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The FarmForward Project: Sustainable and Transformative Strategies for Climate-Resilient Agriculture in VET

WP2

Climate-Resilient Farming Handbook

Handbook 3 What Research Found Needs, Gaps & Misconceptions

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The FarmForward Project: Sustainable and Transformative Strategies for Climate-Resilient Farming in VET

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What Research Found: Needs, Gaps & Misconceptions

The needs analysis research carried out across educators, learners, stakeholders, and farmers in Bulgaria, Greece, Lithuania, Poland and Slovenia gives a very clear picture of where agricultural training stands today and what must change for climate-resilient farming to become a normal part of vocational education. Although respondents came from five different countries, many of their experiences were remarkably similar. The findings show that awareness of climate risks is already high, but the ability to turn this awareness into confident action is still limited. Most people know what is happening to agriculture, but they lack the tools, examples, and practical guidance to respond effectively. This gap between knowledge and action is the main barrier the Handbook aims to address.

Across all groups, one of the strongest messages was that practical learning is missing. Learners and educators repeatedly explained that they understand the theory of climate impacts, yet they rarely see real demonstrations or step-by-step examples of how to apply solutions on farms. Many educators feel they are expected to teach climate-smart practices without having access to modern tools, demonstration sites, or up-to-date teaching materials. Learners also noted that they often hear about soil degradation, drought stress, pests or digital technologies in lectures, but they do not have the chance to practise how these issues are managed in real fields. Stakeholders confirmed this situation from their own work with farmers, saying that the lack of accessible, applied training slows down the adoption of new practices.

Another major learning gap relates to water and soil. Respondents from almost all countries described water scarcity, poor water retention, and drought as some of the biggest challenges for the next decade. They also mentioned soil degradation, erosion, declining fertility, and a need for stronger regenerative approaches. Many students placed soil health, water management, agroforestry, and biodiversity improvement

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among their top priorities for future learning. Farmers in the focus groups also emphasised water as the most immediate pressure point on their farms. Despite this, both learners and educators explained that farming courses still tend to focus more on traditional crop production content than on water-smart or soil-first approaches. This creates a mismatch between what is taught and what will be needed most in practice.

A third important gap concerns crop genetics and resilience. Many educators asked for more training on drought- and heat-tolerant varieties, genetic diversity, and how to choose the right cultivar under shifting climate conditions. Learners also showed strong interest in resilient crops but felt that current training rarely covers modern breeding, stress-tolerant traits, or on-farm trials that could demonstrate the differences between varieties. Without this knowledge, they may struggle to make informed decisions on future cropping systems.

Digital tools are another area where interest is high but practical use is low. Both educators and learners said they want to learn more about precision farming, sensors, remote data, and simple digital workflows. At the same time, many educators admitted they do not use these tools regularly, often because they lack equipment, confidence, or training. Learners explained that digital skills are discussed more often than they are practised. Stakeholders confirmed that digitalisation is advancing quickly, but that training institutions are not yet prepared to teach these tools in an accessible, low-barrier way. If VET programmes do not catch up, a growing gap may form between the skills needed on modern farms and the skills graduates receive.

The research also revealed several common misconceptions that training must address. Many respondents noted that farmers often believe climate-smart practices are too expensive, too risky, or too complicated to implement. Some assume yields will fall or that regenerative approaches only work for certain types of farms. Others

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believe that digital tools require high levels of technical knowledge or large investments, even though simpler, low-cost solutions exist. Misunderstanding also appears in the area of finance: many farmers are unaware of available grants, insurance options, or support schemes. When these misconceptions persist, they can discourage the adoption of beneficial practices. Training programmes therefore need to show clear examples of cost-benefit results, real farmer experiences, and simple entry-level solutions that lower fear and uncertainty. Another misconception relates to the pace of climate change. Some learners mentioned that they see climate impacts as a long-term issue rather than an immediate one. In contrast, stakeholders reported that extreme events, water shortages, changing pest pressure, and livestock heat stress are already affecting productivity. The gap between perceived urgency and actual urgency suggests that training must show concrete, local examples that make climate impacts more visible and relatable.

Financial risk emerged as one of the strongest barriers across all respondent groups. Farmers hesitate to adopt new practices when they are unsure about economic returns, and learners often lack financial literacy to evaluate adaptation strategies. Educators also expressed concern that they do not have enough knowledge to teach economic aspects of climate resilience. This means that future training materials must include simple financial models, clear explanations of payback periods, and practical exercises that help learners calculate the costs and benefits of new practices.

The research also shows that interest in climate-resilient agriculture is growing, especially among young learners. Many students said they want to work on sustainable or modern farms, use precision technologies, or become advisors. However, they often feel unprepared, and some doubt whether the sector will offer stable opportunities unless training becomes more practical and forward-looking. This

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highlights the importance of VET educators being equipped to guide students towards real career pathways, not just theoretical knowledge.

Taken together, the research points to several high-value conclusions. The first is that climate-resilient agriculture must be taught through practice as much as through theory. Demonstrations, field visits, simple experiments, local case studies and real data examples need to become central to VET courses. The second is that soil, water, resilient genetics, and farm-level adaptation strategies require more structured, updated content. These are the areas where learners and educators feel least equipped, even though they will determine the future stability of European farming. The third conclusion is that digital skills must be introduced in an accessible and gradual way so that both teachers and students feel confident to use them, even with limited resources. Finally, economic understanding must be integrated throughout all modules, helping trainees see that climate-smart farming is not only an ecological response but also a sound economic strategy.

These findings have direct implications for how the modules should be delivered. Content should be simple, practical, and illustrated with real examples from partner countries. Each topic should include short, applied exercises that educators can easily integrate into lessons, even with limited equipment. Modules should encourage trainers to collaborate with farmers, advisory services, and local organisations to keep learning grounded in real conditions. Digital tools should be presented through easy, step-by-step workflows rather than complex technical explanations. Economic reasoning should be woven through every module in small, comprehensible steps.

Above all, the research shows a strong desire among all groups to learn and adapt—what they need is clear, practical guidance. This Handbook is designed to bridge that gap, providing VET educators with the tools, examples, and confidence to teach

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climate-resilient farming in ways that are realistic, actionable, and directly aligned with what learners, farmers, and stakeholders say they need most.

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