

WP 4: Stakeholder interviews

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by

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Knowledge for business

Content

- I. General Introduction..... 4
- II. Barriers and Attempts to overcome them 5
- 1. Area of Domestic Energy Use..... 5
 - 1.1. Installation of photovoltaic solar panels (Purchase) 5
 - 1.1.1. Barriers..... 5
 - 1.1.2. Attempts to overcome the Barriers..... 6
 - 1.1.3. Possibilities for future actions 6
 - 1.2. Buying Green Power (Purchase of renewable energy)..... 7
 - 1.2.1. Barriers..... 7
 - 1.2.2. Attempts to overcome the Barriers..... 8
 - 1.2.3. Possibilities for future actions 9
 - 1.3. Construction of low Energy Houses 9
 - 1.3.1. Barriers..... 9
 - 1.3.2. Attempts to overcome the Barriers..... 11
 - 1.3.3. Possibilities for future actions 11
 - 1.4. Energy efficient Refurbishment..... 12
 - 1.4.1. Barriers..... 12
 - 1.4.2. Attempts to overcome the Barriers..... 13
 - 1.4.3. Possibilities for future actions 13
 - 1.5. Energy efficient Heating Behavior (Use) 14
 - 1.5.1. Barriers..... 14
 - 1.5.2. Attempts to overcome the Barriers..... 15
 - 1.5.3. Possibilities for future actions 16
 - 1.6. Summary of Area of Domestic Energy Use..... 16
- 2. Area of Household Appliances 17
 - 2.1 Energy Efficient Appliances (Purchase) 17
 - 2.1.1 Barriers..... 17
 - 2.1.2 Attempts to overcome barriers..... 19
 - 2.1.3 Possibilities for future actions 20
 - 2.2 Cooking and baking practices (Use) 21
 - 2.2.1 Barriers..... 21
 - 2.2.2 Attempts to overcome barriers..... 23

2.2.3	Possibilities for future actions	24
2.3	Summary of Area of Household Appliances	24
3.	Mobility field	26
3.1.	Public transport (Use)	26
3.1.1.	Barriers	26
3.1.2.	Attempts to overcome the barriers.....	28
3.1.3.	Possibilities for future actions	28
3.2.	Car pooling (Use).....	29
3.2.1.	Barriers.....	29
3.2.2.	Attempts to overcome the barriers.....	30
3.2.3.	Possibilities for future actions	31
3.3.	Car sharing (Use)	31
3.3.1.	Barriers	31
3.3.2.	Attempts to overcome the barriers.....	32
3.3.3.	Possibilities for future actions	32
3.4.	Hybrid vehicles (purchase)	32
3.4.1.	Barriers	32
3.4.2.	Attempts to overcome the barriers.....	33
3.4.3.	Possibilities for future actions	34
3.5.	Summary regarding the field of mobility	34
III.	Stakeholder Dialogue	35
1.	Varying stakeholders' point of view	35
2.	Actual Stakeholder Dialogue Initiatives	36
3.	Ideas for Stakeholder Dialogue in the Future	38
IV.	Policy and Recommendations (global view).....	39
V.	General Conclusion	41
	Annexe : List of the interviewees.....	43

I. GENERAL INTRODUCTION

This part of the research contributes to identify the relevance and strengths of various barriers and drivers for energy behavior changes among end consumers and households. The aim is also to discuss with stakeholders how activities from political authorities, economic sectors and NGOs can overcome these barriers. The barriers are analyzed in the 3 areas of domestic energy use, household appliances and private mobility. To understand the barriers and drivers related to user behaviour regarding these themes, 13 qualitative interviews were held with French stakeholders chosen among political (government, local communities), economic and associative players (see the detailed list in the annex).

	Political players / Technical experts	Economic players	NGOs
Domestic energy use			
Heating	ADEME (French Public Energy Management and Environment Agency)		
Low-energy houses		LOGICONFORT (Green Home Builder)	
Photovoltaic panels	ENSAPVS (National High School of Architecture)		
Green energy		ENERCOOP (Energy cooperative)	
Refurbishment			Les Amis de la Terre (Environmental NGO)
Household Appliances			
Energy efficient Appliances (purchase)		- GIFAM (Appliances manufacturers federation) - BOSCH-SIEMENS (Appliances manufacturer)	
Cooking and baking			CLCV (Consumer NGO)
Mobility			
Public transport	- City of Paris (local) - Ministry of Ecology, Energy, Sustainable Development ... (national)		
Car pooling		GREEN COVE (car pooling company)	
Car sharing		OKIGO (car sharing company)	
Hybrid vehicles			AVERE (NGO for the HEV development)

II. BARRIERS AND ATTEMPTS TO OVERCOME THEM

1. Area of Domestic Energy Use

In this area, 5 stakeholders were interviewed on 5 themes, in December of 2008 :

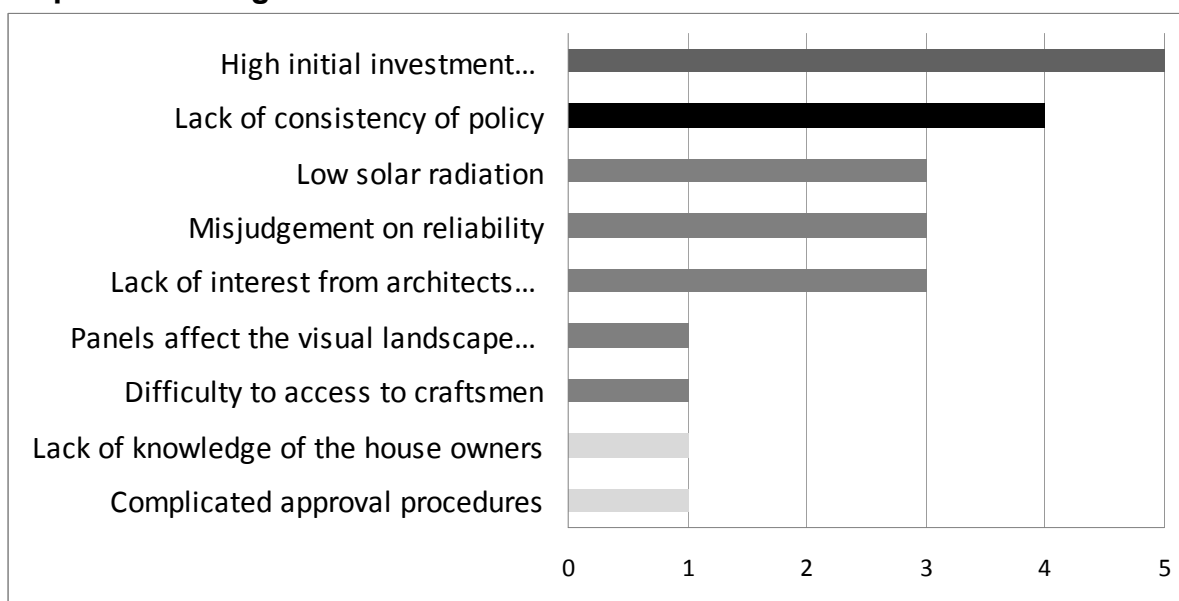
- Two economic stakeholders: One involved in the construction of low-consumption housing, the **Chairman of LOGICONFOR**, green home builder, and the other involved in the purchase and consumption of green energy, the **sales representative at the cooperative ENERCOOP**, the only 100% renewable energy supplier in France at the present time.
- A technical expert on the theme of photovoltaic panels, **Engineer and Lecturer at the National School of Architecture (Paris-Val de Seine)**.
- An institutional stakeholder, for the theme of heating practices, a **Sociologist from the ADEME, the French Energy Management and Environmental Agency**.
- an NGO for the theme of renovation/insulation of housing, the **Head of Mission at Friends of the Earth**, a not-for-profit organisation working for environmental protection.

1.1. Installation of photovoltaic solar panels (Purchase)

1.1.1. Barriers

Suggested Barriers to photovoltaic panels installation (from very low level =1 to very high level = 5)	Technical expert
High initial investment or low financial support	5
Lack of consistency in the political framework / lack of incentive regulation	4
Low solar radiation	3
Misjudgement of house owners on panels reliability	3
Lack of interest from architects or installers	3
Panels affect the visual landscape and heritage	1
House owners' difficulty to access to appropriate craftsmen and companies	1
Lack of knowledge of the house owners	1
Complicated approval procedures (protected buildings)	1

Graphical ranking of barriers



The main barrier is the initial financial outlay for installing photovoltaic panels. The price (€15,000 for a satisfactory yield) is still far too much for home-owners when compared to the time it takes to recover the costs and the potential savings over the long-term. On top of this, according to the interviewee, the warranty on photovoltaic panels is not long enough, as it is shorter than the time it takes to recoup the costs.

“This electricity is sold back to a company responsible for distribution and subtransmission, i.e. EDF in France most of the time. EDF guarantees a purchase price of €0.22 per kilowatt-hour. On the basis of 1,000kWh per year for a kilowatt-peak at €0.22, that makes €220 while it cost you €5,000. You can see how many years it will take to recoup the costs. It takes 25 years to recover and the panels are guaranteed 20-25 years. After that, they are no longer guaranteed.” (Technical expert at the National High School of Architecture)

In addition to these financial barriers, there are psychological barriers concerning the poor reputation of panels. Generally, this poor reputation comes on top of uncertainty as to the long-term future of the panels, their durability, uncertainty which is indeed strengthened by the insufficiently long guarantee and the contracts taken out with EDF.

“What will happen at the end of the 20 years?” The photovoltaic installation will be at the end of its lifespan, the panels will need changing. So re-investment ... but what about the contract with EDF? What am I going to do, as an individual generator, with this electricity generated by the photovoltaic panels? What do I do with it? Who do I sell it to? Who will buy it from me? This will be a problem in the future...” (Technical expert at the National High School of Architecture)

Generally, financial barriers are related to psychological barriers. For example, the time taken to recover the cost of the panels is linked to the purchase and installation price, and is influenced by the type of contracts with EDF (electricity purchase price) and the duration of the warranty. It is therefore difficult to classify barriers in a more formal manner. **The primary one does however appear to be financial.**

The stakeholders identified by the interviewee, **the key players** are the **installers** and **EDF, who purchases electricity of photovoltaic origin from home-owners, or even the owner of the network (local communities)**. However, in his opinion, neither of them is truly responsible for the barriers.

1.1.2. Attempts to overcome the Barriers

Among the attempts to encourage the purchase of photovoltaic solar panels, the **feed-in tariff has recently been doubled** (from €0.11 to €0.22/kWh) Another attempt, made by installers, has aimed at restoring the confidence of potential buyers: **an increase in the duration of the panels' warranty**. As regards the public policies introduced, there is a **40% tax reduction for buyers of photovoltaic panels**, which only concerns a certain category of the population – the most affluent – and does not in any way encourage the whole domestic customers to invest in panels. This may indeed, in the long-term, encourage social inequality between those who generate electricity and those who do not.

“The 40% aid is effective for a certain category of people, but not for others... So, overall, it's pretty mediocre.” (Technical expert at the National High School of Architecture)

However, **the end of EDF's monopoly on electricity generation** (and not distribution and network management – the interviewee insists on this point) has, in his opinion, been a very good thing.

1.1.3. Possibilities for future actions

For the future, the barriers on the installation of photovoltaic panels being mainly financial and psychological in nature, it will be useful to take action with regard to these two aspects. As for the financial

barrier, rather than the current tax reductions, and for the reasons listed above, the interviewee would prefer a **guarantee and a reduction in purchase prices**, with a “refund” for less well-off households who invest in panels.

“The most effective measure would be to allow for a fall in the price of these photovoltaic panels. What seems more reasonable to me is to actually fund the price of the panel.” (Technical expert at the National High School of Architecture)

He also refers to a possible end to the tax reduction in order to encourage a **rise in the price per kWh paid by EDF to households who generate electricity**.

As regards the psychological barriers, the interviewee insists several times on **the necessity of information and explanations**. This should be aimed at professionals (architects, installers, craftsmen, etc.) and at households. More generally, the **media and television should be at the forefront, playing a more educational role**. He also evokes the possibility of making it **compulsory** to install panels on new buildings.

Generally, to remove the various barriers, the interviewee would envisage a series of **more egalitarian measures** to overcome the perverse effects of the existing system which is only aimed at a certain category of the population, with no truly independent information. This is the only way, in his opinion, to encourage increased investment in photovoltaic panels and for their installation to become more widespread.

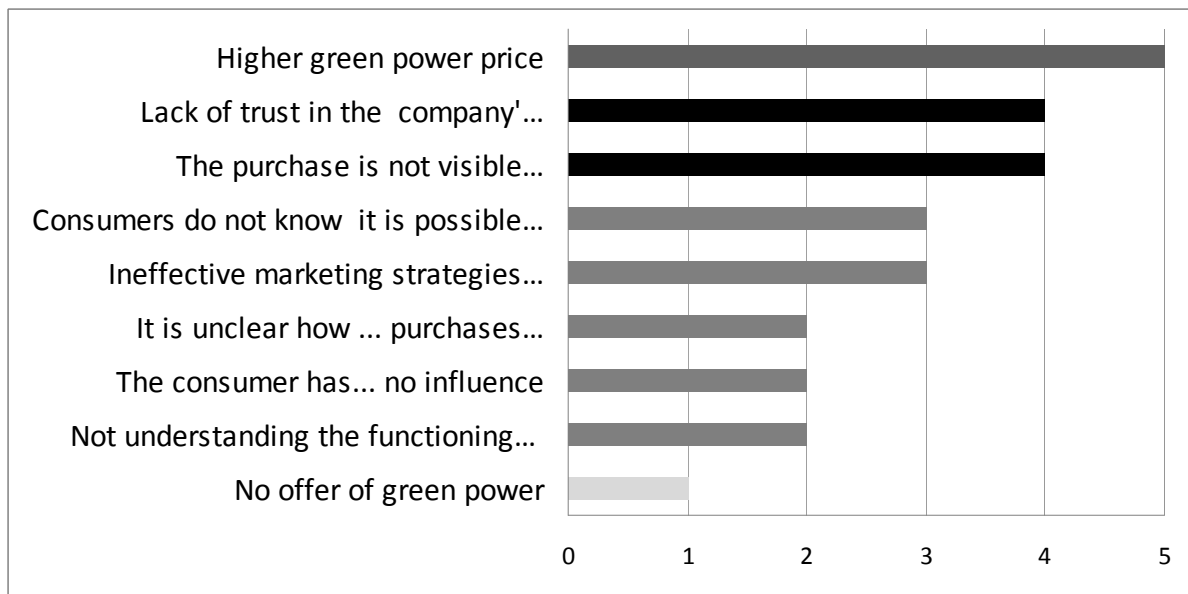
1.2. Buying Green Power (Purchase of renewable energy)

1.2.1. Barriers

Suggested Barriers for purchasing green power
(from very low level =1 to very high level = 5)

	ENERCOOP (Economic actor)
Higher green power price	5
The purchase of green power is not visible (by neighbourhood)	4
Lack of trust in the power company's declaration (concerning energy sources)	4
Ineffective green power marketing strategies (supply)	3
Consumers do not know that it is possible to buy green power	3
Not understanding the functioning of green power market	2
The consumer has the impression that he himself doesn't have any influence	2
It is unclear how green power purchases promote green power (by an increase of production capacity or environmental protection measures)	2
No offer of green power	1

Graphical ranking of barriers



As above, the interviewee noted that the two major barriers to the purchase and consumption of green energy could be summed up in two ways: **the price, which is too high, and the fear of change.**

The first constraint is, according to him, the price of renewable energy, which is currently 30% higher than the price of traditional energy. The reason is that the prices of the offer, particularly at ENERCOOP, are directly linked to the production cost, which is not the case for the rest of the market. Thus, only the better-off and the more motivated (the “militant”) categories make the move to subscribe to an ENERCOOP contract, for example.

