The PROCURA Project

PROJECT SUMMARY

Alternative Fuel Vehicles – the PROCURA project

Utrecht, 19 January 2009

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1 Introduction

PROCURA aims at facilitating large-scale procurement of Alternative Fuel Vehicles (e.g. natural gas vehicles, biofuels) by lowering traditional market barriers. PROCURA contributes to EU objectives related to reducing greenhouse gas emissions, increasing energy security and stimulating alternative fuel application.

Currently, Alternative Fuel Vehicles form a niche market. Large-scale introduction is hampered by a number of structural market barriers, such as (i) lack of infrastructure (chicken-egg problem), (ii) lack of maintenance and repair facilities, (iii) lack of knowledge of fleet owners and consumers, (iv) higher purchase costs, and (v) lack of second-hand market.

In order to overcome these barriers PROCURA focused on developing models for large-scale procurement of Alternative Fuel Vehicles. Procurement models were developed with a focus on centralised buyer pools (e.g. private and public fleets, rental agencies), permitting centralised infrastructure, maintenance and repair, and stronger purchase power (lower costs). PROCURA assessed and developed incentive systems to compensate for higher purchase prices. Lastly, PROCURA set up novel ways of facilitating green fleet procurement via GreenLease schemes, organising second-hand market development, and designing a certification system for Alternative Fuel Vehicles.

PROCURA extends and built upon the work of programs such as CIVITAS, ELCIDIS and BEST by extending the current focus towards private buyer pools, to develop leasing schemes of integrated fuel-vehicle leasing and integrated thinking of procurement, incentives, as well as repair and maintenance structures.

This report will provide an extensive summary of PROCURA, including a summary of the progress per reporting period (6 months), a description of the workpackages & pilot projects, the identified problems & actions taken and a set of policy recommendations. The report will be finalized with a list of the deliverables of PROCURA. The goal is to present a single report describing the whole technical implementation of PROCURA over the total duration of the project.
2 Overview of the PROCURA reporting periods

PROCURA was divided in six different reporting periods of six months each. All reporting periods were concluded by a technical report, describing the progress of the project. This chapter will provide an overview of these PROCURA reporting periods.

2.1 Developing Building Blocks for PROCURA

Activities in the first reporting period have been focused on developing the ground work in WP2 and WP3, in preparation of the pilot cases in WP4-8. Also the dissemination structure has been set up and first activities have been undertaken.

In WP2, manual development takes a central place, include activities like:
- Analysis of current status quo and available knowledge regarding green fleet procurement (in other EU projects, in national projects, individual demonstrations);
- Analysis of market barriers, incentive systems, typical buyer pools, private fleet owners and best practices for AFV procurement;
- First round of fleet scan activities, in preparation of a finalized fleet scan model applicable for all PROCURA partners/pilots, as well as getting more insight on the market barriers perceived by these fleet operators;
- Development of procurement models, in which different configurations of ownership (of fuel, vehicles), financing schemes (leasing versus purchase) and third party involvement (sponsoring, incentives, exploitation, etc) are examined;
- All WP leaders of WP4-8 have started to analyze the local context situation of their pilot cases and early contacts with potential fleet owners have been made;
- The ground work for the dissemination has been carried out (website, basic information package, presentation). Further activities for dissemination are planned, including the selection of the most valuable dissemination channels (currently identified).

In the kick off meeting it was decided that WP2 and WP3 activities should not be final after the deliverables are presented (M8-M14). Instead, partners should have the opportunity to integrate lessons learnt in the individual pilots, as well as to provide additional supporting material for specific case studies to be developed during the local actions. The WP2 and WP3 leaders have reserved hours of the current budget to incorporate these lessons learnt in a final version of the deliverables of WP2 and WP3, as part of WP9 (project evaluation). Draft deliverables will remain on time conform initial project grant agreement; final (updated) deliverables will be delivered in M35. The manual with the coordinated version of all WP2 Deliverables were made available for all
PROCURA members in a monthly issue basis to secure that the format and content would support the field actions.

2.2 Finalizing PROCURA Building Blocks & Shift towards Pilot Cases

The second reporting period (‘Finalizing PROCURA Building Blocks & Shift towards Pilot Cases’) includes the finalization of the necessary building blocks of WP2 (manuals) and WP3 (Procurement Models), and the shift towards the pilot cases (WP4-WP8) where the building blocks were applied.

The period is characterized as bridging theory with practice. The more theoretical groundwork of the manuals and procurement models (although developed in close collaboration with practitioners and market parties to safeguard market applicability) will be applied by PROCURA partners to enter in discussions with fleet owners and municipal fleets for procuring AFVs in the individual pilot cases.

Apart from the finalization of the WP2 and WP3 deliverables, WP-leaders of the pilot cases have made preparations in their respective cases in analyzing the current local market situation for AFVs, evaluate relevant context factors (e.g. regulations, tax exemptions) and build up a network of attractive candidates for involvement in PROCURA.

Through our discussions with fleet owners we have found that availability of AFVs is a major barrier. As a result IST has included an analysis of AFV-availability to provide a basic overview. Furthermore, all WP-leaders of individual pilot cases have assessed AFV availability in their respective countries, given differences per EU country.

A second identified problem was related to the high costs of alternative fuels. Particularly biofuels are only economically feasible in case of tax exemptions. In cases where tax exemptions are not available, costs are prohibiting large scale introduction of AFVs. Given that cost reduction is one of the highest priorities of fleet owners, this provides a major hurdle. As a result, PROCURA put extra effort in collecting detailed economic data of the consequences of switching to AFVs for individual fleet owners (using the fleet scan tool), and focused more on possible incentive schemes as compensation. Given that the issue of tax exemption falls outside the range of the PROCURA project, the dissemination activities have been focused on informing the EU and national governments on the importance of tax exemptions as a way to lower barriers for the adoption of AFVs.

2.3 Progressing Pilot Cases

The main results of PROCURA from the period M1-M18, as described in the interim report, were the following:

- Supporting manuals/reports:
A set of stakeholder-targeted documents and reports, intended to provide support to the relevant stakeholders that are related to the procurement process of AFVs. Examples include manuals with practical data on AFVs for different stakeholders (e.g. fleet owners, repair and maintenance shops); reports on barriers and incentive systems; greenlease concepts (for fleet owners); and a report of attractive procurement models (for fleet owners).

- Analysis tools:
  PROCURA has developed a dedicated and easy to use fleet scan tool that allows partners to quickly analyse economic and environmental impacts of AFV procurement for particular fleet owners. By the end of the Interim period more than 70 fleet scans had been carried out.

- Pilot case start:
  In the last 6-9 months the shift from supporting (more theoretical) manuals/building blocks to more practical case studies was made. In five countries the foundation has been made to prepare, facilitate and achieve procurement of AFVs, through network development (e.g. contacts with supply chain, from OEMs, to fleet owners and municipalities), analysing local regulations, barriers and opportunities, set up workshops with relevant stakeholders, and develop promising procurement strategies.

- Dissemination:
  Through a range of activities (including website, workshops, conference attendances), PROCURA has been active and successful in reaching a large number of relevant stakeholders within the supply chain to support AFV-procurement.

The main lessons learnt throughout the interim period were:

- Cost and availability are main hurdles:
  Through its intensive contacts with fleet owners, the cost focus of this target group has become eminent. Although exceptions occur (e.g. motives of social responsibility, sustainability), for most fleet owners cost is a dominant motive for car and fuel choice. This provides major hurdles for most alternative fuels, except for the countries with supporting taxation schemes (Natural gas in several countries; biofuels in a limited number of countries). Although fleet owners show interest in AFVs, in general, additional and strong incentives are required to convince fleet owners to adopt these vehicles. A second hurdle lies in the lack of availability of AFVs, limiting the choice options for fleet owners. Third, a lack of infrastructure limits the economic and practical procurement of AFVs.
- **Fleets as an opportunity:**
  Through its contacts with the complete supply chain of AFVs, it became clear that a focus on (private or public) fleet owners is the most promising option for procurement of AFVs. Larger fleets can purchase more AFVs, allowing infrastructure to be built, enabling local repair and maintenance structures, and overall costs can be reduced with higher scale of AFV sales. Larger fleets are therefore seen as the logical seeds for large scale procurement for consumers on the longer term.

- **Differentiated Opportunities:**
  There is no overarching winning formula for large scale AFV procurement, also due to large differences between EU countries. Elements of successful AFV practices include (I) favourable taxation schemes, (II) mandates concerning AFV procurement or infrastructure development, (III) complementary incentive schemes initiated by municipalities, (IV) involvement of supply chain (e.g. infrastructure developers, OEMs, repair and maintenance), (V) focus on larger fleets (e.g. municipalities, large fleet owners). Depending on situational differences, these variables need to be adapted to the case at hand.

No major problems with significant impact on the objectives of PROCURA were experienced during the interim period. Minor hurdles include the following. In the first period there has been some ambiguity about work division and planning of deliverables regarding WP2 and WP3. This was largely due to tight deadlines and large synergies between the outcomes of WP2 and WP3. Through intensive communication (regular teleconferences) and numerous status updates in a coordinated project group (IST, NTDA, Ecofys, UU) this problem was tackled with the result that limited time was lost on the WP2 and WP3 deliverables.

Internal communication between partners has been a point of attention. Points of action has been the requests by email to provide updates per WP leader, keep high level of content in discussion in partner meetings, set up an extranet function, and the decision to circulate deliverables to all partners.

Participation of the target group (fleet owners) has in some case been difficult, also influenced by the international variance in regulatory settings, AFV availability and taxation schemes. Through the partner meetings and in some cases additionally, cross-case learning has been put high on the agenda, while input of industry partners ENGVA and Ford has been intensified.
2.4 Towards Implementation

The reporting period of Technical Report IV “Towards Implementation” activities are emphasized on bringing PROCURA knowledge and tools into practice, and providing further support and incentives for fleet owners for procurement.

Typical activities in this period:

- A large number of fleet scans have been carried out in different pilot case countries. Fleet scans support in going beyond public awareness for targeted fleet owners, by demonstrating economic and ecological consequences of shifting towards AFVs. Fleet scans have proven a powerful method for educating fleet owner in detail about AFV opportunities and barriers.
- Contact with the relevant target groups have been made, either through workshops, face to face meetings, conference participations, or newsletters.
- Supporting instruments are still further in development, for instance leading to the certification document. Although a certification platform has proven hard to set up, PROCURA considers certification as a potentially powerful method to support AFV procurement.
- Organizing AFV procurement proves to require a multi-stakeholder view and a clear vision on how to organize the shift to AFVs. For this reason several pilot cases are developing action plans to facilitate the vision development and provide roadmaps and transition steps.

No major problems with significant impact on the objectives of PROCURA were experienced during the Interim Period. Minor hurdles include PROCURA partners are experiencing some sceptical reactions in their discussions with stakeholders in relation to recent debates on biofuels, e.g. on food-for-fuel discussion and concerns regarding sustainability of biofuel production and logistics. In the last PROCURA meeting (January 2008) this has been discussed in detail with all partners, also to come to a more common understanding, and with the objective to have a more nuanced view on biofuels than can currently be observed in the media. Another issue relates to the biofuel-mixing strategy of oil companies that can currently be observed, and which favors B5-10 or E5-10 vehicles, rather than FFV (with 85% ethanol). This trend could be discerned early in the project (2006) but has taken shape in recent years. This limits the partners somewhat in stimulating FFV purchase, but particularly in the option to promote E85 as a fuel. This is a trend in the industry, which as PROCURA partners, little can be influenced. This is however complicated in reaching the overall goals of CO2 reduction of PROCURA – as biofuel vehicles with lower percentages of biofuel are favored.

As is discussed in WP3, setting up a certification platform and accompanying workshop has proven too difficult. Instead a survey was held (conform changed plan of action,
approved by the EU) to establish the conditions under which certification may be helpful and how this should be organized. This WP3 is now fully rounded off. (Higher) Costs of fuel and (limited) availability of AFVs remain a major hurdle for AFV procurement, whereas availability of AFVs per country also differs strongly. Between the WPs more contact is enacted to get more grip on which vehicles are available per country; FAST has set up a showroom to showcase the AFVs available. But overall PROCURA is dependent on OEMs to provide attractive alternatives for current vehicles in order for fleet owners to switch to AFVs. PROCURA remains in contact with OEMs to send this message, while PROCURA also would like to emphasize this point to the EU: availability of AFVs should in some way be stimulated as a starting point for large scale procurement.

2.5 Finalizing the Case Studies

The Technical Report V “Finalizing the Case Studies” emphasizes that the activities are moving towards ‘action’ after a period of analysis, informing, educating and communicating. The last workshops and fleet scans have been carried out, while a more action-oriented approach was demonstrated (e.g. development of Roadmaps and Action plans as well as practical actions in infrastructure development and AFV-procurement).

Typical activities in this period:
- The last fleet scans were carried out in different pilot case countries. Fleet scans support in going beyond public awareness for targeted fleet owners, by demonstrating economic and ecological consequences of shifting towards AFVs. Fleet scans have proven to be a powerful method for educating fleet owners in detail about AFV opportunities and barriers.
- Recurring contacts with selected target groups were made (workshops, face to face meetings) – PROCURA found that several discussions with the most attractive and motivated target groups are necessary to come to action.
- Development of action-oriented documents, either for fleet owners or for municipalities/regions. These take the form of Action Plans or Roadmaps and set up of (public-private) partnerships.
- Infrastructure development and actual procurement of vehicles. Note that procurement of vehicles still require much work in the form of campaigns, detailed cost analysis, practical infrastructure issues, long term stability in municipal support and discussion on incentive systems.
Main barriers for the large scale procurement of AFVs as found in the PROCURA project were:

- **High costs of fuels:**
  PROCURA has considered several ways how this may be circumvented (e.g. incentive systems, financing schemes, subsidies, internationalization of environmental costs). However, this issue remains an urgent barrier.

- **Availability of AFVs:**
  Limited availability of AFVs remains a major hurdle for AFV procurement, whereas availability of AFVs per country also differs strongly. Between the WP’s more contact is enacted to get more grip on which vehicles are available per country; FAST has set up a showroom to showcase the AFVs available. But overall, PROCURA has been dependent on OEMs to provide attractive alternatives for current vehicles in order for fleet owners to switch to AFVs. PROCURA remained in contact with OEMs to send this message, while PROCURA has also emphasized this point to the EU; availability of AFVs should in some way be stimulated as a starting point for large scale procurement.

