



# Challenge Discovery Seed Fund (Stage 1)

## Open Call Guidelines

### Failure Modes of Engineering

#### Failure Mode 2: Inspired | Failure Mode 6: Agile Engineering

<https://feme.ac.uk/failure-modes/inspired-engineering>

<https://feme.ac.uk/failure-modes/agile-engineering>

### Key Open Call details:

- Online application form: <https://forms.office.com/e/S9e5aH4d9a>
- Deadline: 6 February 2026 at 5pm GMT (previously 31 January 2026)
- Further information on FeME: [feme.ac.uk/feme-seed-fund](https://feme.ac.uk/feme-seed-fund)
- Contact information: [feme@ed.ac.uk](mailto:feme@ed.ac.uk)

## Challenge Discovery Seed Fund Guidelines

### 1. Purpose

The Challenge Discovery Seed Fund supports interdisciplinary teams to explore real-world engineering challenges in collaboration with affected communities and FeME Challenge Partners. The fund enables early-stage discovery visits and co-creation activities that help researchers and practitioners scope complex problems, test ideas, and lay the foundations for long-term, fundable research collaborations. Projects should focus on addressing climate change mitigation and adaptation within the priority areas of Transport & Logistics, Energy, Water Crises, and Biodiversity.

This call forms Stage 1 of FeME's multi-phase Challenge Discovery programme, which runs from March 2026 to April 2028, moving from early exploration through to proposal development and grant submission.

### 2. Programme overview

- **Stage 1: Discovery Visit Seed Funding (March–August 2026)** Scoping the challenge with partners and affected communities.
- **Stage 2: Design Challenge (October 2026, Edinburgh)** - Travel bursaries available; collaborative workshop to explore potential solutions.
- **Stage 3: Action Visit Seed Funding (March–August 2027)** - Testing and refining project ideas with partners. Teams are eligible for this stage after successful completion of Stage 1 and 2. Please refer to Section 10 regarding eligibility for progression between the stages.
- **Stage 4: Grant Writing Programme (September 2027–April 2028)** - Co-developing full research proposals with FeME mentorship and partner input.

Each team will be paired with a FeME mentor to provide advice, connection to partners, and support throughout the process.

### 3. Provision

- Funding available: fund up to eight discovery visits. There is up to £2,000 per team but possible flexibility if extra costs are required.
- Eligible costs: travel and accommodation for discovery visits; organisation of local engagement activities; accessibility or care support (through FeME's Caring Pot)

## 4. Team Eligibility

1. Teams should typically include 2–5 members representing a mix of disciplines, sectors, and perspectives. Teams may include non-academic partners such as NGOs, community groups, local authorities, freelancers, and students. At least one team member must be university-affiliated to support fund management and institutional oversight. We ask that teams aim for at least one STEM and one social sciences member.
2. The Lead Applicant (as indicated in the application form) will serve as the primary contact for FeME and host any funds awarded.
3. Not all members are required to travel to the Challenge Partner; please indicate which member(s) will participate, ideally including at least one STEM-affiliated participant.
4. All teams should incorporate a co-creation component in their partnerships, see full descriptions of FeME challenges for examples
5. Open to UK and international researchers and practitioners; early- and mid-career participants are encouraged to lead or co-lead.
6. Teams are encouraged to reflect the diversity of people and expertise needed for inclusive engineering, with attention to participation from underrepresented groups (e.g. women and gender minorities, racially minoritised people, disabled and neurodivergent people, LGBTQ+ individuals, carers, and others underrepresented in engineering).
7. All members should have clearly defined, equitable roles with fair recognition and shared decision-making.
8. Teams awarded Stage 1 funding should be prepared to engage in Stages 2–4 if successful. See Section 10 for more information.

## 5. Team Application

- Applications will be through the online application form which you can find here: <https://forms.office.com/e/S9e5aH4d9a>
- They will be reviewed by FeME team. Constructive feedback provided to all applicants.
- If you are interested in applying but don't have a team, please email [feme@ed.ac.uk](mailto:feme@ed.ac.uk)

### Application support and accessibility

- As part of the application process, applicants are invited to complete an optional section which allows teams to share any accessibility or participation-related considerations.