The “fear of change” only comes second.

“There needs to be a desire to make the move, to leave the long-standing operator, who has been there for 50 years, and up until recently, we never actually asked “Where does electricity come from ? What is a producer? What is a supplier? What is the consumer?” They are not the same thing. And then say “Well, if I change supplier, what changes?” [...] But people don’t know that. It generates fear: “And what if there is a power cut?” [...] And that is also therefore a constraint” (Sale representative in a green energy cooperative)

In the interviewee’s opinion, the **stakeholder** with the greatest influence on the electricity market is the **“nuclear lobby”**. Indirectly, the **State** also influences change or non-change, since it regulates prices and makes decisions. But the **consumers’** own logic is also important:

“Firstly, you need to actually have the idea of changing supplier! You need to know that it is possible to change supplier, to get informed and therefore, to break down the barrier of the fear of change in general, and more particularly the fear of changing energy supplier. Then, once informed and once these barriers have been removed, you realise that changing supplier, simply means changing the basket you put your bill in! [...] Secondly there is the price. Obviously, it’s the logical order, the logical procedure: [...] “I can change”, “I’m not afraid of changing”, “There are the prices” and then “I’m prepared to overcome the price aspect”. (Sale representative in a green energy cooperative)

1.2.2. Attempts to overcome the Barriers

The interviewee believes that the leading measure is **the requirement for EDF to buy renewable energy at a high rate**. This measure, which he sees as positive, is however insufficient. This is also true of the **tax reductions for renewable energies**, which he believes are a good idea but also insufficient.

“Consumers generally think that there are not enough tax reductions for thermal renovation ... In fact for everything related to energy savings and renewable energies ... [If people think there are not enough tax reduc-

tions] *It is that there is not enough accessible information.*” (Sale representative in a green energy cooperative)

There is also the issue of the current reform of the CSPE¹, the tax on renewable energies. Until now, this benefited EDF but will now be open to the other suppliers, which, according to the interviewee, aims at overcoming unfair competition.

1.2.3. Possibilities for future actions

For the future, he therefore suggests more significant **tax benefits**: the purchase of renewable energies must be truly beneficial for households if it is to become more widespread.

Among **the key players** involved in increasing such consumption, it is first and foremost down to **politicians to reorganise the “market structures”**, in particular by extending the advantages of the traditional supplier to the benefit of all the suppliers. But **people** also have to develop their own awareness of the value of using renewable energies.

“It is consumers who actually take action ... but these consumers must want to act. They mustn’t be numbed by a dream-like image. They must want change... And change doesn’t happen overnight” (Sale representative in a green energy cooperative)

To help consumers become more active, **explanation is required**, for example explaining that it is not necessary to wait to move house before changing contract or supplier.

Here the focus must be on making renewable energy more widespread, through **more significant, more generalised tax measures and fairer competition between the different suppliers**. Fair treatment for industrial players goes hand in hand with the development of renewable energies. **But the private individual also plays a key role: he must become more aware and take action for the general interest.**

1.3. Construction of low Energy Houses

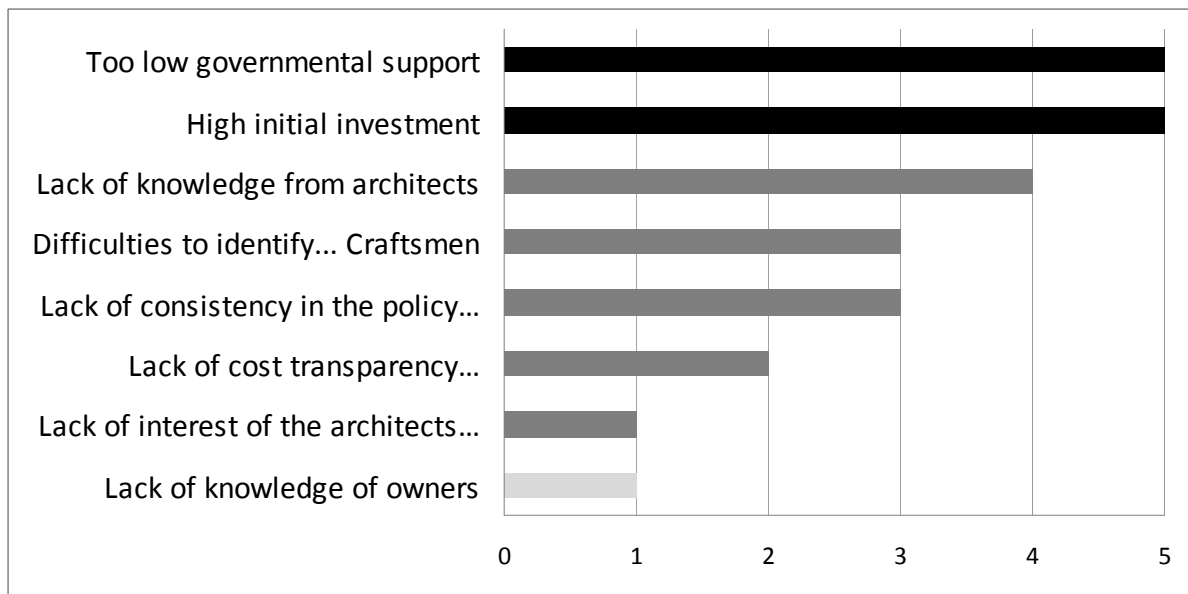
1.3.1. Barriers

Suggested Barriers to the construction of low-energy housing
(from very low level =1 to very high level = 5)

	LOGICONFOR Economic actor
High initial investment	5
Too low governmental support	5
Lack of knowledge from architects and installers	4
Lack of consistency in the policy framework, lack of incentive regulation	3
Difficulties to identify or accede to competent craftsmen	3
Lack of cost transparency (operating costs are rarely calculated)	2
Lack of knowledge of the house owners	1
Lack of interest of the architects and installers	1

Graphical ranking of barriers

¹ CSPE (for Contribution au service public de l’énergie = Contribution to the public service of energy) is a tax mechanism including the obligation for the suppliers to buy renewable energy that consumers produce at a certain price.



The interviewee, Chairman of a green home construction company, lists a series of barriers which may be grouped in two main categories: **the economic barriers**, the result of “industrial lobbying”, and the **technical barriers**. The first are stronger since they are more difficult to solve than the second.

“I could easily find solutions for the technical criteria; it’s a question of money.” (Chairman of Green Home Building Company)

Among the **economic barriers**, firstly there is the problem of extra construction costs for low-consumption homes.

“Selling a passive house, there is an obvious problem of additional costs: building a passive house today costs an extra 20, 25 or 30% in building work. And for the moment, these extra costs are not recovered.” (Chairman of Green Home Building Company)

Next, there is the price of materials, which is too high, and the system used to calculate living space, which is disadvantageous for green homes.

As regards the **technical barriers**, the interviewee referred to:

- the lack of skills among architects and tradesmen, mainly due to the lack of training;
- the number of approvals required for the CSTB (the national technical scientific and building centre);
- more generally, the fact that France is lagging from a technical point of view.

“There are still numerous materials and systems that cannot be found in France, which we have to go and fetch from Germany or Austria for the moment...” (Chairman of Green Home Building Company)

The key players influencing the construction of passive houses can also be divided into two categories: firstly, **the State** which, according to the interviewee, does not grant enough aid to this area of activity, and the **tradesmen** themselves, who will have no choice but to adapt if the market develops.

“So far, all the projects we have worked on have been subsidised, and where there were no subsidies, we didn’t take on the project. That’s how it is – people cannot pay more. [...] So it’s true that the grants do play a major part at the current time! I mean, seen from here, in Germany a passive house costs 5% more than a traditional home - because they’ve developed the experience. But here, that is just not the case. And therefore, we can’t do it without the grants. So it is a barrier ... It’s “the” barrier.” (Chairman of Green Home Building Company)

Once again, the two types of barrier are linked. Eliminating financial barriers should make it possible to eliminate technical barriers. The technical problems (France’s late arrival in the field, the lack of training for professionals) are not insurmountable, but solving them will not be enough to increase the construction of passive houses.

1.3.2. Attempts to overcome the Barriers

Several **measures** are mentioned by the interviewee. The first is **tax incentives from the government**, deemed insufficient and above all, diverted from their original purpose by firms who use them as an excuse to increase their prices. Likewise, the measure to **increase the floor area ratios** for ecological homes has been rejected by local councils and is therefore a failure. Only the **new measures from the ADEME** appear to be a real step forward, since the agency now puts greater focus on the building's overall energy performance than on renewable energies.

Another initiative comes from the local authorities - the "**calls for regional projects**", based on the performance results and overall vision of the building industry, and these deserve to become more widespread.

"I have a very positive opinion, since this time, we are aiming at the right target, i.e. the building's performance; we are not talking about renewable energy. And the subsidies, what can I say, they contribute to the overall cost of the whole project. This has enabled us to work on real projects, which we couldn't have done otherwise. But there is a slight drawback – for the moment, this concerns a project and a project tender, they are one-off situations" (Chairman of Green Home Building Company)

1.3.3. Possibilities for future actions

For the future, the suggested improvements mainly concern **removing the financial constraints**: enlarging the population affected by the tax incentives and setting up, for example, a zero-rate loan in spite of the reluctance, directly subsidising private individuals so that they benefit, instead of benefiting companies and builders.

"If we want this to become more widespread, there is no choice: the government has to set up incentives or things like that." (Chairman of Green Home Building Company)

Another recommended action is better **training** for architects and tradesmen, to improve their skills in the construction of green homes. More generally, this concerns **promoting the technical sectors and generating interest in the professions related to construction and ecology**.

Globally, to remove the mainly economic and technical barriers, it is recommended to:

- fight the industrial lobbies (construction and materials) within the organisations that issue approval such as the CSTB (An agency which promotes well-being and safety in buildings for building sector companies),
- directly subsidies for private individuals,
- fight to overcome the lack of skills among architects by providing better training,
- use the overall energetic performances of the house in order to target the evaluations and granting financial assistance.

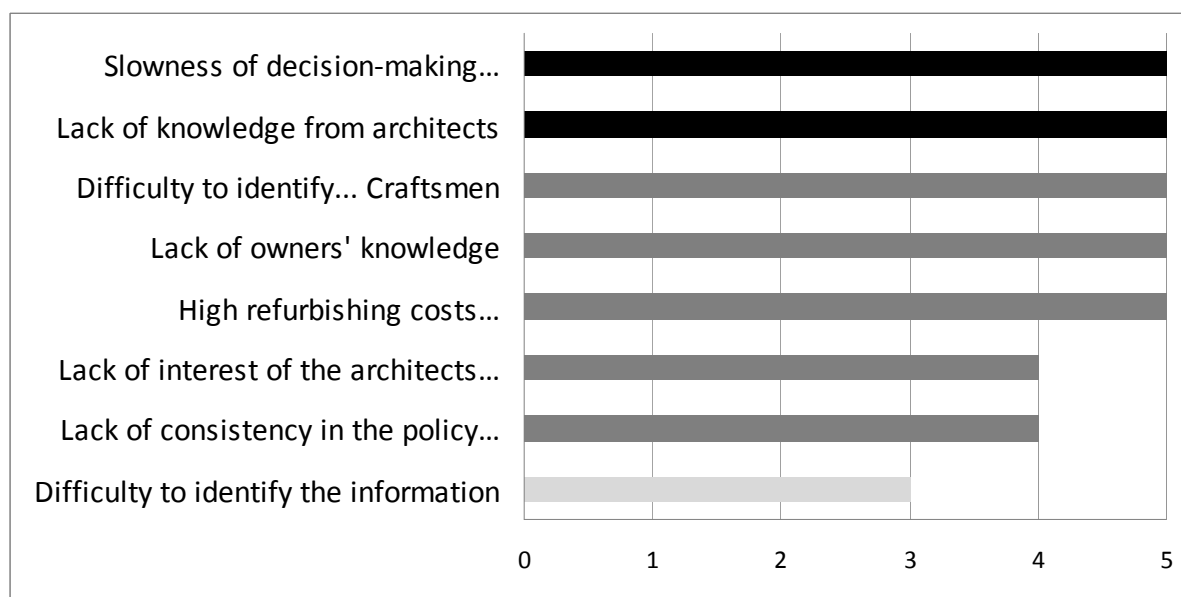
The key players are therefore the law-makers and politicians.

1.4. Energy efficient Refurbishment

1.4.1. Barriers

Suggested Barriers to refurbishment (from very low level =1 to very high level = 5)	NGO
High refurbishing costs / low governmental financial support for refurbishment	5
Lack of knowledge from the house owners	5
Difficulty to identify or reach competent craftsmen	5
Lack of knowledge from architects or installers	5
Slowness of joint ownership decision-making processes	5
Lack of consistency in the policy framework, lack of incentive regulations	4
Lack of interest of the architects or installers	4
Difficulty for house owners to identify the right information	3
Lack of cost transparency (operating costs are rarely calculated)	2

Graphical ranking of barriers



The person we met, a representative from a NGO and specialist on these issues, mentioned several barriers for home-owners when it comes to carrying out energy efficient renovation and heat insulation work.

Firstly **the lack of information concerning energy savings**. This lack of information explains the incredibility of households before the energy savings to be made with this work.

"I think that, at the present time, most people do not make the move because they are not informed about the energy savings they could make or about the investment that they could make." (Head of Mission at 'Friends of the Earth', Environmental NGO)

Next, and only secondly, there is the **economic barrier** which is mainly a preconceived idea and is also due to a lack of information.

The third barrier is, according to the interviewee, due to the **cultural models of the home-owners**, which are difficult to change.

"This brings us back to the incredibility surrounding ecological solutions... Or the fact that in certain backgrounds, people don't like spending ... and insulation may appear superfluous, compared to the small savings it might generate, but they are not as small as that ... But there is no culture of investment, of dynamics. Therefore, they prefer to save as much as possible" (Head of Mission at 'Friends of the Earth', Environmental NGO)

Town planning rules can also prove to be a hindrance. During "major" renovations, the local town planning notices or other constraints can put a brake on things. Finally, there is a secondary constraint with the **difficulty of getting access to tradesmen**, which is also largely due to a lack of information.

