

Working paper

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Toll experiments in french interurban and suburban motorways : case studies

Toll experiments in urban and sub-urban motorways have been led in France for a few years but some of them met difficulties of acceptance from the users, due to a lack of information and communication.

The environmental arguments generally play in favour toll because of air pollution, road unsafety, greenhouse effects,...On the other side, the introduction of a charge in a old road infrastructure is not considered equitable. Furthermore , we don't know yet how would be the toll on the long term on urbanism and economy around.

Three options of tarification have been experimented : the road infrastructure charge, the regulation charge for congestion roads and the environmental charge (users contribute to the impacts they impose).

Case studies :

Toulouse (1996)

report of the CERTU « pricing of urban automobile displacements – the question of acceptability

In march 1996, a portion of the motorway A64 in the south of Toulouse was put at toll under concession of « Autoroutes du Sud de la France ». This portion of a old roadway is used regularly by the residents to go toToulouse. The toll charge of 5FF (0,8€) seemed exagereted to the motorists from whom alternative is a congested trunk road. An anti-toll association was mobilized and acted against the project and finally the section became free again.

This experiment shows clearly the difficulty of paying an old free infrastructure. First, the losers are indeed numerous compared to the ex-ante situation. Second, if no credible alternative is proposed which was the case in Toulouse.

Besides the institutional and political context (lack of inter-commune structure and a non-negotiable position of the State) played against a more acceptable decision.

Paris

- The North Motorway (A1)

The toll is implemented in an interurban section between the Chamant toll barrier and Paris to solve the week-end returns of passenger cars to Paris and returns from the Asterix entertainment park that occur at the same time (map in annex 1). But part of congestion problems have to be solved in the Paris suburbs.

The objective of the time differentiated toll operation is to spread the demand on Sunday afternoon (week-end returns to Paris) in order to decrease congestion and thus increase the network efficiency. Every Sunday afternoon since April 1992, there is toll tariff variation in time for light vehicles returning to Paris. In red period (16:30 to 20:30) : +25% ; In green period (14h30:16h30 and 16h30 :20h30) : -25%.

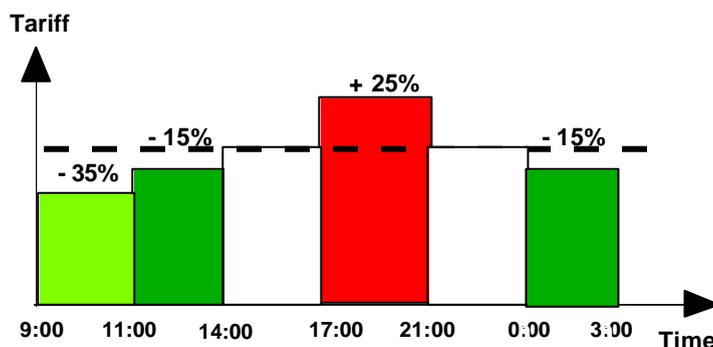
The operation has succeeded to smooth the peak hours : the traffic during the red period has decreased (-4.4%) and was progressively transferred toward the green periods. The peak hour is now later (21:00 to 22 :00).

The user acceptance and awareness was high thanks to the clearness and fairness of the pricing scheme and the information campaign.

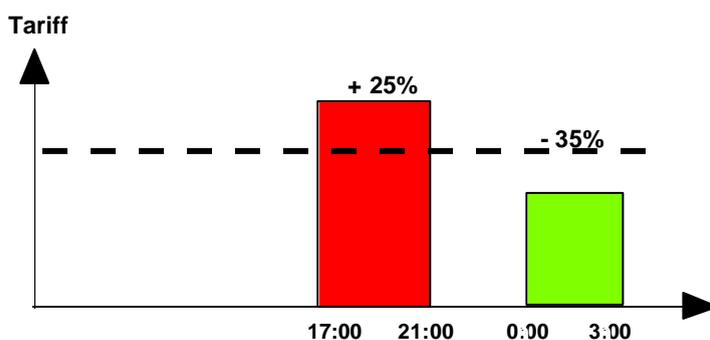
- South-west Motorways (A10-A11)

From March to November 1996, toll tariff variation was implemented for light and heavy vehicles returning to Paris (map in annex 2).

