philanthropic Layer	X% first-loss
Outcome	X% learners experience income improvement → repayment triggered

8.2.3 Potential Investor Typologies

PUBLIC INVESTORS	PRIVATE IMPACT INVESTORS	PHILANTHROPIC INVESTORS	INSTITUTIONAL CO-FUNDERS
ESF+ Managing Authorities	Impact investment funds	Foundations	HEIs (in-kind contributions)
Regional development banks	ESG venture capital	Corporate donors (CSR)	Industry partners
Ministries (Education, Agriculture)	Green transition funds	Trusts supporting education, circularity, climate	Cluster organisations
EIB / EIF (InvestEU windows)	Banks with sustainability mandates		

8.2.4 How Funding Instruments Could Support G4F

FUND	DESCRIPTION
ESF+	Could support micro-credentials, VET upskilling, HEI–industry cooperation, and can act as outcome payer in exploratory financing models.
ERDF	Finances regional training infrastructures, innovation centres.
CAP Strategic Plans / AKIS	Finances advisor training, farmer skills, rural innovation.
JTF (Just Transition Fund)	Supports retraining in carbon-intensive regions.
RRF	Short-term accelerator for reform of training systems and digitalisation.
InvestEU	Provides guarantees to private investors participating in exploratory financing models.

8.2.5 Hypothetical Territorial Examples

Template 1 – GS-IB Design Blueprint

COMPONENT	DESCRIPTION
Target Skills	Defined via AI tool
Beneficiaries	Workers, SMEs, students
Providers	HEIs, VET, NGOs
Investors	Impact funds, banks, foundations
Outcome Payer	Region, Ministry, ESF+ MA
KPIs	Select from KPI Framework
Timeline	X years
Repayment	Conditional on outcomes

Template 2 – SBRS Scheme Design

FEATURE	DEFINITION
Fee Level	€X typical
Trigger	Income uplift / job stability
Repayment	% of income for duration
Public Guarantee	X% via ESF+
Philanthropic Layer	X% first-loss
Providers	HEIs/VET
Monitoring	3P-G4F dashboard

8.2.6 Hypothetical Finance Examples for Different Territorial Models

SMALL REGION (E.G., ALGARVE, MADEIRA)	LARGE REGION (E.G., EMILIA-ROMAGNA, SILESIA)	RURAL REGION (E.G., ROMANIA ADR NORD-EST)
Use SBRS for individual skills	Large GS-IB for industrial-scale food innovation skills	CAP AKIS + micro-credentials
Small GS-IB for circular tourism + agri-food skills	Development bank co-investment	GS-IB for advisory services modernisation
Leverage ESF+ and ROP funds	Blended stack including ERDF	PPP with regional clusters

8.2.7 How Finance Enables the Guidelines of D6.3

GUIDELINE AREA	FINANCE MECHANISM
Curriculum reform and micro-credentials	ESF+/national training funds + institutional budgets
Challenge-based learning	existing PPP cooperation models + regional innovation funds
Upskilling workers	ESF+/employer co-financing; exploratory SBRS only if feasible
HEI–industry co-creation	ESF+/ERDF cooperation actions + foundation support where available
Skills intelligence integration	institutional and programme-level support
Territorial hubs	ERDF + regional development agencies + existing cluster structures

8.3 Final recommendations

1. **Adopt KPI-based accountability** for training investments using the KPI library, reducing the “spin” and “superficiality” hurdles.
2. **Embed micro-credentials and co-creation** into existing instruments (ESF+, ERDF, CAP/AKIS, JTF, RRF) to improve speed and stakeholder engagement.
3. **Use existing PPP cooperation models** to mainstream G4F solutions; treat outcome-based and repayment-linked configurations as **exploratory pilots** only, with feasibility checks and without invented parameters.
4. **Use the 3P-G4F platform for transparency and monitoring**, ensuring that skills financing is linked to demonstrable competency gains rather than attendance alone.

10. Conclusions

The GEEK4Food guidelines presented in this document represent a shift from traditional, supply-driven education toward a dynamic, evidence-based skills ecosystem for Europe’s agri-food sector. By addressing the structural hurdles of superficiality, scientific ignorance, and institutional lag, these guidelines provide a validated roadmap for the green and digital transition.

10.1 Summarising the Strategic Approach

The core strength of the GEEK4Food model lies in its integrated nature. The guidelines succeed by linking three critical pillars:

- **Intelligence:** Utilizing AI-driven skills forecasting to ensure curricula are proactive rather than reactive.
- **Pedagogy:** Mainstreaming micro-credentials and challenge-based learning to provide the "skills fluidity" required by a rapidly evolving market.
- **Accountability:** Shifting the focus of financing from input-based proxies (attendance) to measurable competency outcomes (KPIs).

