

Schoon Vervoerd Clean Transport

Biodiesel in road transport for flowers & food

Report elaborated in the framework of the Carbon Labelling Project

Deliverable D9

**“Elaboration of a carbon labelling program and material for freight systems
and products”**

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1. The Clean Transport initiative of Greenports

Clean Transport – in Dutch **Schoon Vervoerd** – is an initiative of the Dutch flowers & food organisations and Rabobank Nederland to introduce biodiesel to reduce CO₂ emissions in road transport and decrease the dependency on fossil energy. It is also meant to demonstrate the innovative capacity of the sector not only for products and production processes but also in the wider sense of sustainability. Preferably Clean Transport would use B100. For pragmatic reasons B30 (30% biodiesel) is used in the start-up at the Flora Holland site in Naaldwijk.

The initiative was presented in June 2005 offering the Flowers & Food Innovation Agenda to the Dutch Minister of Agriculture, Mr. C. Veerman. It is part of the agenda of energy related initiatives '**Schoon Geproduceerd, Schoon Vervoerd**' of the Greenports. The initiative '**Schoon Geproduceerd, Schoon Vervoerd**' includes activities on 'greenhouse as a source of energy', use of terrestrial heat, cold/heat storage, biomass fuelling, use of waste heat and CO₂ of energy plants and refineries as well as warm water (heating) and CO₂ for greenhouses. More than 2000 MW capacity is already installed, the equivalent of a nuclear plant, with substantial benefits for emissions, costs and sustainability.

Van de Geijn Partners was responsible for the Innovation Agenda and was in September 2005 asked to initiate and manage Schoon Vervoerd from idea to market introduction. In that period there were contacts with **Senter Novem** and the Ministry of Economic Affairs to ensure that the initiative would fit in the Dutch Energy Transition Agenda. In spring 2006 there was a first contact with Senter Novem for Schoon Vervoerd to serve as a pilot in Holland for the European project Carbon Labelling. This was formalised in September 2007. In August 2008, Schoon Vervoerd started up, after a three year preparation period.

The Dutch flowers & vegetable industry – **Greenports** - is a unique geographical cluster of related business activities (production, import, logistics and technical and financial services) with a total turnover of well over € 10 billion, 250.000 employees, 10.000 hectares of greenhouses and vast auction & trade areas concentrated in Aalsmeer, Barendrecht, Venlo, Naaldwijk and some other places. The sector is leading in innovation of products, production processes, technology and services worldwide.

The energy bill of Greenports amounts to about € 1 billion and is rapidly increasing, despite intensive improvement efforts. For transport alone the energy bill amounts to about € 175 million on a yearly basis. The sector is well aware of the vulnerability for disruptions in the energy market. Many measures are taken in the greenhouses to transform the sector from a massive consumer (10% of the Dutch gas consumption) to a net producer of energy,

and to reduce the dependency on fossil sources. Measures are taken to move transport from road to water (short sea, barge) and rail, to introduce new logistic concepts using containers instead of trailers (shift



Figure 1: The importance of Greenports for the Dutch road transport

from road transport to multimodal transport) and ICT to better manage modal split and improve transport efficiency.

Schoon Vervoerd fits in this portfolio of measures. The Greenports have set themselves goals to reduce 30% CO₂ in 2020 and be independent of fossil energy sources by 2040. These goals serve economic values (reduce costs), sustainability (CO₂ footprint) and support license to produce.

Transport in the Greenports has a specific pattern. Trucks collect products (flowers, vegetables, plants) from the greenhouses on a daily basis to a few large scale auction and trade sites. Products often get a new owner there but more importantly groupage takes place and products are assembled in market oriented combinations (bouquets, assortments). Trucks distribute products to various retail channels mainly in North West Europe. This pattern follows a daily routine with thousands of trucks and hundreds of transport companies involved in the transport of flowers, fruit, and vegetables.

This pattern is very suitable for the introduction of biofuels as infrastructure (tanks and equipment) needs to be installed only at a few sites. Logistic services (filling the tanks), technical support (truck services) and monitoring (performance and emissions) can be concentrated at a few large scale locations. Multiple transport companies can participate in a small scale start-up, spreading the news. And last but not least, collective sector organisations can support the introduction. Nonetheless, the preparation has taken all the effort in the world over a 3 year period to get started.

An important lesson learned in Schoon Vervoerd is that it takes a lot of time, substantial effort (financially) and strong determination to set-up an initiative with high blends of biofuels. This is true even though there are no significant problems for trucks and fuel, locations are optimal for infrastructure and services, financial conditions are beneficial (cost neutrality for the transport companies involved) and shippers strongly support the use of biofuels. However, shippers will not pay a premium when using biofuels and demand guarantees from truck manufacturers when using B100.

Even under these almost ideal conditions it has been difficult to get started with Schoon Vervoerd, which finally took off in August 2008 after 3 years of intense matchmaking between all the parties involved. The project is described in the next chapter, whereas lessons learned are explained in later chapters of this report.

