



COMED KARES
INNOVATION HUB

ECO-HACK

Cultivating Changes in #NammaBengaluru

Build4Bengaluru Innovation Showcase

ComedKares Innovation Hub, Yelahanka, Bangalore

23rd November 2024



Event Overview

Event Summary: Eco Hack 2024 brought together 78 students across 23 teams from Bangalore, Tumkur, Mandya, and Mysore, uniting them in a collaborative effort to tackle critical challenges in sustainability and agriculture. The event fostered innovation, creativity, and practical problem-solving, with a clear focus on developing solutions that could make a tangible impact on the environment and agricultural practices.



Highlights: The event showcased a diverse array of impactful and functional proofs of concept (PoCs), with student teams presenting innovative solutions to address sustainability and agricultural challenges. Some of the most notable projects included:

- **Smart Water Management Systems:** Technologies designed to optimize water usage and reduce waste in agricultural settings.
- **Low-Cost Agricultural Robotics:** Innovative robotic solutions aimed at improving efficiency and addressing labor shortages in farming.
- **Herbal and Non-Toxic Pest Control Solutions:** Eco-friendly alternatives to harmful chemicals used in pest management.
- **Urban-Integrated Aeroponics and Aquaponics Systems:** Sustainable farming methods that integrate into urban environments to support local food production.
- **Drone-Enabled Soil Sampling Technologies:** Advanced drone technologies to enhance soil health monitoring and precision agriculture.

A truly inspiring moment at the event was the participation of 13-year-old Poorvi J Kashyap, who developed a carbon footprint tracking app. Her innovation demonstrated that impactful solutions can come from individuals of any age, and it was a testament to the boundless potential of young minds in shaping a sustainable future.

Jury Insights: The jury panel, which included Mr. Sunil Mysore, CEO of Hinren Engineering Pvt Ltd, and Shiva Chaitanya, Associate at NSRCEL, provided invaluable feedback and guidance to the participants. Their insights emphasized the importance of approaching sustainability not just as a technical challenge but as a lifestyle. They encouraged teams to focus on solving real-world problems and to avoid creating solutions in search of a problem, ensuring that their ideas were grounded in practical applications.



Winners and Recognition

Winner – Team Pinnacle Minds

- Team members: Aishwarya Saravanan, Sai Vivek Y
- Innovation: Dual-powered agriculture robot with an advanced rover mechanism designed to combat labor shortages and inefficiencies in agriculture.
- Prize: ₹10,000 cash and an investment of ₹25,000 from Mr. Sunil Mysore, CEO of Hinren Technologies. This investment provides a significant confidence boost and is expected to help the team take their innovation to the next level.

1st Runner-Up – Team Triad Innovators

- Team members: Vipin JB, Siddharth Sahu, Sharika Umashankar
- Innovation: Robotics-integrated, foldable IoT structure for real-time sludge treatment optimization in water management.
- Prize: ₹7,000 cash.

2nd Runner-Up – Team NOTARC:

- Team members: A self-driven team of 4, running drone and UAV workshops in Bengaluru.
- Innovation: A low-cost, remote-controlled pesticide and fertilizer spraying robot designed for smallholding farmers, offering a scalable and accessible solution for rural agriculture.
- Prize: ₹5,000 cash.

Guests & Jury



Mr. Sunil Mysore

CHIEF EXECUTIVE OFFICER
HINREN ENGINEERING PVT LTD



Shiva Chaitanya

ASSOCIATE @ NSRCEL IIMB



Muralidhar Ponnaluri

CEO, ERA FOUNDATION & COMEDKARES

Event Agenda:

Sl. No.	Program Details	Timings
1	Welcome and Registration	09:30 AM - 10:00 AM
2	Inauguration, Guest address and setting the tone	10:00 AM - 10:30 AM
3	Team Pitch and Evaluation	10:30 AM - 01:30 PM
4	Team networking and Break	01:30 PM - 02:30 PM
5	Team Pitch and Evaluation	02:30 PM - 04:30 PM
6	Prize distribution Ceremony and Valedictory	04:30 PM - 05:00 PM





TEAM - TRIAD INNOVATORS

SLUDGE OPTIMIZATION

Problem Statement

The Lack of regular data monitoring system in sewage treatment plant (STP) operation, particular in sludge bed, results in inefficiencies and environmental hazards. The implementation of efficient monitoring techniques is essential in order to enhance sustainability and optimize treatment operations.

