SMART INDIA HACKATHON '17

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Ministry of Environment, Forests & Climate Change

MoEFCC is responsible for planning, promoting, coordinating, and overseeing the implementation of environmental and forestryprogrammes in the country. The main activities undertaken by the ministry include conservation and survey of the flora of India and fauna of India, forests and other wilderness areas; prevention and control of pollution; afforestation, and land degradation mitigation. It is responsible for the administration of the national parks of India. 28 problems statemenst from this Ministry will be given to technology students as a part of Smart India Hakcathon 2017.

Local level natural resource mapping and management for sustainable development.

#MEF28   Total Submissions : 8

For any local level planning for development, a proper natural resource mapping and accounting system is a prerequisite. One can select any ideal village in the country and a project can be made to map the geographical area of the village with details on the distribution of all natural resources available in the area along with human resource. Use this information for developing a digital support system for the people to understand about the available resources on real time basis such as ground water level (past and present), surface water availability, soil type, and suggestions on the farming potentials.

Sample Data Required: No

Local level carbon sequestrations to mitigate Climate Change.

#MEF27   Total Submissions : 7

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.

Sample Data Required: No

PARTICIPATE

Mechanism to evaluate harmful radiation levels in working environment on human society and suggest measures to improve conditions.

#MEF26   Total Submissions : 11

In our working environments such as home, office, or an industry, we are surrounded by various kinds of electronic equipments which emit various types of radiation. Exposure to these radiations is known to create health problems. There is no policy, protocol or management system available in the country to handle this issue. It will be good to visualize a monitoring system to of measure the level of harmful radiation in any working environment and provide warning and suggestion on safeguard mechanism. A model project in this line will be a good initiative.

Sample Data Required: No

PARTICIPATE

Prediction of rain and local weather based on the available 100 years of rainfall data and modeling a farmer support system.

#MEF25   Total Submissions : 18

Some intelligent prediction/expectation of the local weather is essential for all agricultural activities. Mostly the farmers do it based on their understanding and observation on nature. An intelligent support system can be attempted with modern analytical tools and using database on the local weather information available. Predictive models can be made in support of the farmers for each localities and make it available on line whenever they are in need.

All India Area Weighted Monthly, Seasonal And Annual Rainfall (in mm)	https://data.gov.in/catalog/all-india-area-weighted-monthly-seasonal-and-annual-rainfall-mm
Area Weighted Monthly, Seasonal And Annual Rainfall (in mm) For 36 Meteorological Subdivisions	https://data.gov.in/catalog/area-weighted-monthly-seasonal-and-annual-rainfall-mm-36-meteorological-subdivisions
District Rainfall Normal (in mm) Monthly, Seasonal And Annual : Data Period 1951-2000	https://data.gov.in/catalog/district-rainfall-normal-mm-monthly-seasonal-and-annual-data-period-1951-2000
Meteorological Sub-division Wise Monthly Actual And Normal Rainfall From 2010 To 2011	https://data.gov.in/catalog/meteorological-sub-division-wise-monthly-rainfall
Sub-Division-Wise Rainfall (MM) Distribution week 24.9.15 to 30.9.15 and Period 1.6.15 to 30.9.15 (From: Ministry of Agriculture and Farmers Welfare)	https://data.gov.in/catalog/answers-data-rajya-sabha-questions-session-237
Sate/Ut-wise Number of districts affected by deficit and scanty rainfall during South-West Monsoon – 2015 (From: Ministry of Agriculture and Farmers Welfare)	https://data.gov.in/catalog/answers-data-rajya-sabha-questions-session-237

PARTICIPATE

Documentation and use of `Traditional Ecological Knowledge' to conserve `Sacred Groves' in India.

#MEF24   Total Submissions : 5

India is country with a treasure trove of traditional ecological knowledge associated with its biodiversity and natural resources. Thousands of sacred groves are available in every region which supports a high diversity of flora and fauna in the name of faith and belief. Similarly, different rites associated with various aspects of life, different local resource management traditions associated with various belief systems, still undocumented local health traditions associated with locally available herbs and so on also need to be documented. Very little information is available Sacred Grooves in India. There is no mechanism for integrating such knowledge into a usable, functional and linked data base. A plan to device such a data base cum safeguarded retrieval information system can be taken as a project.

