



Feb 23-24, 2019

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Case 1: Waste Management in Urban Areas

The present system for Solid Waste Management in India, like any other developing country, is fraught with many inadequacies in terms of treatment methods and techniques. Illegal dumping is a major problem with significant concerns regarding human health, safety, property values and quality of life in general urban societies. In addition to all this, it imposes a major economic burden on the local governments which are typically responsible for cleaning up these open solid waste dump sites. Poor collection and disposal practice is another problem as it attracts and promotes sites for the breeding insects, rodents and pathogens that can cause and transmit various diseases in society.

With rapid urbanisation, the country is facing a massive Waste Management challenge. Over 377 million urban people live in 7,935 towns and cities and generate 62 million tonnes of Municipal Solid Waste per annum. Only 43 million tonnes (MT) of the waste is collected, 11.9 MT is treated and 31 MT is dumped in landfill sites. Solid Waste Management (SWM) is one of the basic and essential services provided by municipal authorities in the country to keep urban centres clean. However, almost all municipal authorities deposit solid waste at a dumping yard within or outside the city haphazardly. Experts believe that India is following a flawed system of Waste Disposal and Management.

Q1. What are the various ways in which technology can be implemented in tackling this issue?

Q2. Provide a High Level Algorithm for one of the solutions provided in answer of the previous question?

Q3. Which agency can these solutions be integrated to the current government policies?

Q4. How do you plan to scale the solution on District and State level Waste Management?



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Case 2: Boost of Crop Production and Processing using Technology

Over the years, our rural farmers have been dependent on indigenous or local knowledge for improving crop production. Such knowledge refers to skills and experience gained through oral tradition and practice over many generations. Acquisition of such primitive skill by our rural farmers has not helped them enough to improve agricultural yield. This fact is evident from our rural agricultural system which faces problems ranging from poor farm yields, plant weeds, pests that attack farm crops, old farm implements to poor quality fertilizers. Rural farmers in their effort for a better farming system and improved agricultural yield, are confronted with certain constraints. These constraints can be categorized as security, social and culture, ecological/environmental degradation, farm tool availability and market and prices.

Food production requires adjustments to rapid population growth, the expenditure of resources, soil degradation, reduced utilization of land and a growing lack of water. In order to meet current and future needs of a growing world population, it is necessary to increase farm production. However, this must be done in a sustainable and qualitative way in accordance with the environmental and food safety requirements. Climate change is yet another challenge for today's farmers, who are now forced to adjust their production to increasing risks from extreme weather conditions (such as hail, drought, heavy rain, and soil erosion). Climate change is not only responsible for adverse weather conditions; it also causes instability in farm commodity prices.

- Q1. How can crop production be boosted using technology? Give a High Level algorithm.
- Q2. How do you plan to integrate illiterate farmers into your solutions?
- Q3. How can Machine Learning and Artificial Intelligence be used to control the crop's Minimum Support Price and help the farmers? Give a rough model.
- Q4. How can this rough model be implemented on a National Scale?



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Case 3: Public Health Management Systems in Rural Areas

The current Primary Healthcare structure in India is outdated and facing a lot of issues. It is extremely rigid: making it unable to respond effectively to local realities and needs. In Rural India, communicable diseases, maternal, pre-natal, and nutritional deficiencies continue to be major causes of death. Non-communicable diseases such as diabetes, cardiovascular diseases, respiratory disorders, cancers and injuries have shown a rising trend. Mental health disorders, which are not much taken care of and are generally considered a taboo are also on the rise taking a substantial toll on human lives in rural areas, posing a huge challenge for the present system. It has also been observed that there is poor level of client satisfaction in rural areas of India regarding primary healthcare services. Client satisfaction is an important measure of the quality of healthcare and it needs to be addressed in order to improve the utilization of primary healthcare services.

As per the Census 2011, India's population is more than 121 crores. 83.3 crores (68.84%) of Indians live in rural areas. Considering the population norms for PHC of 30,000 in plane areas (here the population norms for PHC of 20,000 for tribal and hilly areas is not considered), India requires more than 27,700 PHCs. When compared with Rural Health Survey, 2011; India requires 3,800 more PHCs. There is an urgent need to address inadequate infrastructure, technological as well as manpower for better service and delivery of primary healthcare. Only after addressing these issues we can think of applying Indian Public Health Standards to all healthcare infrastructures.

Q1. What all issues can be resolved by using technologies like AI in optimisation of Public Healthcare System of India?

Q2. Give a High Level Algorithm of one such model to optimise any of the aspect mentioned by you in first Question.

Q3. How can Smartphones be exploited to integrate individuals to Public health framework?

Q4. How do you plan to implement your solutions on District and State level?



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