



IP-SUNTAN

Innovative Policies for Sustainable Urban Transportation

Policy Brief

Project leader Erik Verhoef on IP-SUNTAN:

‘The outcomes of our research will definitely have impact on policymaking’

IP-SUNTAN (Innovative Policies for Sustainable Urban Transportation*) is a collaborative research project with universities from Amsterdam, Stockholm, and Vienna.

‘The IP-SUNTAN project has looked at innovative measures to deal with urban transportation problems, in particular measures that are based on pricing principles’, says project leader Erik Verhoef from Vrije Universiteit Amsterdam. ‘The group in Vienna especially looked at new ways of parking to come to a better use of the urban infrastructure. The Swedish research group focused on refinement of public transport pricing and on the existing congestion charging schemes in the cities of Stockholm and Gothenburg. And in the Netherlands we have been, and still are, working on the theme of tradeable peak permits.’

Excellent research groups

The cooperation between the research groups was very good. ‘Vienna and Stockholm are excellent research groups, we speak the same language, we get excited over the same sort of policy issues, and over the same sort of policy instruments that we are studying. It is therefore very easy for us to reflect upon one another’s work, and to give valuable advice in all directions. All partners brought their own expertise, leading to cross-fertilization.’

Worldwide relevance

What is IP-SUNTAN’s relevance to society? ‘Dealing with externalities is one of the main challenges in urban, transport and environmental policies. Externalities refer to all types of market values that lead to overconsumption of certain types of goods. Examples are CO₂ emissions, emissions that inflict on local and environmental quality in cities, but also traffic safety, traffic congestion, noise annoyance of urban transport. These difficulties are not unique for the cities I mentioned, but are ubiquitous across the world.’

Synergy with other research projects

Is there a relationship with other research projects? ‘IP-SUNTAN is strongly related to U-SMILE**, a Dutch SURF project which specifically looks at the development and testing of tradeable permit systems. That means that we have a nice group of PhD students and postdocs working on the same field. We can combine modelling, empirical research, design, evaluation, which would be too much for just a single PhD student. Also BREATHE*** is – although less strongly – related to IP-SUNTAN: it also deals with environmental challenges in urban transportation. We try to obtain synergy as much as possible.’

Follow-up

‘The outcomes of our research will definitely have impact on policymaking’, says Verhoef. ‘There is a lot of interest in the research we are doing. Several projects are using the concept that we have developed. Seven different experiments are in preparation. So I think we will see a spin-off of what we have been doing within let’s say two years. However, this is a very volatile field. So, unfortunately, I cannot give any guarantees. As researchers we are not in the seat of the policy makers. There can always be political issues.’

Policy conclusions

The research carried out in IP-SUNTAN has substantiated the often defended but also often challenged claim that price incentives can offer a strong instrument to stimulate behavioural change in urban transportation. The research has, *inter alia*, revealed that:

- Road pricing strategies in Stockholm and Gothenburg has led to significant changes in behaviour
- A wide range of studies into parking behavior, surveyed by the Vienna team, confirm that travelers are sensitive to parking charges, and may for example respond by changing parking location, parking duration, or mode of transport and trip frequency



The extent to which pricing induces behavioural changes is by no means a natural constant.

- The Swedish road pricing case studies have revealed that elasticities – a measure for expressing behavioural responsiveness to prices – may change over time, and may do so in opposite directions (that is, the behavioural impact may increase or decrease over time)

- Behavioural change may (or will) also vary over sub-groups. The Vienna parking experiment suggests that selection effects of participants, if relevant in a certain application, may play a strong role – confirming insights from earlier Spitsmijden projects in The Netherlands; but also that for examples visitors and locals may respond differently
- Behavioural change may also depend on the extent to which incentives are clearly explained to those drivers who are subject to these incentives. There is a fear that the sophisticated parking charge schedule tested in Vienna may have been too hard for participants to understand, limiting their responsiveness
- At the same time, travellers are very well capable of processing seemingly complex incentives. The experiment with tradable parking permits confirmed that travellers are perfectly capable of making the rational choices when applying this instrument in a serious-game setting; that is, a setting in which the choices made have real financial consequences
- Pricing policies naturally become more effective when more alternatives for behavioural change are offered. This was found to be true for parking policies in Vienna, but also for road pricing in Gothenburg (with less public transport options) versus Stockholm.

Pricing measures are often attractive from the societal cost-benefit perspective, in that these induce travelers to give up on those trips / vehicle kilometers / other units of consumption (including vehicle ownership and type) that bring them the smallest losses in benefits.

- Consistent with this notion was the finding that Low Emission Zones, in particular for passenger cars, may be a policy for which the societal losses (adaptation costs) may by far outweigh the societal benefits (the value of lower emissions).
- Another confirmation was obtained in the Randstad case study, which – through its game-experimental set-up – made clear that travelers indeed forego options with the lowest (lost) benefits when being confronted with financial incentives that make them change behaviour

The technical possibilities for applying sophisticated pricing are available and functioning.

- Applications with road pricing in Sweden confirm that the required technologies are robust, and – from a societal perspective – affordable in the sense that societal welfare benefits exceed the cost of toll collection
- The case studies in Vienna confirm that technologies for applying differentiated sophisticated parking charges can be applied using a variety of different technologies, including GPS-based technologies
- Also innovative pricing schedules that are based on tradable permit principles are relatively easy to apply in practice. The case study in the Randstad used an online market for tradable permits that functioned as desired, succeeded in bringing the equilibrium price to the theoretically expected level, and gave rise to very modest transaction cost and were considered to be relatively easy to participate in by the participants

Social acceptability is a key aspect for the political and societal feasibility of pricing measures.

- Even though a recurring pattern is that acceptability increases after implementation, acceptability is not a constant, and revisions of pricing systems may definitely raise new concerns over its acceptability, as was seen in Swedish cases
- The Randstad case study gives reason to believe that budget neutral price incentives such as tradable permit schemes, with an expected higher acceptance by avoiding structural money streams from travellers to the government, can indeed be put to practice, and seem to be both understandable and acceptable to participants

- Actual application of pricing measures may bring acceptance issues to the light that cannot always be predicted accurately from hypothetical questionnaire-based choice studies. One such example was the more limited impact of public transport crowding on trip satisfaction than what could have been expected from earlier valuation studies in Sweden

All in all, the study delivered new and more robust insights into the potential of pricing instruments in spurring behavioural change in urban mobility; and how this depends on the technical design including the differentiation of pricing and therewith the type of behavioural changes it seeks to stimulate, as well as the availability of alternatives. Societal acceptability is an important aspect, which is on the one hand hard to predict through its dependence on many factors, while at the same time this dependence gives room for optimizing policies also from this viewpoint. The technological advances enable full exploitation of such findings through an intelligent design of smart pricing measures. The study highlighted how experiments can really help in gaining insights into these important matters, in turn helping governments to design policies that better meet the triplet of criteria: effectiveness, efficiency, and acceptability.

The IP-SUNTAN research team

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*The project website can be found at <https://sbe.vu.nl/ip-suntan> where the full IP-SUNTAN popular report can be downloaded.

**Urban Smart Measures and Incentives for quality of Life Enhancement, see for more information

<https://sbe.vu.nl/u-smile>.

***Building Resilient Economic Agglomerations addressing Transportation and Health Effects: Urban form, location choice and transport solutions for high air quality and low-carbon cities, see for more information

<https://sbe.vu.nl/breathe>.

IP-SUNTAN

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