- **Infrastructure availability:**
  Similar to AFVs, infrastructure (un)availability is a major barrier; also here PROCURA has been trying to find joint solutions to solve this chicken-egg, e.g. by starting with biodiesel infrastructure, procurement of flexible fuel vehicles, or joint procurement of infrastructure and vehicles.

- **Food for fuel discussion:**
  PROCURA partners have been experiencing sceptical reactions in their discussions with stakeholders in relation to recent debates on biofuels, e.g. on food-for-fuel discussion and concerns regarding sustainability of biofuel production and logistics. This is leading to sceptical reactions of fleet owners (biofuel cars are no longer an image builder), municipalities (unclear whether this supports their policies) and supply chain members (solid investment or not?). The related ambiguity in EU signals concerning the long term support of the current AFV standards for 2020 seemed to be starting to hamper private investments in biofuels, and thereby large scale procurement of AFVs. In PROCURA meetings in January 2008 (Warsaw) and June 2008 (Florence) this topic was discussed in detail with all partners. Ecofys prepared a presentation on “myths“ and “facts” regarding this discussion; it was however decided that it is not the role of PROCURA to take active position and bring forward their ‘opinion’. PROCURA can play a role in making clear how this discussion affects the large scale procurement of biofuel vehicles. One newsletter was focused on the food-for-fuel debate, by
asking relevant stakeholders in the supply chain what the effect is of this discussion on their operations.

- **Biofuel strategy:**
  Another issue relates to the biofuel-mixing strategy of oil companies that can currently be observed, and which favours B5-B10 or E5-E10 vehicles, rather than FFV (with 85% ethanol). This trend could be discerned early in the project (2006) but has taken shape in recent years. It limited the partners somewhat in stimulating FFV purchase, but particularly in the option to promote E85 as a fuel. This is a trend in the industry, which cannot be influenced significantly by PROCURA partners. It did however complicate reaching the overall goals of CO2 reduction of PROCURA, as biofuel vehicles with lower percentages of biofuel are favoured, but not included in the PROCURA performance indicator measurement.

- **(Hybrid) Electric vehicles:**
  An interesting resurgence in hybrid and full electric vehicles can be discerned. Despite the positive developments in this field, this creates more ambiguity among end users whether AFVs are the dominant future solution. PROCURA kept its knowledge base up to date regarding the developments in all alternative drives, in order to provide fleet owners a good overview of opportunities.

### 2.6 Completing PROCURA

In the final half year of PROCURA the main emphasis has been on the finalization and completion of the project. Final efforts were made to achieve the formulated targets and finalize the last deliverables. Typical activities in this period include:

- Creation and publication of main technical publication “Hitting the road in green mode: tools for successful procurement of alternative fuelled vehicles for public and private fleets”;
- Finalization of the specific country activities, which has resulted in several highlights, such as the political decision made in December to introduce 75 CNG buses in the city region of Nijmegen (Netherlands);
- Final seminar and project meeting in Brussels, including various members from automotive industry;
- In close communication with the Commission the contract amendment was set up, which was required due to the termination of the ENGVA organization;
- Preparation of the required final technical and financial PROCURA reporting to the Commission;
- Final uploads of PROCURA deliverables to the website (http://www.procura-fleets.eu). The PROCURA website will be maintained by FAST until January 2011 or longer.
During the final months of PROCURA, Ecofys has maintained regular contact with different WP leaders of WP4-8, concerning the pilot cases, and WP10 regarding dissemination and upgrading of the website and newsletters. Moreover, Ecofys was involved setting up the program for the last PROCURA seminar in Brussels. In addition, the Summary report of the PROCURA project was composed (deliverable D1.2). Finally, Ecofys gathered all relevant data, achievements and deliverables for the completion of PROCURA and prepared this final technical report.
3 Identified problems & actions taken

Concerning the identified problems and actions taken, a distinction can be made between types of problems. First of all, some problems were encountered regarding the technical process of the project itself. Moreover, a set of problems was identified for the actual large-scale adoption of AFVs by fleet owners. This chapter will describe both types of problems.

3.1 Technical progress

With regard to the technical progress of the PROCURA project, only minor problems have been identified and acted upon. In the first period there has been some ambiguity about work division and planning of deliverables regarding WP2 and WP3. This was largely due to tight deadlines and large synergies between the outcomes of WP2 and WP3. Through intensive communication (regular teleconferences) and numerous status updates in a coordinated project group (IST, NTDA, Ecofys, UU) this problem was tackled with the result that limited time was lost on the WP2 and WP3 deliverables.

Internal communication between partners has been a point of attention throughout PROCURA. To deal with this issue, a number of actions were taken; it was regularly requested from all workpackage leaders to provide updates by e-mail, during the partner meetings a high level of content in the discussions was ensured, an extranet was put on the PROCURA website to exchange deliverables and other files among the partners, and the decision was made to actively circulate the deliverables to all partners.

A third issue was the participation of the target group (fleet owners) in workshops, seminars and other PROCURA activities. It has in some cases been difficult to realise the desired participation level, partly influenced by the international variance in regulatory settings, AFV availability and taxation schemes. To deal with this, cross-case learning has been put high on the agenda, mainly through the partner meetings and in some cases via additional channels. Moreover, the input of industry partners ENGVA and Ford has been intensified.

3.2 AFV adoption problems

Concerning the actual adoption of AFVs by fleet owners, the following problems were identified and acted upon. Already in the second period of PROCURA, it was identified that the low availability of AFVs is a major barrier for fleet owners to adopt these vehicles. Therefore, IST has included an analysis of AFV-availability in PROCURA to provide a basic overview. Furthermore, all WP-leaders of individual pilot cases have assessed the AFV availability in their respective countries, given differences per EU country. But overall, PROCURA is dependent on OEMs to provide attractive alternatives.
for current vehicles in order for fleet owners to switch to AFVs. PROCURA remains in contact with OEMs to send this message.

Similar to AFVs, infrastructure (un)availability is a major barrier; also here PROCURA has tried to find joint solutions to solve this chicken-egg, e.g. by starting with biodiesel infrastructure, procurement of flexible fuel vehicles, or joint procurement of infrastructure and vehicles. A third identified problem is related to the high costs of alternative fuels. Through the first 50 fleet scans that were carried out, it turned out that particularly biofuels were only economically feasible in case of tax exemptions. If tax exemptions are unavailable, costs are prohibiting large-scale introduction of AFVs. Given that cost reduction is one of the highest priorities of fleet owners, this provides a major hurdle. As a result PROCURA intends to collect detailed economic data of the consequences of switching to AFVs for individual fleet owners (using the fleet scan tool), and focus more on possible ways to circumvent this issue (e.g. incentive systems, financing schemes, subsidies, internationalization of environmental costs). Given the issue of tax exemption falls outside the range of the PROCURA project, PROCURA has focused its dissemination activities on informing the EU and national governments on the importance of tax exemptions as a way to lower barriers to procure AFVs.

PROCURA partners have been experiencing some sceptical reactions in their discussions with stakeholders in relation to recent debates on biofuels, e.g. on food-for-fuel discussion. Additionally, concerns were raised regarding the sustainability of biofuel production and logistics. In PROCURA meetings in January 2008 (Warsaw) and June 2008 (Florence) this topic was discussed in detail with all partners. Ecofys prepared a presentation on “myths” and “facts” regarding this discussion; it was decided that it is not the role of PROCURA to take active position and bring forward their ‘opinion’. However, it was decided that PROCURA can play a role in making clear how this discussion play a role in the large scale procurement of bio-fuel vehicles. One newsletter will be focused on the food-for-fuel debate, by asking relevant stakeholders in the supply chain what the effect is of this discussion on their operations.

Another issue relates to the biofuel-blending strategy of oil companies that can currently be observed, and which favours B5-B10 or E5-E10 vehicles, rather than FFV (with 85% ethanol). This trend could be discerned early in the project (2006) but has taken shape in recent years. This limits the partners somewhat in stimulating FFV purchase, but particularly in the option to promote E85 as a fuel. This is a trend in the industry, which as PROCURA partners, little can be influenced. It however complicates reaching the overall goals of CO2 reduction of PROCURA – as biofuel vehicles with lower percentages of biofuel are favoured. From WP3 it was concluded that setting up a certification platform and accompanying workshop is too difficult. Instead a survey was held (conform
changed plan of action, approved by the EU) to establish the conditions under which certification may be helpful and how this should be organized.

A final remark is made on the resurgence in hybrid and full electric vehicles that could be discerned the past year. Despite the positive developments in this field, this creates more ambiguity among end users whether AFVs are the dominant future solution. The PROCURA partners made sure they kept themselves up to date regarding the developments in all alternative drives, in order to be able to provide fleet owners a good overview of opportunities.
4 Consortium management (WP1)

Ecofys has held regular contact with all partners throughout the project, either by mail or by phone. Particularly discussions with partners involved in WP2 and WP3 have been more frequent (teleconference by phone in a monthly basis in the first reporting period) in order to enable effective communication and work responsibilities; especially the management of possible overlapping between activities of tasks of WP2 and WP3 has been a point of attention. Ecofys has organized several telephone conferences with NTDA, IST and UU to define tasks, responsibilities, priorities and planning of draft reports to be sent around.

Co-operation with the DOE programme was stimulated, where WP2 leader IST has made contact and built upon the knowledge created in this programme. Furthermore, a thorough assessment was made of more than 10 EU projects to look for available knowledge and synergies. In 2006, Ecofys attended a meeting in the Netherlands were experiences were exchanged between 4 current EU projects related to AFV procurement (e.g. SUGRE and BEST). As part of WP2 and WP3, contact has been made with several ongoing EU projects concerning green fleet procurement (e.g. BEST, Biogasmax). Through interviews, mutual learning experiences have been exchanged. For WP9, a number of telephone interviews have been held with the project coordinators of the different pilot cases. These interviews served to gather the necessary input for the deliverables of this workpackage, thereby intensifying communication between partners and optimizing cross-case learning. Throughout the project Ecofys has been in contact with most partners to keep in touch with latest developments, possible barriers found, and provide support where necessary.

During the first periods, in which WP2 and WP3 were conducted, the involvement of partners in the pilot cases (WP4-8) was a point of attention. In order to increase communication between partners it was decided in the meeting of July 2006, to set up an extranet facility on the PROCURA website (available for PROCURA partners only) to share documents, notes and experiences. Additionally, it was decided to provide individual updates between the partners on a monthly basis. In this way communication between partners was intensified. However, in general it remains difficult to create an internal discussion, possibly also due to differences per pilot case. The half year PROCURA meetings remained the most important points of contact, and much time was allocated to discussing details of the pilot cases in these meetings.

Six project meetings have been held. Two-day meetings were scheduled in order to maximize the opportunity to get a shared understanding of the barriers for AFV procurement per pilot case. All representatives of the partners participating in the PROCURA consortium were present at these meetings. The two-day meetings provided
opportunities to discuss in-depth the problems fleet owners are faced with concerning AFV procurement as well as provide room to discuss and brainstorm on models PROCURA can deliver as suitable and realistic solutions. Besides the regular project meetings, two other meetings were held; one in October 2006 with the partners that were involved in WP2 & WP3 and one in December 2008, with all partners, in which a dissemination seminar was combined with a short project meeting on the issues regarding the finalization of PROCURA.

Quality of the work is controlled through sending regular draft reports to either closely involved partners (preliminary reports) or to all partners (draft reports). Furthermore, by building as much as possible on earlier work PROCURA is focused on providing added value to current state of knowledge. In discussions with WP2 and WP3 leaders, quality control has been high on the agenda. Through telephone meetings, the involvement of other PROCURA partners (e.g. Ford, ENGVA), fleet owners/end users (e.g. public, private) and relevant branch organizations was continually emphasized and integrated to increase quality of the work.

**Contract amendment**
In 2007, one of the most notable developments has been the termination of ENGVA as project partner, due to filing of bankruptcy. As coordinator, Ecofys has been in close contact with the EU and the remainder of ENGVA to manage this. Ecofys has finalized all administrative links between ENGVA and PROCURA and set up a contract amendment which was communicated to the EU; furthermore, Ecofys has formulated a strategy to share the tasks and responsibilities of ENGVA to other PROCURA partners.

During the course of this project it was concluded that the contribution of Ford is most valuable in WPs that were originally not envisaged. For instance, in Italy and Portugal (where a majority of hours of Ford were allocated), the market for FlexiFuel Vehicles (FFVs) is limited, whereas in Spain the market for FFVs is much larger. This is partly due to recent developments in taxation schemes for these countries. Furthermore, the value of Ford as a dissemination partner has been under-budgeted. Therefore, the hours of Ford are more focused on WP8 and WP10 than initially planned. Ecofys has contacted the respective WP coordinators to come to a budget plan of Ford’s contribution in 2008, and communicated this with the EU (as part of the contract amendment, which also dealt with the changes resulting from the liquidation of ENGVA).

**Process aspects**
Attracting fleet owners and other stakeholders to workshops proved complicated throughout the project. Despite the fact that a large number of stakeholders have been reached, and that some workshops have been very successful and well-visited, in some cases participation remained limited. In the PROCURA meeting of January 2008, this
point was tackled in more detail; with all partners a set of pre-conditions for successful workshops was made, so that all partners were stimulated to do everything within their power to make workshop participation a success. In addition, the success of PROCURA has been dependent on the motivation of stakeholders.

During the PROCURA meeting of January 2008, it turned out that some issues remained, concerning the use of the fleet scan tool. This was particularly the case in relation to context differences between countries. It was decided that WP3 coordinator NTDA would get in contact with other WP coordinators to study any conflicts, and integrate updates where possible in the tool. This had been accomplished before the next project meeting of June 2008.

One of the main management and coordination objectives throughout PROCURA has been to facilitate and support all partners in achieving their respective objectives and deliverables against set deadlines. Particular focus was on getting progress in the different pilot cases and in achieving sufficient dissemination. Towards the end of the project, Ecofys put more emphasis on these activities and kept close track of performance indicators. Additionally, Ecofys has been communicating the possible gaps regularly with the PROCURA partners, also requesting input on how and who may support in filling the gaps, thereby achieving the objectives.
5 Manual development (WP2)

The main objective of this work package was the developing of five manuals, all concerning alternative fuels and vehicles that could congregate the necessary information regarding these solutions. IST has focused on data gathering regarding (i) market barriers, (ii) incentive systems and (iii) manual development. The activities within workpackage 2 were focused on finalizing and delivering the following documents:

- Market barriers of large AFV procurement (D2.1);
- Manual for infrastructure development for AFVs (D2.2);
- Training guidelines for maintenance and support of AFVs (D2.3);
- User manuals for fleet owners concerning AFVs (D2.4);
- Report on available incentive systems (D2.5).

