



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

## Deliverable 4.1

A skills roadmap with identified  
gaps and mechanisms to ensure  
fluidity and resilience



Co-funded by  
the European Union

<b>PROJECT No.</b>	101087203
<b>PROJECT ACRONYM</b>	GEEK4Food
<b>PROJECT TITLE</b>	Glocal Ecosystems and Expanded Knowledge for green skills and capability in the Food Sector
<b>PROJECT CALL</b>	ERASMUS-EDU-2022-PI-FORWARD
<b>PROJECT DURATION</b>	01/01/2023 – 31/12/2025 (36 months)
<b>PROJECT WEBSITE</b>	<a href="http://www.geek4food.eu">www.geek4food.eu</a>
<b>PROJECT COORDINATOR</b>	Paola Pittia, UNITE   Via R. Balzarini 1, 64100, Teramo (TE), Italy
<b>Contact</b>	<a href="mailto:ppittia@unite.it">ppittia@unite.it</a>
<b>EU PROJECT OFFICER</b>	
<b>DELIVERABLE No. - TITLE</b>	4.1 – A skills roadmap with identified gaps and mechanisms to ensure fluidity and resilience
<b>WORKPACKAGE CONCERNED</b>	WP4 – Innovative HE tools and methodologies for developing circular and green agri-food talent.
<b>WP LEADER</b>	Organisation
<b>RESPONSIBLE AUTHOR</b>	Konstantina Ntrallou, Aarhus University
<b>Contact</b>	<a href="mailto:konstantina.ntrallou@food.au.dk">konstantina.ntrallou@food.au.dk</a>
<b>OTHER AUTHORS</b>	Milena Corredig, Aarhus University <a href="mailto:mc@food.au.dk">mc@food.au.dk</a>
<b>DELIVERABLE NATURE</b>	Report
<b>DISSEMINATION LEVEL</b>	<input checked="" type="checkbox"/> PU: Public <input type="checkbox"/> SEN: Sensitive
<b>DELIVERABLE REVIEWERS</b>	Paola Pittia, UNITE Mario Roccaro, EIT Food
<b>DELIVERABLE DUE DATE</b>	M16 – 30/06/2024
<b>DELIVERABLE REVIEW DATE(S)</b>	M18 – 05/06/2024 M18 – 26/06/2024
<b>DELIVERABLE SUBMISSION DATE</b>	M18 – 30/06/2024

Name, surnames and email addresses of partners included in the deliverable are reported respectful of the EU data protection legislation comprised of the General Data Protection Directive (GDPR) 2016/679.

Deliverable 4.1. -A skills roadmap with identified gaps and mechanisms to ensure fluidity and resilience

PARTNERS		CONTACT
<p><b>UNIVERSITY OF TERAMO</b> Italy</p>		<p>Paola Pittia <a href="mailto:ppittia@unite.it">ppittia@unite.it</a></p>
<p><b>AARHUS UNIVERSITY</b> Denmark</p>		<p>Milena Corredig <a href="mailto:mc@food.au.dk">mc@food.au.dk</a></p>
<p><b>USAMV CLUJ-NAPOCA</b> Romania</p>		<p>Dan Vodnar <a href="mailto:dan.vodnar@usamvcluj.ro">dan.vodnar@usamvcluj.ro</a></p>
<p><b>UNIVERSITY OF MINHO</b> Portugal</p>		<p>Antonio Vicente <a href="mailto:avicente@deb.uminho.pt">avicente@deb.uminho.pt</a></p>
<p><b>TECHNOLOGICAL UNIVERSITY DUBLIN</b> Ireland</p>		<p>Jesus Maria Frias Celayeta <a href="mailto:jesus.Frias@tudublin.ie">jesus.Frias@tudublin.ie</a></p>
<p><b>SKYHIVE</b> Ireland</p>		<p>Mohan Reddy <a href="mailto:mohan@skyhive.io">mohan@skyhive.io</a></p>
<p><b>CASSIOPEA</b> Italy</p>		<p>Germana di Falco <a href="mailto:germana.difalco@gmail.com">germana.difalco@gmail.com</a></p>
<p><b>MILCOOP</b> Italy</p>		<p>Milena Marzano <a href="mailto:milena.marzano@milcoop.com">milena.marzano@milcoop.com</a></p>
<p><b>4CF SP ZOO</b> Poland</p>		<p>Ania Sacio-Szymanska <a href="mailto:anna@4cf.pl">anna@4cf.pl</a></p>
<p><b>EIT FOOD</b> Belgium</p>		<p>Mario Roccaro <a href="mailto:mario.roccaro@eitfood.eu">mario.roccaro@eitfood.eu</a></p>

