# Customer Survey

## Motives and Acceptance of Biodiesel among German Consumers

**A Survey in the Framework of**
Carbon Labelling Project
EIE/06/015/SI2.442654

by

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## Objective

In the framework of the Carbon Labelling Initiative Q1 made a consumer survey in order to assess the acceptability of a carbon label and to investigate the buying behaviour of German fuel customers.

The most important questions included:

- What are the most important motives when buying fuels?
- How aware are consumers about Climate Protection linked to their individual transportation?
- How do consumers assess the product biodiesel?
- Are consumers willing to contribute to Climate Protection by using climate friendly fuels?
- Would they pay a higher price for those fuels?

## Situation

Pure biodiesel (B100) made from rapeseed has been sold since the early 90' at public gas stations in Germany. In 2006 more than 1,600 petrol stations offered this alternative fuel to private and commercial consumers and in total 500,000 tons were sold.

Due to tax exemptions in Germany biodiesel had been approximately 10-15 cent cheaper than mineral diesel. Since August 2006 B100 is taxed with 8 cent. This fact has decreased the price advantage of biodiesel and has led to significant sales cuts.

Although producers and retail stations advertised the use of biodiesel with environmental arguments, there seems to be only a vague knowledge among consumers about the advantages of biodiesel.

## Method

During the implementation of the Carbon Labelling initiative at 10 pilot stations, Q1 carried out on-site consumer interviews.

The interviews were made by Q1 staff after the customers have finished the fuelling process. The interviews included close and open ended questions and took 2 to 5 minutes.

In order to address both diesel and biodiesel customers, two different questionnaires were used. The interviews were conducted in German. However, for this paper the questionnaires were translated into English.

# Questionnaire Diesel (English Translation)

A – fossil diesel clients

1. You just have fuelled your car with fossil diesel. Have you ever considered to use biodiesel as an alternative? Which of the following statements fit to your opinion?

**My car could also be operated with biodiesel**

☐ fits totally ☐ fits mainly ☐ fits slightly ☐ does not fit ☐ I don't know

**The fuel price is the main criterion for my purchase decisions.**

☐ fits totally ☐ fits mainly ☐ fits slightly ☐ does not fit ☐ I don't know

**The fuel quality is the main criterion for my purchase decisions.**

☐ fits totally ☐ fits mainly ☐ fits slightly ☐ does not fit ☐ I don't know

**I would like to make a contribution to climate protection by using a climate friendly fuel**

☐ fits totally ☐ fits mainly ☐ fits slightly ☐ does not fit ☐ I don't know

**I am willing to pay a higher price for a climate friendly fuel in comparison to fossil diesel**

☐ fits totally ☐ fits mainly ☐ fits slightly ☐ does not fit ☐ I don't know

2. Which aspects do you associate with biodiesel?

_____

_____

3. Do you know how much $CO_2$ emissions can be saved by using biodiesel in comparison to fossil diesel?

_____

4. If there was a fuel which reduces $CO_2$ emissions by 60%, would you be willing to pay a higher price for this fuel in comparison to fossil diesel?

☐ Yes, ____ Cent ☐ no

Thank you very much!

# Questionnaire Biodiesel (English Translation)

B – Biodiesel clients

1. You just have fuelled your car with biodiesel. Why do you use this kind of fuel? Please rate the following motives according to your personal preferences.

**price**

☐ very important ☐ important ☐ indifferent ☐ little relevance ☐ no relevance

**climate protection**

☐ very important ☐ important ☐ indifferent ☐ little relevance ☐ no relevance

**independence from fossil oil products**

☐ very important ☐ important ☐ indifferent ☐ little relevance ☐ no relevance

2. Since when do you use biodiesel?

_____

3. What was the main reason for you to change to biodiesel?

_____

4. Do you know how much $CO_2$ emissions can be saved by using biodiesel in comparison to fossil diesel?

_____

5. Did you have any negative experiences with biodiesel? If the answer is „yes“, please describe your experiences.

_____

6. If there was a fuel which reduces $CO_2$ emissions by 60%, would you be willing to pay a higher price for this fuel in comparison to fossil diesel?

☐ Yes, ____ Cent ☐ no

Thank you very much!

