AAVARTAN'19

VIGYAAN PROBLEM STATEMENTS

(Go Green)

1. Local level Carbon Sequestrations to mitigate Climate Change

Sequestering carbon from air is a requirement to mitigate the imminent global climate change. Drive for carbon sequestration in terms of mass planting of appropriate fruit trees and other beneficial trees in villages, decentralized anaerobic production of charcoal from weed trees and plants such as Prosopis and Lantana can be taken up by the villagers. A digital mechanism can be planned to motivate this process as a mass movement across the country. A proper quantified documentation and recording of these activities into a national data base will also create a proof for the country to present our case in the international climate change negotiations.

2. Evaluation of Health Hazards and Management of Electronic Wastes

As our utilization of electronic goods are increasing and at the same time the new technologies in the field of electronics and instrumentation making the existing equipments out dated, electronic wastes are indeed a menace to manage by the human society, considering the unprecedented high ecological threat with regard to their disposal. A digital solution system in this regard on management of electronic wastes and evaluation of health hazard to humans shall be prepared.

3. Monitoring migratory bird population in India which is an indicator of Climate Change

Any change in local weather conditions are likely to affect the movement and population of each migratory bird species that come to India from various parts of the world. Hence they are considered as one of the best global climate change. Early or late migrations of birds and extra-limit observation of their distribution are established as the best indicators of climate change documentation. As we have thousands of bird watchers across the country in search of the birds every day for amusements and learning, we can very well record the arrival, departure and population of each migratory bird species systematically. For which we need to develop a networking solution that can connect all the information they collect, do basic analysis and also integrate all that in the climate change study platform.

4. Flood Detection and Management

Floods are the major cause of death in India that occurs yearly without any intimation. Mortality rate due to flood is exponentially increasing. It touches its highest records each year. The problem is that, it comes at almost same geographical are and its occurrence and damage is still not predictable. It not only takes life, but reducing economy growth of the states.

Objective:

1. To determine flood prone areas.
2. Efficient early warning systems
3. To make a mobile application for individuals
4. To stop rivers from flooding as much as possible.

Outcomes:

1. Efficient flood management systems
2. Less mortality rate
3. Less infrastructure and economical loss.

5. Decentralized water harvesting solutions for villages and urban areas

Availability of safe drinking water and water for the agricultural purposes are increasingly becoming the most challenging issue of our country. Completely centralized water distribution system cannot handle the issue of our country. We need decentralized planning of locally adapted, locally possible water harvesting, water conservation and utilization plans and integrated understanding of all these issues. Hence digital technology for decentralized water harvesting solutions for villages and urban areas of our country is the need of hour.

6. Digital field guides mobile apps for field identification of butterflies

In the world of widely available mobile phones, tablets and small personal computers, the electronic field guides for field identification of different biodiversity components are emerging as a reality. As an example butterflies are suggested here. Butterflies being an exciting charismatic group of insect easy to access and strikingly colorful with distinct and unique pattern to identity, it is easy to do such a thing taking an advantage of the potentials of present IT skills.

7. Alternative use of binding element in place of cement

Cement is the main binding element use in any construction work. When cement react with water during concreting, CO_2 gas evolves and lead to global warming. Not only has this, the manufacturing of cement also leaded to many environmental problems. Some alternative material other than cement is to be determined which has a lesser effect on environment.

8. Slow degradation of sugar canes

Find the solution to fast degrade waste arise from sugarcane industry that is bio hazardous to our environment as slow degradation gives rise to solid waste management issues.

9. Water crises and its solution through advanced technology

Population growth and shortage of available resources are exponentially increasing. We have limited amount of natural resources such as water, which is now being consumed rapidly. The area which is suffering from critical water crises should be taken seriously.

Objective:

1. To determine critical areas.
2. To determine methodology to overcome inefficient water supply.
3. To determine feasible water harvesting technologies and its deployment.
4. To apply most efficient water filtration technologies.

Expected Outcome:

1. Ground water level increment
2. Availability of safe drinking water
3. Awareness of water harvesting technology

10. Domestic Potable and Grey Water Management System

Develop and demonstrate an efficient domestic water management system at community level using appropriate technologies. The system should provide a cost effective solution for potable water management in conjunction with grey-water treatment and it's reuse**.**