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Earth Observation Societal and Economic Applications, Challenges and Benefits (5)

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DATA ENABLED GOVERNANCE AND FARMER ADVISORY - EO IS A CRITICAL COMPONENT –  
APPLICATIONS FROM INDIA

**Abstract**

India is placing priority for sustainable agriculture and for enhancing farmer incomes. One important need is for scientific information for farmer's land holding as part of data-enabled governance. With more than 600k villages and with 140 million land holdings, it is only application of technology, like space-based Earth Observation (EO), that can implement coherent data governance frameworks that are scientific and evidential across various sectors in each village. While we cover various examples, we shall highlight how placing the farmer at the centre of the data system will be key differentiator; apart from reliance on realtime data analysis, including EO images, specific to a farmer's plot, along with other natural resources, the daily weather, market dynamics, social status and best practices for crops suitable for the plot - as part of an overall Farm Advisory.

In this data system, crucial EO image analytics deliver weekly water- and crop-status at the plot/level; meteorological forecasts warn about weather; numerous GIS maps are analysed and integrated - all these dis-aggregated to village unit with specialised algorithms. Suitability analyses determine the optimal crops, based on soil, climate, terrain conditions and also considering the social and economic status of the farmer; integration of multiple parameters pinpoints to best practices for every plot at different crop stages; Beneficiary analytics forecasts benefits, such as income or assets and Market Analyses recommend the best market access and pricing. These are integrated into the final advisory and is communicated to farmers as weekly/fortnightly/monthly advice or even as "episodic event" advisories using mobile, web-access or through a call centre. These plot-unit advisories are also aggregated to policy dashboards for government and other market needs.

We will share experiences – experiment conducted in South Odisha, India in various villages covering 150k land holdings. Another example is how a state system of GIS (example, Karnataka-GIS) has enabled governance systems on scientific basis and brings democratic principles of equity. Validation results are provided - 40 percent farmers adopted the farm advisory and over 98 percent accepted the weather advisories and cropping practices. The state-GIS usage has triggered various Apps implemented for different sectors. Thus, the results of such data systems are encouraging.

This paper describes the design, the complex data component - in which EO is crucial component, the automated realtime data analytics, the Farmer Advisory and data implementation. Real field experiences, analytics experiences, social interactions and "farmer feedback" are covered.