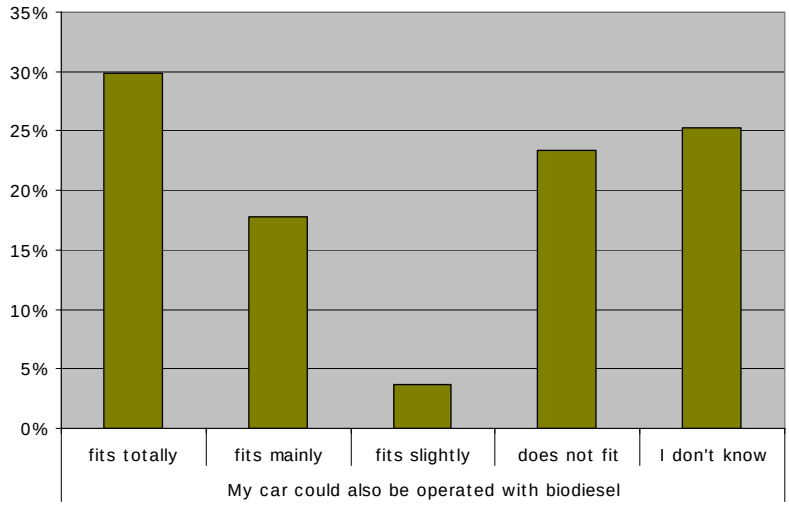
## Results from fossil diesel clients

In Germany approximately 50% of all private customers use fossil diesel. Due to a lower taxation it is cheaper than gasoline. It is normally used by customers with a high kilometer per year average (normally more than 30.000 km/a).

During the survey 107 (n=107) diesel clients have been interviewed directly after purchasing fossil diesel. They were confronted with the following statements that they had to judge:

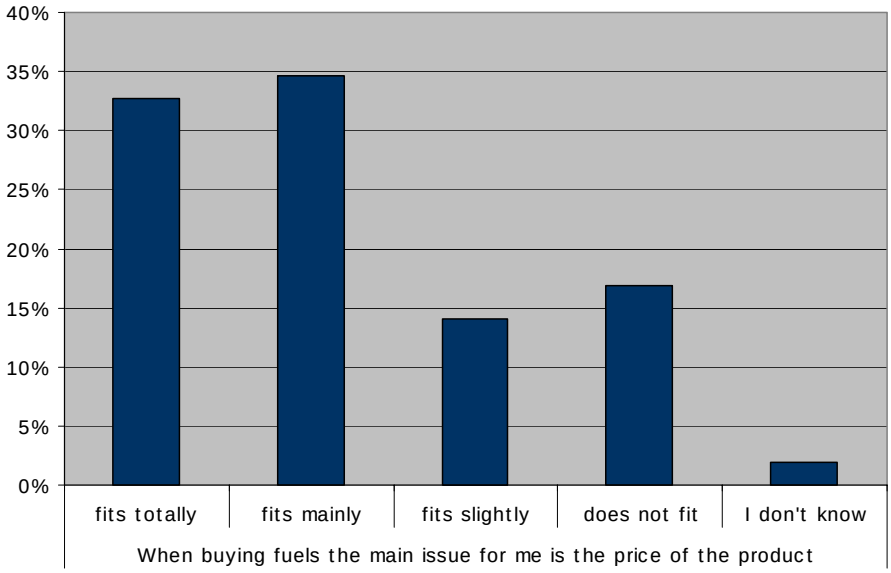
**“You have just fuelled your car with fossil diesel. Have you ever considered to use biodiesel as an alternative? Which of the following statements fit to your opinion?”**

**Statement 1: My car could also be operated with biodiesel**




These results show that 25% percent of all fossil diesel clients do not know if biodiesel is suitable for their car. These consumers do not know if their car is approved for biodiesel by car manufacturers.

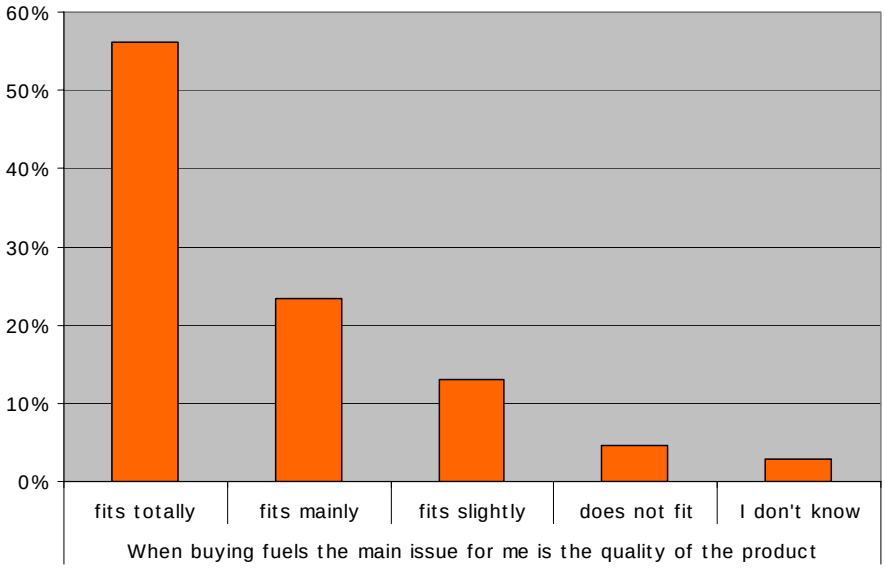
**Statement 2: The fuel price is the main criterion for my purchase decisions.**




The price is of major importance for 68% of all fossil diesel. They agree totally or mainly to the above mentioned statement.