2. Implementation of the Clean Transport initiative

After a preliminary feasibility survey in the second half of 2005, Schoon Vervoerd was initiated as a project in January 2006 after a meeting of a delegation of the Greenport Taskforce Mobility headed by Philip Smits, president of The Greenery International, at Shell Headquarters in The Hague with the Shell official represented in the Platform Mobility. The Platform is responsible for the energy transition in transport in Holland and is supported by Senter Novem. More information on the Platform can be found at <http://www.senternovem.nl/energietransitiedm/index.asp>.

NB 1 Shell officials hold a number of key-positions in the organisation of the energy transition in Holland. As a company Shell is declared opponent of first generation biofuels and makes a strategic choice for Gas to Liquid (GtL) and second generation biofuels, both solutions for the longer term. In the meeting a strict distinction was made between Shell's company policy and

Shell's commercial interests as market leader in the Greenports on the one hand and goals of the Platform and Schoon Vervoerd on the other. Nonetheless, the combination of interests has been complicating the implementation of the project.

The Greenport Taskforce Mobility covers 5 infrastructure related projects for the Greenports. Schoon Vervoerd was added as the sixth project. Herman de Boon, former president of the agro-processing company Cebeco Handelsraad and chairman of the Association of flower import and export organisations in Holland was appointed chairman of the Steering Committee. Mr De Boon also holds a position as advisor to the Board of Archer Daniel Midland (ADM), market leader for biofuels in the US and Germany.

Members of the Steering Committee are 3 transport companies specialized in export of fruit and vegetables, collection of flowers (from greenhouses to the auction) and distribution of flowers (from the auction to the international retail). Other participants are Flora Holland, Rabobank Nederland and sector organisations Productschap Tuinbouw and Hoofd Bedrijfsschap Agrarische Groothandel.

The project was funded by sector organisations and Rabobank Nederland. Total costs are approximately € 400.000 over the period of three years, from the first initiative in July 2005 until the first tank filled with biofuel in August 2008. Expenses are mainly for project management, external communication and compensation of additional fuel costs for transport companies due to lower performance of biofuels and extra maintenance. These costs have been substantial due to the complexity of the energy market specifically for biofuels, the public debate adding to the complexity and the lack of consistency and support of government.

BP invested in the tank location, project management, commercial efforts, supply of biofuel for the price of fossil diesel (inclusive transport) and publicity. Volvo Truck Nederland invested in commercial activities, additional maintenance and monitoring.

In the start-up phase from mid 2005 there was no subsidy involved in the funding of the project as it did not meet the criteria until April 2007 when a subsidy was granted by Senternovem. The subsidy was withdrawn in April 2008 because promised goals for CO₂ reduction could not be reached, investments on the supply side (tanks and the like) were lower than expected and expenses for project management on the demand side (Greenports) were much higher than expected. European criteria for the subsidies were the main reason for the withdrawal. Eventually all expenses on the demand side (mainly project management) have been financed by the sector, and all investments and additional costs on the supply side (tanks, additional costs of bio components, logistic costs) were financed by supply side partners in the project.

NB 2 There are no adequate subsidies for demand side initiatives while the demand side definitely plays the key-role for successful biofuel projects and money for project management is difficult to organise in demand side projects. It is even more remarkable that investment subsidies are available for supply side projects while investment capital is no issue on the supply side and the supply side does not play a key-role in the start up of biofuel innovations. Strategic locations (for filling stations) are the real issue (scarcity) on the supply side. Strategic locations are far more effective as a stimulus for the introduction of innovative biofuels than bringing in additional money (subsidies) as money is not scarce at all on the supply side.

In September 2007, Senter Novem formally decided for Schoon Vervoerd to be the pilot in Holland for the European initiative Carbon Labelling. In total € 35.000 was granted for

specific publicity, to gather information in the start up, and for a final report as a contribution to the European final report. The change from B100 to B30 in the final stage of the project and the change of the number of trucks did not effect the agreement about Carbon Labelling.

After a survey in the first quarter of 2006 visiting among others Archer Daniel Midland in Leer (Germany) the Steering Committee decided:

- not to depend on (temporary) specific tax reduction. This would eventually destroy the frontrunners as soon as taxes are normalised. This happened (as predicted) in Germany in 2007, with heavy impact on the biofuel industry.
- to invite outsiders (non-traditional players) to participate in the business case and wait with participation of established players (oil companies).
- not to make new entrants critically dependant on tax policy and the willingness of established oil companies as this would sooner or later destroy the business.
- to choose B100 (100% biodiesel) adopting the German model for the Dutch situation without temporary tax reduction.
- not to join in the debate between NGO's, oil companies, knowledge workers and politicians about advantages and disadvantages of first or second generation biofuels.
- to go for a practical, feasible and 'imperfect' first step to introduce biodiesel and then decide about improvements and next steps.