- FeME provides a small fund to support caring responsibilities for participants of seed funding activities. This may include covering childcare, eldercare, travel support, or other costs that enable fuller participation in FeME activities. Requests are confidential and considered on a case-by-case basis.

#### **Criteria:**

- *Relevance (20%)* - How well the proposed work aligns with FeME's mission and priority challenge areas.
- *Quality of activities (20%)* - Whether the planned discovery methods are appropriate, insightful, and deliverable within the scope.
- *Interdisciplinarity & Team Strength (15%)* - The extent to which the team brings complementary expertise and meets the interdisciplinary requirement.
- *Partnership & co-creation (20%)* - How ethically, collaboratively, and meaningfully the team will engage communities and partners.
- *Feasibility & planning (15%)* - Whether the timeline, logistics, budget, and risks are realistic and well thought out.
- *Ethics, EDI & safeguarding (10%)* - The degree to which the project embeds equity, care, responsible practice, and safety.
- *Commitment to future stages (unweighted)* - The team's interest and capacity to continue with later phases of the Challenge Discovery programme.

#### **Applications should include:**

- A summary of the proposed discovery visit activities and the intended outcomes, explaining why an in-person visit is necessary for understanding the challenge, what insights cannot be gained through desk-based research alone, and how the visit will meaningfully advance the team's understanding and project direction.
- An overview of the team's composition, interdisciplinarity, roles, and why they are well suited to address the challenge.
- A simple budget outline with a short justification of anticipated costs for the discovery visit.
- Confirmation of the team's commitment and availability to participate in the subsequent stages of the multi-phase Challenge Discovery programme, along with agreement to FeME's ethical, safeguarding, and conduct principles.

## **6. Challenge Projects**



Teams may choose to work with one of FeME's existing Challenge Partners or propose a new partner that aligns with FeME's mission and the Stage 1 focus areas of Transport & Logistics, Energy, Water Crises, and Biodiversity. FeME Challenge Partners represent real-world contexts where engineering intersects with social, environmental, and ethical complexity. Each partner brings opportunities for hands-on discovery, co-creation, and the development of research ideas that respond directly to pressing climate and sustainability challenges.

Teams do not have to have experience or connection to the organisation as of yet.

### **Existing Challenge Projects**

Teams may work with existing FeME Challenge Partners. Find a summary here and a full description of the challenges at the end of the guidelines document:

*Challenge 1: Optimising Fairness and climate resilience for humanitarian planning and response – Humanitarian aid.*

This challenge explores how to optimise the placement of health infrastructure in remote or climate-affected regions. Teams may investigate decision models that balance efficiency, vulnerability, and environmental change, such as flooding or disrupted transport networks. This project sits at the intersection of operations research, logistics, and social equity.

*Challenge 2: Harvesting Clams: Struggle for Survival - Universidad Pontificia Bolivariana (UPB)*

This challenge focuses on women's livelihoods in coastal communities affected by pollution, sea-level rise, and unsustainable harvesting practices. Teams may work with local communities in Colombia, India, Indonesia, or Vietnam to co-create participatory monitoring systems, value-chain innovations, or sustainable harvesting and governance models.

*Challenge 3: Healthy soil with the Lake District National Park*

Healthy soils are vital for carbon sequestration, biodiversity, water management, and resilient food systems, yet in the Lake District's upland farming landscape there is limited understanding of soil health baselines or feasible pathways for improvement. Because soil health is interconnected with hydrology, biodiversity, cultural practices, and rural economies, regenerative strategies must balance environmental benefits with the realities of a protected cultural landscape. This challenge invites research into soil carbon,

ecosystem services, farmer engagement, hydrological modelling, and green finance mechanisms to design climate-resilient, culturally appropriate approaches for upland livestock systems. Applicants will work with partners and communities in the Lake District through a discovery visit.