"Access to tradesmen is also a problem of access to information. Information: this means a lot of things. It can be awareness-raising, but also simply very specific information on how to find a tradesman." (Head of Mission at 'Friends of the Earth', Environmental NGO)

The key players concerned by these barriers are mainly the "**family tradesmen**" who are not sufficiently trained and who often don't have the knowledge, but also the **family network** who conveys the incredibility about energy savings. The **local authorities** can also be key players when town planning is a barrier.

Finally, **the barriers are mainly social and cultural**. Even the economic barriers and those due to a lack of information are related to pre-conceived ideas (poor knowledge or incredibility as to the energy savings and the feeling that one lacks information).

1.4.2. Attempts to overcome the Barriers

Among the **measures** designed to overcome these barriers, the interviewee mentioned the **tax credits** set up to counter the economic issues. The amount of these tax credits is raising and they target more eco-efficient products.

Next, there are the "**Energy Info Rooms**"² set up by the ADEME to try and overcome the lack of information available to residents.

Finally, regarding the **training of tradesmen and professionals**, there is a lack of commitment from the State. Only the tradesmen's federations such as the FFB (*the French building federation*) and the CAPED are starting to take action as regards training, but this remains too occasional (a "powdering" effect, i.e. a superficial way to act).

Generally, the "Grenelle" Environmental Round Table³, with regard to renovation/heat insulation, has so far resulted in **poor regulations concerning standards for renovation** (renovation of homes at 150kWh compared with the 80kWh hoped for).

"Well, for the moment, there's nothing. So, in the near future, err... no, nothing. So now, if the Grenelle law [see footnote explaining Grenelle Round Table] does what it says it will, there will be something, but it still won't be ideal either. It is not what we need to reach factor 4. It is not what will help us to reach the objectives for true energy savings. [...] It is not a half measure; it is a measure going in the wrong direction" (Head of Mission at 'Friends of the Earth', Environmental NGO)

1.4.3. Possibilities for future actions

For the future, there should firstly be a **doubling of the Energy Info Rooms budget** and **improved training for their advisors**. The other measures to be taken to encourage home-owners to carry out heat-related renovations in their homes are in the Friends of the Earth programme itself: a **law setting more drastic standards for renovation in terms of energy consumption** for accommodation dating

² The „Energy Info rooms“ are part of a network developed by ADEME (the French Environment and Energy Management Agency) and by local authorities. They are local spaces where households can bring information and advices on energy efficiency and climate change: energy savings, investments (insulation, refurbishment, etc.) and taxes available. There are about 160 "Energy Info Rooms" in France.

³ The „Grenelle de l'Environnement“ is a government initiative who consisted to invite environmental stakeholders to have an "Environmental Round Table", in 2007, in France. There were 6 groups who defined guidelines and objectives for operational programmes. One kind of outputs is law projects.

from before 1975, and even more drastic standards in new buildings. This law should firstly act as an incentive, as is the case at present (tax credit or zero-rate loan), then should make heat renovations mandatory for home-owners whenever works are carried out or at the time of any real estate transaction.

Finally, concerning the windows of **opportunity**, the interviewee is in favour of a requirement to insulate and carry out thermal renovation work during **decorative or extension projects**, but also **when property is acquired, or during works in joint ownership complexes or façade renovation**.

Other than the **State, the stakeholders** mainly involved remain **tradesmen**, provided that they have minimum training. They would therefore be able to inform **households** and to provide communication.

"I think we can develop a major lever there." (Head of Mission at 'Friends of the Earth', Environmental NGO)

However **aid** must also be developed **in line with** the performance of materials, in priority going to the most effective products. Direct subsidies should be given greater priority than tax incentives. The most drastic standards and legal constraints sought (requirement to carry out work) are not enough if the targeted products are not the right ones.

1.5. Energy efficient Heating Behavior (Use)

The questions were focused on use phase, but interviewees answered also concerning purchase. So we let this subject, which is interesting to analyze: for appliances (see below) and heating systems, some experts think that the point is to purchase efficient products, rather than to use them efficiently.

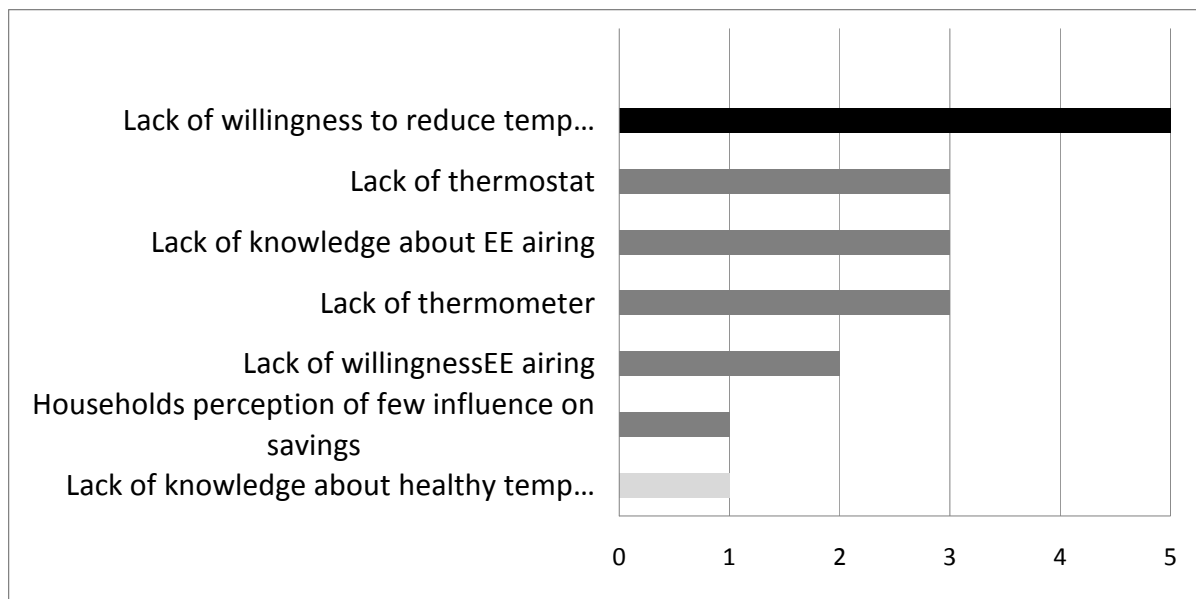
1.5.1. Barriers

Suggested Barriers to more energy efficient heating behaviours

(from very low level =1 to very high level = 5)

	ADEME Political actor (national)
Lack of willingness of inhabitants to reduce temperature	5
Lack of thermometer	3
Lack of knowledge of inhabitants about energy efficient airing	3
Lack of thermostat (or temperature regulation not possible)	3
Lack of willingness of inhabitants to energy efficient airing	2
Lack of knowledge of inhabitants about healthy temperature	1
Households perception that heating temperature has few influence on savings	1

Graphical ranking of barriers



The person we met is a sociologist specialising in the question of heating practices in homes. She listed a number of barriers to the adoption of new, less energy-consuming practices. The biggest barrier is without a doubt **"money"** (including the "household's ability to invest" and the high cost of materials).

Then there are the poor skills of **tradesmen**, due to the division between the various building trades and therefore, a lack of global vision.

"I would say that the two main locks are money – a household's ability to invest – and tradesmen's skills,"
(Sociologist at the French Environment and Energy Management Agency)

There is also an obstacle in the households themselves and their **lack of knowledge**.

"The brake is people's knowledge, because in general people don't know: they don't necessarily make the link with energy consumption levels. Doing work on the house is inconvenient, they haven't got the money for it." (Sociologist at the French Environment and Energy Management Agency)

Finally, in France we are feeling the effects of **the legacy of a system that failed to encourage responsible behaviour**, in which households were merely passive consumers: they were not used to ask questions concerning energy, because of the monopoly and the low price of energy.

The key players here are therefore the **households** themselves, where it is difficult to change habits and behaviour, and the **tradesmen and architects**, who have insufficient training in heating and thermal insulation practices and **bankers and estate agents** who "have not always integrated the issues of energy saving". But it is above all **"society"** (in the sense of social standards) itself which is important in the interviewee's opinion, in that it dictates standards and fashions, where ecology and energy savings are given an increasingly important role. In spite of this, habits and practices are hard to change and are only evolving slowly. For example, the regulation standards for comfort in terms of heating (19°C) are not respected, in the dwellings. The standards set have very little impact - indeed none at all - on practices. Habits regarding comfort are stronger.

1.5.2. Attempts to overcome the Barriers

Among the **current measures and policies** aimed at encouraging a change of behaviour in terms of heating and thus to save energy, the interviewee referred to two main measures: **tax reductions** (tax credit and zero-rate loans for refurbishment), which she views positively but which only benefit those who pay tax, but also the **"Energy Info Rooms"** designed to overcome the lack of information available to the public and to offer advice.

The **information campaigns**, however, such as those run by the ADEME, have had little effect on practices.

On the other hand, **thermal regulations for new constructions and the label system** are measures which do work and which would be worth extending.

"I think that the labels are quite effective, because they encourage manufacturers to come up with quality goods. It does not necessarily have the greatest impact from the consumer's point of view. But like the builder, he wants the label, he will look for quality. It's often negotiated with them anyway. [...] I think the labels are important - they help to raise standards in the market." (Sociologist at the French Environment and Energy Management Agency)

1.5.3. Possibilities for future actions

Concerning the measures to be taken **in the future**, the main thing is what the interviewee calls the **"regulatory constraint"**, which means going beyond tax incentives and making things compulsory by law (insulation work or energy performance audits).

"That was negotiated at the Grenelle environment round table but it didn't come about. In my opinion, we've lost 10 years. We could have set 2015, we could have set a deadline. So there - we need a carrot, but if there is no stick, unfortunately we don't move as quickly. And there would have been grants too." (Sociologist at the French Environment and Energy Management Agency)

This obligation must also make the most of **opportunities** for a change in situation, when people **move house or acquire property. Households should be required to carry out an energy performance audit at that time.**

Overall, this means using the "Energy Info Rooms" to inform home-owners and the energy performance audits when buying property and moving house, while applying stricter regulations and requirements, rather than tax incentives which only benefit certain people.

1.6. Summary of Area of Domestic Energy Use

The financial and information aspects are two weaknesses when it comes to changing behaviour, practices and undertaking work in the field of domestic energy.

The price and investment barrier is undoubtedly what ranks highest, according to our interviewees. It concerns the price of renewable energy, of works or of purchasing materials.

Generally, to overcome this obstacle, it means **strengthening the existing measures including tax reductions on purchase or consumption** (tax reductions), while targeting products offering better energy performance. However, these tax reductions only affect the more relatively well-off households and certain interviewees would rather favour **direct subsidies for home-owners and products**, especially as the existing tax reductions are often used by firms as an excuse to raise their prices. The incentive effect is therefore often low and relatively insufficient.

This financial barrier is related to a **social and cultural barrier**. Households and home-owners do not like changing their habits or energy consumption behaviours (buying renewable energy, new heating practices) or having work carried out. One solution to overcome this problem, suggested several times, is the **"regulatory constraint"**: i.e. making it a legal requirement (to carry out insulation or renovation work, to fit photovoltaic panels, etc.) rather than using tax incentives, at the same time reducing the aforementioned inequalities. **Requirements should therefore replace incentives.**

One significant barrier is the **lack of skills among professionals in the building sector**, which includes both architects and tradesmen. Rather than a lack of interest, there is more a lack of knowledge which could be overcome with **better, more comprehensive training** in energy savings and ecology, especially since these professionals are still the best source of information and advice for households and home-owners in this respect.

The **lack of information available to the public and the technical constraints** have more or less impact, according to the interviewee.

Overall, the people we met believe that the existing measures are generally positive, while hoping that they will be strengthened and made more effective and fairer for households and consumers.

2. Area of Household Appliances

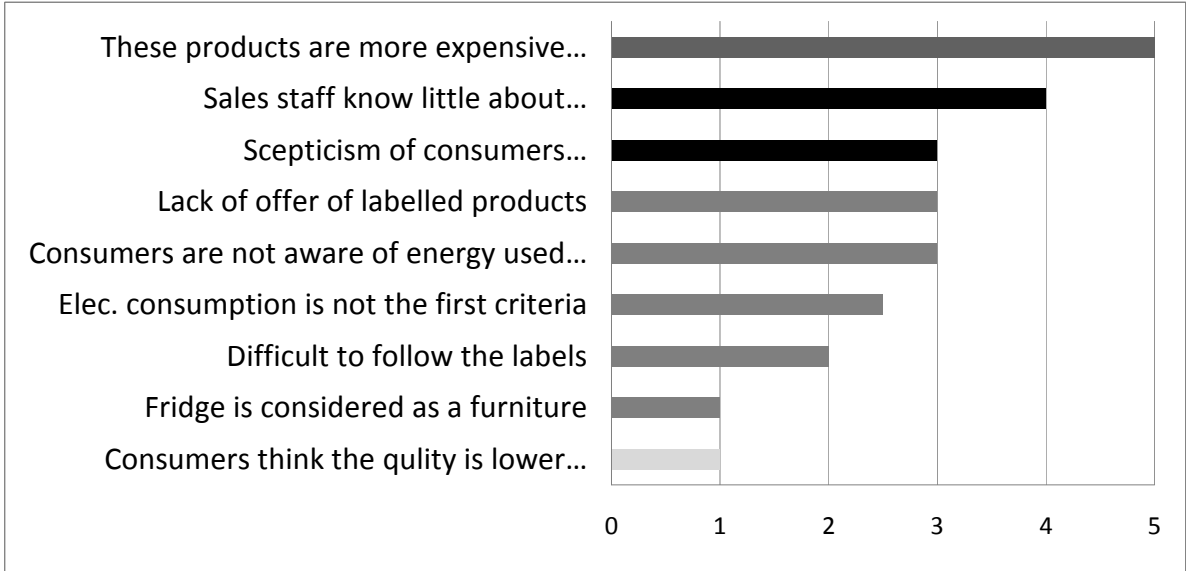
The "household appliances" chapter was dealt with from two angles. First, the goal was to understand the barriers to buying so-called "energy efficient" household appliances. We met with **the Environmental Officer at GIFAM** (a household appliances manufacturers federation), who was already aware of the Barenergy project. Then we met **the Marketing Manager at Bosch-Siemens**, to hear the viewpoint of a direct economic player. The second goal was to assess barriers to adopting low-energy consumption in baking and cooking practices. For this purpose, we met with **the Environmental Officer at CLCV**. CLCV is a consumer NGO that focuses on three issues: consumption, housing and the living environment.

2.1 Energy Efficient Appliances (Purchase)

2.1.1 Barriers

Suggested Barriers to household energy-efficient appliances purchase, in descending order (from very low level =1 to very high level = 5)	Level of barrier
these products are more expensive, lack of incentives	5
sales staff know little about the new equipment	4
consumers are generally not aware of the energy used by the appliances	3
lack of offer of labelled products	3
scepticism of consumers about environmental claims, distrust labelling and media	3
electricity consumption is not a "first order" buying criteria, it comes after price, capacity, design and features	2,5
difficult to follow the labels. Frequent changes	2
fridge is considered as a needed furniture rather than an electric appliance	1
consumers think the quality is lower than that of the more traditional products	1

Graphic ranking of barriers



From the standpoint of the two interviewees, **two main barriers** were identified: **cost and lack of communication**. Furthermore, the environmental officer of GIFAM also mentioned the lack of government investment.