The main activities carried out to achieve this goal included:

- Research and collection of relevant information regarding the implementation of alternative fuel vehicles in different countries (particularly European);
- Analyses of recommendations suggested and incorporation of those in the PROCURA documents;
- Research and collection of information in the internet and in specific bibliography;
- Contacts and interviews with many different entities and associations all over the target countries, related with the subjects covered in the manuals (target group, infrastructure, maintenance, alternative vehicles, biofuels, natural gas and incentive systems).

Some of the referred entities were:

- National Biodiesel Board;
- Austrian Biofuels Institute;
- CIVITAS SMILE Project;
- National Natural Gas Vehicle Association;
- European Natural Gas Vehicle Association;
- Bioalcohol Fuel Foundation;
- European Biomass Industry Association;
- Vehicles Manufacturers: MAN, Ford, Volvo, Citroen;
- Urban Fleet Companies: STCP (in Porto - PT), Autobus de la Ville de Luxembourg (AVL), Empresa Municipal de Transportes de Madrid S.A., Berliner Verkehrsbetriebe BVG;
- Empresa Municipal de Transportes de Valencia;
- Oil Companies: BP, Repsol, TOTAL;
- Environment and Health Administration of the City of Stockholm (in the person of Dr. Eva Sunnerstedt);
Many European projects, such as: TELLUS, TRENDSERTER, VIVALDI, MIRACLES, NICHES, ZEUS, ELCIDIS, PREMIA, Clean Cities;
National Renewable Energy Laboratory;
U.S. Department of Energy;
National Ethanol Vehicle Coalition;
Renewable Fuels Association.

Although earlier suggestions of IST to comprise the manual-reports in one large document (title: “What is up for Alternative Fuels Vehicle? What you need to know to be part of this business”), with the development of the deliverables it was agreed with the coordinator that it would be more valuable focusing on the smaller and more focused end-deliverables. The one-single document strategy was aborted in favour of three manuals, targeted for three different target groups.

In order to provide opportunities for feedback and increase quality of the documents IST held a policy of frequent updates of draft versions regarding WP2: several draft issues of the deliverables were made, and the final draft versions of these documents were sent to all partners in the beginning of December 2006, providing opportunities for partners to give final comments and eventual feedbacks and input on these documents (specially focused in the development of the case studies).

Limited feedback was received during the reporting period (M12); however, after the PROCURA meeting in Valencia (18-19 January 2007) extensive input was received from all partners and incorporated in the WP 2 deliverables, in order to finish them. In this sense, at the end of month 13, and along with the Progress Report all the presented deliverables were finalized and sent to the Commission.

The material was developed in this form so it would be made available for the final users with a minimum of changes, and could be part of a further campaign in the penetration of the AFV after the termination of the project (also for the editing of the final version encompassing the lessons learned during the Procura project). During November and December 2008, the WP2 deliverables have been updated according to other partners’ experiences, and changes on the European fuel market.

In the work developed along this WP, the coordinator of the project (Ecofys) and partner ENGVA were extremely involved; not only providing inputs and suggestions on what the documents should look like, but also in gathering relevant information to include in the material produced.
6 Procurement models (WP3)

Within WP3 the University of Utrecht had 500 hours at their disposal. They have employed these hours to create a theoretical methodology to determine how to come to Procurement Models. A first draft of this methodology was presented at the progress meeting in July 2006. Moreover, UU has analyzed best practices in order to identify key success and failure factors of the procurement process as they have occurred in empirical procurements.

Terberg has contributed to the preliminary Greenlease paper by fulfilling a questionnaire and providing information regarding the Leasing business. Further informal telephone interviews (>5) with different European Leasing companies have been performed to receive a thorough understanding of important criteria regarding Leasing schemes. The work on financial schemes aims at elaborating financial concepts which lead to win/win situations for all participants in the procurement process. These benefits may range from trivial benefits to significant price reductions.

Ecofys developed a fleet scan tool which calculates economic and environmental effects according to different fleet scenarios. The tool was customized to the legal environmental and market specifications of the Netherlands. NTDA Energía and Ecofys later on adapted this tool, to make it applicable to other countries as well. The outcome became the WP3 deliverables D3.1 and D3.2; the communicative tools on economic and environmental effects.

For deliverable D3.5 (The Certification Platform) a delay occurred; this seminar had not been organised by July 2007. By that time, a great deal of work had already been done; several drafts were made for the Certification System outline (D3.3), summarizing various concept design options and recommendations for Certification Systems related to alternative fuel vehicles. Main influence partners to the second draft on Certification were Ecofys and ENGVA, who evaluated the first draft and provided their input to the second draft. This second draft was distributed among the PROCURA consortium prior to the Progress meeting in Lisbon where some decisions regarding the further development of this paper were made. The final version of this document was however supposed to integrate the conclusions of the seminar and therefore remained undelivered at that time.

The organization of a seminar has not been feasible, due to the complexity of the matter and limited available platforms in this field. NTDA approached relevant organizations related to AFV-certification, collected possible venues (e.g. conferences) to link the seminar to, and finalized conclusions on most attractive options for certification. Based on this, it was decided that the seminar was to take place in Brussels at the same time.
as the Sustainable Mobility Week (17th – 21st September 2007) and would be aiming at forming a network of participants who could represent the certification claims of public and private fleet owners, car manufacturers, national authorities, certification institutes, large technological institutes, leasing companies and academic as well as industry R&D. The platform was to be a communication pool of specialists from various European countries with different market perspectives and knowledge relevant to the market penetration of AFVs. For this seminar, a complete agenda had already been set by PROCURA, while various speakers had been invited.

However, NTDA encountered difficulties attracting the assigned number of participants to this seminar (D3.5). It received only 12 registrations, although a lot of effort was placed in promoting this event. A brief overview of the efforts placed in the workshop promotion is provided below:

- Sending out a large number (226) of personalised invitations;
- Contacting/inviting various platforms and initiatives (such as Biofuel EU projects, the biofuels platform and the biofuels-cities initiative, etc.);
- Invitations were sent to all participants of the Mobidays (event at Imperial College on the 21-09-07)
- The event was posted on various websites (e.g. Cordis Website);
- The event was promoted through newsletters;
- Follow-up calls were made.

In summary, hardly any response was given at our event dissemination, thus the overall interest seemed to be low. From the responses that were received, it can be concluded that the event was not perceived to be important due to the following reasons:

- The topic of alternative fuel vehicle certification is very complex, new and has too many angles (financial, policy, environmental, etc.);
- The fact that it is an event based on an EU project which main focus is on procurement (and thus not on certification) lets people believe there has not been sufficient theoretic investigation in this field;
- Responses show that a workshop should be based on the evaluation of a practical pilot case (applying the label, experiencing and analysing reactions and consequences of consumers, dealers, etc.).

An alternative action plan, which was accepted by the EU, was set up by NTDA and Ecofys in order to fulfil deliverable D3.5. The original Certification Workshop Venue was cancelled. The strategy to compensate the cancelled Certification Workshop consisted in the following:

- A specific questionnaire was developed, based on our Certification work and inquiring certification demands and perspectives from different market
representatives (public, private, automotive industry, certification institutions, etc.);
- Based on this questionnaire we performed telephone interviews and analysed the feedback;
- The input was incorporated into deliverable D3.5;
- A focus was put on Certification in a series of PROCURA newsletters by highlighting different Certification aspects and asking for feedback;
- PROCURA presented and discussed the PROCURA Certification concept in a number of conferences/events on EU level, beginning with a presentation at the Mobidays (21-09-2007) in London and taking into account a presentation held at the FUNDETEC PLATFORM in June 2007;
- NTDA remained in close contact with the entities that had registered for the original seminar and inquired their input for the questionnaire.

It was perceived that a more specialised audience was reached and more concrete input was received by pursuing this alternative action plan than by sticking to the original plan of having a conference with low attendance.

A thorough interview guidance document was prepared and distributed before contacting potential interview partners the first time. This document allowed us to lead the interviews in a standardised form and ensured that all critical aspects have been discussed during the telephone interviews. About 156 experts were contacted via e-mail and telephone and asked to participate in this public consultation, 23 public and private entities filled-out these questionnaires. Of these questionnaires 5 contacts object to having their identity and comments publicly revealed, whereas the remaining experts don't have any objections to disclose their identity and position. Concluding, the response rate comes up to over 15%. Of the experts who filled out the questionnaire, 91% claimed to have experience with certification of any form. The feedback received in the questionnaires was analysed and presented in deliverable D3.5.

During the Warsaw Progress Meeting, NTDA offered to make moderations to the fleet scan tool, because some partners found it to be unsuitable for their needs. NTDA asked all partners to send in suggestions for tool alterations. The following problem was raised by partners IST and ETA: In the case of Italy and Portugal, the EU standard pre-setting of the fleet scan tool suggests the replacement of conventional vehicles for alternative ones that do not exist on the Italian market. This is mainly due to the fact that, nowadays, Italy and Portugal only have a limited number of alternative vehicles available. The concern was how to avoid that they use the tool for a fleet owner with this pre-setting and thus propose him to buy vehicles which is actually unavailable on their national market. The problem of vehicles not available on one market is easy to overcome by a function already included in the tool. The Excel includes a function,
which the pre-settings of the exchange are pre-defined. This pre-setting can be changed in accordance with national vehicle availability.

It was indicated to all PROCURA partners that whenever modifying the tool in any way, they should always make a copy of the original tool and save the new version with a name indicating the modifications made. Thus, all concerns were possible to be solved without moderating the core of the tool. The tool can be used on a general basis for all EU countries, but an experienced user (i.e. PROCURA partner can use the tool to customize it a great deal more).
7 CNG Nijmegen (WP4.1)

To improve its air quality, the municipality of Nijmegen has worked toward the introduction of a substantial fleet of CNG-vehicles within its boundaries. In this approach it has set its goals towards both the introduction of CNG busses in public transport as the introduction of a substantial fleet of CNG light duty vehicles. Nijmegen initially aimed for the introduction of an equivalent of 200 CNG personal vehicles and 1 CNG filling station during PROCURA, to be followed by a growth scenario. Moreover, it was perceived that the creation of a supporting infrastructure (maintenance, car dealers) and marketing approach towards the addition of a larger volume of CNG vehicles was required to achieve a successful introduction of CNG vehicles in Nijmegen.

Related to the objectives above, the numerous activities have been carried out. Some of these activities were:

- Discussions/meetings with the local bus company and the concession authority (city-region Arnhem Nijmegen) in order to assess viability and implementation of CNG buses in Nijmegen;
- Increase the public awareness of the benefits of CNG buses/vehicles (e.g. European Mobility Week; CNG bus on main bus lines in this week and demonstration of CNG vehicles to public and press);
- The organization of workshops and several business meetings with public and private fleet owners, as well as representatives of the automotive supporting industry, concerning the implementation of CNG in the municipality of Nijmegen;
- Discussions with several fleet owners (e.g. waste collection company) that have shown an interest in carrying out a pilot with CNG vehicles;
- 20 fleet scans were carried out by Ecofys;
- Integration of the CNG policy of Nijmegen municipality with policy from city-region Arnhem Nijmegen and the province of Gelderland. This resulted in a unification of forces to introduce CNG on a larger scale. The province of Gelderland decided to subsidize new filling stations (~ €100,000,-) and introduce a network of CNG filling stations in Gelderland;
- Discussions with different market parties regarding the development of a CNG filling station in Nijmegen;
- Formulation of a plan of action for the introduction of CNG vehicles in the municipality’s fleet, ultimately switching completely to CNG.
- In co-operation with the province of Gelderland and Nijol BV, the owner of a local CNG filling station, the municipality has approached eight local dealers which have CNG and/or bioethanol vehicles in their assortment. A number of meetings were organized, in which it was established that these car dealers are well informed on developments and opportunities for
driving on natural gas and bio-ethanol and would like to make an active contribution to the success of clean mobility in the municipality of Nijmegen. On the 18th of April 2008 the parties entered into a partnership by signing an agreement at the Business meeting “Clean and Sustainable vehicles”.

Over the years these and other activities within PROCURA has led to the situation where the implementation of CNG is fully incorporated in the municipalities’ policies regarding mobility and environment. The City Council of Nijmegen has made a new Climate Action Program. Targets for sustainable mobility are included. The City Council has agreed with the Action Program on the 23rd of January 2008. An implementation plan has been made, which the Board of Nijmegen has agreed with on the 16th of April 2008.

Additionally, the awareness of CNG vehicles among citizens of Nijmegen municipality has increased significantly. One of the main results that attracted public attention was the realisation of a CNG filling station in Nijmegen, as a result of the efforts made by the municipality of Nijmegen. A lot of exposure was generated for CNG vehicles during the opening of this CNG filling station; for many actors this was the beginning of seriously approaching fleet owners, although many marketing activities have already been carried out before the opening of the CNG filling station. In January 2008, Ecofys and the municipality approached local fleet owners by letter and phone, offering advice and fleet scans. Since then, two business meetings were organized (18th of April 2008 and 16th of September 2008), together with the local car dealers, the City Region Arnhem Nijmegen and the Province of Gelderland. Fleet owners were not only informed about CNG but also other kinds of AFVs. This way, a range of possibilities were presented.

During PROCURA, a number of business meetings for AFVs were organized. For these meetings, it was decided to include stakeholders in the complete supply chain, including fleet owners as well as automotive suppliers. The meetings have been a major success with many participants (> 500) from the complete supply chain. The press was always invited and wrote articles in the newspapers about the subject and the achieved results. The province of Gelderland developed the website www.fuelswitch.nl to inform fleet owners about the possibilities of AFVs and the upcoming meetings and activities in Nijmegen.

