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French White Certificates and Energy Savings in the Transport Sector

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1. Introduction

The purpose of this brief paper is to outline the details behind the introduction of an energy efficiency obligation on road transport fuels in France, the challenges facing its introduction, and the results from the first three years of operation. For more details on both the legal and operational details of the French White Certificate scheme, the reader is referred to the French sections in the International Energy Agency/Regulatory Assistance Project (RAP) report, *Best Practices in Designing and Implementing Energy Efficiency Obligation Schemes,*[1] and to the European Council for an Energy Efficient Economy/RAP report on determining energy savings.[2] These reports contain detailed reference lists that are the sources for many of the figures quoted in this report.

2. Background to French White Certificates

The French White Certificate scheme arose out of the French energy policy law passed in July 2005. White Certificates (WCs) are a key part of the French policy to reduce energy intensity by two percent per year until 2015 and then by 2.5 percent per year until 2030. The objective of the law is to encourage the efficient use of energy in a liberalised market. Additionally, France hopes to encourage the development of the energy services market approach. This policy is designed to focus on the more diffuse potentials of energy savings in the residential and tertiary sectors[3] and is intended to provide a new means of financing energy efficiency projects in these sectors. WCs can be earned in nearly all end-use sectors (including transport), but large energy users subject to the European Union (EU) Emissions Trading Scheme (where carbon dioxide [CO_2] permits are traded) are excluded.

2.1 The First Phase

The first phase of French WCs ran for three years from July 2006 with a fairly low target of 54 TWh cumac. Cumac is the cumulative energy savings discounted at four percent over the lifetime of the energy efficiency measures. The obligation was placed on all energy retailers outside of the transport sector. The programme was administered by the French Government, and the national energy agency, Agence de l'Environnement et de la Maîtrise de l'Energie (ADEME), acts as a technical advisor.

In the first three years, obligations were borne by the retailers/suppliers of energy (other than transport fuels) that supplied end users not covered by the EU Emissions Trading Scheme. The majority of the obligation was placed on Energie de France (the state-owned monopoly electricity company) and Gas de France, with nearly 80 percent of the required savings falling on these two companies. The other 20 percent of the obligation falls on small electricity, gas, and liquid petroleum gas (LPG) retailers and all domestic oil providers. More than 2,500 heating oil

[1] Regulatory Assistance Project, 2012.
[2] Staniaszek & Lees, 2012.
[3] The tertiary sector covers the public and commercial end-use sectors, sometimes called the service sector.

retailers had to deliver 13 percent of the national target. In essence, the overwhelming majority of the obligation was on the classic utility companies, but obligations were also placed on unregulated fuel retailers outside of the electricity and natural gas sectors.

During the first phase, deemed energy savings[4] accounted for virtually all of the achieved energy savings. This is due to the attractiveness of the deemed energy savings approach to energy retailers. These include the certainty in energy savings awarded if the measure is installed correctly, the opportunity for mass marketing of such measures, and the large number of deemed energy saving values published by Association Technique Energie Environment. Nearly 84 percent of energy savings were achieved in residential buildings. The estimated costs for the obligated companies in achieving their targets was 0.4 eurocents/kWh cumac or 20 percent of the penalty that the companies would have been fined if they had missed their energy saving targets for each kWh cumac shortfall.

In addition to the obligated energy retailers, certain organisations could register to be "eligible" to generate WCs on their own and subsequently trade these in the market. (In the second phase, the prospective list of eligible applicants has been reduced.[5]) The obligated energy retailers could meet their individual targets through generating WCs by implementing energysaving programmes with their customers, usually through bilateral contracts with energy efficiency installers, buying certificates on the WC market, or paying a penalty, which was set at two eurocents/kWh cumac.[6]

During the first phase, there was little trading of WCs in the market place. The trading option was not heavily used, partly because of the restrictive rules governing who might be an eligible party to earn WCs in their own right, but also because of the reluctance of the two major energy retailers to purchase WCs on the open market. Consequently, less than three percent of the total certificates were traded in the first period, and the price was usually between 0.3 and 0.35 eurocents/kWh cumac.

