DRIVE QUANT by FairConnect

Eco—driving and insurance: stakes and opportunities

2022

FOREWORD

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The year 2022 has only just ended but it is already clear that it will mark a turning point for the mobility sector. Fuel shortages, rising energy prices, rising sales prices for combustible and electric vehicles, the end of self-service scooters announced in Paris and the rail network coming under pressure are just some of the challenges faced by stakeholders in the field of mobility last year.

For users, access to mobility has never seemed so difficult and getting around has never been more expensive. They find themselves caught between the need to travel, the general rise in prices and the climate crisis, which is pushing them to adopt more responsible and less polluting forms of mobility without any real accessible alternatives being offered to them.

The fundamental changes initiated in recent years, such as electric vehicles, carpooling or the reopening of railway lines are going in the right direction, but it would be very misleading to think that these solutions can be applied to all mobility use cases or spread to the entire population in the short term. It is therefore essential to propose effective solutions immediately to allow users to reduce the environmental impact of their mobility.

Eco-driving has a prominent place among these solutions. First of all this is because the government has made it a focal point of its energy conservation plan and seems ready to invest significant resources into promoting this style of driving. Moreover, as you will see in the conclusion of our white paper, eco-driving is effective in more than one way: it reduces fuel consumption and therefore CO2 emissions but also strengthens the purchasing power of the French by allowing them to make substantial savings.

Who could be more appropriate for accompanying the French in this quest for energy-efficient mobility than insurers? An essential pillar of the mobility ecosystem, insurance companies have an interest in becoming involved in the subject given the benefits they could derive from it. Two of the most important are: reducing loss ratio and meeting ESG commitments.

Through this white paper, we will demystify the principles of eco-driving, compare theoretical savings and achievable savings depending on the road contexts and suggest ways for insurers to support the deployment of eco-driving in France.

Enjoy the read!