As an additional activity, an analysis of the second-hand market of CNG vehicles was carried out by Ecofys. From this analysis, it was concluded that the total availability of CNG vehicles is dependant on a strong second-hand market of CNG vehicles. The offer of second-hand CNG cars is very poor in most European member state countries, and is therefore not contributing positively to the introduction of CNG as a transport fuel. Ecofys investigated how the second-hand CNG vehicle market in the European member states
can be stimulated. The most important recommendation is that there should be a more transparent import/export of CNG vehicles in Europe.

**CNG filling station**

In 2006, the municipality of Nijmegen started discussions with possible partners who showed an interest in developing a public CNG filling station in Nijmegen. This resulted in serious propositions of three market parties, in the end leading to an agreement with Nijol BV, a local oil company, to realize a public CNG refuelling facility at their public filling station at Bijsterhuizen in Nijmegen. The province of Gelderland has subsidized this filling station in Nijmegen with a €100,000,- grant. The CNG filling station was officially opened at the 14th of November 2007. About 70 visitors were present at the opening, including the Minister of Environmental affairs. For the local press, the opening was a major news item. Currently, 40 car owners own a dedicated card to refuel a CNG vehicle at this filling station.

Another market party, Visser & Smit Hanab, is investigating the possibilities to create a large CNG storage facility (peak shaver) in Nijmegen, which also can function as a buffer for a CNG filling facility. This facility could be a good opportunity for the local bus company.

Starting the 18th of April 2008, it is also possible to refuel bioethanol (E85) vehicles in Nijmegen. Tamoil has invested in an E85 filling station. Bioethanol is made from wood and cane sugar. They do not exclude each other. Nonetheless, both CNG and E85 are charged as a alternatives for gasoline and diesel. It is up to the end user to eventually make a choice that best suits its (business) situation. Yet the local parties corporate to increase the local awareness of these alternatives.

**Bus company**

During PROCURA, the municipality of Nijmegen has organized several meetings with the local bus company, in order to assess viability and implementation of CNG buses in Nijmegen. When the municipality of Nijmegen started with PROCURA, a public tender was planned for public transportation in the city region Arnhem Nijmegen by 2007. This public tender would have made a good instrument to demand high environmental standards for the public transport buses from 2007 on. The tender was however delayed until 2010.

The municipality of Nijmegen subsequently made a large effort to persuade bus company NOVIO to introduce CNG buses before the new concession of 2010. The management of NOVIO however delayed that decision because, at the end of 2006, they were taken over by Connexxion. In 2007, several meetings were held with the concession authority (City region Arnhem Nijmegen) and bus company Connexxion. In addition, Ecofys conducted fleet scans on the bus fleet of Connexxion in Nijmegen to provide insights in the
implications of early replacement. Despite all efforts, Connexxion decided not to introduce CNG buses in their fleet during the current concession.

As a result of this decision, the municipality of Nijmegen shifted its focus to the new bus concession, starting in January 2010. Discussions were started with concession authority City region Arnhem Nijmegen to demand the use of CNG buses in the new concession. After extensive negotiations and meetings, the council of the concession authority voted in favour of this requirement for the 2010 concession. This means that from January 2010 on, all 75 public transport buses in Nijmegen will be CNG buses.

**Local fleet owners**

During the PROCURA project, a substantial number of fleet owners in Nijmegen decided to introduce one or more CNG vehicles in their fleet. The first fleet owner to adopt CNG vehicles was the municipality itself. In 2006, Ecofys performed a fleet scan for the Municipality fleet, based on a natural replacement of vehicles until 2014. This fleet scan was the basis for the decision by the city council of Nijmegen municipality to buy only CNG vehicles (for their own fleet) from that point on. This decision was taken on the 20th September 2006. In 2007, a plan of action for the implementation of CNG vehicles in the municipal fleet was made, based on discussions with the fleet operators of the municipality and additional fleet scans by Ecofys.

The municipality also tried to persuade local fleet owners to adopt CNG vehicles in their fleet. At first mainly through workshops, business meetings and public campaigns. Later on, after the first public CNG filling station had been realized, fleet scans were offered to local fleet owners. As a result of these efforts, the following fleet owners adopted the implementation of CNG vehicles in their fleets:

- Municipality of Beuningen;
- DAR (local waste collection company);
- Klarenbeek (logistics company);
- Hegeman (local car dealer);
- DBS group (logistics company);
- GAFU (local company);
- Nijol (CNG filling station);
- Several private consumers.

In total, over 40 CNG vehicles were procured in the region of Nijmegen during PROCURA. More vehicles are expected in the near future. To facilitate this, a practical action plan to introduce CNG in Nijmegen has been made. This plan contains some steps to make local fleet owners aware of the benefit of CNG by using several communication tools, including consultancy and fleet scans. The Province of Gelderland, the City Region Arnhem
Nijmegen, the press and the local car dealers will be partners in the implementation process.

**Follow-up**
The results of the CNG project will be a good basis to continue the large-scale introduction of CNG in Nijmegen the coming years. Next year, the municipality will develop incentives to stimulate fleet owners to procure CNG vehicles. The possibilities of differentiation parking fees for CNG vehicles will be investigated. Furthermore, the municipality will investigate the feasibility of the use of lanes and road for CNG vehicles only. For both projects, the city will cooperate with other municipalities, who are also working towards the introduction of AFVs.

Furthermore, the municipality will stay in contact with local taxi drivers to inform them about the possibilities of CNG for their fleet. A fleet scan (PROCURA tool) will be performed. If this approach will be successful, it will be extended to driving schools and other specific target groups.

CNG is not the solution for all fleet owners, because of the limited range of CNG vehicles. For fleet owners driving many kilometers a day, LNG (Liquid natural gas) could be an alternative for diesel and gasoline. Therefore, the municipality of Nijmegen will start a project next year -together with the City Region and Province of Gelderland- to introduce LNG in Nijmegen as well. Furthermore, the possibilities of biogas will be investigated, as biogas is more sustainable than CNG is. By the introduction of biogas the transition towards sustainable fuels has been made. The approach of PROCURA and the lessons that the city has learned will be useful in both these projects.
8 Greenlease (WP4.2)

WP 4.2 has the objective to increase awareness for green driving for private fleet owners and develop Greenlease schemes for the market of AFVs and green driving in the private sector using economic incentives. Terberg has developed a greenlease concept (logo; see Figure 1) for their lease fleet and marketed this concept extensively during PROCURA. This was done by means of a media campaign, including radio commercials, promotional folders, internet exposure, etc.

![Greenlease logo by Terberg.](image)

Figure 1: Greenlease logo by Terberg.

The activities carried out by Terberg and Ecofys include the following:

- Terberg has conducted interviews with potential fleet owners concerning the opportunities of a greenlease scheme;
- Terberg has carried out several discussions with suppliers of AFV technology with the objective of assessing feasibility of integrating these products in a greenlease scheme;
- Ecofys has conducted over 80 fleet scans among various fleet owners;
- Terberg continued the marketing of its Greenlease product (fuel efficient vehicles and ecodriving);
- Terberg, supported by Ecofys, has carried out an extensive analysis of available alternative fuel infrastructure;
- Terberg conducted an analysis of its own fleet on feasibility for AFVs, together with Ecofys. The possible AFVs have been matched with the profiles of various existing and potential customers. The result of this analysis was an updated marketing strategy for Terberg, aiming at regionally operating fleet owners with vehicles that are replaceable by CNG vehicles (which is dependant on the available models);
- Initiation of a public-private partnership with the province of Utrecht.

The main result of the interviews was that interested parties in AFVs in the Netherlands can be considered innovators, who are willing to take both the financial risks and additional servicing tasks associated with early adoption of AFVs. The potential added value of leasing contracts is however the reduction of these risks and servicing efforts. This implies that leasing AFVs in the Netherlands may only be a winning procurement tool in very specific circumstances.
Because of the current AFV market, the analysis of available alternative fuel infrastructure by Terberg and Ecofys, has not resulted in the realization of alternative fuelling infrastructure on Terberg property. Terberg is following the developments of public CNG filling stations in the province of Utrecht and other parts of the Netherlands closely. The upcoming CNG filling station in the city of Nieuwegein (scheduled for opening in March 2009) is for instance an excellent opportunity for Terberg, because of its geographical proximity to Utrecht.

The Greenlease portfolio initially comprised fuel efficient vehicles with very competitive tariffs, which included an ecodriving course for the client. This has been extended in 2008, with the lease offers of several CNG vehicles. This is remarkable, given the limited CNG infrastructure combined with the preference of lease customers for “no hassle”. In all customer meetings the possibilities of AFVs are mentioned by Terberg. Their first client is currently driving Terberg CNG vehicles; Peeze in the city of Arnhem leases 2 CNG vehicles.

Finally, Terberg and Ecofys initiated a public-private partnership with the province of Utrecht. Terberg advocated the greenlease concept as well as AFVs in general with the province of Utrecht. As a result, they took a leading role concerning the adoption of AFVs in their region. The province aims to replace 50% of their vehicles with CNG vehicles. They have already started using 11 light-duty CNG vehicles. Moreover, they installed a small private CNG filling station at their vehicle depot. In March 2009, the first public CNG filling station in the province of Utrecht is scheduled to open in Nieuwegein (a city near the city of Utrecht). Moreover, several local car dealers have started offering CNG vehicles and will be actively participating in the opening ceremony of the CNG filling station.
9 AFV Procurement in Lisbon (WP5)

An increased use of biofuels is considered an important aspect of the Portuguese strategy to achieve the desired reduction of tailpipe emissions by the transport sector. Moreover, the use of biofuels contributes to the reduction of Portugal’s dependence on imported fossil fuels. Instituto Superior Técnico (IST), the Portuguese technical university of Lisbon, is a partner in PROCURA and acts as a change agent for this pilot project. They observed that there is increased attention in Lisbon and its surrounding municipalities for the introduction of biofuels. Especially local governments are interested in both the cost reduction opportunities involved with the introduction of AFVs (in particular the use of biodiesel), as well as other aspects like an improved city image and the impacts on local health, labour and trade.

The main objective of this work package was the development of a green fleet procurement application, and subsequent evaluation of this application to the particular context of the Lisbon area (Portugal). Furthermore, it was also expected that the creation of an alterative fuel and vehicle roadmap, could be applicable to other cities and municipalities.

This work package comprised of the development of six activities, concerning the actual market introduction of alternative fuels and vehicles. These activities were:

• A pilot study for the introduction of biofuel in the Lisbon area – Portugal;
• An assessment of the main drivers for biofuel introduction in the Lisbon metropolitan area - Portugal;
• 15 Fleet scans with fleet owners using procurement models developed in the PROCURA project,
• Workshops with local and regional fleet owners;
• Workshops with automotive supporting industry;
• The formulation of a roadmap for the analysis of similar action applicability by other local governments.

During this work package several contacts were made, namely with the Municipality of Lisbon, and other municipalities, as well with private fleet owners, in order to promote AFV introduction and conduct the 15 fleet scans scheduled. The workshops organized during this workpackage also resulted in some valuable contacts, as well as several important lessons.

**Municipality of Lisbon**

The fleet of the municipality of Lisbon was chosen to be the main pilot study target fleet, given its attractiveness, its willingness to shift to alternative fuels and the municipality’s commitment to PROCURA. Additionally, involvement was sought from the urban bus fleet
This product is a result of the PROCURA project n. EIE/05/102

(Carris, operating in the area of Lisbon; Scotturb, operating in Oeiras), waste collection vehicles and other city service vehicles. First, contact was made with the municipality and relevant fleet data was gathered; e.g. number of vehicles, fuel consumption, annual mileage and vehicle category. Subsequent to these initial contacts and initiatives, the characterization of Lisbon’s Municipality fleet was completed.

Due to unexpected problems, the Mayor of Lisbon Municipality resigned in June 2007. In August elections took place and a new mayor was elected. Because of this, the municipal contacts had to be renewed to ensure good execution of the project, although the final result was not as successful as expected. IST was able to determine the main activities that should be developed in the future, to achieve a large-scale introduction of AFVs in Lisbon.

Moreover, the main drivers for biofuels introduction in the Lisbon metropolitan area were assessed by IST. In their report, IST identified the most important constraints for the implementation of biofuels in Lisbon. As Portugal is not, and most probably will not start, using non-cultivated lands for energy crops, there is a lack of national feedstock, associated with high cost of the existing national feedstock and industrial processing. There are however some incentives for the use of biofuels in Portugal, namely the geopolitical need for a secure fuel supply, the undesired dependence of foreign energy supplies, and also the fulfilment of the Kyoto Protocol, as well as of course the development of new business opportunities.

**Fleet scans**

Regarding the PROCURA fleet scans; 16 bus fleets and 3 municipal fleets were scanned by IST, using the PROCURA fleet scan tool delivered in workpackage 3. All fleets had different characteristics, such as:

- Type of operation: urban or suburban;
- Type of fuel: diesel, petrol, natural gas, biodiesel;
- Different ages of the fleets;
- Different fleet dimensions;
- Different types of vehicles;
- Different types of companies: public or private.

The fleet scan tool developed within the PROCURA project had some restrictions concerning its applicability to the Portuguese fleets. These restrictions were mainly related to the limited vehicles availability on the Portuguese market, which resulted in some unrealistic scenarios. To overcome this, modifications were made to the fleet scan tool, namely: The removal of bioethanol vehicle options (there is currently no ethanol available in Portugal); the assumption that heavy-duty vehicles and bus companies have
the procurement power needed to purchase CNG vehicles, and; light-duty vehicles are only to be replaced by CNG vehicles actually available on the Portuguese market.

**Workshops**

IST organized three workshops during the PROCURA project. This resulted in a report describing the participants and main conclusions of the workshops. The workshops focused on the whole supply chain concerning AFVs, including local and regional fleet owners as well as the automotive industry.

The main benefit of the workshops was the fact that it granted fleet owners an excellent platform to elaborate on their experiences with AFVs to their peers, and a good opportunity for companies to establish contacts and built a network. Furthermore, the workshops were used to emphasize the benefits of AFVs, notably with regard to costs and the environment. Alternative fuels, as a new energy source, are a viable answer to the oil dependency and CO₂ mitigation problems. Moreover, there are solutions already available for implementation in different types of existing fleets.