This represents high price sensitivity among German customers.

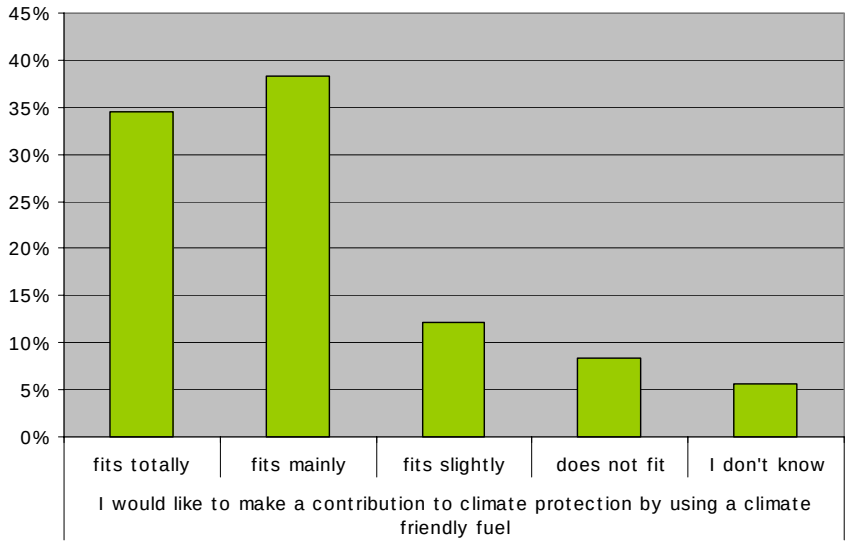
**Statement 3: The fuel quality is the main criterion for my purchase decisions.**




Fuel quality is of major importance for 79% of all fossil diesel clients. They agree totally or mainly to the above mentioned statement.

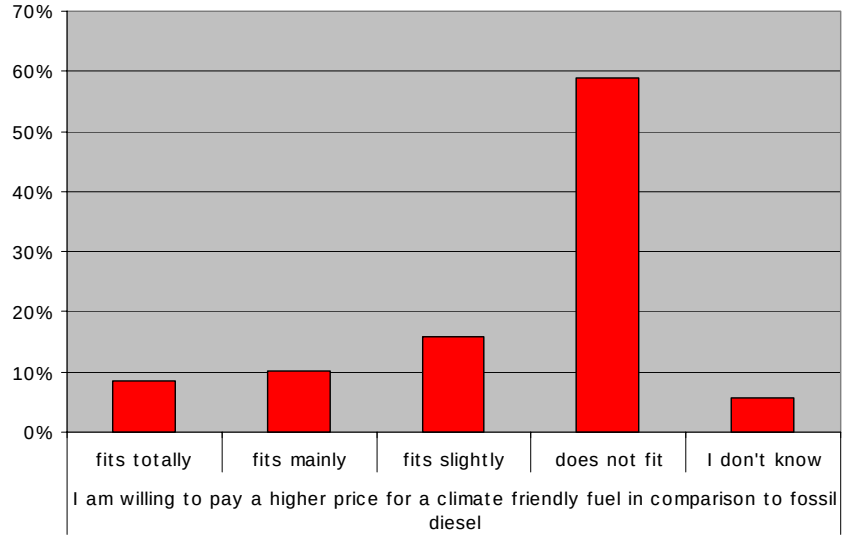
This shows that fuel quality is even more important for German fossil diesel customers than price.

**Statement 4: I would like to make a contribution to climate protection by using a climate friendly fuel**




When confronted with a statement about climate protection 73% of the German fossil diesel clients underline their willingness to make a contribution to climate protection by using a climate friendly fuel.

