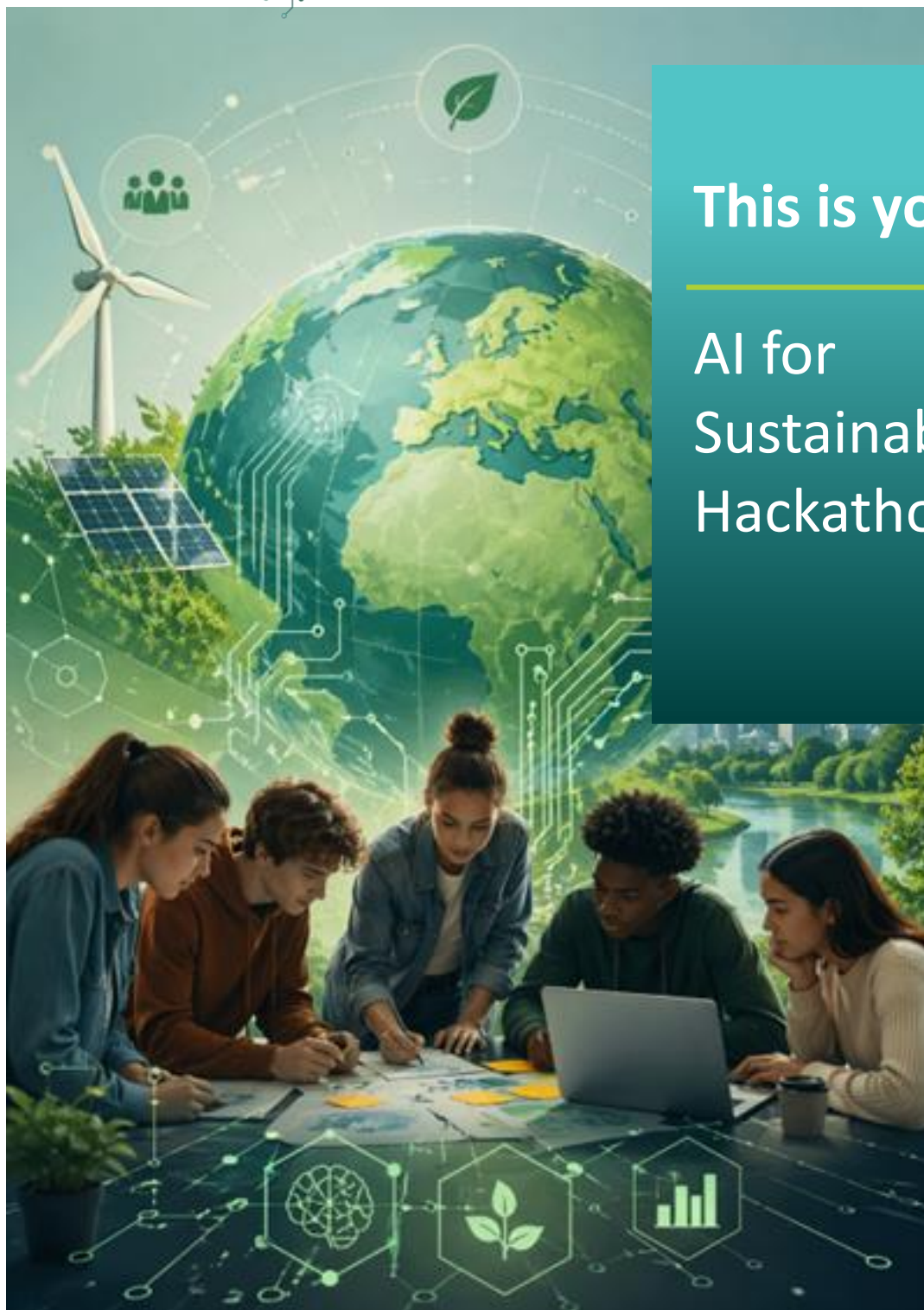


This is your

AI for Sustainability Hackathon Guide



WP4|A4.3
AI for Sustainability
Hackathons Guide

By
SUSTaiN Partners

www.sustainvet.eu

Sustainable Future



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INTRODUCTION

About SUSTaiN

SUSTaiN – *AI-enhanced Vocational Education for a Sustainable Future* – aims to strengthen vocational education by combining **digital skills (AI)** with **green skills (sustainability)**. The project has developed five learning modules covering AI foundations and its application in agriculture, transport, energy, and water management. These modules form the knowledge base for hackathons, where learners apply what they have learned in practical, real-world contexts.

Purpose of this *AI for Sustainability Hackathon Guide*

This **AI for Sustainability Hackathon Guide** supports educators, trainers and institutions in organising AI for Sustainability Hackathons within vocational education and training (VET).

What is a hackathon?

A hackathon is a short, intensive learning activity where participants work in teams to solve a real-world problem. In this project, the focus is on using Artificial Intelligence (AI) to address sustainability challenges across key sectors.

This guide provides:

- Step-by-step support to plan and run a hackathon
- Practical tips based on project experience
- Ready-to-use ideas and examples
- Guidance on working with companies and stakeholders

It is designed to be easy to use, even for those with limited experience in AI or hackathons.



Why hackathons in VET?

ASPECT	WHAT IT MEANS IN PRACTICE
LINK TO THE WORLD OF WORK	<i>Learners benefit when they:</i> • Work on real challenges • Collaborate with others • Apply knowledge in practical situations
LEARNING APPROACH	Hackathons create a hands-on learning environment where learning happens through doing.
WHAT PARTICIPANTS DO	<i>During a hackathon, participants:</i> • Work in teams to solve a realistic problem • Develop ideas and possible solutions • Present their work (often to companies or experts)
MAIN FOCUS	<i>The goal is not a perfect solution, but:</i> • Learning by doing • Developing practical skills • Building confidence
BENEFITS FOR VET LEARNERS	<i>Hackathons help to:</i> • Connect education with industry needs • Encourage teamwork and communication • Support problem-solving and creativity • Increase motivation and engagement
FLEXIBLE FORMATS	<i>Hackathons can be organised as:</i> • Short classroom activities • Full-day or multi-day events • On-site, online or hybrid formats

Linking AI, sustainability and skills development

Today's workforce requires a combination of technology skills (such as AI), sustainability awareness, and the ability to apply knowledge in practice. Hackathons bring these elements together by creating a space where learners can explore real challenges, use digital tools, and develop practical, solution-oriented approaches. In SUSTaiN, hackathons are designed around real challenges in sectors such as:



AGRICULTURE

(smart farming, resource use, etc.)



TRANSPORT

(route optimisation, emissions reduction, etc.)



