

## IT based enumeration of Irrigation Census in Andhra Pradesh

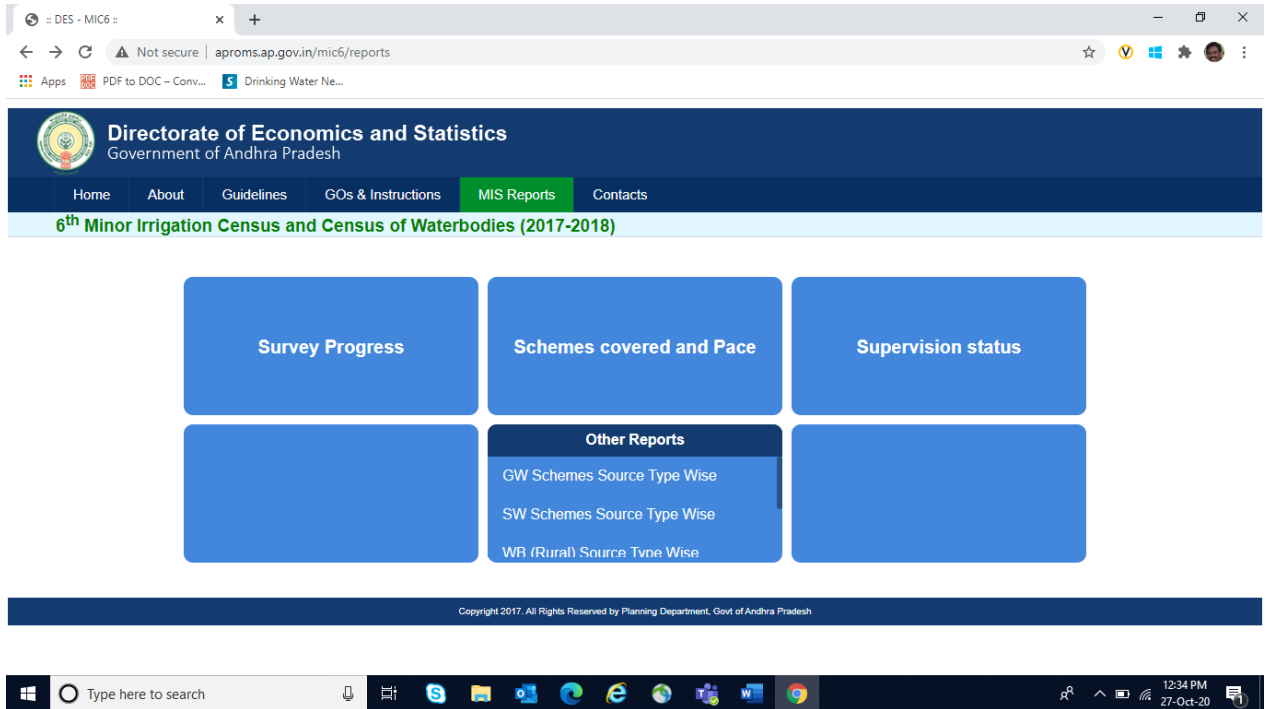
**Problem Statement:** Irrigation Census involves enumeration of data for all groundwater and surface water minor irrigation sources across all villages in India. The 6<sup>th</sup> Irrigation census also involved canvassing of data for water bodies in villages and urban local bodies. The enumeration process is done by canvassing five schedules to cover all aspects of minor irrigation. Huge data collection leading to issues like manual errors, missing data, operational issues are frequently experienced leading to increased time and resource lag, needless to say of issues like coordination, data tabulation and data validation techniques.

**Intervention:** Andhra Pradesh is one of the few States that have conducted “Paperless” 6<sup>th</sup> Minor Irrigation Census. During the State Level Coordination Committee (SLCC) meeting prior to execution of 6<sup>th</sup> MI census, it was decided to conduct the survey through tab/ mobile app without canvassing the schedules to save time and avoid data entry errors. Accordingly, customized software was developed in-house. Tab / mobile app was developed with android version for canvassing all schedules of 6<sup>th</sup> Minor Irrigation Census and Census of Water Bodies. All the 5 schedules (Ground Water, Surface Water, Census of Water Bodies in Rural and Urban areas and Village schedule) as designed by Gol were integrated into the 3 schedules covering all the information. “Postgre SQL” is used for storing the captured data through tab/ mobile application.

Trainings were conducted for the field and supervisory functionaries at State, District and Mandal level before commencement of the census.

Pilot survey was done to test the application covering all the schedules of groundwater, surface water schemes and water bodies @ 2 schemes each in all 13 districts both in Rural and Urban areas. ‘All the table’ scrutiny checks were incorporated in the app as per instructions of Gol. Photographs along with latitudes and longitudes of water bodies are captured in the Census of Water Bodies. The app has been developed with provision to upload the canvassed data automatically in the NIC software structure in one go through back end bulk data entry.

Exclusive Web portal (<http://aproms.ap.gov.in/mic6/dashboard>) was established for day to day monitoring of the fieldwork of 6<sup>th</sup> MIC & CWB featuring different MIS Reports viz., (1) Survey progress (2) Schemes covered and pace (3) Supervision status and (4) Other reports.



WhatsApp group was formed to resolve the field level issues and to share the clarifications.

Senior Officers from DE&S were allotted districts for monitoring and supervision. Core Group Team was constituted with group of officials. The team visited all districts and explained the process of rectification of errors in the portal at Mandal level as part of validation of the enumerated data.

**Impact:** The application has immensely benefitted the enumerators in terms of data collection and primary data validations, thus saving time and resource. The data consolidation was done in much lesser time. The progress of data collection was effectively monitored by the supervisors using the desktop application. The gaps or delays were monitored, and corrective actions were taken immediately.

**Replicability:** The applications that were used for Irrigation Census in Andhra Pradesh are very common and widely used in various IT applications across all sectors of business and social sectors. The modules can thus be replicated in other states and UTs. Furthermore, MI Stat wing, can further improve the application and incorporate provisions for online transmission of data to the server for data tabulation. Inbuilt data validation modules may be made a part of the overall application to complete correctness of data prior to tabulation.

Such an approach may be adopted for survey of medium and micro-irrigation schemes as well. A consolidated IT based application operatable with mobile / tab containing multiple schedules with inbuilt validation modules for all irrigation schemes can be

thought of. The application may also use Machine Learning / AI techniques for analysis and predictions pertaining to water availability and demand. Such prognosis will immensely help the irrigation sector as a whole in identifying area specific issues and devise plans accordingly.

*(Reference: KII with Nodal Officer, Andhra Pradesh as part of primary survey)*