The price of household appliances is a factor that hinders the buying of energy-efficient household appliances. The additional cost of these appliances creates a strong consumer barrier, especially since it represents a major financial investment, and also because the additional cost is non-negligible for the most efficient appliances.

"The price is generally higher or much higher than the average price for the same functionality. For category A++ refrigerators [...], which is a very efficient category, the price is much higher, since they cost on average 200 to 300 euros more than a category A refrigerator, and the average price of a market refrigerator, all classes combined, is 300 euros." (Environmental Officer at GIFAM-Appliances manufacturers federation).

"Until now, very environmentally-friendly products were perceived by consumers as being very expensive products, [...], so it was people with strong purchasing power that had the means to buy efficient, energy-saving products. And that's a real barrier, because if you analyze buying criteria, in France, price is the number one buying criterion. (Marketing Manager at Bosch-Siemens)

Despite growing consumer awareness of environmental issues, the high cost of efficient appliances prevents them from acting according to their ecological beliefs.

"I think there is a gap between statements and buying. Consumers are all aware and everything involving climatic change is therefore viewed as crucial [...] Therefore, if these products were maybe slightly less costly, we think that the act would be performed. [...] Even if it (the population) wants to protect the planet, the wallet remains a factor." (Environmental Officer at GIFAM-Appliances manufacturers federation)

"They may say, "I buy to protect the environment," but you couldn't tell at the check-out counter." (Marketing Manager at Bosch-Siemens)

In addition to these first barriers, **there are other barriers related to communication and information**. While consumers are more informed of environmental issues, they do not yet fully understand the energy savings that could be made by using energy-efficient household appliances. This poor consumer knowledge of energy consumption illustrates both inadequate salesperson knowledge of efficient appliances, and insufficient communication by the stakeholders.

"Salespersons are an incredibly important relay, and despite all the training they receive, the environmental message is not always conveyed. [...] People know that it exists but they haven't fully understood it and perhaps it hasn't been said enough that in the end these products can help save money." (Environmental Officer at GIFAM-Appliances manufacturers federation)

More specifically from the manufacturer's standpoint, the marketing manager of Bosch-Siemens denounces the message conveyed by large-scale retail.

"In marketing, we say "not seen, not sold." Therefore if consumers can't find the best product, the most economical, if we don't talk to you about it, if you don't know it exists, well, you won't buy it. These products require visibility, and there is a major barrier that stops the manufacturer from reaching the consumer, and its retail. If retail doesn't believe in them, if it doesn't present environmentally-friendly products, there is not much point. So if the product is not showcased, if the product is not communicated on in the store, if the salesperson does not convey the message... In general, salespersons are subject to tremendous pressure to sell extended warranties⁴. Therefore salespersons – many, not all - sell the low-cost product because price is a key criterion. They therefore sell an inexpensive washing machine and the extended warranty and they say that it's still less expensive than the least expensive high-end products. And they tell consumers three years, five years, no

⁴ Consumers can have an extended warranty on appliances, paying more: for example 5 years, instead of 2 years.

problems. And these prices are much lower than Bosch's lowest environmentally-friendly price. This is not the message conveyed by qualified, motivated and informed salespersons. It is the message of large-scale distribution, which designs sales arguments to sell products and warranties." (Marketing Manager at Bosch-Siemens)

With regard to GIFAM, this lack of communication and information is mainly due to **a lack of investment from the government and from the other stakeholders such as manufacturers and energy suppliers**. There are two reasons for this failure. Firstly, the household appliances sector is not considered to be a key sector. It is indeed true that real energy savings are not as great mass-wise as in the construction sector (building), for example. In addition, it is a sector where the issues in employment are gradually decreasing, because production is increasingly less "made in France".

"The problem with household appliances is that, while some are definitely more energy-efficient than others, in terms of absolute value the amounts are small, so energeticists tend to focus more on insulation, where you can glean more energy savings. [...] Savings from household appliances are real but smaller on a mass scale [...]; it is also a hindrance for institutional players, who reason that they had best focus on building insulation" (Environmental Officer at GIFAM-Appliances manufacturers federation).

"The government is motivated to invest and help based on the question of whether or not there are jobs at stake. In short, there is a slight problem in that our products, our industry, are less "Made in France" than before." (Environmental Officer at GIFAM-Appliances manufacturers federation)

The **stakeholders** have been identified according to two levels of influence.

- Firstly, players that can release financial assistance. This is mostly the **government** (ministries of the Environment, the Economy and Finance).
- Secondly, players that have an influence on communication and awareness. These are mostly **ADEME (the French Environment and Energy Management Agency)** and **energeticists** for their awareness campaigns, **manufacturers** and **large-scale retail** for their communication on appliance capabilities, and more generally the media and the trade and public press.

"For us, the key players are ADEME and the energeticists, [...] and then the government, the Ministry of the Environment, Industry, and the Economy. They can act by reusing tools that range from tax credits and energy savings certificates to bonuses." (Environmental Officer at GIFAM-Appliances manufacturers federation)

"In addition to large-scale retail, the influential players are the media and the trade and public press." (Marketing Manager at Bosch-Siemens)

The various barriers identified reveal a level of **interdependency**. We have seen that lack of communication reflects to some degree the lack of investment and consideration of certain stakeholders. Likewise, we can say that the lack of government financial assistance tends to strengthen the main barrier, which is the financial cost.

2.1.2 Attempts to overcome barriers

As a result, while actions must be considered from a financial standpoint, other measures must be taken to communicate more on environmentally-friendly appliances in order to grow consumer awareness. At that level, a partnership approach between manufacturers and retail would appear to be fundamental.

In France, there is **no "policy" encouraging the purchase of environmentally-friendly household appliances**.

"There are policies in Italy, Spain and Hungary. [...] For example, in Eastern Europe, incentives have been developed by the governments so that households receive a bonus if they replace their appliances. The same is not true in France and there are no measures, but that could change." (Environmental Officer at GIFAM-Appliances manufacturers federation)

Indeed, a bonus/surcharge plan was studied by the Ministry of the Environment, in collaboration with GIFAM and ADEME:

"We had an environmental bonus/surcharge plan with the Ministry of the Environment. It's like the bonus/surcharge system for car insurance that could have been applied to appliances, but unfortunately the plan fell through because it's complicated: you have to target the surcharge that corresponds to the extra cost of energy-intensive appliances, and there's a purchasing power issue too because energy-intensive appliances are also the least expensive appliances, so that raises a problem. But we worked for close to one year with ADEME and the Ministry of the Environment to complete the plan [...] but today the situation has improved and we are going back to the Ministry of the Environment to implement this kind of policy."

(Environmental Officer at GIFAM-Appliances manufacturers federation)
"The entire profession [...] is very disappointed because the policy was not implemented." (Marketing Manager at Bosch-Siemens)

More concretely in terms of **actions**, the household appliances sector is mainly launching communication or awareness measures conducted separately by the various stakeholders: manufacturers, energeticists, ADEME and GIFAM. They each communicate through specialized trade shows, advertising slogans, or more innovative actions such as cross-communication.

"We did something else too. It's called cross-communication. In short, we (our members) put a leaflet in every washing machine and refrigerator on efficient dish washers that basically said, you have just purchased a household appliance, and did you know that a dish washer can save you so much water compared to washing dishes by hand, and so much electricity. So we've done this type of communication, but it's still relatively restricted. We did one-shot campaigns, or over three-month periods. (Environmental Officer at GIFAM-Appliances manufacturers federation)

"We communicate with the savings account book. For example, for a washing machine, next to the product there is a printed booklet in which we say: energy consumption -36%, water consumption -67%, and on the last line a savings of 408 euros over five years. And we explain that this savings of 408 euros can be made if you replace a 15-year old washing machine with a current Bosch washing machine, with an average rate per kilowatt/hour of so much, etc. (Marketing Manager at Bosch-Siemens)

Specifically, GIFAM conducts joint actions with ADEME, energy suppliers or manufacturers. These actions take the form of communication campaigns in the press, more innovative actions such as the cross-communication mentioned above, or the eco-calculator. An eco-calculator is a software program distributed on CD-ROM to retailers and schools that allows consumers to estimate the energy savings they can make by buying a new energy-efficient household appliance. This approach was effective but it wasn't distributed widely enough due to excessive production costs.

Therefore, the household appliance sector mainly generates **communication actions (energy labels) that are apparently well accepted, well understood and well perceived by all the stakeholders**. This acceptability is due to the fact that the players, whether they be consumers, political officials, manufacturers or energeticists are more aware of environmental issues. Yet these campaigns are still insufficient and are sometimes on a very small scale.

"These communication campaigns are not steady enough and are too sporadic. Long-term awareness campaigns are needed." (Environmental Officer at GIFAM-Appliances manufacturers federation)

2.1.3 Possibilities for future actions

For the future, we need to reuse the range of tools existing in other fields, such as construction, or in other countries. Concretely, in terms of financial assistance, we need to use ideas such as tax credits (example of Italian tax credit for the purchase of efficient refrigerators) or purchase bonuses (example of bonus given by the Spanish regions for the purchase of an A++ appliance). The general idea is therefore to implement bonus systems that make energy-efficient appliances more attractive through the use of financial bonuses. These assistances must be provided by government, through the release of financial funds, and by energeticists. For example, the two interviewees both mentioned partnerships between manufacturers and energeticists.

"It would be interesting to have partnerships with energy suppliers. We attempted this with EDF but were disappointed because we were unable to create a partnership. We initiated it because we felt it would be interesting since EDF is required to decrease household energy consumption. [...] With this partnership, not exclusively with us, there could be manufacturers who would help you save money, and if you buy one of these appliances, EDF would reduce your bill." (Marketing Manager at Bosch-Siemens)

"We could also imagine that for the purchase of an efficient appliance, the energeticists would accept discounts on electricity bills. But the problem is that everyone needs to agree, and EDF is a private company, not a charitable organization." (Environmental Officer at GIFAM-Appliances manufacturers federation)

In terms of communication, more needs to be done to promote energy-efficient appliances: lastly, it seems necessary to emit policies with a high level of involvement by the political authorities:

"For cars, there's actually a "Grenelle de l'Environnement" logo, a green logo, and that's very powerful because... the government, in short the supreme power, says that it's good [...]" (Environmental Officer at GIFAM-Appliances manufacturers federation)

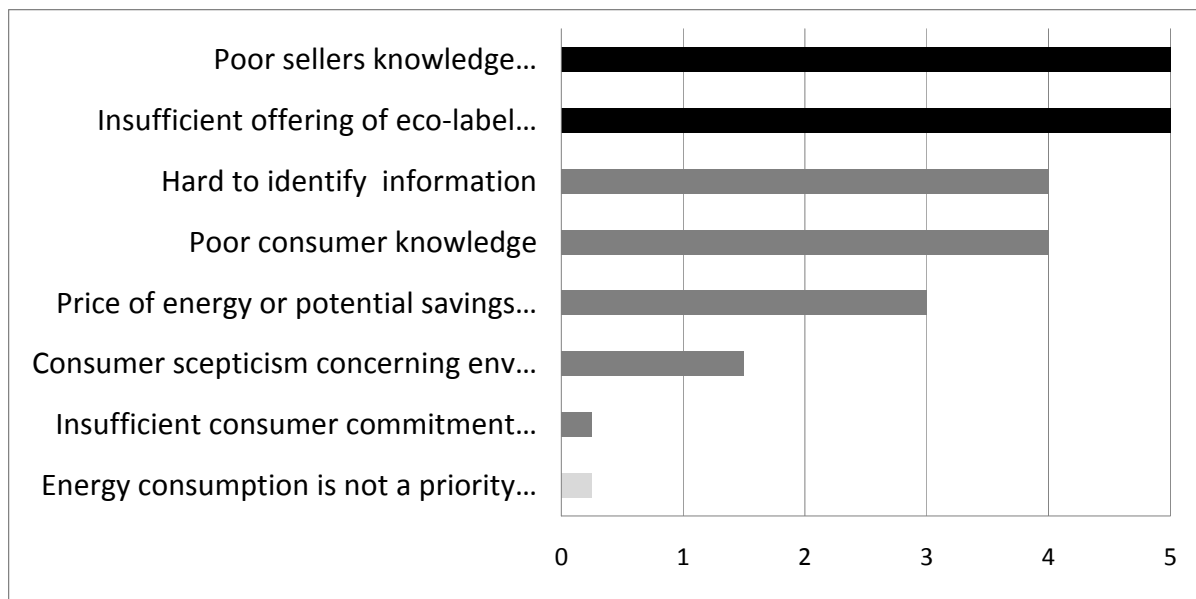
2.2 Cooking and baking practices (Use)

Whereas we asked questions about the uses, the people interviewed answered much on the purchases, concerning the cooking and baking practices. We let their answers, because it is interesting to see that, for them, a part of the barriers are amongst the purchases.

2.2.1 Barriers

Suggested Barriers to energy-efficient cooking and baking uses, in a descending order (from very low level =1 to very high level = 5)	Level of barrier
Insufficient offering of eco-labelled products	5
Poor sellers knowledge on cooking utensils and appliances	5
Poor consumer knowledge	4
Hard to identify the relevant information	4
Price of energy or potential savings too low	3
Consumer scepticism concerning environmental impact of these savings	1,5
Energy consumption is not a priority compared to cooking quality, speed, reliability	0,25
Insufficient consumer commitment to this issue	0,25

Graphic ranking of barriers



According to the interviewee, **three barriers were mentioned, in the following order. First, purchasing power, then habits, and lastly government incentives.**

Concerning cooking **appliances acquisition**, the barriers are the same as those previously identified for purchasing household appliances. As a result, **purchasing power** is considered to be the main barrier. Here again, price is a fundamental buying criterion, unlike energy consumption, i.e. the operating cost.

"Further upstream, there is the choice of household appliances [...] and that means another barrier, purchasing power, because you need the means to buy."
(Environmental Officer at CLCV, consumers' NGO)

For consumers to buy low-energy consumption appliances, they need to be informed on these appliances. When choosing a household appliance such as a stove, advice and information should be given at the time of the sale. However, this information must be simple and understandable for consumers:

"Information is Crucial and choosing the right household appliance is not such a simple thing." (Environmental Officer at CLCV, consumers' NGO)

Lastly, the lack of government incentives is also considered a hindrance, in the sense that the efforts made by the stakeholders haven't matured yet.

"Why shouldn't I be rewarded if I do something virtuous? That's the idea of the bonus/surcharge system (for cars): to incite, and basically to give a small gift. It's the same for everything involving insulation, heating, etc. Energy savings in buildings with the tax credits, the famous 200 quater article of the French tax code. Everything is moving in that direction, but I really think they're not going far enough. [...] So the incentives are a barrier... I hope things will improve." (Environmental Officer at CLCV, consumers' NGO)

From **use's** standpoint, the main barrier is **cultural**. Thus, eco-consumption is part of a movement of change in energy consumption behaviours and habits. In terms of cooking practices, consumer behaviours represent cultural habits, such as cooking with gas or using a lid while cooking, which tend to evolve.