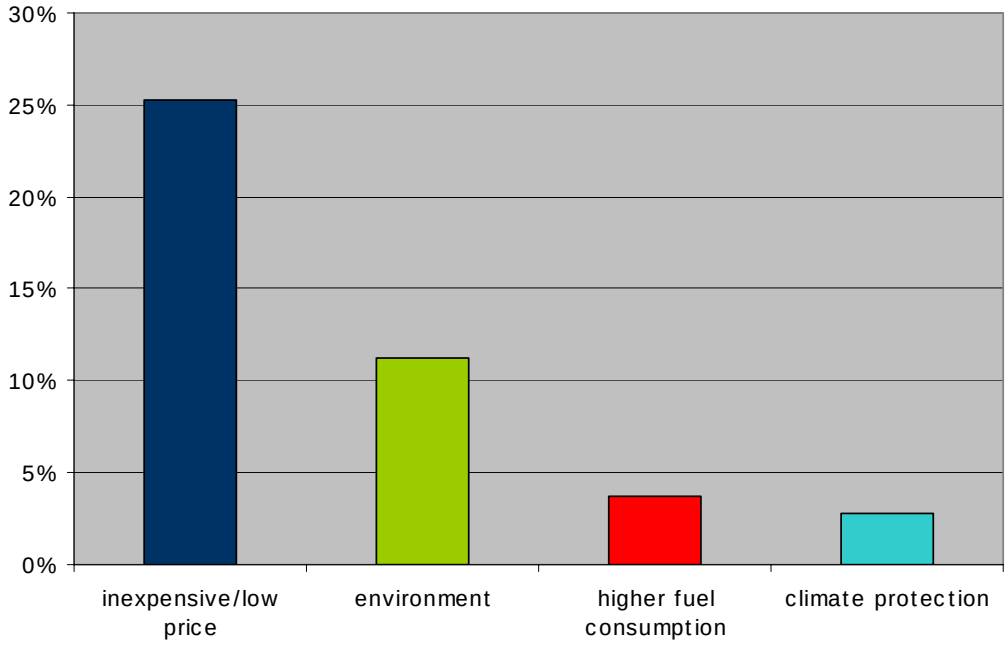
**Statement 5: I am willing to pay a higher price for a climate friendly fuel in comparison to fossil diesel**




If German fossil diesel clients are asked about their personal monetary contribution to climate protection, only 18% state that they are willing to pay a higher price for climate friendly fuels. The vast majority of 59% strictly refuses a personal monetary contribution.

In the next step, Q1 asked the fossil diesel customers an open ended question where no answer options were given.

**Which aspects do you associate with biodiesel?**




The perception of biodiesel among fossil diesel clients shows interesting results:

- 25% of the fossil diesel clients associate biodiesel with a low price.
- 11% associate biodiesel vaguely with environment[1].
- 4% presume higher fuel consumption if biodiesel is used.
- Only 3% of the consumers associate biodiesel with climate protection.

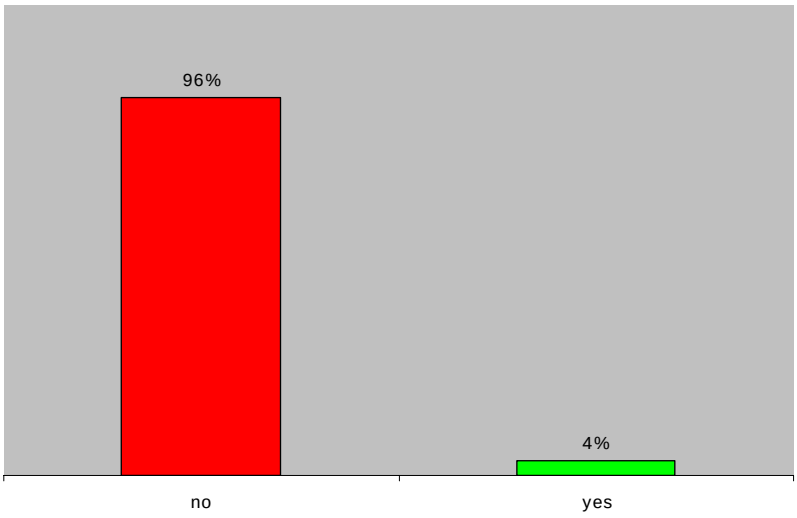
The vast majority of fossil diesel clients (60%) did not answer this question. Biodiesel seems largely unknown for them.

These results show that the positive effect of biodiesel on $CO_2$ reduction and therefore on climate protection is not obvious to German fossil diesel consumers.

Therefore it is not surprising that most consumers could not indicate how much $CO_2$ is saved when biodiesel is used instead of fossil fuel.