10.2 Validation and Adoption Readiness

The iterative consultation process, comprising expert questionnaires, institutional focus groups, and financial institution surveys, confirmed that the guidelines are both relevant

and implementable. Stakeholders validated the Integrated Public–Private–People (PPP) model as a realistic framework for de-risking private investment through existing EU instruments like ESF+, CAP, and RRF. The consensus reached during the March 2026 Expert Dialogue emphasizes that while technology is an enabler, the success of the green transition depends on the high-quality coordination of human capital development across all levels of governance.

10.3 Sustainability and Scaling Beyond the Project

The guidelines are designed to be policy-safe and immediately deployable within current regulatory frameworks. By utilizing the 3P-G4F platform as a shared operational layer, regional and national authorities can maintain the momentum of the project, ensuring that training interventions remain aligned with Smart Specialisation (S3/S4) strategies and the European Green Deal.

In conclusion, Deliverable 6.3 provides the necessary due diligence logic for policymakers and investors to treat green skills as a strategic asset rather than an operational cost. Through the continued adoption of these guidelines, the agri-food sector will be better equipped to operate within planetary boundaries while remaining globally competitive.

----- END OF THE DELIVERABLE -----

11. Annexes

Annexe 1

Focus Group Report: An Expert Dialogue on "Skills, Policy and Investment" in Europe's Food Systems

Date: 18 March 2026 **Time:** 10:00 – 12:00 CET **Platform:** Online Focus Group via Google Meet and Miro **Project Coordinator:** Paola Pittia, University of Teramo **Facilitators:** Dariusz Kozdra, Marcin Wierzbowski and Kacper Nosarzewski, 4CF The Futures Literacy Company

Focus Group Context

The focus group was designed to provide an expert review of the GEEK4Food framework. Funded under the Erasmus+ Forward-Looking Partnership, GEEK4Food has developed tools to address the structural gap in human capital and skills required to implement the EU's green and digital transition in the agri-food sector. The primary goal of the session was to validate the G4F deliverables by stress-testing them against plausible, disruptive future scenarios (wildcards).

Participant Information

- **Total Registered Participants:** 34
- **Total Attended Participants:** 21

Stakeholder category	N.
Education	11
Funding	4
Policy	6

- **Targeted Institutional Remits:** The dialogue was aimed at a select group of institutional representatives, divided into three specific domains: Policymakers and managing authorities, Funding professionals, and Representatives from universities, research institutes, and Businesses.

Materials Reviewed

Registered participants were provided with pre-reading materials and links to the digital tools developed by the consortium:

- **G4F GST:** Positioned as an engine for skills diagnosis and personalized learning paths.
- **Transformative Policies Pathfinder:** A regulatory map designed to align training initiatives with EU funding and frameworks.
- **Action Catalogue of 12 Use Cases:** Outlining localized, scalable interventions ranging from circular economy skills and fermentation biotechnology to sustainable packaging compliance and VET modernization.
- **Three Impact Finance Configurations:** Exploring 3P blended models to finance training.

Methodology: The Stress-Test

Participants were segmented into three sectoral "War Rooms" (Policy & Governance, Funding, Education & Research). In these Miro-based breakout rooms, they conducted a SWOT analysis of the GEEK4Food portfolio. The evaluation was conducted through the lens of specific disruptive scenarios (Wildcards), such as a sudden zero-tolerance skills mandate for CAP funding, a massive collapse in public grants, and the corporate ultimatum.

Executive Summary of Reviewer Inputs (SWOT Synthesis)

Group 1: Policy & Governance

- **Strengths:** The AI tool was praised for democratizing the learning curve, making it more accessible than platforms like LinkedIn Training. The sentiment was that since AI is now a necessity, utilizing available tools is highly beneficial.
- **Weaknesses:** There were concerns that SMEs are unfamiliar with integrative systems, meaning AI talent management might be perceived as impossible. Furthermore, AI tutors need to improve interactivity between teachers and students. Language barriers were also flagged as a vulnerability.
- **Opportunities:** Opportunities lie in delivering micro-credentials after funding calls through individual Higher Education Institutions (HEIs). The group also suggested focusing on the certification of employees rather than whole companies.
- **Threats:** Interventions must help small producers first. Validating compliance at a company level is difficult (e.g., HACCP).