WATER MANAGEMENT

(monitoring, conservation, etc.)



ENERGY MANAGEMENT

(smart grids, efficiency, etc.)

Participants explore how AI can improve efficiency, support better decision-making and reduce environmental impact. At the same time, they are encouraged to think about: the ethical use of AI, data responsibility and environmental impact of digital technologies. Through this approach, learners develop:

- Digital skills (understanding and using AI tools)
- Green skills (sustainable thinking and decision-making)
- Work-ready competences (teamwork, communication, problem-solving)

In practice, a SUSTaiN hackathon is not focused on coding or advanced technical knowledge. Instead, it centres on understanding a problem, working collaboratively, and using ideas, data and available tools to develop practical solutions. This approach makes the hackathon accessible and relevant for a wide range of learners and sectors.

01 | WHAT IS AN AI FOR SUSTAINABILITY HACKATHON?

Definition and key characteristics

An **AI for Sustainability Hackathon** is a short, intensive learning activity where participants work in teams to solve a real-world sustainability challenge using ideas, data and digital tools, including Artificial Intelligence (AI). These hackathons are time-limited, typically lasting from a few hours to a few days, and are team-based, with participants working in small groups. They are challenge-driven, focusing on real problems, and solution-oriented, encouraging the development of ideas rather than perfect products. In the SUSTaiN context, hackathons focus on challenges from key sectors such as agriculture, transport, energy, and water management. The aim is not to build complex AI systems, but to:



From traditional hackathons to educational hackathons

Hackathons originally came from the technology sector, where programmers worked intensively to develop software in a short time. In education, hackathons have evolved into a learning method. Instead of focusing on coding, educational hackathons focus on:



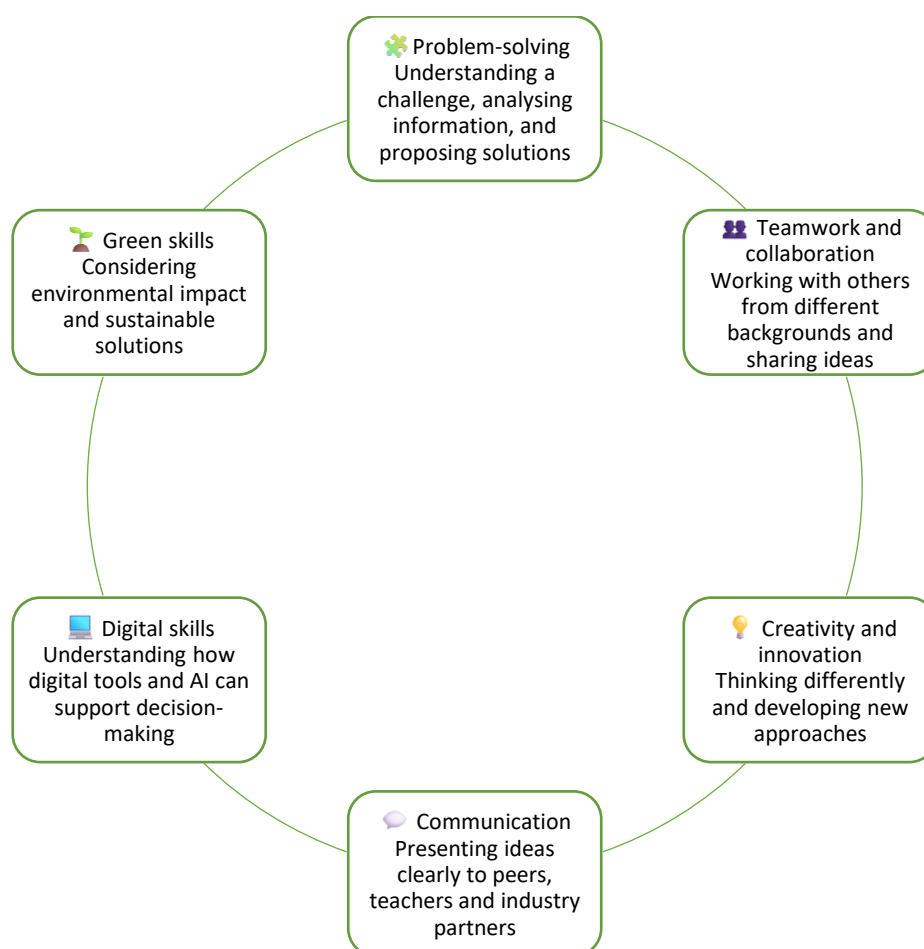
In a VET context, this approach places less emphasis on technical complexity and more on application and understanding, with a strong connection to professional practice. As a result, hackathons can be used effectively even when participants do not have programming skills, are new to AI, or come from different vocational backgrounds.

The role of hackathons in VET

Hackathons fit naturally within VET because they reflect how work happens in real life. In many professions, people need to work in teams, solve practical problems, make decisions based on available information, and communicate ideas clearly. Hackathons simulate this environment, while also helping to bring industry and education closer together, introduce learners to current labour market challenges, and encourage active participation instead of passive learning. For educators, hackathons offer a flexible tool that can be integrated into existing courses, used as a stand-alone activity, and adapted to different timeframes and learner levels.

Skills developed

Hackathons support the development of both technical and transversal skills, which are essential in today's workforce. Key skills developed include:



In practice, a SUSTaiN hackathon invites participants to explore real-world challenges such as using AI to reduce energy use in buildings, designing smarter transport routes to lower emissions, optimising water usage, or developing ideas for more sustainable farming. The focus is always on practical thinking, collaboration, and addressing real challenges.

02 | PEDAGOGICAL APPROACH AND LEARNING DESIGN

Hackathons as experiential and project-based learning

Hackathons are based on a simple idea: learning happens best by doing. Instead of only receiving information, learners work on real problems, test ideas and approaches, and learn through trial, discussion and feedback. This makes hackathons a strong example of experiential learning, where learning happens through experience, and project-based learning, where learners work towards a concrete outcome. In practice, this means that learners take an active role, teachers act as facilitators or mentors, and mistakes are seen as a natural and valuable part of the learning process.



Interdisciplinary learning across sectors

Sustainability challenges are rarely limited to a single field. For example, transport affects energy use, agriculture depends on water management, and energy systems influence all sectors, showing how closely these areas are connected.

Hackathons bring together different perspectives by encouraging learners to work in mixed teams, combine knowledge from different fields, and look at problems from multiple angles.