#### *Challenge 4: Resilient Solar Home Systems in Conflict-Affected Communities with Sunsaver Solutions*

Solar home systems in conflict-affected regions of Cameroon provide essential energy access but suffer from premature failures driven by harsh environmental conditions, informal repair practices, conflict constraints, and gendered patterns of use and maintenance. Women distributors - central to customer support - often lack diagnostic tools, while extreme dust, heat, and mobility challenges create failure modes not captured in standard engineering tests. This challenge invites interdisciplinary investigation into real-world degradation, participatory co-creation of solutions with women and communities, climate-responsive design approaches, and models of social and behavioural determinants of system resilience. Applicants will visit Sunsaver partner sites across Cameroon to collaborate directly with local networks and households.

Please find the full description of challenges at the end of this document.

#### **New Challenge Projects**

Teams are also welcome to propose their own challenge partner, provided it aligns with FeME's aims and thematic priorities. This could include a community organisation, NGO, local authority, or social enterprise engaged in real-world challenges linked to engineering, climate, or biodiversity.

You will be invited to propose a new challenge project via the seed fund online form. When proposing a new partner, applications will be asked to include:

- A short description of the project and the partner's role and relevance to FeME
- A letter of support or confirmation of participation indicating their willingness to engage across all programme stages (as applicable).
- A clear description of how the proposed collaboration will support co-creation, equity, and mutual benefit for all involved.

- Proposed partners should share FeME's values of collaboration, care, and inclusivity, and demonstrate commitment to ethical and sustainable engagement.

## **7. Safeguarding, safety, and equitable participation**

- Teams are responsible for the safety and wellbeing of all participants during travel and fieldwork, including following local laws, obtaining insurance, and completing risk assessments where needed. All engagement must follow recognised safeguarding and ethical standards, with consent and responsible data handling.
- FeME expects equitable collaboration - partners and communities are co-creators, not subjects - with fair recognition, shared benefits, and transparent decision-making. Projects and teams should ensure accessibility and inclusion for diverse needs and, in Global South or low-resource settings, prioritise local leadership and avoid extractive practices.

## **8. Reporting and Knowledge Sharing**

All FeME seed funded activities will agree to:

- An online presentation (as per call specification) in August covering activities, outcomes, reflection, and next steps.
- FeME Tapestry submission
- Participation in FeME network through events, peer support work, etc.

## **9. Conditions of Award**

- Adherence to FeME Code of Conduct and ethical standards.
- Acknowledgement of FeME & EPSRC funding in all outputs.
- Open and inclusive data and authorship practices.
- Compliance with UK Data Protection Act (2018) & GDPR.
- Submission of final report and participation in evaluation.
- Non-transferability of funds without prior written approval.

## **10. Follow-On Opportunities**

- Successful projects will present findings at an online seminar and be invited to the FeME Design Challenge (Oct 2026). Teams demonstrating strong progress will be eligible for Action Visit funding and mentorship through the FeME Grant Studio.

### **Successful completion and strong progress mean that the team has:**

- Delivered agreed activities within the funded stage (e.g. discovery visit and presentation).
- Demonstrated meaningful engagement with challenge partners and affected communities.
- Reflected on learning and shared outcomes through FeME's reporting channels (e.g. Tapestry submission, end-of-project summary, seminar).
- Shown commitment to FeME's guiding principles of collaboration, care, equity, and learning.
- Identified potential for further co-created work, partnership, or research development.

### **Assessment and decision-making**

- Applications and progression decisions are made by a FeME Selection Panel, composed of FeME leads, relevant Failure Mode representatives, and an independent advisor with experience in EDI and participatory research.
- The panel considers project outputs, feedback from mentors and partners, and alignment with the aims of the next programme stage.
- Decisions and feedback will be communicated in writing, and applicants may be invited to revise or expand their ideas before progressing.

FeME's aim is to support learning and continuity, not competition. Teams demonstrating genuine collaboration, reflection, and growth - even if results are exploratory or inconclusive - will be prioritised for continued mentorship and future opportunities.

