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Deliverable due date: M36 – November 2019

D2.14 – Last mile strategies and EV uptake

WP2, Task 2.7

Transition of EU cities towards a new concept of Smart Life and Economy

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731297.

Project Acronym	mySMARTLife
Project Title	**Transition of EU cities towards a new concept of Smart Life and Economy**
Project Duration	1st December 2016 – 30th November 2021 (60 Months)
Deliverable	D2.14 – Last mile strategies and EV uptake
Diss. Level	PU
Status	☐ Working ☐ Verified by other WPs ■ Final version
Due date	30/11/2019
Work Package	WP2
Lead beneficiary	CER
Contributing beneficiary(ies)	NAN
Task description	**Subtask 2.7.3:** Last mile delivery strategies based on EV deployment. Last mile solutions and green management of corporate vehicles. NAN and CER will collaborate in this subtask. A platform tool to promote a greener concept of company fleets will be designed and deployed to provide companies with tools (for example, a web platform or other digital solution and a database with proposal of greener actions) developed by ADEME to optimize the management of company fleets and to promote the use of cleaner and more energy efficient vehicles. In this subtask, a support to the initial diagnosis / use of the tool, advice on the definition of an action plan, evaluation of the impact after 1 year and the deployment of the tool. - Another activity to be implemented in this subtask is the Call for projects smart urban logistics to support freight operators to develop cleaner solutions for their delivery routines, Nantes Metropole will launch a call for tender rewarding innovation on the last kilometre issue. Launch of a call for proposal, selection of best proposal and financial awards will be carried out. Nantes Metropole's own funds will support the awards to avoid cascade funding and evaluation of the impact of selected projects.

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Date	Version	Author	Comment
28/03/2019	0.1	Alexandre STRAUSS (CER)	Chap. 3: Structure and planning
17/05/2019	0.2	Pierre NOUAILLE (CER)	Chap. 4: draft version, submitted to NAN
12/07/2019	0.3	Alexandre STRAUSS (CER)	Chap. 3: draft version
18/07/2019	0.4	Pierre NOUAILLE (CER)	Chap 4: updated version, integration of NM comments
02/09/2019	0.3	Lucie DROULERS, Mélaine BONNAUDET (NM)	Chap. 4: first review and comments
24/09/2019	0.4	Pierre NOUAILLE (CER)	Chap. 4: Comments and additional elements
10/10/2019	0.5	Pierre NOUAILLE (CER)	Final version of overall document
11/102019	06	Benoît CUVELIER, Gilles FARGES, Mélaine BONNAUDET (NM)	Review of all document
16/10/2019	07	Pierre NOUAILLE (CER)	Consolidated version
24/10/2019		David Le Chenadec (ERDF)	Internal review
08/11/2019	08	Pierre NOUAILLE and Alexandre STRAUSS (CER)	Up dated version, integration of comments of the reviewer

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Abbreviations and Acronyms

Acronym	Description
mySMARTLife	Transition of EU cities towards a new concept of Smart Life and Economy
Ademe	Agence de l'environnement et de la maîtrise de l'énergie – French Environment & Energy Management Agency
PDU	Plan de déplacements urbains – Sustainable Urban Mobility Plan
TAN	Transports de l'Agglomération Nantaise – Public transport Operator of Nantes agglomeration

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1. Executive Summary

This deliverable describes two actions conducted by Nantes Métropole as part of mySMARTlife project.

The first action concerns a call for projects launched by Nantes Métropole in favor of sustainable urban logistics.

The second concerns the promotion and deployment, at the Nantes agglomeration level, of an innovative approach to help companies to change the composition and management of their fleets of vehicles in a logic of sustainability.

This deliverable details each of these two actions, by describing the contexts in which they have been carried out, their objectives and their contents. It also makes a first assessment of these two actions.

A more precise evaluation will be led within the complete evaluation of the mySMARTlife demonstration project in Nantes through work package 5 (WP5).

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2. Introduction

2.1 Purpose and target group

This deliverable constitutes a feedback of two actions carried out in Nantes as part of the mySMARTlife project. These two actions concern topics of mobility.

The first one is related to a call for projects launched by Nantes Métropole and aimed at developing solutions for more sustainable last-mile logistics. This call for proposals was launched in particular as part of the implementation of a new regulation relating to deliveries in the Nantes metropolitan area. It aimed to support logistics stakeholders in their adaptation to this new regulation, by promoting innovative solutions allowing an evolution of practices of deliveries.

The second concerns a support approach towards companies to optimize the management and composition of their vehicle fleets, in order to limit greenhouse gases (GHG) emissions and enable companies to save money. This approach is based in particular on the use of a diagnostic digital tool (developed by Ademe[1]) for fleet managers.

This deliverable is aimed primarily at public actors of urban mobility, who are interesting in new tools to deal with last-mile logistics matters and corporate vehicle fleets. These two topics raise important challenges for cities, in terms of CO_2 emissions, congestion or parking.

2.2 Contributions of partners

The following table (Table 1: Contribution of partners) depicts the main contributions from participant partners in the development of this deliverable.

Table 1: Contribution of partners

Participant short name	Contributions
CER	Overall content and redaction of all the sections of the deliverable
NAN	Actions leader, providing of information and data, general review of the deliverable
CAR	General review of the content of the deliverable

[1] Ademe (Agence de l'environnement et de la maîtrise de l'énergie): French Environment & Energy Management Agency

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2.3 Relation to other activities in the project

The following table (Table 2: Relations with the other activities in the project) depicts the main relationship of this deliverable to other activities (or deliverables) developed within the mySMARTLife project and that should be considered along with this document for further understanding of its contents.

Table 2: Relations with the other activities in the project

Deliverable Number	Contributions
D2.1	Baseline report of Nantes demonstration area
D5.1	Integrated evaluation procedure

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3. Call for projects on urban logistics

3.1 Roles and impacts of logistics in urban areas

Urban logistics is a key component of economy in urban areas. Shops, offices, and more, inhabitants need goods deliveries. The strong development of e-commerce increases the number of deliveries to the housings. In the same time, shopkeepers want less and less storage space and need to be delivered more often.

The urban centre of Nantes is particularly dense in shops and offices. The delivery moves are very concentrated in a little space and this space is the most constrained of the city. To maintain the level of activity and the attraction of the city, it was necessary to find new delivery solutions that need less space, and have less negative externality.

3.2 Nantes's will to push a transformation of logistics to reduce impacts

The reflexion of Nantes Métropole about urban logistics is a long-term initiative. Back in 2010, when the previous urban mobility plan was under discussion, Nantes Métropole organised workshops with delivery representatives. But the subject was not really mature to encourage Nantes to implement major evolutions. A system of delivery park disk was however put in place to ease delivery park places control by city police. In 2018, the new urban mobility plan recognizes the fundamental role of urban logistics and last-mile delivery in the functioning of the city. It sets a series of measures based on support of local stakeholders (call for projects, experiments…); it aims at taking into account urban logistics and last-mile delivery issues in urban planning, at reducing the environmental impact of delivery activities in city centre, but also at developing alternatives to road traffic, such as river and railway transport.

Figure 1: Green delivery disk for regulation and control

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Élaboration du PDU
Document final

et a engagé une concertation avec les usagers et associations qui a débouché sur de nombreuses préconisations, dont certaines seront mises en place à court terme comme l'amélioration des outils de réservation ou encore le renouvellement des véhicules de service.
Dans le cadre du schéma directeur d'accessibilité des transports collectifs, c'est aussi l'ensemble de l'accessibilité au réseau de transports collectifs qui va être poursuivie et confortée, en intervenant sur :

- l'information, notamment en amont du déplacement ;
- la mise en accessibilité des points d'arrêts ;
- le renouvellement du parc de matériel roulant (minibus, bus et tramway) permettant de finaliser son accessibilité et de développer l'information embarquée à destination des voyageurs, pour un meilleur repérage tout au long du parcours ;
- l'adaptation du service et des mesures d'accompagnement en concertation avec les usagers ;
- l'accompagnement tant côté exploitant, par la formation des personnels en lien avec les usagers, que côté usagers avec la volonté d'expérimentation autour de l'accompagnement des personnes handicapées sur le réseau classique ;
- l'évaluation pour suivre la mise en œuvre des actions au fur et à mesure et permettre des corrections si nécessaire.

Le travail se poursuit, par ailleurs, pour rendre accessibles les autres services de mobilité : vélo pour les personnes à mobilité réduite, une tarification solidaire pour le service de location longue durée, mise en accessibilité de l'ensemble des parkings de stationnement, aménagement de 2 % de places de stationnement réservées aux personnes à mobilité réduite lors de projets modifiant l'espace public, site internet des opérateurs, accessible au plus grand nombre...
La Métropole lutte également contre toute les formes de discrimination et poursuit son travail pour l'égalité femme/homme auprès des opérateurs de mobilité métropolitains. Elle œuvre notamment à favoriser et sécuriser l'usage des services de mobilité, par exemple par la possibilité d'un arrêt à la demande la nuit.
Enfin, Nantes Métropole poursuivra sa démarche de conseil en mobilité auprès des publics-cibles, en déclinant localement la politique nationale «manger-bouger» et en diffusant les recommandations de l'Organisation mondiale de la santé (OMS) en termes de bénéfices des modes actifs sur la santé. Il s'agira également d'accompagner et de fédérer les acteurs du territoire, publics comme privés, qui œuvrent dans ce domaine.