Team Members

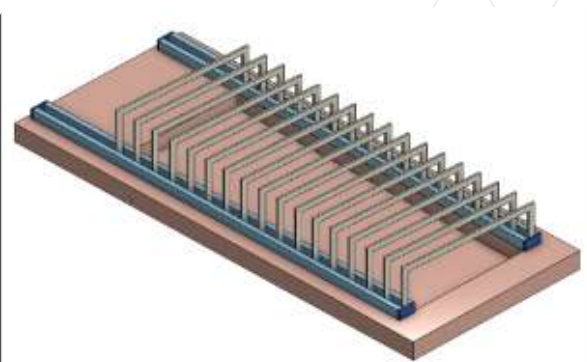
Sharika U Shankar
Siddharth Sahu
Vipin J Balan

Project Team



Solution

A semi-autonomous foldable structure around the sludge drying bed area enhances operational efficiency by providing continuous monitoring of gas emissions, temperature, and humidity. This innovative approach improves the safety and effectiveness of sewage treatment, allowing for real-time data feedback. The structure enables proactive maintenance by identifying potential issues early, reducing downtime and improving system reliability. Its foldable design ensures flexibility and ease of installation, while the semi-autonomous system ensures that environmental conditions are consistently optimized. Overall, this initiative enhances the operational performance and safety of sewage treatment processes, making them more sustainable and efficient.



TEAM - NOTARC

AGRICULTURE ROBOT

Problem Statement

The overuse and inefficiency of synthetic fertilizers in agriculture lead to environmental damage and unsustainable practices. Addressing this problem requires innovative solutions such as precision agriculture and integrated nutrient management to optimize fertilizer use, enhance crop yields, and minimize ecological harm, ensuring sustainable and efficient farming practices.

Team Members

Skanda R Nadig
Niharika Kiran M

Dhawala S
Durga Prasad

Project Team



Solution

Addressing the agricultural fertilizer problem requires a combination of innovative and sustainable approaches. Regular soil testing can help identify nutrient deficiencies and prevent unnecessary fertilizer use, while slow-release fertilizers minimize leaching and reduce environmental impact. Agroecological practices such as crop rotation, cover crops, and agroforestry naturally enhance soil fertility and lessen dependence on chemical fertilizers. Government subsidies can incentivize the adoption of sustainable or organic alternatives. Additionally, waste-to-fertilizer innovations, which repurpose agricultural, industrial, or urban waste, offer an eco-friendly solution. Stronger policies and regulations further promote sustainable fertilizer use, reducing pollution and encouraging best practices in nutrient management.



TEAM – ECO FARMERS

BALCO BLOOM–A PROMISE OF GIVING ORGANIC VEGGIES.

Problem Statement

Generally , In urban areas we don't get the fresh veggies and fruits. And even if we are getting it it's not being organic.It is being prepared by the inorganic method by the factories.Specially in metropolitan cities as like bengaluru is facing problem in which the veggies and fruits which is being taken by the people is not being organic.And one such report by the scientists has been passed by checking the samples of veggies and fruits in Bengaluru. So here we are focussing more onto the urban farming and health.

Project Team



Team Members

Md Danish Ali
Omkar kulkarni

Riya kumari
Sartaj Ali

Solution

To come out of this problem we have developed a vertical greenhouse farm which can be settled onto a balcony of the apartments. By our solution people can get the organic veggies which they want and even some of the veggies which they can't take will be taken by the farmers nearby by exchanging the crops which they will grow. Not only this we also have an application named balcobloom from which we can manage the setups of the greenhouse. We will even get the notification about the plant that when they want nutrients. In these we are using the kitchen wastes to prepare fertilizer which will get mixed up with the water collected by the method of rainwater harvesting. We can also get connect with the people through our app by an option there that is community. This will be one time investment but is going to be a new way of being healthy by getting our own fruits and veggies.



TEAM – PULSE

HERBAL PESTICIDE (BIO BUG BUSTER)

Problem Statement

The excessive use of synthetic insecticides has caused environmental damage, insect resistance, harm to non-target species, and health risks to humans and animals. Herbal insecticides, derived from plants, provide eco-friendly alternatives with biodegradability, selective pest toxicity, and compatibility with integrated pest management, ensuring sustainability and safety for the environment and health.

