# 2023 ISCES

# Global Environmental Solutions Challenge

# Topic Description

**Your solution can refer to but not limited to the following topic descriptions.*

## Topic 1：Human Health

Plastic pollution not only wreaks havoc on the environment, but also poses potential hazards to human health. Microplastics may enter the food chain and be ingested into our bodies through food and water sources, thereby adversely affecting our health. How to minimize plastic waste by educating the public on proper disposal and recycling? How to quantify and control plastic pollution while preventing microplastics from affecting human health?

## Topic 2：Circular Economy

The global production and consumption of plastic products is increasing, but the recycling rate is universally low. Easy-to-recycle design, innovation of recycling value chain, cheaper and safer recycled plastics are key in circular economy. How to make plastic products of different materials in a closed loop of production-consumption-recycling, and reduce the generation of plastic waste, as well as the production of

virgin plastics? How to avoid health risks in the recycling process? How to improve recycling rate by changing consumer behavior?

**Topic 3：Climate Change**

Plastic is the material for which demand has been strongest since 1970. Its heavily reliance on fossil feedstock, extremely low recycling rate, and high emissions from petrochemical processes is a challenge for reaching net zero emissions. It is estimated that the annual production of plastic products in the world will produce more than 400 million tons of carbon dioxide emissions, which is equivalent to nearly a quarter of global vehicle emissions. How to efficiently recycle engineering plastics to further reduce the carbon intensity of industrial products such as automobiles? How to quantify the impact of global plastic production and plastic pollution on climate change?

**Topic 4：Zero-Waste City**

In the construction of zero-waste cities, the control of plastic waste is the key. We should actively promote sustainable alternatives to plastics and increase recycling rate, while improving plastic waste management in cities. How to make municipal solid waste management more effective and achieve effective plastic sorting and recycling at the community level?

How to control plastic pollution during urbanization, such as transportation, buildings and other infrastructure?