Promouvoir une logistique urbaine durable sur le territoire métropolitain

Les fonctions logistiques d'approvisionnement et d'enlèvement sont des fonctions inhérentes aux activités urbaines. Pour être le moins nuisibles et le plus durables possibles, elles doivent être pensées et intégrées dans la ville, au plus près des habitants, et adaptées à l'évolution des comportements d'achat (consommation locale, développement du télé-achat, des points-relais, pick-up...). Cette adaptation ne peut se faire sans l'implication de tous, citoyens comme entreprises, secteur public comme privé.
Plusieurs démarches seront menées pour poursuivre le déploiement d'une logistique urbaine durable :

- l'accompagnement des projets des acteurs locaux sur la logistique urbaine durable (appel à projets dès 2018, ateliers, expérimentations, subventions...) ;
- l'amélioration de la prise en compte de la logistique dans les équipements et les aménagements urbains (planification des besoins, aires de livraison, espaces logistiques de proximité, mutualisation du dernier km de livraison...) ;
- la réduction de l'impact environnemental des déplacements liés au transport de marchandises en ville à travers la refonte de la réglementation de la livraison en centre-ville qui sera applicable dès 2019 ;
- le développement des modes fluvial et ferroviaire comme alternative au réseau routier pour le transport de marchandises ;
- la consolidation du partenariat avec les acteurs du secteur de la logistique urbaine (co-construction, travail collaboratif, co-écriture et mise en œuvre d'une charte de logistique urbaine durable partagée avec les acteurs économiques...).

Nantes Métropole

NANTES MÉTROPOLE 2018

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Figure 2: Actions on urban logistics in the new Nantes mobility plan, voted in December 2018 by Nantes Métropole city Council

Translation of highlighted part above:

Promote a sustainable urban logistic in the metropolitan area

Supply and reverse logistic functions are inherent to urban functions. To make them the less harmful and the more sustainable possible, they have to be designed and integrated within the city, closest to the inhabitants, and adapted to the buying behaviour evolutions (local consumption, online purchase increase, distribution points, etc.). This adaptation can not be made without the implication of everyone, citizens as companies, public sector as private. Several actions will be implemented to pursue the deployment of a sustainable urban logistic:

Local actors sustainable urban logistic projects support (call for projects, workshops, experiments, subsidies, etc.);

Better consideration of urban logistic in urban planning and equipment (needs planning, delivery areas, proximity logistic spaces, last mile mutualisation, etc.);

Reduction of goods delivery environmental impact through the evolution of the rules for downtown delivery to be applied as soon as 2019;

Development of waterway and railway delivery as alternatives to road delivery;

Consolidation of the partnership with the actors of urban logistic sector (collaborative work, collaborative writing of a sustainable urban delivery charter shared with economic actors)

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3.3 The call for projects for innovative delivery solutions

In 2019, in accordance with the new mobility plan strategy, Nantes Métropole decided to change the regulation about goods deliveries within the city centre.

From now on, clean vehicles can enter the city centre (in the area where regulation apply – see opposite map) from 4 am to 11 pm whereas diesel vehicles can enter only from 7.30 am to 11.30 am.

The goal of this new regulation is to encourage delivery companies to change their rolling stocks to alternative energies.

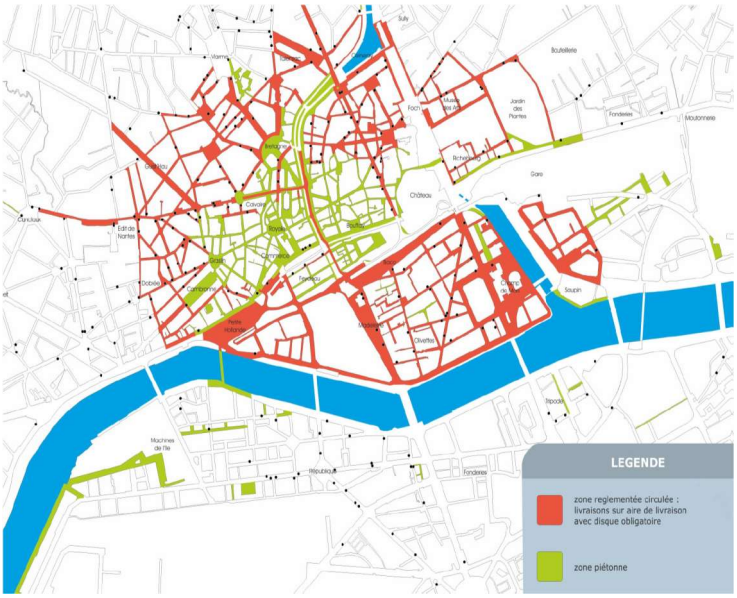

Figure 3: area within the new regulation apply (green = pedestrian zones, red = regulated access zone)

To help companies to adapt to this new regulation, Nantes Métropole launched a call for projects for innovative urban delivery solutions, called FLUX: “Fabriquons la Logistique Urbaine Ensemble” (“Let’s build urban logistics together”).

Beside this objective, the call for projects is also a way to ease experimentation in Nantes and to test new solutions on an industrial scale. The call for projects is at the same time, a way to spot some new solutions and highlight them, so new clients can discover and use them, and a place to meet partners to develop a solution not yet experimented.

Figure 4: Call for projects logo

The calendar of the call for projects has been built to follow the main steps of the new urban logistics regulation. Indeed, Nantes Métropole considered from the beginning the two actions linked together. The idea was to set the choice of awarded projects at the same time of the application of the advantages for the clean vehicles and about 18 months before the new regulation is effective. The goal is to let the time for the projects to be operational to offer alternative solutions to address the new regulation.

The main steps of the call are mentioned below:

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- September 2018: launching of the call for projects; communication event towards urban logistics stakeholders and potential candidates
- Autumn 2018: organization by Nantes Métropole of different kinds of events towards potential candidates, to help the emergence of projects (visits of the urban sites made available by the call's partners, workshops…)
- 31st December 2018: closure of the candidatures submission phase
- 12 June 2019: announcement of the results and of the award-winning projects
- From spring 2019: start of implementation of award-winning urban freight projects

Figure 5: Announcement of the results, in attendance of Johanna Rolland, Mayor of Nantes and President of Nantes Métropole

Formally, the call for projects is led by Nantes Métropole, but it associates also many other partners, covering a large field of activity including energy providers, transport network management, urban development, trade union. The different partners provide different and complementary assistance to award-winning projects.

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Figure 6: List of the partners involved in the call for projects

Some offer only technical supply to help the emergence of the projects, whereas other can finance some services (VNF, national manager of the waterways network offered technical assistance and could pay for some works on its installations).

The map below shows the different places candidates could require to settle down and test their solutions. The darkest ones are spaces within public park facilities, generally on ground floor, or empty lands, which can be used as storage places, parking lots or to build facilities. The middle grey ones are buildings and even a riverbank land was proposed (light grey).

These are generally former logistic buildings, for example in the former M.I.N.[2] which moved to south of the Nantes ring road in the municipality of Rezé. The former was on the island of Nantes near the city centre. This map is not exhaustive; as for example, Nantes Métropole Habitat, a local social housing builder, proposed to meet candidates who need space in other parts of the city to study their demand and propose spaces in the ground floor or parking of their buildings located all over the Nantes metropolitan area.

[2] Marché d'Intérêt National: national wide market, second biggest food market in France, only opened to professionals, feed all shopkeepers, restaurants owners, etc.

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Most of these buildings and facilities are available for some years (generally 3 to 5 years) to test the solutions. At the end of this period, if the solution have proven to be interesting, the proposal is to find a space in the urban development projects to install their facilities permanently.

Figure 7: Map of the buildings and properties available proposed by some of the call for projects partners (reference: Nantes Métropole)

3.4 Results of the call for projects

The call for projects had a very good audience. A first workshop was organised in November 6th 2018 with more than 100 attendants. Several examples of innovative urban logistics projects in Nantes and other places were presented. The goal of this workshop was also to regroup actors of urban logistics in Nantes so they can form teams to apply to the call for projects. Indeed, the call specifications stated that projects held by a group of actors will be better evaluated than ones held by a sole firm.

