Chapter 48
Green Airport Investments to Mitigate Externalities: Procedural and Technological Strategies

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ABSTRACT

Transport systems are important pollution sources, mainly in terms of greenhouse gases, noise and land consumption. To mitigate the problem and safeguard airport development at the same time, the involved stakeholders are fixing goals, priorities and duties in order to promote the sustainable development of the air transport industry at global level and the wellness of local communities as well. It is desirable to estimate airport noise and carbon impacts in order to suitably manage them and identify strategies in line with the concept of green economy. In this chapter, a general framework to identify optimal procedures and methods to evaluate the effectiveness of policies addressed to reduce airport impacts on the airport surroundings is proposed. The case study of the airport of Bologna is presented as an example of Transport Company that effectively operates to minimize its noise and carbon impacts. According to the proposed general framework, impacts and estimated costs to achieve the status of green company have been computed.

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INTRODUCTION

Transport activities allow displacement of both people and goods – which are variously located in time and space – to fulfil activities and production needs. Transport systems have always had an important role for the development and control of a territorial system. Since the Roman Age, roads and bridges have followed military conquests in order to guarantee supplies to troops first, and then a widespread transport network for trading and territory development. The road network was the connective tissue linking the ancient Rome to the distant provinces with a total length of about 100.000 Km at the Roman Empire's maximum extent. The availability of well-established roads, as the renowned Silk Route, was the premise to start trading relationships among distant areas, encourage the alliance of civilisations, and explore new lands. In the ancient times, a crucial role in perishable and raw materials restocking as well as export of finished products was played mainly by harbours, which made it possible also the exploration of distant and unknown lands. After the discovery of the New World, further inventions and evolutions of transport means led to the development of mass transit systems, which made available travels to a large percentage of population. Later on, and in particular after World War II, more and more significant traffic volumes developed along routes. Airports took the role of harbours in being strategic nodes of the worldwide transport network for both passengers and freight. Routes have linked first cities and countries where the economic activities were more important, then all countries all over the world. Such network has established relationships among distant areas and has had undeniable advantages for the several actors involved in the production, management and supply of the air transport.

Despite their important role, however transport systems are important pollution sources, mainly in terms of greenhouse gases (GHG), noise and land consumption. According to some recent figures (Fulton et al., 2009), transport systems account for 22% of the total amount of GHG emissions and at European level this percentage increases to 25% (EEA, 2012). Atmospheric pollution and induced climate changes are then some of the most important externalities taken into consideration to measure the performances of transport companies. Nevertheless, in specific contexts such as airports located in the neighbouring of densely urbanised areas, noise as well might be a relevant impact. Infrastructure interventions within airport boundaries – for example - might aim at both enhancing capacity and driving airborne traffic over different areas to reduce noise emission – e.g., new runways. However, it requires relevant monetary investments as well as the availability of large areas and then is considered only at large hub airports. Airport infrastructures can be examined under several points of view. From a managerial point of view, traditionally there has been a split between public and private airport facilities management, while the assets are commonly public owned. From the infrastructure point of view, key topics have been airport location and development plans within and outside airport boundaries. All those decisions entail consequences on the territory, airport managers' policies and, finally, on the relationships between airport and territory.

As nodes of a wide transport network – which includes also the surface transport networks linking airports to the main cities they serve – the airport location is not trivial. Particularly, there is a dualism between airport proximity to or distance from the relevant built-up areas. From one side, proximity strengthens the relationships with the territory, particularly by benefitting from road and rail networks to enhance the airport catchment area. From the other side, distant airports are preferred to protect the territory and its communities from the detrimental effects caused by the airport presence. Such protection is counterbalanced by the need to realize a suitable surface access network, which is a relevant land-consuming and potentially polluting activity – particularly if a wide-ranging modal split is expected.