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## Planning sustainable transport policy measures in the city of Reggio Calabria

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### Abstract

In the present paper some aspects of the design and application of an Urban Transport Plan in Reggio Calabria, a city in the south of Italy is presented. The process introduced aims to improve the quality of life and access for more sustainable patterns of development, while at the same time not harming the urban mobility, proposing a model that can be applied to the neighboring urban areas.

The high costs of construction of additional road space, and the consideration that a greater offer of road space is an impulse for a greater demand of private car traffic, led the planning in the direction of using existing road space more efficiently, by using traffic control mechanisms, and shifting demand to alternative modes.

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### 1. Introduction

The city of Reggio Calabria falls in what is known as the metropolitan area of the Straits of Messina, area formed by the cities of Reggio Calabria on the continental side and Messina on the Sicilian side, an area which just falls short of a million inhabitants. Heavy traffic crossing the Straits, a relatively high population density (1000 inhabitants per square Km) and the growth of car ownership in absence of a transport policy has resulted with congested local traffic.

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The spreading of heavy traffic using unsuitable roads, has led to the increase of the risks for public health and safety, being the levels of pollution dangerously high and the pedestrian mobility strongly restricted (Cirianni & Leonardi, 2011, 2012).

In the present paper a parking policy is introduced, which aims to redistribute on and off road parking, discouraging parking in what is the central area by the means of charging policies and the institution of a Controlled Traffic Zone, and doing so shifting long term parking to fringe areas; the proposed actions were simulated to measure and evaluate their effectiveness and impacts. A key factor of the success of the proposed parking policy is the institution of pedestrian routes and precincts promoting walking and cycling.

In the paper after a brief introduction to parking policies and the effects of transport externalities, an application to the study area is presented, describing the scenario before the adoption of the proposed policies, and after the application at the date, presenting some results in comparison.

## 2. Parking management

Parking management in city centers, or more in a general traffic management, is an ever present problem for all cities, and optimization of traffic control requires adequate parking policies.

In the process, particular attention should be put to the externalities of transport, where with transport externalities we intend all the repercussions on non users and users of the system alike, produced from transportation activities, which are the occupation of the public spaces, accidents, noise and air pollution, congestion of the road network. (Polak & Vythoulkas, 1993).

To reduce these external costs, which weigh on the entire population, some control policies can be adopted, of monetary nature and non monetary nature.

Among the policies, which can be used and are taken in consideration is urban road pricing, requiring the payment of a toll in order to enter in the zones subject to the greatest traffic pressure (city center, central business district CBD) and/or in order to engage the street lanes. The amount to be paid is in relation the externality level produced from motorists.

Road pricing has been adopted in different cities, London's congestion charging is probably among the most famous cases, while in Italy, in similar suit to London a congestion Charge is adopted in Milan, an many cities have experimented restrictions, as for Traffic Controlled Zones, where if not introducing tolls, control policies are applied. The legislative chance to adopt such policies follow the introduction of the new Road Code (1992), which opened the road to Urban Transport Plans, and a generally new approach towards road and traffic control.

Paying for parking, a well established practice in most countries, applies the principle of road pricing making parking schemes an effective tool of traffic management.

### 2.1. Transport Externalities

Traffic externalities produce negative effects on the community. In its definition externality is what is had when a subject's objective function contains a variable which depends on the behavior of another subject, whose decisions do not hold account of the first (Cirianni & Leonardi, 2006).

In economy externalities mark a failure of the market. The prices do not reflect the entire social cost and it becomes necessary to estimate the part of not calculated social cost. In the public sector, the administrator can adopt actions to correct the effects of externalities as:

- 1) tolls and taxes;
- 2) regulations and restrictions to limit and to reduce the causes of externalities;
- 3) subsidies to promote alternative and/or corrective actions.

The introduction of taxes or subsidies corrects the externalities since it equals the private marginal cost to the social marginal cost and equals the private marginal benefit to the social marginal benefit.

Taxing allows to discriminate the levels of utility, while regulation treats all the subjects in the same way, not discriminating in relation to the marginal benefits. Although there are some redistribution effects that must be considered. In fact, while regulation does not require monetary costs, even if it may be a cause of loss of welfare, application of taxes involves an income for the State and an expense for the user.

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