Sample Data Required: No

PARTICIPATE

Assessment of effect of tourism on local biodiversity in Protected Areas.

Total Submissions : 7

Tourism is a fast growing industry in India and elsewhere in the world. There is no mechanism available to evaluate the effect of tourism on local biodiversity in the Protected Areas (Sanctuaries, National Parks, Tiger Reserves, Biosphere Reserves etc.) in India. Information on this effect should be quantified in real time and the management strategies should be adaptively modified. To begin with, a digital model plan for a Protected Area in India with high tourist flow to assess the effect of tourism on local biodiversity is a good project idea.

Sample Data Required: No

PARTICIPATE

Mechanism to evaluate Human-Wildlife conflicts in forest areas and develop technologies to mitigate the conflict issues.

#MEF22   Total Submissions : 11

This is an age old problem for the life of people living in and around forest areas. In the last two decades there is an increase in human-wildlife conflicts. This is due to increase in human population, decrease in forest cover and in some cases increase in wild animal population as well. Till date there is no mechanism available to evaluate the human-wildlife conflict issues in the state and national levels. Also to mitigate the issue, no technological solutions are available. Development of sensor based technology to mitigate human-elephant conflict issue could be one of the suggested problems.

Sample Data Required: No

PARTICIPATE

Evaluation of Health Hazards and management of electronic wastes.

#MEF21   Total Submissions : 14

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.

Sample Data Required: No

PARTICIPATE

Digital solutions for `Smart Transport' restructuring to reduce air pollution in any city.

Total Submissions : 19

Planning of `Smart Transport' as a combination of well planned public transport and provisions of essential private transport is important for our society. Most of our cities are showing an increase level in air pollution and one of the ways to minimize air pollution in cities is through planning of `Smart Transport'. Considering all the existing practical limitations, planning a workable design of restructuring the city transport with a view to reduce air pollution is a challenge worth taking.

Sample Data Required: No

PARTICIPATE

Digital solutions to control and manage noise pollution.

#MEF19   Total Submissions : 13

Everyone will agree that the noise pollution level in urban areas is in the increasing trend. Many studies have revealed the ill effects of excessive sound on human body. We do not have any clue about its destructive effect on the health and well being of wildlife and other animals. Hence there is an urgent need to measure, record the noise level; develop a warning-management system in our living and working environments. A model plan on this line will be a good project to undertake.

Sample Data Required: No

PARTICIPATE

Planning solid waste management for any urban area/ housing colony.

#MEF18   Total Submissions : 50

Solid waste management is a major problem of all urban areas in India. Based on available information regarding solid waste management in major cities in the country, the most potential extent of waste generation and its removal policies shall be made through digital technology and an intelligent and efficient plan of action can be visualized and developed as a model.

Sample Data Required: Yes

PARTICIPATE

Digital solutions to evaluate the pollution and pressure on wetlands and water bodies and its conservation.

Our water bodies, especially those of the urban areas are under increasing threat due to pollution and anthropogenic pressure. As we have many colleges in cities and town, they can be motivated to do the pollution monitoring in a real time basis and the data can be integrated in to an assessment-warning-management suggestion system.

Sample Data Required: Yes

PARTICIPATE

A surveillance system for air pollution monitoring, warning and management .

#MEF16   Total Submissions : 30

Air pollution is one of the major threats to all life system in the world and India is no exemption to this issue. Most of our cities are chocked with poisonous gases and heavy loads of suspended particulate matter. This is a cause of concern for human life. Hence a digital surveillance system for air pollution monitoring shall be prepared. This localized information system of the changes in air pollution and the pollution level can alert the local people and authorities concerned in advance so that necessary remedial measures shall be taken for our wellbeing.

Sample Data Required: No

PARTICIPATE

Water usage audit of household/agricultural/industrial sectors and management plans.