At the end of the first period, the energy retailers collectively achieved 120.7 percent of their first phase target at a cost equal to one-fifth of the penalty set by the French Government. The deemed savings approach was almost universally used, and consequently 83.8 percent of the savings were a result of activity undertaken in residential buildings, with over 72 percent of energy efficiency improvements being heating equipment improvements, particularly boilers and heat pumps. The reason behind the domination of heating efficiency improvements in delivering

[4] Deemed energy savings are awarded ex ante for standardised energy efficiency measures whose savings values are well established. Using deemed savings has proven to be a popular approach for obligated parties, as it permits mass marketing and economies of scale, and also eliminates uncertainty for the companies on their energy savings values as long as the measures are installed correctly.

[5] Since January 2011, the eligible applicants for WCs have been reduced to energy suppliers, local and regional authorities, and social landlords.

[6] As the average price of a WC was estimated to be 0.4 eurocents/kWh, it is highly unlikely that anyone paid the fine levied at five times this rate.

WCs is a direct result of the tax breaks that were available for householders in installing either more efficient boilers or heat pumps. ADEME estimated that in the first period the tax breaks were worth €1.3 billion to consumers. This meant that the energy retailers had to put very little subsidy in at all, their work being more an exercise in bringing a little known tax break to the attention of households. As a result, there were an estimated 550,000 improvements to heating systems, many more than the estimated 70,000 improvements made to the insulation in lofts, roofs, and walls. Finally, and of more immediate relevance, only 0.4 percent of the energy savings came from transport activities during the first phase.

Savings in electricity accounted for 27 percent of all savings in the first phase. ADEME estimated that the impact on final energy consumption was equivalent to about one percent of the energy consumption in French buildings in the residential and tertiary sectors.

Although transport energy savings have always been eligible to count against the French national target, the main obligated energy retailers had little direct involvement with the road fuel sector, and so the energy savings in transport have always been small. By the formal end of the first phase in June 2009, 0.4 percent of the savings achieved (65 cumac TWh) was met through road transport energy savings. There were little or no new energy savings from road transport reported before the start of the second phase in January 2011.

Because of delays in starting the second phase, an informal agreement was struck between the French Government and the energy retailers under which they would continue to achieve energy savings during the 18-month interregnum between the two phases at similar rates as those that they had done during the first phase.

2.2 The Second Phase

The second phase of the WC scheme, which began in January 2011, represented a massive increase in the overall target – a more than six-times increase, including the introduction of a specific obligation on road fuel importers.[7] The electricity, gas, and LPG retailers had their targets increased by a factor of more than 4.5, and the road transport fuel importers had their annual targets increased in stages of 10, 30, and 50 TWh cumac in the period of 2011 to 2013. Of course, road transport fuel importers do not have to meet their targets by saving road transport fuel; they could meet the targets through other efforts, such as improving the insulation or heating and ventilation of buildings. Also, as some of the major hypermarkets[8] will be covered by the road transport fuel obligation because they are importers of road transport fuels, they also have the opportunities to promote energy-efficient products and be a marketing outlet for other energy efficiency measures. The choice by the road transport fuel importers will depend on the relative costs of the various energy-saving opportunities open to them,[9] how saving energy fits in

[7] The importers of road transport fuel were chosen as the obligated parties, as the alternative of placing the obligation on road transport fuel retailers would involve a much larger number of obligated parties.
[8] Hypermarkets are large supermarkets that often retail road transport fuel as well.
[9] The oil company, Total, has publically stated its intention to meet most of its road transport target through non-transport energy-saving activities.

with their market positioning and objectives, and other considerations. As such, the specific path to compliance these importers choose is beyond the scope of this paper.

3. What Retailers of Heating Oil (and LPG) Did in the First Phase of French White Certificates

Total, the largest national oil company in France, is vertically integrated and, although a private company, has close links to Government in the way that is common in France. Total had approximately 25 percent of the energy reduction obligation in the heating oil business and was part of an arrangement through the auspices of Ecofioul, a heating oil distribution body that has taken on the collective responsibility for delivering the savings targets of its members (around 80 percent of the obligation on heating oil and LPG). Total has been open about its activities, and given the very few WCs generated in the transport sector, it is reasonable to assume that Total's behaviour is representative of the other obligated heating oil companies.

