

# Positive versus Negative eco-labelling; will negative labels change consumer behaviour

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## **Introduction**

Eco-labels are found on several food products. These labels show that, regarding the environment, these products are superior to products without the label. Since consumers neither have the time, nor the competence to examine the environmental impact of the production of food products, this eco-label can be helpful for them in choosing the food product, consistent with their environmental attitude and behaviour (Houe and Grabot 2009). However, ethical consumerism is a second step taken by consumers that are already environmentally involved (Grankvist, Lekedal et al.), so people with a negative or blank attitude towards environmental friendly consumerism are not likely to pay attention to an eco-labelled, environmental friendly alternative to their habitually purchased food products. Thus, environmental labelling is only useful when the consumer actually pays attention to it and uses them in their decision making, and the type of eco-labelling now used, does not seem to reach this goal.

An alternative to the positive type of labelling used up until now could be to introduce negative labels. According to several theories, these negatively framed labels might have a greater influence on consumer decision making.

This thesis tries to find the effect of negative labelling on the consumer, while still taking price difference into account.

## **Summary**

Prospect theory of Kahneman & Tversky (1979), suggests that negative information weighs heavier in decision making than positive information. Taking this into account, it might be more efficient to turn labelling around: introduce a negative ('non-eco') label for "normal" products. To find if this is more efficient the preference of the respondent is measured in the negative, positive and two-sided frame, also taking the effect of total identity into account.

Other than literature suggests the results of this research show that negative labelling does not increase the preference for a positive or blank premium priced product over a negatively labelled product. Nor does the negative label increase the preference for an environmental friendly alternative if the price is equal to the non-eco product. Negative labelling increases the time the consumer takes to make a decision, but the final choice for a product is only dependent on the total identity of the respondent. Finally, two-sided labelling appears to have more impact than either positive and negative information.

## **Subject introduction**

To indicate whether a food product is environmentally friendly produced, several eco-friendly production companies pay to add the eco label to their products.

Remarkable is, that all the labelling done for eco-friendly products aims at the positive quality attributes of the products, and at the gains the consumption of the product will have for the consumer and his environment. It is a one sided positive message that tries to inform and persuade people to choose for the eco alternative and contribute to a better environment. Several researches found that trust in, and transparency of the label is one of the most important aspects for the consumer (Thøgersen 2000; Loureiro, McCluskey et al. 2002; Nilsson, Tuncer et al. 2004; Teisl, Rubin et al. 2008).

Prospect theory of Kahneman & Tversky (1979) however, suggests that negative information weighs heavier in decision making than positive information. Taking this into account, it should be more efficient to turn labelling around: introduce a negative ('non-eco') label for "normal" products instead of a positive label for environmentally friendly products. Reversing the labelling as such could trigger different reactions from people who are not used to buying ecologically produced products.

Next to the prospect theory there are several other approaches that could explain the advantage of negative labelling. One of them is the occurrence of cognitive dissonance. This dissonance arises when there are two inconsistencies such as a negative label but a low price versus a "normal", blank product but more expensive. Since people do not like dissonance they will be motivated to reduce it. This motivation will lead to a change in attitude. The attitude is likely to change into the direction of choosing the blank product, since in a price-quality trade-off, people will avoid the lowest quality (Luce, Payne et al. 2000).

Motivational conflicts can arise in which normal goals, to approach the positive and avoid the negative, are not as clear anymore. Organic products may be considered positively by consumers (Kuchler et al., 2000; Raab & Grobe, 2005), while the premium price that is asked for these products is valued negatively (Batte et al., 2007). The use of positive labelling creates an approach-approach situation, in which a decision is easily and routinely made. One will either choose cheap or environmental, which are both positive attribute, resulting in a positive end state, either way. Negative labelling will change this situation. This type of labelling creates an approach-avoidance conflict, where the negatively labelled products withholds two contrasting attributes to consider. On the one hand an 'approach attribute', which is the lower price, and on the other an 'avoidance-attribute', which is the negative

label. This type of dilemma is more difficult to solve than an approach-approach situation, so people have to step out of their habitual buying behaviour and give extra thought to what type of purchase fits best with their attitude and behaviour. Once stepping out of their habitual behaviour, consumers will be more open to persuasion and change.

