

LUT University - May 2024

# Impact Exchange Hackathon



# Green Auction Hackathon (3 - 4 Members/Group)

## Day 1 (Evening)

Presentation of Teams regarding which challenges are the most important according to them and why



## Day 1 (Morning)

Presentation of Various Sustainability Challenges and SUSAF/green analysis Tools



## Day 2

Bidding by Teams on Sustainability Challenges for selection. The more points the team bid more chance to get that challenge (Max 10 bid points)



## Day 3 - Day 8

Development of the solution/ides on sustainability challenge selected by teams. Submission & Demo of solution working on last day.



## Day 9

Presentation about how ur solution is impactful and GREEN



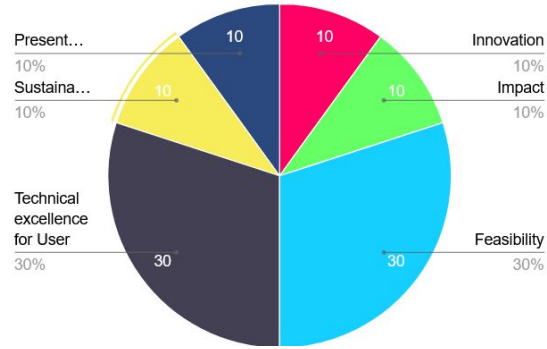
## Day 10

Evaluation & Results. (Points more if challenge has been solved by team same as bidding margin)

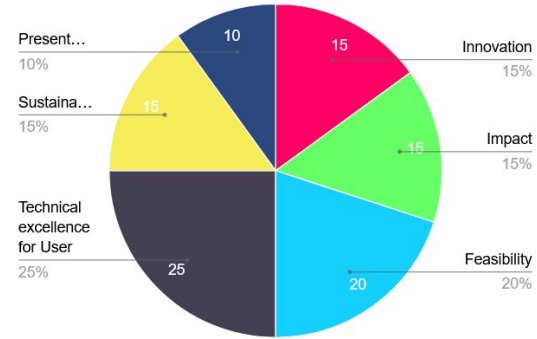


# Green Auction Hackathon Judging Criteria

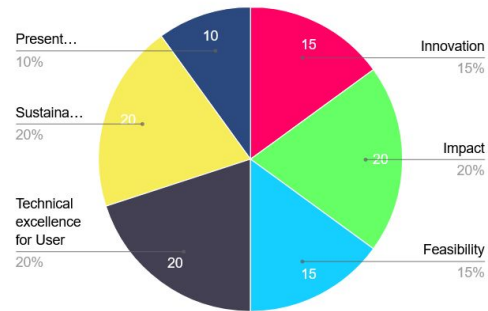
## 4 - 5 Bid



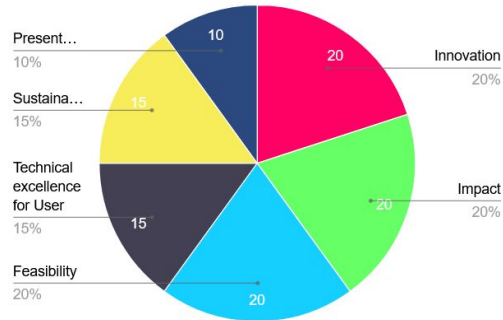
## 6 - 7 Bid



## 10 Bid



## 8 - 9 Bid



# Green Auction Hackathon Challenges

**1. Mangrove Conservation** - Malaysia's coastline is home to extensive mangrove forests, which play a critical role in protecting coastal areas from erosion, supporting biodiversity, and mitigating climate change by sequestering carbon. However, these mangroves are threatened by rapid coastal development, aquaculture, and deforestation. The destruction of mangroves not only affects the environment but also the livelihoods of local communities who rely on these ecosystems for fishing and other resources.

**2. Water Conservation & Management** - Agriculture is a significant part of Malaysia's economy, but it faces challenges with water scarcity and inefficient water use. In regions like the northern states, inconsistent rainfall patterns and inefficient irrigation practices lead to water wastage and reduced crop yields. Proper water management practices are crucial to ensure sustainable agriculture, support local farmers, and maintain food security in the country.

**3. Waste Management** - Rapid urbanization and population growth in Malaysian cities have led to an increase in waste generation, resulting in overflowing landfills and environmental pollution. Despite efforts to promote recycling, the overall recycling rate remains low, and improper waste disposal continues to pose serious environmental and health risks. Effective waste management and recycling programs are needed to reduce landfill dependency and promote sustainable practices.

# Green Auction Hackathon Challenges

**4. Sustainable Tourism** - Tourist destinations such as the Cameron Highlands and the islands of Langkawi and Tioman are facing environmental stress due to the high volume of visitors. Issues like littering, habitat destruction, and overuse of natural resources are common. Sustainable tourism practices are necessary to preserve these natural attractions, protect wildlife, and ensure that tourism benefits local communities without degrading the environment.

**5. Community Engagement in sustainability Initiatives** - While there are many sustainability programs and policies in place, there is often a lack of active public participation and engagement. For instance, initiatives such as recycling programs and energy conservation efforts have limited success due to insufficient community involvement. Encouraging community engagement is essential for the success of sustainability initiatives, as it helps build awareness, drives collective action, and fosters a culture of environmental responsibility.

# Themed Sprint Green Hackathon

**Objective:** Focus on diverse sustainability challenges to gain a deeper understanding of global sustainability issues.