[1] Answers mentioning “Umwelt” (environment), „Umweltschutz“ (environmental protection) and „Bio“ (bio) are summarized under “environment”

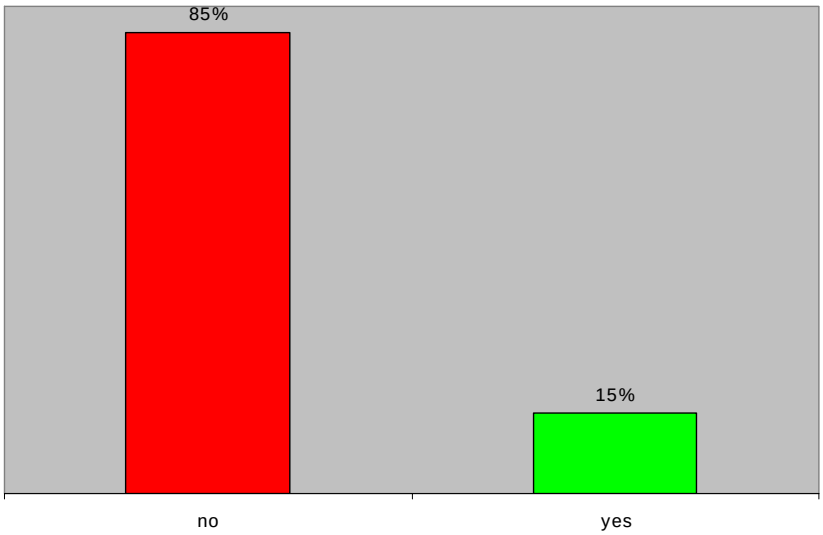
**Do you know how much $CO_2$ emissions can be saved by using biodiesel in comparison to fossil diesel?**




In total, only four persons answered this question and estimated 30% to 60% $CO_2$ reduction.

The interviews were finalised by the question if customers are willing to pay more for the fuel to make a contribution to climate protection by using a climate friendly fuel. Since this question is a closed question and includes a specific carbon reduction number (60%), it was much easier for consumers to answer this question.

**If there was a fuel with which you could reduce the $CO_2$ emissions by 60% would you be willing to pay a higher price for this fuel in comparison to fossil diesel?**



Question 4 underlines the results from statement 5. Only 15% state that they are willing to make a monetary contribution to climate protection by paying more for biodiesel.

Consumers who answered this question with “yes” (15%) accepted to pay in average 3.5 Euro Cent more for biodiesel than for diesel.

## Results from biodiesel clients

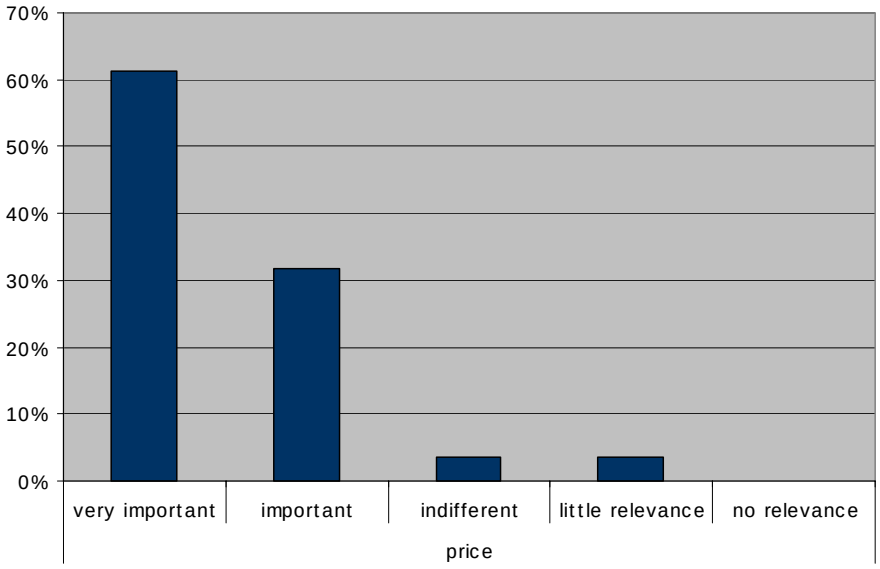
In Germany approximately 1% of private consumers use biodiesel as a fuel for their car. With this study Q1 wanted to investigate the motives of these consumers to use biodiesel. What do they think about biodiesel and how high is environmental awareness, especially climate considerations, among these consumers?

Again Q1 used a mix of closed and open ended questions to assess the attitude and behaviour of the biodiesel consumers.