Project Team



Team Members

Samith G Nayak
C Manjunatha

Naitik Vinayak Prabhu Desai

Solution

To address the harmful effects of chemical pesticides, we developed BIO BUG BUSTER, a 100% organic herbal pesticide and insecticide. It effectively targets mosquitoes, houseflies, cockroaches, ants, lizards, and bedbugs. It also removes stains caused by bedbugs on walls. With no chemicals used, it is safe for humans, leaves no stains after spraying, and its moisture evaporates quickly. Its pleasant aroma ensures a comfortable experience while delivering effective pest control. BIO BUG BUSTER is made with safe, natural ingredients, providing a stain-free and eco-friendly solution for maintaining a pest-free and healthy environment.



TEAM - BHŪMI PĀLAKARU

PLANT VAIDHYA

Problem Statement

Karnataka's crop disease crisis causes significant agricultural losses, threatening farmers' livelihoods and food security. Increased reliance on pesticides fosters unsustainable farming practices, escalating environmental and economic challenges. Urgent interventions are needed to promote sustainable solutions, protect farmers, and safeguard the region's agricultural stability and food supply.

Project Team



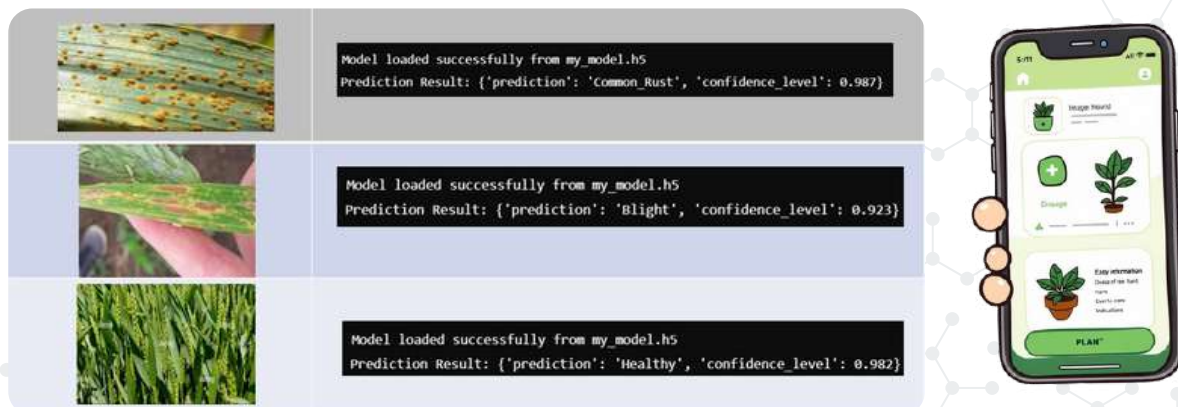
Team Members

SAI SHRESHT
CHANDINI

SHREYAS
SHREYA DV

Solution

The app allows farmers to take a picture of their crop and receive a real-time diagnosis of the disease, enabling timely intervention. The app provides detailed information about the detected disease, including symptoms, causes, and treatment options. The app utilizes advanced AI algorithms to accurately identify a range of crop diseases. The app is designed with simplicity in mind, making it easy for farmers with limited tech experience to use. The app will be partially functional offline, allowing farmers to access critical information even in areas with limited internet connectivity. We're using pre-trained deep learning models (e.g., TensorFlow, Py-Torch) for image recognition and disease classification. We're utilizing a combination of technologies for app development, including: MIT App Inventor, Thinkable, Android Studio, and Swift. We'll integrate APIs to access external resources like weather data and agricultural databases.



TEAM – JOHN INNOVATIONS

TERRA PROBE: PIONEERING A NEW ERA FOR SOIL MANAGEMENT

Problem Statement

Traditional soil management methods in agriculture are inefficient, costly, and imprecise. As farming demands grow, a more effective solution is needed. But what if an innovative, cost-effective approach could transform how we manage soil health and productivity? Can new technology offer better results without burdening farmers with high complexity?