The deadline for applications has been set to the end of the year 2018. The candidates had to give several documents to fulfil the call requirements:

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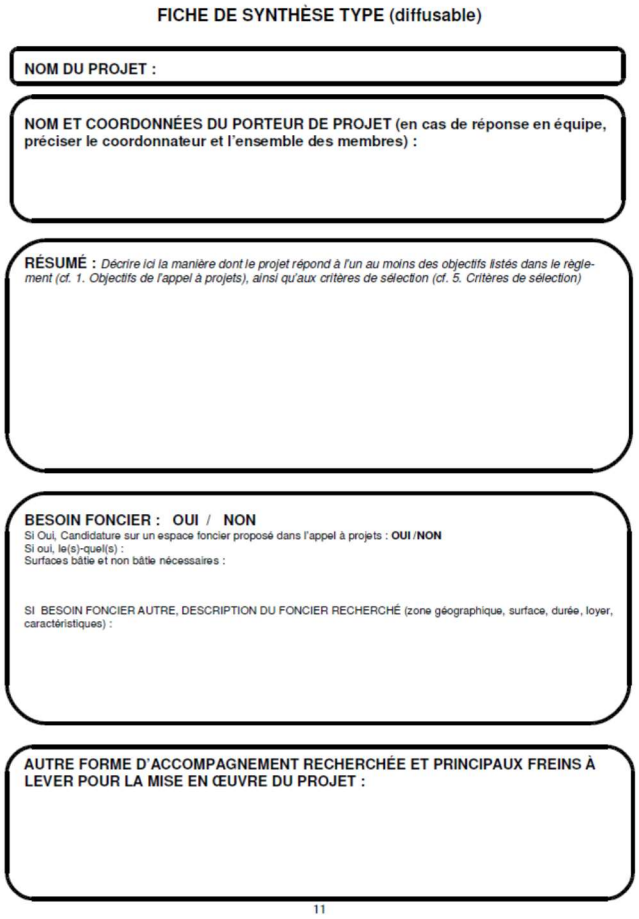
- a presentation form with the date of creation of the firm, the members of the group if relevant, the existing activities, etc.
- an abstract of the solution proposed
- a technical report explaining with more details the scope, expected outcomes, conditions of success, needs of finance and needs for a building or a property.

3.5 Projects submitted and criteria of selection

In total, 32 projects have been submitted. To ease the analysis of the projects, they have been classified into 9 categories:



FICHE DE SYNTHÈSE TYPE (diffusable)

NOM DU PROJET :

NOM ET COORDONNÉES DU PORTEUR DE PROJET (en cas de réponse en équipe, préciser le coordonnateur et l'ensemble des membres) :

RÉSUMÉ : *Décrire ici la manière dont le projet répond à l'un au moins des objectifs listés dans le règlement (cf. 1. Objectifs de l'appel à projets), ainsi qu'aux critères de sélection (cf. 5. Critères de sélection)*

BESOIN FONCIER : OUI / NON
Si Oui, Candidature sur un espace foncier proposé dans l'appel à projets : OUI /NON
Si oui, le(s)-quel(s) :
Surfaces bâtie et non bâtie nécessaires :

SI BESOIN FONCIER AUTRE, DESCRIPTION DU FONCIER RECHERCHÉ (zone géographique, surface, durée, loyer, caractéristiques) :

AUTRE FORME D'ACCOMPAGNEMENT RECHERCHÉE ET PRINCIPAUX FREINS À LEVER POUR LA MISE EN ŒUVRE DU PROJET :

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Figure 8: Abstract form to be filled by candidates

- **Organisation of logistic activity at different scales** (3 projects): these solutions goals are to adapt the size and energy of the delivery vehicles to the urban environment. Generally, the idea is to regroup all deliveries in one storage facility outside the dense urban area and create one or several little spaces within the city centre. Then clean vehicles transport the goods from the outer storage space and the inner facility and the last mile is made by cargo bikes or by trolley.
- **Optimisation of urban storage for last mile logistic** (4 projects): in this category, projects focus on short range logistics, for example for produces. Solutions go from reverse logistics (get the garbage in the vehicle that delivered the goods) to autonomous refrigerated boxes to store produces.
- **Utilisation of new clean delivery vehicles in replacement or substitution of old ones** (7 projects): there are not only alternative energy motorised vehicles but also innovative bicycle trailers or delivery tricycles.

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- **NGV stations** (2 projects): in addition with previous category, these projects aim at deploying new NGV[3] stations within the metropolitan aera, to be used by delivery vehicles and heavy vehicles (such as future garbage collection trucks that Nantes Métropole plan to purchase).
- **Waterway logistic** (3 projects): Nantes is crossed by several main rivers (Loire, Erdre, Sevres Nantaise) and is home of one of the biggest French sea ports (Nantes – Saint-Nazaire). These projects aim to use the potential of waterway logistics in urban areas. One of the typical use is the logistic of building waste for the works on the Ile de Nantes.
- **Railway logistic** (1 project): this project is to study the possibility to use the tramway network to transport goods.
- **Digital tools** (3 projects): the projects target both final customers with digital buying platforms and companies with algorithms to optimize vehicles routes.
- **Rationalization of logistic chains** (5 projects): this category contains both projects of use of vehicles already used for other purpose (driving lessons, passengers transportation, etc.) and grouping of logistic among actors.
- **Others** (4 projects): these projects could not be linked to one of the other categories.

Nantes Métropole evaluated the projects to give to the partners a first analysis. The points highlighted were:

- Time needed before the solution can be deployed in Nantes
- Economic model and financial sustainability of the solution
- Expected effects on urban logistics emissions and energy consumption
- Innovation level of the solution.

3.6 Selection of awarded projects

After the analysis of the projects by the Mobiliy Department of Nantes Métropole and the partners, 13 projects were awarded and 4 were classified as “FLUX seeds” because they were interesting projects but not mature enough to be operated rapidly on field.

[3] NGV: Natural Gas for Vehicles

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The 13 awarded projects are summarised in the table below:

Table 3: Awarded projects

Name of the project	Brief description	Strength	Points to be developed
	Supply chain optimisation		
LU 360°	Development of interconnected logistics areas on different scales of the city : - Mutualization center in the outskirts of the urban area (north-west) - Urban delivery spaces in the center of Nantes 	• Financially independent • Experience in urban logistics and operating • Ideal place for last mile delivery in Nantes • Existing facilities and operational on a short term	• Waterway part not immediately
Urban delivery space (Espace urbain de distribution – Ile de Nantes)	Urban delivery space integrated in a building project with mixed uses in the former Alstom Bergeron company workshops, located in the Beaulieu Island (City Center). 	• Financially independent • Experience in logistics real estate • Partnership with last mile delivery company and general operator • Ideal place for last mile delivery • The only project of mixed urban development	• Traffic difficulties to access to the facility • Facility operational in 2023/2024
Superflux	Inovatingurban hub in the city center (Beaulieu Island) combining a neighbourhood delivery space with commercial activities.	• Innovating hub in the center of Nantes (Beaulieu Island) • The hub combines docks for cycling logistics (“les coursiers nantais”) with incubating commercial activities	• Business model to be clarified

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		(micro freight + micro shop). • The enterprises that set up benefit personalised support included in the program	
	NGV stations deployment		
Building of two NGVstations **(Stations GNV : deux de plus dans la metropole)**	Project of building two new NGV stations in the territory (West and East) to strengthen the current coverage (3 stations). 	• Coverage enhancement of the territory • Proximity for the garbage trucks (to be convert to NGV) • Future users interest	• Feasibility to be confirmed for one of the two sites
	Clean vehicles fleet		
"Grand Nantes vert" **(Green Great Nantes)**	Project carried out by Transport Jouve delivery company : progressive conversion of its vehicle fleet to NGV 	• Conversion to a NGV vehicles float • Mutualised delivery and stock systems	• Share of goods in the mutualised systems to be detailed
Cycling logistics development (LCN, Logistique Urbaine à Vélo)	Promotion of a local bicycle courier cooperative with solidarity and sustainable policies. Investment in new electric trailers to increase their delivery capacity.	• Decarbonized urban centre delivery • "anti-deliveroo" social model • Possible mutualisation with other actors (Titi	•

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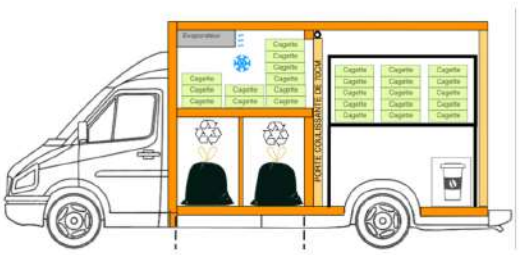
		floris, Superflux, 1,2,3 courses)	
	Optimisation of storage space in urban area		
FLUO (Fluidifier les livraisons urbaines par optimisation : making urban delivery flows better by optimization)	Creation of a new storage hub combined with electric vehicles and reverse logistics to supply automatic distributors in commercial retail areas. 	• Originality • Clean vehicles • Promotion of local food network	• More information needed on return logistics • Feasibility of the installation of recharge facility to confirmed
Projet Kiosque Paysan	Project of shared delivery hub to supply biological and local goods. The Kiosque Paysan is an association of agricultural producers and distributors. 	• Mutualisation of local organic products • Numerous partners: could have a big impact on mutualisation • Delivery with clean vehicles and cycles • Project included in the territorial food plan	• Business model to be clarified
Promus box	Network of smart refrigerated storage containers on two scales : installation in outskirts to collect goods from producers (first mile) and in city for last mile delivery.	• Mutualisation for delivery and stock • Last-mile delivery with clean vehicles • Partnership with “le kiosque paysan”: box	• Technical constraints to take into account