The LPG retailers already had, prior to the WC scheme, some initiatives encouraging their customers to install more efficient boilers. This pre-WC activity by LPG retailers was most likely driven more by concerns of customer retention than conservation, given the much higher cost of LPG as a residential heating fuel. It is therefore likely that the WCs for LPG retailers represent an expansion of their existing heating end-use improvements.

In the first period of French WCs, the major activity by oil and LPG retailers was promoting the installation of higher performance boilers for households. In particular, the heating oil businesses have embraced WCs and now see them as an opportunity to both capture and preserve customers through maximising the benefit for the final consumer.

During the course of the first period, the offer to consumers from Total gradually widened to include insulation and also to cover energy saving in other fuels. In January 2011, Christian Deconninck, the Director in charge of meeting Total's French WC targets, publically stated that Total's attitude to obligations in heating oil supply had changed from being a constraint to one of viewing it as a business opportunity.[10] Total's heating oil business has engaged in a big move to capture and promote the installation of energy-efficient boilers for households. In doing so, Total introduced:

- A policy of maximising the benefit for the final consumer;
- A large network of installers that has been built over the country to bring the Total offer to final consumers;
- In the first instance, a focus on heating oil boilers, but the scope of the Total offer is presently widening to insulation and other energy-saving measures; and

[10] Deconninck, 2011.

- Organizing work through the umbrella of a third party, Ecofioul, which is controlled by professional unions and has gathered roughly 80 percent of the heating oil obligation.

Total has "over performed" in Ecofioul; with 30 percent of the Ecofioul obligation, Total produced more than 50 percent of the Ecofioul WCs.

4. How Will Oil Importers Deliver Their Road Transport Energy Efficiency Obligation?

ADEME and the French Government have been active in bringing forward a series of deemed energy-saving measures in the transport sector that could be used by the companies to meet their energy efficiency obligation. Despite little activity in the transport sector, the number of energy efficiency measures with deemed energy savings increased from four in March 2007 to nine in January 2011 and then to 26 as of December 2012.[11]

4.1 Deemed Energy Savings for Transport

In France, transport measures are split into two types of energy savings: equipment and services. Transport *equipment* measures are classified as:

- Intermodal shift (e.g., from road transport to rail or water-based transport);
- Bus tyres with lower rolling resistance;
- Vehicle telematics to monitor the driving of the vehicle (fleet tracking);
- Energy savings from special lubrications for light vehicles;
- Monitoring and targeting of fuel consumption;
- Light vehicle tyres with lower rolling resistance;
- Improving the energy efficiency of inland barges (engines); and
- Vehicle replacement with a more energy-efficient vehicle.

Transport *service* measures are classified as:

- Training of public road transport drivers to ecodrive;
- Training of light vehicle drivers (commercial fleets) to ecodrive;
- Car pool from home to work journeys;
- Various initiatives to improve the performance of tyres, including maintaining tyre pressures at the correct level;
- Regular cleaning of inland barge hulls and propellers and anti-fouling hull painting; and
- External contracts to maintain tyres at optimum and correct wheel alignment.

[11] The deemed energy savings are colloquially known as "fiches" and are published by the Association Technique Energie Environnement; there are approaching 300 such fiches for the French WCs (see http://www.atee.fr/). As these fiches are summaries, the rationale for how the deemed energy savings are established by ADEME is not included. Those individuals requiring more details should contact ADEME directly.

The Annexe at the end of this paper provides these measures and gives a summary of the key requirements associated with the energy saving value.

It is noticeable that the most recent fiches that describe deemed energy savings for specific measures (EQ 14 to 18 and SE 4 to 9) are trying to increase the value of the energy savings being awarded for individual actions compared to the earlier ones. For example, replacing a tractor unit with a more efficient one can merit energy savings of up to 850,000 TWh cumac, depending on the age of the tractor unit being replaced. However, it is not clear how free riders[12] are dealt with, and it is likely that the percentage of free riders will be significant owing to normal stock turnover.