SECTOR	EXAMPLE CHALLENGE	SKILLS COMBINED
 AGRICULTURE	Reduce water use in farming	AI + environmental awareness
 TRANSPORT	Optimise delivery routes	Data analysis + logistics
 ENERGY	Improve energy efficiency in buildings	Technical + sustainability skills
 WATER	Monitor and reduce water waste	Digital tools + resource management

This approach reflects real working environments, where solutions require collaboration across disciplines.

Linking hackathons to EQF¹ levels (EQF 4–6)

Hackathons can be adapted to different learner levels. In SUSTaiN, the focus is on EQF levels 4–6. The level of complexity in a hackathon can be adjusted to suit different learners and contexts. This can be done by adapting the type of challenge, the amount of guidance and support provided, and the expected outcome—ranging from simple idea generation to more structured and developed solutions. This flexibility makes hackathons suitable for a wide range of levels and learning environments.

¹ EQF (European Qualifications Framework) is a common European reference framework that helps compare qualifications across countries by translating them into a shared system of eight levels based on learning outcomes (knowledge, skills, and competence). Read more here: <https://europass.europa.eu/en/description-eight-efq-levels>

EQF LEVEL	LEARNER PROFILE	HACKATHON FOCUS	EXAMPLE ACTIVITY
EQF 4	Upper secondary / basic VET	Understanding problems and simple solutions	Identify a challenge and suggest basic ideas
EQF 5	Higher VET / technical students	Applying knowledge and working in teams	Develop and present a structured solution
EQF 6	Advanced / applied higher education	Analysis, decision-making and innovation	Design and justify a solution using data and AI concepts

Integration with SUSTaiN modules

The five SUSTaiN modules provide the foundation knowledge for hackathon activities. The hackathon is where learners apply this knowledge in practice.

MODULE	HOW IT SUPPORTS THE HACKATHON	EXAMPLE APPLICATION
1. FOUNDATIONS OF AI IN VET	Introduces basic AI concepts and terminology	Understanding how AI can be used in solutions
2. AI IN AGRICULTURE	Focus on smart farming and resource use	Designing AI-supported farming solutions
3. AI IN TRANSPORT	Covers logistics and efficiency	Optimising routes and reducing emissions
4. AI IN ENERGY MANAGEMENT	Focus on energy systems and efficiency	Improving energy use in buildings or systems
5. AI IN WATER MANAGEMENT	Focus on monitoring and sustainability	Reducing water waste and improving distribution

In practice, the modules can be used either before the hackathon as preparation or during the hackathon as reference material. A well-designed hackathon combines this knowledge with key skills such as teamwork and problem-solving, allowing learners to apply what they have learned in realistic situations. It also supports both technical understanding and the development of soft skills, ensuring that learning is not only theoretical, but relevant, practical and transferable to the workplace.



03 | DESIGNING AI FOR SUSTAINABILITY CHALLENGES

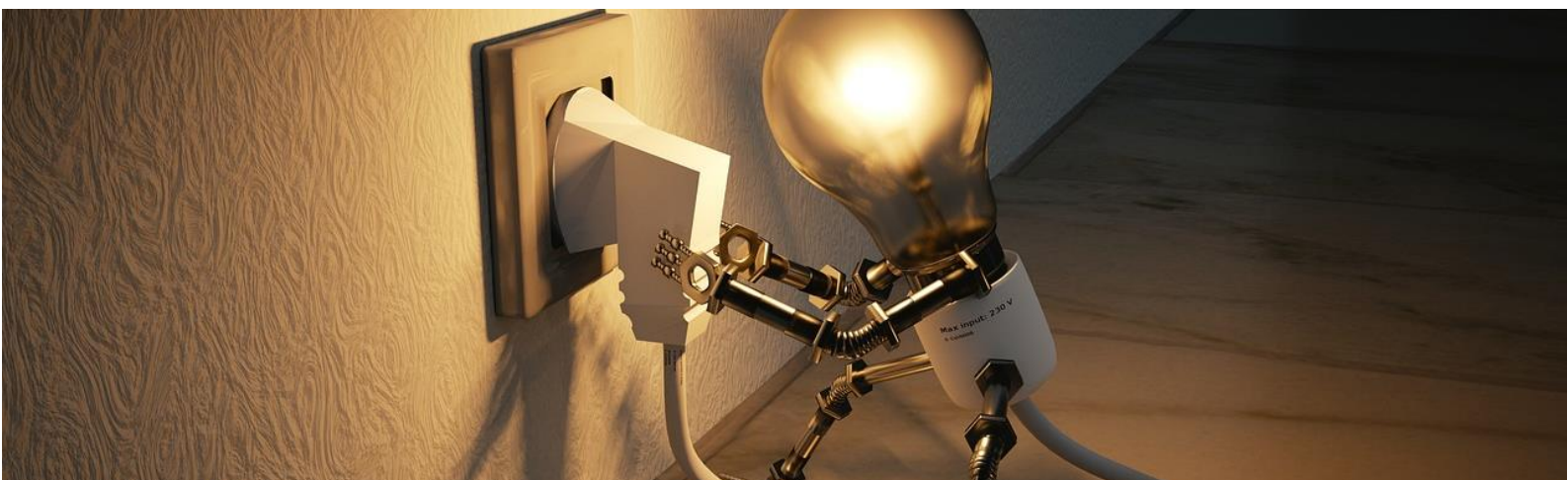
How to create real-world problem statements

A strong hackathon starts with a clear and realistic challenge. The challenge should be based on a real problem rather than a theoretical one, be relevant to the sector, be open-ended with more than one possible solution, and be easy for learners to understand. A good challenge does not require a perfect answer, but instead encourages exploration, discussion, and practical thinking. A clear way to frame a challenge is:

How might we use AI to improve, reduce, or optimise [problem] in [sector or context]?

This structure helps keep the task focused, practical, and easy to understand. Some examples might be:

- *How might we use AI to reduce energy use in school buildings?*
- *How might we improve water management in local communities using digital tools?*



Aligning challenges with industry needs

To increase relevance, hackathon challenges should reflect real needs from companies or organisations. This helps learners better understand how their ideas connect to real working environments and current industry demands. Educators can achieve this by collaborating with local industry partners, using real case examples, or adapting challenges based on current issues and trends within the sector.

SOURCE OF CHALLENGE	EXAMPLE
LOCAL COMPANY	Reduce fuel consumption in delivery routes
PUBLIC SECTOR	Improve water usage in municipalities
SCHOOL/INSTITUTION	Optimise energy use in campus buildings
SECTOR TRENDS	Reduce emissions in transport systems

This approach helps learners better understand real working environments, see the value of their ideas in a practical context, and make clear connections between their learning and future career opportunities.

