



An integrated assessment of alternative land-based passenger transport policies: A case study in Tenerife



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ABSTRACT

Over recent decades, there have been numerous cases of land-based transport policies that have lacked clear and coherent strategies. This has not only hampered the resolution of issues like road congestion, but has also created new ones (e.g. strong social opposition to new train infrastructures). The absence of such strategies highlights the need for long-term transport policies with a wider vision of the issues, since land-based transport cannot be considered from just a technical perspective.

The main objective of this article is to implement a participatory integrated approach to facilitate the understanding of land-based passenger transport governance issues on Tenerife, in the Canary Islands. Relevant policy issues and alternatives are identified by the stakeholders involved. The inclusion of stakeholders in the assessment process is crucial to frame transport governance issues appropriately and to define and assess plausible policy alternatives. This assessment process even included a final step of validation of the results by stakeholders to foster discussion among them about transport issues and policy alternatives.

Finally, due to the obstructive role played by some stakeholders in influencing past transport policies, an analysis of possible coalitions among stakeholders is also discussed.

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1. Introduction

The socio-economic and environmental impacts of transport policies have been thoroughly analysed in recent decades. Urban congestion in the main European cities is costing approximately €80 billion per year and the predictions indicate this figure will increase in the coming decades (European Commission, 2011, 2013). There were also approximately 25,900 lives lost in 2013 as a consequence of road accidents (European Commission, 2015). Vienneau et al. (2015) estimated that 6000 and 14,000 of years of life were lost due to noise and air pollution, respectively, related to transport activities in Switzerland in 2010, considering road, rail and air transport altogether.

However, transport governance issues go beyond technical ones, tense social relations¹ – such as strong and opposing interests – and system-related uncertainties² highlight the need for more inclusive approaches.

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¹ Transport planning is not a linear process, instead it involves complexity, since many links between transportation and households' mobility patterns are produced (Rydin et al., 2012).

² Hernández González (2014) identifies low uncertainties related to congestion referring to inexactness of estimations (i.e. imprecise speed-flow functions, value of time, operation cost functions of car usage, and elasticity of traffic demand) and high uncertainties detected for accidents (patient pain and relatives' grief), noise, and air pollution (related to dose–response functions).

As a consequence, transport-related decision-making processes need to be improved through the application of new rules, practices and participatory decision-making tools (Hodgson and Turner, 2003; Macharis et al., 2012; Wang et al., 2014).

This research discusses the use of integrated assessment processes consisting of the integration of institutional analysis, participatory methods and multi-criteria analysis. The authors argue that such integrated assessment might assist in transport-related planning processes and, therefore, apply it to a case of inter-urban transport planning issues on Tenerife (the Canary Islands).

2. Case study

Tenerife has an area of 2034 km² and a local population of 897,582 in 2013, distributed among 31 municipalities, with a density of 441 inhabitants per km² (ISTAC, 2014b). There are three main urban agglomerations that have the largest populations, most economic activities (Table 1) and the majority of inter-urban trips (Fig. 1) with distances between 40 km (from the North to the metropolitan area) to 80 km (from the metropolitan area to the Southwest). Thus, the island functions like a large sprawling city. Just the metropolitan area and its surrounding agglomerations accumulate 4.5 million hours lost in congestion, costing €109 million a year (Hernández González, 2014).

Work, educational and leisure activities are the main purposes of inter-urban trips, with 62% of these trips being made by car, while alternative transport means (bus, coach, tram, and taxi) account for 18% and car-pooling for 19% (Table 2).

In the late nineties, the Cabildo de Tenerife (Island Council) started to design a tramway as an alternative to road transport that would help improve the public transport system (Cabildo de Tenerife, 2006a). In addition, a new road network was proposed to guarantee traffic continuity on the Island (Cabildo de Tenerife, 2006b). Even though new road infrastructures can encourage new demand patterns and greater congestion (Marina-González and Marrero, 2012; Waddell et al., 2007), it was considered (and it is still today) the solution to Island's congestion issues.

Nowadays, over fifteen years later, these two plans have still not been completely implemented. Moreover, newer plans have been developed but not yet implemented, due to either financial restrictions or social opposition (Table 3). Thus, Tenerife's transport policies might be described as a collection of disperse transport policies leading to a range of easily noticeable transport impacts in Tenerife (Table 4).

The main objective of this paper is to frame appropriately the disjointed land-based passenger transport governance strategy³ initiated two decades ago and to propose and to assess more plausible inter-urban transport policy alternatives through a more inclusive process.

3. Literature and material

Integrated assessment is the combination of existing and/or new methodologies intended to significantly improve scientific analysis of any complex issue. It consists of complementary methods to improve our understanding of the complexities of transport planning.

In the transport policy literature reviewed, several examples of integrated assessment regarding either transport planning or transport projects can be found (Hülsmann et al., 2014; Macharis et al., 2012; Nocera et al., 2014; Nurul Hassan et al., 2013; Tuominen et al., 2014; Vermote et al., 2014; Wang et al., 2014; see also Table 5). Integrated assessment can either be implemented in a technocratic way (where only experts are involved in the analysis) or in a participatory one (where stakeholders and other members of society might be actively involved).

Examples of technocratic integrated assessments are Hülsmann et al. (2014) and Wang et al. (2014). Hülsmann et al. (2014) analysed the effects of traffic on air pollution combining the use of a multi-agent-based transport model and a specific air pollution model for street canyons. According to the authors, this integrated assessment allowed a better understanding of the causes and effects of air pollution on the environment and human health. Wang et al. (2014) analysed sustainable transport planning alternatives in Madrid (Spain), using an integrated assessment, based on Delphi and MCA methods, called "integrated transport planning framework". The conclusions pointed out that (a) this process is a promising tool to understand the acceptability of complex transportation measures, and (b) it is a robust and transparent decision-making process to find compromise solutions compared to other approaches based on one criterion utility-maximisation characteristics.

However, some authors have expressed their concerns about the implementation of technocratic approaches. Thus, for instance, Nocera et al. (2014) have highlighted that the problem with technocratic approaches is that "[t]he perspective of the society has not been taken into account adequately, thus leading to misunderstandings and conflicts between different perspectives because a real debate has been prevented and the positions tend to be polarized. This DEAD⁴ approach favours decision-makers and postpones, or even omits, a real discussion with citizens" (Nocera et al., 2014, p. 282).

From this perspective, stakeholders should be considered in decision-making processes as powerful problem-solving tools (Banville et al., 1998), and also as basic requisites to cope with the complexities of the issues involved (Funtowicz and Ravetz, 1991, 1993). In those cases, where the engagement of stakeholders in transport planning has actually taken place, they have brought new insights into transport planning (Legacy et al., 2012) and are suitable approaches to be used

³ For simplicity, "transport policy" will be used throughout the paper.

⁴ Refers to Decision, Education, Announcement and Defence. These authors support transport decisions based on ADD (Announce, Discuss and Decide).

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