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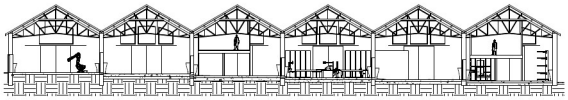
		soon operational • Monitored by Nantes citylab	
Ici Nantes – Make ici	Delivery, storage and production space for artisans in an urban planning project (Zac Mellinet). 	• Originality – arts and crafts sector • Mutualisation of delivery and stock for artisans • Integrated in the urban planning	• Need for subsidies • Invest capacity in an electric vehicle to access city centre ?
	Waterways logistic		
Electro-voltaic barge (La barge zero)	Use of an electro-voltaic barge on the Loire and Erdre rivers to supply the city center stores. Clean vehicles and bicycles are used for the last mile after unloading. 	• Clean multimodal transport solution • All included project innovative and sharable • Will to be opened to competitor with an outside structure allowing mutualisation • Project entirely financed	• Implementation start to define • Elements needed about park and recharge needs • Waterway feasibility to check
	Supply chain optimisation		
Fair urban logistics for a	Collection of returnable bottles in a closed-circuit with clean vehicles and valorizing employees in reintregration programm.	• Creation of a return logistics network • Team candidature	• Uncertainty of the speed of the upscaling

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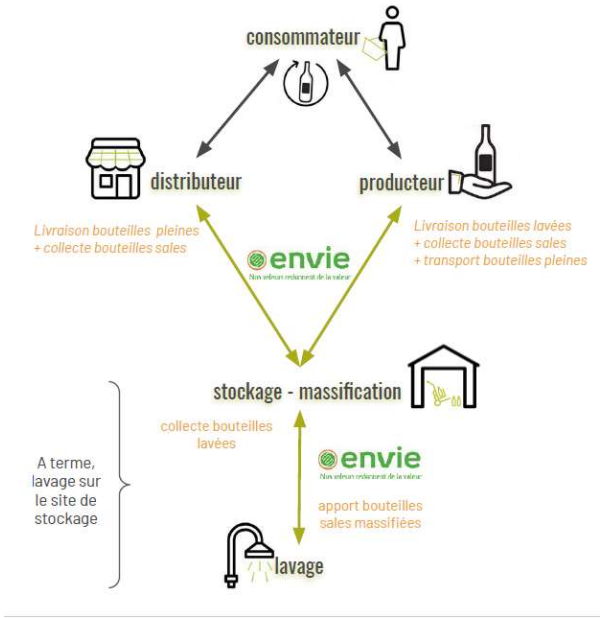
circular economy (Logistique solidaire pour une économie circulaire)		• Social and solidarity economy • NGV and electric light vehicles • Actual partnership with clients/users	• Search for land for future development
Titi Floris	Optimization of vehicle use for the society by carrying goods besides transporting people. 	• Mixed use of vehicles (people mobility and goods delivery) • Clean vehicles already used • Social and solidarity economy • Partnership already in place with Geodis and “Les coursiers nantais”	• Which upscaling of goods delivery ?

3.7 Expected outcomes

The main expected outcomes from this call for projects is a better organisation of urban logistics that both reduce the nuisances (pollutants emissions, GHG emissions, energy consumption, noise, road safety, road congestion, etc.) and keep the city activity possible by continuing the deliveries and back logistics.

Besides from these main objectives, Nantes Métropole also targets to help innovative solutions to be implemented and, if efficient, generalised in the metropole and further. The partners of the call for projects have been chosen mainly in this objective.

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3.8 Indicators for projects evaluation

From a formal point of view, the action included in the mySMARTlife project consisted of launching a call for projects on urban logistics. Thus, this action can be evaluated using the following indicators:

- number of submitted projects
- number of selected projects
- types of selected projects.

But beyond the call for projects itself, it would be especially interesting to evaluate the impacts and effects of the projects themselves. As such, it will be useful to define also indicators to evaluate each of the implemented projects through specific indicators. These indicators can deal with energy and CO_2 emissions savings, kilometres decrease per parcel or delivery point, increase of load factor, etc[4].

If it is possible, these indicators adapted to each project will then be globalized to create indicators for the call for projects in general.

Part of the data collected to monitor the projects could be shared into the urban platform that is implemented within mySMARTlife project. This data will be for example, the number of deliveries made by cycle, clean vehicles or using personal cars or light delivery vehicles (optimising the use of personal cars).

Some of these data could be sensitive for the companies operating the project, so that only summarised and anonymized data should be put into the platform. These data would be interesting to follow the evolution of alternative urban delivery solutions use and to compare with other cities where same data is available. This will allow Nantes Métropole to evaluate the effects of the call for projects on the overall on urban delivery.

[4] The Handbook for emission factors for road transport (HBEFA) could be used.

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4. “MobiliPro”: tool for greener company vehicles fleets

4.1 Presentation of the MobiliPro approach

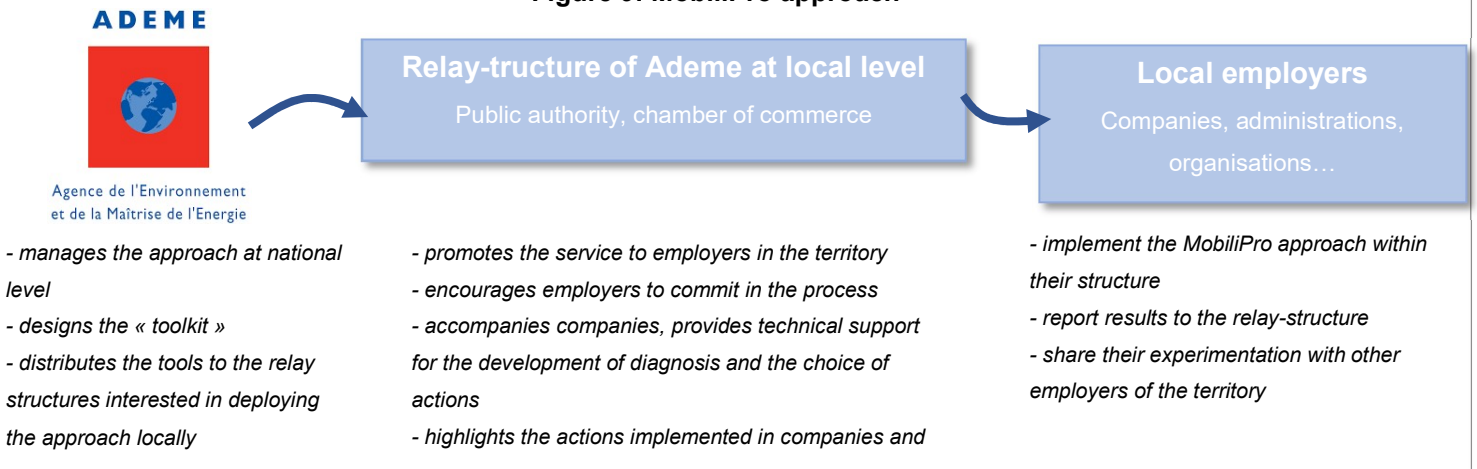
MobiliPro is the name of a specific service developed by the French Environment & Energy Management Agency (Ademe) in 2016. It allows employers to optimize the management of the professional-related trips of their employees, in order to reduce their CO_2 emissions and to generate financial savings. It mainly targets companies, but also more generally all organizations that use professional vehicles fleet and / or whose employees realize many travel trips: private companies (whatever their business sector), but also local authorities, administrations and public bodies. MobiliPro was tested first in the Nouvelle Aquitaine Region ant then in the Pays-de-la-Loire region, especially in Nantes, where it is one of the actions deployed under the mySMARtlife project.

MobiliPro deployment at the local level is usually done through an intermediate actor that plays as a relay structure of Ademe. This “relay-structure” plays an important role insofar as it promotes the service, accompanies and advises companies and organizations wishing to engage, provides tools and resources developed (spreadsheet, actions sheets, feedback ...) and helps companies to use them.

These relay structures can be of different types, but must have the capacity to animate on the territory a network of voluntary actors to participate in the process; as such, they are often structures in the public sphere (local authority, chamber of commerce, etc.).

For companies and voluntary organizations, commitment to the MobiliPro approach enables access to various tools and personalized support provided by the relay structure. It is a way for them to improve their knowledge of the mobility practices of their employees and the costs of using vehicles in their fleet. It also allows them to identify relevant optimization actions to deploy, facilitate their implementation within the organization, their evaluation and their enhancement.

Figure 9: MobiliPro approach



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4.2 Why address the issue of work-related journeys and companies vehicles fleets?

Work-related trips raise economic, energy and environmental issues and concern both private and public actors (at national and local level).

