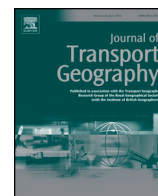




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# Analysing stakeholders' perception of Light Rail Transit as an opportunity to achieve sustainable mobility in Granada (Spain)

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## ABSTRACT

Despite the growing theoretical recognition of Light Rail Transit (LRT) systems as potential instruments to achieve sustainable mobility outcomes at the city and metropolitan levels, few rigorous studies are available in relation to stakeholders' understanding on the positive contribution of LRT to urban mobility planning. The Metropolitan Area of Granada (Spain) is a case in point. To address this gap, this present paper presents the results of a participatory process (MOBYPANEL) used to analyse how a set of local stakeholders perceived the opportunities offered by the implementation of an LRT to achieve sustainable mobility goals. A total of 50 stakeholders were asked to participate, assessing the *suitability* of LRT to promote 42 mobility policies previously selected, and the *relevance* of these policies in leading LRT to reach five sustainable mobility goals. The results revealed an overall high consensus among stakeholders concerning the positive role of the LRT in the successful implementation of most of the policies analysed, with some exceptions within environmental and car-charging economic measures. Also, 'accessibility', 'intermodality' and 'efficient management' were, in general, more firmly considered than 'urban integration' and 'environmental quality' as goals for implementing sustainable urban mobility policies within the context of the LRT project. The study also provides a discussion on the role of the LRT as a means for sustainable urban mobility policy delivery and as an end for strategy making.

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## 1. Introduction

Light Rail Transit (LRT<sup>1</sup>) systems are extensively recognized as catalysers of sustainable urban mobility policies in many cities, for their potential role in transforming the urban environment and the conditions required in the planning context for their successful integration (e.g. Babalik-Sutcliffe, 2002; Cervero, 1984; Hass-Klau and Crampton, 2002; Nolte and Yacobi, 2015). Among these conditions, the involvement of a variety of stakeholders can become critical in facilitating the suitability of many complex decisions, which rely on the collaboration between urban planners, transport planners, and transport companies, as well as other groups that usually participate in the decision-making process (Bertolini, 2012; Springer, 2007). The literature indicates the limited attention previously paid to how stakeholders perceive the possibilities opened by LRT projects (De Bruijn and Veeneman, 2009; Knowles and Ferbrache, 2014; Wangel, 2011). The metropolitan area

of Granada (MAG) (Spain) provides a recent case study to analyse the multiple perspectives of stakeholders regarding this issue. Like other medium-sized cities of southern Spain, MAG was chosen by the regional government for a new LRT project (still under construction). LRT has spearheaded urban-mobility planning in Andalusia, seeking sustainable mobility goals such as accessibility, intermodality, and urban as well as environmental integration of transport. However, the perception of stakeholders on the LRT project has never before been explored. Therefore, the present paper examines the following question: *Is the Granada LRT Project perceived by local stakeholders as a real opportunity to encourage sustainable urban mobility?*

To address this question, the present research involves a participatory process (MOBYPANEL) to assess the opinion of stakeholders on the enabling capacity of the Granada LRT project to promote different urban-mobility policies (*suitability*) and sustainable urban-mobility goals (*relevance*). A panel-oriented survey, aimed at selecting participants that play a role as 'instrumental actors' in the MAG, was used to gather responses and measure suitability and relevance while determining potential sources of consensus or dissension for both.

The methodology underlying the present research was used to explore new techniques for assessing potentially conflictive transit projects, which, under the emergence of communicative planning paradigms, are expected to lead to subsequent transformations in transport decision-making towards more open, participative processes.

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<sup>1</sup> "Light rail is a rail-bound mode of public transport for cities and urban regions. Contrary to train (heavy rail) and metro (subway, underground) light rail principally is able to be integrated within public realm, sharing public space with other traffic to some extent" (RVDB/Lightrail.nl, February 19, 2010, Amsterdam, Netherlands).

The paper is structured as follows: [Section 2](#) describes a set of participatory processes associated with LRT implementation, while [Section 3](#) shows the research design of the paper. [Section 4](#) illustrates the results of the case study of the Granada Metropolitan Area. Finally, [Section 4](#) presents the conclusions and recommendations for further inquiries.

## 2. LRT projects and stakeholder involvement

Transport planning faces challenging times. Significant changes have taken place during the last two decades, resulting in the emergence of a reclaimed transition from rationalistic approaches towards communicative planning paradigms (see e.g. [Bertolini et al., 2008](#); [Curtis, 2011](#)). This means a shift from deliberative contexts, including one or a few dominant actors, to interactive contexts, which emphasize participation and learning in the planning processes ([Klenk and Hickey, 2011](#); [Laurian and Shaw, 2008](#); [Zegras et al., 2004](#)), and reconcile different ways of understanding planning opportunities. Communicative paradigms reorient planning from a form of scientific instrumental rationality to a consensual discussion basis ([Willson, 2001](#)). A structured involvement of stakeholders during the different stages of transport planning seems to be crucial for the latter. In this context, LRT projects are excellent cases to gain insights into the importance of combining multiple perspectives in transport decision making. The efficacy of LRT projects in mitigating environmental impacts such as traffic congestion and urban pollution is well known (e.g. [Hass-Klau and Crampton, 2002](#); [Soria-Lara et al., 2015](#)). However, many problems arise in practice during LRT implementation because of the complexity of the situation, involving administrative authorities, railroad companies, citizens, etc. Despite the importance of effectively integrating different perspectives and sources of knowledge during LRT practice, this approach remains scarcely explored in academia.