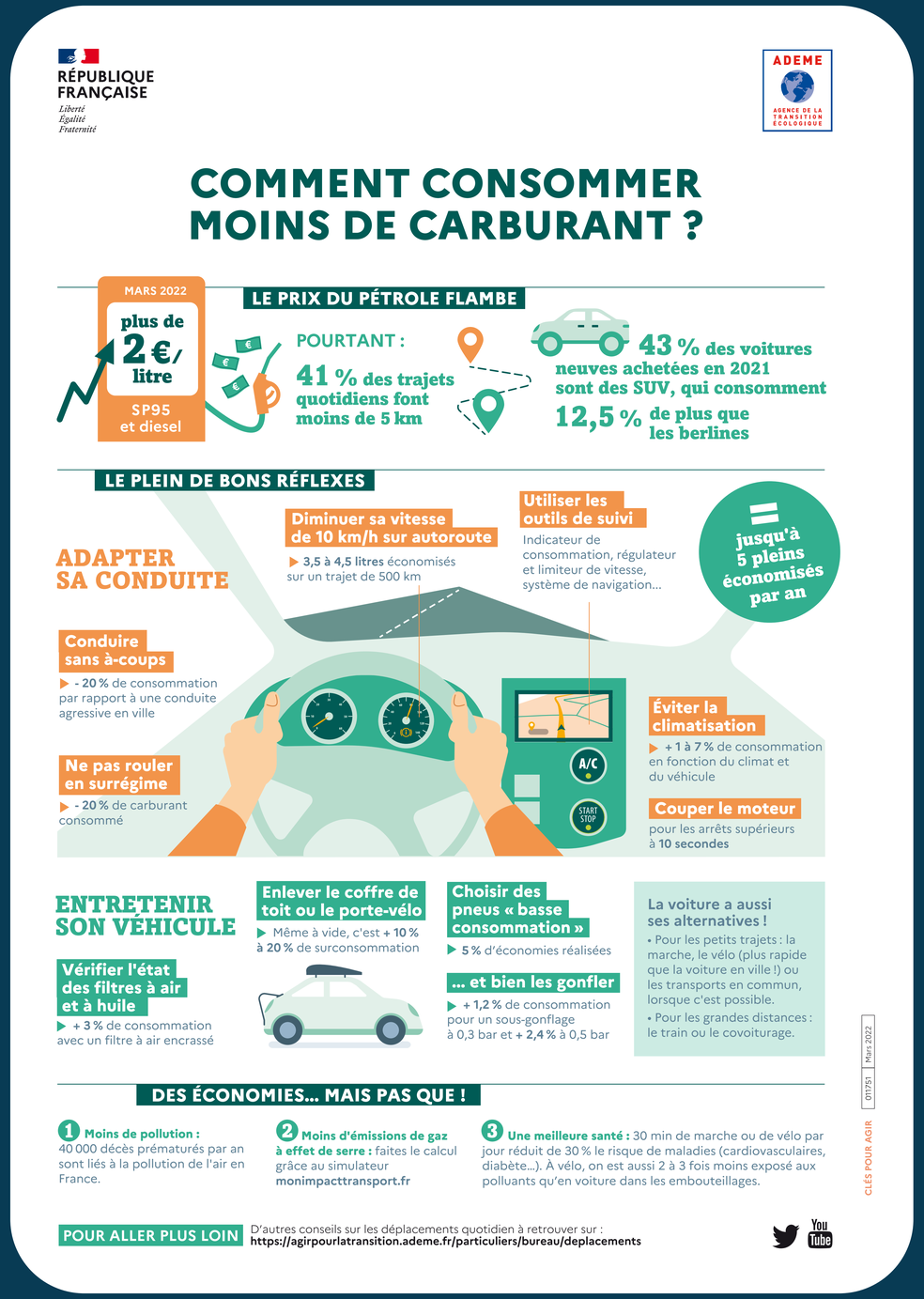
INTRODUCTION

What if eco-driving's moment of glory has finally come? Reading the energy conservation plan presented by Elisabeth Borne, French Prime Minister, leaves little room for doubt: 'deployment of eco-driving training', 'promotion of eco-driving' and even 'expansion of eco-driving to trains, public transport and lifts'. The term has been used many times and the government is now extending its scope to all modes of motorised travel. This new policy direction has important implications for the months and years to come, because learning to eco-drive requires training and long-term support in order for it to be fully mastered and effective.

In order to support motorists in this transition, it is essential to ask the right questions now. What is eco-driving? What is really behind this driving style that has become the spearhead of the movement for more environmentally-friendly mobility? Why has ADEME (the French Agency for Ecological Transition) announced a saving of 10% at most when Bison Futé claims that it is possible to save 15% on fuel? Why such discrepancies? What real savings can we expect? Which ones have been measured? And finally, what role can insurers play in supporting change?

ECO-DRIVING: GESTURES BUT ABOVE ALL A NEW KIND OF BEHAVIOUR

ADEME defines eco-driving as 'a simple and effective operational action which is accessible to all drivers while integrating perfectly into a more comprehensive approach to sustainable development'. In practice, eco-driving consists of adopting a series of daily road actions and behaviours that aim to reduce fuel consumption. ADEME presents its main recommendations for eco-driving in an infographic summary :



ADEME highlights two types of actions that comprise eco-driving, namely:

1. The gestures to be routinely included in ‘vehicle maintenance’,
2. The new behaviours to adopt in ‘adapting your driving’.

It is also clear that there is a difference in the effectiveness of the two types of action. The actions to be included in routines are important but they don’t have a big impact on reducing fuel consumption. Conversely, although complex to implement, modifying driving behaviour is by far the most effective solution for significantly reducing fuel consumption and loss ratios. We will focus our analysis on these actions.

For its part, Road Safety Standards highlights additional recommendations such as complying with regular vehicle maintenance requirements and slowing down earlier.