Team Members

Janardhana M
Harish S.K
Abijith Barath

Project Team



Solution

Drones revolutionize agriculture by delivering precise, real-time insights into soil health, moisture, and nutrient levels, enabling optimized irrigation and preventing issues like waterlogging. This fosters sustainable farming, boosts crop yields, and supports the cultivation of medicinal plants and forest resources. Drones also enhance agro-tourism and improve cotton farming, reducing the textile industry's environmental impact. By increasing efficiency, cutting costs, and minimizing risks, drones drive financial development and economic growth. Their role in sustainable practices strengthens environmental health, ensuring long-term benefits for agriculture, industry, and the economy. Drones are key to modernizing agriculture while promoting ecological and financial sustainability.



TEAM - AGROTECH

AGROTECH : TRANSFORMING THE FUTURE OF FARMING

Problem Statement

Agriculture faces challenges like inefficient crop selection, inappropriate fertilizer use, and poor yield prediction, leading to reduced productivity. Soil degradation from mismanagement and limited tools for plant disease detection further impact yields. Fragmented farmer communities hinder knowledge sharing, while smallholder farmers struggle to adopt smart farming technologies due to limited access and affordability. These issues demand innovative, data-driven solutions for sustainable agricultural practices.

Project Team

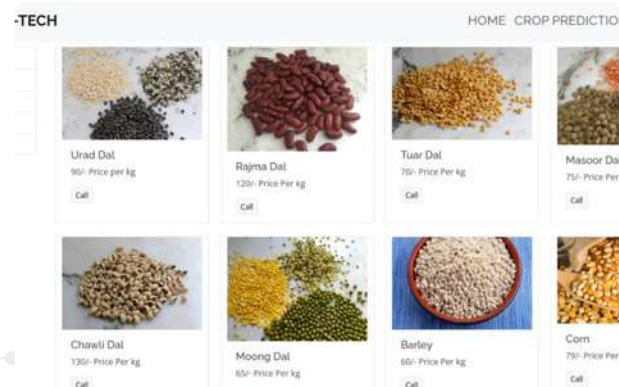


Team Members

Shivani T C Ruchith D
Rakshitha M R Prajwal

Solution

The AgroTech project utilizes AI, machine learning, and advanced technologies to address key agricultural challenges. It recommends optimal crops using models like Random Forest, considering soil, climate, and resource data. Fertilizer prediction is enhanced through soil nutrient analysis, minimizing wastage and environmental harm. Regression models estimate crop yields, enabling effective planning and resource allocation. Soil analysis, powered by sensors, offers actionable insights to maintain long-term fertility. Computer vision and CNNs, such as VGG16, facilitate early detection and classification of plant diseases. A dedicated platform connects farmers, fostering knowledge exchange and collaboration. Additionally, IoT integration supports smart farming practices like irrigation scheduling, pest monitoring, and precision agriculture. By combining data-driven insights with innovative technologies, AgroTech empowers farmers to improve productivity and sustainability.



TEAM - BETA

SERICULTURE IN INDIA AND TECHNOLOGY INTERGRATION

Problem Statement

To develop an app for sustainable development of Sericulture in India in which it provide temperature monitoring and inventory details and many more..

Sericulture farmers face numerous challenges in maintaining optimal conditions for silkworm breeding, leading to reduced yields and decreased quality. Existing methods rely on manual monitoring.

Project Team



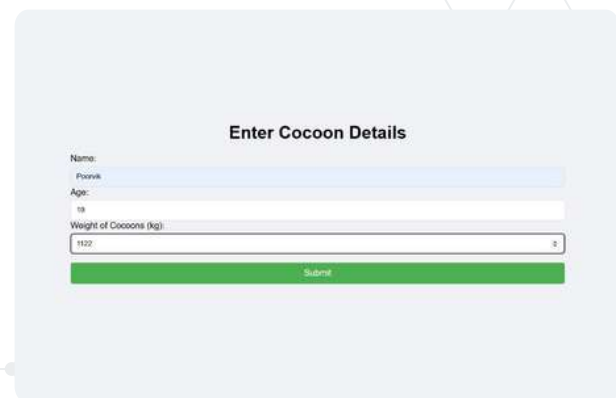
Team Members

Poorvik Hebbal Y
Prajwal Yadav S

Raghuveer S
Sanjana B G

Solution

SeriSmart is a mobile app tailored for sericulture farmers, enabling efficient silkworm breeding management, real-time temperature and humidity monitoring, and access to dynamic silk market prices. By integrating IoT sensors, machine learning, and market data APIs, it provides real-time insights and personalized recommendations. The app addresses key challenges such as inefficient breeding cycles, lack of environmental monitoring, limited access to market information, and inadequate community support. SeriSmart empowers farmers with data-driven decision-making tools to optimize productivity, improve silk quality, and connect with a broader sericulture network, fostering knowledge-sharing and sustainability in the industry.