Five of the 26 deemed energy savings fiches for transport activities are concerned with modal shifts from road to rail or water-based transport and, as such, they are of less relevance to many countries. More universal opportunities, especially for oil importers, are in commercial and public transport with respect to energy-efficient bus tyres, fleet tracking, and ecodriving for fleets. Perhaps the simplest opportunity lies in using energy-saving lubrications for all forms of road vehicles.[13] However, on an on-going basis, the largest energy savings arise from replacing old articulated tractor units. As mentioned previously, this raises questions on the extent of free riders taking advantage of this opportunity: this concern needs to be set against the significant air quality benefits and, in a time of recession, also the important aspects of helping to "kick-start" the economy.

4.2 Cost Effectiveness of Transport Savings Compared to Other Options

Using the energy saving values given as deemed energy savings in the French WCs and summarised in the Annexe, an upper limit on the contribution that the energy supplier is likely to make toward the transport energy efficiency measure can be deduced. Table 1 does this by assuming that the maximum contribution from an oil importer is equal to the two eurocents/kWh cumac penalty that would be imposed on a company for every kWh cumac it misses under phase two.

The most striking thing about Table 1 is the very low deemed energy savings values for most actions carried out in the road transport sector compared with common actions in the residential sector. Indeed, the actual cost of insulating a roof is unlikely to approach the maximum subsidy payable for this action, calculated on the basis of the corresponding deemed energy saving. Furthermore, for equipment changes, the lifetime for transport measures is often as short as one year, whereas in the residential sector, any insulation savings, although discounted, still can be

[12] Free riders are those individuals or organizations that would have undertaken the energy efficiency measures even in the absence of the promotional activities of the obligated energy company.
[13] Arguably, regulating that all oil lubricants should meet minimum energy saving performance specifications might be a simpler and more efficient way of proceeding.

counted for 35 years. Clearly it is much easier to affect consumer decisions and behaviours with larger monetary values available for subsidies and longer timeframes for measure lives.

Table 1. Maximum Subsidies for Transport

Transport Actions	Deemed Energy Saving (cumac units)	Maximum Subsidy (€)
Car oil change	99 kWh	2.0
Car green tyre	90 kWh/tyre	1.8
Inflating tyre pressure correctly	19 kWh	0.4
Car pooling	670 kWh/person/year	13.4
Ecodriving	1100 kWh/person training	22.0
Three-year card for energy consumption monitoring	900 kWh	18.0
Computerised on-board system for cars	2000 kWh	40.0
Replacing D-rated car with C-rated car	78 kWh	1.6
Replacing G-rated car with B-rated car	360 kWh	72.0
Replacing tractor unit (aged 2001–2005)	330 MWh	6,600.0
Installing new tyre pressure facility (urban)	140 MWh	2,800.0
Contract to regular servicing of tyres and wheels (articulated lorries)	6 MWh	120.0
Residential Options	**Deemed Energy Saving (cumac units)**	**Maximum Subsidy (€)**
Insulation for roof (80 m^2 house)	128 MWh	2,560.0
Heat pump (120 m^2 house)	132 MWh	2,640.0
Condensing boiler (120 m^2)	121 MWh	2,420.0

The maximum subsidy that various transport and residential energy efficiency actions in the French WCs; the subsidy is derived by multiplying the deemed energy savings by the penalty for each cumac kWh missed (two eurocents/kWh).

Some of the current deemed energy saving values for road transport in the French WC are linked with behavioural response. This is an area that has long been difficult to demonstrate and there are debates about the longevity of the behavioural change. The French seem to have erred on the safe side and used reduced factors compared to some of the available data. Another complication is that transport vehicles are operated in more variable manners than would be the case with a boiler or heat pump installed in a property, so the proof of the energy efficiency improvement is harder to demonstrate. The lack of energy labels on fuel consumption (e.g., CO_2 emissions) for trucks limits the simple use of deemed energy savings, a shortcoming not shared by cars, whose fuel consumption data must, by European mandate, be publicised on all cars sold.

Arguably there is a further complication in that energy retailers outside of the transport sector have a much longer contractual term arrangement than the road transport fuel retailer. Most road transport fuel is purchased on the spot market. Moreover, there is not normally a long-lasting relationship between a fuel retailer and customer.

It is also to be noted that the most attractive measures per road vehicle are for retail road fuel outlets installing new tyre pressure facilities (maximum subsidy €2800) and replacing an old articulated tractor unit (up to €17,000 for pre-1992 vehicles). Again, the issue of free riders for such old units must be a concern.