> Contrary to popular belief, it is important to keep in mind that eco-driving does not only concern drivers of combustion-powered vehicles. Buying an electric vehicle is synonymous with a profound modification of driving behaviour, so as not to see battery life melt away.

CHANGING DRIVING BEHAVIOUR, WHAT ARE THE RESULTS MEASURED?

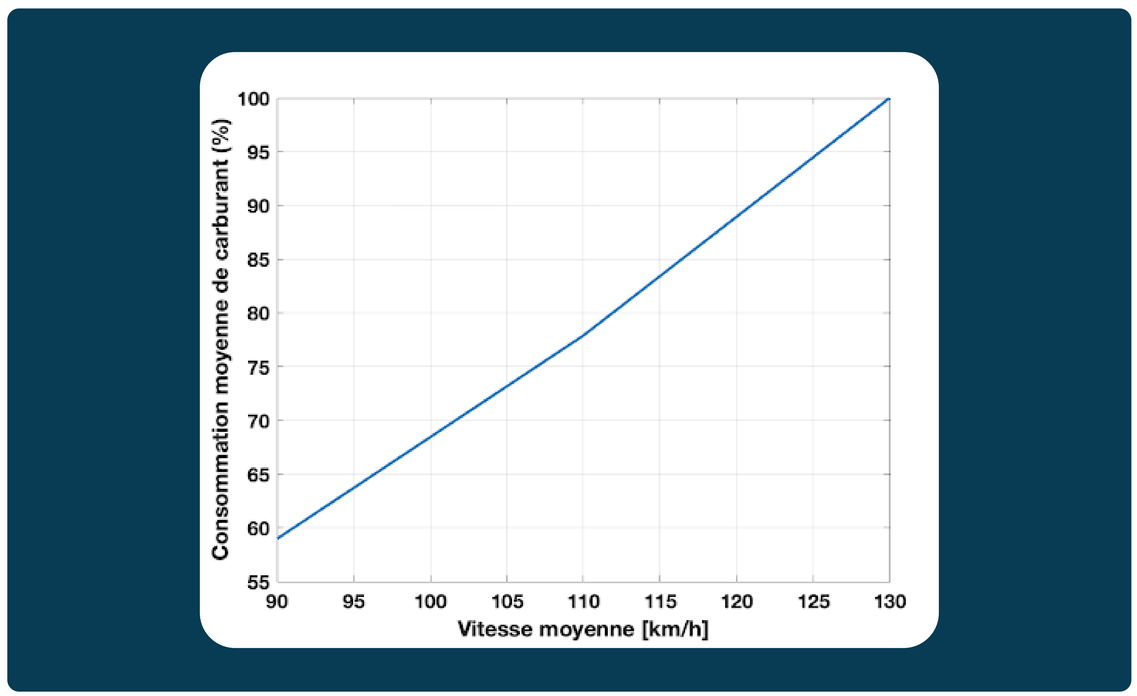
Although seemingly simple, eco-driving is not instinctive and results from a compromise between travel time and vehicle consumption. In practice, it is possible to reduce fuel consumption while keeping the same travel time. However, it is essential to extend the travel time to fully optimise fuel consumption. The human factor must also be added to this, because behaviour modification happens in the long term and is not the same among all motorists.

As a result, it is difficult to quantify fuel savings accurately and estimates of gains vary widely. For example, ADEME estimates that the average driver can reduce their fuel consumption by 7 to 10%, while Bison Futé claims that it is possible to reduce their consumption by up to 15% and some insurers proclaim savings of up to 20%. What is the reality? What savings can a typical driver expect? In what road context? And, most importantly, how? Before answering these questions, it is essential to understand to what extent and under what circumstances driving behaviour impacts fuel consumption.

A - What is the impact of driving behaviour on consumption?

On the motorway :

Driver behaviour has little influence on fuel consumption as there are few acceleration and deceleration phases. Users maintain a constant speed over almost all of their journey. Therefore, it is helpful to examine the effect of average speed on fuel consumption:



Reading the graph highlights a difference in fuel consumption of about 22% between 110km/h and 130km/h. In concrete terms, this means that someone who drives at 130km/h consumes a lot of fuel but arrives at their destination faster. Conversely, someone who drives at 110 km/h arrives at their destination later but reduces their fuel consumption significantly.