During the survey 85 (n=85) biodiesel clients have been interviewed directly after purchasing biodiesel. They were confronted with the following statements that they had to judge:

**You just have fuelled your car with biodiesel. Why do you use this kind of fuel? Please rate the following motives according to your personal preferences.**

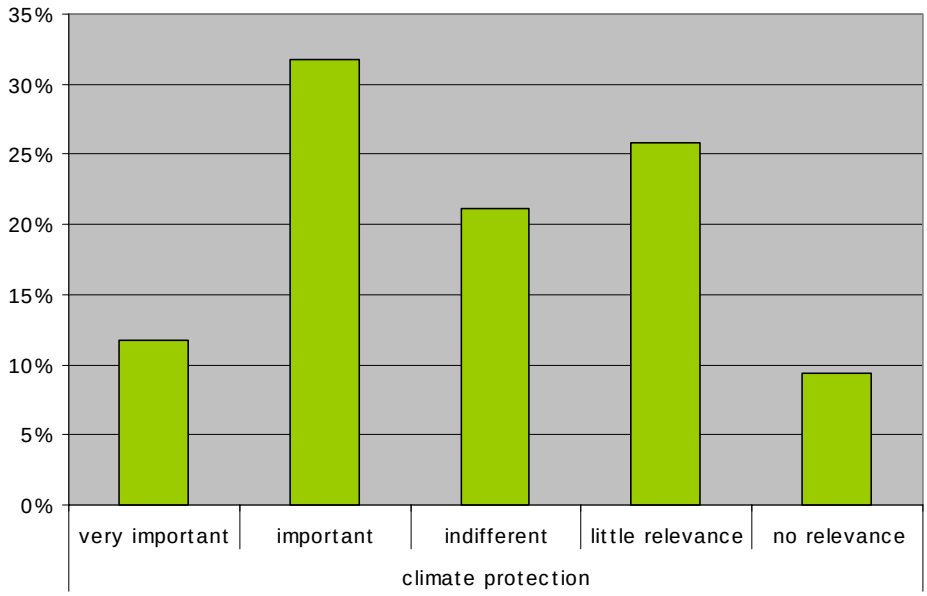
### Relevance of the price




For 93% of all biodiesel clients the price of the product is important. They agree totally or mainly to the above mentioned statement.

This is significantly higher than the price sensitivity among the fossil diesel customers.

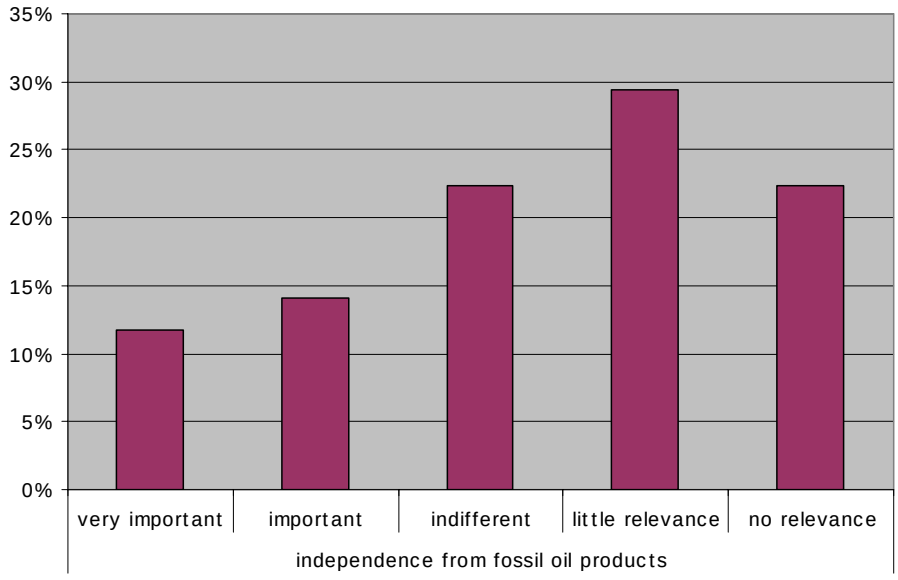
### Relevance of climate protection




When asked about the importance of climate protection, answers of biodiesel consumers were inconclusive. In comparison to the price there seems to be only a basic mindset pro climate protection.

The majority of interviewed consumers (56%) said that climate protection is indifferent or has little or no relevance for purchase decisions of fuels.

### Relevance of independence from fossil fuels




The majority of German biodiesel clients state that independence from fossil fuels is not important.