The outsider strategy was maintained from January 2006 until July 2006 looking for a business model according to the decisions of the Steering Committee. Main attention has been paid to specific organisation of the supply chain from crop production to filling station, which still (in 2008) is one of the strategies for the commercial roll-out. This approach, however, did not offer a solid economic business case for the start-up and more importantly, outsiders do not own strategic locations for filling stations and therefore make them critically dependent on the cooperation with established partners.

In early 2006 the European Union proposed for the obligation of all member states to blend an yearly increasing percentage of bio components with fossil fuels, both for gasoline and diesel, increasing to 10% in 2010. The policy to reach these goals was left to the individual Member States.

NB 3 Member States are responsible for policies to meet the EU goals for biofuel. Different policies in the Member States introduce unequal playing field while the fuel markets are international by nature, especially for road transport. Business cases that are feasible in Germany or France, are completely unfeasible in Holland due to the national policies. The main challenge for Schoon Vervoerd is to find a solution for the specific Dutch situation regarding tax and policies for the blending obligation.

In July 2006, the Dutch policy was published offering oil companies freedom to trade the EU obligation to blend biofuel internally and mutually, similar to the CO₂ emission trade. This policy in practice excludes new entrants from the market as long as the price for biofuel is higher than fossil fuel. At least it would make new entrants dependant on the cooperation of established oil companies to trade bio credits and therefore make them very vulnerable for their commercial interests.

Based on these considerations the Steering Committee in September 2006 decided to leave the outsider strategy behind, maintain the B100 strategy and involve established oil companies in the project to create 'islands of B100' at the Greenports. A number of consecutive and parallel negotiations started late 2006 with potential partners and in August 2007 it was decided to work together with BP and to introduce of B100 in Naaldwijk at the existing BP filling station at the Flora Holland site. In early 2008 this was changed to B30.

BP exploits one of the largest filling stations in Holland at the Naaldwijk premises of Flora Holland. BP is interested to add biofuel to the spectrum of green initiatives like windmills, solar and other innovations. As an established oil company BP has the obligation to blend biodiesel with fossil diesel. Like all established companies, BP is a main stream player with restricted capability for small scale initiatives and therefore needs co-operation with a niche player.

BP was supported by an outside consultant well known in the oil market as well as in the biofuel industry from cropland to refinery. The specific combination of skills, interests and positions has proven successful. In August 2007, BP proposed B100 for a price of fossil diesel to transport companies. The only remaining problems to be solved were the costs of the 7% lower performance of biofuel and additional maintenance (changing motor oil).

In December 2007, Productschap Tuinbouw decided to compensate the remaining additional costs due to lower fuel performance and extra maintenance offering cost neutrality to the participating transport companies using B100 for the start-up of the BP filling station at the Flora Holland site in Naaldwijk. At this point everything was ready to introduce B100 on a cost neutral basis for transport companies.

The emergence of a strong public permanent debate on the sustainability issue of biofuels introduced a finite complexity to the Schoon Vervoerd initiative. In January 2008, three important outside forces came to a climax:

- The crisis in the German biofuel industry due to the gradual introduction of taxes on biodiesel and the obligation to blend bio components with fossil diesel. This situation had been predicted in January 2006, which was and is the main reason for Schoon Vervoerd not to depend on temporary tax advantages and the cooperation of oil companies.
- The culmination of negative publicity about environmental and social impacts of biofuels as well as potential negative GHG balances of biofuels. This negative publicity had a substantial impact on the motivation of business partners.
- Transport companies hesitated and later on refused to participate, considering chances of negative publicity, long-term market uncertainties.

These forces led to a re-consideration of the set-up of the project and BP's participation.

In March 2008, it was jointly decided to leave the B100 strategy and choose B30 (30% biodiesel), at the same time reduces the number of trucks of the initiative. Transport companies made clear that B100 would cause too much uncertainty after the end of the project (including vehicle warranties) and were more willing to join with B30. BP decided to co-operate with Volvo Truck Nederland. The goals of the project were re-defined namely to gather technical data and experience with high blends of biofuel.

In April 2008, Senter Novem withdraw the subsidy of the CO₂ reduction programme granted in April 2007 as the project no longer could deliver the promised CO₂ reduction goals. Co-operation with Senter Novem in the framework of the Carbon Labelling project was continued. Productschap Tuinbouw took over all financial obligations (project management, compensation of remaining costs for transport companies), demonstrating the commitment of the Greenports and enabling the project start-up in Naaldwijk.

In conclusion, the Clean Transport initiative experienced a very large complexity, not only in financial terms (withdrawal of the subsidy in a critical phase where commitments must be made), but because the overall benefits of the project were put into question, both on the demand side (Greenports) and the supply side (BP). Nonetheless, the project took-off in summer 2008, proving the determination of participants.