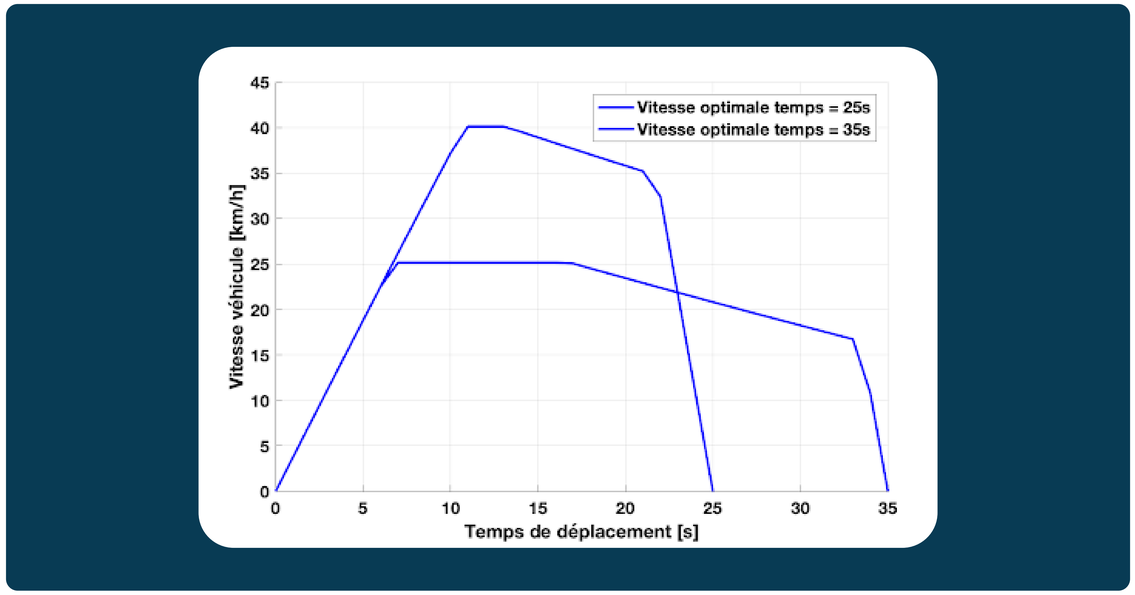
In thinking about this large consumption gap, we should not forget that motorway traffic only represents 30% of national traffic. Therefore, although not insignificant, the savings achieved by decreasing speed from 130km/h to 110km/h on motorways would be less than 6% of total national consumption.

In urban areas :

In contrast to the motorway context, acceleration and deceleration phases have a major influence on energy consumption in urban areas. Driver behaviour therefore plays a major role in a vehicle's consumption.

The works published on the subject (which resulted in the algorithms now used by DriveQuant) highlight the optimal speed trajectories that make it possible to minimise consumption to cover a given distance in a given time.