4.2.1 Greenhouse gas reduction issues for public actors and local administrations

In France, **transport accounts for 37% of CO_2[5] emissions**; transport constitutes the main sector of greenhouse gas emissions and the second largest energy consumption item. The transport sector is also responsible for emissions of air pollutants (NOx, fine particles) with direct health consequences for exposed people.

The main part of these emissions (around 95% for greenhouse gas emissions) comes from road transport, particularly passenger cars.

However, it is estimated that professional vehicles account for nearly 20% of the total number of vehicles and 40% of new registrations of light vehicles[6]: thus, professional vehicles are responsible for a significant part of emissions from the road sector and constitute a relevant lever to reduce greenhouse gas emissions.

Act on professional fleets is therefore a relevant way to contribute to achieve the French objectives of carbon emissions reduction. Indeed, the national low-carbon strategy presented at the end of 2018 aims for the country's carbon neutrality by 2050 and aims a 31% reduction in CO_2 emissions for the transport sector by 2029-2033 (compared to 2015)[7].

At the local level, issues are quite similar (in Nantes Métropole, transport accounts for 42% of local CO_2 emissions), so that optimization of work-related trips[8] is an essential lever for achieving local objectives in terms of greenhouse gas emissions reduction (the **Nantes Metropole Climate Plan, adopted on 01/12/2018** sets a goal of reducing greenhouse gas emissions per capita by 30% by 2020 and by 50% by 2030).

4.2.2 Economic and financial issues for companies and vehicles fleets management operator

Within companies, work-related trips constitute a large budget, which may be the second largest expense item in their operating budget, after salaries.

Regarding vehicles, it can be estimated that possession costs of a light thermal vehicle comes to more than 5000 € per year. Cost per km ranges from 0.27 € to 0.54 € depending on the annual distances

[5] In 2016 – reference: https://www.insee.fr/fr/statistiques/2015759#tableau-Donnes
[6] Estimate from Ademe
[7] https://www.ecologique-solidaire.gouv.fr/sites/default/files/Projet%20strategie%20nationale%20bas%20carbone.pdf
[8] Through evolution of employees mobility behaviours or evolution of corporate vehicles fleets

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travelled[9] (Figure 10). About 1/3 of these costs consist of fixed costs (rent or depreciation, taxes), and 2/3 of variable costs (Figure 11).

Figure 10: Costs per km according to the anual distance travelled (per vehicle)

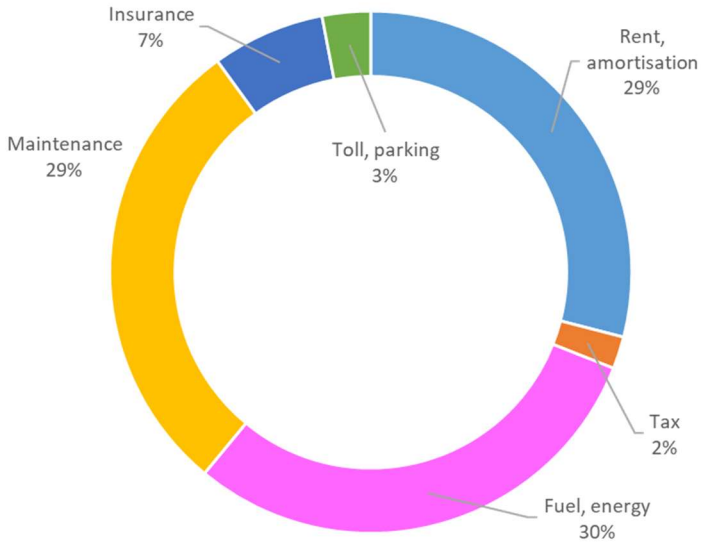

Figure 11: Structure of possession costs for a corporate vehicle (reference: Ademe)

Characteristics of vehicles, their use by drivers, the management practices of the fleets… can have very important impacts on these average costs. This justifies that companies carry out fine analyses in order to better identify the “total cost of ownership” (TCO) and to identify levers for financial savings.

Beyond constituting an opportunity for companies to achieve reduction of operating costs of their vehicle fleets (and more generally, to reduce the mobility budget of the organization), commitment in the MobiliPro approach also allows to improve their Company Mobility Plans.

Finally, for public organizations, local authorities and public establishments that have to favor low-emissions vehicles when renewing their fleets, MobiliPro can be a very useful decision support tool.

[9] All these figures comme from the following document: Ademe, 2018, « MobiliPro – optimisez vos déplacements professionnels », 6 p.

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Company Mobility Plans are a set of measures that aimed at optimizing trips related to the company's activity.
In France, Company Mobility Plans are mandatory for all companies with more than 100 employees working on the same site, and located inside the perimeter of an Urban Mobility Plan. If commuting trips are generally well broached in these plans, it is not really the case of work-related trips. Therefore, the MobiliPro approach and it tools make it possible to improve Company Mobility Plans on this specific item and can be very useful to guide companies towards the development of a more global mobility strategy.

4.3 MobiliPro: before the experimention in Nantes

Prior to its deployment in the Nantes Métropole territory, Mobilipro has been the subject of several experiments and deployments at the local level since 2016.

Without considering the Nantes Métropole experimentation, about 20 organizations have been involved in the MobiliPro approach, supported by six relay structures, located in two regions (Nouvelle Aquitaine and Pays-de-la-Loire) and six departments. Of the 20 or so organizations involved, 14 had finalized an actions plan by the end of 2017; these 14 structures represented a total fleet of nearly 1,300 vehicles.

4.4 The tools of the MobiliPro approach

The toolbox of the MobiliPro approach can be provided free of charge to companies and organizations wishing to participate in the process.

The toolbox mainly includes two tools developed by Ademe (the French Environment & Energy Management Agency) and that companies can use in semi-autonomy:

- **A spreadsheet, that is the central tool of the approach:** it allows to compile key data on work-related trips made within the company, to analyze them (diagnosis in terms of CO_2 emissions, expenditures, accidentology…) and to focus on solutions and actions to improve the mobility management in the company.
- **A set of action-sheets**, providing detailed information on various actions and solutions that can be implemented within the companies to optimize mobility of employees.

These two tools are completed with:

- **A guide** for the project manager who in-house the company, will be responsible for deploying the MobiliPro approach. This guide provides advice and recommendations to lead the process, in particular at the key steps (mobilization of teams and of the Managers of the company, data collection, validation of the actions, etc…). This guide is also the user's guide of the spreadsheet tool.

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- **Models of customizable action sheets** that companies can use when formalizing their actions plan, in order to specify internal leaders, objectives of the actions, schedule, steps, ways of financing…

4.4.1 The MobiliPro spreadsheet

The MobiliPro spreadsheet is the central tool of the process. It takes the form of a file developed in three versions of spreadsheets: Excel 2007, Excel 2010 and Libre Office 3.5.

Figure 12: Screen print of the MobiliPro spreadsheet home screen

It is intended to be used in semi-autonomy by the project manager in charge of piloting the MobiliPro approach within the company / organization. That means that it can be used without prior training but that the project manager can receive support from the relay structure to use it.

The MobiliPro spreadsheet is structured in sheets that allow to run through the logical progression of the process, according to the following 4 main steps: 1. Project preparation, 2. Diagnosis, 3. Choice of actions, 4. Monitoring.

- **1. Project preparation**

Through this sheet, the user provides information on the company / organization (location, activity, workforce, contacts), and indicates the main characteristics of the trips made by employees (reasons for travel, modes of transport used ...).

This sheet also makes it possible to define the “perimeter” of the work-related trips taken into account in the diagnosis (the tool can treat all trips related to the activity of the company / the structure, excepting commuting and trips related to specialized transportation activities – logistics for example). Trips that can be taken into account are:

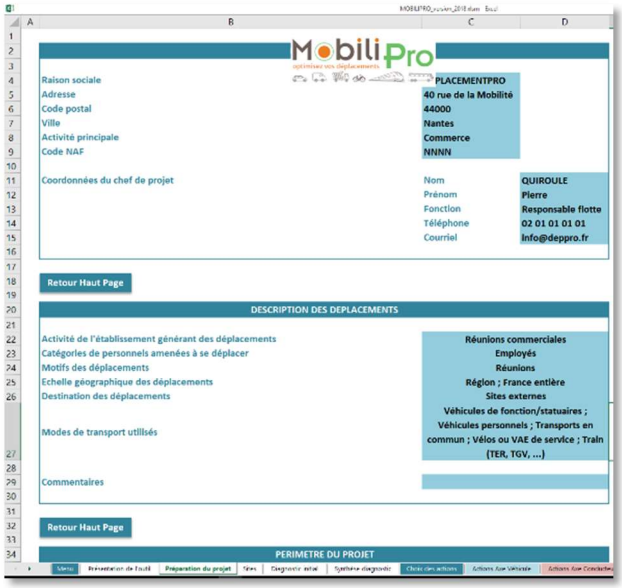

Figure 13: Screen print of the “Project preparation” sheet

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- trips made with fleet vehicles (company cars, service vehicles or pooled vehicles),

- professional trips realized with personal vehicles and source of payment of kilometer allowances,

- medium and long-distance trips made by train or plane, as well as all other business trips using public transport, taxis, rental vehicles ...

