

# Section I: The Policymaking Context

A confluence of trends—political, technological, and economic—has encouraged the development of a new generation of imaging satellites that will be owned and operated by commercial firms rather than by governments. More than four decades after the Soviet Union first orbited the Sputnik satellite in 1957, a nascent marketplace for satellite imagery data is emerging. Civilian agencies, businesses, scientific centers, and defense establishments all anticipate gaining another valuable source of earth-observation data. Commercial observation satellites also promise to bolster global transparency by substantially expanding public and international access to high-resolution satellite images. This trend is most notable in the growing interest among news media and nongovernmental organizations in applying commercial satellite imagery to their information needs.

However, policymakers in the United States and elsewhere are ambivalent about encouraging commercial observation satellites and the greater global transparency that expanded public access to commercial satellite imagery provides. Commercial observation satellites raise several major policy issues, including:

- *Government policy effects.* How do civilian remote sensing programs and government policies encourage or inhibit the development of commercial observation satellites?

- *Market prospects:* Is there a viable commercial market for satellite imagery, particularly given alternative technologies and data sources?
- *Dual-use utility:* Will rapidly growing global transparency, which includes unprecedented access to high-resolution commercial satellite imagery, enhance or diminish the security of countries, particularly in unstable regions?

The chapters in Section I offer background on the policymaking context for commercial observation satellites. They provide a useful historical review of U.S. decisionmaking on whether and how to commercialize satellite imaging. In addition, these chapters explore the market, technology, and national-security implications of expanding global access to this new type of information technology.

The belated appearance of commercial observation satellites results more from a basic policy change than from technological impediments. As discussed in Chapter 2, the unique qualities of satellite imagery were recognized early on as a means of increasing global security. In this chapter, Richard Leghorn, a leading participant in the U.S. policy debates on this issue in the 1950s and 1960s, and Gregg Herken, a historian specializing in the Cold War era, recount how President Eisenhower and other senior officials seriously considered the value of global transparency in the form of the “Open Skies” proposal and other measures to manage U.S.-Soviet relations. However, the perceived national-security imperatives at the time favored the proponents of greater secrecy. With the end of the Cold War, the earlier restrictions on public access to imagery data have been substantially relaxed. Thus, the authors see a new opportunity to reconsider the “road not taken” as Washington and Moscow substantially loosen earlier restrictions on broad access to imaging satellite technologies and high-resolution images.

In Chapter 3, Ray Williamson reviews the evolution of satellite remote sensing with particular attention to assessing the conditions that have encouraged the commercialization of satellite imagery. His chapter highlights the development and modernization of the U.S. Landsat satellite as the world’s longest-running civilian remote sensing satellite program, as well as the subsequent emergence of non-U.S. imaging satellites, including France’s Satellite Pour l’Observation de la Terre (SPOT) series. He also analyzes how advances in information technologies and remote sensing applications have created more-favorable market conditions for commercial remote sensing than existed during the failed U.S. government attempt to privatize the Landsat program in the 1980s.

The remaining chapters in Section I assess key policymaking issues regarding the market prospects, technology trends, and national-security implications of commercial observation satellites. Kevin O'Connell and Beth Lachman assess the market trends for commercial satellite imagery and related spatial technologies in Chapter 4. Although a major international market already exists for remote sensing, satellite imagery data providers currently account for only a small portion of the total remote sensing revenues. Most of the revenues are generated by airborne providers of overhead photography and digital imagery and by the value-added firms that process and analyze both airborne and satellite data to produce information products. The authors also note that national governments will exert a major influence on the business focus and fortunes of commercial imaging satellite firms because governments continue to play a critical part in regulating these firms and are the primary consumers of their imagery data and services.

The policy issues surrounding commercial observation satellites are rapidly evolving because technological advances are creating the possibility of commercial observation satellites with improved sensors based on different types of imaging technologies. In Chapter 5, Bob Preston analyzes two types of emerging technologies: synthetic aperture radar and multi- and hyperspectral imaging. These sensors are expanding the utility of remote sensing applications beyond the traditional emphasis on high-resolution panchromatic (e.g., black and white) images. His chapter describes the unique characteristics of these imaging technologies and discusses the particular licensing and operational control issues that they pose for policymakers.

Finally, in Chapter 6, John Baker and Dana Johnson analyze commercial observation satellites as a dual-purpose technology, paying particular attention to the U.S. national-security implications of this new information technology. This chapter reviews the significant contribution that civilian remote sensing satellites made to the military operations of the Coalition forces in the Gulf War. With their higher resolution and more timely imagery, commercial observation satellites could become an important source of geospatial information for U.S. and allied combat or peace operations. However, the same commercial imagery could also be exploited by potential adversaries, including rogue states and terrorists, provided that they can translate access to imagery data into the information crucial for their operations. Either way, the authors contend that commercial satellite imagery poses some important organizational and doctrinal challenges for U.S. military planners.