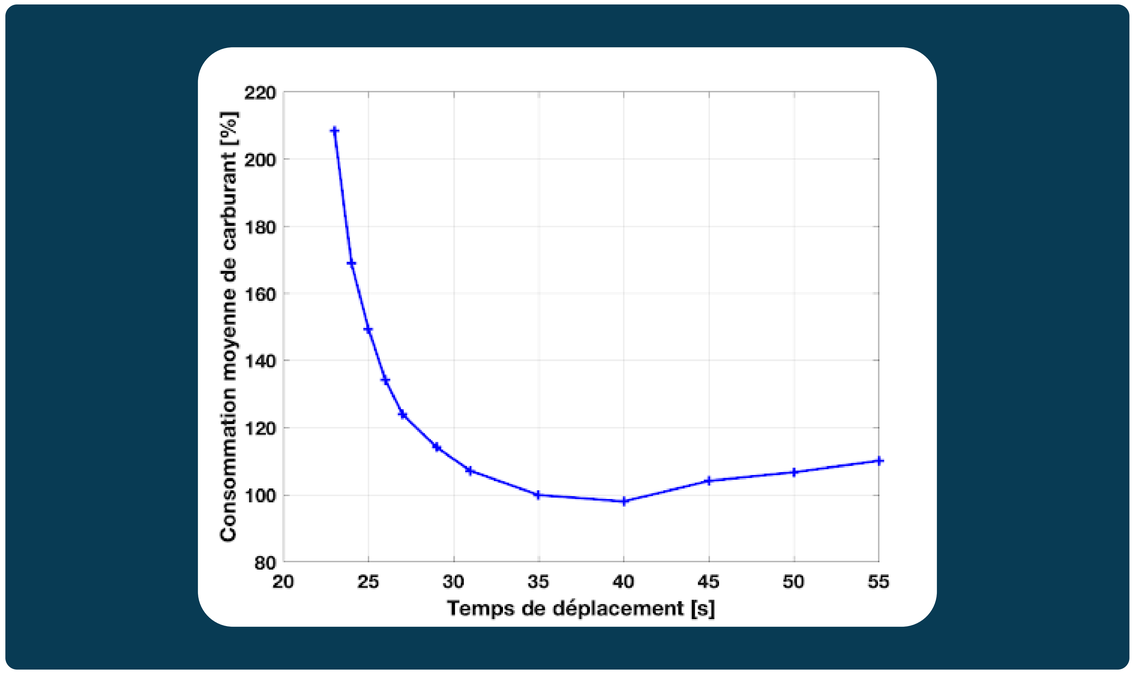
For example, the graph below shows two trajectories to cover a distance of 200m at optimal speed, depending on the travel time:



The result is very clear: the optimum speed trajectory to be adopted in order to minimise a vehicle's consumption consists of a fairly full-throttle first acceleration phase, followed by a constant speed phase, a deceleration phase (corresponding to a foot lift, when the engine is no longer producing torque) and then decisive braking.

Conversely, reducing the travel time results in a more aggressive driving behaviour, which consists of going from strong acceleration to sudden braking very quickly. This driving style generates much higher fuel consumption.

The following graph shows that lengthening travel time by a few seconds generates a big reduction in fuel consumption. The driver's behaviour is therefore key in urban areas since an aggressive driving style generates additional fuel consumption. These behaviour variations are measured by our solution and represented in the form of an eco-driving score per trip.