Light vehicles



Heavy vehicles



The result was a decrease of peak-low traffic by 12%, and of time squared through congestion by 60%, traffic transfer on parallel network has been negligible (0.5% per weekend).

The peak hour traffic decrease was between 6% to 9%.

About 90% of users were aware of the scheme after 6 months of implementation. The other 10% are mainly occasional users and it will always be difficult to inform them.

The signing has a high impact.

In average, 50 % of users were in favour of the scheme.

- South-east motorways (A5/A6)

The A6 motorway links the area of Paris to Lyon, on the way to the southeast of the Alps (map in annex 3). There is a periodic congestion on this motorway during winter holiday departures and returns. Since December 1994, the A5 motorway provides an alternative route to A6. But the A5 way is 71 kilometers and in average 40 mn longer than the A6 motorway between Paris and Beaune, is more expensive and not well known.

The main objectives of the study are to shift traffic from A6 to A5 (15-20% expected), reduce congestion on A6 , make the A5 motorway well known to users.

During winter holidays and easter weekend, differential toll tariffs are implemented for light vehicles in favour of A5 motorway (years 1995-1997). It consists of an increasing price on A6 and a decreasing price on A5.

This action was completed with an important communication campaign (press conference during winter holidays, radiomessage 2 or 3 times a day, articles in magazines,...).

The pricing sheme operation had an impact on route choice. About 7000 vehicles were transferred on A5 per week-end and per direction. : 15-20% of the traffic concerned with route choice is on A5

Marseille

- Experiment of the tunnel Prado-Carenage of Marseilles

Source : CERTU,2000

On september 1993, the Marseilles Company of the tunnel Prado-Carenage reconverted a railway tunnel closed down in a road tunnel which was the first example of street to toll in France. The tunnel located under the centre town of Marseilles connects the station of Prado to the Careening basin.

The agglomeration of Marseilles extends on 24.000 hectares and accounts 1.231.000 inhabitants. Three motorways (A7, A55 and A50) connect the downtown area towards the exterior. Before the start-up of the tunnel, only one urban boulevard of 2x3 ways ensured the crossing of the Center (90.000 cars/day).

The operator perceives a toll in order to cover maintenance and capital costs. The price of the passage was 1,6 Euros (reference study 1995).

Effects of the tunnel on traffic

The tunnel contributes massively to the transit of the commune of Marseilles, but also to the ways of interchanges or interns. The traffic reaches 204.000 vehicles per day.

The effects of the tunnel on the road traffic were gradually reinforced: reduction of the network of surface, but growth of the total traffic.

For the reference period (september 1993-september 1996), the traffic of the tunnel in wrought days increased by 74% from 20.700 cars/day to 36.100/day. The growth was 51% the first year, 13% the second year and 3% the third year.

The progression of the traffic is more moderate at peak hour in the evening which represents a stronger use into off-peak and average hours.

The tunnel competes with three alternative itineraries on surface. Globally, total traffic (tunnel + surface) has increased to a significant degree after the opening: 14% the first year, + additional 2% between 1994 and 1995. This phenomenon did not continue the following year.

Reactions of the motorists

Specific investigations were undertaken on the reasons of the decision to use or not the tunnel. In the tunnel, each motorist answered a questionnaire on his professional category, his reasons for departure and arrival, his frequency of use, his means of payment, the estimation of his saving of time...

73 % of displacements pass by the tunnel, that is to say related to work: 40 carried out for enterprise and 33 between the place of work and the residence.