Group 2: Funding

- **Strengths:** The G4F ecosystem successfully links skills, careers, employers, and policy into a cohesive guide. The Public-Private-People (PPP) model was deemed realistic, and the overall finance thinking was noted as diverse and forward-looking.
- **Weaknesses:** The ecosystem's heavy reliance on public funding makes it vulnerable. Private finance models remain mostly theoretical and unproven at scale, with payment logic frequently unclear. Crucially, some finance models place disproportionate risk on vulnerable actors, such as learners who cannot control all post-training outcomes, or small SMEs lacking administrative capacity.

- **Opportunities:** The framework targets a very real existing knowledge gap. Under financial squeeze scenarios, micro-credentials become highly valuable as shorter, targeted training becomes more attractive.
- **Threats:** If funding becomes overly dependent on strict proof of results, actors might become defensive, or providers might "cherry-pick" only the easiest participants. Additionally, there is a distinct lack of private skills financing schemes currently active.

Group 3: Education & Research

- **Strengths:** The portfolio effectively matches the need for "skills fluidity" and demonstrates strong potential for cross-sector use and wide European reach. The Pathfinder was highlighted as flexible for scenario-based adaptation.
- **Weaknesses:** The baseline status for measuring Impact KPIs is unclear; it is uncertain whether measurements apply to the whole organization, the sector, or just employees taking the micro-credentials. There is also a lack of standardization across sites and modules, and a need for clear correlation with the ECTS system.
- **Opportunities:** Securing buy-in from a consortium of HEIs could facilitate the federation of micro-credentials, making them stackable and universally recognized. Furthermore, involving students in the co-creation of courses offers significant potential.
- **Threats:** Gaining buy-in from the SMEs who stand to benefit the most remains a challenge. The continuous need for ongoing collaboration, funding, and the continuous re-validation of module content are notable threats.

Conclusions

The workshop feedback reveals that the GEEK4Food ecosystem's primary strength is its ability to conceptually link skills, careers, employers, educators, and policy into a cohesive framework. Participants noted that the proposed use cases are highly concrete and successfully address real-world agri-food transition needs, and the Public-Private-People cooperation model was viewed as a realistic approach. Furthermore, the AI tool was praised for democratizing the learning curve and making skill acquisition more accessible compared to existing platforms.

However, significant vulnerabilities were also identified during the stress tests. The framework currently remains heavily dependent on public funding, and its overall success relies on high-quality coordination among various stakeholders, which makes the entire model vulnerable if one piece fails. Reviewers expressed strong concerns that exploratory private finance models might place disproportionate risk on learners and small SMEs, who ultimately cannot control all post-training outcomes. Additionally, SMEs might struggle to adopt these systems due to bureaucratic burdens, limited administrative capacity, and a general lack of familiarity with integrative AI tools. From an educational standpoint, reviewers highlighted a lack of standardization across sites and modules and an unclear baseline for measuring the impact of Key Performance Indicators.

To address these findings, further actions should focus on reducing the operational and financial burden on smaller actors. Interventions must prioritize helping small producers first, and the project

should consider shifting the certification focus toward individual employees rather than entire companies, as achieving company-wide compliance is often too difficult for SMEs. The financial and payment logics must be explicitly clarified so that all stakeholders know exactly who pays for what and under what conditions. Moreover, outcome-based payment models must be carefully designed to prevent training providers from adopting defensive behaviors, such as selecting only the easiest participants to guarantee their funding.

On the educational front, the consortium needs to immediately establish clear baseline metrics for all use cases to accurately measure skills increases among targeted groups. Finally, to ensure long-term viability and European-wide recognition, the project should actively seek buy-in from a consortium of Higher Education Institutions to federate the micro-credentials and establish a clear correlation with the ECTS system. The AI tools and learning platforms must also be kept simple, affordable, and sensitive to language barriers to ensure widespread adoption and trust.

Detailed Inputs

GROUP 1 Policy & Governance

Strengths

- Focus should not be so much on European funds – very small part of the training
- AI is democratising the learning curve, easier than e.g. LinkedIn Training
- CEDEFOP processing job ads from several member states
- Since AI is a must, we might just as well use any available tool

Weaknesses

- SMEs are not familiar with integrative systems, so using AI to manage talent can be perceived as impossible
- AI tutors should improve interactivity between teacher/students
- LANGUAGE

Opportunities

- Micro-credentials delivered after a funding call through individual HEI institutions
- Similar to learners. The org delivering training is asked to carry too much performance, while they cannot control everything AFTER training.
- Certification of employees not companies?

Threats

- Help small producers in the first place
- Very hard because e.g. HACCP is at the company level. Why would sustainability be more stringent (to the Opportunity - Certification of employees not companies?)