Sector-based challenge design

In SUSTaiN, hackathon challenges should reflect the four key sectors: agriculture, transport, energy and water management. This is to ensure strong relevance to real-world contexts. As shown in the table below, each sector focuses on specific types of challenges, such as resource efficiency in agriculture, emissions reduction in transport, energy efficiency and forecasting, and monitoring and conservation in water management. Challenges should be practical, relevant, and clearly linked to real systems that learners can understand and relate to.

SECTOR	CHALLENGE FOCUS	EXAMPLE CHALLENGE
 AGRICULTURE	Resource efficiency, smart farming	How can AI reduce water and fertiliser use?
 TRANSPORT	Logistics, emissions reduction	How can routes be optimised to reduce fuel use?
 ENERGY	Efficiency, forecasting	How can AI improve energy use in buildings?
 WATER MANAGEMENT	Monitoring, conservation	How can we detect and reduce water waste?

Embedding sustainability goals

Each challenge should clearly connect to sustainability, ensuring that learners consider the environmental impact of their ideas. This can include reducing energy or resource use, lowering emissions, improving efficiency, or supporting environmental protection. As illustrated in the table below, sustainability can be approached in different ways, such as energy efficiency, resource management, emissions reduction, and circular thinking. To keep this accessible, learners should always be encouraged to ask a simple guiding question:

How does this solution improve sustainability?



Sustainability focus: Energy efficiency.

Example: Reduce electricity use in buildings



Sustainability focus: Resource Management.

Example: Optimise water or material use



Sustainability focus: Emission reduction.

Example: Lower CO₂ in transport systems



Sustainability focus: Circular thinking.

Example: Reduce waste and reuse resources

Incorporating ethical AI considerations

Even at VET level, it is important to introduce the responsible use of AI. Learners should be encouraged to reflect on key aspects such as where the data comes from, whether the solution could be biased, how transparent it is, and what impact it may have. As shown in the table below, these ethical considerations can be explored through simple guiding questions related to data, fairness, transparency, and overall impact. This does not need to be complex because the aim is to raise awareness and encourage reflection.



Ethical aspect: DATA

Is the data reliable and appropriate?



Ethical aspect: FAIRNESS

Does this solution work for everyone?



Ethical aspect: IMPACT

Is it good for people and the environment?



Ethical aspect: TRANSPARENCY

Can we explain how it works?

In practice

A good SUSTaiN hackathon challenge is clear and realistic, linked to a real sector problem, and designed to encourage teamwork and discussion. It should also clearly connect AI, sustainability, and practical application. The checklist below helps educators quickly assess whether their challenge is suitable before starting. If the challenge is easy to understand, relevant to the learners' field, connected to sustainability, and open to different possible solutions, then it is ready to use.

04 | HACKATHON STRUCTURE AND METHODOLOGY

Overview: The 3 phases of a hackathon

A hackathon is most effective when it is organised in a clear and structured way. Breaking the process into three simple phases—preparation, implementation, and follow-up—helps ensure that both educators and participants understand what to expect at each stage. This structure supports smooth organisation, active participation during the event, and meaningful reflection afterwards, helping to maximise both learning and impact.



Phase 1: Preparation (before the hackathon)

This phase focuses on setting a clear and practical foundation. This includes defining the challenge or challenges, selecting participants such as students, educators, and, where possible, external partners, and inviting industry or stakeholder representatives to contribute. It is also important to prepare the necessary materials and tools and decide on the format, whether it is a classroom activity, a full-day event, or an online session. In a VET context, it is especially important to keep instructions simple and clear, use real-life examples, and provide a short introduction to AI if needed to ensure all participants feel prepared and confident.

Phase 2: Running the hackathon (step-by-step)

A hackathon can be organised using a clear and structured flow, as shown in the example below for a one-day event. Here is an example of a 1-day hackathon:

STEP	ACTIVITY	TIME
1	Welcome & introduction	15–30 min
2	Present challenge(s)	15 min
3	Team formation	15–20 min
4	Idea generation	45–60 min
5	Develop solutions	2–3 hours
6	Mentoring/check-ins	Ongoing
7	Prepare presentation	30–45 min
8	Team presentations (pitch)	5 min per team
9	Feedback & wrap-up	30 min

During the hackathon, several key activities help guide participants through the process. Team formation is an important first step, with groups ideally consisting of three to five participants and, where possible, a mix of backgrounds and skills to encourage diverse perspectives.

In the idea generation phase, participants are encouraged to explore as many ideas as possible without early judgement. Simple methods such as brainstorming or using “How might we...?” questions can help stimulate creativity and open discussion.

Once teams select an idea, they move on to solution development. At this stage, teams should clearly define the problem they are addressing, propose a practical solution, explain how AI could be used, and consider the sustainability impact of their approach.

Finally, each team prepares and delivers a short pitch. This presentation should clearly explain the problem, outline the proposed solution, describe how it works, and highlight why it is relevant and valuable.

Phase 3: Follow-up (after the hackathon)

The follow-up phase is important to consolidate learning and reflect on the experience. After the hackathon, it is useful to organise a group reflection where participants can discuss what worked well and what could be improved. Feedback from educators, mentors, or external partners can provide additional perspectives, and a simple evaluation can help assess learning outcomes. Where appropriate, some ideas developed during the hackathon can be taken further, for example by linking them to class projects or future assignments.

Roles in the hackathon

ROLE	RESPONSIBILITY
EDUCATOR	Facilitates, guides, supports teams
LEARNERS	Work in teams, develop solutions
MENTOR (OPTIONAL)	Provides expertise and feedback
INDUSTRY PARTNER (OPTIONAL)	Presents real challenges, evaluates ideas

To support educators in designing challenges, a basic template is provided below:

Sample template: Basic challenge template

Title:

Short and clear (e.g. *Reducing Energy Use in Buildings*)

Challenge question:

How might we use AI to improve/reduce/optimize _____?

Context:

Brief description of the real situation

(e.g. A school building uses high amounts of energy...)

Task for participants:

Develop a solution that:

Explains the problem

Proposes an idea

Shows how AI could be used

Considers sustainability impact

Expected output:

Short presentation (3–5 minutes)

Visual or simple concept (poster, slides, sketch)

Additional templates and ready-to-use examples are provided in the Annex: ***Practical Tools for Running a Hackathon.***



05 | ORGANISING THE HACKATHON

Planning the hackathon

Good planning is essential to ensure that a hackathon runs smoothly and achieves its intended learning outcomes. While the level of preparation may vary depending on the format, whether it is a short classroom activity or a full-day event, here are several key elements that should always be considered. Taking the time to plan these aspects in advance helps create a clear structure for both educators and participants, reduces uncertainty, and supports a more effective and engaging learning experience. Here are some key planning steps:

STEP	WHAT TO CONSIDER
DEFINE OBJECTIVES	What should learners gain (skills, knowledge, experience)?
SELECT CHALLENGE(S)	Choose relevant, real-world problems
DECIDE FORMAT	Short session, full-day, or multi-day
IDENTIFY PARTICIPANTS	Students, educators, optional external partners
ASSIGN ROLES	Who facilitates, supports, evaluates?
PREPARE MATERIALS	Slides, templates, instructions

It is important to keep the planning process practical and realistic. A hackathon does not need to be complex or resource-intensive to be successful. What matters most is having a clear structure, relevant challenges, and a well-prepared environment that supports active participation.