## **11. About FeME Seed Funding**

Failure Modes of Engineering (FeME) is a network for future inclusivity, sustainability and global impact. Our mission is to create an inclusive, resilient, and adaptable engineering to better confront climate change and biodiversity loss, recognising their disproportionate impact on women, children, and underrepresented communities. We champion and support their roles as agents of change across Scotland and around the world through education, partnership, research, and advocacy.

FeME is a collaboration between the University of Edinburgh, the University of Glasgow, and Heriot-Watt University, funded by the UK Engineering and Physical Sciences Research Council (EPSRC) with £2.2 million through the Tomorrow's Engineering Research Challenges Network Plus Programme (2025-2028).

## FeME Guiding Principles

Our guiding principles reflect the shared commitments of the FeME Network:

1. We prioritise wellbeing, accessibility, and mutual respect in all our work.
2. We remove barriers to participation and elevate underrepresented voices.
3. We act with integrity, fairness, and shared responsibility.
4. We make socially and environmentally responsible choices for lasting impact.
5. We stay curious and adaptive, learning from experience, feedback, and failure.

## FeME Code of Conduct

The FeME Code of Conduct outlines the shared standards and behaviours that guide how we work together with respect, inclusion, and care. It ensures all members, partners, and participants help create safe, equitable, and supportive spaces built on integrity, openness, and trust.

1. All members, staff, and participants are expected to act with respect, integrity, and inclusivity. Our community expectations are:
2. Treat everyone with respect, kindness, and professionalism.
3. Value and actively listen to diverse perspectives, particularly from underrepresented groups.
4. Work collaboratively and share credit for successes.
5. Be transparent in your actions and decisions and take accountability for mistakes.
6. Communicate openly and constructively, avoiding exclusionary or harmful behaviour.
7. Create accessible and inclusive spaces, both online and in-person.
8. Use resources responsibly, with care for environmental and social impact.

## FeME Commitments

1. **Ethical Data Practice** - All projects funded through FeME must uphold the highest standards of data ethics and integrity. This includes compliance with GDPR and the UK Data Protection Act (2018), responsible data collection and storage, and anonymisation of any sensitive equality, diversity, or inclusion (EDI) information.
2. **Open Knowledge and Attribution** - FeME is committed to open, transparent, and collaborative research. Wherever possible, project outputs, data, and materials should be made openly available through FeME's digital platforms, with clear recognition and credit for all contributors and partners.

3. **Equity, Diversity, and Inclusion (EDI)** - EDI principles are integral to every FeME funding call. We ensure diverse and trained assessment panels, accessible application processes, and inclusive authorship practices. Teams are encouraged to embed EDI in their own project design and delivery, with funding available through FeME's Caring Pot to support caring responsibilities or participation needs.
4. **Wellbeing and Care** - FeME recognises that equitable collaboration depends on care and flexibility. Funded activities should prioritise participant wellbeing and accessibility, including consideration of time zones, caring responsibilities, and access needs. Hybrid and flexible participation should be standard practice wherever feasible.
5. **Climate and Sustainability** - All FeME-funded work contributes to addressing the interconnected crises of climate change and biodiversity loss. Projects should model sustainable practices in their operations and travel, and consider the long-term environmental and social impacts of their methods and outcomes.

These guidelines sit alongside FeME's Terms of Reference and apply to all funded activities under the FeME network.

## 12. Full Challenge Project Descriptions

### ***Challenge 1: "Optimising" fairness and climate resilience for humanitarian planning and response with Humanitarian aid***

Deciding on the location of Health Centre or other essential facilities (e.g., schools, markets, banks) in remote areas is a maximisation problem. It tries to balance various climate resilience, economic and social/cultural aspects while maximizing benefits for local communities. With newly built local critical infrastructure/facilities, these communities are able to access vital services, meaning that they no longer have to choose between maintaining traditional ways of living and relocating to more densely populated areas. For example, journeys that used to take 24 hours to reach the newest hospital now take only one hour to get to the nearest newly built Health Centre.