Group 2 Funding

Strengths

- It looks like the “ecosystem” links skills, careers, employers, educators, policy, etc.
- The skills platform seems intuitive
- PPP model realistic
- Use cases are concrete and linked to real agrifood transition needs

- G4F ecosystem = good guidance for learners / educators
- Good policy awareness: training uptake is linked to rules, incentives and public programmes
- Finance thinking is diverse and forward-looking
- It answers a necessity within the employment environment
- Increases skills at the receiver
- Roadmap for funding
- Addresses different level of occupation

Weaknesses

- The ecosystem seems to have a strong whole-system logic. Does it though?
- The ecosystem also depends on coordination quality - its success depends on it. It may make the model strong but also vulnerable
- The different tools (skills, use cases, etc.) configuration seems resilient, concept-wise, but not yet in implementation
- Funding acquisition before business implementation
- The system still heavily dependent on public funding
- Skills on start-ups formation are not visible enough
- Payment logic is not always clear. Who pays, for what, under which conditions?
- Vague ethical banking / sustainability financing
- Financing availability to SMEs
- Standardisation in terminology for funding acquisition
- Soft skills importance in funding is not visible enough
- Private finance models quite theoretical, not proven (at scale)
- Some finance models may place too much risk on specific stakeholders (e.g., learners, SMEs or delivery actors) - re impact bonds, social outcome contracts, skill based or income contingent repayment
- What about the skills at the funding provider ? e.g public bodies It is often that SME and the public bodies are on a very different page
- Measuring impact is necessary, but harder than it looks (esp for skills / outcomes)
- Is the learner expected to carry the cost(s) if things do not work out? A learner does NOT control everything that affects success. The person who has the least power ends up carrying the risk of the whole system not working
- Small SMEs may be asked to take on financial/operational commitments harder for them to absorb (than for larger firms). What if staff leave, results do not show quickly enough, paperwork is too heavy, etc? Cannot ask small companies to behave like large organisations
- Similar to learners. The org delivering training is asked to carry too much performance, while they cannot control everything AFTER training. If payment depends too heavily on final outcomes providers may respond in problematic ways (e.g., selecting only easier participants, avoiding people with more barriers, etc.)
- Finance shall address also to the logistic aspects connected to the SMEs / start-ups, especially for biotech
- Bureaucratic burden for private sector for obtaining public financing for skills development
- A lot depends on SMEs engaging. But it may still be too complex for them with limited time, staff, admin capacity

Opportunities

- Targeted to an existing knowledge gap
- Growth opportunity for the expansion of a company through new skills
- The wildcard rewards models that are lean, practical

- Micro-credentials become more valuable (money is tighter, hence shorter / more targeted training become more attractive)
- Use cases linked to compliance, productivity, supply-chain demands, market access, cost reduction may be the strongest ones
- If money is scarce choosing the right training matters more - hence, AI tools might become more valuable because funding needs better targeting

Threats

- Insufficient workers showing interest in acquiring financing skills, with finance comes higher responsibility
- If money gets tighter and funding depends on proof of results, this may distort behaviour (actors becoming overly defensive)
- If the funding model feels risky or confusing to users; they may disengage - i.e., trust may fall
- The wildcard makes weak points much more visible: e.g., dependence on grants, complex coordination and delivery models
- Learning programs in academia slow in aligning with the market requirements in terms of finance related aspects of the graduates
- But the AI tools may also be expensive to maintain, difficult to update, or require a lot of actors to cooperate well
- AI tools become more valuable only if they are cheap enough to run, simple enough to use, clearly useful for decisions
- No private skills financing schemes
- Imbalance between funding on research and innovation for companies
- Governmental policies insufficiently allocating funds for skill acquisition in food
- Discrepancies between funding rates between various type of institutions remain present

Group 3 Education & Research

Strengths

- Matching the skills fluidity needs
- Pathfinder - Flexible for scenario-based adaptation
- Potential for wide reach at an European level
- Note: in Ireland Springboard offer support/funding for micro credentials for skill building <https://springboardcourses.ie/>
- Multisector applicability
- Strong potential for cross-sector use

Weaknesses

- Impact KPI's: what is your baseline status? organisation or sector based? Increase in skills amongst all employees or amongst those taking micro credentials (case use 5). Similar for case use 6, what is your baseline status and who is included in your measurement?
- Standardisation across sites/providers/modules etc.
- Workers acceptance issue
- Pathfinder - risk of slow uptake e by SMEs
- Correlation w/ ECTS system
- Digital wallet
- Compliance to EU law in regard to microcredentials.