Logistics and format

Hackathons can be organised in different ways depending on time, space and resources. Some possible formats are:

FORMAT	DESCRIPTION	WHEN TO USE
CLASSROOM (1–2 HOURS)	Short activity within a lesson	Introduction to AI + sustainability
HALF-DAY	More time for discussion and development	Deeper engagement
FULL-DAY	Complete hackathon experience	Strong focus on teamwork and presentation
MULTI-DAY	Advanced work and detailed solutions	Higher-level learners



- **On-site:** Best for interaction and teamwork



- **Online:** Flexible, requires clear structure



- **Hybrid:** Combines both (requires good coordination)

Participant recruitment

Participant recruitment can involve a range of different groups, depending on the goals and format of the hackathon. Participants may include VET students (EQF 4–6), educators and trainers, adult learners, and, where possible, industry representatives. It is important to aim for diversity within teams by bringing together participants from different study areas, with varying skill levels and perspectives. This helps create richer discussions, more creative solutions, and a learning experience that better reflects real working environments.

Working with industry and stakeholders

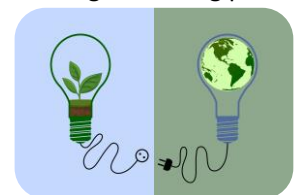
Working with industry and stakeholders can add significant value to a hackathon by strengthening its connection to real-world practice. External partners can contribute in different ways, such as providing real challenges, sharing practical



Type of partner: Company
Example contribution: Real case problem



Type of partner: Municipality
Example contribution: Sustainability challenge



Type of partner: NGO
Example contribution: Environmental perspective

acting as mentors or feedback on participants' solutions. The table below outlines examples of how different types of partners can be involved. If external create meaningful experiences by using challenges.

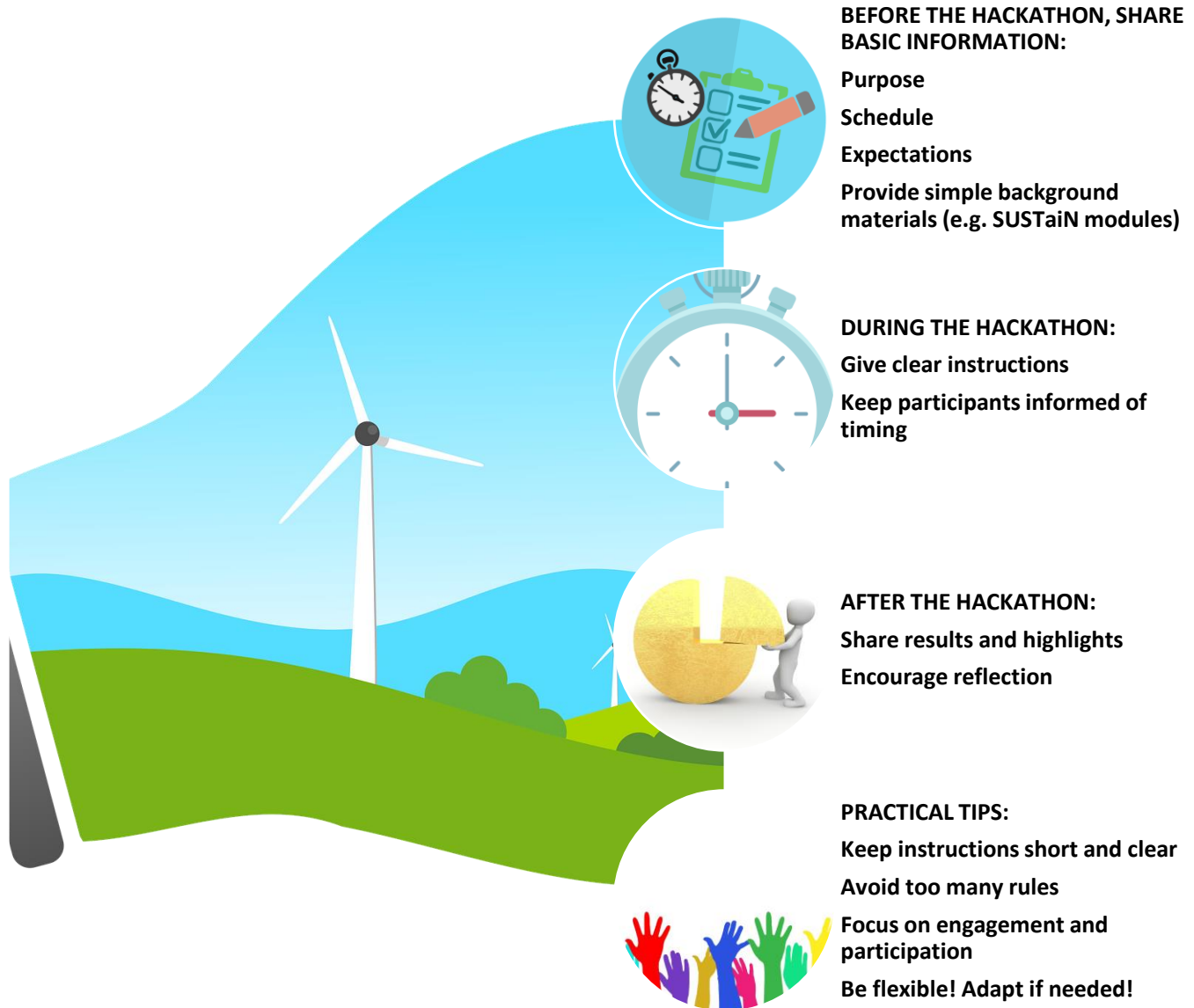


Type of partner: Sector organisation
Example contribution: Industry trends

insights, judges, and offering below outlines examples of how different partners are not available, educators can still realistic scenarios based on current sector

Communication and promotion

Clear communication helps participants understand what to expect by providing them with a clear overview of the purpose, structure, and activities of the hackathon, reducing uncertainty and helping them feel more confident and prepared to take part.