- **2. Diagnosis**

This sheet makes it possible to identify and enter the data necessary for the realization of the diagnosis concerning the business trips of the company / structure. The data to be collected and filled in relate to:

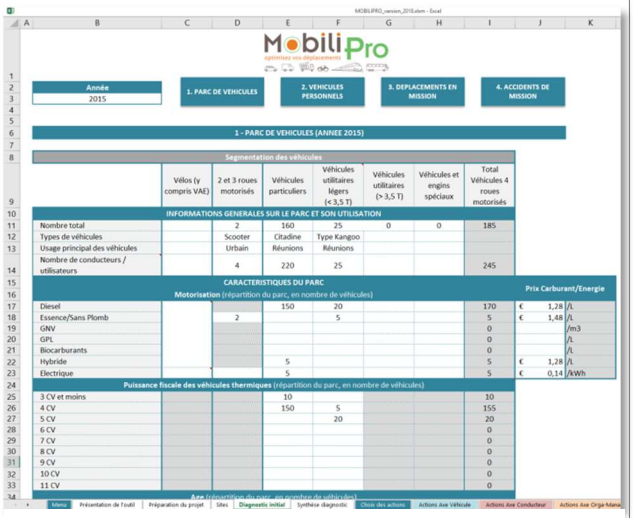

Figure 14: Screen print of the "Diagnosis" sheet

- **the vehicle fleet** of the company / organization and in particular: its precise composition (number of vehicles according to their category [10], their motorization, their tax power, their age, their method of financing or possession [11], their management mode[12], their CO_2 emissions), the use of vehicles (annual distance travelled, number of annual uses) and the associated costs (fuel consumption and expenditure, rent / depreciation, insurance, taxes, maintenance and upkeep ...).

- **personal vehicles used for business trips and associated kilometer allowance**: amount in €, number of persons and types of vehicle concerned…

- **trips made by train, plane or other modes of transportation** (taxi, public transport, rental vehicles): number of trips, distance and associated expenses.

- **car accidents:** number of accidents during business trips (excluding commuting trips), number of days off work ...

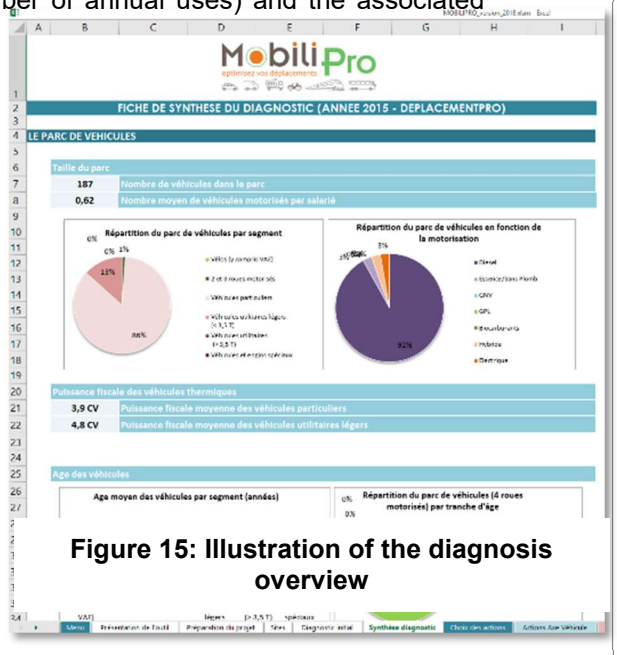

Figure 15: Illustration of the diagnosis overview

Once all the data has been entered, it is possible to edit an overview of the diagnosis. This overview reports the main indicators about composition and use of vehicles, and more broadly about mobility issues in the company with graphs, figures and tables.

[10] 2 or 3 motorized wheels, private vehicle, light commercial vehicle (<3,5 T), commercial vehicle (> 3,5 T), vehicles and special machines.
[11] Purchasing, long-term purchasing, leasing, short-term rental, medium term rental
[12] Vehicle assigned to a person, vehicle assigned to services, vehicle in pool

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These results are intended to be presented and shared within the company, in order to collectively identify the main issues related to business ttips in the organization.

- **3. Choice of actions**

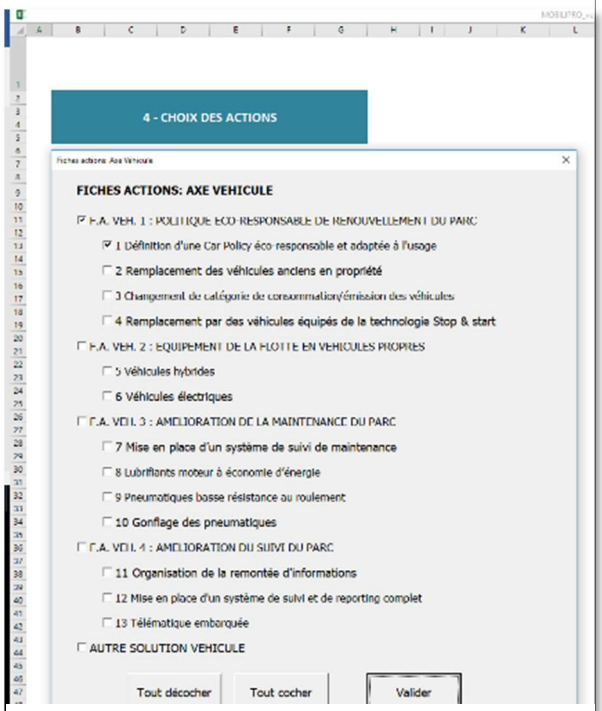

Figure 16: Illustration of actions selection tab

This sheet is designed to help to define an action plan that addresses the main issues identified during the previous diagnostic phase. It offers the possibility to select the most appropriate solutions from a list of about thirty actions, divided into three categories:

- actions concerning vehicles

- actions concerning drivers and behaviors

- actions concerning organization and mobility management

A full description of each of the 32 actions proposed by the tool is available in a catalog of action sheets (see below).

Once the actions have been selected in the spreadsheet, users can use tabs to enter informations to describe them precisely the actions and define the way they will be implemented within the company.

The tool allows to plan actions over a period of up to 3 years (example: for the action "first eco-driving training", it will be necessary to indicate the number of employees that the company plans to form the first year, and the following years).

Once all the actions have been selected and described, the tool allows to edit a summary of the action plan. It provides an estimate of the cost of the measures but also the expected impacts of their implementation, in terms of CO_2 emission and economic savings.

These various documents provide to the project manager clear information, displaying objectives and quantified impacts, on which he can rely to discuss this action plan within his company (with the management teams , the operational teams ...) before having it validated.

- **4. Monitoring**

This last sheet makes it possible to follow the schedule of the implementation of the actions and to follow the achievement of the objectives. This tab allows in particular:

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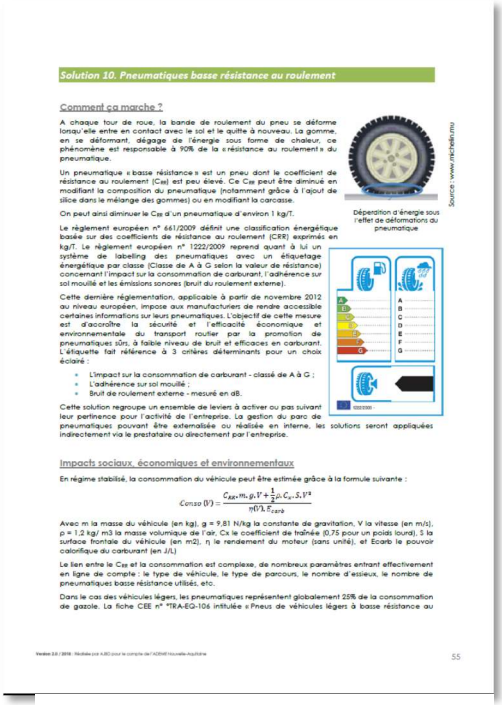
- to update the data relating to the company's business trips and thus analyze the effects of the action plan through the evolution of the main indicators (CO2 emissions, cost per kilometer of the fleet, total budget company trips ...)

- to follow the progress of the implementation of the actions and to follow the possible differences between the results obtained and the targetted objectives.

4.4.2 The action-sheets

The catalog of action sheets that goes with the spreadsheet tool presents in a detailed way the 32 solutions proposed in the MobiliPro approach: it provides a precious help to the project manager for the selection of the most relevant actions to optimize the professional trips within its structure .


Solution 10. Pneumatiques basse résistance au roulement

Comment ça marche ?

A chaque tour de roue, la bande de roulement du pneu se déforme lorsqu'elle entre en contact avec le sol et le quitte à nouveau. La gomme, en se déformant, dégage de l'énergie sous forme de chaleur, ce phénomène est responsable à 90% de la « résistance au roulement » du pneumatique.

