

HYDERABAD CITY KNOWLEDGE AND INNOVATION CLUSTER PROPOSAL

Comprehensive Vector Control Program:

Countries with severe malaria grew 1.3% lower per year and a 10% reduction in malaria was associated with 0.3% higher growth per year. The potential upside of eradicating one mosquito-borne disease- malaria by 2040 is enormous: 11 million lives and \$2 trillion dollars of economic impact. Socio-economic burden due to malaria is around INR 11,640 crore per annum. Rising dengue cases account for over INR 10,000 crore of annual economic costs (including direct and indirect costs in terms of loss of production and medical costs) (Times News Network, 2016).

Hyderabad has been facing severe challenges in controlling the spread of vector borne diseases. The Government of Telangana has been working on many fronts to control vector population and ultimately the diseases. In Hyderabad, data on the number of dengue and other vector-borne disease cases are recorded using the e-portal. The Greater Hyderabad Municipal Corporation (GHMC) has mapped all mosquito breeding sites. The GHMC has been spraying pesticides in waterbodies. In addition to pesticides, herbicides are also sprayed on the floating water hyacinth. These measures give a temporary relief. However, to have sustained control of vector population it is necessary to develop and standardize a comprehensive vector control program.

In this context, RICH and its partner organisations are proposing a project for developing a comprehensive vector control program for the city of Hyderabad. The project aims at standardising scientific vector control protocols including identifying mosquito breeding sites and developing disease forecasting models, deploying IoT devices to record adult mosquito population on a real-time basis, developing hyperspectral imaging technology for estimating mosquito larvae population, and standardising spray formulation and spray schedules for pesticides. Based on the results obtained in the first phase, the project will be further implemented in other parts of the state.

- **Key activities and stakeholders:**

- i. Real time disease recording/monitoring system - GHMC, Marut Dronetech

- ii. IoT device & imaging technology for real time estimation of mosquitoes - IIIT-H, Marut Dronetech, IIT-H
- iii. Converting water hyacinth to manure or handmade paper - CSIR-IICT, CSIR-NEIST
- iv. Standardising pesticide combinations, spray fluid concentration and spray schedules - CSIR-IICT, National Vector Borne Disease Control Program, Central Insecticide Board
- v. Mosquito breeding control using semiochemicals - CSIR-IICT, ATGC Biotech
- vi. Bioremediation technology for lakes - CSIR-IICT
- vii. Bio larvicide - CSIR-IICT, startups
- viii. Vector borne disease forecasting model - CSIR-IICT
- ix. Community participation programs – NGOs
 - **Budget:** INR 5.45 crores
 - **Duration:** 12 months
 - **SDGs relevant to the project:**
 - SDG 3- Good Health and Well-Being
 - SDG 6 Clean Water and Sanitation
 - SDG 9 Industry Innovation and Infrastructure
 - SDG 17 Partnerships for the Goals
 - **National missions relevant to the project:**
 - National Vector Borne Disease Control Program
 - Integrated Disease Surveillance Program
 - **Metrics to measure project outcomes:**
 - Number of lakes covered
 - Number of technologies introduced
 - Reduction in adult and larvae population
 - Reduction in the number of dengue, chikungunya and malaria cases