### **Objective and delimitation**

Understanding consumer behaviour leads to understanding consumer society. This again is necessary for the development and understanding of consumer policy. When society wishes to get more consumers to buy ecological products, it may certainly be worth while to see if the way in which environmental friendly products are promoted now, is the most effective way.

Environmentally friendly production is not something of the past few years, and also not something that only relates to food products. There are a lot more examples of eco labels, for food as well as for other products. For as far as this research goes, only the Dutch eco-label for food products is taken into account. Although just aiming at this particular label, the result will give an insight of the effect that negative labelling will have on consumers. If negative labelling seems to be more effective, this could be applicable throughout the whole market.

## Literature research

### Why labels work

Labels on product packaging make an intrinsic attribute extrinsic, so it is easy for consumers to recognize a product and to know what attributes the product withholds. Since consumers do not have the time and the competence to fully investigate all this themselves, labelling helps them to make quick choices. These quick choices have to be made practically every day and are an example of approach-approach decision (Miller 1959), where the choice for one alternative will automatically weaken the desire to approach the other alternative. In fact, whatever the choice is, the consumer will always end up with a desired product. These quick choices and routine will lead to habitual behaviour: there is no need to elaborate on every choice, since the end state will always be positive for the consumer.

### Why eco-labels do not work

Eco-labels also inform consumers about intrinsic attributes of the product, only then they are especially used to indicate that a product is environmentally friendly produced. Eco-labels create transparency in the market and try to persuade people into buying eco-products, because the products are less harmful for the environment. Buying eco-labelled food is part of sustainable behaviour and can give consumers a good feeling about themselves, because they feel they contribute to a better environment. But still, eco-labels do not seem to reach their goal of persuading consumers into buying eco-products as much as the producers of eco labelled food want to (Loureiro, McCluskey et al. 2002).

Eco-labelled food still does not have a large market share and the gross of consumers purchases normal products instead of eco-products. People that are not looking for eco-labels will not notice them (Teisl, Rubin et al. 2008) and the price-quality trade-off also contributes to the lack of interest in eco-products. The quality attribute of the product, which is 'ecological', is not directly tangible, while the premium price is. So the loss of buying an eco-product is more clear and realistic than the gains.

There are several other problems concerning the choice for eco-products. First, attitude does not always predict behaviour: an increased preference for environmental friendly production does not necessarily result in an actual choice for ecological products (Grankvist, Lekedal et al. 2007). Second the habitual shopping behaviour that people create for daily purchases restrains them from considering an eco-alternative.

Environmental labels are only useful if consumers actually use them in their decision making, and paying attention to them is rather the means to a goal, than a goal itself (Thøgersen

2000), suggesting that only people who already buy ecologically produced products pay attention to the label, and people that do not buy eco-labelled products, also do not search for the labels.

#### Why negative eco-labelling should work

Breaking habitual behaviour is not easy, but necessary to change the eco-behaviour of consumers. To break routine, a conflict is needed. This conflict will create a new situation and push the consumer to use more elaborated thinking. In this process the present attitude is measured to the present behaviour and that 'confrontation' may cause the consumer to realize that their behaviour is not in line with their attitude any longer (Grankvist and Biel) which will be the start of unfreezing past behaviour of Lewin's change model.

Negative labelling, instead of the positive kind that is used now, will create a situation that requires more thought (Grankvist 2004; van Dam 2009). Since the way in which information is presented always has an effect on how people interpreted a message (Teisl, Rubin et al.) the negative message might create the new situation that is needed to activate consumers with an intermediate concern to choose eco food over non-eco food. Furthermore, by framing the message in a negative way consumers will see the purchase of a 'non-eco'-labelled product as a loss for the environment, and loss aversion (Tversky and Kahneman 1991) predicts a strong reaction to this. The feeling of loss can only be eliminated by choosing the more expensive eco-alternative. Although the premium price could also feel as a loss, in a price-quality trade-off people are more likely to take a price-loss than a quality-loss (Luce, Payne et al. 2000).