Major inciting element to use the tunnel is the refunding by the entreprise: 40% of the users

The users of the tunnel declare that the tunnel strongly improves their conditions of circulation: 74% estimate to save time, 19% to avoid congestion. The average of the savings of time estimated is of 22 mn (3 times reality). Non users advance like reasons the cost, the extending of distance or the absence of saving of time.

These results show that the main advantage for the users lies in the saving of time offered compared to the competitor routes, which can justify toll.

Other case study : Acceptability of pricing urban automobile mobility

Extract from CERTU report (2001, 2003)

Pricing urban automobile mobility is not a new concern in France but its realization is still slowed own by the acceptability question.

The work of the National Research Center for Urban Transport (2001-2003) drives an analysis of the policies of transport of multimodal nature including a large set of instruments such as the urban toll (London type), the access vignettes, infrastructure tolls. It analyses

those experiments in the local context, the period and process of implementation, and the alternatives or mitigation measures proposed.

These experiments show that acceptability of the project lies primarily on the decision-making process and on the communication. Dialogue is very necessary to increase awareness and participation of the population. Communication also plays an important role because, if the objectives of the transport policy are well accepted, the pricing instruments on the other hand are generally rejected.

The research by CERTU identifies twelve key elements to build acceptability during the decision-making process (see annex 4)

Other difficulties appear with environmental effects (air, noise, road insecurity, GHG and fossil consumption energies) unanimously recognized as durable harmful effects and social equity (pricing put forward the selection by money).

City centers economy

Impact of urban traffic pricing on urbanism and economy of the city are rather badly known. The only listed objective data relate to the town of Trondheim (Norway) which has not observed negative impact on the trade of the downtown area since the implementation of a tariffing of cord in 1991.

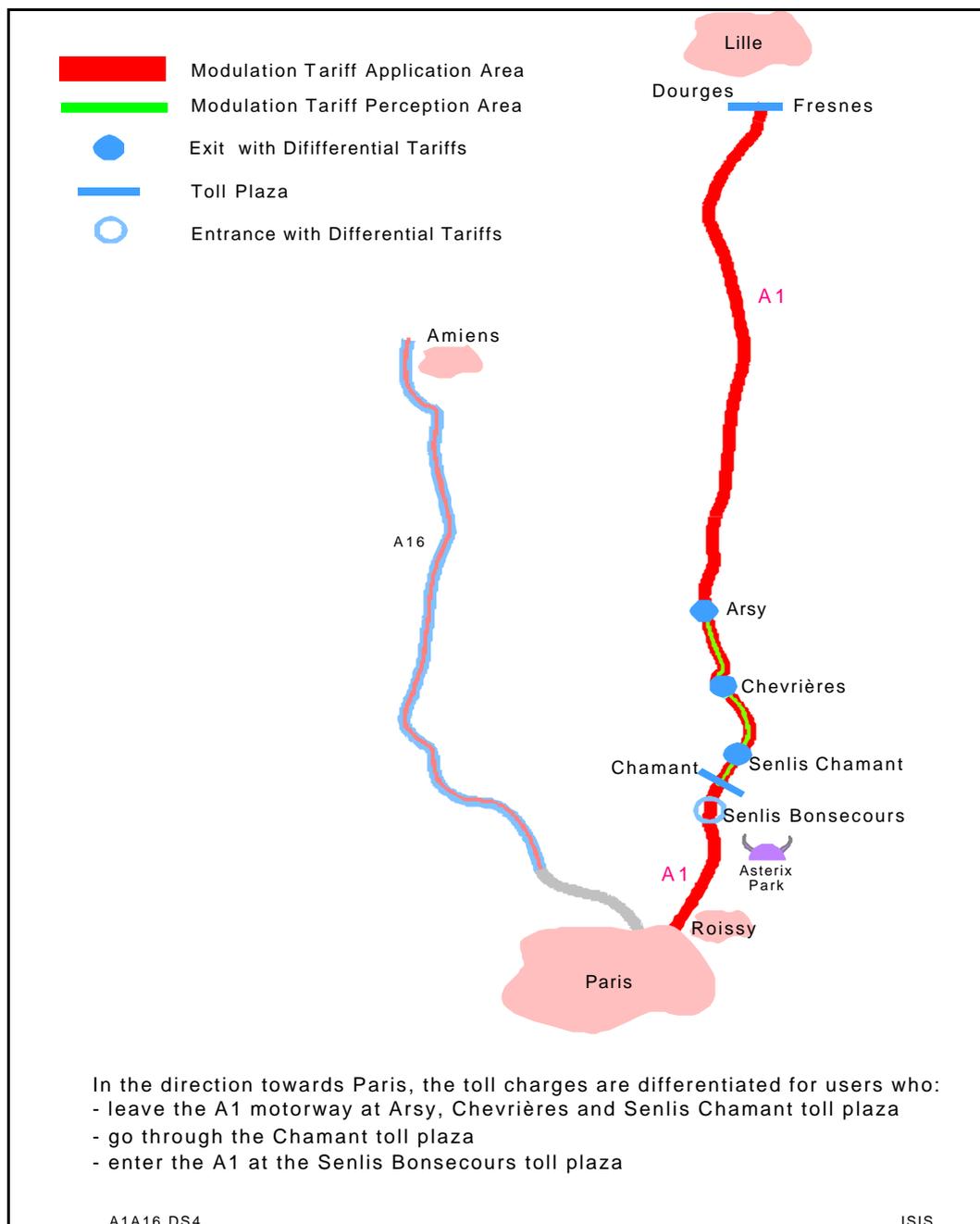
In theory, it is probable that an increase in the cost of transport will tend to compact the city since the users wishing to minimize their costs of displacements. But still, there are uncertainties about their impact on the urban development : a tariffing generalized according to the distance or a tariffing of cord will not have the same effects on the localization of the households and employment, hence the need for making specific studies.