A good example was the experience of Arriva with biodiesel in Portugal. Arriva-Portugal is part of the English Arriva group, operating in nine European countries and one of the largest public transportation companies in Europe. Biodiesel was chosen as an alternative fuel due to the fact it would only require minor changes in the vehicles engines, and it would be possible to use regular diesel as back-up. Arriva started a partnership with Prio Advanced Fuels in order to start using biodiesel. In September 2007 Arriva started the introduction of biodiesel in phases, firstly using B10 for 2 months, which was later raised to B20 and finally to B30. There are no reported problems or fuel consumption variations. This experience was seen as a good opportunity to develop social responsibility, and at the same time innovate and create an improved product. Additionally, a waste collection company in the Lisbon area has its vehicles running on (low blends of) biodiesel, produced from used cooking oils from its municipality.

![AFV roadmap](image)

**Figure 2: Graphical representation of AFV roadmap.**

**AFV roadmap**

The last task to be developed was the conception of an alternative fuel and vehicle roadmap, which could be applicable to other cities and municipalities. This roadmap was made and some important conclusions could be made. Firstly, in order to promote large scale introduction of
biofuels it is fundamental to build an integrated strategy which can be set at different scales, from a local level up to a governmental one. This strategy comprises several steps which can be put into a roadmap, namely the identification of a target region and particular market barriers, the fleet assessment, the identification of the approach to procure alternative vehicles, the infrastructure implementation and impact evaluation. Green procurement activities can be considered as a useful tool for the large scale introduction of AFV, as it is proven successful in several initiatives developed by other governments.

**Follow-up**

WP5 can be considered as very relevant regarding three main points: the roadmap developed that contains information for the applicability to similar situations; the use of the information obtain from the performed fleet scans in Portugal fleets and the AFV promotion resultant from the three workshops organized in Portugal. The last point is particularly important, in our opinion, as AFV are not well spread in Portugal, and this kind of initiatives may facilitate its endorsement. These actions can have a medium/long term impact, since many of the principles and activities can be applied in a longer future.
10 Pilot case Italy (WP6)

ETA has worked towards the PROCURA project in order to facilitate the development of model action plans by fleet owners and local authorities, to demonstrate the intention to procure AFVs on the short term. The main achieved result of WP6 is the wide promotion among fleet owners and vehicle users of Alternative Fuels Vehicles options, including Bioethanol (E85), Biodiesel (B50) and Compressed Natural Gas (CNG).

The most important activities carried out within WP6 are related to the organization of three workshops with local and regional fleet owners (with the main collaboration of Municipality of Florence, Technological District of Rovereto, Municipality of Rovereto – Traffic & Environment Assessor, Provincial Energy Agency of Trento, Provincial Environment Agency of Trento as well as local fleet managers, specialized press, managers from relevant Italian companies, university researchers in the bioenergy field) as well as the organization of two workshops with automotive supporting industry (with the main collaboration of ANIASA – national rental cars association, the Municipality of Bolzano – Traffic & Environment Assessor and FORD).

In addition, more 11 fleet scans have been carried out towards public and private fleet owners to determine both the cost aspects as well the technical and non-technical barriers of the introduction of AFVs. Procurement models regarding AFVs have been proposed to fleet owners and, together with ASSODISTIL (Italian bioethanol producers association) actions have been carried out in order to lobby the government, to resolve the problem of the high taxation of alcohol.

In Italy the use of biofuels for transportation have a great potential and a clear trend in that direction has already begun but currently, ethanol and biodiesel are low blended with petroleum-based fuels for use in conventional fuelled vehicles as additive. At the moment only one E85 filling station is installed in Italy. On the other hand, the latest directives from the Italian Minister of the Environment confirmed important news concerning energy saving and also local governments as well as the Italian chambers of commerce for industry are working to introduce specific incentive programs for biofuels and to promote the culture of this innovations.

The situation is different for the CNG market: Italy was the first country to develop NGVs in Europe and is currently the biggest market in Europe in terms of number of vehicles. Thanks to a pipeline running from North Africa through Italy, gas companies saw a natural opportunity to sell gas. During PROCURA, ETA has had the opportunity to discuss about the above mentioned topics (as well as other related themes) with a number of fleet owners, local authorities, car dealers, etc.
Interesting debates have been developed between involved stakeholders, public and private fleet owners, local authorities, infrastructure developers and green fleet procurement actors in general. Below there is a summary of some relevant topics tackled during debates:

- **BIOFUELS & SUSTAINABLE MOBILITY:** the introduction of AFVs into the fleets is an option, but it should be inserted in a broader strategy for private/public mobility management such as:
  - Planning of local transport services;
  - Promotion of the “carsharing” and “carpooling” technique using AFVs.

- **SWEDISH BIOFUELS EXPERIENCE:** the successful Swedish experience demonstrates the need of clear national policies also in Italy, new codes, regulation, incentives, obligations and standards must be developed by public Italian authorities.

- **E85 DISTRIBUTION & COSTS:** serious lack of distribution infrastructure and higher price of E85 compare to petrol price. Other E85 filling stations are required (only 1 installed in La Spezia). Additionally, a strong excise reduction is needed for E85 to convince people in the use of this alternative fuel.

- **FOOD FOR FUEL DEBATE:** This is a strong argument against the developing of alternative fuels in Italy, public opinion is afraid of the bad consequences of biofuels;
  - Second generation biofuels will do away with the counterarguments?
  - Hydrogen or hybrid vehicles for future actions (PROCURA II)?

- **BIOFUELS MARKET IN ITALY & EUROPE:** A strong effort must be developed not only in Italy but also in the entire EU in order to get the 10% binding minimum target for the share of biofuels in overall EU petrol and diesel consumption by 2020:

<table>
<thead>
<tr>
<th></th>
<th>total final consumption of petrol and diesel for transport (ktoe)</th>
<th>% of biofuels in total final consumption of petrol and diesel for transport (ktoe)</th>
<th>biofuels (ktoe)</th>
<th>bioethanol (ktoe)</th>
<th>biodiesel (ktoe)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EU 25</strong></td>
<td>290398</td>
<td>1,1%</td>
<td>3211</td>
<td>690</td>
<td>2508</td>
</tr>
<tr>
<td><strong>ITALY</strong></td>
<td>37258</td>
<td>0,4%</td>
<td>162</td>
<td>n.a.</td>
<td>162</td>
</tr>
</tbody>
</table>

*SOURCE: Eurostat, december 2007*

- **CNG VEHICLES:** The Italian fleet includes about 400,000 natural gas vehicles. There is a network of 500 refuelling stations across the country, and the number of NGVs and filling stations keeps increasing.
  - The production and the upgrading of biogas for vehicles could represent an important new perspective.
The main task for ETA during the progress of the action was to give a change in vehicle purchase behaviour towards AFVs. In order to accomplish this task, ETA has acted towards:

- An increase in awareness among bus companies, fleet owners and vehicle users on AFVs options;
- The development of experiences with the use of CNG in order to allow a more effective shift to the introduction of AFVs;
- Giving special focus on economic and environmental impacts, barriers and possible solutions.

The general overview of the main activities carried out by ETA during the action is summarized below, with a description of the performed work.

**Fleet scans**

11 fleet scans were carried out by ETA for public and private fleet owners, investigating biofuels and CNG. The fleet scan analysis shows in general that the exchange of the fleet to CNG and E85 will generate a reduction in all the pollutants. While environmental benefits are important factors for fleet owner’s business in terms of improved company image, the financial impacts don’t seem to be a decisive factor in fleet procurement mostly because of the depreciation time of the current fleet. Only NGVs show financial benefits due to the price of CNG vehicles and to the less fuel cost and consumption.

![Figure 3: Example from an ETA fleet scan report.](image)

In order to propose procurement models to fleet owners and groups of private car owners, fleet scan reports have been prepared for each involved organization. Main contents of each report are:

1. Overall Objective of Fleet Scan Tool;
2. Calculation Basis and underlying assumption;
3. Reference scenario of existing fleet;
4. Overview of Alternative Fuel scenarios, with:
   - Compressed Natural Gas (CNG) scenario;
   - Bioethanol (E85) scenario;
   - Biodiesel (B50) scenario;
5. Conclusions.
Moreover, in order to induce public and private fleet owners to perform fleet scans, a brief document (in Italian language) has been created to promote the fleet scan tool towards Italian fleet owners. In addition, ETA has improved the Fleet scan tool and made it more applicable to the Italian AFV situation. This renewed tool will be an important instrument for ETA also after the end of the PROCURA project. ETA, in fact, is planning to offer his consultancy service to fleet Managers in order to help them in the management of their fleet, offering customized fleet scan analysis. The new tool is called ECOfleet Scan.

**Workshops**

ETA organized a total of five workshops during PROCURA. Three of these workshops were targeted at local and regional fleet owners; two were targeted at the automotive supporting industry. The workshops for fleet owners were visited by local fleet managers, local authorities, experts in the field of Mobility Management, regional agencies for the environment and SCANIA. The main topics were; biofuels in general, the PROCURA and the BEST project, financial aspects for biofuels in Italy, Mobility Management and successful experiences with CNG.

The workshops for the automotive supporting industry were visited by rental car companies, car makers, bioethanol producers association, mobility managers association, environmental and fleets magazines and environmental regional agencies. The main topics were; rental car companies and the environment, sustainable bioethanol production, the PROCURA and the BEST project, incentives for the use of bioethanol, sustainable mobility in urban areas, the ‘car sharing’ technique, Ford Motor Company experiences with FFV/E85, Ford FlexiFuel vehicles. Via the workshops, new cities like Rovereto and Bolzano were involved in the PROCURA project and AFV adoption.

An article regarding the Bolzano workshop and the PROCURA project has been published in the specialized magazine ‘Fleet Magazine’ N° 39, May 2008, page 20 (see Figure 3). Fleet Magazine has an average circulation of over 16.000 copies per month.
Increased AFVs activity by regional organizations

Within the PROCURA project, ETA aimed to increase the activity on Alternative Fuels in many association and organization in Italy. A large effort was made to initiate contacts in the whole AFV supply chain. Alternative fuels and advanced technology vehicles are seen by Italian National and local Governments as pivotal for improving local air quality, decreasing the dependence on foreign oil and reducing the emissions of greenhouse gases. However, major barriers (especially economical) currently prevent the widespread use of these fuels and technologies. Despite these barriers, there is continued interest in providing impulses and support for their development and commercialization from many associations and organizations, working towards biofuel and AFVs market expansion. ETA carried out the following activities to contribute to this:

- Cooperation started with the Italian Minister of Environment in order to join the Sustainable Energy Europe Campaign partnership with the PROCURA project;
- Cooperation started with ANIISA (national rental cars association): Strong interest from fleet owners association in AFVs;
- Cooperation started with Assodistil (Italian bioethanol producers association) in order to lobby the government, to resolve the problem of the high taxation of alcohol;
• Organization of a one-day meeting with Peugeot Italia for the promotion of the fleet scan tool and for studying the possibility to install an E85 filling station at their plant in Milan;
• Collaboration with the National industry Confederation for the entire range of renewable energies including Sustainable Mobility and AFVs;
• Initiating contact with Euromobility, the National mobility managers Association, in order to extend the know-how developed within PROCURA in a broader context.

In addition, ETA has delivered two proposals for the constructions of E85 filling stations. ETA has developed experience with the installation of an E85 filling station in La Spezia, within the BEST project. Based on this experience, ETA was asked to make a proposal for the construction of two E85 filling stations (see Figure 6):
• One in the Bolzano area;
• One at the Peugeot production plant in Milan.

![Figure 6: ETA proposal for a E85 filling station.](image)
**Public-private partnership**

In 2008, a marked increase in cooperation between the public and private sectors for the development and operation of environmental and transport infrastructure has been achieved. The concept of a working partnership between the private sector and public bodies is well established and today regional public-private partnerships are common practice in delivering services. Many regions have already established such partnerships and achieved a great deal in delivering infrastructure, such as roads or buildings, or services.

In this context, relevant partnerships have been established also for the AFVs market development and the PROCURA project has had an important role in this process by a continuous work with public and private organizations to create and maintain a wider infrastructure for these alternative fuels vehicles. Concerns about air pollution, energy security, and climate change have prompted the development of alternative fuelled vehicles (AFVs) and policies to encourage their use. Most major auto manufacturers now offer many models of cars, trucks, and vans powered by alternative fuels, including compressed natural gas, ethanol, electricity, and hybrid vehicles. Against this wide commercial offer, the Italian Government and some Regional governments offer tax incentives and grant programs for CNG vehicles and also an excise reduction for biodiesel. Anyway there is still the need of strong partnership between automakers, fuel providers and refuelling station manufacturers to offer rebates and other incentives for AFVs.

Within PROCURA, ETA composed an overview of regional public-private partnership on AFVs treated during the PROCURA project as well as an overview of the role of the municipalities within the PROCURA’s activity is given. The activities carried out by ETA include:

- Cooperation with bioethanol producers and providers in relation to the installation of the bioethanol pump in the Municipality of La Spezia (connected with the BEST project);
- Cooperation with SCANIA and the Municipalities of Trento and Rovereto. This collaboration has led to the beginning of a network about AFVs;
- Cooperation with the municipality of Florence. These contacts have led to the organization of the two workshops in Florence;
- Cooperation with the Energy Department of the Province of Pistoia. These contacts have led to a fleet scan analysis.

**Follow-up**

The activities planned after the end of the project are focused on the idea to go on with the actions carried out during the project. The main activity will be to extend the PROCURA Project experience for further promotion of Alternative Fuel Vehicles in 3
Italian Cities by joining the Sustainable Energy Europe Campaign under the strategy umbrella of the Italian Ministry for Environment, Land and Sea.

In addiction, the fleet scan tool provided within the project will be improved and enhanced with the introduction of new car models and national parameters in order to go on with the actions related to the promotion of procurement models to fleet owners and groups of private car owners.
11 CNG Poland (WP7)

At the start of PROCURA, CNG was merely a niche market for bus companies in Poland. KAPE participated in PROCURA to support the development of CNG use by bus fleets, and facilitate the diffusion of this technology. The introduction of alternative fuel buses in various Polish bus fleets, is deemed necessary to improve the local air quality in Polish municipalities and work towards a diversified fuel mix.

Within the PROCURA project, KAPE carried out the following activities:

• 30 meetings with bus companies and fleet management;
• Organization of three seminars concerning CNG buses;
• 15 fleet scans on bus fleets;
• Preparation of a report on the 2nd hand market opportunities in Poland;
• Preparation of a promotional folder;
• Preparation of an action plan for the introduction of CNG buses in Warsaw.