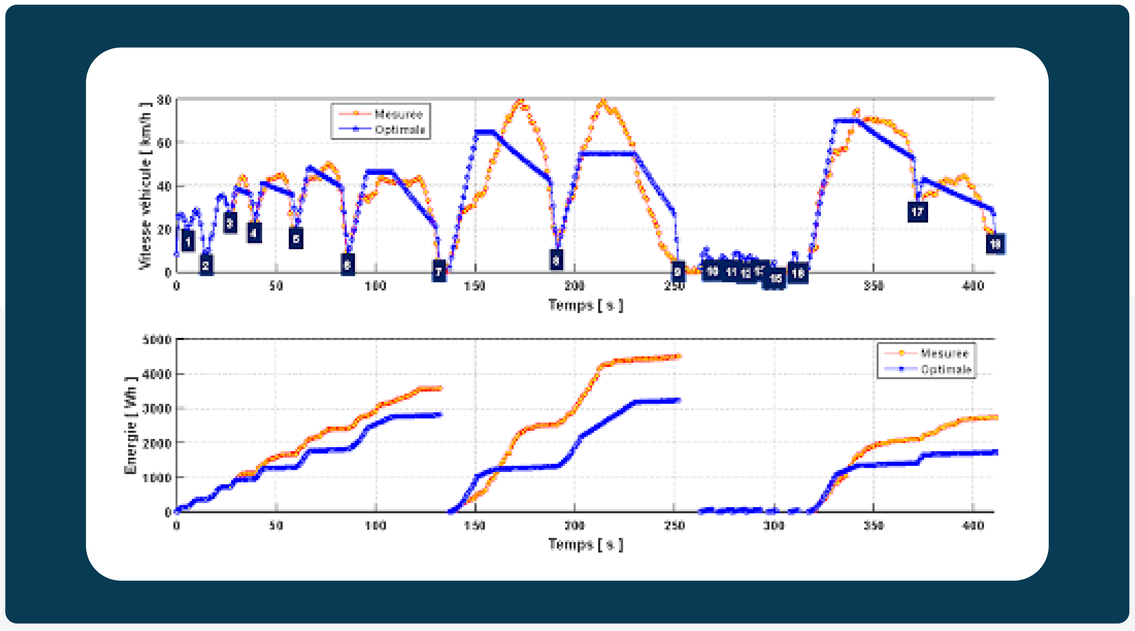


The ideal behaviour to adopt in the city is therefore to favour full-throttle acceleration, break sooner and maintain a cruising speed of less than 30 km/h as long as possible. These conclusions are supported by tools that make it possible to evaluate the potential savings from data collected during a journey.

B - What are the potential savings without impacting travel time?

The above reasoning is applicable to all types of journeys. Each time the vehicle stops, the speed trajectory and the optimum consumption are calculated in order to cover the distance which has just been covered in the same time, in order to evaluate the difference between the driving behaviour measured and the optimum behaviour.

The following curves illustrate the difference in speed between the trajectory measured and the optimal trajectory, as well as the maximum consumption saving that can be achieved by adopting an optimal trajectory.



The first curve indicates that the optimal speed trajectory includes more full-throttle initial acceleration, a longer holding phase and later deceleration compared to the measured trajectory. The second curve shows the difference between the energy consumption measured and the optimal consumption. The following table indicates the maximum possible energy savings :

PHASE	MAXIMUM SAVING (%)
1	17%
2	30%
3	36%

Eco-driving would therefore theoretically save up to 36% of fuel without increasing travel time. What actually happens in practice? What savings can an average driver make by adopting eco-driving?

CASE STUDIES

A - What is the feedback from La Poste (French Post Office)?

Over the past ten years, several large French companies have chosen to train their employees to eco-drive. The company that has published the most about its eco-driving training programme is undoubtedly La Poste (French postal service company). According to figures relayed by the press, about 60 trainers were hired to train nearly 800 drivers per week in eco-driving.

The return on investment was immediate:

- 5% reduction in fuel consumption,
- 10% reduction in loss ratio,
- Nearly 5 million euros of savings per year.

At first glance, these results may seem disappointing since they do not reach the bar of 10% fuel savings. However, the particular nature of a postal worker journeys (repeated stops over short distances, very dense urban context) explains why reductions are less substantial than expected. Despite this, it should be noted that the results are still very interesting:

- The financial savings are substantial, with 5 million euros saved per year,
- The environmental gains are even greater because an employee convinced to adopt eco-driving in their work will also change their behaviour behind the wheel of their personal vehicle. This is a double win for the environment.

B - What are the lessons learned from smartphone telematics?

gradually developing in several markets, especially in Europe and the United States. This solution is used by insurers who rely on data from phone sensors to analyse the driving style of their policyholders and offer them rewards if necessary. Let’s look at the actual driver data collected by DriveQuant, a smartphone telematics provider based in Paris.