Total plans to meet at least two-thirds of its road transport obligation through non-transport activities. The company successfully lobbied to be rewarded for encouraging early scrappage of old cars. Moving from a G-rated to a B-rated[14] vehicle has an energy saving of 360 kWh cumac, worth a maximum subsidy of €72. Additionally, Total is trying to see what it can do to influence the purchase of energy-saving lubricants and monitoring fuel fleet consumption, while continuing to argue that WCs are not the best manner to promote fuel efficiency in the road transport sector.

Finally, it is worth noting that the intermodal transport switches from road to rail or road to barge, for example, would have limited scope in many other countries.

4.4 Feedback on Actual Transport Activity Linked to WCs from Total[15]

Total estimated that there was very little road transport energy saving activity in the first year. In the second year, energy savings were running well behind the tripled first-year target. During the second year of the WCs, Total developed various scenarios on what might happen to the end of the third period when 90 TWh cumac of energy savings should have been achieved and their central scenario was that only 10 TWh would be achieved. Privately, they also estimated that 60 percent of that will be delivered by Total.

It must be remembered that Total at that time was in the midst of negotiations with the French Government and ADEME over the target for the third phase of the French WCs, which will begin in January 2015. ADEME were arguing that technically it should be possible to save even greater amounts of energy in transport through WCs, and Total, as might be expected, was pointing to the slow performance to date to argue the opposite. Total's preferred solution is that obligations are completely removed from road transport importers, but, failing that, that the target for the next period should be set between 20 and 30 TWh cumac over the three years. More recently, the final outturn of the second phase was evaluated by the French Court of Auditors[16]; less than one percent of the WC target of 345 TWh cumac was met by energy savings in the transport sector (i.e., even less than what Total was predicting in their central scenario of 10 TWh cumac).

Clearly the large difference between the subsidy or promotional costs that can be covered by a French WC in most road transport initiatives remains significantly less than the values that can be offered under the other end-use sectors. This has severely limited energy savings in transport.

[14] The EU energy label denotes the energy efficiency of any product on an A–G range, with A being the most efficient. Originally instigated for electrical appliances, it has expanded in coverage and is now applied to heating, cars, and tyres.
[15] The source for much of the information in this section comes from private communications with Total officials.
[16] Court of Auditors, 2013.

At the practical level, examples of projects that Total has undertaken include:

- In partnership with an ecodriving training organisation for professional transport drivers, Total funded 30 percent of the total cost of the course. Despite this subsidy, only 213 drivers were trained.
- In the telematics field, Total has encountered problems with meeting the current ADEME requirements, claiming that the costs to meet the ADEME specification are too high for professional transport fleets.

4.5 White Certificates Treatment of Electric Vehicles

Currently there is no electric vehicle support available from the French WC scheme, although there are state subsidies for new electrical and hybrid vehicles. Indeed, in July 2012, the French Government increased the subsidies for buyers of electric cars to €7000 from €5000, and for hybrid cars to €4000 from €2000. Such levels of support would be unlikely through WCs. Additional support is available from some regions, which might add supplementary grants, and there is no annual vehicle tax for companies owning electric vehicles.

The technical reason for not including electric vehicles in the French WC scheme is the present rule for fuel switching, which uses primary energy to determine whether there are any energy savings being realised. The fuel (gas-oil, gasoline) burnt in conventional engines is compared with the electricity used in the equivalent vehicle multiplied by a 2.58 factor (to take account of primary energy). This results in the electric vehicle no longer demonstrating any energy savings against conventionally fuelled vehicles. Clearly, with the French having a very low carbon electricity system with dominant nuclear and hydropower generation, there are significant CO_2 saving opportunities. However, any change in WC policy would be politically challenging!

5. Conclusions

Although the French WC scheme has not shown much activity in the road transport sector, there are some relatively simple opportunities for promoting energy efficiency in this sector (e.g., replacing old articulated tractor units, ecodriver training for fleets, and improving the energy efficiency via programmes aimed at tyres and lubricants).

However, after three years of endeavour, it is clear that the opportunities for importers of transport fuel to save transport energy are much less attractive to them than their alternative opportunities in saving fossil fuels and electricity in non-transport end uses.