Deliverable 4.1. -A skills roadmap with identified gaps and mechanisms to ensure fluidity and resilience

# CONTENT

1. Executive summary	1
2. Roadmap's definition	2
3. WP2 and WP3 contributions to G4F Roadmap	2
3.1 WP2 (GEEK4Food skills tool) data for the G4F Roadmap	2
3.2 WP3 (3P-G4F: digital ecosystem for green skills, training and knowledge transfer) data for the G4F Roadmap	3
4. Roadmap's key elements	3
5. Steps for the development of G4F Roadmap	3
7.1 Developing the G4F Roadmap	5
6. References	8

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.

---

## Project Coordinator

Paola Pittia | University of Teramo | ppittia@unite.it

Deliverable 4.1. -A skills roadmap with identified gaps  
and mechanisms to ensure fluidity and resilience

# 1. Executive summary

The aim of the GEEK4Food Green Skills roadmap is a methodology for the continuous improvement and upgrading of the training offerings, by using and filling the skills and competences gaps identified by the Artificial Intelligence (AI)-driven tool (GEEK4Food-GST: green skills tool, Skill pass, D2.1) and evaluate how to connect skills needs with the content of new training courses and modules (*Task 4.2: Design of innovative training offer for green skills*).

The developed GEEK4Food-Green Skills Tool (GST, D2.1) tracks the current and emerging green skills and contributes to the creation of a flexible, resilient roadmap that helps to better understand how to be aligned to optimal pathways to promote, sustain, or improve green skills in the agri-food sector. The related outcomes of the GEEK4Food-Green Skills Tool (GST) and the project's 3P platform(3P-G4F) support and continuously complement the activities developed in the GEEK4Food Green Skills roadmap and WP4 activities, like the design and development of training solutions to support the green skills and competences development.

The project's roadmap is expected to be a key tool for both academics and policymakers to provide well-developed and better-oriented continuous training programs to reduce the skill mismatch between the workforce and the professions of the agri-food sector. Outcome will be the creation of the necessary fluidity to operate in a changing, resilient agri-food system, focused all actors in large, medium, and small enterprises in need to reskill for a circular economy to build a holistic mindset.

The G4F roadmap was presented to the project's partners, at the 3rd consortium meeting (Dublin-IRE, 11-12 January 2024) and open for discussion, comments and suggestions in the following months until the 4<sup>th</sup> Consortium meeting (Cluj Napoca-RO, 18<sup>th</sup> June 2024), where it was approved.

The GEEK4Food Green Skills roadmap will be assessed and continuously reviewed throughout the project duration to ensure its validity and the ability to respond to the need of updating and modernization of the training (Higher Education, other training providers) based on the current and emerging green skills' needs.

## 2. Roadmap's definition

A “roadmap” is a strategic planning technique that places goals, major tasks and milestones on a timeline, all grouped in a single representation or graphic. Mainly, it's an *easy-to-understand* strategic tool that has a flexible format for presenting strategic information.

A roadmap needs to tie together the procedure's **strategy** (the “why”), the **actions** that we need to take to achieve the goals (the “what”) and a **timeline** for completion (the “when”).

Different types of roadmaps, e.g., product, technology, project, strategic, agile are available. The suggested “GEEK4Food roadmap” type could be categorised as an “**hybrid strategic-agile roadmap**”, balancing broad oversight with flexible, iterative development. This form provides a bird's eye view of an activity direction, detailing where it is, what are the main objectives, and how to achieve them, outlining strategic goals, initiatives, and timelines, highlighting dependencies and potential obstacles. The ‘agile’ type illustrates how the activity will evolve with a lot of flexibility. Agile roadmaps focus more on themes and progress rather than dates and deadlines. They're a statement of the goals, not a hard-and-fast plan of action and to-dos.