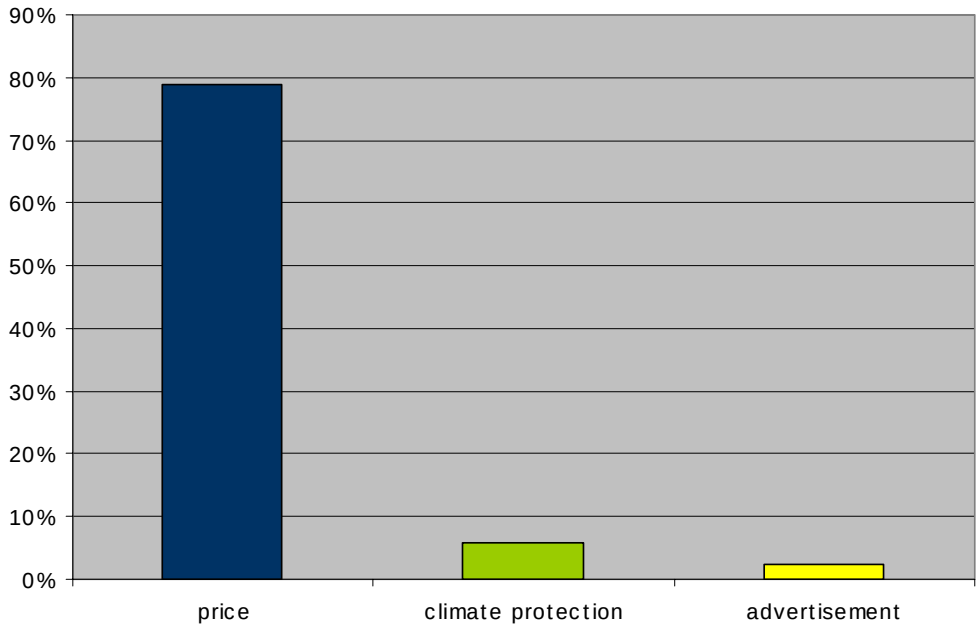
Fossil diesel is regarded as a safe and secure alternative to which they could immediately switch back.

In the following question, Q1 asked the consumers about how long they have been using biodiesel. The average number is 1.7 years and the median is only 1 year. This shows that many of the interviewed consumers have recently changed to biodiesel.

This result could be explained by two issues which could have influenced these consumers in the last year. The first issue was the large discussion about climate change which emerged in Germany during the last 1-2 years. The second issue was a serious increase in fuel prices that probably led to consumer reactions.

For an unbiased answer Q1 used an open ended question to get further information about the motives for changing to biodiesel.

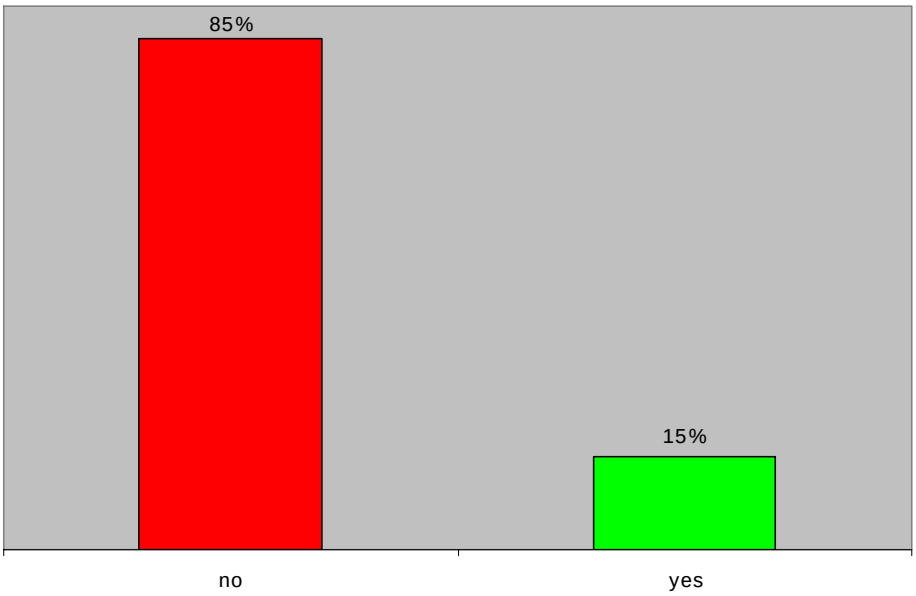
**What has been the main reason for you to change to this fuel?**




79% answered that the attractive price was the reason to change to biodiesel. For only 6% of the interviewed persons climate protection was the motive to change to biodiesel.

These numbers underline the results from the first question. Biodiesel is mainly used to save money for the consumer. Positive climate aspects are either unknown or not relevant.