The Court of Auditors' evaluation of the second phase of the French WCs has suggested several improvements in the next phase. These relate to improving the cumbersome and outdated method of administration of the WCs, improving the transparency of the scheme, and having a continuous dialogue with the WC stakeholders. All are to be welcomed, but this will not alter the fundamental dynamic that the deemed energy savings from the transport sector are much more expensive for obligated parties than the alternative options in other end-use sectors. This is not

to say that energy efficiency is not important in the transport sector – rather that other energy-saving policies will be more effective in producing energy savings. For example, in Europe, regulation of automobiles through a series of EU Directives has dramatically improved fuel efficiency of road vehicles and reduced their emissions.

The energy efficiency obligations that have successfully delivered energy savings around the globe over the past two decades all focussed on stationary end uses. The simple adaption of these obligations to the transport sector has been an interesting exercise. It has not resulted in significant energy savings in the transport sector, but it has generated useful energy savings in other end-use sectors.

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7. Annexe

Summary of the Key Features for the Deemed Energy Savings Currently Approved by the French Government for Measures Saving Road Transport Fuel as of December 2012

Equipment Fiche Number	Measure	Requirements	Lifetime (years)	Deemed Saving (cumac kWh)
TRA-EQ-01	Combined railroad transportation of freight over long distances	New activity; savings based on the length of the train	12	8000 to 16,000 per journey
TRA-EQ-02	Bus tyres with low rolling resistance	Tyres (for articulated and non-articulated buses) must have certified energy gain of at least 4 percent; provision of a copy of the maintenance record of tyres purchased	Duration of maint-enance project	7000 to 35,000 (non-articulated bus) 10,000 to 46,000 (articulated bus)
TRA-EQ-03	Fleet tracking (eligible vehicles: light goods up to heavy goods vehicles)	Provide proof of completion of initial training in economical driving	4	2000 (light vehicles) to 33,000 (heavy goods vehicles)
TRA-EQ-04	Energy-saving lubricants for light vehicles (diesel and petrol cars)	Lubricant approved after testing against standard test CEC-L-54-T-96 provided the independently verified savings are equal to or better than 1%	1	Depends on volume of lubricant, petrol or diesel engine, and specific type of lubricant
TRA-EQ-05	Monitoring of fuel consumption in light vehicles (commercial)	Need to present evidence from the private cards used for fuel purchase	5	1500 per vehicle
TRA-EQ-06	Light vehicle tyres with low rolling resistance (commercial fleets)	Tyres to have a class C or better label; receipt for tyres purchased to be presented	1	Depends on tyre label and mileage

Fiche Number	Measure	Requirements	Lifetime (years)	Deemed Saving (cumac kWh)
TRA-EQ-07	Intermodal transport unit for the combined waterway-road transport	Acquisition of a new intermodal transport unit of any size dedicated to transporting combined river-road, out of ISO-type shipping container	12	Between 2800 and 8200, depending on the waterway location and the tonnage of the new boat
TRA-EQ-08	Rail tractor-trailers used for the carriage of goods	Acquisition of a new rail tractor trailer for intermodal transport	30	Between 5600 and 68,000, depending on whether short or long journeys (>500 km)
TRA-EQ-09	River barge	Intermodal transport requirements similar to those for rail tractor-trailers	40	Related to tonnage × km travelled × river-specific factor
TRA-EQ-10	Propelled river boat	Requirements as for river barge	40	More complicated, depending on boat unladen tonnage
TRA-EQ-11	Self-contained, energy-efficient refrigerating units for trucks, semi-trailers,[17] refrigerated trailers, and units	Buying new refrigeration equipment for listed vehicle types above 3.5 tonnes	9	Complicated!
TRA-EQ-12	Same as TRA-EQ-11, but not self-contained refrigeration units	Buying new refrigeration equipment for listed vehicle types above 3.5 tonnes	9	Complicated!
TRA-EQ-13	Energy-saving lubricants for vehicles transporting passeng ers or goods	Using a more energy-efficient lubrication (15W-40) than ACEA E7, provided the independently verified (can be laboratory tests according to OM501FE procedures) savings are equal to or better than 1%	1	Given by the formula 48,700 * X * Y% where X = volume of lubricants sold in cubic metres Y = improved efficiency in % over the reference lubricant

[17] A semi-trailer is a trailer without a front axle (i.e., the tractor unit or truck bears some of the trailer's weight).