However, some key elements should be included in the GEEK4Food roadmap and in particular:

- **Strategic objectives.** These are the high-level goals to be achieved.
- **Initiatives.** These are the major efforts to be undertaken to achieve the strategic objectives.
- **Milestones.** They are significant events or achievements along the roadmap that indicate progress towards strategic objectives.
- **Actions.** These are specific tasks related to each initiative. They represent the “how” of achieving each initiative, and ultimately, the strategic objectives.
- **Resources,** required and their allocation strategy (technology, stakeholders, budget)
- **Timelines.** Timelines offer a temporal view of when initiatives and actions are expected to start and end, indicating progress and helping manage expectations.
- **Dependencies.** These outline potential obstacles or factors that could impact the progression or success of the initiatives. [1]

## 3. WP2 and WP3 contributions to G4F Roadmap

### 3.1 WP2 (GEEK4Food skills tool) data for the G4F Roadmap

The data-based info from the Green Skills Tool (D2.1) constitute the baseline and they are needed for the continuous update of the offered training and its alignment with the market needs. Through real-time, skill-level labour market intelligence (i.e. the Quantum Labour Market®, SkyHive), the highly innovative and performing A.I.-based tool built (D2.1) will track the current and emerging green skills, relates it to the aforementioned frameworks and simultaneously helping academia, training providers, educators, employers, learners, workers, and governments, by creating a flexible, resilient roadmap that will help to better understand how to be aligned to optimal pathways to promote, sustain or

improve green skills in the agri-food sector. For the purposes of the GEEK4Food roadmap, it will provide relevant information on the current and emerging skills and skills gaps that Higher education institutions and training provider could use to either design and develop new courses, modules and study programs or to modernise/upgrade existing ones.

### 3.2 WP3 (3P-G4F: digital ecosystem for green skills, training and knowledge transfer) data for the G4F Roadmap

The networking-hub from the GEEK4Food 3P-G4F platform (person-public-private) will enable real time feedback on WP's training for continuous improvement by integrating the GEEK4Food skills tool (skill pass, D2.1), current and under design and development training modules (Innovative HE tools and methodologies for developing circular and green agri-food talent, tasks of WP4) and the training delivery targeted to both teachers and learners to boost a green sustainable food system (WP5). Dedicated trainings in WP5 will be carried out to teachers and trainers on the aims and applications of the roadmap in Higher Education frameworks.

## 4. Roadmap's key elements

Creating a the G4F roadmap is a thoughtful process. The G4F Roadmap is a flexible tool, which communicates a strategy and its execution, and not rigid to-do-lists.

Key elements that should be included in the GEEK4Food Roadmap development are the following:

1. **Identify the strategic objectives:** Define the aims to be achieved with the roadmap's implementation.
2. **Develop initiatives and define actions:** Identify the key actions that will contribute to achieving the objectives and break down each initiative into specific tasks, providing clear direction.
3. **Set timelines and milestones:** Establish a timeline for each initiative and action. Identify critical milestones to provide a sense of progress.
4. **Recognize dependencies and risks:** Acknowledge potential roadblocks and plan mitigations.
5. **Review and refine:** Regularly review and update the roadmap to ensure it stays relevant. [2]

## 5. Steps for the development of G4F Roadmap

The main steps of the GEEK4Food Roadmap development are:

1. **Define strategy and goals.** The 'strategy' articulates the challenge to be "solved", while 'goals' define what is planned to be achieved over a certain time period. One of the project's objectives is to support the development of a workforce with the requisite green skills to innovate and sustain the agri-food sector. Additionally, the achievement of an alignment of the offered educational programmes with the current and future market needs, enhancing employability and sector efficiency, is one of the project's objectives. Finally, GEEK4Food aims

to foster a culture of continuous learning and adaptation to new green technologies and methodologies in the agri-food sector.