A well-organised hackathon does not require extensive resources or complex arrangements. What matters most is having a clear structure that guides the process, a relevant and engaging challenge that connects to real-world contexts, and active participation from learners throughout the activity.

06 | RUNNING THE HACKATHON

Starting the hackathon

A strong start to the hackathon helps participants feel confident, motivated, and ready to engage. At the beginning, it is important to welcome participants, clearly explain the purpose and structure of the activity, present the challenge in a simple and understandable way, and set clear expectations regarding time, teamwork, and expected outcomes. This introduction should be kept short and focused, avoiding too much theory, so that participants can quickly move into active participation.



Facilitating the process

During the hackathon, the educator's role is to guide and support participants rather than lead the solutions. Facilitators should encourage active participation from all team members, help teams stay focused, and support effective time management throughout the process. Instead of providing answers, they should ask guiding questions that help learners think more deeply about their work, such as identifying the main problem they are addressing, considering how AI could be applied, and reflecting on the sustainability impact of their ideas.



Idea generation

At the idea generation stage, teams should explore a wide range of possibilities before selecting one direction to develop further. This early phase is important for encouraging creativity and open thinking. Simple methods such as brainstorming, where many ideas are shared without judgement, using "How might we..." questions to frame challenges, and mind mapping to organise thoughts can all support this process. At this stage, it is important to emphasise that there are no "wrong" ideas, as the goal is to generate and explore different perspectives.



Developing solutions

Once teams have selected an idea, they move on to developing it in more detail. At this stage, they should clearly define the problem they are addressing, describe their proposed solution, explain how AI could be used, and identify the sustainability benefits of their approach. It is important to keep the process realistic and simple, focusing on the strength of the idea rather than technical complexity.



Mentoring and support

Mentoring and support play an important role in the hackathon process. Where possible, mentors such as teachers or

external partners can support teams by providing feedback, asking critical questions, and sharing practical insights. Their role is to guide and support the learning process, not to take over the work, allowing participants to develop their own ideas and solutions.



Preparing the pitch

When preparing the pitch, each team develops a short presentation of their idea, typically lasting 3–5 minutes. The presentation should clearly explain the problem being addressed, outline the proposed solution, describe how AI is used, and highlight the sustainability impact. The focus should be on clarity and understanding rather than perfection, ensuring that ideas are communicated in a simple and effective way.



Presentations and feedback

During the presentations and feedback stage, teams share their ideas with other participants, educators, and, where possible, industry partners. This provides an opportunity for learning through discussion and reflection. Feedback should be constructive, simple and clear, and focused on both strengths and areas for improvement. Effective time management is also essential throughout the hackathon. Facilitators should set clear time limits for each activity, provide regular reminders, and ensure the process continues to move forward. In practice, a successful hackathon is not about creating perfect solutions, but about active participation, collaboration, and learning through experience. If participants are engaged and working together, the hackathon is achieving its purpose.

QUICK FACILITATION CHECKLIST

- ☐ Clear introduction given
- ☐ Teams formed and active
- ☐ Ideas generated
- ☐ Solutions developed
- ☐ Presentations completed
- ☐ Feedback shared

07 | ETHICAL AND RESPONSIBLE AI IN HACKATHONS

When using AI in sustainability challenges, it is important to consider responsible use. Participants should reflect on whether the data is reliable and appropriate, whether the solution is fair and works for everyone, whether it can be clearly explained, and whether it has a positive impact on people and the environment. The aim is not to carry out deep technical analysis, but to build awareness and encourage reflection. In practice, this can be supported by asking teams one simple guiding question: *“Is this solution responsible and sustainable?”*



08 | EVALUATION AND ASSESSMENT

Hackathons focus on learning and participation rather than only on final results, so evaluation should be simple, clear, and supportive. It can include aspects such as understanding of the problem, quality of the idea, use of AI concepts, sustainability awareness, and teamwork and communication. Evaluation methods may involve short feedback from educators or mentors, peer feedback from other teams, and, if needed, simple scoring criteria. In practice, evaluation should remain light and constructive, with the main goal of supporting learning rather than judging performance.

CRITERIA	FOCUS
PROBLEM UNDERSTANDING	Is the challenge clearly explained?
SOLUTION IDEA	Is the idea realistic and relevant?
USE OF AI	Is AI used in a meaningful way?
SUSTAINABILITY	Does the solution support sustainability?
PRESENTATION	Is the idea clearly communicated?

This table is an example of quick evaluation criteria.