Technical solutions

Different available technologies for pricing obviously affect acceptability in a different way (see annex 5).

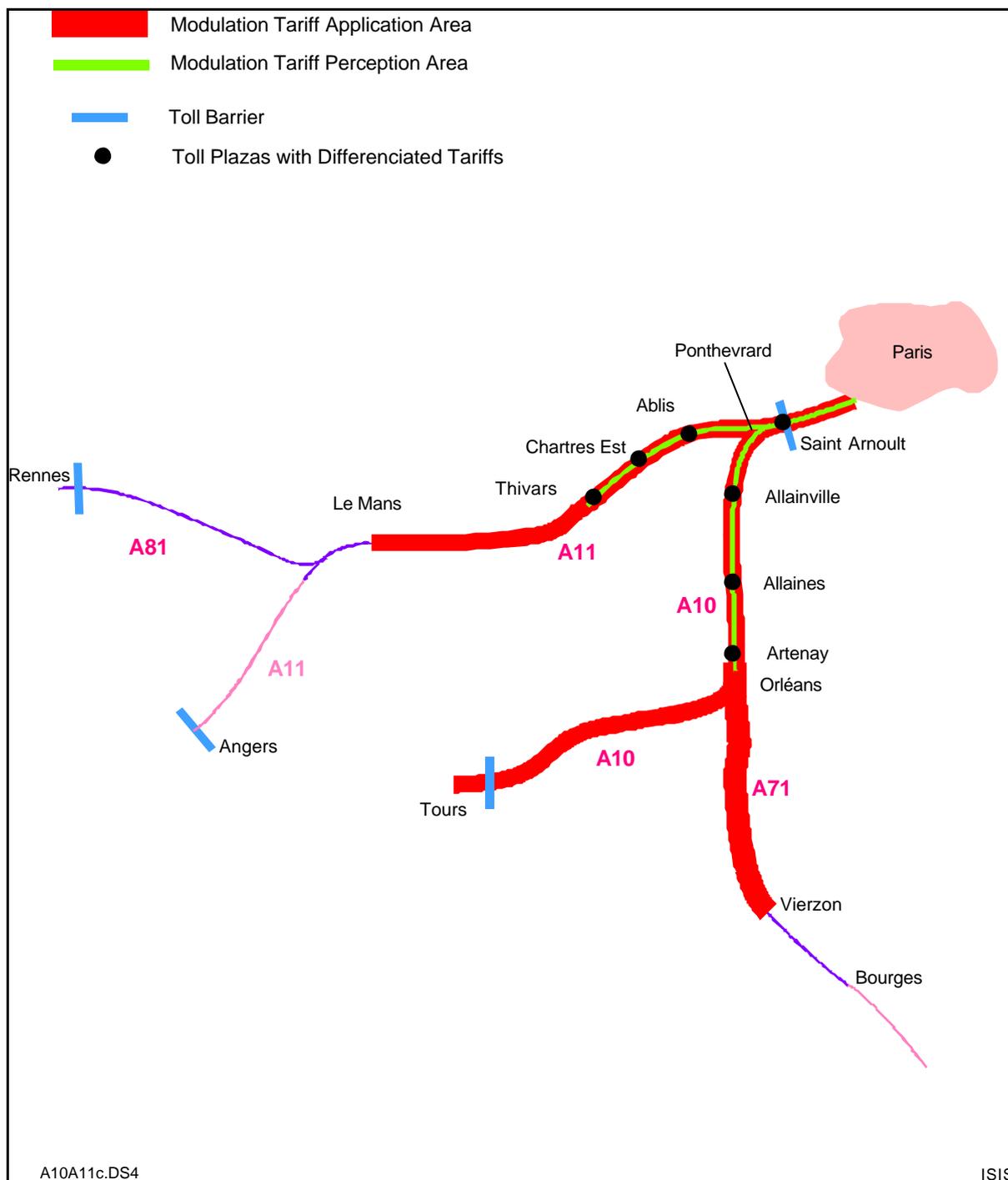
Annex 1

Map : A1



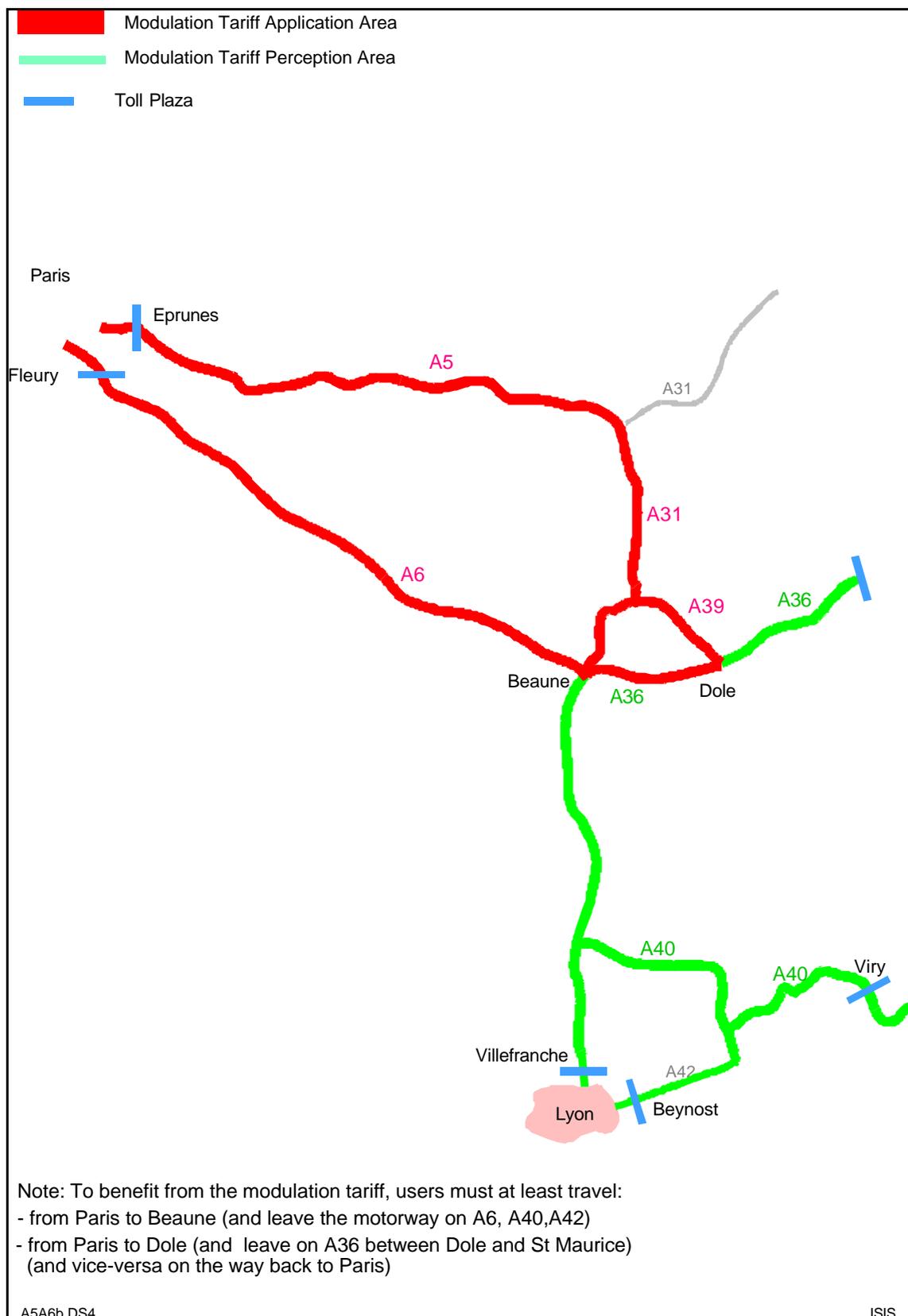
Annex 2

Map : A10



Annex 3

Map : A5/A6 Motorways



Annex 4

Source : CERTU

The twelve key elements to build acceptability during the decision-making process

1. The project must serve *transport* policy and be coherent with it.
2. The decision-making process must be built so as *to guarantee the transparency* and to facilitate interaction with the various actors.
3. The efforts provided through communication and marketing make it possible to better work out and promote the project.
4. The equity questions must be assessed carefully.
5. The objectives of the project must correspond to *main expectations of the population*.