Un pneumatique « basse résistance » est un pneu dont le coefficient de résistance au roulement (C_{RR}) est peu élevé. Ce C_{RR} peut être diminué en modifiant la composition du pneumatique (notamment grâce à l'ajout de silice dans le mélange des gommes) ou en modifiant la carcasse.

On peut ainsi diminuer le C_{RR} d'un pneumatique d'environ 1 kg/T.

Le règlement européen n° 661/2009 définit une classification énergétique basée sur des coefficients de résistance au roulement (CRR) exprimés en kg/T. Le règlement européen n° 1222/2009 reprend quant à lui un système de labeling des pneumatiques avec un étiquetage énergétique par classe (Classe de A à G selon la valeur de résistance) concernant l'impact sur la consommation de carburant, l'adhérence sur sol mouillé et les émissions sonores (bruit du roulement externe).

Cette dernière réglementation, applicable à partir de novembre 2012 au niveau européen, impose aux manufacturiers de rendre accessible certaines informations sur leurs pneumatiques. L'objectif de cette mesure est d'accroître la sécurité et l'efficacité économique et environnementale du transport routier par la promotion de pneumatiques sûrs, à faible niveau de bruit et efficaces en carburant. L'étiquette fait référence à 3 critères déterminants pour un choix éclairé :

- L'impact sur la consommation de carburant - classé de A à G ;
- L'adhérence sur sol mouillé ;
- Bruit de roulement externe - mesuré en dB.

Cette solution regroupe un ensemble de leviers à activer ou pas suivant leur pertinence pour l'activité de l'entreprise. La gestion du parc de pneumatiques pouvant être externalisée ou réalisée en interne, les solutions seront appliquées indirectement via le prestataire ou directement par l'entreprise.

Déperdition d'énergie sous l'effet de déformations du pneumatique

Source : www.michelin.mu

Impacts sociaux, économiques et environnementaux

En régime stabilisé, la consommation du véhicule peut être estimée grâce à la formule suivante :

$$Conso\,(V) = \frac{C_{RR}.m.g.V + \frac{1}{2}.\rho.C_x.S.V^3}{\eta(V).F_{carb}}$$

Avec m la masse du véhicule (en kg), g = 9,81 N/kg la constante de gravitation, V la vitesse (en m/s), ρ = 1,2 kg/ m3 la masse volumique de l'air, Cx le coefficient de traînée (0,75 pour un poids lourd), S la surface frontale du véhicule (en m2), η le rendement du moteur (sans unité), et Ecarb le pouvoir calorifique du carburant (en J/L).

Le lien entre le C_{RR} et la consommation est complexe, de nombreux paramètres entrant effectivement en ligne de compte : le type de véhicule, le type de parcours, le nombre d'essieux, le nombre de pneumatiques basse résistance utilisés, etc.

Dans le cas des véhicules légers, les pneumatiques représentent globalement 25% de la consommation de gazole. La fiche CEE n° "TRA-EQ-106 intitulée « Pneus de véhicules légers à basse résistance au

55

Figure 17: Illustration of an action sheet

Each action / solution is declined on a sheet that contains:

- a description of the action and its application scope

- the applicable regulatory context

- a synthetic visualization of the expected gains (CO_2 gains, economic gains) and an estimate of the costs of implementation

- the conditions for implementing and monitoring the action.

The 32 actions proposed are grouped into 3 main categories of interventions:

- **actions concerning vehicles**: these actions relate to the company's vehicles strategies, low-emission vehicles purchasing, improved maintenance and fleet monitoring;

- **actions concerning drivers and behaviors**: these actions concern the promotion of good practices, eco-driving programs and road risk prevention;

- **actions concerning organization and mobility management**: these actions concern the optimization of work-related trips, the pooling of vehicles, the use of alternative modes of transport for individual vehicles, the promotion of remote meetings...

The precise list of the 32 actions, broken down into the 3 categories, is shown in the table below:

Figure 18: List of the 32 solutions proposed in the MobiliPro tool

N°	Fiches actions / solutions
AXE 1. VEHICLES	
FA 1.1	**Eco-responsible fleet renewal policy**
1	Definition of an eco-friendly car-policy

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N°	Fiches actions / solutions
2	Replacement of old vehicles of the corporate fleet
3	Change of category of consumption / emission of the vehicles of the fleet
4	Replacement by veh. equipped with stop & start technology
FA 1.2	**Purchases of "clean" vehicles**
5	Hybrid vehicles
6	Electric vehicles
FA 1.3	**Improvement of fleet maintenance**
7	Implementation of a maintenance monitoring tool
8	Use of energy saving motor lubricants
9	Low resistance tires
10	Inflating tires
FA 1.4	**Improvement of the monitoring of the fleet**
11	Organization of feedback
12	Implementation of a complete monitoring and reporting system
13	Embedded telematics
AXE 2. CONDUCTORS / BEHAVIORS	
FA 2.1	**Promotions good practices**
14	Setting up an eco-responsible mobility policy
15	Setting-up of information and awareness tools
FA 2.2	**Setting-up of an eco-driving program**
16	First eco-driving training
17	Regular trainings in eco-driving
18	Eco-driving performance management system
FA 2.3	**Prevention of road risk**
19	Road Safety Training
AXE 3. ORGANISATION / MANAGEMENT	
FA 3.1	**Trips optimization**
20	Planning software to optimize appointments and tours
21	Navigation and route optimization tools
FA 3.2	Optimization of fleet size and mutualisation of vehicles
22	Decrease of the fleet size by pooling vehicles
23	Setting-up a computer-based fleet management system
24	Use of a car-sharing system as a substitute for corporate vehicles
FA 3.3	**Use of alternative modes to the individual vehicle (and airplane)**
25	Purchasing of a bikes and e-bikes
26	Provision of public transport tickets
27	Train use for medium and long distance travel
28	Development of professional carsharing
FA 3.4	**Promoting of remote meetings**
29	Development of the use of audio-video-web conferences
FA 3.5	**Optimization of all trips related to the activity**
30	Setting up of a mobility management system
31	Development of a company mobility plan

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N°	Fiches actions / solutions
32	Collaboration with logistic operators to optimize deliveries flows

4.5 The deployment of the MobiliPro approach in the Nantes Métropole territory

4.5.1 MobiliPo: a contribution to the implementation of Nantes Métropole's policy for more sustainable mobility

The deployment of the MobilIpro initiative in the Nantes Métropole area is part of the city's mobility strategy, defined in the Urban Mobility Plan (Plan de Déplacements Urbains – PDU, adopted by the metropolitain council on February 16, 2018).

This plan specifies the objectives for the metroplitan area by 2030, in terms of modal share, reduction of emissions in the transport sector, motorization rates, road safety or noise generated by transport. It also defines the city's strategy and the associated action plan. Nantes Métropole is aware that the achievement of the targets for reducing emissions and modal shift (towards public transport and active modes) requires the mobilization of all the actors of the territory (companies, associations, students and schoolchildren ...). That is why Nantes Métropole promotes their committment in different kinds of initiatives, and this is part of its strategy for a more sustainable mobility.

Nantes Métropole has therefore set up a special scheme for companies, to encourage and support them in the implementation of actions promoting more environmentatlly mobility practices toward their employees.

This scheme is called "Mobility Pack". It provides companies with different levels of information and support from Nantes Métropole and business mobility service operators. It is in this context that Nantes Métropole, in partnership with TAN and Ademe, supports companies in the development of company mobility plans through which employers engage in a process of rationalization of motorized trips of their employees.[13]

In concrete terms, the Nantes Métropole “Mobility Pack” offers three levels of support with a growing range of services and resources:

- Pack 1 « Advantage – information: it corresponds to a minimum commitment of the employer; it offers access to generic information and promotion media concerning the mobility services within the agglomeration; Pack 1 also offers discounts for employees and for the employers on public transport subscriptions (TAN network), self-service bicycles (Bicloo), or car-sharing offers.

- **Pack 2 « Events »**: it offers support to employers in organizing events on mobility (on soft modes, public transport, carpooling ...) within the company. Nantes Métropole, but also the TAN, or the operator of self-service bicycles can thus present inside the company site material and information on available offers.

[13] In total, 530 company mobility plans had been signed, representing 120,000 employees (or 1/3 of the city's jobs).

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Pack 2 also includes bike tests (among the various models in the Bicloo range) and trips on the public transport network of the agglomeration.

- **le Pack 3 « Mobility consultancy »:** it is aimed at employers who wish to engage significantly on mobility issues. It provides support to companies in carrying out their mobility plans, through studies and diagnosis (supported by Nantes Métropole) on employee mobility practices. It also includes support for the implementation of action plans for Company Mobility Plans.

In order to strengthen the tools and services of its "Mobility Packs" intended for companies, Nantes Métropole has asked Ademe's regional department to position itself as a relay structure for deploying the MobiliPro tool on Nantes area. This deployment has been integrated into the 2016-2020 partnership protocol signed between Nantes Métropole and Ademe; this protocol details the content of the actions carried out in collaboration over this period.

The experimentation of the MobiliPro device on the Nantes Métropole territory is also one of the actions carried out in Nantes within the framework of the mySMARTlife project.