However, this is not a trivial optimisation transportation/logistics problem as it has to balance multiple factors, many of which are quite often the most important ones, are difficult to quantify. For example, what aspects of social, ecological and geographical

factors, and economic opportunity should be considered in optimisation models. Furthermore, climate change adds to the equation. For example, intensified rainfall events might flood roads and erode pathways, making commuting to facilities unviable at certain times of the year, and/or longer and more dangerous. Is it possible to identify which communities will be most affected by specific disasters? How can climate resilient development principles be used to locate facilities, plan resource allocation and access routes in climate resilient places, which remain accessible as climate change hazards intensify?

This challenge opens space for exploring a variety of issues at the intersection of Operations Research, Social Sciences, Healthcare, Transport Planning and Geospatial hazard analysis such as flood mapping. Among others this application might consider:

- Co-creation with local communities to make vulnerable people heard
- Embedding climate resilient development pathway principles and climate change adaptation requirements in optimisation models
- Facility designs which improve climate resilience and embed local culture and traditions

The applicants will have the opportunity to visit one of the partner sites in Madagascar or Mozambique (or potentially other countries in Sub-Saharan Africa, subject to discussion with the challenge partner) as part of the discovery visit with the ambition to engage with more sites as their project proposal develops.

### ***Challenge 2: Harvesting clams: struggle for survival with Universidad Pontificia Bolivariana***

Harvesting clams is a common source of livelihood for women in coastal rural communities. They provide protein for families and income when sold to resellers. However, this traditional way of living is under threat from existing and emerging challenges. For example, with rising sea levels, mangroves are inundated more frequently and to greater depths, making it more difficult to harvest clams. Illegal mining activities upstream can pollute waterways with heavy metals making clam meat poisonous. However, women rarely have access to tools that can test water safety. Furthermore, whilst women do all the hard work, they get paid very little by middlemen.

While some practices of harvesting are similar across different geographies, e.g., Colombia, India, Indonesia or Vietnam, other practices vary. For example, some communities have developed a practice of sustainable harvesting, such as collecting

only those clams that are above a certain size. Others found different uses to shells that otherwise become waste. Others developed practices of cultivation in places where harvesting in the wild is not possible.

This challenge opens space for exploring a variety of issues at the intersection of Engineering, Environmental Sciences, Business and Management. Among other things, this application might consider:

- Participatory monitoring that would include sustainability measures
- Co-creation of governance structures that would consider value-adding activities, business models, operations and supply chain
- Ecosystems approach to the produce, waste and environment
- Climate adaptation of clam cultivation/harvesting

The applicants will have the opportunity to visit one of the partner sites in the Choco region of Colombia as part of discovery visit with the ambition to engage with more sites as their project proposal develops.

### ***Challenge 3: Healthy soil with the Lake District National Park***

Heathy soils are not only more productive soils, for both food production and biodiversity, but are also better at both storing carbon and ‘slowing the flow’, which are two important mechanisms for climate change mitigation. Many farmers in the UK understand the benefits of healthy soils and are taking measures to improve soil management for soil health, through agri-environment schemes and supply chain contracts, for example. The focus, due to the greatest room for improvement, tends to be on arable farms or mixed farms with both cultivated land and livestock. In the context of the Lake District – a protected landscape as a national park and world heritage site, typified by permanent, uncultivated grassland habitats farmed in a low intensity way through upland farming systems – there are gaps in our knowledge of the baseline of soil health, what actions or solutions are achievable on Lakeland farms, and therefore what the appropriate targets for these farms should be for meaningful sequestration and improved resilience of landscapes.

Soil health cannot be seen in isolation. We have to consider hydrological networks, and the biodiversity-agriculture nexus, as well as social and economic activities for which the soil provides ecosystem services. Then we can design nature-based solutions and inform evidence-based policies that improve soil fertility, water retention, and carbon sequestration while increasing biodiversity, food production and economic opportunities for local communities. There is a need to identify ‘who pays’ for these interventions on farms; current land management options do exist

through public funding, but there is growing interest in co-funding for nature-based solutions through the supply chain, from utility companies and the food and drink industry. Again, these tend to be focused on arable systems so it would be valuable to explore how this approach could be used to establish collaborative marketplaces for upland livestock farmers by identifying place-based operators in the national park and world heritage site who are relying on services linked to soil health.