**Do you know how much $CO_2$ emissions can be saved by using biodiesel in comparison to fossil diesel?**




The great majority of the biodiesel clients have no idea about concrete carbon reduction numbers. Only 15% were able to indicate a detailed number. Most of them answered that biodiesel reduces $CO_2$ emissions by 60% which is the number promoted by the $CO_2$Star campaign.

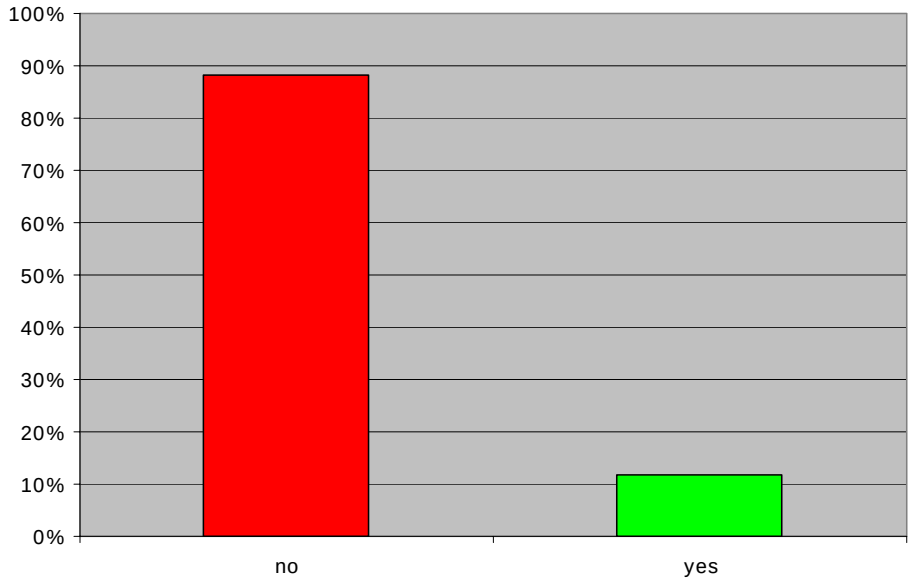
This shows that most consumers are not aware about $CO_2$ reductions. The assumption that customers of biodiesel are more environmentally oriented is disproved by questions 1a, 1b, 3 and 4.

Biodiesel still has a negative image with regards to technical problems. This image is very widespread, but today it is not justifiable since engine failures were drastically reduced. The reason for this image is a result of the pioneer days when biodiesel was not standardized and of cases where necessary measures (e.g. fuel filter change) had been ignored.

In order to assess the image of biodiesel, consumers were asked if they had negative experiences with the use of biodiesel. 11% reported that they already had negative experiences. However the most common negative experience was “higher fuel consumption” which is a known side effect of biodiesel use. Only 3% reported real technical problems (clogged fuel filter; engine problems).

Finally Q1 asked biodiesel customers for personal monetary willingness to make a contribution to climate protection by using a climate friendly fuel.

**If there was a fuel with which you could reduce the $CO_2$ emissions by 60% would you be willing to pay a higher price for this fuel in comparison to fossil diesel?**




Similarly to the results from fossil diesel clients also biodiesel clients are mostly not willing to pay a higher price for $CO_2$ friendly fuels.

Only 12% state that they are willing to make a monetary contribution to climate protection by paying more for biodiesel. This is an even lower number than among the fossil diesel clients (15%).

The average surcharge that would be accepted by the biodiesel consumers that stated “yes” (12%) is 3.9 Euro Cent.

# Conclusions

This survey gives an insight in the purchasing behaviour of German diesel and biodiesel consumers and helps to assess the potential of the Carbon Labelling Project.

The most dominant result is the high importance of price for fuels. Diesel and biodiesel prices are of highest relevance for German clients. Surprisingly the biodiesel clients are even more price sensitive than the fossil diesel clients.

Being confronted with a pro climate statement the majority of persons underline their willingness to contribute to climate protection. However, this contribution is strictly limited if it affects the own purse. Only a minority would pay a surcharge for climate friendly fuels.

The knowledge about carbon reduction potential of biodiesel is very low, even among biodiesel consumers. This underlines the necessity to extend the educational advertisement of biofuels. Activities like the Carbon Labelling Project are accepted but it takes a long way to get the knowledge to the consumer.

On the other hand this study underlines the importance of monetary benefits for biofuels. The consumer is not willing to pay a higher price for biofuels. Currently, only tax exemptions will boost biofuel sales.

In Germany, taxation of biodiesel which was introduced in August 2006 (after full tax exemption until 2006) has led to a decline in biodiesel sales. This questionable decision contradicts the propagation of B100 as a carbon friendly fuel in Germany.