Opportunities

- Include target groups from SMEs and industry
- Science and technology support of microcredentials
- Opportunity for harmonization of skills at a European level
- Do you need to buy in from HEIs? Or a consortium of HEIs? This would allow (an easier?) federation of the microcredentials to allow them to be recognised or stackable? And be a start point for wider reach across Europe. A benefit to the HEIs is that they increase European-wide recruitment
- Student involvement in co-creation of the courses

Threats

- Recognition. You have huge scope here (EU level). Start small, refine then expand?
- Funding?
- Buy in from SMEs who may benefit most?
- Ongoing collaboration, funding collaboration and governance needed.
- Validation and re-validation of modules, content and delivery
- No risk mechanism sharing for SMES and workers
- Threat if standalone and supply driven

Annexe 2

Report: GEEK4Food Financial Institutions Survey

Project Context & Objectives

The GEEK4Food Erasmus+ project conducted a survey to validate the feasibility of impact and blended finance schemes designed to support skills development for the green transition in the agri-food sector. The goal was to gather input from financial institutions on risk appetite, product parameters, and the structural conditions required to participate in public-private partnerships (PPP) for skills-linked financing.

The GEEK4Food Team outreached to 126 contacts in 82 financial institutions (impact funds, commercial banks, EU/national financial bodies) across G4F countries and beyond. The intent proved very challenging and achieved a very limited response.

Respondent Profiles

The survey captured insights solely from two financial institutions from one country, a commercial and philanthropic institution. Both respondents are based in **Romania** and already have existing products aligned with sustainability, ESG, or impact finance.

- **ProCredit Bank:** A commercial bank represented by the Head of Sustainable Development. They currently finance agri-food SMEs (processing/manufacturing).
- **Romanian American Foundation:** A foundation / philanthropic investor represented by the Senior Director of Rural Economy & PRI. They currently finance farmers and cooperatives.

Strategic Fit & Priorities

When considering new partnerships for blended finance, the institutions highlighted different but complementary priorities:

- **Risk and Simplicity:** The commercial bank prioritized **portfolio risk and guarantees**, while the philanthropic foundation emphasized **transaction costs, simplicity, and reputation/policy alignment**.
- **Priority Target Segments:** The commercial bank is focused on supporting SMEs (processing/manufacturing), whereas the foundation targets Cooperatives and Training providers/intermediaries.
- **Relevant Use Cases:**
 - *Commercial:* Carbon farming and ecosystem services skills (eligibility for carbon schemes).
 - *Philanthropic:* CAP compliance / AKIS modernisation (new/young farmers; advisory services).

Feedback on Finance Configurations

Respondents evaluated the proposed blended finance configurations (CAP-anchored repayment, ESF+-blended SME facility, and Micro-credential-backed human capital finance).

Both respondents gave a neutral/moderate rating (**3 out of 5**) for the feasibility of Configuration 1 and the attractiveness of Configuration 2 compared to grant-only programs.

Required De-risking Mechanisms

To make these configurations viable, the institutions require public de-risking support. Both agreed on the need for:

- **Interest-rate subsidies**
- **Technical assistance budgets** (for origination/verification)

Additionally, the commercial bank requires partial guarantees, while the foundation requires grants covering training costs.

Loan Purposes and Learner Finance

If loans were paired with validated training, both institutions would finance **Equipment / process upgrades** and **Working capital**. The commercial bank is also willing to finance energy efficiency and waste valorisation.

Regarding **learner finance**, both institutions are open to it, but **only via a specialized partner**, utilizing standard amortising loans rather than income-contingent or skills-based repayment triggers.

Product Parameters & Market Constraints

Parameter / Constraint	ProCredit Bank (Commercial)	Romanian American Foundation (Philanthropic)
Preferred Ticket Size	€25k – €100k	€25k – €100k
Preferred Tenor	1 – 3 years	3 – 5 years
Evidence needed for De-risking	Default-rate benchmarks from pilots	Public authority certification / eligibility linkage
Key Structural Constraints	State-aid/programme rules complexity, Impact/KPI verification cost, Lack of suitable guarantees	State-aid/programme rules complexity, KYC/AML burden for small beneficiaries

Note: The complexity of State-aid and programme rules is the most significant shared barrier for both institution types.

Willingness to Engage

Both institutions demonstrated a strong willingness to remain engaged with the GEEK4Food project:

- **ProCredit Bank** is ready to participate in pilots and explicitly wants to **co-design a blended finance product**.

Romanian American Foundation is open to exploring a pilot MoU / partnership, joining online workshops, receiving final reports, and potentially co-designing a product. They also requested a follow-up call