**Team Size:** 3-4 people

**Format:**

- **Week 1:** Daily themes (e.g., Monday - Clean Energy, Tuesday - Water Conservation) where participants work on different theme each day.

# Daily Themes

## Day 3 - Sustainable Agriculture

Adopting sustainable practices such as organic farming and agroecology can enhance soil health and food security in Malaysia. Education and support for farmers are essential for this transition.

## Day 2 - Water Conservation

Water scarcity is a growing concern in Malaysia due to climate change and rising demand. Effective management practices like rainwater harvesting and reducing wastage are crucial.

## Day 1 - Clean Energy

Malaysia aims to increase its use of renewable energy sources like solar and wind to reduce reliance on fossil fuels. The focus is on overcoming challenges in energy storage and grid integration.



## Day 4 - Smart Cities

Malaysia's smart city initiatives focus on efficient resource management and improved public services through technology. Key areas include intelligent transportation systems and smart grids.

## Day 5 - Waste Management

Malaysia struggles with solid waste management due to rapid urbanization. Strategies like recycling programs and waste-to-energy technologies are vital for sustainable waste management.

# Week 2

**Format:** Teams select their favorite challenge from Week 1 and spend the entire week refining and developing a polished solution.

## **Evaluation Criteria**

- Innovation: Creativity and originality in addressing the chosen sustainability challenge.
- Impact: How significantly does the solution contribute to sustainability and reduce environmental impact?
- Long-term Benefits: Does the solution offer long-term sustainability benefits and address root causes?
- Technical Excellence: Quality and sustainability of the code and architecture.
- Usability: User-friendly design and functionality.



# Possible Learning Outcomes

- Participants will gain a broad understanding of various sustainability challenges and how they can be addressed through technology,
- Working on diverse themes enhances participants' ability to adapt their skills and knowledge to different contexts and challenges.
- Participants will enhance their ability to identify root causes of complex problems through structured analysis .
- Exposure to diverse themes will encourage participants to think creatively and approach problems from multiple perspectives.
- Participants will understand how technology can be harnessed to solve real-world problems, promoting a sense of purpose and motivation to use their technical skills for social good.
- Participants will improve their skills in creating low-fidelity prototypes and wireframes, which are crucial for visualizing and communicating ideas.

# Green Reverse Hackathon

**Objective:** Start with existing sustainability-focused IT solutions and work backward to identify root problems that can be addressed more effectively to make the solution more efficient or modify it to make it more suitable to resolve sustainability issues in Malaysia.

**Team Size:** 3-4 people

# Green Reverse Hackathon

## Format:

**Phase 1:** Choose existing green technology or solutions (could be open-source).

**Phase 2:** Participants identify potential problems these solutions could address more effectively or by adding/removing some more features.

**Phase 3:** Teams develop enhancements or new applications for these solutions/technologies.

**Example:** Cloud computing has revolutionized IT infrastructure by providing scalable, on-demand resources. However, cloud data centers consume significant amounts of energy. Your challenge is to take an existing cloud-based solution and enhance its efficiency to minimize energy consumption and reduce its carbon footprint.

# Possible Learning Outcomes

- **In-depth Knowledge:** Gain a deep understanding of current green technologies and their functionalities.
- **Critical Analysis:** Develop skills to critically analyze existing solutions and identify areas for improvement.
- **Creative Thinking:** Foster creativity and innovation in developing practical, impactful solutions.
- **Technical Skills:** Improve coding, implementation, and integration techniques by enhancing existing solutions.
- **Teamwork:** Enhance collaboration and role allocation skills by working in diverse groups.
- **Communication:** Develop effective communication and presentation skills, including integrating feedback.

# Evaluation Criteria

- **Identification of Root Problems:** Thorough analysis and clear definition of the underlying issues.
- **Innovative Enhancement:** Creativity and originality in proposing enhancements or new applications.
- **Feasibility and Practicality:** Technical viability and scalability of the proposed solution.
- **Impact and Sustainability:** Significant contribution to sustainability and long-term environmental benefits.
- **Design and User Experience:** Intuitive design and user-friendly experience of the enhancement.
- **Technical Implementation:** High-quality, maintainable code and fully functional solution.

# Student driven sustainability impact in higher education

Empowering students by integrating sustainability education into their academic and extracurricular activities.

Challenge: Develop a tool that makes students actively participate in sustainability initiatives

## Day 1 kickoff event

- Welcome participants and provide an overview of the challenge (topic presented )
- Team formation

## Research and Skill-building (Days 2-4)

- **Brainstorming sessions** identify key sustainability challenges in higher education.
- Teams conduct research on existing sustainability issues and solutions in higher education.
- Teams begin to develop initial project ideas and proposed solution
- One-on-one sessions with experts or academics for guidance and feedback

## Prototype Development (Days 5-7)

- Development of Initial Prototypes
- Teams work on developing functional prototypes of their solutions.
- Feedback Sessions and Iteration :check-ins with mentors to receive feedback and refine prototypes.

## **Development Sprint (8-11)**

- Teams begins start developing tool
- Activities: Debugging, optimizing code for energy efficiency, and finalizing features.
- check-ins with mentors for feedback

## **Final Development Push (Days 12-13):**

- Finalizing Projects: Teams incorporate feedback and finalize their solutions and testing
- Pitch Preparation: Teams prepare their final presentations and demos

## **Day Final 14**

- Each groups will check the projects and demo videos of every teams members and can vote whether they liked it or not
- Top 3 groups will be selected for finals and evaluated accordingly by votes. (judges)