#MEF15   Total Submissions : 21

One way of handling our water problem is its prudent and responsible use. A very great amount of water is being wasted in the country just by not being vigilant in its usage. A proper system of water usage audit for house/ agriculture/ or an industry will help to promote better management plan for water usage in the country. Designing water auditing cum management plan can be taken as a good problem to work on.

Sample Data Required: No

PARTICIPATE

Evaluate the potential and develop a mechanism to promote alternative energy harvesting and usage.

#MEF14   Total Submissions : 21

the same time the availability of these resources are decreasing due to over exploitation. It is high time to tap the alternative energy resources or non-conventional energy resources (for example wind, wave, biomass, river flow and so on) at the earliest and if possible in a decentralized way of production and usage. A plan, design and networking proposal is required in this regard.

Sample Data Required: No

PARTICIPATE

Mechanism to do the household/agricultural/ industrial/public energy auditing and management for sustainable development.

#MEF13   Total Submissions : 11

A very significant extent of our energy generated is getting wasted through lack of knowledge, carelessness and outdated technology use. Awareness of this by every user is the only solution. A systematic mechanism of energy auditing in place can do wonder in this regard. But doing the energy audit for everybody and by everybody is a mammoth task, and hence there is a need for well thought plan for national, regional and local level.

Sample Data Required: No

PARTICIPATE

Digital solutions for the sustainable harvest of local vegetation biomass around villages.

#MEF12   Total Submissions : 7

Majority of rural India still depends on local biomass resources for their day to day living. While the urban India depends more on electricity and such modern sources for energy requirements, the rural India still is a vegetation biomass dependent community. Availability of biomass in close quarters is an advantage for local people and local/rural technology on converting the vegetation biomass in to various kinds of energy needs are available. Digital India can do the planning of local energy needs of villages using locally available biomass resources and make a model project out of it.

Sample Data Required: No

PARTICIPATE

Decentralized water harvesting solutions for villages and urban areas.

#MEF11   Total Submissions : 11

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.

Sample Data Required: No

PARTICIPATE

Digital solutions to restore degraded forests in India.

#MEF10   Total Submissions : 8

Since the pressure on our forests is in the increasing trend due to anthropogenic pressure, it is high time for us to reclaim the degraded forest land, which in turn will increase the forest cover in the country and also will increase the forest connectivity between wildlife corridors for species such as tigers and elephants. A digital model for restoration of degraded forest can help restoration of such areas across the country.

Sample Data Required: No

PARTICIPATE

Digital plan for restoration of a dying river in India.

#MEF9   Total Submissions : 13

Ecological state of affairs of most of our minor and major rivers in the country is in bad state due to its overuse, pollution and encroachment. When we dream the development of nation we cannot forget the health of our rivers which give water for our drinking, cleaning and agricultural purposes. Reviving and restoration of our rivers is a Himalayan task , and it can be done only through participation of everyone, including planners, decision makers, managers, workers and most importantly all the people who live by the side of these rivers. It need a great national vision and design and large number of regional and local sub designs, all these need to be integrated in both digital and physical planes.

Sample Data Required: No

PARTICIPATE

National monitoring of flowering and fruiting of important tree species to assess the Climate Change.

#MEF8   Total Submissions : 3

elements in a national networking mode will create a dynamic database to support the decision makers, managers and farmers for taking informed decisions.

Sample Data Required: No

PARTICIPATE

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

#MEF7   Total Submissions : 4

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.

Sample Data Required: No

PARTICIPATE

Common Bird Monitoring as indicator of changing landscapes.

#MEF6   Total Submissions : 4

A very widespread discussion goes on everywhere regarding the local extinction of even house sparrows from many parts of our country. In the context of increasing urban development the population of common bird species such as hose sparrows, mynas, doves and pigeons are getting affected due to lack of breeding space. Most of the common birds associated with human habitations and nearby natural habitats also forced to change their distribution due to such changes. They are the best available bio-indicators of environmental and landscape changes around us. Monitoring their population and distribution through a participatory networked format is a challenge is the need of hour. A digital plan to do it, collect and manage the data is worth undertaking.

Sample Data Required: No

PARTICIPATE

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.

Sample Data Required: No

PARTICIPATE

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