Fiche Number	Measure	Requirements	Lifetime (years)	Deemed Saving (cumac kWh)
TRA-EQ-14	Improving consumption of fleet cars by replacement with more efficient vehicles (commercial vehicles only)	Based on energy performance labels (A to F) of the vehicles being replaced and the initial fuel consumption; for example, improving fleet by 1 class gives ~13% improvement in consumption	3 to 8	Given by formula 600 * P% * N where P% = improvement of average consumption in % N = number of vehicles in the fleet
TRA-EQ-15	Road tractor replacement	Replacement must be Euro 5 standard-compliant and have automatic gearbox, aerodynamic styling, and low rolling resistance tyres	10	Between 150,000 and 850,000, depending on the age of the vehicle being replaced
TRA-EQ-16	Repowering an inland water transport barge	For engines older than 5 years, replacing with an engine of the same power but meeting EU standards of energy performance	30	Given by the formula Ga * TK where Ga = 0.16 to 0.56, depending on river, power of engine, tonnage capacity, etc., and TK = product of the tonnage carried and distance in km as measured over 6-mo period after repowering × two
TRA-EQ-17	Private car replacement with more efficient vehicles (only individuals, local authorities, and the state eligible)	Based on energy performance labels (A to F) of the vehicles being replaced and the initial fuel consumption	8	Given by formula 600 * P% where P% is average % improvement in energy consumption and depends on difference in ratings between new and old cars; P% varies between 13% and 67%

Services Fiche Number	Measure	Requirements	Lifetime (years)	Deemed Saving (cumac kWh)
TRA-SE-01	Training of public road transport drivers to ecodrive	Evidence of a course that is part theoretical and part practical	1	Per person trained, 5200 (heavy goods vehicles) and 3000 (bus)
TRA-SE-02	Training of light vehicle drivers (commercial fleets) to ecodrive	Practical and theoretical training to be carried out by an approved firm or agency	1	1100 to 1400 per person trained, depending on vehicle
TRA-SE-03	Car pool for home to work journeys	Only if the users perform >100 shared trips per year; written agreement of the users	1	670 × number of users
TRA-SE-04	Inflating tyres for cars and light commercial vehicles	By establishing new pressure inflation facilities or maintaining existing ones that meet French standards	1	40,000 for private facilities (e.g., fleets) 140,000 for low-use stations (e.g., urban) 520,000 for high-use stations (e.g., main highway and with own parking facilities)
TRA-SE-05	Re-treading tyres	For commercial road and public transport vehicles	1	Given by formula 305 * N where N is the number of tyres re-treaded
TRA-SE-06	Measurement and optimisation of fuel consumption on inland barges	Fitting an economiser or flow meter to a new or existing barge	5	Given by the formula C * Y * TK where C = energy consumption/tonne km (depends on boat engine, river being used, etc) between 0.28 and 0.95 Y = equipment gain factor 0.05 or 0.07, depending on equipment installed, and TK = tonne km carried in the 6-mo period following equipment installation

Fiche Number	Measure	Requirements	Lifetime (years)	Deemed Saving (cumac kWh)
TRA-SE-07	Barge cleaning and anti-fouling painting	Cleaning of hull and propeller of inland barges and applying an anti-fouling paint	5	Given by the formula Ga * TK where Ga = 0.014 to 0.048, depending on river, power of engine, tonnage capacity, etc TK = product of the tonnage carried and distance in km as measured over 6-mo period after repowering × two
TRA-SE-08	External servicing of the wheel components in a heavy lorry fleet	For heavy lorries between 7.5 and 44 tonnes; contract specifies regular checks on wheel alignment, pressure checks, re-grooving of tyres, and monitoring of tyre wear	1	Given by formula 6041 * N for articulated vehicles and 2452 * N for lorries where N is the number of vehicles under the contract
TRA-SE-09	External servicing of the wheel components in public transport fleets	As in SE-08 but for public vehicles	1	Given by formula 975 * N for buses and 1035 * N for coaches where N is the number of vehicles under the contract