

# THE IMPACT OF CAR PARKING POLICIES ON GREENHOUSE GAS EMISSIONS

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*The link between car parking and greenhouse gas emissions is ambiguous and has been poorly studied. This research aims to define the stakes of car parking management on climate change and to propose a "virtuous" car parking policy as regards GHGE.*

Parking management plays an important part in transport policies, as most of urban trips are determined by the parking conditions at their origin and destination.

The link between car parking and greenhouse gas emissions (GHGE) is ambiguous and has been poorly studied. Parking policies and facilities have several implications as regards climate change:

- The construction and operation of car parks generate some GHGE;
- The existence of a car parking supply constitutes a direct incentive to car usage and therefore contributes to GHGE;
- The space occupied by on street parking bays in urban areas (2% to 8%) decreases the density of our cities, which tends to favour car use and fuel consumption;
- Car parking policies can impact on car mobility in different (not to say opposite) ways:
  - \* on one hand, a shortage of car parking supply can involve modal shifts – but the traffic related to the search for parking bays may increase;
  - \* on the other hand, a restriction on car parking supply in city centres may make the outskirts more attractive and therefore contributes to urban sprawl;
  - \* thirdly, in extreme cases as in Paris or London, car parking conditions or policies can also influence households' car equipment.

Furthermore, it is estimated that private car mobility currently contributes to 14% to GHGE produced in France. France has set itself the goal to divide by 4 its emissions by 2050. According to some research, progress in technology will not be able to divide the emissions related to transport by more than 2; current tendencies must therefore be deeply reorientated to reach "Factor 4", an objective to which parking management can powerfully contribute.

In this context, the aim of the research undertaken by SARECO for the PREDIT (national program for research in the transportation field) has been:

- to define the stakes of car parking management on climate change;
- to determine what a car parking policy "virtuous" as regards GHGE is.

The analyses are mainly based on the French case; however, a lot of conclusions can probably be generalised to other western countries.

A first step has been to assess car parking policies usually led by French cities. The widely shared objectives of those policies are to make parking conditions easier for residents, to dissuade commuters from driving to work and to facilitate the car accessibility of city centres for visitors.

These objectives induce three remarks:

- Car parking regulations enable to discriminate between different types of car users but not between the distances covered by car users;
- The strain on car parking has mainly been laid on commuters... whereas commuting trips only represent 25% of car kilometres driven in France every year;
- Car parking regulations have mainly focused on city centres, and therefore a restricted amount of kilometres. As an example, the study estimates that regional shopping centres are worth some 15% of private car kilometres.

The attempts to assess the different parking measures usually implemented tend to show a positive (though limited) tendency as regards the reduction in GHGE, in particular because they have contributed to enhance town centres and therefore to limit urban sprawl. However, the effects of some measures, such as the development of park'n ride facilities or on-street parking charging, remain uncertain; in particular, the effects in the short run could be opposite to the long-term consequences.

Visitors constitute a major stake as regards parking policies: their trips constitute a major part of the car kilometres travelled every year but their behaviour (distance travelled, car occupancy, motives, elasticity to pressure on parking supply, willingness to modal shift...) is poorly known and understood.

This work shows that, beyond the optimisation of the currently led policies, there exists a much wider scope for intervention through parking regulations. The second step of the research consists of studying in turn the following themes:

- Measures in favour of "green cars": how car parking regulations can sustain car-sharing, car-pooling and "clean" vehicles;
- Parking taxes and their influence on travel behaviour and urban planning;
- Reduction in private car park ownership and development of public car parks;
- Restrictions on car ownership.

This work is based on a review of different parking schemes implemented in western countries (England, Germany, Switzerland, United States...): effectiveness when assessment is available, discussion of possible pernicious effects, adaptability to other contexts, etc.