Several other theories prove that people will respond more to negative messages and labels than to positive ones. The prospect theory (Kahneman and Tversky 1979) for example describes that losses weigh more than gains. This suggests that a negative message will have a greater impact on a consumer, than would a positive one. Therefore, attributes that are defined by unfavourable values can increase a negative emotion. People in a negative mood use an analytical type of decision making rather than a habitual type (Luce, Payne et al. 2000) which leads to stepping out of habitual buying behaviour.

Also, Millers motivational conflicts arise when people make a decision. By giving a normal product with low price (approach) a negative 'non-eco' label (avoid) an approach-avoidance conflict is created, which requires more thought than an approach-approach conflict would. In the approach-avoidance situation loss avoidance (Kahneman and Tversky 1979; Tversky and Kahneman 1991) will lead to the choice for the eco-labelled product.



## **Hypotheses**

Research will have to show whether negative labelling has a greater impact on the consumer than positive labelling. Still the price difference has to be taken into account, leading to the following hypothesis

H1 Negative labelling increases the choice for non-labelled, premium priced eco-friendly alternatives more than will be the case in positive labelling.

Negative labelling creates an approach-avoid situation, the decision that has to be made requires more thought more than an approach-approach situation, which is the case in positive labelling. Therefore it can be hypothesised that

H2 Negative labelling will require more decision time than positive labelling

By creating a new label, it is easy to make the label stand out more but the reaction to this is not what needs to be tested. The following hypothesis concerns the lay out and the message of the label. To prove that the effect of negative labelling is not attained by the external features of the label, there should not be a difference in the noticeability of both labels. Therefore the following hypothesis has to be tested

H3 All other things being equal, the positive and negative label have the same effect to the consumer.

## Research design

The aim of this research is to find a positive effect on the environmental friendly buying behaviour of consumers by reversing the labelling to a negative form. In doing so it is important to eliminate possible other factors that can distract the consumer from the negative label.

A type of framing that uses colour symbolism (Grankvist 2004) could lead to people choosing the 'right' colour instead of picking the product for its intrinsic values. To prevent this type of framing two labels are used. One is the standard black and white 'EKO' label as is used in the Netherlands. The other is a self constructed, black and white 'No-EKO' label. Both labels only contain text .

### *Sample/participants*

Sample size: the goal is to get 100 to 150 students to join the experiment.

### *Procedure*

Students of Wageningen University will take part in a computer experiment. Before the experiments begins they will be told that instructions are displayed on their computer. The experiment starts with asking general information such as age and gender. After that the labels that are used are introduced: the existing Dutch 'EKO' label as positive label, and a self designed 'No-EKO' label as a negative label. Both labels are black and white, squared, and only contain text.

*Figure 1*



After this, three products will be shown in randomized order (mushrooms, eggs, and mandarins) framed positive, negative, and two-sided without any price difference appearing on randomly the right and left side of the screen. The positive frame will show a positively labelled organic product versus a non labelled product. The negative frame will show a negatively labelled non-organic product versus a non labelled product. And the two-sided labelling will show a positively labelled product versus a negatively labelled product. The pictures of the products are the same, apart from the label that is projected on the product.

The second part of the test will show three pairs of products again positively labelled, negatively labelled, and two-sided but with a price premium on the ecologically friendly alternative. The presentation of the organic product will be randomly on the left, and on the right side, to minimize the presentation bias. The products will, again, be identical apart from the label and the price, which is shown below the picture. The premium price for the organic alternative relies on realistic differences between organic and non-organic products. When all pairs are presented the respondent is to answer questions from a scale to measure environmental awareness (NEP-scale).

After the experiment the respondents are thanked for cooperating and awarded accordingly.

### *Measures*

The respondent is asked to point out his or her preference on a 7 point scale that is situated between the products. The boxes are not marked so the respondent has to choose between preference for the left situated product or the right situated product, and submit the answer so the time between choosing and proceeding can be measured.

To define environmental awareness the respondent is presented questions from the NEP-scale.

## Analysis and results

### Hypotheses and tests

H1 Negative labelling increases the choice for non-labelled, premium priced eco-friendly alternatives more than will be the case in positive labelling.