In August 2008, a tank was installed for B30 and the first trucks started using B30, offered for the normal diesel price to transport companies. Maintenance, warranties and monitoring were offered by Volvo Truck Nederland. Compensation of remaining extra costs for fuel and maintenance were offered by Productschap Tuinbouw, resulting in a safe and cost neutral operation for participating transport companies.

3. Application of the CO₂Star label at the Clean Transport initiative

BP, Volvo Truck Nederland and the project organisation Schoon Vervoerd (Greenports) worked together on the introduction and test of B30, each party taking its own responsibility. The interests and role of the coalition partners are as follows:

1. BP

- *Interest:* contribution to sustainability, reduction of CO₂, and technical and operational data collection on the use of high biodiesel blends as basis for subsequent decisions on commercial roll-out.
- *Role:* operation of the filling station, supply of B30, development of additives to improve engine performance and reduce maintenance.

2. Volvo Truck Nederland

- *Interest:* technical and commercial data on the use of B30 for engine performance and maintenance in practice, with a representative fleet.
- *Role:* acquiring participants/transport companies, initial adaptation and maintenance of the fleet, monitoring performance and effects on lubricants and maintenance.

3. Schoon Vervoerd

- *Interest:* realise goals for clean transportation, structural reduction of CO₂, reduce dependency on fossil energy sources, contribute to sustainability (convenant Schoon en Zuinig) and show innovative capacity throughout the chain.
- *Role:* matchmaking, overall project management, organise co-operation in the project, organise commercial contract and financial agreements, reporting to all parties involved, compensation of extra operational costs for transport companies.

4. Transport companies

- *Interest:* contribute to sustainability goals of the Greenports, reduce CO₂, serve license to operate.
- *Role:* participate in the pilot on a cost neutral basis.

The agreements are confirmed in to contracts:

- Co-operation agreement between BP, Volvo Truck Nederland and Schoon Vervoerd with financial and operational contributions of the individual participants to the pilot
- Agreement between Schoon Vervoerd and the individual transport companies, with individual obligations such as introducing the CO₂Star label), compensation for extra costs and publicity and delivery of technical data on fuel consumption.



Figure 2: Participating companies in the Clean Transport initiative

Van de Geijn Partners served as matchmaker for the initiative, developer of the concept, supporting the Steering Committee and program manager for the introduction on behalf of the Greenports (demand side), in close co-operation with the partners mentioned above.

The objective was to gather technical data (performance, emissions, maintenance, commerce) in a small scale, real life experiment with high blends of biofuel, specifically B30 as a first practical step in a continuing process of improvements (other sources like jatropha, additives both for fuel and lubricants, supply chain organisation) and to serve as a Dutch pilot for the European project Carbon Labelling as agreed in September 2007 and confirmed in April 2008.

B30 biodiesel for the Scoon Vervoerd initiative is distributet at the existing BP filling station at the Flora Holland Auction premises in Naaldwijk in the greenhouse district Westland. The auction is a 150 ha distribution area housing a large number of export organisations and transport companies, with about 3,000 trucks on average per day. This BP filling station is among the largest in Holland.



Figure 3: BP station and fuel pump for B30 at the Flora Holland Auction premises in Naaldwijk

BP guarantees the supply of 1.5 million litres of B30 (30% biodiesel blended with fossil diesel) for the duration of the experiment. Strict BP sourcing protocols are applicable regarding quality of product and compliance with international regulations and sustainability.

A 50,000 litre tank is installed at the existing filling station, with high speed filling equipment using the existing fuel card and billing system.

Trucks are prepared by the Volvo dealer WD-Trucks with Truck Management System installed to monitor emission, fuel consumption and maintenance conditions. Some trucks have an online monitoring system to enable realtime monitoring. Truck drivers use the BP fuel card, which enables the use of biodiesel for specific trucks (closed group), monitored by Volvo Truck Nederland and BP. Trucks in general make more than 100.000 km annually in Holland (collection of flowers at the greenhouses) or abroad (export to European countries).

The number of transport companies participating in this initiative is 6, with 22 trucks of different types. The participating fleet is presented in Table 1. All participants have been informed in a letter about the goals and conditions of Schoon Vervoerd on behalf of the project. The chairman of the Steering Committee called the entrepreneurs individually. Account managers from Volvo Truck Nederland/WD-Trucks and BP made the visits and closed the contracts, which became valid after signing contracts for compensation of remaining costs on behalf of the project. Hence, trucks were adapted by Volvo Truck Nederland and fuel cards submitted by BP.

Table 1: Adapted trucks of the participating companies which are provided with stickers

Transport company	Number of trucks	Additional trailers
Fides Holland bv De Lier	2	2
M. van der Helm Transport Maasdijk	2	n.a.
M&S Flowers Honselersdijk	2	n.a.
Nic. Sosef bv Honselersdijk	3	n.a.
Flowers4all 's Gravezande	2	1
Wematrans bv Honselersdijk	11	11
Total number	22	14

Each participating truck carries the Carbon Labelling logo “CO₂Star” on the cargo door of the trailer. In cases where trailers circulate in the fleet, all trailers carry the label. It is also displayed on the filling pump at Naaldwijk and on the project documents.