4.5.2 MobiliPro's governance in Nantes area

To this end, Ademe provided Nantes Métrppole with the tools of the MobiliPro approach, in order to share them with companies that wish to get involved.

Within Nantes Métropole administration, a mobility expert from the Transport department is leading the process.

Nantes Métropole has also recruited the engineering firm Mobhilis (specialized in sustainable mobility issues) in order to provide support in the mobilization of companies.

Mobhilis is responsible for providing technical support to companies involved in the process, for assisting them in the use of tools (especially the MobiliPro spreadsheet) and for advising them on the most appropriate actions for their specific issues. The Ademe Regional Unit is also regularly informed of the deployment of the process on Nantes area.

4.5.3 Operational deployment of the MobiliPro process

Communication on the Mobilipro approach, its deployment in the agglomeration of Nantes and the possibility offered to local companies to engage, began at the end of 2017, and was done via several channels: :

- through a first announcement during a "mobility club" meeting (2/112017) (the Mobility club is the network of employers involved in the "Mobility Pack" process ; it is facilitated by Mobility Department of Nantes Métropole)
- through 2 meetings (27/12/2017 and 29/01/2018) dedicated to companies; during these meetings Nantes Métropole, Ademe and Mobhilis presented the MobiliPro approach, its

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objectives, its tools, and its implementation on Nantes area (support provided by the engineering firm Mobhilis)

- through systematic presentations of the MobiliPro approach during the regular contacts between the Transports Department and companies of the Nantes region
- through information delivered within networks of local economic actors led by the economic development department of Nantes Métropole

Thereby, companies that wish to engage were invited to get in contact with Mobhilis, in order to plan their project (method, schedule), to be accompanied to use diagnostic tools, and to develop their actions plan. This should ultimately lead the to sign a commitment charter, according to the following schedule::

- End of January 2018: meeting to present the MobiliPro approach
- Mid-March 2018: first exchanges with Mobhilis
- March-April 2018: data collection, diagnosis (via the MobiliPro spreadsheet)
- April-May 2018: definition of the action plan
- End of May 2018: signature of the commitment charter by voluntary companies.

4.5.4 First outcome and perspectives

Some 40 organizations attended the different presentation meetings of the MobiliPro approach. About 40% of organizations were private companies and 60% organizations in the public sector (administrations, local authorities, public institutions ...). The representatives of the organizations that attended had quite varied profiles: sustainable development project managers or CSR project managers, administrative and financial managers, fleet managers, human resources managers, etc.

Among these structures, 24 declared that they were potentially interested in the MobiliPro approach, while first having to think more deeply about the opportunity to engage in such a project. Some companies did not express any particular interest. Others, despite their interest, have given up on getting involved because they already had similar procedures in place to optimize the mobility of their employees.

For the moment, only 5 organizations have confirmed their desire to get involved in the process, to carry out a diagnosis of the mobility practices of their employees, to draw up an action plan and to sign an engagement charter.

But to date, only one organization has gone through all this process. However, the diagnosis made in this first company has highlighted some key indicators, such as:

- the annual distance traveled by the 60 vehicles in the fleet is 975,000 km. Nearly 3.5 million km were travelled by employees with their own vehicles (with payment of mileage allowances)

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- the annual distance travelled by private vehicles of the fleet is about 55 00 km / year and the average distance traveled is about 80 km per trip
- vehicles are mainly under long-term leases contracts
- Nearly 1,800 trips are made by train and a hundred by plane
- 16 mission accidents resulted in 268 days off work
- the company's travel budget is 2.1 M € per year, of which 93% is for road transport
- The average cost of use is € 7,020 / year per vehicles in the fleet, ie € 0.35 / km (compared to € 0.48 / km when employee use their vehicles with payment of mileage allowances).
- Nearly 350 t eqCO_2 are emitted every year because of business trips within the company

It is still too early to make a full assessment of the approach as new businesses are still required to commit. However, the Nantes experiment confirmed some lessons already highlighted during previous experiments conducted in the Nouvelle Aquitaine region:

- Employers generally understand the merits of the approach and perceive it favorably. But only few of them decide to commit in the MobiliPro approach and manage to carry it through to completion (drawing up an action plan and signing a charter of commitments).
- the main obstacle identified so far is the time required for the process and in particular the collection of the data needed to establish the diagnosis. Another difficulty arises from the fact that data needed for diagnosis are often collected from various departments within the company (fleet management department, human resources department, billing department, etc.), which complicates the process. This requires a mobilization of several services within the company, which may encourage the hierarchy not to agree to the commitment of the company in such an approach.
- The tools developed are considered complex and difficult to use without prior initiation.
- The MobiliPro spreadsheet suffers from certain malfunctions that hinder its use. On the other hand, certain action sheets seem obsolete or offer solutions that are sometimes not very adapted to the problems encountered in companies.
- Commitment of the companies in the MobiliPro approach over time imposes important efforts from the relay structure (monitoring, support, communication,). This requires the mobilization of significant ressources within the relay structure to ensure the territorial animation necessary for ithe succes of the approach.

In order to facilitate the involvment of a larger number of companies in the MobiliPro approach, and therefore to consider its deployment on a wider scale, several recommendations can already be made:

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- Improve the tools by updating and completing them (action sheets) and develop web and simplified versions (MobiliPro spreadsheet)
- Increase the awareness of the relay structures on their role and on their expected involvement for the success of the proces
- reinforce Ademe's role in coordinating the relay structures involved in the deployment of MobiliPro on their territory, or even set up training sessions for them

In that sense, it is worth pointing out that some of these recommendations have already been implemented, and that others will be implemented very soon. Nantes Métropole, together with other stakeholders contributed to the improvement of the toll.

For example, the MobiliPro spreadsheet has already received IT developments, to solve certain observed dysfunctions (February 2019); on the basis of the first feedback, a simplified version has also been developed (always in spreadsheet format); it offers limited functionalities, but nevertheless makes it possible to establish an initial diagnosis of mobility practices in companies.

In addition, Ademe published (in April 2019) new version of the action-sheets collection: the actions sheets were updated and 4 new action-sheet were written; they relate to:

- hydrogen vehicles
- NGV and bioNGV vehicles
- training to practice cycling in the city
- development of teleworking

Finally, Nantes Métropole, Ademe, Cerema and SYDELA (Energy Association of Loire-Atlantique) are currently considering how to develop a new version of the MobiliPro spreadsheet, via an online application with simplified functionalities to make it easier for businesses to use.

4.6 Evaluation and KPIs

The table below presents indicators that will be used to evaluate the MobiliPro deployment in the Nantes metropolitan area and its impacts.

Indicator KPI	Unit	Data source	Partner responsible	Urban platform integration	Urban platform service	Open data
Number of companies involved in the tool	#	Monitoring	NAN	Yes	No	No
Number of vehicles in the companies fleets	#	Monitoring	NAN	Yes	No	No

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Annual distance travelled	Km	Monitoring	NAN	Yes	No	No
Quantity of fuel consumed by the vehicles fleets per type of fuel and per year	litre	Monitoring	NAN	Yes	No	No
Average CO_2 emissions / 100 km	g eq CO_2 / 100 km	Monitoring	NAN	Yes	No	No
Annual CO2 emissions due to vehicles fleets (and evolution from one year to another)	T eq CO_2	Monitoring	NAN	Yes	No	No
EV penetration rate	%	Monitoring	NAN	Yes	No	No

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5. Conclusion

In cities such as Nantes, transport is the main sector of greenhouse gas emissions (40% of emissions). Beyond the development of public transport or the modal shift towards active modes (cycling and walking), a significant reduction in greenhouse gas emissions from transport more broadly implies actions targeting all sources of emissions.

To this end, initiatives undertaken by Nantes Métropole to act on emissions due to urban logistics or emissions from corporate vehicle fleets appear to be entirely appropriate.

The two actions presented in this report, must be considered as experiments, aiming in particular to imagine potential solutions that could be deployed at a larger scale.

The call for projects for sustainable urban logistics (FLUX project) has benefited from a real interest from logistics stakeholders at the agglomeration level, insofar as 32 projects have been submitted. The diversity of the proposed solutions (optimization of logistics chains, use of less emission delivery vehicles, optimization of storage premises in the city center, development of river logistics, etc.) also shows that the levers of actions are potentially numerous. It remains now for these experiments to prove their relevance, through their operational implementation and then through the monitoring of their impacts. The question will also be asked whether these experiments can be duplicated to meet the logistical challenges of an agglomeration of more than 600,000 inhabitants.

Regarding action for a more sustainable management of company vehicle fleets, the MobiliPro experiment has made it possible to remind the weight of companies vehicles in the cars stock in urban agglomerations like Nantes (20%). This has shed some light on a potentially important lever to act on the GHG emissions of the transport sector. However, the experiment has confirmed the difficulty of mobilizing companies on the question of mobility, especially when that deals with their internal functioning. It has also confirmed that encouraging companies to change their internal practices requires strong support and the use of extremely simple tools.

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