Meetings and fleet scans

Increasing the awareness with regard to CNG, and showing its economical and environmental advantages were considered essential to catalyze the diffusion of CNG vehicles in Poland. During the first phase of PROCURA, KAPE initiated contact with a large number of municipalities and bus companies in Poland. This led to 15 fleet scans and many meetings, in which the use of AFVs was promoted. Mainly financial and technical issues were discussed. Additionally, seven letters of intend were signed by interested bus companies, regarding the implementation of CNG buses. Eventually, these efforts contributed to the introduction of 58 CNG buses, distributed over different Polish bus companies and municipalities.

Contact was made with about 30 bus companies, 8 car and bus dealers, and 3 gas providers (PGNiG, CNG Polska and PSOG). Information and opinions about market barriers were collected during seminars and face-to-face meetings with the companies mentioned above. The results confirmed that market barriers for Alternative Fuel Vehicles include: A lack of infrastructure (chicken-egg problem); lack of maintenance and repair facilities; lack of knowledge of fleet owners and consumers; higher purchase costs; lack of second-hand market.

Besides the typical market barriers identified in PROCURA, the following barriers were observed in Poland: A high level of uncertainty of fuel prices and charges for pollution; lack of energy and environment protection strategy for country and for regions; key partner to implement CNG in municipal public bus transport are local authorities, through bus concessions. The most significant barrier was a lack of knowledge at local authority representatives, who are responsible for municipal public bus transport.
Seminars
Three seminars were organized, in Lublin (January 2007), J. Góra (July 2007) and Gdańsk (November 2008). A targeted audience of fleet managers, carmakers and fuel providers’ representatives, scientists and local authorities participated in the seminars. The participants expressed their interest in the presentations and the possibility to actively involved in the project. The local authorities do not consider public-private partnerships a feasible approach for the elimination of typical barriers limiting the introduction of AFVs in Poland. The reason is that the legal situation does not allow these partnerships.

Both for the seminars and the face-to-face meetings, individual and tailor-made information was prepared. The content of the seminars depended on the addressed subjects and the expected audience. The standard information about PROCURA consisted of a two page promotional folder and a PowerPoint computer presentation.

Warsaw approach
Further on in the project, KAPE shifted its focus towards Warsaw. As capital, Warsaw has the ambition to be the leading environmentally friendly city in Poland. Therefore, they were perceived to be receptive of environmental arguments for the adoption of CNG buses. KAPE has aided the Warsaw policy makers, by providing technical and financial knowledge, financial models, fleet scans and further environmental and financial assessment tools. Additionally, information channels between the academic society, KAPE and the municipality of Warsaw were established, partially through seminars.

A result of KAPE’s efforts is the fact that Warsaw local authorities are increasingly aware of environmental issues. The city of Warsaw has articulated they want to be the leading Polish city with regard to environmental policy and performance. Furthermore, clear short-term as well as long-term ambitions were formulated with regard to this.

A milestone in PROCURA’s Polish pilot case was the extensive action plan for the implementation of CNG buses and AFVs in Warsaw, which was prepared by KAPE for the municipality. An agreement to prepare the plan was signed with Warsaw authorities (Roads and Public Transportation Department). The implementation plan for CNG buses is an important step towards the envisaged ‘clean transport’ in Warsaw by 2020. The next milestone will be the integration of CNG bus ambitions in the bus concession for Warsaw. Moreover, the methodology used to prepare the action plan for Warsaw can be used by others local authorities and decision makers in Poland, to implement AFVs in their bus fleets.
Second-hand market opportunities
CNG buses purchased on second-hand markets are a viable and successful way to lower economic barriers. Examples are in fleet scan reports for Wałbrzych and Łódź. The actual state of the second-hand market for CNG buses in Poland limited the practical results. The ins and outs of this market are described in the KAPE report on second-hand market opportunities for CNG buses in Poland.

Stakeholders involved
KAPE got in touch with professional associations in the field of transport (National Chamber of City Transport, Association for Promotion of AUTOGAZ, Association of Engineers of Transport) and with other stakeholders to arrange common marketing activities for CNG buses. During the PROCURA project, the following stakeholders were involved by KAPE:

- Fuels suppliers:
  - PGNIG and CNG Polska;
  - BIO cluster;
  - NAFTO SERVICE;
- Bus producers and distributors:
  - SOLARIS;
  - POLSKIE AUTOBUSY;
  - KAPENA;
  - SCANIA;
  - MAN;
  - EVABUS;
- Universities:
  - Warsaw Technical University – prof. Z. Chłopek;
  - Wrocław Technical University – prof. Lech Sitnik;
  - Radom Technical University – dr. W. Wołoszyn;
- Fleet owners: 30 companies
- Local authorities:
  - Warsaw;
  - Gdańsk;
  - Rzeszów;
  - Kraków;
  - Łódź;
  - Lublin;
  - J. Góra
- Associations:
  - Polish Chamber of Liquid Fuels;
  - Chamber of Urban Transport.
The main barriers for the adoption of CNG vehicles that have been identified were: An unfavorable price difference between conventional and CNG buses, mainly because of the additional costs of infrastructure for CNG buses and high CNG price compared to oil-based fuels; lack of a clear and proper legislative framework; lack of long-term guarantees for investments (long-term strategy of fuels supply); lack of a supply and distribution infrastructure; lack of different available CNG vehicles.

**Follow-up**

The final result of the actions undertaken in the PROCURA project in Poland is the "Plan of action to implement AFV in Warsaw city by 2020". The plan for Warsaw formulates a target for 2020 and a roadmap to reach it. The target is formulated, in accordance with EU objectives, as an equivalent of prevented CO2 pollution, the share of biofuels in the total fuel consumption and the total fuel consumption by the transport sector in the region of Warsaw in 2020. The above indicators are translated, using a model of the Warsaw transport sector, to specify different types of vehicles and different types of fuels required in 2020. The plan’s strategy of developing and testing AFV procurement models for Warsaw, consists of incentive systems and a series of projects directed to develop new technologies for regional fuel production ("fuel for Warsaw") and new solutions in the public city transport ("car for Warsaw").

The cities Gdańsk, Łódź, Rzeszów, Lublin, Kraków are interested in cooperating with KAPE on the same subject – a roadmap to achieve the described indicators of "clean transport" by 2020. KAPE has offered these cities support in implementing green fleet procurement, based on the tools and manuals developed in PROCURA. Negotiations to sign agreements with these cities are scheduled for 2009. The short term impact of the action will be the replacement of traditional city buses and fossil fuels by AFV and alternative fuels. The development of this process will depend on the availability of alternative fuels and alternative fuel vehicles on the market. When sufficient alternatives are available, replacement will be extended to private fleet owners, taxi corporations, private cars and others, all with a focus on centralised buyer pools. Buyer pools will group buyers from different cities, dependant of the implementation of procurement models. This process will start in 2009.

The medium term impact of the action will be the implementation of a combination of incentive systems and new concepts of public city bus transport. It should induce passengers to favour these concepts and to increase their use of public transport at the expense of cars. The implementation of these schemes will start around 2014. The long term impact of the action will be the integration of procurement models with regional fuel production ("fuel for Warsaw"), and with City Transport Management System, including implementation of the “car for Warsaw” system.
12 Pilot case Valencia (WP8)

This WP created the procurement of 15 FFVs and the installation of a biodiesel filling station. Main Partners in this WP have been NTDA, Ford, the Municipal Police of Valencia, FIVEC, AVIA and Mediterranean Biofuels. Within the Valencia pilot case, the tools and models generated in WP3 were successfully applied, e.g. Greenlease scheme (Procurement is a Greenlease of the Banco de Santander to the Municipal Police) and Fleet Scan Tools. The following activities were conducted by NTDA:

- Organizing three workshops on AFVs;
- Performing five fleet scans on regional fleet owners;
- Contacting and involving FIVEC (Fundación para la Innovación Urbana y Economía del Conocimiento);
- Contacting and involving Fundación Comunidad Valenciana - Región Europea;
- Providing information to local entities on fuels, available AFVs and the PROCURA reports and outcomes;
- Presenting the PROCURA Pilot Case at international Conferences (Europe Innova; World Direct Investment Conference; 16th Biomass Conference; Ecofira, Egetica);
- Launching a call for local Pilot Case Partners on the NTDA Website;
- Identification and contacting of relevant stakeholders:
  - 23 Leasing /Renting entities;
  - 83 Potential Procuring entities;
  - 26 Car Dealers;
  - 18 Maintenance Services;
  - 16 Replacement entities;
  - 13 Manufacturers of replacement items;
  - 1 Manufacturer (Ford).
- Evaluation of socio-demographic & infrastructure data in the region of Valencia;
- Study of other European pilot cases / implementation of alternative fuel vehicles in Cities and identification of possible strategies applicable in Valencia (Case studies evaluation, literature research & interviews);
- Application of Porter Value Chain Model to the AFV supply chain in the city of Valencia;
- Customizing fleet scan template to the region of Valencia;
- Development of a report on financial instruments to support the realization of infrastructure and procurement of AFVs.

The main stakeholders involved in the Valencia pilot case were:

- Ford: Support in providing information on bioethanol and vehicle availability;
- FIVEC: Public entity, which provided support in dissemination / contacts;
- FCVRE: Dissemination organization on local and EU level;
- Municipal police of Valencia: Public fleet owner;
- VIVO Petroliferas: Distributor of (mainly) conventional fuels;
- Mediterranean Biofuels S.L.: Biofuels infrastructure set-up company
- Banco Santander: Provision of ‘greenlease’ contracts;
- AVIA: Association for vehicle part manufacturers that facilitated contact details of manufacturers;

Within the pilot case local barriers on AFV development were identified. Relevant stakeholders and end users (public / private fleet owners, bus companies, fuel providers) were interviewed. The coordinator of this pilot case (NTDA) elaborated financial instruments supporting the infrastructure development and acquisition of AFVs. Moreover, the Valencia Pilot included fleet scans and training program for fleet owners, car dealers, potential AFV drivers as well as supporting industry. NTDA aimed at stimulating the local case study via providing information to local entities on fuels, available AFVs and the PROCURA reports and outcomes.

**Municipal police of Valencia**

At the beginning of this workpackage, a detailed project plan for the Valencia pilot case was written in advance, and some local fleet owners have been contacted and informed of the possibility of participating in fleet scans and a pilot case situated in the Region of Valencia. These fleet owners were:

- EMT
- Cheste Circuit
- Local Police
- Municipal transport fleet owner
- City of the Arts and Science

Unfortunately, only the Local Police showed a lasting interest in the PROCURA project and participated actively. Moreover, initial and informal discussions on financial procurement concepts and investment possibilities have been performed with representatives of the Valencian Community Investments VCI and Deloitte Spain.

The municipal police of Valencia decided in June 2008 to procure 15 FFVs. This decision was preceded by extensive negotiations with NTDA and FORD, making this achievement a great reward for their efforts. As anticipated, a ‘greenlease’ contract was provided by the Banco Santander.

**Memorandum of Understanding**

Later on, FIVEC, FCVRE, VIVO Petroliferas and the local police signed memorandums of understanding, stating their support to the Valencia pilot case of PROCURA and stating their common intention of infrastructure set-up and AFV procurement. Moreover, close
collaboration was realized with FIVEC and Fundacion Comunidad Valenciana - Región Europea (FCVRE), regarding the dissemination of PROCURA.

**Mediterranean Biofuels S.L.**
Mediterranean Biofuels S.L. intended to solve the low biofuel availability in Valencia, notably for the municipal police of Valencia. For the police, Mediterranean Biofuels investigated the possibility to install a private filling station in their own vehicle depot. Unfortunately, investigation learned this was impossible due to space limitations. The start-up company however has realized a biodiesel filling station in the vicinity. They aim to realize more biofuel filling stations in the coming years.
13 Cross-case Evaluation (WP9)

For deliverable D9.1, an ex durante cross-evaluation of the five pilot cases was done. The goals were to gain insight in the factors that determine the fleet owners’ willingness to adopt AFVs, and to determine the effectiveness of the interventions that were used to catalyse AFV procurement in the pilot cases. To achieve these goals, the following research question was answered:

*Which critical success and failure factors can be identified in the adoption of AFV procurement and what interventions can be done to influence these factors, based on best practices?*

To answer this research question, a theoretical framework was set up, based on the ‘diffusion of innovations’-theory by Everett M. Rogers. The core of this study constitutes an analysis of the targeted fleet owners’ perception of the innovation’s attributes, whereas AFVs are considered the investigated innovation. By interviewing the change agents of the different pilot cases, the targeted fleet owners’ willingness to adopt the innovation (AFVs) was determined, as well as the way they perceived the innovation’s attributes, and the interventions that were done by change agents to influence the perceived attributes of the innovation.

The results showed that the following success or failure factors could be distinguished in PROCURA:

1. Cost of ownership;
2. Fuel availability;
3. Environmental impact;
4. Image;
5. Risks;

These factors are listed from more to less critical, but the scale is ordinal. It was found that the cost of ownership is more important than the other factors, but it was not determined how much more important in comparison to the other factors. Fleet owners are generally willing to adopt AFVs if this induces a significant overall cost reduction, whereas fleet owners are generally unwilling to adopt AFVs if the cost of ownership increases as a result. The fuel availability is the second critical success or failure factor that was recognised. An alternative fuel that is (locally) unavailable is unlikely to diffuse through a social system, whereas a substantial increase in fuel availability is an enabler for the widespread adoption of corresponding AFVs.
The environmental impact was also a significant success or failure factor. The absence of a demonstrably decreased environmental impact in comparison to other technologies is an insurmountable failure factor. Moreover, a demonstrable and tangible decreased environmental impact is a strong success factor. Some of the pilot cases involving the adoption of bioethanol vehicles established that the image of AFVs is also a critical success or failure factor. Especially for commercial fleet owners, the image (whether it be positive or negative) of AFVs had an important influence on their willingness to adopt.

The innovation-decision processes investigated in this study, are essentially processes in which uncertainties are reduced. The remaining perceived uncertainties are often a critical failure factor for the adoption of AFVs, although a lack of risks can also be an critical success factor. The final critical success or failure factor is the vehicle availability. The amount of different types and makes of AFVs is relatively small in comparison to their conventional counterparts. To be adopted, AFVs that are equal to their conventional counterparts need to be available.