BP offers B30 for maximum 1.5 million litres and duration of 2 years. Volvo Truck Nederland takes care of initial adaptation of trucks, additional maintenance and performance monitoring of the fleet during 2 years, to gather data on the effects of B30. Productschap

Tuinbouw (Greenports) offers financial compensation to participating transport companies for additional operation costs. Thus, transport companies participate on a completely cost neutral basis. The trucks/trailers carry the CO₂Star label in return for the compensation in order to enhance the publicity of CO₂ emission reductions in the transport sector.



Figure 4: CO₂Star sticker of the labelling campaign for trucks in The Netherlands

Remaining additional costs for transport companies due to lower performance (7% for B100, 2% for B30), initial adaptation and additional maintenance is compensated by Productschap Tuinbouw. The participation of transport companies in the Schoon Vervoerd initiative therefore is cost neutral. For the size of the start up (1.5 million litres, 22 trucks) this may result in compensation of about € 75,000 by Productschap Tuinbouw, mainly paid to participating transport companies and for a minor part to Volvo Truck Nederland for additional maintenance.

4. Results of the Clean Transport initiative

The first feedback of the transport companies is positive about the operational effects and acceptance of B30 in the marketplace. Performance is measured and monitored by Volvo Truck Nederland using on-truck fleet monitoring software (Dynafleet) with wireless data transfer. The reports show mileage and the influencing factors on fuel consumption. Figures are preliminary based on (qualitative) interviews with all transport companies and monitoring in the short period of measuring (2 weeks) on 2 trucks.

First results indicate no relevant difference between using fossil or B30 blend on engine performance, functioning and fuel consumption.

Emission and engine economy are not tested on-truck as the engines are performing in compliance with respective EURO 5 norms (otherwise they are not allowed on the road). Volvo Sweden is asked to provide the data of the test stands for these engines using fossil diesel and B30. These data will be provided as soon as the measurements are performed.

BP estimates the reduction of CO₂ emissions during the pilot with 1.5 million litres of B30 at 650 tons. This reduction is preliminary. Realised sales from week 36 to week 39 is 11.000 litre B30. Predicted weekly sales after the completion of the start-up will be about 15,000 litres.

The fleet is composed of different types of Volvo trucks with EURO 3 and EURO 5 engines, maintained by WD-Trucks, the local dealer with support of Volvo Truck Nederland.

The preliminary data and opinions about fuel consumption show only marginal differences between fossil diesel and B30. Differences based on energy-content (predicted 7% for B100) would cause 2% additional consumption for B30. Consumption differences up to 10% in practice also exist for fossil diesel due to weather conditions and driver's behaviour.

Drivers have been asked about their experience with B30. Procedures at the filling station are the same for fossil diesel and B30. The general impression is that the fuel type does not affect the truck drivers. They have no ambition to serve higher goals and leave strategic decisions to the company management.

An operational remark of the drivers is that filling of tanks on both sides of the truck is not possible yet for B30 without turning the truck, since the station has only one B30 pump. For fossil diesel this is not necessary as the truck is parked in a lane with filling stations on both sides. This remark is under the attention of BP. Furthermore, there is no significant difference in engine performance between fossil and B30. Power, acceleration, and stand-by show no differences. In general, B30 is currently not being discussed between drivers. Only the Wematrans drivers communicate that their participation is motivated by contribution to a better environment and the image of the transport branch.

For maintenance the service-intervals for B30 are 40,000 km instead of 60,000 km for fossil diesel. The calculated extra costs are about € 460 annually depending on the annual mileage. For the pilot initiative these additional costs are compensated. Currently, several engine parts such as heating and cooling appliances (Eberspächer, Webasto, Hatz) are not suitable for B30. By mounting a special fuel tank for tax-free diesel for these appliances these problems are solved, involving costs of about € 250 per vehicle.

The main motives for truck companies to participate in the Clean Transport initiative are environment, sustainability, responsibility, and innovation. Specific motivations include:

- Environment enforces the use of cleaner and renewable fuels.
- Company image: Participation in existing policies about cleaner environment
- Contribution to an innovative company image
- Contribution to the image of the Greenports
- Sustainability and responsible entrepreneurship

Two truck companies plan to extend their participation in the Clean Transport initiative, as soon as the current confidentiality is lifted and depending on the sustainability debate. More feedback from the transport companies and customers on the carbon labels will be available early 2009.

External communication of the truck companies will be performed using the following tools:

- Website: communication of sustainability of production and transport as part of their corporate image (business to business);
- Contacts and meetings with customers and interviews in various magazines of the Greenports highlighting the issues of cleaner environment, sustainability, responsibility;
- Advertisement in magazines of the Greenports about the use of B30;
- Own publication for customers in October 2008 with about 20,000 readers;

The internal support differs for the participants and the motivation is sometimes restricted to the management, in other cases employees are enthusiastic and support the progressive attitude of their company.

