



Saturday 13th April - 14th April 2019

AKU REDUCTION OF HAZARDOUS WASTE HACKATHON CHALLENGE 2019

Tackling one of the 17 sustainable development goals of 2030:

Responsible Consumption and Production

We are currently consuming natural resources at an unsustainable rate - one of the 17 sustainable development goals by 2030 is to “ensure sustainable consumption” - a focus on sustainable living means we have a better quality of life and reduce our dependency on natural resources while tackling challenges regarding air, water, and soil pollution.

Glossary

Ash disposal – Ash that is produced when materials are burnt has to be thrown away effectively. Significant exposure to ash and other components of coal ash increases a person's risk of developing cancer and other respiratory diseases

Soil Pollution - Soil pollution is defined as the presence of toxic chemicals (pollutants or contaminants) in soil, in high enough concentrations to pose a risk to human health and/or the ecosystem.

Problem

1. Safe removal and management of solid hazardous waste

For example, a large challenge AKU have been dealing with is with the safe removal and management of solid hazardous waste. Currently, it is very difficult for them to filter between different types of waste because:

- It's hard to identify and separate different types of waste
- Lack of education and training
- Lack of ownership from any of their teams to filter waste accurately.

2. Cost of disposing of waste

It is costly to dispose of waste in the right way. Safe incineration is important to ensure that toxic gases released are not harmful to people nearby. However, in rural areas the lack of incineration capacity or knowledge on how to do correctly results in outsourcing which is high cost and increases environmental risk

Additionally, currently, about 40% of all waste found in the hazardous area, was identified as non-hazardous. This not only wasted a lot of the people's time filtering waste into the accurate areas, but meant there was an increase in costs to have to dispose of this waste in the proper manner.

3. Level of natural resource use

There is more non-renewable energy sources being used as these are the cheaper, faster solutions in the short term but the environmental impact and health of people in surrounding areas suffers because of this.

4. Pollution and cost to the environment

Through the incineration of waste, there are high levels of air pollution. Incineration has many polluting effects which include the release of various hazardous gases, heavy metals, and sulfur dioxide.

Waste and ash disposal are also not done in the most environmental way and waste that is not disposed of properly seeps into the soil creating soil pollution and harming crops that are grown on the land. Excessive accumulation of garbage creates land contamination as harmful toxics seep into the ground.

Can you help to find a solution?

AKU are looking to reduce the level of natural resource use and pollution, while promoting opportunities to use renewable energy, recycle more (both in large cities and in remote regions and reduce their dependency on gasoline and fuel consumption) - they are essentially looking to improve all areas of their supply chain to become more environmentally sustainable (e.g. tackling air pollution, increasing recycling, using more renewable energy).

The Challenge:

Your challenge is to come up with a technological solution to help implement a clean and green energy solution focused towards:

- *The use of renewable energy*
- *Managing the removal of waste effectively*
- *Encouraging communities to become more sustainable in the resources they use (e.g. benefits of carpooling, consuming more organic/plant-based foods, improving air quality and more)*

Further links for research

- <https://www.un.org/sustainabledevelopment/cities/>
- <https://www.un.org/sustainabledevelopment/sustainable-consumption-production/>
- <https://www.un.org/sustainabledevelopment/climate-change-2/>
- <https://www.un.org/sustainabledevelopment/energy/>

Teams will be judged on a certain set of criteria that will be explained on the day, but we encourage you to pick one of these problems to tackle in depth rather than try and tackle all problems.

Good luck!