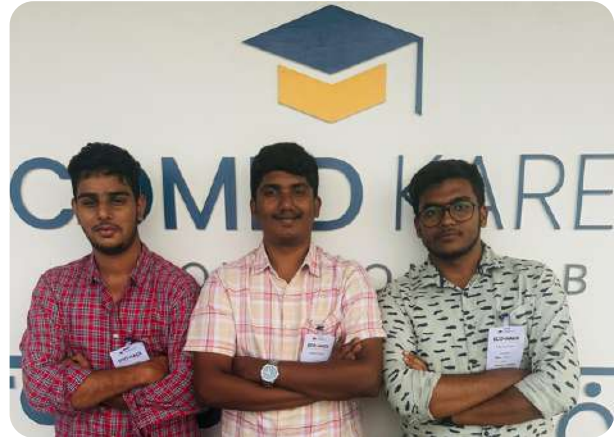
TEAM - AQUATECH

AQUATRACK:REAL-TIME WATER CONSUMPTION MONITORING

Problem Statement

Water scarcity is a pressing global issue worsened by inefficient water consumption practices. Rapid urbanization in areas like Bangalore has amplified challenges related to unmonitored and excessive water usage. Addressing this requires scalable and efficient solutions.

Project Team



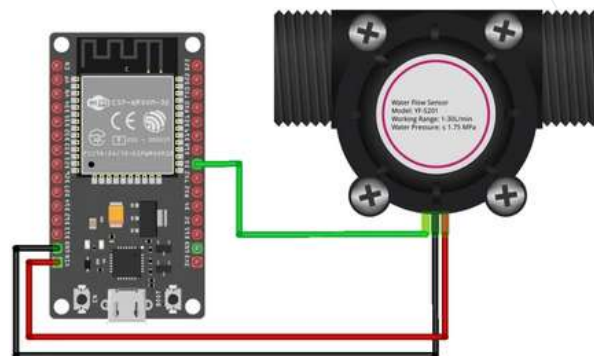
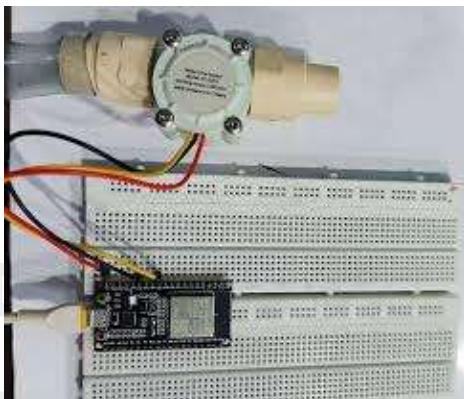
Team Members

Nandan Javagal
Avaneesh Honnappa

Pratham D U

Solution

Aqua Track is an IoT-based solution designed to address water wastage and overuse in urban areas. It uses flow sensors connected to an ESP32 microcontroller to monitor water consumption in real-time. The collected data is processed and displayed on a user-friendly web dashboard, showing live usage, billing, and penalties for excessive consumption. This encourages responsible water use by promoting awareness and accountability. The system is cost-effective, scalable, and easy to implement, making it ideal for both households and large-scale applications. Dynamic billing ensures fair costs and discourages wastage. Aqua Track reduces water bills while contributing to global conservation efforts. Future enhancements include mobile app integration, AI-based trend analysis, and cloud-based scalability. This project promotes sustainability and offers a practical solution to tackle water scarcity. Its efficient design empowers users to manage water responsibly while ensuring long-term benefits.



TEAM - MIND TREASURES

GREEN BENGALURU: BRIDGING CITIZENS AND AUTHORITIES FOR A SUSTAINABLE FUTURE

Problem Statement

Bengaluru faces severe environmental degradation, including waste mismanagement, deforestation, water pollution, and reduced green spaces. Rapid urbanization has led to critical losses in water bodies and groundwater. Limited citizen engagement and real-time data hinder timely action. Green Bengaluru empowers residents to report issues, fostering accountability and supporting sustainable urban resilience.