The following preliminary conclusions can be drawn at this initial stage of the Clean Transport initiative:

- The fuel B30 has the potential for market introduction in The Netherlands if no extra costs occur in comparison with diesel fuel;
- Maintenance issues need to be solved, e.g. through the introduction of suitable lubricant additives;
- Applications for the operation of heating and cooling systems of the engines need to be found;
- Communication is required both on technical data and immaterial benefits;
- Further information is needed, both on technical performance data of B30 and on sustainability benefits of biofuels.

5. Communication and dissemination

Communication was organised differently in the two main phases of the project: Greenports having the initiative, roughly from the start until August 2007 and supply partners preparing for the introduction, roughly from August 2007 until August 2008.

In the initiative phase a communication team was formed with experts for External Affairs of the parties represented in the Steering Committee (demand side): Flora Holland, Rabobank Nederland, Association of Flower Import & Export Companies, Hoofd Bedrijfsschap Agrarische Groothandel. A detailed communication plan was produced for active, offensive publicity. In the introduction phase the communication team was changed with experts for External Affairs of BP, Volvo Truck Nederland, Flora Holland and Rabobank (demand & supply side). It was jointly decided to communicate on a reactive basis in first instance and start active communications once the project is fully running and once first results can be presented.

Schoon Vervoerd was presented at the conferences indicated in Table 2. Schoon Vervoerd was published in the following media, as presented in Table 3, and several brochures, websites, labels, displays were developed (see Table 4).

A website of the Schoon Vervoerd initiative is available and will be used as soon as the confidentiality agreement on the initiative is lifted. This is expected to happen in December 2008.



Figure 5: Dick Oosthoek (Rabobank Nederland) and Wim van de Geijn (van de Geijn Partners) at the Hortifair 2007

Table 2: Presentation of Schoon Vervoerd at conferences

Event	Description	Remarks
Greenport Conference June 2006	Presentation by P. Smits, Task Force Mobility Greenports	National conference, 300 attendees, Aalsmeer
Flora Holland January 2007	Presentation by H. de Boon, Chairman Schoon Vervoerd, Chairman flower export ass	Opening Business Parc, 200 attendees
Greenport Conference June 2007	Presentation by W. Baljeu, Task Force Mobility, Director tradeplatform import / export fruit & vegetables	National conference, 300 attendees, Barendrecht
Hortifair Exhibition 2007	Presentation by Rabobank Nederland in the context of renewable energy, using displays (80-100 cm) and wall presentation (3-4 m)	Annual international conference, RAI Exhibition & Congress Center Amsterdam
Horti Exhibition London	Presentation by Frugi Venta	International exhibition
Meeting Barendrecht	Presentation by Total / Schoon Vervoerd	Meeting with transport companies, 40 attendees
Meeting Aalsmeer	Presentation by Auction Aals-meer / Schoon Vervoerd	Meeting with transport companies, 50 attendees
Meeting Naaldwijk	Presentation by Flora Holland / Schoon Vervoerd	Meeting with transport companies, 50 attendees
Meeting Naaldwijk	Presentation by BP / Schoon Vervoerd	Meeting transport companies and OEM's, 20 attendees
meeting Productschap Tuinb	Presentation by Dir. D. Duijzer,	Item new year reception
Meeting Arnhem	Presentation by W. van de Geijn, Schoon Vervoerd	International bio-fuel meeting, Senter Novem, 40 att.

Table 3: Publications of Schoon in different media

Medium	Description	Remarks
Financieele Dagblad	Interview with sector representatives	Announcement of use of biofuel in road transport
Financieele Dagblad	Column by H. de Boon and W. van de Geijn	Unfair tax for biofuels as barrier to introduction
NRC Handelsblad	Column by H. de Boon and W. van de Geijn	Unfair tax for biofuels as barrier to introduction
Bladeren	Interview with flower sector representatives	Magazine for growers of flowers, edition 5000
Vakblad Groente en Fruit	Several publications	Magazine for trade & transport of fruit & vegetables
Rabobank Bus. Magazine	Interview Ton de Winter, member Steering Committee	Magazine for business relations of Rabobank
Groothandelsblad	Several publications	Magazine for wholesale
LTO Glaskracht	Newsletter	Growers in Holland

Table 4: Dissemination material for the Schoon Vervoerd initiative

Medium	Description	Remarks
Dutch brochure	2 page description of B100	Distributed in various conferences and exhibitions
English brochure	2 page description of B100	Distributed at Hortifair and other international events
Website Greenports Nederland	Announcement, progress reports	Communication website for Greenports
Website (Rabobank)	Announcement, progress reports	Customer Communication
Website Kas als energiebron	Announcement, progress reports	Communication website on energy related issues
Flexible wall display	3-4 m display	Used at Hortifair
Displays	80/100 cm display	Used at Hortifair
CO ₂ Star sticker	Self adhesive vignet Schoon Vervoerd, CO ₂ star	Used on doors of trailers of transport companies