"The barriers are cultural. In this specific example, people cook the way they were taught, and it's not enough to just say to someone, "you know, you should use a lid to save energy." (Environmental Officer at CLCV, consumers' NGO)

"You can change behaviour by providing guidance through training and education. It paves the way for the future and that's how you get things rooted. I believe we're going to change the way we do things." (Environmental Officer at CLCV, consumers' NGO)

The following **stakeholders** were mentioned:

- Consumers, who do not have a true countervailing power, except via consumers' associations
- The suppliers, who according to the Environmental Officer of CLCV, a consumers' NGO, *"could offer advice and make their offerings more and truly greener."*
- Manufacturers, in collaboration with superstores which could use more stringent specifications to remove the least virtuous products from the market.
- Local authorities, which have, according to the Environmental Officer at CLCV, consumers' NGO, *"real power to change and set an example."* It also requires that they adapt their budgets more.
- The government, which despite commitments by the Ministry of the Environment to other sectors, needs to show a strong commitment through financial assistance and by searching for solutions with the field players.
- Field players, such as consumer or environmental NGOs.

While all the stakeholders have been identified in an attempt to understand their various levels of influence, **two types of players have been specifically pinpointed. Institutional players** who, according to the Environmental Officer of CLCV, consumers' NGO, *"organize and regulate public life and the ability to better consume or not."* They have an influence on consumers and can offer incentives. And then there are **the field players**, which establish the connection between consumers and institutional players.

While the cooking practices chapter has highlighted a cultural barrier tied to consumer behaviour, the other barriers identified are similar to the first chapter on household appliance purchasing, since the study also covered the phase prior to practices, i.e. choosing the appliances. **Here again, the various barriers identified (cultural habits, and insufficient information and financial incentives) appear to be highly correlated.**

2.2.2 Attempts to overcome barriers

Cooking practices involve specific moments of consumption. As a result, and as for household appliances more generally, the stakes involved are not as high, for example, as heating, and special measures in this area are few. However, two attempts to reduce this consumption, which are more general, were identified: **the energy label and the CLCV Topten guide.**

For purchases, the energy label is evaluated as an effective approach that increases consumer awareness through simple and understandable information. Set up by the government, this approach is well accepted by the various players: consumers, political players and economic players.

"The energy label is pretty effective. Consumers know about it. It's a good thing, but you need to be careful to not overly dilute the information. I think we should stop the A+ and A++ system. No, manufacturers need to accept that an A++ should become an A and an A should become a B, etc. The best products should be A products, otherwise every product would be an A product and it loses all meaning. (Environmental Officer at CLCV, consumers' NGO)

The Topten guide is a guide for comparing products based on their buying criteria, including operating cost. Based on the concept of a Swiss guide, the Topten was created by CLCV, with the support of ADEME. While it is only distributed via Internet and is not widely known, it has a dual objective: to inform consumers and make them aware of the operating costs of certain appliances, and to become a reference for all stakeholders, so that the market can become more virtuous in the long term.

"Our objective is that huge numbers of people use it. Whether they be public or private consumers, and we'll soon be opening it up to buyers and companies. The goal is to have a large readership, so we can say to manufacturers, watch out, your products aren't so great, it's time you adopted a more virtuous policy. In fact, it's already happening in Switzerland. The guide is almost 10 years old. As soon as a product is removed from the guide, manufacturers are concerned and they try to get back in. In Switzerland, it's sponsored by WWF and one Swiss person out of

two is a member, so they are aware of the guide. So it works well there, and manufacturers pay attention to it. So in France, it's the same idea: to be a stimulus to make the market more virtuous." (Environmental Officer at CLCV, consumers' NGO)

2.2.3 Possibilities for future actions

For the future, whether it be in the field of cooking practices, or more generally to make consumers more aware of eco-consumption, it is important to conduct more **educational actions**. Behaviours need to change, and **consumers need to be made more aware of the operating cost of household appliances**.

In addition, and in more concrete terms, various **tools** could be mobilized. Firstly, with the help of government, so that financial assistance can be made available to responsible consumers. **Financial assistance, such as the tax credits** available for buildings, or the bonus/surcharge system for car insurance, are examples that could be considered.

"The idea is to provide an incentive and, in short, to give a small gift. It's the same idea as for insulation, heating, energy savings in buildings with tax credits, the famous 200 quater article of the French tax code. [...] the government can influence people and offer assistance [...], it can make a more or less strong commitment to energy savings with measures that could save us money, educate, increase awareness and pave the way to a better future" (Environmental Officer at CLCV, consumers' NGO)

Secondly, it could be a good idea to set up **incentive-based pricing**, i.e. a tool that allows excessive energy consumption to be taxed in order to make consumers more responsible:

"For domestic energy, there's a fine solution that we're waiting for: incentive-based pricing. Roughly, the more I consume the more I pay, but with a threshold, and a gradual increase, with the whole thing being weighted based on the size of the household. This tool would make consumers and people who consume more responsible. They would pay more attention." (Environmental Officer at CLCV, consumers' NGO)

In addition, it could be useful **to evaluate the energy consumptions of households** so that consumers would be more aware of their consumption. Energeticists could thus establish consumption assessments and provide personalized advice to help consumers consume less.

"Consumption trends could be evaluated. [...] Suppliers send us their bills, they have the consumption statements and therefore potentially the consumption fluctuations, so they could provide personalized advice. It could be a very simple short text on the bill to increase awareness and even include analogies so that people understand what these differences in consumption correspond to. There's an advisory role there, and suppliers could do that." (Environmental Officer at CLCV, consumers' NGO)

2.3 Summary of Area of Household Appliances

The environmental component has become a key component of the household appliances sector. As one of the interviewees says: *"This market is not about selling dreams, so the environmental component is stronger. It's a real issue, getting consumers to understand all the advantages."* The challenge of removing barriers to purchasing virtuous appliances is gaining ground because the environmental issue is making all stakeholders increasingly aware of the problem. The players interviewed are waiting for concrete actions that are specific to the household appliances sector. When the Environmental Officer of CLCV, consumers' NGO, talks about recommendations and a dialog platform, he adds *"I'm ready to talk about it as soon as possible because we need to act now."* As for the Environmental Officer at GIFAM, she states that *"the problem is that there's a tremendous amount of discussions and talk about energy savings, but there comes a time when concrete measures need to be taken."* **The range of tools available to act in the household appliances sector needs to be extended with concrete actions, whether through assistance in purchasing or by educating consumers in eco-consumption.** Lastly, while the household appliances sector does not raise stakeholder awareness as much as, for example, the construction/building sector, it nevertheless appears that the issue is to mobilize all consumers.

"What household appliances have in their favour is that the products are so widespread. For example, 100% of all households have a fridge, 80% have a washing machine, so typically we can make savings since everyone has one and uses one. Fridges are used everyday, washing machines maybe 4 to 5 times a week, so it's really what you could call a rich deposit, and the philosophy is that small streamlets combine to create large rivers." (Environmental Officer at GIFAM-Appliances manufacturers federation)

"To talk about ecology, you have to convince and win over the masses or it has no effect." (Marketing Manager at Bosch-Siemens)

"There's a real problem and it's that consumers say to themselves "what difference will it make if I try to save on energy." And that's the real issue: everyone has to understand that 1 + 1 makes 2 and that if we all pull together, something will happen." (Environmental Officer at CLCV, consumers' NGO)

3. Mobility field

Issues of changing behaviour regarding energy used for individual mobility concern four sub-themes in this inquiry: the use of public transport, car pooling, car sharing and the purchase of hybrid vehicles.

3.1. Public transport (Use)

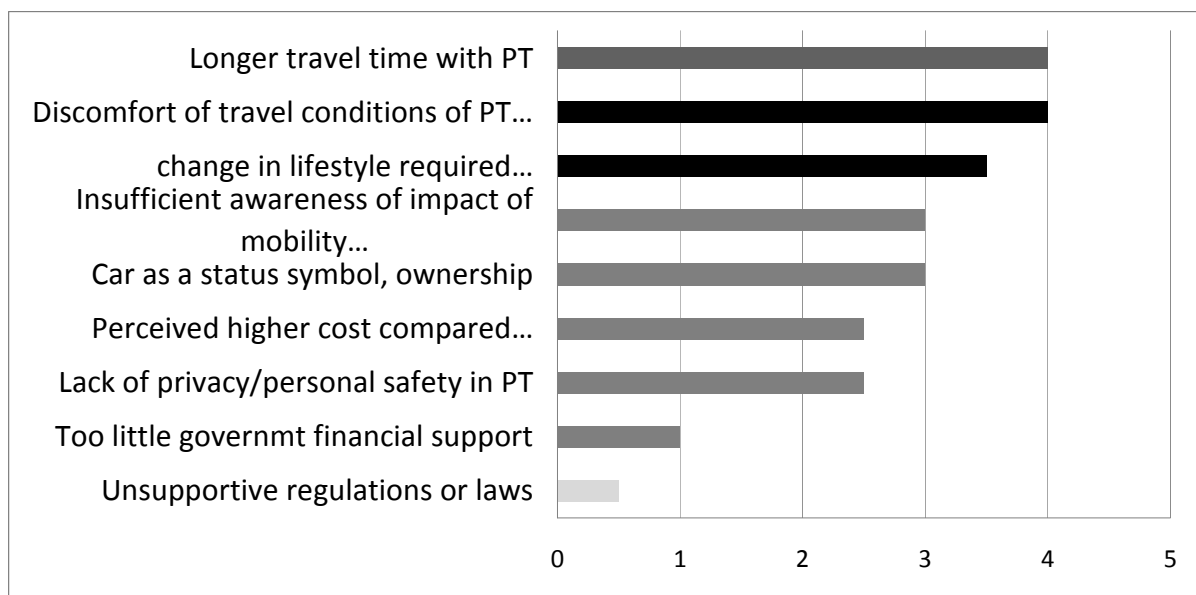
The theme of public transport was covered by two interviews, both in the **political field**: The responsible of the general transport policy for Paris (Mobility Agency) and an adviser in charge of urban transport in the “Cabinet du Ministère de l’Ecologie, de l’Energie, du Développement Durable et de l’Aménagement du Territoire” (MEEDDAT) (Chambers of the Ministry for Ecology, Energy, Sustainable and Territorial Development).

3.1.1. Barriers

Graphic classification of obstacles in the use of Public Transport (PT)

Among a list of 9 suggested barriers (in descending order) :

- i. longer travel time with public transports
- ii. discomfort of travel conditions of PT, overloaded/insufficient capacity during rush hour
- iii. change in lifestyle required by the use of PT (more pre-planning/less flexibility)
- iv. car as a status symbol, ownership
- v. insufficient awareness of impacts of mobility on health, environment, space, energy
- vi. perceived higher cost compared to driving
- vii. lack of privacy/personal safety in PT
- viii. too little governmental financial support to use PT
- ix. unsupportive regulations or laws



Three almost identical **major obstacles** were identified by the two interviewed players:

- **1. The quality of service and the comfort of public transport** (frequency, comfort, punctuality, journey time comparable to journey time in a car);
 - "The Parisian particularities mean that the network is very dense with a diversified offer, many solutions, but far more often than in the provinces, there are issues of congestion inside the network (in particular the Metro) which are not well tolerated" (Responsible of the general transport policy for Paris)*
 - "The real challenge [...] is to measure up to things [with respect to the car] so that public transport is competitive in terms of comfort, quality of service, punctuality and speed. Today, speed is of the essence for the development of a "site propre" (dedicated space)" (Adviser in charge of urban transport in the Ministry for Ecology, Energy, Sustainable and Territorial Development)*

A "site propre" (a route dedicated to transport, such as a tramline) offers public transport at higher speeds, a major commercial advantage: They are unaffected by traffic jams and frequencies are more reliable.

The quality of service of public transport is difficult to maintain for two major reasons:

- In dense urban areas, the demand for and use of public transport is growing faster than the offer, causing the networks to become deeply saturated with issues of "internal congestion" making it tedious to use them at certain times.
- In areas with lower densities, the lack of an offer, both in terms of frequency and scale, is detrimental to generating any credible alternative to the private car.

- **2. The attachment to the private car** makes it difficult to change the behaviour of people, to convince them to use public transport more often
 - "[In a recent survey] More than half the people interviewed stated that they would not change behaviours unless fuel reached a price of two euros per litre, ... and we are still a long way off that. And 26% of the interviewed people said that whatever the price of fuel, they would continue to use their car" (Adviser in charge of urban transport in the Ministry for Ecology, Energy, Sustainable and Territorial Development)*
 - "Afterwards, but far less in Paris than in the provinces, people are attached to their cars, to owning them, and therefore, people who have a car do not want to let it go and sometimes use it although the trip may be longer, or when they face the risk of having parking difficulties" (Responsible of the general transport policy for Paris)*

- **3. Longer trips in public transport than in private cars.**

Furthermore, it appears that the **role of the parties concerned** with public transport is clearly identified:

- (1) The Government must set down regulations that are an incentive and help finance some major infrastructural investments.
- (2) Local communities (through urban transport organisation authorities (AOTU) should develop and operate public transport networks.
- (3) Through their attitude, users "will make or break the success of a public transport infrastructure" (Adviser in charge of urban transport in the Ministry for Ecology, Energy, Sustainable and Territorial Development).

And for the Paris area (Région Ile-de-France the Responsible of the general transport policy for Paris also refers to 2 other players who should not be left out of account:

- parking operators which, through car-sharing approaches, can become part of a more general "sustainable mobility" approach;
- "Paris Métropole", a cooperative structure now being set up as an opening mixed union between the capital and the territorial communities in its built up area, to facilitate dialogue and cooperation between Paris and the neighbouring "Departments" (towns and suburbs around Paris) It is also often referred to as **Greater Paris**.

The three main obstacles mentioned are sometimes interconnected. For instance, it appears impossible to overcome personal attachment to the car except under several conditions:

- the development of public transport must be covered by the whole alternative transport modes (walking, cycling, car sharing etc) in a consistent multi-mode network;
- it must have the backing of sufficiently hard-hitting information designed to move closer to the comfort and ease of use offered by the private car.

3.1.2. Attempts to overcome the barriers

In the Ile-de-France, or Greater Paris, area which is a concentration of part of the public transport stakes in France, **many actions have already been implemented**. The Responsible of the general transport policy for Paris refers to those he considers most important:

- reinforcing the quantities of the Metro offer by increasing pre- and post-peak period train frequencies,
- Changing to the "Navigo pass" system (chip ticket), a "minor revolution facilitating travel";
- Setting up the "Vélib" system (bicycles available from self-service terminals) an action which was "unanimously approved as restoring freedom and mobility to Paris dwellers, offering an alternative mobility, especially during slack public transport periods (evenings and nights)";
- finally, the development of bus lanes. Regarding this last measure, evaluation appears to generate mixed opinions, probably because communication about this action is not the best. Users don't see "more buses" which could be due to the clumsy way this action was put over and which could be improved by more work on the visual identity of the buses themselves, or on the design of the bus stops.