6. The revenue must be used within the transport sector and primarily to promote credible alternative solutions to the use of car.
7. *The strategy of step by step* allows to *adapt* the project and rise awareness of the population.
8. It is necessary to convince there is not any better solution.
9. The project must remain as simple as possible.
10. The prices charged when opening must be “calling prices”.
11. A broad and stable political adhesion must be required.
12. The various institutional levels must establish a good capacity of negotiation

Annex 5

Source : Certu

Advantages/drawbacks of various technologies available

Type	Example	Advantages	Drawbacks
Vignette	Singapore before 1998 Rome	Very simple to put in place Does not allow the identification of the vehicle	Rigidity of the tariff grid Visual monitoring
Traditional system with turn pike and manual payment	Various urban infrastructures	Well-known in France Easily allows to manage the occasional Does not allow the identification of the vehicle	Payment directly felt Low flow Difficulty to “insert” in urban environment Vehicle <i>Only on the passing of one point</i>
Short distance telecommunication devices	<i>Télépéage</i> existing in various infrastructures Singapore since 1998	Facilitated variation of tariffing Flexibility of the methods of payment Rather known in France	Only with the passage of one point Difficult to manage occasional
GPS	Royalty for heavy lorries in Switzerland	Possibility of making fine tariffing according to the distance, the place or other criteria	Identification of the vehicle Little retreat on the technologies Difficult to manage occasional
Automatic identification of the number plates	London	Makes it possible to manage easily occasional	Identification of the vehicle Little retreat on the technologies <i>Only with the passage of one point</i>