

Chapter 7

Sustainable Airport Infrastructure: Balancing Infrastructures for the Airport Metropolis

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ABSTRACT

Ongoing financial, environmental and political adjustments have shifted the role of large international airports. Many airports are expanding from a narrow concentration on operating as transportation centers to becoming economic hubs. By working together, airports and other industry sectors can contribute to and facilitate not only economic prosperity, but create social advantage for local and regional areas in new ways. This transformation of the function and orientation of airports has been termed the aerotropolis or airport metropolis, where the airport is recognized as an economic centre with land uses that link local and global markets. This chapter contends that the conversion of an airport to a sustainable airport metropolis requires more than just industry clustering and the existence of 'hard' physical infrastructure. Attention must also be directed to the creation and on-going development of social infrastructure within proximate areas and the maximization of connectivity flows within and between infrastructure elements. It concludes that the establishment of an interactive and interdependent infrastructure trilogy of hard, soft and social infrastructures provides the necessary balance to the airport metropolis to ensure sustainable development. This chapter provides the start of an operating framework to integrate and harness the infrastructure trilogy to enable the achievement of optimal and sustainable social and economic advantage from airport cities.

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INTRODUCTION

The importance of sustainability and infrastructure is clearly acute at the confluence of the airport and the city. The modern airport is an essential global connection for the social and economic interaction of cities that rely on aviation as a means to shuttle both people and goods in a 'same day service world'. Airports require well connected infrastructure links to the city and region to service this global interface. However, to make this truly sustainable, infrastructure needs to be viewed as more than just physical works that connect people. Rather, social infrastructure is a critical element that defines the capacity of the community to sustain a quality of life and healthy community. How well 'hard' and social infrastructure are connected impacts the overall sustainability of the relationship. This is especially critical when the function of infrastructure changes in a society.

The role, scale and meaning of major urban airports worldwide have changed over the past decade as a result of corporate and economic transformation. Modern airports are very different from traditional airports, and our current knowledge is insufficient for understanding the complex roles and relationships now associated with airports (Freestone, Williams, & Bowden, 2006). The airport can no longer be considered in isolation from the metropolis that it serves. Large international airports in Europe, North America and Asia have varied functions beyond airport traffic and operate as metropolitan hubs with a diverse range of land uses.

The evolution of the airport into an urban hub that impacts both the city and region has been termed the *aerotropolis* (Kasarda, 2001) or *airport metropolis*. While airports have become more important to cities in recent decades, the airport metropolis concept asserts that airports themselves can invest in developments to guarantee that the airport is more than just a crucial piece of infrastructure, and is actually generating otherwise unattainable economic and social benefits. The

airport metropolis becomes an economic generator that is a gateway to international destinations and markets linking regions on a global scale. This in turn, requires specific industry clustering and infrastructure to provide the necessary support for global competition. The districts around the airport have been referred as an 'airfront' which describes the wide range of commercial, industrial and transportation facilities required to service the new demands (Blanton, 2004). The airport metropolis becomes a hub that provides the city and region with a different context for markets and flow of goods. As Kasarda (2001) notes, this type of global market is based on speed and access where the airport metropolis provides an unimpeded gateway for the flow of goods between the region and global markets. However, the movement of the airport from air transport to business hub is not without problems. In particular, an overemphasis on the hard or physical infrastructure does not acknowledge the importance of social infrastructure and connectivity as essential elements to this new identity. We argue in this chapter that the airport metropolis consists of three essential and interactive elements: 'hard' and 'soft' infrastructures and connectivity. The dynamics between these elements sets a context that defines the sustainability of the airport as critical infrastructure to the metropolis and the surrounding region.

PHYSICAL INFRASTRUCTURE

Many types of physical infrastructure should be in place to enable airports to meet their new dual roles of transportation hub and regional economic facilitator. These hard or economic infrastructures include large scale installations that connect and service commercial, industrial, residential and cultural nodes of the region. Typical elements are roads, railways, utilities, ports, airports, freight and service interchanges, and of increasing importance, information and communication

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