The suggested project's strategy is to *'bridge the green skills' gaps in the agri-food sector by using AI data analytics and educational methodologies, that will foster the resilient and innovative workforce.'*

Regarding the goals defined in the G4F roadmap, the first one is the identification of the green skills and competencies needs in the agri-food sector. Then, the determination of innovative training needs that will be used to answer these identified skills' gaps, is the next goal defined in the roadmap. Having these data, as a third goal, we need to determine and develop mechanisms to support skills' fluidity and resilience.

2. **Turning goals into initiatives.** The initiatives are the key elements of the roadmap as tools in support of the roadmap's vision and help the training team to achieve the defined goals, that, in turn, are usually broken down into 'actions'. This step will be achieved by developing a set of adaptable, scalable training modules and programs on specific topics addressing the identified green skills' gaps.
3. **Gather intermediate feedback.** The need of evaluating external and unforeseen factors that could affect the definition of the goals, actions and initiatives, along with the collection of additional comments and suggestions is a main step of the roadmap plan.
4. **Define the roadmap actions and tie to strategic initiatives.** This means that the large themes of work are converted into 'actions' corresponding on the modalities, tools, modules, etc. that allow to exploit each initiative and, ultimately, to achieve the strategic objectives.  
By applying the roadmap to the specific GEEK4Food project, this corresponds to the definition of the actions by which the topics/areas that will be identified by the AI-based tool, that will correspond to courses, modules and training workshops targeted to both trainers and learners (i.e. students, graduates, worker, professional interested to acquire a specific knowledge, competence, skill). The developed training modules (D4.2.) will be executed (WP5) and made public and disseminated by the 3-P G4F platform. The 3P-G4F platform will continuously supporting the roadmap actions by providing a continuous on-time and online monitoring and assessment of needs and demands, as well as offering additional training courses to persons in the agri-food sector, to attain the skills requested by the green job market.  
The design of training and courses as well as of any other initiative requires the identification of the training and assessment methodologies applied to achieve the target goals (i.e. the specific skills) any other specific aspect (e.g. duration, time, place, modality: online, blended, etc..) and/or of any other collaboration needed (internal, external).
5. **Assign roles and allocate resources.** This step is related to the identification of responsibilities and roles, the identification of costs and of all the resources necessary to the development of the initiatives. This includes also the internal and external stakeholders' involvement. The stakeholders can be already identified (e.g. in the GEEK4Food project, the consortium and associated partners) but also external ones e.g. agri-food industries, professional associations, employment agencies, policymakers, etc. These activities are relevant also for the dissemination and promotion of the initiative.
6. **Development of the initiative/action.** This corresponds to the delivery of the training module, the holding of a training workshop or event

7. **Gather final evaluation and feedback.** This final step is relevant for the evaluation of the roadmap and all the related initiatives. It includes the evaluation of the impact of the initiative on the specific target group, the goals achieved, and any weakness evidenced during the development of the initiative.

The G4F roadmap was presented to the project’s partners, at the 3rd consortium meeting (Dublin-IRE, 11-12 January 2024) and open for discussion, comments and suggestions in the following months until the 4<sup>th</sup> Consortium meeting (Cluj Napoca-RO, 18<sup>th</sup> June 2024), where it was approved.

## 7.1 Developing the G4F Roadmap

Forming the Roadmap’s basis for integrating it with the broader G4F model and its external dissemination, a preliminary roadmap was developed (Figure 1), to illustrate steps 1 (Define strategy and goals) and 2 (turning goals into initiatives).

**Strategy:** to bridge the green skills’ gap in the agri-food sector by using AI data analytics and educational methodologies, that will foster the resilient and innovative workforce.