In this hypothesis the dependent is 'Preference score' (1-7) and the condition is the label (positive/negative/both). This will be tested with a one-way ANOVA splitting the cases in 'no premium price' and 'price difference'

One way ANOVA Score

### No premium price

Productscore negative label (-1), two-sided (0), positive label (1)

Descriptives			
	N	Mean	Std. Deviation
-1	112	<b>6</b>	1.294
0	112	<b>6.46</b>	0.994
1	112	<b>6.37</b>	1.193

Table 1.1

We found and F-score of 4.785, and with a p of 0.009 this result is significant ( $p < 0.05$ )

ProductScore <sup>b</sup>			
Tukey HSD <sup>a</sup>			
		Subset for alpha = 0.05	
1= pos, -1= neg, 0= beide	N	1	2
-1	112	6.00	
1	112	6.37	6.37
0	112		6.46
Sig.		.051	.835

Table 1.2

### Price difference

Productscore negative label (-1), two-sided (0), positive label (1)

Descriptives			
	N	Mean	Std. Deviation
-1	112	<b>2.79</b>	1.657
0	112	<b>3.54</b>	1.912
1	112	<b>2.89</b>	1.857

Table 2.1

We found and F-score of 5.612, and with a p of 0.004 this result is significant ( $p < 0.05$ )

ProductScore <sup>b</sup>			
Tukey HSD <sup>a</sup>			
Subset for alpha = 0.05			
1= pos, -1= neg, 0= beide	N	1	2
-1	112	2.79	
1	112	2.89	
0	112		3.54
Sig.		.898	1.000

Table 2.2

Both ANOVA's show that the preference for the eco-friendly alternative does not increase with the use of a negative label. With a significance of 0.009 in the 'no premium price' category and a significance of 0.004 in the 'price difference' category hypothesis 1 has to be rejected. Negative labelling does not increase the choice for non-labelled, premium priced eco-friendly alternatives more than will be the case in positive labelling.

H2 Negative labelling will require more decision time than positive labelling

This hypothesis has 'time' as dependent and 'label'(positive/negative) as condition. This also can be tested with one-way ANOVA

One way ANOVA *Time*

**No premium price**

ProductTime negative label (-1), two-sided (0), positive label (1)

Descriptives			
	N	Mean	Std. Deviation
-1	112	12.06	4.528
0	112	7.64	3.02
1	112	9.32	3.474

Table 3.1

We found an F-score of 40.065, and with a p of 0.000 this result is significant ( $p < 0.05$ )

ProductTime <sup>b</sup>				
Tukey HSD <sup>a</sup>				
Subset for alpha = 0.05				
1= pos, -1= neg, 0= beide	N	1	2	3
0	112	7.64		
1	112		9.32	
-1	112			12.06
Sig.		1.000	1.000	1.000

Table 3.2

## Price difference

Descriptives			
	N	Mean	Std. Deviation
-1	112	10.54	4.821
0	112	9.45	4.92
1	112	9.32	4.457

Table 4.1

We found an F-score of 2.231, and with a p of 0.109 this result is not significant ( $p < 0.05$ )

ProductTime <sup>b</sup>		
Tukey HSD <sup>a</sup>		
	Subset for alpha = 0.05	
1= pos, -1= neg, 0= beide	N	1
1	112	9.32
0	112	9.45
-1	112	10.54
Sig.		.134

Table 4.2

The first ANOVA, which is done in the case for 'no premium price' the mean of 12.056 seconds (negative label) compared to 9.324 seconds (positive label) unmistakably proves (significance is 0.000) that negative labelling leads to more elaborated thinking than positive labelling. In the second ANOVA however, the mean times are closer, although the mean of the negative price condition still is slightly higher. With a significance of 0.109 this is not highly significant.

A possible explanation for the difference between the time measures is a 'learning factor'. The respondents were presented with the 'no premium price' condition first, and later with the 'price difference' condition.

Only based on the results in the 'no premium price' category the second hypothesis can be accepted. Negative labelling will lead to more elaborated thinking than positive labelling, which requires more time.

H3 The positive and negative label have the same effect to the consumer, all other things being equal.

This will be tested by letting the consumer decide between the various products, positively and negatively labelled with and without adding a premium price to the positively labelled product. Comparing these results will show whether hypothesis 3 is assumable or not.

