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MAJOR CHALLENGES AND OPPORTUNITIES TO ACCELERATE SPACE-BASED EARTH
OBSERVATION ACTIVITIES; A CASE STUDY OF TÜRKIYE

Abstract

Space-based Earth Observation has emerged as a crucial economic sector significantly influencing the financial prosperity and progress of nations, and as a key area to overcome various challenges. This area has transformed into a market-driven socio-economic growth catalyst for private entrepreneurial enterprises and global investors. The Global Earth Observation industry is currently valued at around 10 billion Euros, predominantly under the influence of the production-oriented market segment. Projections indicate a significant growth trend in the coming years. Earth Observation technologies offer innovative solutions that meet the needs of the global community. Many countries, especially developing ones, allocate significant resources to enhance Earth Observation capabilities. Emphasis is placed on countries developing comprehensive capacities across various components and allowing flexibility to tailor these capabilities to their specific needs for optimal outcomes. The process of enhancing a country's Earth Observation capabilities involves a multifaceted interplay of challenges and opportunities spanning technological, financial, environmental, and geopolitical realms. The capacity-building process required to enhance a country's Earth Observation capabilities also contributes to the progress of various sectors. Despite having significant potential and sufficient resources to compete globally, Turkey has historically lagged behind in this field. However, since 1990, there has been a noticeable increase in interest and progress in space-based initiatives in Turkey. This study provides a general overview of Turkey's capacity-building efforts for space-based Earth Observation activities from 1999 to 2014 and highlights Turkey's key achievements, successful initiatives, collaborative efforts, challenges and evolutionary milestones in line with its space capabilities. Turkey's investments have propelled it into a new era of advancements in space technology and enabled the development of domestic upward and downward systems. The study also evaluates the progress made in the first decade and outlines the main aspects of transforming the basic infrastructure into a modern Earth Observation capacity. This unconventional approach to space-based capacity-building for developing economies has paved the way for the establishment of a space agency in Turkey.