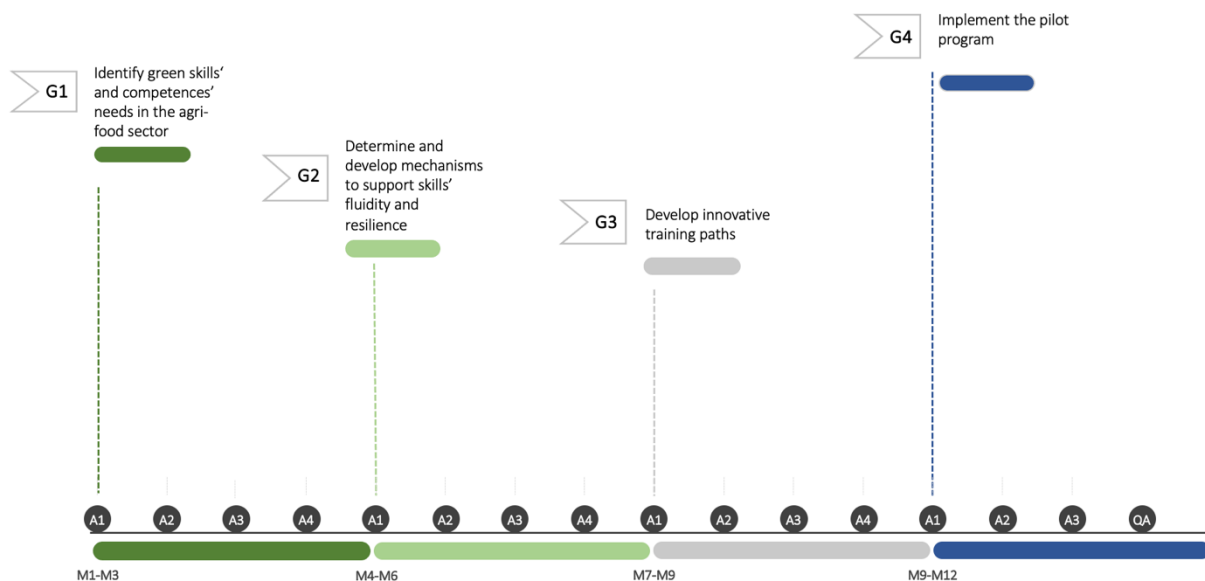


Figure 1: G4F roadmap with step 1 (i.e. define strategy and goals)

On the top of the preliminary representation of the G4F Roadmap, the roadmap’s strategy is reported. The top outlined section represents the stated goals (**step 1**). Each goal is reported with a flag sign and the letter G. The selected goals in the project are:

1. To identify green skills and competencies required in the agri-food sector.

2. To determine and develop mechanisms for fluid, adaptable and scalable training paths/programs.
3. To develop innovative training paths targeting identified skills' gaps.
4. To implement a pilot program.

Moving to **step 2** (turning goals into initiatives) and adding the suggested initiatives that will support the roadmap's vision and help the team to achieve the stated goals, the roadmap's layout can be refined as reported in Figure 2.