Project Team



Team Members

Sharath K M
Syed Faisal

Solution

EcoShift Bengaluru is a mobile app aimed at tackling the city's pressing environmental issues through innovative, tech-driven solutions. It focuses on water management, urban farming, climate resilience, and soil conservation, encouraging citizens to actively contribute to environmental protection. The app features AI-powered tools like CarbonConscious for tracking and reducing carbon footprints, HomeHarvest for urban farming, and Bengaluru Suraksha for climate monitoring. Additionally, it includes EcoMarket, a platform for eco-friendly products, and crowdsourced reporting, allowing citizens to report issues with real-time geolocation. Authorities are provided with a dashboard to track and manage these reports efficiently for quick action.

Bengaluru Environmental Weather Detection & Forecast

Enter Your Location in Bengaluru to Get the Current Weather

Enter your location in Bengaluru:

Get Weather

Weather Forecast

CARBON FOOTPRINT CALCULATOR

Smart AI for Carbon Conscious Living Δ

Your Country:

Daily commute distance (in km) 0.00 - 100.00	Waste generated per week (in kg) 0.00 - 100.00
Monthly electricity consumption (in kWh) 0.00 - 1000.00	Number of meals per day 0
Internet usage (in bytes) 0	Fossil fuels used (in litres) 0.00

Calculate CO2 Emissions

Team



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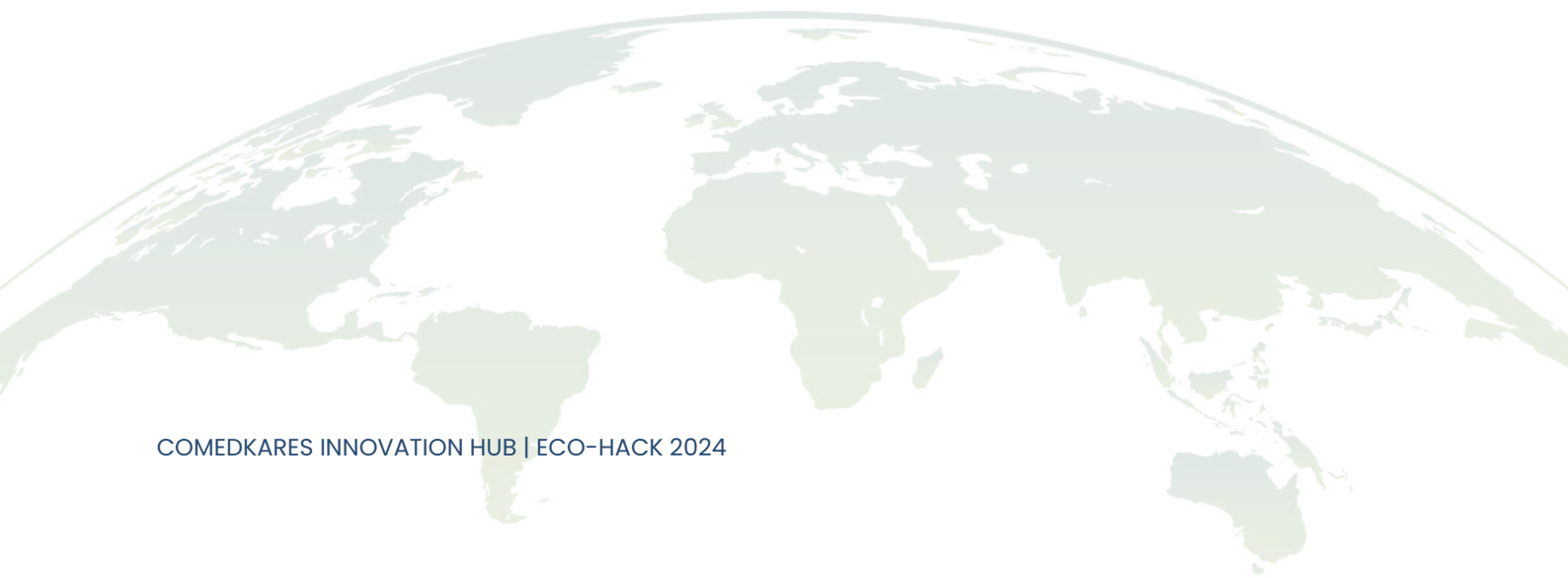
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INNOVATION HUB

*Nurturing compassionate competent
technocrats for the future*

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