This can only be done in conjunction with systemic engagement with farmers, advisers, rural communities, local government, DEFRA arms length bodies and the food supply chain/end market consumer to integrate soil health and biodiversity within agri-food systems and co-create regenerative agriculture strategies. In the Lake District, it will be critical that these strategies both support nature and climate objectives whilst being appropriate in a cultural landscape and considerate to agropastoral practices, to avoid detrimental impacts socially and culturally. It is also important to consider nature and biodiversity financing that incentivises climate-positive farming, which enables developing a replicable model for climate resilient agrifood systems transformation.

This challenge opens space for exploring a variety of issues at the intersection of Environmental Engineering, Environmental Sciences, Social Sciences, Green Finance. Among other things, this application might consider:

- Reviewing soil carbon literature for carbon sequestration in upland grazing systems and reporting how this can be applied in the Lake District
- Identifying soil health baselines, including carbon in soils, and gathering data from work already happening by collaborating with local stakeholders
- Studying soil regeneration, landscape resilience, and ecosystem services in an upland farming landscape made up of predominantly sheep farming
- Modelling potential impacts of changing soil health and hydrological cycles on long-term sustainability of the productive landscapes
- Co-creating climate resilient-centred regenerative agriculture strategies that are appropriate in a cultural landscape designated for its upland hill farming systems
- Exploring Green and sustainable finance frameworks to incentivise climate-positive farming that are embedded in the food supply chain and valued by the consumer

The applicants will have the opportunity to visit the partners and communities in the Lake District, UK, as part of discovery visit with the ambition to engage with more sites as the project proposal develops.

#### ***Challenge 4: Resilient Solar Home Systems in Conflict-Affected Communities with Sunsaver Solutions***

Solar home systems are a lifeline for households across rural and conflict-affected regions of Cameroon. They provide lighting, communication, education, and income opportunities in areas where grid electricity is unreliable or inaccessible. Sunsaver distributes these systems primarily through women-led community networks, who act as local distributors, educators, and the first point of contact when problems arise.

However, the long-term durability of these systems is increasingly threatened by a combination of technical, environmental, and social factors. Field observations show recurrent failures across batteries, charge controllers, and panels, often linked to extreme dust, high temperatures, informal repair practices, and payment interruptions. At the same time, the social realities in which these systems operate, including gender norms around technology, conflict-driven mobility constraints, and limited access to formal repair services shape how faults are interpreted, reported, and addressed.

This is not a straightforward engineering problem. Many aspects difficult to quantify or poorly understood. For example:

- Women distributors are often responsible for customer education and early troubleshooting yet lack diagnostic tools to identify deeper technical faults.
- Extreme dust and heat in the Sahel accelerate degradation of panels and batteries in ways not captured by standard product testing.
- Conflict limits technician mobility, leading to informal repair ecosystems and community-driven workarounds that can create new failure modes.
- Cultural and gendered dynamics influence when faults are reported, who makes decisions about repairs, and how systems are used daily.

This challenge opens space to explore a variety of issues at the intersection of Engineering, Gender, Maintenance Ecosystems, Behavioural Sciences, and Climate Resilience. Among others, this application might consider:

- Participatory mapping of real-world failure modes and informal repair practices
- Co-creation with women distributors and affected communities of approaches to address system degradation
- Low-cost diagnostic tools or workflows that enable non-engineers to identify failures early
- Climate-responsive approaches to dust, heat, and environmental exposure



- Modelling the social and economic determinants of system misuse, overload, or abandonment
- Exploring how gender norms shape reporting patterns, maintenance, or adoption of best practices
- Approaches for strengthening last-mile support systems for technical devices

The selected applicants will have the opportunity to visit Sunsave partner sites across Cameroon as part of the discovery visit, with the ambition to engage with additional communities as the project proposal develops. They will work directly with Sunsave's women-led distribution networks, technicians, and rural households to co-create insights and interventions that strengthen the resilience of solar home systems under complex environmental and social conditions.