The table below compares the driving behaviour of an average driver over 12 months before and after being coached in eco-driving:

Road context	Initial eco-driving score	Eco-driving score after coaching	Initial consum-ption in litres	Initial consumption in litres	Fuel saving in litres
urban	7.4 / 10	8.0 / 10 **(+0.6)**	238.3	220.4	**- 17.9**
extra-urban	8.1 / 10	8.5 / 10 **(+0.4)**	802.1	721.9	**- 80.2**
highways	8.4 / 10	9.0 / 10 **(+0.6)**	943.4	834.2	**- 109.2**

In this example, an average fuel consumption of 6.57 l/100km drops to 5.83 l/100km as a result of the coaching received. Although the average consumption saving is less than 1 litre, the benefits over twelve months are huge:

- about 220 litres of fuel saved
- Une économie proche de 400 euros pour le conducteur.

That’s a saving of almost 400 euros for the driver.

Road context	Potential fuel saving in %
urban	**8%**
extra-urban	**10%**
highways	**12%**

An average driver is therefore able to save about 10% of fuel if they practice eco-driving. Assuming that it is possible to change the behaviour of 50% of the 48 million motorists in France, and taking into account the fact that the annual consumption of the French vehicle fleet is 42.2 billion litres of fuel, here are the savings that can be made over 12 months:

- A saving of 2.11 billion litres of fuel
- A saving of 5 Mt CO2 eq.

The data reported by smartphone telematics therefore confirm the relevance and effectiveness of eco-driving. In the long term, adopting this driving style will have a colossal impact on the environment.

Reading these two case studies, there can be no doubt about the effectiveness of eco-driving in reducing fuel consumption and CO2 emissions. The difficulty of quantifying this efficiency is also apparent, however, because there is a significant differential gap between theoretical and practical savings. In reality, estimates that boast of 20% fuel savings are far too optimistic. It seems that under real conditions savings are around 10% for an average driver. Although lower than the values most often put forward, namely 15%, the impact of a saving of 10% per driver is no less significant when considered at the scale of 48 million French motorists.

HOW CAN INSURERS SUPPORT THIS TRANSITION?

In view of the significant benefits, insurers have every interest in supporting and accelerating the growth of eco-driving among policyholders.

Their first line of work must be to convince policyholders of the benefits of this alternative driving mode, which will be considered restrictive at first glance. To do this, there are several possible avenues, such as implementing free training to coach drivers. This solution has the advantage of convincing motorists of the benefits of eco-driving in practice, but involves high costs and fairly significant logistics to manage. A cheaper and equally effective alternative is to concentrate on prevention by offering policyholders a measurement tool such as smartphone telematics. Thanks to this tool, insured people will be able to see the savings that can be made if they change their driving behaviour for themselves. It is an educational and gentle way for the insurer to convince its customers to switch to eco-driving.

The second line of work is commercial. It involves designing and launching insurance offers according to usage or behaviour, the logical culmination of the prevention phase to retain customers who have adopted eco-driving and reduce their loss ratio. This type of offer is also a great communication lever for attracting new customers who want to eco-drive. In addition, it would allow the insurer to establish itself as a company dedicated to the climate and with strong ESG commitments, which will certainly set it apart from competitors in an environment where the bond of trust between insurers and insured parties is at its lowest. Several insurers have already embarked on the adventure of small-scale connected insurance (Altima, Yeet VTC, Direct Assurance) but no historical insurer has yet marketed an offer, even though 60% of motorists want to be offered contextual insurance.

CONCLUSION

With the increasing social pressure in favour of strong environmental action and energy conservation as a new political banner, eco-driving represents a major axis of development. The first effects would be immediate because the technology has already been mastered by companies like DriveQuant, which uses smartphones as a means of data collection and driver coaching. Smartphone telematics also have the advantage of having no logistical or financial barriers, unlike telematic boxes. The only barrier on its path is the will to act, because it will take significant support to boost it, both in terms of training and monitoring. At a time when insurers are widely reporting on their societal commitments, they have everything to gain from taking ownership of this issue: reducing their environmental footprint and that of their customers, reducing claims and therefore reducing costs, not to mention taking better account of ESG criteria. The emergence of eco-driving is a golden opportunity for insurers to initiate a profound behavioural change on the part of their policyholders and to take an active part in the energy transition.

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