During PROCURA, the change agents have used several interventions to increase the fleet owners’ willingness to adopt AFVs. The interventions that were distinguished are:
- Workshops / Business meetings / Seminars;
- Fleet scans;
- Development of a business case / action plan;
- Public ‘campaign’;
- Manufacturer discount on AFVs;
- Realisation of a public filling station for AFVs.

The workshops, business meetings and seminars were used to provide awareness and evaluation information on AFVs, with the goal to increase their willingness to adopt AFVs. Moreover, the fleet owners exchanged information on AFVs amongst each other, which helps to reduce uncertainties. The fleet scans were mainly used to provide tailor-made evaluation information with regard to costs and environmental impact. The fleet scan also provided awareness information with regard to vehicle availability, and helped reducing uncertainties. The developed business cases basically constituted more detailed fleet scans with various scenarios, targeted at bus fleets. These business cases were used to provide similar information as workshops and fleet scans together, with similar effects.

In one pilot case, a public CNG campaign was set up to increase the awareness with regard to AFVs. This affected the fleet owners’ perception of vehicle and fuel availability, but also contributed to a positive image. In a different pilot case, a manufacturer discount on AFVs was realised for one specific fleet owner. This is a change of the actual attributes of the innovation, and not just the way these attributes are perceived by the fleet owner. It has a positive effect on the fleet owner’s willingness to adopt AFVs. The
final intervention is the realisation of a public filling station for AFVs. In the concerning pilot case, the PROCURA partner provided the necessary cue-to-action for this. The presence of a public filling station for AFVs had a major impact on the actual fuel availability and thus had a significant effect on the local fleet owners’ willingness to adopt AFVs.

Based on this study, the following policy recommendations were formulated:

- Synchronise national policies with regard to alternative vehicles and fuels;
- Create price competition between conventional vehicles and AFVs, if necessary by introducing financial incentives for AFVs;
- Introduce legislation concerning local air quality problems;
- Specify environmental conditions in public transport tenders;
- Facilitate local alternative fuel infrastructure;
- Involve committed municipalities.
14 Dissemination (WP10)

The objective of WP10 was an as broad dissemination as possible, ensuring that the results of PROCURA would be used after the project as well. In the second half of 2008, FAST focused on promoting the results of the PROCURA project, especially the procurement models and fleet scan model results, to EU policy makers involved in the proposed Directive on the promotion of clean and energy efficient road vehicles (COM 2007/817), that sets mandatory criteria for the life cycle costs of vehicles of public authorities, and the Action Plan on Urban Transport. In addition it prepared the final PROCURA EU seminar ensuring participation of a broad range of stakeholders.

Increasing AFV awareness

Additional presentations of the PROCURA project were made at the following events in the last reporting period to leverage the PROCURA results and look for opportunities to continue to use the results. These included:

1. Attended EU Project COMPRO workshop in Bremen, September 18, 2008. Participants: public fleet owners bus manufacturers, local authorities (total 76); distributed PROCURA flyers and discussed aligning of dissemination activities with COMPRO coordinator and possible future collaboration in using relevant results of both projects. In addition discussed potential contribution of COMPRO and PROCURA to policy actions with regards to the Directive (COM 2007/817).

2. Discussed the use of PROCURA project results with WorldExpo 2015 director of operations in Milan; the World Expo 2015 plan foresees the use of low emission vehicles throughout the fair and a start has been made with the verification of suitable transport technologies. FAST has been asked to submit ideas to the WorldExpo Scientific Committee that advises on the technologies used in the Expo. FAST is planning a seminar on suitable technologies for the WorldExpo in the Spring of 2009, in which it will present an overview of the results of different EU projects that could be interesting to integrate in the Expo;

3. Attended Inauguration of Joint Undertaking for Fuel Cells and Hydrogen, presented PROCURA results in EHA presentation at Industry and Finance Workshop (October 13, 2008) as an example of how to use relevant EU projects results in developing the first commercial markets for new clean technologies;

4. Attended Science Cities Seminar at the West Midlands representative office in Brussels (December 9, 2008): West Midlands Region is an automotive region and is very active in sustainable transport activities as member of various networks, Covenant of the Mayors, Civitas etc. They are also interested in disseminating PROCURA results to their contacts in the automobile industry.
Increasing AFV knowledge

FAST issued three special editions of the PROCURA newsletters in the second half of 2008 on the occasion of the discussion in EU Parliament of three relevant EU dossiers:

1. Directive for the promotion of the use of energy from renewable sources (COM 2008/19): setting sustainability criteria for biofuels;
2. Regulations on setting emission performance standards for new passenger cars as part of Community’s integrated approach to reduce vehicles emissions;
3. The Directive on the promotion of clean and energy efficient vehicles:

The newsletters addressed the following topics:

1. The discussions on the impact of food production of first generation biofuels in relation to the proposal for the EU Directive on the promotion of Renewable Energy were addressed in the 3rd newsletter “Food, Fuels and Fleets” that was sent out on the occasion of the EU Urban mobility week in September 2008.
2. To address the common complaint of large fleet operators on the small quantity and long delivery times of AFV the 4th newsletter in 2008 newsletter “Alternative fuelled vehicles in Europe” featured an in-depth overview of available vehicles and interviews with car manufacturers;
3. The 5th newsletter in 2008 was dedicated to “CNG in Europe: vehicles and infrastructure” with an overview of available vehicles.

Furthermore, updates on new AFV have been regularly included in RSS feeds and are included in Newsletters, and FAST has conducted several teleconferences with PROCURA partner FORD to discuss dissemination approach to fleet owners.

Communication with the EU

During the course of the project in addition to its dissemination tasks for WP10, FAST has taken on the review of relevant EU dossiers to facilitate the use of the PROCURA results in the development of EU legislation, especially dossiers that concerned the procurement of vehicles. The following dossiers have been reviewed:

1. Directive for the promotion of the use of energy from renewable sources (COM 2008/19): setting sustainability criteria for biofuels;
2. Regulations on setting emission performance standards for new passenger cars as part of Community’s integrated approach to reduce car emissions.
3. The Directive on the promotion of clean and energy efficient vehicles: As public procurement has entered EU transport policy since the Green paper towards a Sustainable Urban Transport, and the subsequent revised proposal for the Directive for the promotion of clean and energy efficient vehicles (COM2007/817), FAST has actively followed this dossier in the EU Parliament. FAST has informed MEP’s, notably Dorette Corbey, the Dutch rapporteur of the review of Fuels Directive and Dan Jorensson, rapporteur of the Directive for the promotion of
clean and energy efficient vehicles on AFV availability and infrastructure and has actively promoted the PROCURA fleet scan tool as instrument to identify emission reduction impact of substitution of conventional fuels with alternative ones. In addition policy debates on the Renewable directive and biofuel policy have been monitored. The Newsletters that were issued in the second half of 2008 all focused on specific EU dossiers.

**Handbook**

On the basis of the experiences in the PROCURA pilot projects and in view of new EU legislative action, FAST, in collaboration with Ecofys and NTDA developed the outline of the final technical report of PROCURA such that an easy to use guide, the PROCURA AFV Guide, was developed that could serve as a handbook for fleet operators and their personnel on AFV. FAST will continue to distribute the handbook and the CD at relevant events in 2009. The following events have been identified so far:

- The future of EU directive on the procurement of clean road transport vehicles, UITP, January 29, 2009;
- EU Sustainable Energy Week, February 9-12, 2009;
- Hannover Fair, April 21-25, 2009.
15 Policy recommendations

The experience that was gained during PROCURA provides useful insights and starting points for policy makers. The overall experience of the PROCURA pilot cases showed that fleet owners are generally willing to adopt AFVs if this induces a significant overall cost reduction, whereas fleet owners are generally unwilling to adopt AFVs if the cost of ownership increases as a result. The fuel availability is the second critical success or failure factor that was recognised. An alternative fuel that is (locally) unavailable is unlikely to diffuse through a social system, whereas a substantial increase in fuel availability is an enabler for the widespread adoption of corresponding AFVs.

The environmental impact was also a significant success or failure factor. The absence of a demonstrably decreased environmental impact in comparison to other technologies is an insurmountable failure factor. Moreover, a demonstrable and tangible decreased environmental impact is a strong success factor. Some of the pilot cases involving the adoption of bioethanol vehicles established that the image of AFVs is also a critical success or failure factor. Especially for commercial fleet owners, the image (whether it be positive or negative) of AFVs had an important influence on their willingness to adopt these vehicles.

Based on the experiences gathered during PROCURA, the following policy recommendations have been formulated by the PROCURA consortium to stimulate the diffusion of AFVs.

15.1 General recommendations

The five PROCURA pilot cases provided the PROCURA consortium with insights leading to the following main policy recommendations with a positive impact on the general market development of AFVs:

- Synchronization of national policies with regard to alternative vehicles and fuels;
- Creation of price competition between conventional vehicles and AFVs, if necessary by introducing financial incentives for AFVs;
- Introduction of legislation concerning local air quality problems;
- Specification of environmental conditions in public transport tenders;
- Facilitation of local alternative fuel infrastructure;
- Involvement of committed municipalities.

A more extensive set of policy recommendations, focused on different policy levels, will be provided in the following paragraphs.
15.2 EU level

A number of policy measures were identified by the PROCURA consortium, which are only applicable at the European Union level. Specific policy recommendations have been formulated for the European Commission to stimulate the diffusion of AFVs. These are:

1. **Synchronize national policies**
   The pilot cases were each conducted in very specific national contexts. Every country has its own policy with regard to (alternative) fuels and AFVs. To stimulate the diffusion of AFVs, it is recommended that the national policies involving AFVs are synchronized with each other on a European level. The European Union has made an important statement by labeling the use of natural gas/biogas and biofuels as a necessary intermediary step for the near future. The logical next step would be to synchronize the national policies with regard to these fuels, to provide certainty to end users, suppliers and manufacturers. The synchronization of national policies should of course not slow down the development of breakthrough national or regional initiatives, like the Swedish example. On the contrary the EU legislation could use the Swedish initiative (like for example the definition of the EEV (Environmentally Enhanced Vehicle)) as a benchmark.

2. **Introduce an international certificate system for biofuels**
   In a first phase there needs to be on the EU level recognition of E85 as a fuel for homologation purposes of the Flexifuel vehicles. The use of biofuels is also hampered by the fact that there is often uncertainty about its origin and sustainability. By introducing a certificate system, a guarantee of origin can be provided for biofuels. The guarantee of origin is needed to ensure that the biofuel has a positive greenhouse gas balance and does not have a negative impact on the global food prices. Negative effects of the use of biofuels are minimized by demanding such a certificate for all biofuels used in the European Union.

3. **Introduce an alternative fuel directive**
   It is recommended to introduce an EU directive on the introduction of alternative fuels. This directive should specify tangible targets with regard to the market penetration of natural gas/biogas and biofuels in the transport sector. By formulating these targets in an EU directive, the targets can be posed for the EU member countries as well. Additionally, these targets should be actively mandated, to ensure that all EU member countries meet them. At the moment the EP and Council are reviewing the EU Fuels Directive in which biofuels and hydrogen have been included, as well as sustainability criteria for biofuels.
4. **Formulate and articulate a clear long-term strategy by following an integrated approach**
Currently, the automotive industry as well as other companies and organizations are uncertain about the technology they have to invest in. It is recommended to formulate and articulate a long-term strategy on alternative fuels and sustainable mobility, in which clear ambitions, goals and standards are set for the nearby future and on which policy is based. These goals should be set via an integrated approach in which all the parties (national/local governments, fuel distributors, car manufacturers, etc) are being involved.

5. **Include Transport in the EU’s “Lead Markets initiative”**
As DG TREN seeks a network for public procurement of clean vehicles the inclusion of transport issues in the EU’s Lead Market Initiative is advisable in order to establish networks of key stakeholders at local levels.

15.3 **National level**
In addition to the policy recommendation at a European Union level, a set of policy recommendations was identified for the national level. A good example of a European country with national policy significantly favouring biofuels is Sweden. A short description of the main AFV policy measures in Sweden is given below.

**Example of Policy measures in Sweden**
Nowadays, the largest European E85 Flexifuel vehicle (FFV) fleet is found in Sweden and numbers to 116,695 units (data July 2008). The significant increase in the national procurement of AFV can be directly linked to the Global Cooperation Bill, which was passed in 2005. This bill not only ratified the Kyoto Protocol but also integrated biofuels targets of the EU Biofuels Directive (2003) and led the Swedish government to the decision of eliminating oil imports by 2020.

As a result to the Global Corporation Bill, Sweden offers a number of core incentives for AFV procurement:
- Exemption of CO₂ and energy taxes until 2009 for Biofuels;
- 30% price reduction at the pump of E85 fuel over gasoline;
- 40% price reduction at the pump for biodiesel over gasoline;
- Bonus of approximately $1.800 for the procurement of a FFV (payable to buyer);
- Exemption of Stockholm Congestion Tax;
- 20% (max) cost reduction on car insurance;
- Free parking spaces in larger Swedish cities;
- Decreased annual registration taxes;
20% tax reduction for the procurement of FFVs as company cars.

To set a good example, the Swedish Government decided that 25% of their vehicle purchases (excluding police, fire and ambulance vehicles) have to be propelled with alternative fuels. Additionally, since 2005 any filling station selling more than 3 million liters of fuel/year has an obligation to offer at least one kind of biofuel. This resulted in over 1200 filling stations providing E85 (data 2008). Moreover, this obligation for filling stations will be increased as to include all those filling stations with an annual volume of more than 1 million liters. This is expected to result in the creation of an additional 2800 filling stations by the end of 2009.

The Sweden case shows that a significant market push can be realized with supporting policy measures. Nonetheless, even Sweden still has a long way to go as only 2% of the Swedish vehicles are running on alternative fuels.

The PROCURA consortium based its policy recommendations mainly on their own experiences, but also considered the Swedish example regarding national policy. The following recommendations were thus formulated for policy-makers at a national level:

1. **Create a level playing field for alternative and conventional fuels**

   On a national level, it is especially important to monitor and influence how the costs of AFVs compare to the costs of conventional vehicles. If necessary, it is recommended to provide tax exemptions or financial incentives to ensure that AFVs are at least competitive with conventional vehicles for certain niches, depending on their fleet characteristics and use. Cost competitiveness is decisive for the diffusion of AFV. Again, it is specifically important to articulate a clear long-term strategy concerning alternative fuels along with this, and formulate distinct national objectives. Most tax incentives are only effective when they are in place for at least several years. Following the Swedish incentive package the aim should be to not only to give incentives regarding excise duty exemption of the fuel but also looking at stimulating the end customer (retail or fleet) AND making sure the necessary fuel infrastructure is (or will be) in place. The national governments should lead by example by implementing the green product portfolio clearly in their tenders.