As far as the Adviser in charge of urban transport in the Ministry for Ecology, Energy, Sustainable and Territorial Development is concerned, the two leading steps to be taken are the development of new public transport infrastructures (especially in dedicated spaces) and a transport bonus, favouring the use of public transport by company employees.

3.1.3. Possibilities for future actions

As far as **perspectives for future actions** are concerned, this point was developed more extensively by the Responsible of the general transport policy for Paris. For Paris, the first thing to do is to continue to fill out the Metro offer by the systematic automation of the lines to reduce the average intervals between two trains from the present 120 seconds to 90 seconds in the future, meaning a considerable increase in Metro traffic. Then it will be necessary to work on developing real multimode and real-time information to inform users about traffic conditions, disturbances and possible alternatives, in real time for normal situations and perturbed situations. Finally, using the same principle as Vélib', but for cars, that is using the car sharing system, an Autolib' system will be developed for Paris and inner suburban residents.

On a national scale, the Adviser in charge of urban transport in the Ministry for Ecology, Energy, Sustainable and Territorial Development emphasised a number of measures, some of which follow on directly from the "Grenelle Environment" Round Table, including the development of 1500 km of public transport in additional dedicated spaces in the years to come, with specific Government subsidies for communities, designed to favour this development. He also referred to the development of high-speed train lines.

The Adviser in charge of urban transport in the Ministry for Ecology, Energy, Sustainable and Territorial Development mentioned the fact that **changes in mobility behaviour can be encouraged when new living situations occur**, such as marriage, home-moving, a change of jobs, etc. but that this type of incentive has to be local and cannot be coordinated on a national scale.

Concerning the **responsibility of the players** in implementing change, both of the interviewed people pointed out that many players have to be involved at different scales in terms of time and space. Although the **Government** may play a legislative and financial role, the **communities** are still on the "front line" (Adviser in charge of urban transport in the Ministry for Ecology, Energy, Sustainable and Territorial Development), because the organisation and operation of public transport falls upon them. It is also accepted that conventional public transport cannot meet every mobility need and that alternative offers such as car pooling, car sharing, and even the use of a private car, may still be necessary or "relevant".

"There are some sparsely populated areas where public transport cannot operate on a 24-hour per day basis and cannot go everywhere. Bringing us once again to the idea that all the different transport modes must hinge together in time and space, so that if I want to, I can go from point A to point B as I wish" (Adviser in charge of urban transport in the Ministry for Ecology, Energy, Sustainable and Territorial Development)

In addition, in the perspective of a consistent and global multi-mode system, it is clearly understood that **to improve the use of public transport, it will be necessary to tackle all the obstacles at the same time**, otherwise some of the actions may be ineffective in producing the expected results:

"I cannot see there being any hierarchy, in any case in the longer run. I think that in any case, all three must be carried out together." (Adviser in charge of urban transport in the Ministry for Ecology, Energy, Sustainable and Territorial Development)

Finally, it is surprising that the interviewed people referred so little to the matter of **financing** the public transport offer development because it is one of the most important questions, often coming up in discussions. The challenge is not only "what should we do?" but also "where will the financing for doing such and such come from?"

3.2. Car pooling (Use)

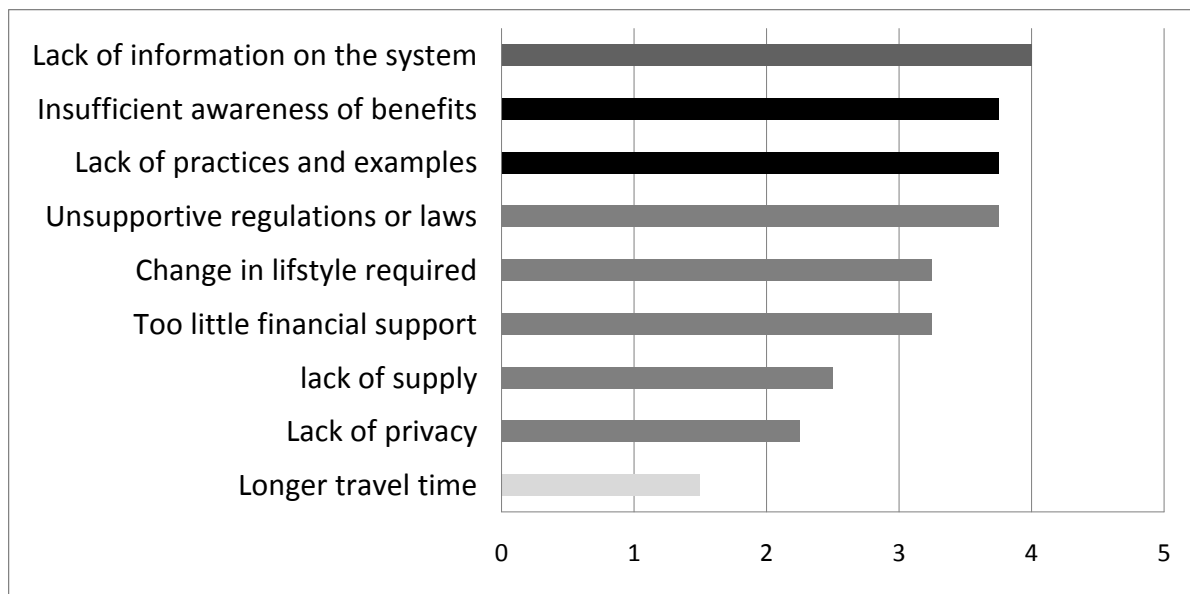
The theme of car pooling was covered by an interview with an **economic actor**, the Marketing Director of the Green Cove operator.

3.2.1. Barriers

Graphic classification of barriers in the use of car pooling and car sharing

Among a list of 10 suggested barriers (in descending order) :

- lack of information on the system
- mistrust of the user
- unsupportive regulations or laws
- lack of practices and examples
- insufficient awareness of benefits (on environment, health, space, and energy)
- too little financial support
- change in lifestyle required (more pre-planning / less flexibility)
- lack of supply (market, offers)
- lack of privacy
- longer travel time



Very small barrier = 1 ; Small barrier = 2 ; Barrier of medium importance = 3
 Important barrier = 4 ; Very important barrier = 5

Four **major barriers** were referred to:

- 1. A feeling of insecurity linked with fear of others, carpoolers, that they do not know and with whom they only have an Internet contact;
"What frightens people, especially women, is knowing nothing about the person with who they will be car pooling." (Marketing Director of the Green Cove operator - car pooling)
- 2. Worries about time schedules and a certain lack of flexibility in the system when there are not many co-carpoolers (for instance, the case of a "closed community" in a company world);
- 3. A very general lack of knowledge about car pooling services;
- 4. An offer that is far too scattered with only a few serious operators and with much improvisation on the Internet market;
"So if you type car pooling on the net using Google, you get all sorts of hits." (Marketing Director of the Green Cove operator - car pooling)

This main difficulty (especially for women), the issue of security, is followed by that of time schedules and a lack of knowledge about car pooling. But because of the lack of any communication from the public authorities, and the lack of an official image, inaccurate knowledge of the service is very much responsible for the first two constraints. In addition, the subdivided nature of the offer makes this situation even more difficult because the fact that serious operators exist alongside "improvising" operators does not help to develop any trust among users regarding these services.

Accordingly, there are **three identified players** to help develop car pooling:

- (1) the Government, playing a legislative and encouraging role;
- (2) the communities for local organisation, facilitation and leverage if they decide to set up this kind of service, or to elicit a call for tenders;
- (3) companies which through company travel plans (CTP), could become levers in developing the offers available to their employees.

"Until we have a clear legislative framework, people will be left uninformed ..." (Marketing Director of the Green Cove operator - car pooling)

The operators could also improve their offers, attempting to establish new collective cooperation, for instance by setting up interoperable services on the French or even European scale.

3.2.2. Attempts to overcome the barriers

Efforts and actions have been implemented to remove some of the obstacle. First of all, because the safety issue is a major obstacle, Green Cove has set up a user certification system offering access to an identification card so that users can authenticate themselves, and a system of grading on the same principle as the grading of buyers and sellers on eBay.

As far as journey schedules and planning are concerned, tools and interfaces have been developed to allow better prediction of movements in advance and offering the possibility of visualising the make-up of a car pool team, that is, the driver and the various passengers.

3.2.3. Possibilities for future actions

In the future, one of the ways in which Green Cove intends to progress is to establish partnerships with automobile insurance companies to obtain preferential rates and offer some transparency about the insured status of the driver.

In terms of prospective and future actions, the main approaches are better communication for the general public but also simplification of the tool and the offer. Simplification could culminate in the emergence of several major operators who are clearly identified and therefore well known, offering users better visibility and greater confidence.

Concentrations of people in a context in which they are rendered particularly inclined to draw on the benefits of car pooling services are **privileged opportunities** for furthering this service, of having it discovered on a practical level and of ensuring good communication. Festivals, or student events are a good example.

"These are local operations bringing people together in a propitious context." (Marketing Director of the Green Cove operator - car pooling)

3.3. Car sharing (Use)

The theme of car sharing was covered by one interview with **an economic actor** : the Operations Director of Paris operator OKIGO, an affiliate of Avis/Vinci Park.

3.3.1. Barriers

Graphic classification of barriers on the use of car sharing (see. 3.2.1)

Three barriers are clearly identified.

1. The lack of communication and information for people about the subject is the major obstacle.

"What we have realised is that it is really necessary to explain the service properly if we are to sell it. Handing out flyers in the street and saying "OK right that's it" will not get people to adhere to the service. It does not work very well. What is difficult is to explain easily a service which is very simple in essence but which generates many questions among potential users because it represents something new to them." [...] "By definition, managing to explain a new use is very complicated." [...] "Very clearly, we need communication. That is what made Vélib' such a success, because there was an enormous amount of communication about it. It created a fashion effect and attracted people to it" (Operations Director of Paris operator OKIGO, an affiliate of Avis/Vinci Park)

2. The second obstacle, in terms of behavior, is related to being accustomed to using a car, and to attachment to a particular car.

"Is it going to be as easy to use a car sharing service as to use my own car? It might mean making an effort because I know exactly where my car is, and if I live just above a car sharing station, the effort will not be so great. However, if I live 200 m away, I will have to walk those 200 m, that could be tough" (Operations Director of Paris operator OKIGO, an affiliate of Avis/Vinci Park)

3. Finally, the third obstacle relates to the quality and development of the car sharing network. If it is not well enough developed, it will mean that access to the car sharing service is relatively limited compared to the optimal accessibility offered by owning a private car.

As regards the **influence of the parties concerned (stakeholders)**, for the time being, their role seems to be clearly identified but there are collective issues to be dealt with:

"I do not think there is any key player and I believe that many things need to be done ..."

(Operations Director of Paris operator OKIGO, an affiliate of Avis/Vinci Park)

"We will need to get together and think about the issue of what can be done in a city like Paris to make our service known?" (Operations Director of Paris operator OKIGO, an affiliate of Avis/Vinci Park)

3.3.2. Attempts to overcome the barriers

Among the **attempts to remove these obstacles**, at least for Paris, the interviewed parties dwelt at length on the creation of the car sharing label, and its corollary, public street stations. As the Operations Director of Paris operator OKIGO, an affiliate of Avis/Vinci Park, sees it, it would be very important to create this label because it would demonstrate that the Paris Town Hall "officially considers that car sharing is something virtuous". Developing the number of stations would also favour access to the service and should be promoted in the future.

Regarding the evaluation of these measures, however, they have this mixed feelings:

"The label: the idea is good but we're not ready for the application" [...] "The Street Station: the idea is good but in reality we don't have any, I don't know"

But beyond the idea of this label, we need the Paris Town Hall to make it known and through it, promote car sharing services among the people.

3.3.3. Possibilities for future actions

For the future, it is important for car sharing operators to combine their forces, in one way or another. Through their mutual interest, for instance by making the Paris label better known, something that concerns them all, there could be coordinated communication efforts allowing cost sharing and a wider-ranging campaign, impossible for one operator alone to coordinate. Furthermore, the public authorities should also contribute to this communication because car sharing represents collective "virtues" that are worthy of their support:

"That is why we are counting on communication from the public authorities on the subject because we consider that there are social virtues to be gained from car sharing and that the risk represented by communication could be shared by private players as well as public players because car sharing has virtues for the community in general."

3.4. Hybrid vehicles (purchase)

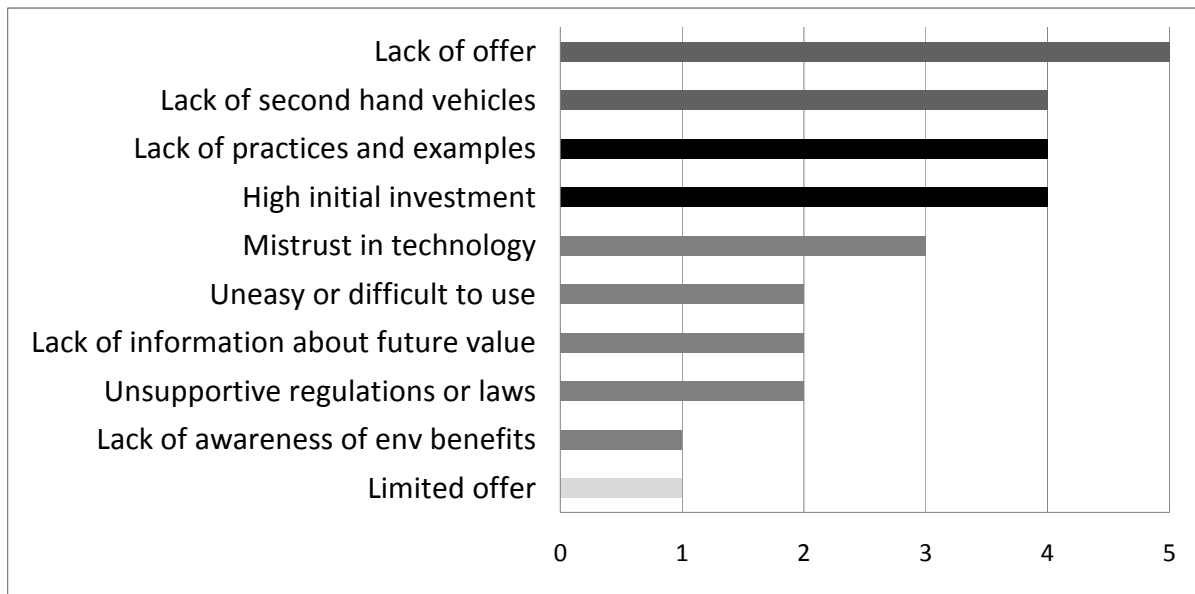
The theme of the hybrid vehicle was dealt with through a discussion with the Chairman of AVERE (Association for the Development of the Hybrid and Electric Vehicle, **NGO**).