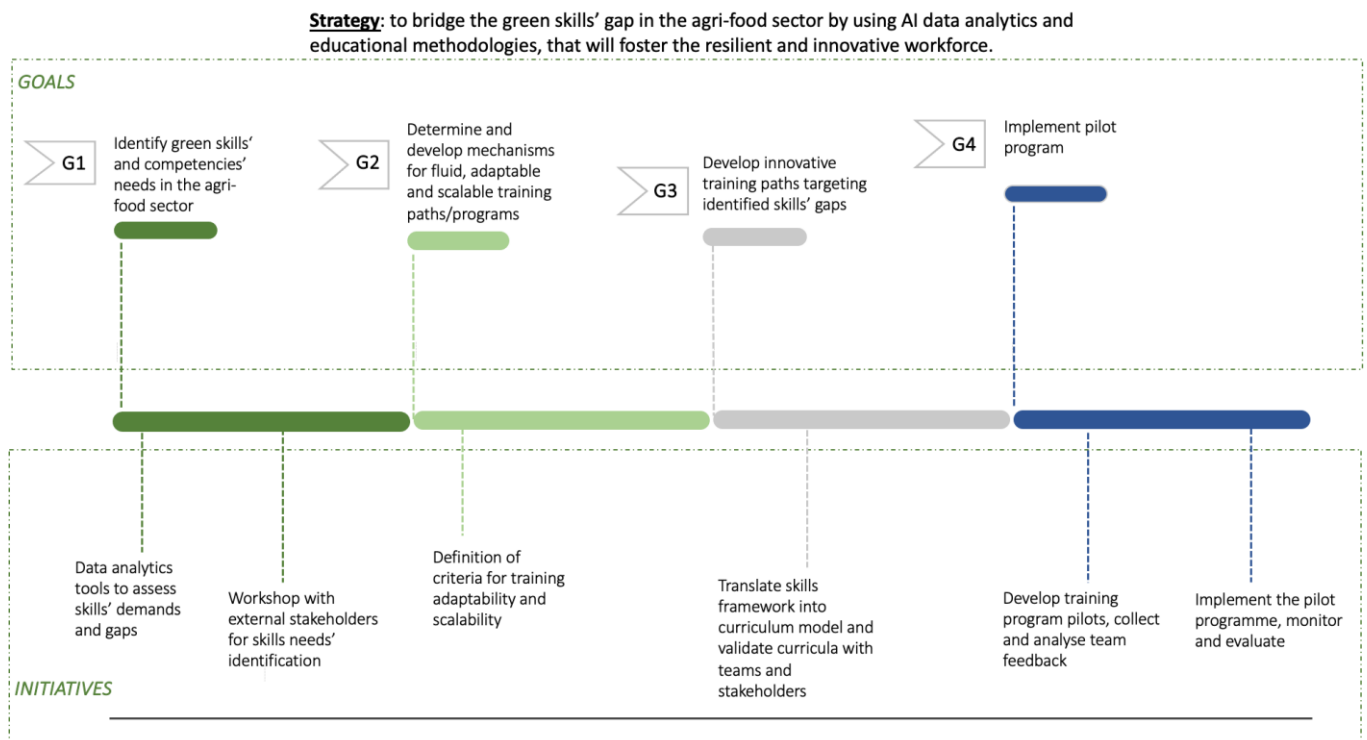


Figure 2: G4F roadmap with steps 1 (define strategy and goals) and 2 (turn goals into initiatives)

The bottom outlined section in Figure 2 includes the defined initiatives that will be taken to support the project's vision and that will be implemented by the WP5 activities.

For the first goal (i.e. "Identification of key green skills and competencies required in the agri-food sector"), the suggested initiatives are:

1. The assessment of the skills' demand and gaps with the (G4F Skill tool).
2. The organisation of a workshop with industry experts, to identify the skills' needs.

For the second goal (i.e. "Determination and development of mechanisms for fluid, adaptable and scalable training paths/modules"), the proposed initiatives are:

3. The definition of the criteria for the training adaptability and scalability.

For the third goal (i.e. "Development of innovative training paths targeting identified skills' gaps"), the suggested initiatives are:

- To translate skills framework into curriculum model and validate curricula with teams and stakeholders

For the fourth goal (i.e. *“Implementation of pilot training”*), the initiatives are:

- To develop the training program pilots, collect and analyse team’s feedback
- To monitor and evaluate learners’ and stakeholders’ feedback.

By adding the identified *“actions”* and tying them to the strategic initiatives by moving to step 4 (i.e. *define the roadmap’s actions*), the roadmap could be completed giving the full overview on how by achieving each initiative, the strategic objectives, could be accomplished.

In Figure 3, the complete roadmap’s layout is presented.

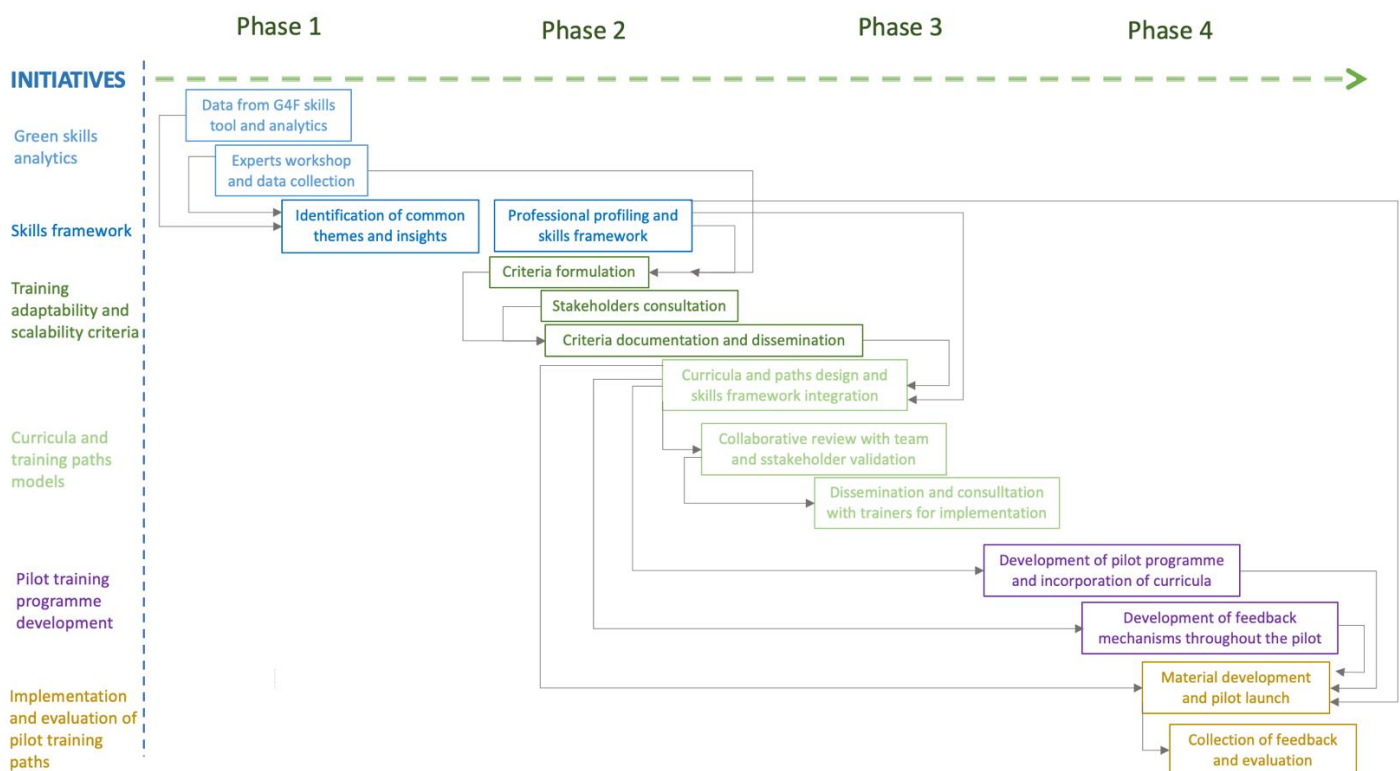


Figure 3: GEEK4Food roadmap with step 4 (Define the roadmap actions and tie to strategic initiatives)

In the roadmap, a timeline is also included (see at the top of the layout), indicating the *“when”* of the initiatives and actions. The timeline is divided into 4 different time phases, to allow a fast and efficient overview of the roadmap’s activities, by indicating progress and helping manage expectations for each initiative and action. The timeline may vary and may be adapted (e.g. shortened, prolonged) each time the roadmap is implemented, depending on its objectives and actions to be taken and specific framework and environment where it will be applied.

In the left side of the roadmap are the suggested initiatives. Each initiative is broken down into actions. Each initiative’s action is presented in the same colour, to better differentiate the ones that are part

of the same initiative and to clearly distinct the “how” of achieving each initiative and, ultimately, the strategic objectives.

Again, depending on the roadmap’s objectives, some of the actions may be skipped or not fully developed, to adapt the implementation of the roadmap at the specific needs.

The “arrows” in the roadmap show the links between the actions and how the actions are linked and interdependent. For example, the data from the GEEK4Food skill tool (GST-G4F) and a potential expert’s workshop will lead to the identification of common themes and insights related to the development of the skills framework.

## 6. References

[1] Loginov M.P., Ivanitsky V.P., Maramygin M.S., Tatyannikov V.A., [Roadmaps classification](#), International journal of Engineering and Technology, 7 (2018) 91-96

[2] [miro](#), Strategic Roadmap



**Co-funded by  
the European Union**

**Disclaimer:**

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