6. Future development of the Clean Transport initiative

The future development of the Clean Transport initiative will certainly depend on the following issues:

- Technical data gathered in the course of the introduction in Naaldwijk, mainly performance of biofuel (litres per km), emissions and maintenance.
- Tax measures (equal tax per km for biofuel and fossil fuel), depending on the performance of biofuel to be examined in Naaldwijk.
- General context, public debate, oil prices, prices for biofuel.
- Commercial opportunities for suppliers related to the introduction of biofuel.

These and other aspect will be considered both by suppliers and the Greenports. The following next steps for the implementation of the initiative are envisaged:

- *Jatropha* (instead of rapeseed), to contribute to solutions in the sustainability debate. BP is active to establish *jatropha* plantations and to refine the oil through co-operation with third parties. Various initiatives are underway of Dutch growers and export companies of flowers active in central Africa. The presence of Dutch growers and export companies of flowers, fruit and vegetables as well as suppliers (for instance renewable compost to be used in plantations) in central and South Africa is promising to develop *jatropha* and other energy crops, as a natural extension of the usual business and local presence.
- Supply chain organisation, from the feedstock production to the filling station to reduce costs and increase efficiency and transparency. A first meeting is planned on the subject with leading partners in the supply chain.
- Additives to be used to improve performance of biofuels and at the same time further reduction of CO₂ emissions. Other additives will be used to improve the effectiveness of lubricants and reduce the additional maintenance costs.



Figure 6: Leaf and seeds of *Jatropha curcas*

- Research on biomass based power supply for the greenhouses. This would also be a contribution to reduce waste in the Greenports and transform it into energy.
- Locations for filling stations equipped to distribute biofuel (high blends). Strategic locations for filling stations are a supreme stimulus for the introduction of biofuels especially at the Greenports sites.
- Equal tax levels per km for biofuel and fossil fuel. The urgency depends on the performance data gathered in Naaldwijk. Tax disadvantage for biofuel (as is the case now) is prohibitive for roll-out.

The follow-up will be presented at the Greenport conference on November 27, as part of the project Schoon & Zuinig (Clean & Economical). Schoon & Zuinig is initiated by the Greenports and aims to achieve independency from fossil fuels and a substantial reduction of CO₂ of the Greenports in 2040. The ambitious program consists of a broad spectrum of initiatives in production (terrestrial heat, greenhouse as source of energy, waste to energy, etcetera) and in transportation (multimodal transport, use of alternative energy sources).

Options for the follow-up have been investigated in various meetings, one of them being an evaluation of the introduction of Schoon Vervoerd in Naaldwijk with BP and Volvo. Other meetings were held with growers of *jatropha*, parties involved in energy transition in Holland, independent oil distributors and representatives of the Greenports.

The follow-up consists of three different action lines, first being publicity (rationalize the debate on food fuel and forest, organize sense of urgency, show feasibility), second being support of government to create economic conditions for experiments in the Greenports and third execute experiments in a permanent process of open innovation with business partners. These three action lines fit in the long term strategy Schoon & Zuinig (Clean & Economical) of the Greenports.

Using the practical experience (showcase) of the introduction of biodiesel in Naaldwijk, the following communication and publicity strategy was used. Thereby, parts of the communication program were postponed due to the delay and the sustainability debate. Now Schoon Vervoerd shows good results, and publicity can start as planned in the communication protocol of the project.

- Contribution to the food-fuel-forest debate in the Regieraad Energietransitie in close co-operation between governmental organisations, parties in the market, scientific institutes and NGO's. The start of the communication will be at the Greenport conference in November, subsequently item(s) on Dutch TV (for instance Tegenlicht), invitational conference(s) (for instance with Clingendael Institute for safety en geopolitical studies) and regular newspapers.
- On the practical level encourage drivers involved in Schoon Vervoerd to be proud to be first league in innovation and show it, supplying incentives, gadgets and promotion material.
- Communicating to the transport companies about trip data of their trucks on a dedicated internet site to keep them informed of performance.
- Presentation of results on specific meetings of transport companies.

The mobilisation of Governmental support for experiments and innovations in the Greenports is similar to the temporary support for greenhouses as source of energy.