The output in table 1.2 can be used to answer this hypothesis. A p of 0.051 shows that the positive and negative label are not significantly different and hypothesis 3 can be accepted.

Additional, all influences: label condition, identity, and product score, can be tested in the same test using a factorial ANOVA to find out which factor affects the consumer the most.

No price difference (-1) and price difference (1)

### Tests of Between-Subjects Effects

Prijs	Source	Type III Sum of Squares	df	Mean Square	F	Sig.
-1	Corrected Model	40,978(a)	5	8,196	6,351	<b>,000</b>
	Intercept	8,600,484	1	8,600,484	6,664,979	<b>,000</b>
	cond_neg	7,172	1	7,172	5,558	<b>,019</b>
	cond_twz	,431	1	,431	,334	<b>,564</b>
	totid_centr	16,005	1	16,005	12,403	<b>,000</b>
	cond_neg * totid_centr	,699	1	,699	,542	<b>,462</b>
	cond_twz * totid_centr	,025	1	,025	,020	<b>,889</b>
	Error	425,832	330	1,290		
	Total	13,692,000	336			
	Corrected Total	466,810	335			
1	Corrected Model	81,254(b)	5	16,251	5,112	<b>,000</b>
	Intercept	2,200,299	1	2,200,299	692,161	<b>,000</b>
	cond_neg	,544	1	,544	,171	<b>,679</b>
	cond_twz	24,044	1	24,044	7,564	<b>,006</b>
	totid_centr	19,814	1	19,814	6,233	<b>,013</b>
	cond_neg * totid_centr	,891	1	,891	,280	<b>,597</b>
	cond_twz * totid_centr	2,439	1	2,439	,767	<b>,382</b>
	Error	1,049,032	330	3,179		
	Total	4,300,000	336			
	Corrected Total	1,130,286	335			

Table 5.1

### Coefficients(a)

Prijs	Model		Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	Sig.
			B		Beta		
-1	1	(Constant)	4,380	,530		8,260	<b>,000</b>
		TotalIdentity	,422	,120	,227	3,522	<b>,000</b>
		cond_neg	-,179	,076	-,143	-2,358	<b>,019</b>
		cond_twz	,044	,076	,035	,578	<b>,564</b>
		neg_id	-,088	,120	-,048	-,736	<b>,462</b>
		twz_id	,017	,120	,009	,140	<b>,889</b>
1	1	(Constant)	1,104	,832		1,327	<b>,185</b>
		TotalIdentity	,469	,188	,162	2,497	<b>,013</b>
		cond_neg	-,049	,119	-,025	-,414	<b>,679</b>
		cond_twz	,328	,119	,169	2,750	<b>,006</b>
		neg_id	-,100	,188	-,034	-,529	<b>,597</b>
		twz_id	-,165	,188	-,057	-,876	<b>,382</b>

Table 5.2

In the 'no premium price' category as well as in the 'price difference' category the factorial ANOVA 'Total identity' is the only factor that stays of any influence on the product score.

In both categories the 'Total identity' has a positive direction (B=0.422; B=0.469).

## **Discussion and Conclusion**

The goal of this research was to show whether negative labelling would be more effective in persuading the consumer into buying a premium priced environmentally friendly product compared to positive labelling. Several theories suggested that this could be the case. Prospect theory (Kahneman and Tversky 1979) shows that losses have a greater weight than gains. By giving a negative label to a non environmental friendly product, the product is framed as a loss, suggesting the consumer will avoid it. However, the results of the test shows that just putting the negative label on a product does not make consumers choose the positive or non labelled alternative.

Although the preference for environmentally friendly products is not triggered by the label, the new situation with the negative label does create a more elaborated type of thinking. However, in case of premium priced eco-products the time that the respondents take seems to be more equal. A possible explanation for this could be that the choice with a price difference was shown after the choice without a price difference. There could be a learning factor involved that made the respondent recognize the labels sooner and choosing faster.

Total identity, consisting of values and environmental awareness, of consumers is the only factor that has a significant influence on the choice the consumer makes. Only environmental awareness of the respondent does not have a significant effect on the choice for either the positive or the negative alternative.