3.4.1. Barriers

Graphic classification of barriers for purchase (and use) of hybrid vehicles, among a list of 10 suggested barriers :

- x. lack of offer (production and supply)
- xi. high initial investment
- xii. lack of practices and examples
- xiii. lack of second hand vehicles
- xiv. mistrust in technology

- xv. unsupportive regulations or laws
- xvi. lack of information about future value
- xvii. uneasy or difficult to use
- xviii. limited offer (unattractive models)
- xix. lack of awareness of benefits on environment



Very small barrier = 1 ; Small barrier = 2 ; Barrier of medium importance = 3
 Important barrier = 4 ; Very important barrier = 5

For the AVERE Chairman, it is very clear that:

- 1. The first obstacle regarding the purchase of hybrid vehicles is the outstanding paucity of the offer made by automakers. Other obstacles stem from this first one.
- 2. The second obstacle is the particularly high cost of these vehicles, also related to the fact that there is no mass production.
- 3. The third obstacle is fear of the unknown among buyers who are wary of new and innovating technologies that have been not fully tried out by the general public.

"To begin with, the offer is almost non-existent. That is the greatest obstacle"

"For the first few years, hybrid vehicles cost more than equivalent counterpart vehicles".

"Until the supply is available, it cannot be said that there are psychological obstacles, even if it might actually be the case."

"Every car buyer fears the unknown and a product that is highly innovative arouses fears related to the problems that could happen, in particular because of the electronics."

It is clear that automobile dealers and manufacturers are being criticised generally for their evident reluctance to develop hybrid and electric vehicles:

"I consider that it began with the dealers. None of the French dealers have ever wanted to push their clientele towards electrical solutions, all the more so for loyal customers."

"For the last 30 years, all the efforts of the major manufacturers have focused essentially on diesel engines to improve noise, pollution levels, reliability and economy".

3.4.2. Attempts to overcome the barriers

There is little evidence of previous actions or initiatives. One action, which appears to be somewhat anecdotal, is mentioned : the Touring Club for Hybrid Vehicles aimed at informing people about such vehicles and helping them get over their negative foregone conclusions regarding the technology. *"I don't think it can be said that any great efforts have been made."*

3.4.3. Possibilities for future actions

For the future, it is clearly stated that what we need now is a global follow-on effect with all the players who get to grips with the evolution towards the hybrid vehicle:

- manufacturers by proposing hybrid models in the various ranges,
- dealerships by instructing and encouraging buyers,
- the towns for the local policies that they can initiate,
- the Government for its financial incentive policies, such as Bonus-Malus deals.

"The best thing would be for the manufacturers to get things moving so that in 10 years time there would be nothing on the market except hybrid vehicles. It would be the best solution for the planet and for France with the same system of hybrid vehicles extending to small and large trucks."

"It would be a good idea if everybody could join in but it would be necessary for the government, people working for transport authorities, the environmental press, but above all the automobile press and the communities, to set an example. It would take all that."

3.5. Summary regarding the field of mobility

Above all, it is evident that there are no major divergences in the viewpoint of the different players. There is a relatively broad consensus about the need to find collective solutions to the idea that "the car is still the most efficient solution" as a way of ensuring urban mobility. It is also evident that institutional players need to be aware of the need to include in their thinking process about "sustainable mobility", **alternative** solutions such as car pooling, car sharing, hybrid vehicles or the bicycle, because conventional public transport cannot meet all the demands of users or their needs.

This means that it is equally necessary to continue to make investments into public transport infrastructures, to improve the quality of the offer, and also think about other dimensions of mobility, such as the quality and relevance of multimode information, coordination and connection between conventional mobility modes (public transport on the one hand, or private cars on the other) and more innovative modes of mobility. However, although each player appears to have a clearly identified role regarding alternate "conventional" modes to replace the personal car (public transport type), things are very different regarding the "new alternate modes" of travel (car sharing, car pooling, etc).

Therefore, the challenge is not just one of developing the techniques but also the methods of governance, the quality of the dialogue and the exchanges between the parties concerned, of which there are more and more, with a capacity to address the demands of the people, which are increasingly individualised and more and more precise in terms of space and time.

III. STAKEHOLDER DIALOGUE

1. Varying stakeholders' point of view

In the domestic energy field

The various stakeholders thus agree that the biggest issue is the financial constraint, whether it involves investment in works (green houses, solar panels, renovation) or changing practices. They all also acknowledge, at one point or another, the responsibility of politicians in the lack of initiative. The latter do not go far enough, for example, with the financial levers that they propose. Generally, the measures taken, while heading in the right direction - especially since the Grenelle environment round table- are still too lukewarm. Again, for all of them, the psychological barriers are ranked second.

However, there are some differences of opinion. On information, for example, where the interviewees are not unanimous regarding its effectiveness and the adequacy of awareness-raising campaigns. Training and information are however often included in all the remarks, even where its effectiveness is called into question (ref. the interviewee from the ADEME), as an obligatory step for all our technical, economic, political and social experts.

But the difference is strongest when it comes to the regulations to be adopted to overcome the different constraints evoked. The institutional player, the association's representative and the technical expert are for regulatory measures (the "regulatory constraint") regarding work, while the two economic players do not even mention this, preferring to keep with incentives, even if these are still seen as inequitable.

"As from 2015, thermal renovation must become compulsory at the time of every real estate transaction. Of course, no one agrees with us there." (Head of Mission at 'Friends of the Earth', Environmental NGO)

"I think that we need to introduce a regulatory constraint, as a sort of extra layer... because... incentives alone... We reach people who are already aware, and more than that, those who are already motivated." (Sociologist at the French Environment and Energy Management Agency)

"How can you force people who build to include [photovoltaic panels]? Do you see what I mean? The installation... that's an additional cost... We do require people to have windows in their houses... It will be a bit like that, really, in time." (Technical expert at the National High School of Architecture)

In the Household appliances field

There is a very strong convergence between the messages of the stakeholders interviewed. Firstly, they agree on the fact that **the main barrier to purchasing efficient household appliances is purchasing power**. Indeed, while the interview on cooking practices was meant to focus on consumer practices, it also allowed us to broach the issue of purchasing energy-efficient appliances. These interviews allowed us to open the debate on eco-consumption. On this point, the stakeholders again agree that firstly, **consumers are still not sufficiently aware of the energy savings and therefore the monetary savings that can be made, and secondly, that mentalities and behaviours need to be changed through educational action**. Hence the importance of long-term awareness and communication campaigns.

In addition, the interviewees also point out **the lack of incentive from certain stakeholders**. For example, the government doesn't go far enough in their financial assistance approach. The economic players as well, but at various levels depending on whether it concerns energeticians or manufacturers, who don't support consumers enough or don't commit themselves enough through partnerships.

In the mobility field

Among the interviewed, it seems that there is much more **convergence** than there is divergence. For instance, there is more or less across the board agreement about the fact that people are now relatively aware of the environmental impact of using the car, even if it does not always cause them to change their behaviour.

"People are more and more aware of matters, the obstacle is constantly diminishing" (Operations Director of Paris operator OKIGO, an affiliate of Avis/Vinci Park)
"I do not feel that people are contesting the benefits to the environment. People are aware that vehicles are having a real impact on the environment" (Chairman of AVERE (Association for the Development of the Hybrid and Electric Vehicle, NGO))
"Even if there is an increasing awareness on the individual and collective levels, encouraging us to make an effort, it still does not justify my changing my ways." (Adviser in charge of urban transport in the Ministry for Ecology, Energy, Sustainable and Territorial Development)

Another point about which several of the parties concerned agree is the fact that a new service (car pooling or car sharing) or a new product (hybrid vehicle) generates wariness or uncertainty, requiring enormous communication efforts to be made. Therefore, the challenge of changing behavior does not boil down to the simple quality of the offer. There is no doubt that the quality and diversity of the offer is important, that there is also a psychological, cognitive and behavioral aspect which calls for communication and acclimatisation as well as a certain "critical mass" effect.

Finally, another point on which the interviewed parties agree is that it is important to devote overall thought to mobility and to the various modes of transport which do not have to be competitive but may complement one another in time and space. In this way, when the car is considered as an alternative, as in car sharing, it naturally fits in with multimode traveling systems and it could even be contemplated that public transport operators include within their public service delegations a system of car sharing or pooling.

"It would be worthwhile if car sharing was always included among discussions and exchanges, along with other mobility modes." (Operations Director of Paris operator OKIGO, an affiliate of Avis/Vinci Park)

There is also almost unanimous recognition of the fact that the players need to get together, talk and develop solutions since everybody is becoming aware of the fact that mobility is a complex theme which cannot be satisfied by any one solution and that it is by interconnecting the mobility modes and therefore by having the various players responsible for the development cooperate that satisfactory overall solutions may be found

"Considered on their own, resolving these different goals will not be enough." (Adviser in charge of urban transport in the Ministry for Ecology, Energy, Sustainable and Territorial Development)

"I do not think there is a key player and I believe that many things need to be done ..." (Operations Director of Paris operator OKIGO, an affiliate of Avis/Vinci Park)

"Today, the challenge facing us is to optimise the use of the urban space, a rare public asset, and therefore to plan carefully how we share our streets between buses, bikes, pedestrians and cars, but also among other road users that include professionals, delivery men, traders, businessmen, home delivery services." (Responsible of the general transport policy for Paris)

2. Actual Stakeholder Dialogue Initiatives

In the domestic energy field

The initiatives for dialogue between stakeholders were barely touched upon during the interviews. The **"Energy Info Rooms"** are mentioned by two of the interviewees (the Sociologist from the ADEME and the Head of Mission at Friends of the Earth) as offering potential local support. While one of them sees it as an experiment worth extending, the second is more reserved, in particular due to the cuts in the ADEME's budget. However, the person with the most to say on the question of dialogue between stakeholders is the ENERCOOP employee, who reminds us of the practical objectives of his cooperative.

"Well, that is precisely the philosophy of ENERCOOP, which is relocation [...]. Therefore, really, dialogue must be redeveloped at local level... [...] It is exactly what is happening in the Ardennes region and in the Vilaine area at Redon, and in other places across France. As it is ENERCOOP's project to set up local cooperatives for electricity generation in France. It is really about bringing local authorities together – i.e. politi-

cians – along with companies, private individuals, and bringing them all together around a table, on equal terms, pooling resources, and putting in public funds." (Sale representative in a green energy cooperative)

The **Grenelle environment round table** is mentioned three times, firstly by the association's representative, who took part, by the Sociologist from the ADEME and the chairman of LOGICONFOR, the passive homes' builder. The first person sees it as successful in terms of dialogue but a failure as regards legislation, although it has helped to speed things up.

"It is an initiative from the associations and Nicolas Sarkozy, which resulted in proper dialogue between the stakeholders. [...] Yes, it's very positive from that point of view. If we were expecting dialogue, then we got it... However, we weren't looking for dialogue, we were expecting negotiations. [...] Regarding renovation, it was relatively positive since we had a lot of catching up to do. For example, there is a European directive which was set up in 2002 on thermal renovation, which was finally applied in French law in August 2008. We were so far behind, we had our knuckles rapped twice. ... So they are trying to tell us that the Grenelle environment round table is coming up and that we are always at the forefront, that it's great and all that, well... It all needs to be put into context." (Head of Mission at 'Friends of the Earth', Environmental NGO)

The ADEME's representative and the chairman of LOGICONFOR were more sceptical about the Grenelle round table.

In the Household appliances field

Through the importance of the environmental issue today, all the stakeholders are aware of the question of energy consumption. They ponder the various ways to take action. Some approaches are conducted fairly quietly. This is the case of **specific initiatives**, such as GIFAM's **cross-communication**, and CLCV's **Topten guide**. In addition, other forms of dialog are established more formally through **European platforms**, for example. To reiterate the words of the Environmental Officer of GIFAM, "There are many platforms, such as European programs. *At the time there was "save," there's the national plan for energy efficiency that was to set European objectives. These are all echo chambers. [...] there's a tremendous amount of discussion and talk about energy savings."*

Yet "**more confidential**" discussions can also be held with the government. As we mentioned above, GIFAM, in collaboration with ADEME and the Ministry of the Environment, has thought about a bonus/surcharge system for household appliances.

While there are various **dialog approaches**, they are still **very limited**, in the sense that they are only known to the stakeholders involved. These approaches are implemented to think about very specific initiatives and actions. This **compartmentalization** is quite apparent in the interviews. In effect, aside from the energy label that appears as a government-driven action, the other measures used as examples were always actions conducted by the interviewees. In short, the Topten guide was only mentioned by CLCV and the eco-calculator was only mentioned by GIFAM.

In the mobility field

Although the five interviewed players appear to identify clearly the influencing concerned parties in their fields, and their respective roles, only the Adviser in charge of urban transport in the Ministry for Ecology, Energy, Sustainable and Territorial Development (via the Grenelle Environment Round Table) has been committed to a specific process of widening dialogue between the parties concerned. And each of the players acknowledges that something is lacking at this level and that initiatives need to be implemented quickly.

For instance, with respect to car sharing, the Operations Director of Paris operator OKIGO, an affiliate of Avis/Vinci Park, underlined the fact that the first obstacle was a lack of communication, both internally between car sharing operators, and between these operators and the other parties concerned, like the communities, and finally a lack of committee chief in with the general public.

As he sees it, speaking for the Paris Town Hall, the Responsible of the general transport policy for Paris, stipulated that there is "*nevertheless great disparity between Parisian concerns and those of the outer-ring suburbs. We do not necessarily have the same culture.*" He very much desires strengthen dialogue with the communities of the inner-ring suburbs which could be implemented through the "Metropolitan Paris" plan.

The Marketing Director of the Green Cove operator - car pooling, has identified a major obstacle, the "subdivided service offer" between a wide variety of operators which is detrimental to the image and legibility of the car pooling service. Among the openings for future improvements, he suggests better communication with the general public, the simplification of the tool and the offer, and the emergence of a few major operators. He also points out that there is a need to strengthen co-operation with the communities and the enterprise world. All of these proposals are in favour of structured dialogue and coordination between the parties concerned.

As far as hybrid vehicle is concerned, Avere already has a corporate structure between the parties concerned but the reports drawn up by its chairman revealed that many ties with other parties concerned are still not in place. This work needs to be strengthened with dealerships, the managers of large community vehicle fleets and manufacturers.

"Everybody must be involved. Avere will obviously be one of the concerned parties but impetus must come from the government, manufacturers, car dealers, and everybody must act together so that the result is reached quickly." (Chairman of AVERE (Association for the Development of the Hybrid and Electric Vehicle, NGO))

3. Ideas for Stakeholder Dialogue in the Future

In the domestic energy field

Other than the ENERCOOP representative, whose ideal platform for cooperation between stakeholders we have just described, and which needs to be extended, there are few plans for a future pooling of resources concerning domestic energy.

However there is a major difference between the vision of a joint platform proposed by the institutional player and that from the association's representative.