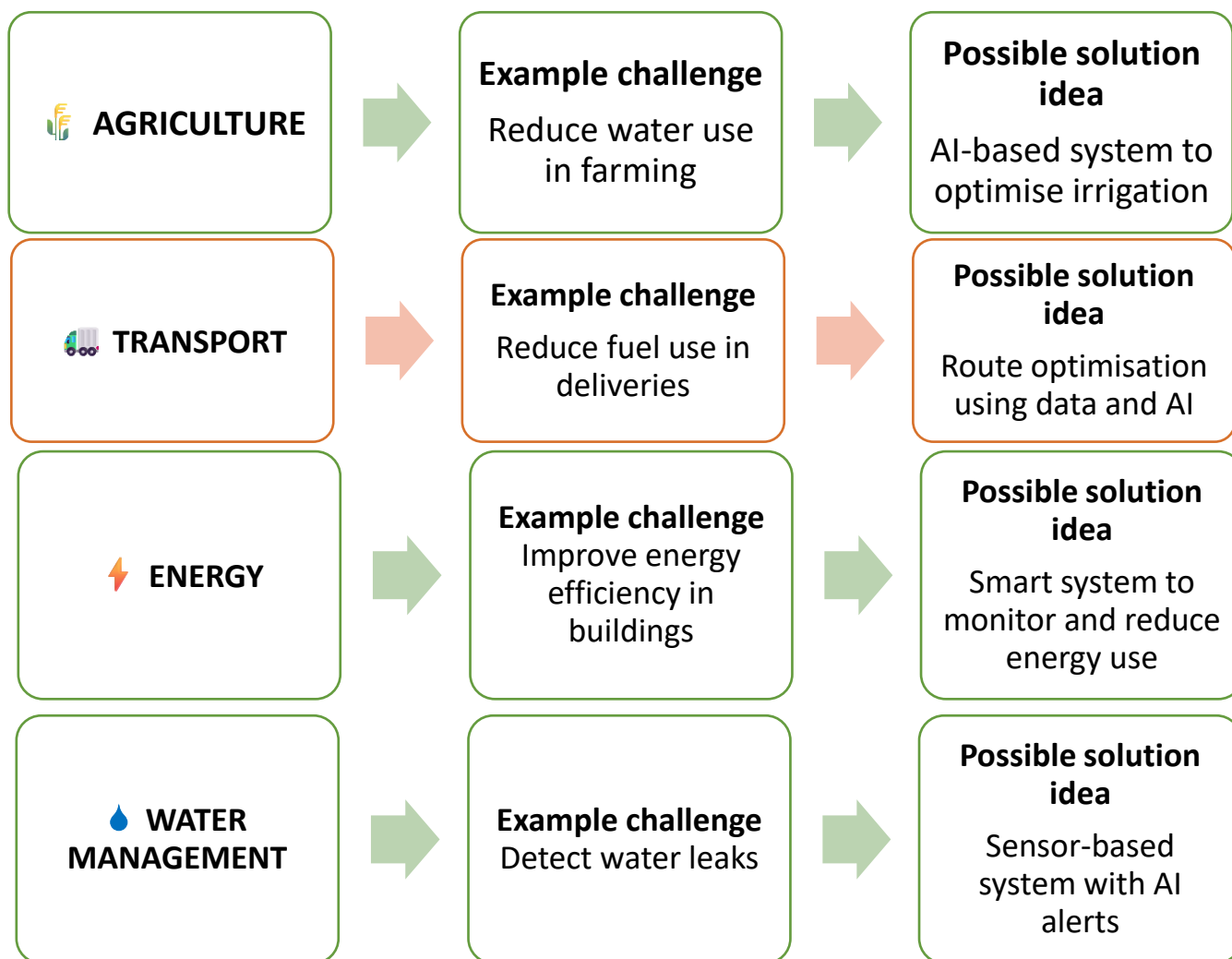
09 | OUTCOMES, IMPACT AND SUSTAINABILITY

Hackathons are not only a learning activity, they can also create lasting value. By the end of a hackathon, participants will have developed ideas and possible solutions, gained experience working in teams, and applied knowledge from the SUSTaiN modules in a practical context. These activities help learners build confidence, strengthen problem-solving skills, understand how AI can be used in real situations, and think more critically about sustainability.

Some of the ideas developed during the hackathon can be taken further, for example by continuing them in class projects, sharing them with industry partners, or using them as examples in future training. While not every idea needs to be developed further, some may have real potential. In practice, the true value of a hackathon lies not only in the final ideas produced, but in the learning experience, collaboration, and new perspectives it creates.

10 | CASE STUDIES AND GOOD PRACTICES

Case studies and examples help make hackathons more practical and easier to understand. They show how real-world challenges can be explored and how simple, realistic solutions can be developed. In this section, examples from key sectors illustrate how AI can be applied to support sustainability in different contexts. Here are some examples from SUSTaiN sectors:



11 | ANNEXES

This annex provides a set of ready-to-use templates and practical tools to support the planning and implementation of AI for Sustainability hackathons in VET.

The materials are designed to be:

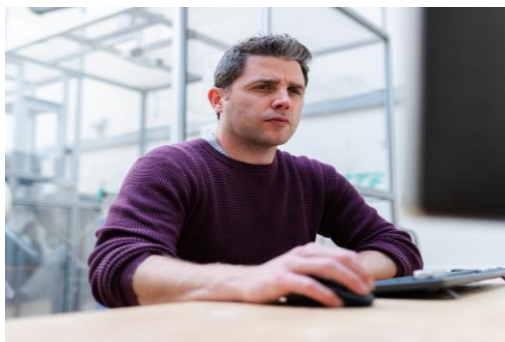
Simple and flexible

Easy to adapt to different sectors and learner levels

Directly usable in classroom or workshop settings

Educators can use these templates to design challenges, structure activities, and guide participants, helping to ensure a smooth and engaging hackathon experience.

The tools can be used as they are, or adapted to fit specific contexts, and learning objectives; or one of the sectors from the SUSTaiN project: agriculture, transport, energy and water management.



TEMPLATE 1: Hackathon planning canvas

AI for Sustainability Hackathon: Planning sheet

1. Basic information

- Title of hackathon: _____
- Date and duration: _____
- Format: ☐ Classroom ☐ Half-day ☐ Full-day ☐ Online ☐ Hybrid

2. Learning objectives

What key knowledge, skills, and competences should learners develop through this activity (e.g. teamwork, understanding of AI, and sustainability awareness)? _____

 *Tip: Think in terms of what learners should be able to **do** after the hackathon (e.g. explain an idea, work in teams, apply AI to a real problem).*

3. Challenge definition

Define the focus of the hackathon by selecting a relevant sector and formulating a clear, open-ended “How might we...?” question that guides learners toward solving a real-world problem.

Which sector: ☐ Energy ☐ Transport ☐ Agriculture ☐ Water ☐ Other _____

 *Tip: Make it real-world, simple, and open-ended. For example, use this structure: “How might we use AI to improve/reduce/optimize **energy consumption** in **our school**?”*

4. Participants and roles

Identify who will take part in the hackathon and their roles, including the **number** of learners and any supporting educators, mentors, or industry partners.

☐ Learners ☐ Educator(s) ☐ Mentor(s) ☐ Industry partner (optional)

 *Tip: Aim for teams of 3–5 learners with mixed backgrounds.*

5. Logistics

Ensure that all practical arrangements are in place, including the learning space or digital platform, necessary materials, and a clear time structure for the activity.

☐ Room / platform ready ☐ Materials prepared (slides, templates....) ☐ Time schedule defined (intro, teamwork, presentations...)

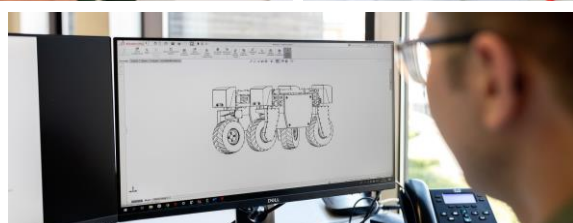
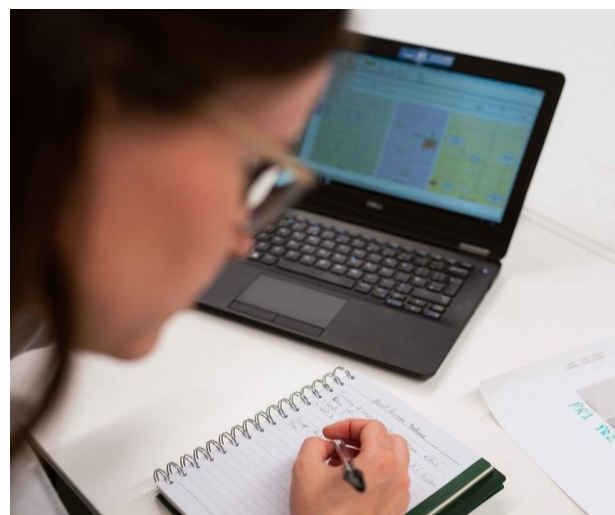
 *Tip: Keep structure simple! Clarity beats complexity! Even a simple structure helps keep the activity on track.*

6. Success Indicators

Define how success will be measured by ensuring learners are actively engaged, teams develop ideas or solutions, and all groups complete their presentations.