- Develop requirements for additives and fuel specifications. Industry can help to specify but can't prescribe. Co-operation between industry and government on an international level is required.
- Create conditions (financial, regulations) for experiments (Schoon geproduceerd, Schoon vervoerd, with jatropa, other sources, additives) on an economical basis. Sustainability alone can not be the only considered issue; innovations must be economical from the first moment on to be feasible and durable. The Government has a number of options available to help create an economical basis for experiments.
- Create of a fair level playing field for all fuel suppliers first of all by enforcing transparency throughout the chain, from cropland to filling station and learn from other sectors like (mobile) telecom how to create a competitive and innovative market place.
- Support the assignment of strategic distribution sites on the Greenports;

Finally, a suitable supply chain has to be created and organised:

- Develop the supply-organisation for next-generation biodiesel fuels (e.g. jatropa), using Naaldwijk as launching infrastructure. (harvesters, processors, distributors, Greenports).
- Extend with Schoon Vervoerd the distribution to strategic distribution sites on other greenport locations (Barendrecht, Bleiswijk, Rijnsburg, Aalsmeer, Eelde, Venlo), first with B30, later with next-generation biofuel components. Het idee was dat greenport een soort proeftuin zou worden van alternatieve brandstoffen met lagere CO₂ footprint.

- Optimize biodiesel fuels by experimenting and testing of additives in fuel and lubricants in the existing experiment in Naaldwijk (BP, Volvo, WD-Trucks and participating transport companies).
- Adapting and testing of engines and appliances to next-generation biodiesel fuels (Volvo, Webasto, Hatz, Eberspächer, Yamaha, Thermoking), according to Governmental regulations.

7. Conclusions and recommendations

In countries where there is no price incentive for the use biofuels (tax incentives, subsidies, compensations) pilots are almost per definition complex, as there are no direct operational benefits for participants.

This requires detailed contracts between participants reflecting their specific interests in the results (image, technical and economic data, license to produce, innovation, market introduction) as well as their contribution to the project.

As there are no direct commercial incentives progress depends on immaterial benefits for the participants and for the initiative as a whole, which makes the co-operation vulnerable to changes in the context (public debate, commercial policies).

Projects of this kind can only succeed due to persistency, dedication and sufficient time and patience and flexibility to adapt to changing outside forces.

Project management must be equipped to cope with permanently changing circumstances and external conditions (public debate).

Therefore it takes much time to realize the start of the project with substantial investment in process management and relatively low investment in equipment.

The following conclusions and recommendations can be drawn with respect to the Carbon Labelling Initiative:

- Carbon Labelling has been important to motivate business partners and participating transport companies to address the current debate on biofuel sustainability issues. The label offered re-confirmation of some comfort for the participants to persist in difficult circumstances and maintain confidence in the goals and values of the project. Preliminary conclusion is that the motivation of the transport companies to participate in the pilot is to show responsible entrepreneurship and communicate this to their customers. More feedback from the transport companies and customers on the labels will be available in early 2009.
- So far, communication to customers has been limited due to current confidentiality agreements until the pilot is officially launched.
- When the price is right, transport companies are willing to use B30 as a contribution to sustainability and the goals of their customers.

- The introduction of biofuels is merely a matter of organizing the commercial interests. High biofuel blends seem to have no technical risks and offer reliable performance for transport companies.
- Introduction of high biofuel blends is a matter of organisation and determination of the project participants.
- The demand side has to contribute to a successful introduction of biofuels. Greenports are an excellent example of demand side innovation, like Rotterdam Climate Initiative. Today, adequate instruments (subsidies) are not available or suitable for demand side innovation.
- Existing instruments (subsidies) for the supply side are not effective. Supply side investment subsidies are not needed for the introduction of biofuels to the market, as especially oil companies are not dependent on financial support schemes.
- Strategic locations for the introduction of biofuels are important and offer unique opportunities to speed up innovation. Public partners and Greenports are in an excellent position to address the introduction of biofuels from the supply side.
- Biofuels are best introduced in several consecutive steps. The successful introduction in Naaldwijk would offer opportunities for next steps, as described in the previous chapter.
- Transport companies and other participants are uncertain about the impacts of biodiesel regardless the positive experience in other countries (Germany, France). Better information based on the economic and technical information gained from the Clean Transport initiative will speed up the introduction.

8. Recommendations

The following recommendations for a successful introduction of biofuels can be drawn from the Clean Transport and Carbon Labelling initiatives:

- Investigate the attitude of consumers of freight services with respect to the effectiveness of labels highlighting the GHG benefits of biofuels;
- Stimulate the demand side with effective subsidies, mainly for project management, matchmaking and communication;
- Stimulate the supply side with strategic locations to introduce high biofuel blends;
- Invest in effective communication of technical data with maximum transparency for transport companies, involving stakeholders (transport companies) in Naaldwijk;
- Rationalize the public debate about first generation biofuels as a first step in a permanent process of improvement and innovation;
- Stimulate effective biofuel supply chain organisation (transparency, costs and competitiveness);

- Reconsider the effects of the different national policies on the introduction of high biofuel blends, specifically the Dutch policy;
- Stimulate the development and use of additives for biofuels and lubricants to improve both performance and sustainability;
- Consider the effects of tax disadvantages of biofuels due to lower performance and take adequate tax measures to produce a level playing field;