Referring to the Grenelle environment forum, the representative from the ADEME notes the positive nature of this meeting of politicians, members of associations and professionals but regrets the absence of households, the people most concerned, who should be at the forefront of such platforms and more involved in dialogue, within neighbourhood councils for example.

"Finally, with the industrialists, for a number of years now, we have done things, since there have been sector-based negotiations, and we had a large number of contacts, although this was finite, with whom we could sit round the table with. And there our client, he's vanished, well, he's escaped us somehow." (Sociologist at the French Environment and Energy Management Agency)

However, when we turn to the question of consumers taking part in dialogue, the association's representative refers to "consumer associations". No mention is made of any obligatory participation of residents, as previously. The presence of representative associations at meetings would seem to be sufficient. Indeed, the rest of her speech, although committed, seems to consider the resident as one of the barriers on change, at least in terms of renovation/insulation.

In the Household appliances field

With respect to the interviewees, the implementation of platforms appears necessary to materialize future actions.

"There is a time when we need to take concrete steps and sit down together with ADEME and the Ministry." (Environmental Officer at GIFAM-Appliances manufacturers federation)

Furthermore, these platforms necessarily imply the involvement of all stakeholders, i.e. the government, ADEME, energeticists, and unions or consumer organizations representing the manufacturers and consumers, respectively. For example, the Environmental Officer at CLCV, a consumers' NGO, recommends establishing permanent think tanks on energy consumption. Let's reiterate his words to understand his intentions.

"Permanent think tanks for energy consumption in France, bringing all the stakeholders together around the same table, i.e. the decision-makers, European partners, consumer organizations, environmental defence and eco-consumption associations, manufacturers and energy suppliers. But a permanent council, just as there is a national council for noise, and for water; I would like to see a national council on energy consumption. [...]. With a real mission to inform, to

listen, to exchange and to dialog; [...] the purpose is to achieve information production in the noble sense of the term, raise awareness, and to better understand our energy consumption and what it should be tomorrow." (Environmental Officer at CLCV, consumers' NGO)

In the mobility field

To improve dialogue between the parties concerned, various openings have been mentioned during the interviews. For public transport, the Responsible of the general transport policy for Paris would like the various components of the mobility issues be discussed at the "Metropolitan Paris" scale, in addition to the work already taking place at the STIF (Syndicat des Transports en Commun en Ile-de-France - *Paris Area public transport union*). The projects and challenges facing "Greater Paris" are not based only on its architecture but also on its governance. At this scale, they could be a Mobility Club which would involve communities, services, the classical public transport operators as well as new mobility operators like car sharing, car pooling, Vélib', car park managers and user associations. On a more local level, it was pointed out that initiatives like the Mobility Agency of ZAC Paris-Rive-Gauche should be developed in all the districts in order to involve Parisians more generally.

On a bigger scale, at the national level, the Adviser in charge of urban transport in the Ministry for Ecology, Energy, Sustainable and Territorial Development underscores the fact that the particularity of the "Grenelle Environment Round Table" was indeed deliberation, dialogue and debate between the five different entities (Government representatives, community representatives, employees, enterprises, associations and NGOs). As he sees it, the approaches put under way in the "Grenelle Environment Round Table" should continue because *"Grenelle is a step forward in progress and development, the beginnings, but now we must continue."* Therefore, he believes that the "Grenelle Environment Round Table" provides a suitable framework for dialogue between the parties concerned to find solutions to the future challenges of urban transport.

The Marketing Director of the Green Cove operator - car pooling, announces the creation in 2009 of a "car pooling club" with various partners, communities, industry, transporters, as an opening toward dialogue and together defining the best solutions for car pooling. Of course, we must not forget public transport so that "it incorporates car pooling in its overall vision and mobility, proposing car pooling as part of the public service delegation."

With respect to car sharing, the Operations Director of Paris operator OKIGO, an affiliate of Avis/Vinci Park emphatically underscores the need for dialogue as frequently as possible during discussions of other themes concerning mobility, such as the creation of new public transport infrastructures, Vélib', street developments, etc.

IV. POLICY AND RECOMMENDATIONS (GLOBAL VIEW)

Of the three aspects dealt with in this research, the policies and/or recommendations seem to oscillate between injunctions and incentives, and also differ depending on the subject. For domestic energy savings and eco-efficient use of household appliances, money is still the key factor. While the challenge is a long term one, consumers are apparently unwilling to wait for the return on investment, and incentives are hoped for in this area. However, for alternatives to the "All Car" solution, because private cars are already more expensive and because practices and alternative modes have existed for a long time, development should probably be based on an improved organization of the alternative offering, supported by a policy restricting the use of private cars

In the domestic energy field

Energy savings are supposed, as their name would suggest, to make savings for society and households, while respecting the environment and the domestic economy. Why then does the financial barrier to investing always come out at the top of the list of obstacles to change?

Whether it is a question of financial barriers or weak policies and measures adopted, what emerges from these interviews with the various stakeholders is **the significance of "pre-conceived ideas"** and the strength of inertia and opposition to change. People who take the initiative to proceed with the construction of passive houses, with renovation/insulation works or to fit photovoltaic solar panels, like

those who take the initiative to change their heating practices or to use renewable energy, even if they are more well-off, are above all people who are informed and motivated, or indeed "militant", as certain interviewees suggested.

While general wisdom and socio-cultural models are not easy things to change, several "across-the-board" or "cross-cutting" recommendations do seem to emerge from the interviews, with the aim of overcoming the barriers on more economical, more ecological domestic practices.

Firstly, better training for building professionals, then direct subsidies for households for materials or products that are truly energy-efficient.

As regards the **tax incentives** set up by the government, there is a certain consensus around the fact that they are currently **insufficient**. The various players have divided opinions on the possible solutions: **increasing their value, introducing further measures, making them more targeted** to specific products or practices which are more economical or environmentally-friendly, or indeed simply **doing away with them** to replace them with regulatory requirements.

However, the ideal measures must also consider private individuals, owners and households - the "producer-consumers" - or even suppliers themselves, **on an egalitarian basis**, the only true prerequisite for generalising access to renewable energies and to energy savings in the domestic field. The network administrator must also be required to purchase the green electricity at a reasonable price.

In the Household appliances field

In France, while there is still no **real policy** in the field of household appliances, the government is currently focusing on establishing **a bonus/surcharge system for household appliances**. In addition, we have seen that policies exist in this area in Europe. We have mentioned the bonus for purchasing an A++ appliance in Spain, and the tax credit in Italy and Eastern Europe.

As a result, to attempt to remove the barriers to buying energy-efficient household appliances, **actions** must be established that are **government-driven**. Not only because they can release **financial aids**, but also because they have the power **to raise consumer awareness**. For example, the "Grenelle de l'Environnement" seems to have very positive impacts on consumer awareness and the awareness of all other stakeholders as well.

The recommendations would be to issue **real policies** and a "**Grenelle label**", and to have an ongoing **"energy" Grenelle on energy consumption** in France, for all sectors.

In the mobility field

Lastly, regarding changes in mobility-related behavior, practices are older and all players jointly stress the important role the **public authorities** must now play in coordinating and "enforcing" alternative practices. The **government** must send a clear message and set the regulatory frameworks (legislative, fiscal and financial) to control energy consumption (and local pollution) tied to automobile mobility.

Secondly, the part played by **local communities** is clearly mentioned. Municipalities must think globally and organize urban mobility, both in conventional forms – through the organization of public transportation – and through its role as facilitator and organizer, as well as through its enabling and communicative capacity, to promote the emergence of new solutions, or even experimentations.

From analysis of these discussions, it also appears that a large share of the obstacles impeding changes are not based only on the **proposed mobility offer**, whether quantitative or qualitative, but also on cultural, psychological and behavioral aspects. This means a great deal of work on the issues of **communication, image, perception, advertising and education**. There is clear identification that for the three innovating areas (car sharing, car pooling and hybrid vehicles) there is a "fear of the unknown", a reluctance to try a solution that we are not familiar with and that has not yet received much media coverage. There is a certain inertia and foregone conclusions to be overcome, calling for **specific accompaniment** which is sometimes underestimated by the public authorities. The players directly concerned are often forced to measure the consequences at their own cost.

Finally, one re-occurring concern is the issue of **dialogue and exchanges between the parties concerned**. For urban life, with increasingly complex mobility requirements and increasingly diversified players and mobility solutions, now more than ever before we have to create openings for the consistent working together of these players and mobility modes, improving simultaneously the overall offer, its legibility, its ease of use etc. Like the UITP (Union Internationale des Transports Publics) perhaps we should invent an IMU (International Mobility Union)?

So, while policies may differ according to the subject dealt with, they all have a common denominator: communication. And more importantly, "authentic" communication. Whether for domestic energy, eco-efficient household appliances or mobility, many false preconceptions must still be overcome.

V. GENERAL CONCLUSION

In the opinion of the interviewees, more than measures, **the domestic energy field** (works, materials, practices and consumption) above all **lacks strong will**. Governmental will, of course, which should favour more audacious policies for funding, renewable energy, practices, overall energy performance and targeted products, but also and above all the will from the consumers and households themselves. Because, from the financial aspect to administrative and technical constraints, etc., barriers are above all, according to these stakeholders, down to their pre-conceived ideas.

In the quantitative part of the study, it would therefore be wise to look deeper into these pre-conceived ideas and users' socio-cultural models.

There are still many strong barriers to the use of **energy-efficient household appliances**. While purchasing power is considered to be the main barrier, the lack of investment on the part of the stakeholders and inadequate communication and awareness campaigns compound the problem. This fact is all the more salient in that the household appliances sector doesn't generate strong energy consumption awareness among the various stakeholders (energeticians, government and manufacturers). As a result, the range of tools available for action in this field needs to be expanded. Actions are therefore required at two levels. Firstly, through financial measures to attempt to remove the cost barrier, and secondly through educational measures designed to increase consumer awareness of eco-consumption.

There is a consensus about the need to find collective solutions to the idea that "the car is still the most efficient solution" as a way of ensuring **urban mobility**. Institutional players need to include in their thinking process about "sustainable mobility", alternative solutions such as car pooling, car sharing, hybrid vehicles or the bicycle, because conventional public transport cannot meet all the demands of users or their needs, which are increasingly individualised and more and more precise in terms of space and time. This means that it is necessary to continue to make investments into public transport infrastructures, to improve the quality of the offer, and also think about other dimensions of mobility, such as the quality and relevance of multimode information, coordination and connection between conventional mobility modes (public transport, private cars) and innovative modes of mobility. The challenge is not just one of developing the techniques but also the methods of governance, the quality of the dialogue and the exchanges between the parties concerned.

More than **measures** (which are often expected on the economic level), it appears that what is really lacking is **strong political determination** (through legislative measures) that should promote a more daring policy in terms of financing, for sure, but also in terms of renewable energy, practices, global energy performance and targeted products. While this fact is striking with regard to domestic energy (renovation, materials, practices and consumption), it is similar in the field of eco-efficient household appliances. It is also characterized by **communication** that is termed insufficient, in an area where awareness is fundamental. As a result, the range of tools available for communication needs to be expanded. And it seems that it would be wise to begin or, if applicable, to insist on the education of

"eco-consumption," and naturally to support it with a satisfactory and diversified offering. In other words, if we take the example of household appliances and we have one "eco-efficient" model compared to 100 conventional models, this competition will dampen the enthusiasm of an eco-citizen, even a very educated one...

Lastly, through the mobility chapter, where **alternatives** and **awareness** have been around for a longer time, another challenge is clearly emerging: the need for **dialog and exchanges between stakeholders**. It is a recurring concern because in the area of mobility, the offerings are already multiple and they are increasingly diversifying. It therefore seems that there is a priority to facilitate - or to create - the interrelations between each of the stakeholders. So, shouldn't we create an International Association of Mobility, or more generally an International Association of Energy Savings?

ANNEXE : LIST OF THE INTERVIEWEES

With the first field of **domestic energy use**, we received several refusals from economic players regarding the topic of photovoltaic panels, mainly due to our status as part of EDF. These players consider that the behavioral change problem with regard to the installation of photovoltaic panels is tied to EDF's attitude. We finally gathered suggestions of persons to meet from one interviewee (association), and this facilitated the contacting process. Another economic player gave a positive response to our request and showed definite interest because he intends to set up a research and prospecting strategy calling on the services of sociologists. So he wanted to know more on the follow-up to this study and its results, just as the previous economic actor and the associative one. The persons encountered were all able to develop ideas on the topics proposed, with their own interests and visions.

For the topic of **household appliances**, we easily obtained an interview with one person who was already aware of the Barenergy project. At the opposite, another one who hadn't heard about it was more wary of the interview. Getting him to grant this interview was a bit tricky. We had to reassure him as to the issues and purpose of the research.

In the **mobility** area, all the interviewed players said they were highly interested in the research and made themselves very available.

	Political players / Technical experts	Economic players	Associative players (NGO)
Domestic energy use			
Heating	ADEME (national)		
Low-energy houses		LOGICONFORT	
Photovoltaic panels	ENAPVS (national)		
Green energy		ENERCOOP	
Refurbishment			Les Amis de la Terre
Household Appliances			
Energy efficient Appliances (purchase)		- GIFAM - BOSCH-SIEMENS	
Cooking and baking			CLCV
Mobility			
Public transport	- City of Paris (local) - Ministry of Ecology, Energy, Sustainable Development ... (national)		
Car pooling		GREEN COVE	
Car sharing		OKIGO	
Hybrid vehicles			AVERE

Domestic Energy Use

1. DERKENNE Chantal, ADEME, Sociologist, "Observation-Economie-Evaluation" department, Strategy Division, 2008, 8th December.
2. DEN HARTIGH Cyrielle, Friends of the Earth, Head of Mission: "Habitat & Renovation", 2008, 8th December.
3. COIGNOUX Philippe, National Higher School of Architecture, Paris-Val de Seine, Engineer, Lecturer, 2008, 9th December.
4. CIESLAK Jean-Philippe, LOGICONFOR, Chairman & Founder, 2008, 15th December (by phone).
5. DISSOUBRAY Grégory, ENERCOOP, Commercial Development, 2008, 17th December.

Household appliances

6. BARTARES Elisabeth, GIFAM, Environmental Officer, 2008, 5th December.
7. MAISON Philippe, CLCV, Environmental Officer, 2008, 5th December
8. SCHWAB Martin, Bosch-Siemens, Marketing Manager, 2008, 22th December.

Mobility

9. PROCHASSON François, On:, PARIS TOWN HALL, Direction de la Voirie et des Déplacements (DVD), Agence de la Mobilité, "General Policy" section director (for the last 8 years) 19/11/2008
10. LETY Xavier, Urban Transport Adviser; Chambers of the Ministry of Ecology, Energy, Sustainable and Territorial Development. 2008, 26th November.
11. MARMILLON Louis, Director of Operations at OKIGO, car sharing company (affiliate of Avis and this Vinci Park); 2008, 5th December
12. KUHN Olivier, GREEN COVE, car pooling enterprise, 2008, 9th December.
13. MOLARD Jacques, Chairman of the AVERE Association specialising in the promotion and development of electric and hybrid vehicles, 2008, 11th December.