☐ Learners actively engaged ☐ Teams produce ideas/solutions ☐ Presentations completed ☐ Additional notes

 *Tip: Success = participation + learning, not perfection. You can also use this space to adapt the hackathon to your learners, sector, or time constraints.*



TEMPLATE 2: Hackathon delivery canvas

AI for Sustainability Hackathon: Implementation sheet

1. Basic information

- Challenge title: _____
- Duration: _____
- Number of teams: _____
- Format: ☐ Classroom ☐ Half-day ☐ Full-day ☐ Online ☐ Hybrid

2. Starting the Hackathon

How will you introduce the activity and ensure learners understand the purpose, structure, and expectations?

- ☐ Welcome participants and explain the purpose of the hackathon
- ☐ Present the challenge clearly (context and task)
- ☐ Set expectations (time, teamwork, final output)

 *Tip: Keep the introduction short, clear, and focused! Move quickly into active participation!*

3. Team formation

How will teams be organised to support collaboration and engagement?

- ☐ Teams of 3 to 5 participants
- ☐ Mix of skills, backgrounds, or study areas (if possible)
- ☐ Roles within teams defined (optional: e.g. facilitator, note-taker, presenter)

 *Tip: Well-balanced teams lead to better collaboration and more creative solutions.*

4. Idea generation

How will learners explore and develop initial ideas?

- ☐ Brainstorming (generate multiple ideas)
- ☐ Use of “How might we...?” questions to guide thinking
- ☐ Open discussion within teams

 *Tip: Encourage many ideas first — avoid early judgement or selecting solutions too quickly.*

5. Solution development

What should teams produce during the hackathon?

- ☐ Clearly define the problem they are addressing
- ☐ Develop a realistic and practical solution idea
- ☐ Explain how AI could support the solution
- ☐ Identify the sustainability impact (e.g. energy, resources, emissions)

 *Tip: Focus on clarity and relevance rather than technical complexity.*

6. Facilitation and support

How will you guide and support teams during the process?

- ☐ Conduct regular check-ins with each team
- ☐ Ask guiding questions (e.g. “What problem are you solving?” “How does AI help?”)
- ☐ Provide time reminders and keep the process on track

💡 *Tip: Support learning by asking questions! Avoid giving direct answers!*

7. Presentations

How will teams present their ideas at the end of the hackathon?

- ☐ 3 to 5 minute presentation per team
- ☐ Clear explanation of the problem and solution
- ☐ Description of AI use and sustainability impact
- ☐ Use of simple visuals (slides, poster, sketch)

💡 *Tip: Focus on clear communication and understanding - not perfection.*

8. Feedback and reflection

How will you support learning after presentations?

- ☐ Provide simple, constructive feedback (strengths, weaknesses and suggestions)
- ☐ Encourage peer feedback between teams (optional)
- ☐ Facilitate a short reflection (e.g. what worked well, what could improve)

💡 *Tip: Even a short reflection helps consolidate learning and deepen understanding.*

9. Success indicators

Define how success will be measured based on participation, outputs, and learning.

- ☐ Learners actively engaged throughout the activity
- ☐ Teams develop ideas or proposed solutions
- ☐ Presentations completed by all teams
- ☐ Learners demonstrate understanding of AI and sustainability concepts

💡 *Tip: Success = active participation, collaboration, and learning rather than focus on imperfect results.*



TEMPLATE 3: Hackathon evaluation sheet

AI for Sustainability Hackathon: Assessment and feedback

1. Basic information

- Team name: _____
- Challenge title: _____
- Evaluator (teacher/mentor/peer): _____

2. Problem understanding

To what extent does the team clearly understand and explain the challenge?

- ☐ Problem is unclear or not well explained
- ☐ Basic understanding shown
- ☐ Clear and well-defined problem
- ☐ Strong understanding with relevant context

 *Tip: Look for clarity—can they explain the problem in simple terms?*

3. Solution idea

How relevant and realistic is the proposed solution?

- ☐ Idea is unclear or unrealistic
- ☐ Basic idea with limited detail
- ☐ Clear and relevant solution
- ☐ Strong, well-developed and realistic solution

 *Tip: Focus on practicality and relevance rather than complexity.*

4. Use of AI

How effectively is AI considered in the solution?

- ☐ AI not included or unclear
- ☐ Basic mention of AI
- ☐ AI used in a meaningful way
- ☐ Strong and well-integrated use of AI

 *Tip: AI does not need to be technical—focus on understanding its role.*

5. Sustainability Impact

To what extent does the solution support sustainability?

- ☐ No clear sustainability link
- ☐ Basic awareness of sustainability
- ☐ Clear sustainability contribution
- ☐ Strong and well-explained impact

 *Tip: Look for links to energy, resources, emissions, or environmental impact.*

6. Teamwork and collaboration

How well did the team work together?

- ☐ Limited collaboration
- ☐ Some teamwork observed
- ☐ Good collaboration and participation
- ☐ Excellent teamwork and shared contribution

💡 *Tip: Observe participation—are all members involved?*

7. Presentation and communication

How clearly does the team present their idea?

- ☐ Unclear or difficult to follow
- ☐ Basic explanation
- ☐ Clear and structured presentation
- ☐ Very clear, engaging, and well-structured

💡 *Tip: Clarity is more important than polished delivery.*

8. Overall feedback

Provide short, constructive feedback to support learning and improvement.

Strengths: _____

Suggestions for improvement: _____

💡 *Tip: Keep feedback simple, supportive, and focused on learning.*

9. Success indicators

Evaluate whether key learning outcomes were achieved.

- ☐ Team completed the task
- ☐ Idea/solution developed
- ☐ AI and sustainability considered
- ☐ Learning objectives achieved

💡 *Tip: The goal is to support learning—not to judge performance.*

10. Scoring (optional)

If a numerical score is required, use a simple and transparent scoring system based on the criteria above (e.g. 1–4 per category). Add the scores to give an overall result.

💡 *Tip: Keep scoring simple and consistent—its purpose is to support feedback and comparison, not to create pressure or competition. Consider sharing the criteria with learners in advance so expectations are clear.*