2. **Introduce legislation concerning local air quality problems**

   The Nijmegen pilot case shows that national legislation on local air quality is an effective way to create a sense of urgency in municipalities with air quality problems. It is recommended to address air quality problems and monitor the results of measures that are taken on a local level. By doing so, the observability with regard to the environmental
impact of AFVs is enhanced, which has a positive influence on the willingness to adopt and endorse the use of AFVs.

15.4 Local level

A third set of recommendations has been formulated for policy-making at the local level. These recommendations are mainly applicable to local and regional authorities.

1. Specify environmental conditions in public transport tenders

It is recommended to incorporate obligatory environmental conditions in public transport tenders. This will make concession authorities as well as public transport companies more aware of the environmental impact their public transport has. As mentioned in the theory chapter, awareness of the environmental impact of bus transportation alone may very well create an urge to innovate. Additionally, stringent environmental conditions can easily be mandated this way.

2. Involve committed municipalities

Municipalities can play an important role in the diffusion of AFVs. On a low level, the adoption of AFVs can be stimulated substantially by providing leadership, by acting as an ambassador for AFVs, by involving industry and other stakeholders and by setting the example. Moreover, it is recommended to formulate detailed, long-term local policy with regard to the introduction of AFVs. It is key for municipalities to ensure internal commitment to the adoption of AFVs in the municipality board. The Nijmegen pilot case is a good example of successful involvement by the municipality.

Table 1: Recommendations for market stimulation on a local level.

<table>
<thead>
<tr>
<th>Incentive</th>
<th>Corresponding criteria and objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free parking for clean vehicles</td>
<td>Considering type of vehicle in terms of use, fuel and ownership.</td>
</tr>
<tr>
<td>Free parking for clean vehicles</td>
<td>Implementation of a system to indicate special parking areas.</td>
</tr>
<tr>
<td>Free parking for clean vehicles</td>
<td>Local policy and transit regulations in line with the initiative.</td>
</tr>
<tr>
<td>Development of a Green Zone</td>
<td>To ensure traffic calming and pedestrianisation; considering noise, pollution, historic areas not protected from the effects of traffic, and conflicts between road users and pedestrians.</td>
</tr>
</tbody>
</table>

3. Facilitate local alternative fuel infrastructure

On a regional level, it is recommended to address the availability of alternative fuels. Local fuel availability has the largest and most direct influence on fleet owners’ willingness to adopt AFVs. Moreover, a sensible distribution of filling stations for AFVs on a regional scale is important. The pilot cases showed that fleet owners were hesitant to use a filling station further away from their company, because of increased mileage and working hours needed to refuel their vehicles. In many cases, financial incentives may be necessary to catalyze the realization of an adequate fuel infrastructure. For deciding how and where financial incentives should be used, a regional overview can be very useful.
(Again here the Swedish example can be used whereby there is a national obligation to have a minimum of alternative fuel pumps installed with as a result that nowadays Sweden has covered almost half of its fuel stations (E85 or CNG).

15.5 Project level recommendations

The final recommendations are generally applicable on a project leven, when trying to stimulate the diffusion of AFVs. They should be considered by any change agent. These recommendations are specifically useful when conducting a project similar to PROCURA, whether it be a EU / local project or the creation of an European AFV Information Network for public and private fleet owners. The recommendations are:

- Provide examples from European Union projects and networks to inspire others;
- Provide exposure to excellent examples by peers of the targeted fleet or vehicle owners;
- Realize involvement with relevant industry and public-private partnerships;
- Provide detailed and tailor-made information on financial and environmental consequences (PROCURA fleet scan tool);
- Calculate and communicate the environmental costs of both conventional vehicles and AFVs;
- Increase the visibility of AFVs, for example with stickers;
- Accelerate large-scale procurement;
- Provide information on incentives, regulation, best practice and available models, open tenders etc.
# List of deliverables

Table 2: List of PROCURA deliverables.

<table>
<thead>
<tr>
<th>Del. N°</th>
<th>WP N°</th>
<th>Deliverable name</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1.1</td>
<td>1</td>
<td>Project progress reports, financial reports, interim and final report (technical + financial).</td>
</tr>
<tr>
<td>D1.2</td>
<td>1</td>
<td>Summary of project</td>
</tr>
<tr>
<td>D2.1</td>
<td>2</td>
<td>Market barriers for large-scale Alternative Fuel Vehicles procurement</td>
</tr>
<tr>
<td>D2.2</td>
<td>2</td>
<td>Manual for infrastructure development for AFVs</td>
</tr>
<tr>
<td>D2.3</td>
<td>2</td>
<td>Training guidelines for maintenance and support of AFVs</td>
</tr>
<tr>
<td>D2.4</td>
<td>2</td>
<td>User manual for fleet owners concerning AFVs</td>
</tr>
<tr>
<td>D2.5</td>
<td>2</td>
<td>Available incentive systems</td>
</tr>
</tbody>
</table>
| D3.1    | 3     | Communicative economic tools that link green procurement to economic benefits  
- D3.1 & D3.2 integrated in one tool |
| D3.2    | 3     | Communicative economic tools that link green procurement to environmental benefits  
- D3.1 & D3.2 integrated in one tool |
<p>| D3.3    | 3     | An outline for a certification system for green vehicles |
| D3.4    | 3     | An outline for successful greenlease concepts |
| D3.5    | 3     | A platform of relevant stakeholders which aims to further develop an internationally supported certification systems for AFVs |
| D3.6    | 3     | Extra deliverable – additional research on the subject of procurement models |
| D4.1    | 4.1   | Reports of workshops with local and regional fleet owners. |
| D4.2    | 4.1   | Fleet scan reports with fleet owners, application of PROCURA tools. |
| D4.3    | 4.1   | Reports of meetings with bus companies and concession authority KAN |
| D4.4    | 4.1   | Reports of workshops with automotive supporting industry |
| D4.5    | 4.1   | Increased activity on CNG in at least 5 SMEs of supporting industry |
| D4.6    | 4.1   | Plan of action on CNG introduction in the municipal car fleet |</p>
<table>
<thead>
<tr>
<th>D4.7</th>
<th>4.2</th>
<th>Report on feasibility of introduction of AFVs in the Terberg Rental fleet</th>
</tr>
</thead>
<tbody>
<tr>
<td>D4.8</td>
<td>4.2</td>
<td>Report on feasibility of AFV supporting infrastructure on Terberg property</td>
</tr>
<tr>
<td>D4.9</td>
<td>4.2</td>
<td>Report with analysis of meetings with 600 fleet owners in lease context</td>
</tr>
<tr>
<td>D4.10</td>
<td>4.2</td>
<td>Reports of fleet scans with use of procurement tools on public and private fleet owners</td>
</tr>
<tr>
<td>D4.11</td>
<td>4.2</td>
<td>Extra deliverable – additional report on the 2\textsuperscript{nd} hand market of CNG vehicles</td>
</tr>
<tr>
<td>D5.1</td>
<td>5</td>
<td>Pilot Study for the introduction of biofuel in the Lisbon area – Portugal</td>
</tr>
<tr>
<td>D5.2</td>
<td>5</td>
<td>Assessment of the main drivers for biofuel introduction in the Lisbon metropolitan area – Portugal</td>
</tr>
<tr>
<td>D5.3</td>
<td>5</td>
<td>Fleet scan reports with fleet owners using procurement models developed in the PROCURA project</td>
</tr>
<tr>
<td>D5.4</td>
<td>5</td>
<td>Workshops with local and regional fleet owners</td>
</tr>
<tr>
<td>D5.5</td>
<td>5</td>
<td>Workshops with automotive supporting industry (car dealers, maintenance, among others)</td>
</tr>
<tr>
<td>D5.6</td>
<td>5</td>
<td>Roadmap for the analysis of similar action applicability by other local governments</td>
</tr>
<tr>
<td>D6.1</td>
<td>6</td>
<td>Fleet scan reports with fleet owners, application of PROCURA tools</td>
</tr>
<tr>
<td>D6.2</td>
<td>6</td>
<td>Workshops with local and regional fleet owners</td>
</tr>
<tr>
<td>D6.3</td>
<td>6</td>
<td>Workshops with automotive supporting industry (car dealers, maintenance, etc.)</td>
</tr>
<tr>
<td>D6.4</td>
<td>6</td>
<td>Increased activity on Alternative Fuels in at least 5 organizations/associations in the AFV-chain</td>
</tr>
<tr>
<td>D6.5</td>
<td>6</td>
<td>Regional public-private partnership on AFVs</td>
</tr>
<tr>
<td>D7.1</td>
<td>7</td>
<td>Fleet scan reports of 15 bus fleets in Poland: state of art, barriers and solutions</td>
</tr>
<tr>
<td>D7.2</td>
<td>7</td>
<td>Reports from at least 15 meetings with bus fleet management technical staff</td>
</tr>
<tr>
<td>D7.3</td>
<td>7</td>
<td>Face to face meetings (15) with bus companies on technical and financial CNG issues</td>
</tr>
<tr>
<td>D7.4</td>
<td>7</td>
<td>Preparation of action plan for implementation of CNG in at least one bus company</td>
</tr>
<tr>
<td>D7.5</td>
<td>7</td>
<td>Report on second-hand market opportunities for CNG busses in Poland</td>
</tr>
<tr>
<td>D7.6</td>
<td>7</td>
<td>Promotional folder</td>
</tr>
<tr>
<td>D7.7</td>
<td>7</td>
<td>Workshops (3) on CNG public-private partnerships</td>
</tr>
<tr>
<td>D8.1</td>
<td>8</td>
<td>New financial instruments in the Valencia Region supporting the development of infrastructures and acquisition of AFVs</td>
</tr>
<tr>
<td>D8.2</td>
<td>8</td>
<td>Fleet scan reports</td>
</tr>
<tr>
<td>D8.3</td>
<td>8</td>
<td>Workshops with local fleet owners</td>
</tr>
<tr>
<td>D9.1</td>
<td>9</td>
<td>Report on cross-case evaluation of pilot projects</td>
</tr>
</tbody>
</table>
| D9.2 | 9 | Update report of models, tools and manuals developed in PROCURA  
- Integrated with D9.3 in one report |
| D9.3 | 9 | Report on generalizability of models, tools and manuals for specific countries, market segments and technologies  
- Integrated with D9.2 in one report |
| D9.4 | 9 | Report on policy recommendations regarding the acceleration of green procurement, targeted on relevant stakeholders |
| D9.5 | 9 | Conference papers and article in international journal (1) on the results |
| D10.1 | 10 | General website and with section for each partner country divided by target audience to describe local activities |
| D10.2 | 10 | Seminars in Brussels for European officials |
| D10.3 | 10 | Two seminars per partner and observer country for different target groups |
| D10.4 | 10 | 3 customized newsletters per year, 9 total disseminated in each partner country and to EU officials involved in transport development |
| D10.5 | 10 | An interactive CD-ROM (5000 copies) |
| D10.6 | 10 | Publications: 3 brochures of 4 pages, PROCURA handbook |
| D10.7 | 10 | Power point presentations to present the project to different audiences |
| D10.8 | 10 | Abstracts including regular updates |
| D10.9 | 10 | Project presentations including slide packages, presentations, written abstracts, posters, dissemination material |
| D10.10 | 10 | Presentational material including abstracts, visuals including photographic material, interviews |
### Performance indicators

**Table 3: Performance indicators overview.**

<table>
<thead>
<tr>
<th>Performance indicator</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of public and private fleet owners for which fleet scans are carried out by PROCURA partners.</td>
<td>158</td>
</tr>
<tr>
<td>Number of public and private fleet owners participating in workshops, conferences, seminars organized by PROCURA-members in order to raise awareness for AFV.</td>
<td>1192</td>
</tr>
<tr>
<td>Number of local and regional authorities participating in workshops, conferences, seminars organized by PROCURA-members in order to raise awareness for AFV.</td>
<td>935</td>
</tr>
<tr>
<td>Number of maintenance and repair shops having been trained in AFVs.</td>
<td>100</td>
</tr>
<tr>
<td>Number of supply chain members participating in workshops, conferences, seminars organized by PROCURA-members in order to raise awareness for AFVs.</td>
<td>640</td>
</tr>
<tr>
<td>Number of interested stakeholders, with interest in keeping up to date through PROCURA newsletter.</td>
<td>8000</td>
</tr>
<tr>
<td>Percentage of participants from private sector in workshops, conferences, seminars organized by PROCURA-members in order to raise awareness for AFVs.</td>
<td>49%</td>
</tr>
<tr>
<td>Number of procured AFVs through initiatives of PROCURA.</td>
<td>136 (211&lt;sup&gt;1&lt;/sup&gt;)</td>
</tr>
<tr>
<td>Interest in manuals, tools, CD ROMS, PowerPoint presentations developed in PROCURA, assessed by number of downloads/individual requests.</td>
<td>2000</td>
</tr>
<tr>
<td>Oil-based fuel saving (in litres/year).</td>
<td>1.6 (4.8&lt;sup&gt;2&lt;/sup&gt;) mln.</td>
</tr>
<tr>
<td>CO2 reduction (in kton/year).</td>
<td>0.45</td>
</tr>
<tr>
<td>Number of reported supply chain members increasing their portfolio with AFV related services or products.</td>
<td>43</td>
</tr>
<tr>
<td>Number of reported AFV initiatives in which PROCURA partners or activities are mentioned.</td>
<td>48</td>
</tr>
<tr>
<td>Number of reported AFV initiatives in which PROCURA products and experiences are applied.</td>
<td>40</td>
</tr>
<tr>
<td>Number of reported AFV initiatives in which PROCURA partners or activities are mentioned.</td>
<td>14</td>
</tr>
</tbody>
</table>

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<sup>1</sup> Procured AFVs including the CNG buses in Nijmegen, which will be in operation from January 2010 on.

<sup>2</sup> Oil-based fuel savings including the effect of the CNG buses in Nijmegen, mentioned in previous footnote.