Both the type of stakeholders to engage during the implementation of transport projects and how they can be involved can vary, fundamentally influenced by the context and the objectives pursued during the consultation phase ([Wangel, 2011](#)). In this sense, the broadest variety of stakeholders should be considered for the implementation of transport projects. These stakeholders, here called 'normative actors', include individual citizens, practitioners, decision-makers, politicians, etc. An example in the context of LRT projects is the study made by [Millar et al. \(1999\)](#), who conducted a series of workshops with a large number of representatives from society to discuss the introduction of light rail transit into a small resort community, its negative effects, and potential benefits. [Bailey et al. \(2007\)](#) also applied a participatory methodology based on scoring desirable project alternatives to design a light-rail transit-oriented development in the context of a low-income urban neighbourhood. The results provided urban designers guidance on local preferences.

In addition, when the main objective of the consultation process is to test the effectiveness of transport projects to reach specific mobility objectives (e.g. in the context of economy, environment, etc.), it moves closer to the views of stakeholders who can ultimately achieve such objectives. They are mainly consultants, advisors, policy makers, and decision makers. These stakeholders are here called 'instrumental actors'. [Vermote et al. \(2014\)](#), for example, processed the views of such stakeholders by multi-criteria decision techniques in order to assess the territorial impact of a set of light-rail scenarios for Flanders (Belgium). [Boeijharat \(2004\)](#) also guided a consultation process engaging 'instrumental actors', based on an international survey to predict the feasibility and indicative cost of LRT projects.

Finally, when the objective is to assess the consistency of the transport decision-making process, in terms of how stakeholders were engaged and how their views were taken into account, stakeholders who ensure a critical distance with real life should be used. These are here called 'theoretical actors' and includes theoreticians, academicians, researchers, etc. In this respect, [Yamashita et al. \(2015\)](#) studied the validity of the pluralistic power concept following the decision-making

process and the stakeholder's involvement during the implementation of a LRT project in local areas of Japan. [Kato et al. \(2008\)](#) also analysed how the consensus between stakeholders was built during the introduction of a light rail in Toyama (Japan). A final example comes from [Springer \(2007\)](#), who analysed the importance of bottom-up initiatives to foster the implementation of light rails in several USA cities.

It bears indicating that, while substantial differences can be recognized between the three reported types of stakeholders' participation during transport decision making, applications in practice are flexible, combining elements of each type and customizing the process for the particular situation.

## 3. Research design

### 3.1. Case study

The Metropolitan Area of Granada (MAG) includes 32 municipalities, which add up to approximately 600,000 inhabitants. Population and activities are highly concentrated in the so-called 'urban agglomeration', which comprises a conurbation along Churriana de la Vega, Armilla, and south of Granada city outskirts, and major industrial and residential concentrations in northern municipalities such as Maracena, Albolote, Atarfe, and Peligros. Improvements in road infrastructures, such as the north–south by-pass, followed by significant residential growth in the immediate metropolitan ring, have fostered the demand for mobility in recent decades. In addition, the escalating reliance on private car reflects the lack of integration of public transportation modes in recent urban development, and also highlights the poor horizontal and vertical coordination between the agencies involved in spatial planning and public transport. The ineffective management of private metropolitan transport operators by the regional government reached a turning point in 2003 after the creation of the Metropolitan Transport Consortium in the MAG. Further steps have been taken by local interventions on urban mobility, framed within the sub-regional spatial plan ([POTAUG, 1999](#)), the local master plans (PGOUs) and the more recently introduced Sustainable Urban Mobility Plans ([PMUS, 2003](#); [PMUS, 2013](#)) (see [Fig. 1](#)).

The Granada Light Rail Transit project (called 'Metropolitano de Granada') is seen by the regional government as a new milestone to achieve an efficient, high-quality, and sustainable metropolitan multimodal transport system. The first line was planned along the north–south corridor ([Soria-Lara et al., 2015](#)), from the Armilla-Granada conurbation, through the most populated areas of Granada, to the main municipalities in the north of the urban agglomeration. With 15.9 km and 26 stops, the project provides unprecedented opportunities for bringing planning and transport innovations into practice ([Valenzuela et al., 2009](#); [Valenzuela-Montes, 2011](#); [Valenzuela-Montes et al., 2011](#)), but also generates new areas of confrontation between local stakeholders. For instance, the project has raised intense debates concerning the convenience of its route, its impact on local commerce or the technical difficulties of constructing an underground section, after the multiple interests of maintaining current traffic flow along a main street. This conflictive environment has made the Granada LRT project a noteworthy case for examining multiple perspectives among practitioners, interest groups, and academicians.

### 3.2. MOBYPANEL: objectives and web survey

MOBYPANEL was a participatory process, intended to explore the perception of a set of stakeholders on the impact of the Granada LRT project, in order to promote sustainable mobility goals in the region. Two essential aspects were considered ([Fig. 2](#)):

- Suitability, defined as the stakeholders' perception of the LRT project's capacity to promote the successful implementation of a set of urban mobility policies.

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