Furthermore, the different situations that are created: positive versus blank, negative versus blank, and positive versus negative, show that two-sided information, although not significant, has the largest effect on the respondent. Future research on this topic can focus on this finding and elaborate on it. Another recommendation is to randomize the 'no price difference' and 'premium price' categories to eliminate the learning effect or to make price a between subjects factor.



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## Appendix 1

To measure the NEP the respondents were presented with the following questions. This has been measured on a 7-point scale, stating whether the respondent 'totally disagreed' or 'totally agreed' with the statement.

q3b	Mensen hebben het recht om de natuurlijke omgeving te veranderen zodat hun eigen behoeften worden vervuld
q3c	Planten en dieren hebben evenveel recht om te bestaan als mensen
q3e	We bereiken bijna de grenzen van de hoeveelheid mensen die op aarde onderhouden kunnen worden
q3g	Het evenwicht van de natuur is erg gevoelig en gemakkelijk te verstoren
q3i	De balans van de natuur is sterk genoeg om met de gevolgen van de moderne industrielanden om te gaan
q3l	De mens is het milieu ernstig aan het misbruiken
q3m	De klimaat crisis die de mensheid boven het hoofd hangt, is sterk overdreven
q3n	Mensen zullen uiteindelijk genoeg leren over de werking van de natuur, dat zij in staat zullen zijn haar te beheersen
q3o	Als alles doorgaat op de manier waarop het nu gaat, zullen we snel een enorme ecologische catastrofe tegemoet gaan

To measure social identity the following questions have been asked. The first part has been measured on a 7 point scale, stating whether the respondent 'totally disagreed' or 'totally agreed' with the statement.

q2b soc ident	Ik denk aan de natuur als een gemeenschap waartoe ik behoor
q2f	Ik voel dat ik bij de Aarde behoor net zoals de Aarde bij mij hoort
q2h	Zoals een boom deel is van het bos, voel ik mij onderdeel van de natuurlijke wereld
q2i	Ik zou willen weten hoe duurzaam mijn levensstijl is, vergeleken met de gemiddelde Nederlander
q2j	Ik zou willen weten hoe duurzaam mijn levensstijl is, vergeleken met mensen die in dezelfde winkels als ik boodschappen doen

After these statements the respondents were presented with a graphical illustration to measure their social identity in comparison to a group.

q2q1	De mate waarin ik mij identificeer met duurzame consumenten
q2q2	De mate waarin ik mij identificeer met de wereldbevolking
q2q3	De mate waarin ik mij identificeer met de natuurlijke omgeving

To test peoples values the following questions have been asked. It has been measured on a scale from -1 to 7, -1 stating the value is 'not important at all' and 7 stating the value is 'highly important' to the respondent

val1	<b>Equality</b> (GELIJKHEID: gelijke kansen voor iedereen)
val2	<b>Respect for the earth</b> (RESPECT VOOR DE AARDE: in harmonie leven met andere soorten)
val3	<b>Power</b> (MACHT: controle over andere mensen, dominantie)
val4	<b>Feeling united with nature</b> (EENHEID MET DE NATUUR: je verbonden voelen met de natuur)

val5	<b>Peace</b> (EEN VREEDZAME WERELD: vrij van oorlog en conflict)
val6	<b>Wealth</b> (RIJKDOM: materiële bezittingen, geld)
val7	<b>Authority</b> (GEZAG: het recht om te leiden of op te dragen)
val8	<b>Social justice</b> (SOCIALE RECHTVAARDIGHEID: herstel van onrecht, zorg voor zwakken)
val9	<b>Environmental protection</b> (BESCHERMING VAN HET MILIEU: behoud van milieukwaliteit en de natuur)
val10	<b>Influence</b> (INVLOEDRIJK: invloed hebben op mensen en gebeurtenissen)
val11	<b>Loyalty</b> (BEHULPZAAMHEID: werken voor het welzijn van anderen)
val12	<b>Prevent environmental pollution</b> (MILIEUVERVUILING VOORKOMEN: natuurlijke hulpbronnen beschermen)
val13	<b>Ambition</b> (AMBITIEUS: hardwerkend, eerzuchtig, strevend)

## Appendix 2

The regular 'EKO'-logo and the self constructed 'No-EKO' logo:



The products used:

