

# DE GROENE REKENKAMER



## **Impact analysis of the Nutella tax on the environment and Dutch economy**

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## **Samenvatting**

In dit rapport komen drie aspecten aan de orde aangaande de voorgestelde belasting op tropische oliën: Palm olie, Palmpitten olie en kokos olie. Deze belasting is eind 2012 voorgesteld in Frankrijk onder de noemer “Nutella tax”. Dit rapport zal antwoord geven op de volgende vragen: 1) Waarom wil de Franse overheid deze belasting heffen? 2) Hoe zal de Nutella tax invloed hebben op de Nederlandse economie? 3) Zijn alternatieven slechter voor het milieu? Relevante vragen wanneer er gekeken wordt naar de expansie van de palm olie industrie de afgelopen jaren. Om een antwoord te kunnen geven op deze vragen zijn er verschillende methoden gebruikt. Een Input-output analyse, interviews met belanghebbende en een life cycle analyse. De bevindingen van dit onderzoek zijn dat de Nederlandse economie zowel negatief dan wel positief beïnvloed kan worden. De grond waarop dit voorstel is gedaan hoogstwaarschijnlijk niet de echte reden achter het voorstel is en dat een overstap naar substitutie opties een grotere impact op het milieu zal hebben dan productie van palm olie.

## **Abstract**

This is a study into three different aspects of the proposed French ‘Nutella’ tax on palm oil : Why is it being implemented ? How will it affect the Dutch economy ? Will potential alternatives be more detrimental to the environment? This is an important issue primarily due to the palm oil industry increasing in size and demand every year. With three varying objectives of research three different methods were comprised to answer the posed question. For assessing how the tax would affect the Dutch economy an economic input output analysis was undertaken, to determine the reasons behind the tax stakeholder interviews were conducted and to identify if the alternatives to palm oil would be more detrimental to the environment a comparison of Life Cycle Analysis was completed. The findings from these methods of research were the Dutch economy would indeed be affected by such a tax but not severely and the reasons for the tax may not be based on valid grounds. Furthermore it was discovered the alternatives would be much more detrimental if adopted. Overall the implications of these findings show that in many cases particularly environmental, the implementation of the tax would prove extremely costly to the Palm oil industry as a whole.

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## Introduction

In November 2012 the French government discussed the draft version of *Projet de loi de financement de la Sécurité sociale pour 2013* (PLFSS) - a financing bill to cover the social security costs for the year 2013. The Minister of Social affairs and Health, Marisol Touraine, and delegated minister of Budget, Jerome Cahuzac, presented the PLFSS bill on October 10<sup>th</sup> 2012. The PLFSS is arranged to gain additional revenue of EUR 5,- billion to invest in national social security issues. (Productschap MVO; Magazine nr. 19 & Republique Francaise)

Yves Daudigny (member of the Social affairs commission in the French Senate) proposed an amendment; the "Nutella Amendment" which functions as additional income source to the PLFSS. In this amendment an additional tax on products containing tropical oils like palm oil, palm kernel oil and coconut oil is proposed. When implemented the tax on palm oil will quadruple - increase with 300%. Currently the tax on palm oil is around EUR 100,- per tonne of palm oil, when implemented it will be EUR 400,- per tonne. The proposed amendment was approved by a voting. However, eventually the PLFSS budget bill was rejected completely. After this rejection an amended text of the PLFSS was discussed to obtain approval. Finally, on 29 December 2012 an adjusted version of the PLFSS bill was approved. (Republique Francaise, news.com.au & france24.com)

Despite, the Nutella Amendement was not part of the approved PLFSS bill, a new proposal and implementation process seems quite probable. The Socialists, with Yves Daudigny as initiator of this amendment, and The Union of Popular Movement (UMP) both support the tax on tropical oils and have a majority in the House of Representatives and the Senate. The probability of a new initiative for a proposal is still a likely option. (Productschap MVO; 16-11-2012)

If the Nutella tax eventually will be implemented, many actors in the palm oil industry will be affected. One of these actors is the Port of Rotterdam in the Netherlands. This port is one of the largest importers of Palm oil for Europe. According to Productschap MVO (2010) the Netherlands and Germany are the largest re-exporters of Palm oil within the European Union. In 2009 the Port of Rotterdam imported a share of 36% of all EU-27 palm oil import, the largest share within the European Union. This position in the palm oil supply chain is important for the Dutch economy (Productschap MVO, 2010). Besides the Port of Rotterdam and the Dutch economy, there are more stakeholders. Stakeholders like farmers, employees and local communities in the country of origin, processors and multinationals. But also the environment, ecosystems and the public health of the French, When the Nutella tax becomes effective, stakeholders will be affected, whether this is positive or negative is the subject of this study.

## Relevance of research

The possible regenerated discussion about the proposed adjustment in the taxing system for tropical oils, gives this study relevance. Implementation of the Nutella tax is still a possibility and stakeholders in the Palm oil business have to deal with this. The relevance to study the impact on the Dutch Economy is based on several grounds. First, the role of Palm oil for the Dutch Economy, especially the Port of Rotterdam, is of importance due to the fact the Netherlands is among the largest importers,

transshipment and (re-)exporters of crude or processed palm oil to other countries, especially to EU-27 (Productschap MVO, 2010). Secondly, tax on national level will influence other nations within the European Union. Measurements, taken on national scale within a trading bloc (with an open internal market) will have an impact on other nations. How should other members within the trading bloc and the highest authority of a trading bloc has to deal with this kind of measurement? Furthermore, not only the Dutch economy or other member states probably experience impact, others stakeholders will as well. Also, if palm oil is not cost effective or efficient enough due to the increased costs, will other goods replace palm oil? Finally this research is relevant to determine how the tax may influence the degradation of the environment, through producers potentially being forced to switch to alternative forms of vegetable oil for production. This is where the comparison of alternatives proves essential in comprehending what knock effects and impacts the tax could influence in the future.

## Palm oil industry

### Application

As vegetable edible oil, palm oil is worldwide the most popular in its kind, with a share of 33% of the market for edible oil in 2012. This share equals 55,97 million metric tonnes (Mn Mt) palm oil of the total edible oil production. In this sector oils like soybean, rapeseed, sunflower seed, cottonseed, peanut and coconuts oils are clustered. (WWF, 2013).

Palm oil is used in two categories; food and non-food application, what makes palm oil very versatile. Productschap MVO (2010) created a clear table about palm oil application, see the table.

Application of palm oil		
<b>Food</b>	Cooking oils and frying fats	
	Margarine and spreads	
	Shortenings	
	Confectionary and bakery fats	
	Vanaspati (vegetables Ghee)	
	Ice cream, coffee creamers and filled milk	
	Emulsifiers	
	Vitamin E supplements	
	<b>Non-food</b>	Soap, shampoo and detergents
		Animal feed
Energy generation, biodiesel and lubricants		
Cosmetics		
Pharmaceuticals		
Organic fertilizers from biomass		
Paints		
Plasticizers, stabilizers for rubber and PVE		

According to Basiron (2002), the WWF report (2013) and the Malaysian Palm Oil Board (2012) the versatility of palm oil compared with other edible oils is high and therefore makes it an interesting product for various applications. A food application of palm oil is the use of palm oil in Nutella – a typical French sandwich spread. According to Kim Willsher, reporter for The Guardian (2012), and Productschap MVO (interview) Nutella consists for 20% of palm oil.

### Production

Palm oil is a worldwide used product which mainly finds his origin in Malaysia and Indonesia (WWF 2013, Basiron 2002, Hospes&Kentin 2012, productschap MVO 2010, and Amiruddin 2003). In the WWF report (2013) it is stated that Malaysia and Indonesia have a share of 90% in the worldwide production, Thailand, Papua New Guinea and United Arab Emirates all are responsible for 1% and other countries produce the remaining 7%. In a fact-sheet about Palm oil by Productschap MVO (2010) the developments during the period 1995 till 2010 are presented. During this period the worldwide palm oil production increased by more than 300% to 46,7 million tones.

A striking fact is that various sources give other numbers and data about the palm oil industry. However, all show that Malaysia and Indonesia are the largest producers of palm oil in the world, with the most recent data set their share at 89%. (WWF 2013)

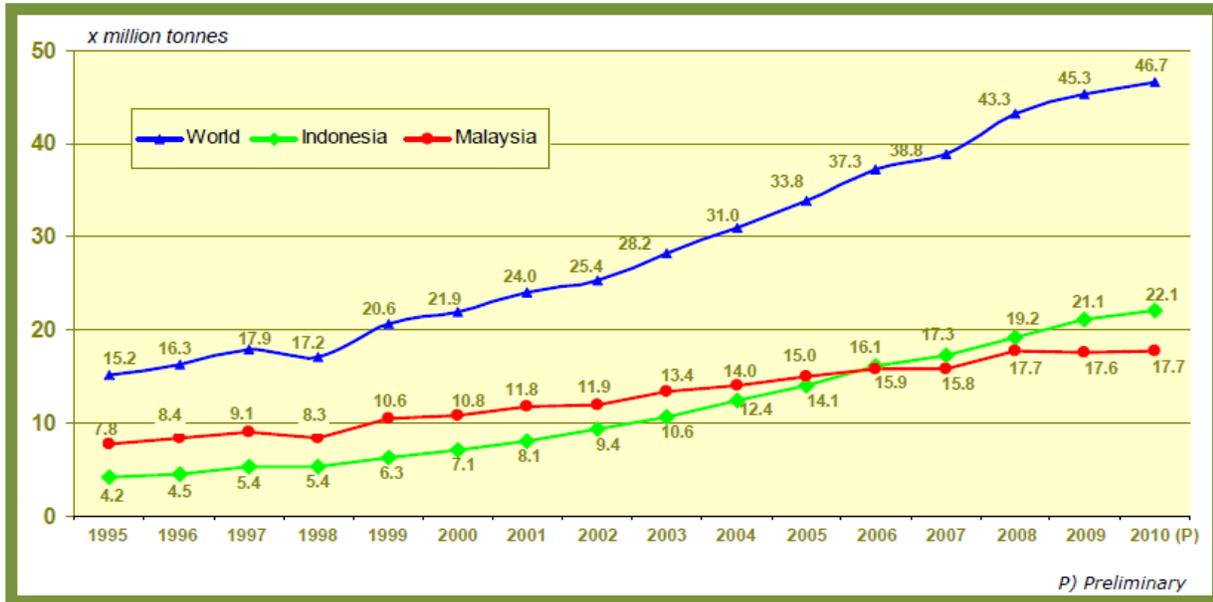


Figure: Development worldwide palm oil production

Most frequently palm oil is cultivated at huge plantations (15.000 hectares) and only a tenth is cultivated on small sites between 2 and 50 hectares. The fruits are ready for harvesting when they weight around 50 kg. The gathered fruits are brought to an oil mill were the oil must be pressed out quickly (within 24 hours). After this step crude palm oil is ready for the next steps in the chain; transport, processing, retail and finally the use by consumers. (MVO Nederland). With the expansion of worldwide palm oil production and use, concerns rise. Production of palm oil often is valued positively in economical terms (income generation and employment) but negatively in concern of the environmental and social impact. As Hospes & Kentin (2012) write: *“The rapid growth in palm oil production and trade has generated income and employment to millions of people and foreign currency for many countries”*. In the same paragraph they write: *“At the same time, this growth has given rise to concerns on negative environmental and social effects of palm oil production”*. This statement introduces the discussion about the negative impact and circumstances in relation to the palm oil cultivation. Tan et al. (2009) sums up effects like deforestation, loss of biodiversity, greenhouse gas emission, soil erosion, peat land destruction, orang-utan extinction and social circumstances for the inhabitants as negative impacts.

All the concerns draw the attention of various organisation. In 2004 concerned institutions established the Roundtable of Sustainable Palm oil, RSPO. This initiative by Unilever, WWF, Mpoa, Migros and Aak refinery promotes production and use of sustainable palm oil. With a certification scheme they try to influence policies of countries and multinationals. After the foundation in 2004, currently 14% of world wide produced palm oil is certified by the RSPO. The main goal of the RSPO is to make sustainable palm oil the norm worldwide. (RSPO 2012).

## **Trade developments**

Globally the palm oil production has experienced expansion. In 1961 the worldwide palm oil production reached the amount of 1.478.901 tonnes, with an expansion to 48.550.751 tonnes in 2011. This massive growth of 3.233% over a period of 40 years shows the massive expansion of the whole palm oil industry (FAO 2013). According to WWF (2013), RSPO (2012) and Productschap MVO (2010) the expansion of palm oil production and consumption can be explained by the following factors and developments: The high yield per hectare of palm oil compared to other edible oils, the cost competitiveness of palm oil, the ability to replace other kind of oils, the naturalness of palm oil, little hydrogenation needs (compared to other types of edible oils) but also the growth of the emerging economies like India and China, are among the driving factors for expansion. According to Hospes and Kentin (2012) and Productschap MVO (2010), India and China are the main importing countries of palm oil. In 2011 the Netherlands imported 1.191.695 tonnes of palm oil and exported palm oil with a value of EUR 117.846.900 (productschap MVO,2012). Within the European union the Netherlands is responsible for the largest volume of re-export - import to other European countries.

The palm oil imported to the Netherlands mainly finds its origin in Malaysia and Indonesia. Palm oil imported to the Netherlands (92%) is mostly re-exported to other European countries, so the domestic use is relatively low. (Productschap MVO 2010).

The Port of Rotterdam plays an important role for the Dutch palm oil industry. The Port has a leading position as trading hub for vegetable oils and fats. In 2009 the harbour was responsible for 80% of the import of edible fats and oils for the EU-27 (Productschap MVO 2010). These shares make the Port of Rotterdam an important income source for the Dutch economy. The key palm oil companies (processors) in this Port area are IOI-Loders Crokiaan, Cargill, Wilmar Europem, Sime Darby Unimills and Aarhuskarlshamn (MVO productschap, 2010). Currently, the Port of Rotterdam strengthens its position as the main palm oil processing centre of Europe.

## **Conclusion**

This section shows the dynamic context of the palm oil sector. It is a sector that involves stakeholders worldwide. Due to its versatile application possibilities and advantages compared with other edible oils, palm oil manifests itself as a global 'player'. Also, the current developments show a growing interest in palm oil, mainly due to emerging economies like India and China. For the Netherlands palm oil is important in relation to other countries within the European Union and has economical interests. The Port of Rotterdam functions as transport hub for Europe and generates income for the Dutch economy.

## **The Netherlands – Port of Rotterdam**

As member of the European Union, the Netherlands benefits from the its membership. Due to the abolishment of the trade barriers, multinationals are able to compete with a bigger range of competitors and also the consumer market has expanded. These developments enable companies to experience benefits of scale that leads to specialization and higher yields of production (Straathof et al, 2008). In relation to the trade in goods the Dutch economy experiences the highest benefit, compared to other member states, as a result of the European internal market. In 2005, 18% of the Dutch export was established due to the internal market.

Currently the Port of Rotterdam is the largest logistic and industry hub of the European Union. With a turnover of 435 million tonnes of goods the Port of Rotterdam is ranked first in the category of Sea ports in Europe. Also, the port has the best infrastructure of all European ports and is placed fourth worldwide. In 2011 the direct and indirect added value by the Port of Rotterdam to the Dutch economy had a value of EUR 18 billion. Due to its position, the Port plays a strategic role for the competitive position of Dutch companies. The strategic role of the Rotterdam harbour area is described as follows: "The Port has a unique physic- and knowledge infrastructure worldwide, the collaboration with other harbours and logistic hubs in the Netherlands makes innovation, specialisation and product improvement possible and the collaboration with harbour and industrial compounds in other surroundings". (Havenbedrijf Rotterdam N.V., 2012 and Havenbedrijf Rotterdam N.V., 2013, ).

The European Union is positioned third in regard of palm oil import worldwide, in 2011 this was a worldwide share of 13,75% (WWF, 2013). In concern of the palm oil industry the Port of Rotterdam has a leading position as trade hub for vegetable oils and fats for Europe. Of the total import of this category of goods in Europe, the port of Rotterdam is responsible for 80%, with palm oil as main oil.

## Stakeholder interviews

To gain an insight as to why the tax is being implemented interviews were conducted with key stakeholders. The three core organisations that were consolidated included the head of Foreign Affairs at the Port of Rotterdam Head of the Product Board MVO and the Head of Foreign affairs at the Dutch Government. A variety of questions were asked to provide their full opinion on the tax and in what way it would influence their company/establishment.

### **The Port of Rotterdam;**

The Port of Rotterdam has interest in the Palm oil industry due to its role as one of the biggest importers and processing sites of and for Europe. Companies like Cargill and Wilmar have their facilities in this area. Stijn highlighted the belongings for Palm oil in the bio fuel industry and the European ambition to have an bio based industry, this tax will probably will influence this ambition negatively. The grounds on which Daudigny proposed this tax has probably a protective aim, to protect the French agriculture industry. However, for the Port of Rotterdam a positive could be that the palm oil clusters currently situated in France will perhaps move to The Port of Rotterdam. In the end this tax probably affect big food companies (Unilever etc) more. The European union should monitor this discussion closely.

### **A member of the VVD party in the parliament**

I do not support this proposal; the grounds on which the Nutella tax is based, has a protective aim. The French want to protect their farmers, especially the sunflower industry, this due the fact that the France economy is not doing that fine. Alternatives to palm oil will definitely become more prominently used when this tax will be implemented, examples in the past can support this (Taiwanese tax on stainless steel). In case of sustainable palm oil production, this proposal will be a step backwards. In case of the Dutch economy; for the Port of Rotterdam this tax potentially could be positively, this because producers of palm oil located within France may be forced to move elsewhere to reduce costs. The national level of this tax which influence other member states within a trading bloc like the European Union is not desirable: *“EU need economic integration to ensure an advancing economy, national measurements should be instilled, it costs welfare, and is simply moving the production of a commodity elsewhere (potentially non EU meaning loss of welfare)”*. The Dutch government, Minister Ploumen, should talk to France to reconsider the proposal. A final remark given about this case: *“Very similar to Climate Change debate, actions such as the Nutella Tax are simply shifting their own problem elsewhere”*.

### **Productboard MVO**

The current discussion is based on improper grounds. When the French government really wants to have impact they should propose tax on other products. The French diets exist out other products which contain more saturated fat, such as dairy products an meat, palm oil has a little share in the contribution of intake of saturated fats. The public health reason currently given as ground of this proposal is thus not that effective. France give the impression, nobody says it that directly, that protective grounds for

their domestic products are the real motive. Alternatives for palm oil exist but our current way of consuming is not able to adopt to an alternative that quick or at all. Palm oil is traced in more than 60% of the products in the supermarkets but also quality characteristics of palm oil are not easy to replace, quality of products depends on these characteristics. Furthermore, production of palm oil is far more effective compared to the production of other oils, the yield per hectare is far more bigger. When the tax eventually will become reality it will affect the sustainable palm oil massively, it will be "*killing*". For the Dutch economy a negative impact probably will be the case, due to the media attention in France about this proposal other member states receive information easily. In Belgium the government currently is investigating this issue also, so the discussion on national scale affects other member states within the European Union. As Productschap MVO we try to spread objective information about this issue to make sure the debate is held on proper and fair grounds. We safeguard the objectives of all stakeholders in the palm oil industry, from cultivation site till end user. We do not promote a palm oil diet but we are realistic. Palm oil is a key product in current diets, so a ban on improper grounds is not what we want.

## Comparison of Alternatives

With the Nutella tax undoubtedly causing additional costs to producers in France and importing palm oil products into France, it is worth assessing whether or not the tax will influence a transition to products containing vegetable oils that can be used as an alternative to palm oil. To see if this transition is possible both the environmental effects and crop yield ratio of these alternatives will be analyzed and compared with palm oil. Before this is done however it is worth noting that in many cases this transition may prove difficult, due to MNCs such as Unilever whose production process being based around suppliers from Malaysia and Indonesia who are based around palm oil production and would find it too cost intensive to change to an alternative.

To first evaluate the environmental effects of palm oil and the alternatives it may prove valuable to observe a key producer's view on how the environment is affected by palm oil production at what they will do to combat this. In the early 1990s Unilever stated that it would 'Review and continuously improve the performance of our products, services and operations as measured by the environmental impact' as well as 'Initiate projects to assess the environmental impact of the edible oil and fat based product range as one of our substantial businesses in Foods'. From these statements it can be suggested that Unilever even if affected by the tax will continue to use the product (in this case palm oil) that causes least degradation to the environment. For this comparison of vegetable oils the data will be extracted from Unilever's available data set (Cesacu 2008). Based on the comparison results were also a set of assumptions which were (Dumelin 2009);

- Agriculture
  - Focus on areas where Unilever sources oils
  - Collect data on specific production systems/agricultural practices
  - Use site specific data on soil quality
- Extraction
  - Solvent for soy, rapeseed and sunflower
- Refining
  - Physical for tropical oils
  - Assumed to take place at a GMP factory in Europe (The Netherlands)
- Transport
  - Distance and mode dependent upon plantation/farm location

Along with these assumptions also come both the element of complexity and variability for assessing environmental impact. When interpreting complexity there are multiple factors that need to be taken into account. Firstly the emissions from the fertilizers specifically nitrous oxide, nitric oxide and ammonia are affected by multiple variables which include climate, crop type, soil condition and fertilizer type/application. Secondly nitrogen is not absorbed by the plant or omitted into the air so is therefore assumed to be lost through nitrate runoff. With variability comes interpreting what technology, mechanization and crop variety is used by the majority of farms. This is also paired with the external factors that include local climate and soil quality.

## Agricultural Inputs and Outputs for Oil seeds

	Oil yield t/ha	Fertiliser input (kg/t oil)			Pesticide (kg/t oil)
		N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	
<i>Plantation Crops</i>					
Palm	5.5	19	3	29	0.01
Coconut	0.7	62	62	104	0
Olive	0.9	231	82	69	7.8
<i>Annual Crops</i>					
Rape Seed	1.4	183	65	260	35
Sunflower	1.3	120	45	303	37
Soybean	0.6	0	136	136	21

Figure (Dumelin 2009, Cesacu 2008)

When observing figure the oil yield (t/ha), fertilizer input (kg/t oil) and Pesticide (kg/t oil) for each vegetable oil can all be seen and compared. Looking at the oil yield it is evident that palm oil is far higher than any other alternative at 5.5 t/ha with the closest being rape seed at 1.4 t/ha, 4.1t/ha less. With an almost 300% difference in the oil yield this evidence goes to support as to why palm oil is the vegetable oil that is used in the majority of products by Unilever, as well as why it is becoming increasingly popular within the Biofuel sector. For the required fertilizer input for each vegetable oil it can be seen that palm oil requires the least for each category except from nitrogen, where it is only the second lowest to soybean oil. Finally observing the mandatory pesticides for each vegetable oil palm oil is again the second lowest to coconut oil only by 0.01 kg/t, presenting more reason for as to why it is the most heavily produced vegetable oil.

### Environmental Profile of Vegetable Oils

For the environmental profile of each vegetable oil parameters need to be established in order to define how the results were derived.

1. Energy Consumption – amount and source of energy used, expressed in MJ per ton of product/edible oil
2. Global warming – expressed in weight of kg CO<sub>2</sub> equiv. released
3. Acidification – Emission of nitrogen oxides (NO<sub>x</sub>), sulphur oxides (SO<sub>x</sub>) and ammonia (NH<sub>3</sub>) leads to

acidification of the environment and changes in the chemical composition of soil and surface waters in kg SO<sub>2</sub> eq.

4. Eutrophication – excessive plant nutrients due to run-off from agricultural land, leading to algal blooms & decay, oxygen depletion and resultant damage to aquatic ecosystems in kg PO<sub>4</sub> eq.

5. Photochemical smog – a measure of air pollutants released in terms of their potential to form ozone relative to that of ethylene / ethene in kg ethylene C<sub>2</sub>H<sub>6</sub> eq.

6. Land use – area required in hectares per ton of product

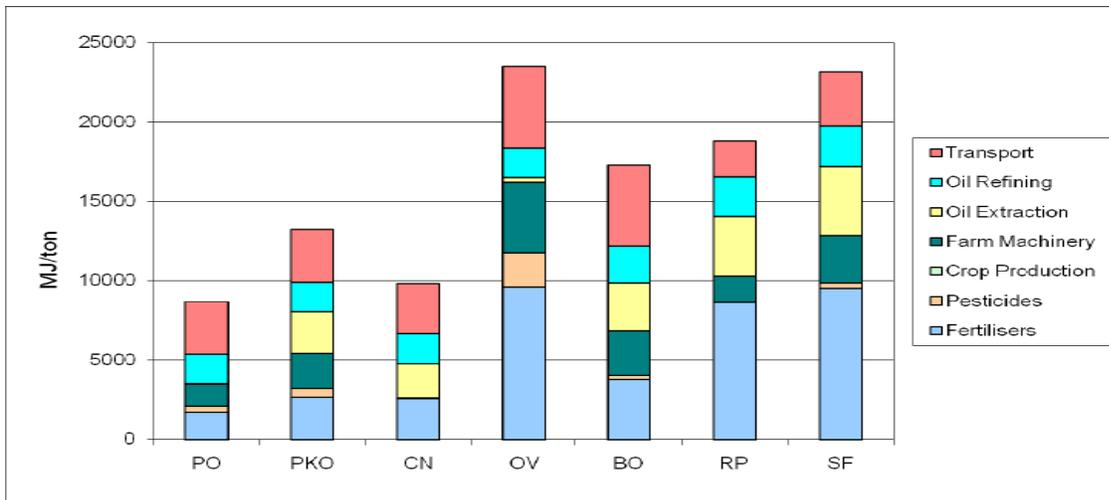


Figure . Energy Consumption of Vegetable Oils (Dumelin 2009)

From the energy consumption graph it can be observed that Palm oil has the least effect in MJ/tons compared to all the different alternatives. With coconut oil being the second least energy consuming oil, coming in at just below 1000. It is apparent from the information that transport is the main contributor to palm oils energy consumption, differing from both sunflower oil and olive oil which core consumption comes from the use of fertilisers. Furthermore it is worth noting that Coconut oil is the only oil that does not require the use of farm machinery, resulting in being the second lowest.

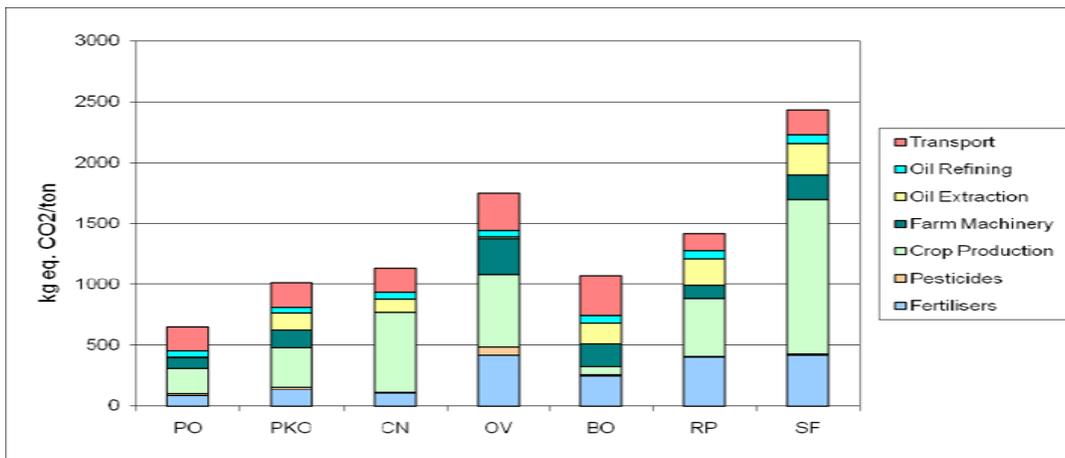


Figure . Global Warming of Vegetable Oils (Dumelin 2009)

When observing the graph that displays the global warming of each vegetable oil through CO<sub>2</sub>/ton it can be seen that palm oil contributes the least at around 600 kg equivalent CO<sub>2</sub>/ton. Sunflower oil from the evidence of the graph is the highest contributor nearly reaching 2500 kg equivalent CO<sub>2</sub>/ton. When looking at the main contributor to the Co<sub>2</sub> for each vegetable oil it can be seen that the crop production by in large is the core source. With both fertilizers and transport are the other two main contributors to vegetable oils global warming.

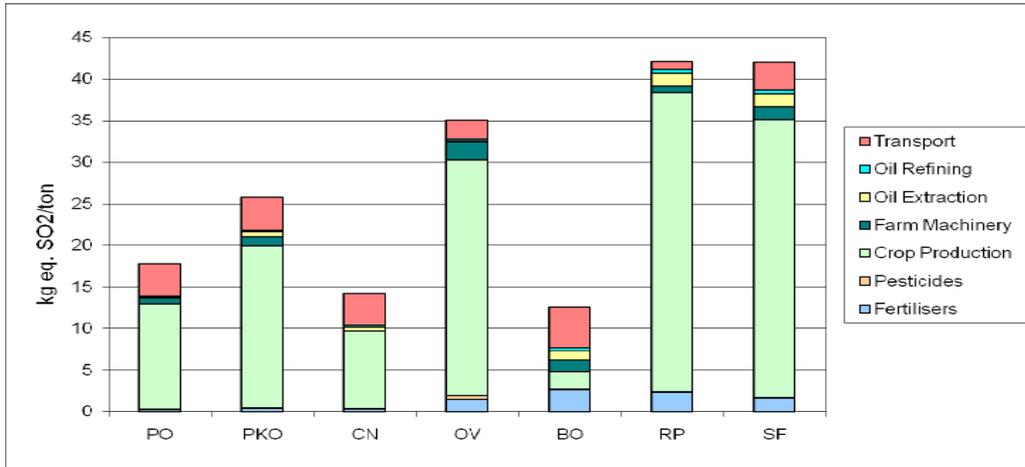


Figure.. Acidification of Vegetable Oils (Dumelin 2009)

From the graph it can be seen that Acidification of each of the vegetable oils is represented through kg equivalent So<sub>2</sub>/ton and the oil with the lowest amount in this case is Soy Bean Oil being around 13 kg equivalent So<sub>2</sub>/ton. Rape seed oil and sun flower oil show to be the highest So<sub>2</sub> contributors both being at around the 42.5 kg equivalent So<sub>2</sub>/ton. When observing each contributor to the So<sub>2</sub> in detail it can be seen that crop production is the main source of Acidification apart from with Soy Bean Oil.

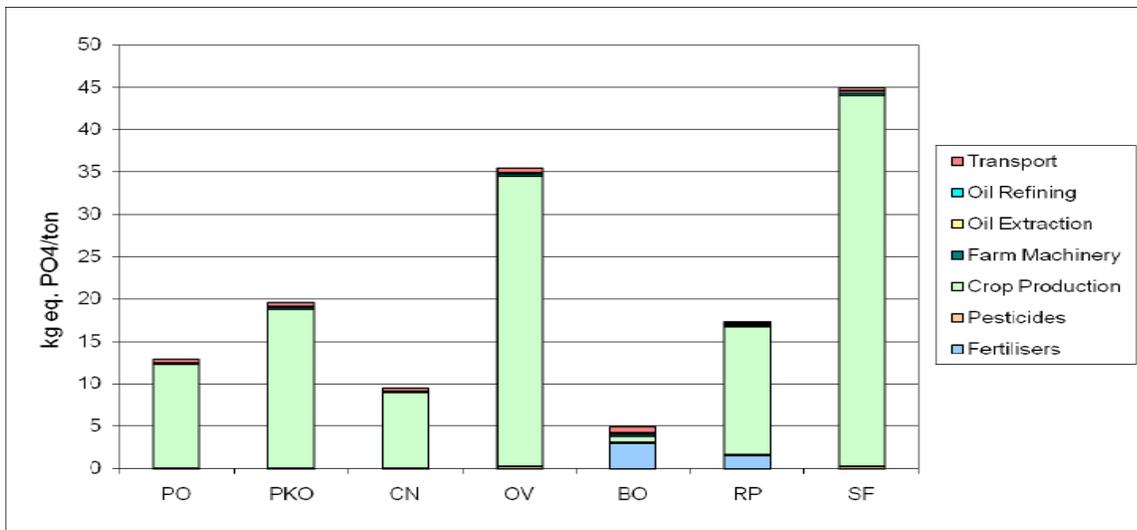


Figure . Eutrophication of Vegetable Oils (Dumelin 2009)

From the graph it can be seen that the Eutrophication of vegetable oils is represented by kg equivalent Po<sub>4</sub>/ton with soy bean oil being the lowest contributor at 5 kg equivalent Po<sub>4</sub>/ton. It is evident that sunflower oil is the highest contributor at 45 kg equivalent Po<sub>4</sub>/ton. Moreover when observing the highest contributor to the Po<sub>4</sub>/ton it is clear that the crop production is the core source.

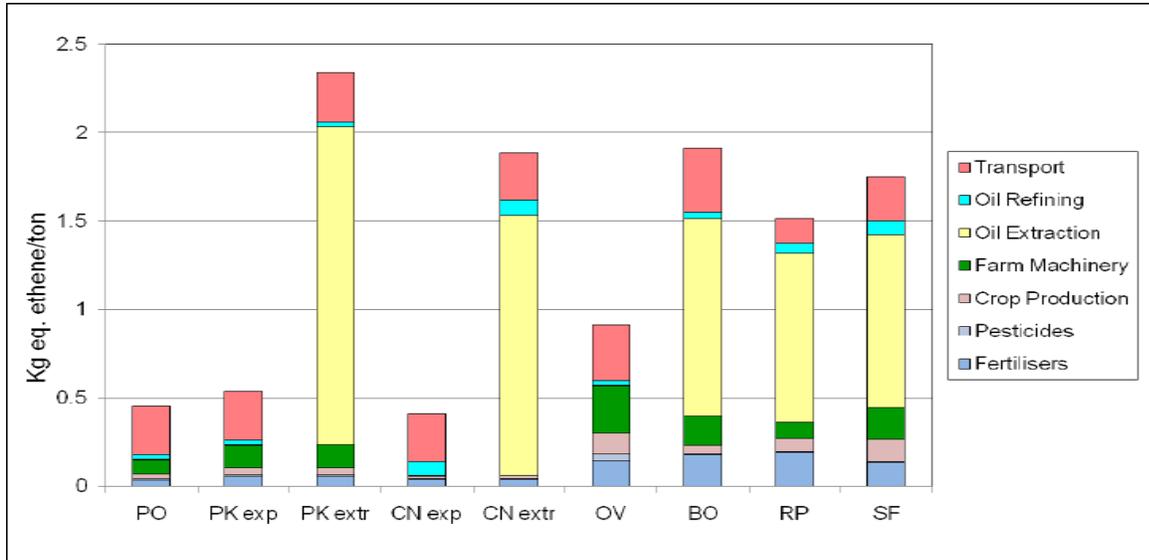


Figure . Photochemical Smog of Vegetable Oil Production (Dumelin 2009)

When observing the graph for Photochemical Smog produced by vegetable oil it can be seen that it is represented by kg equivalent ethane/ton. From the information it is evident that Coconut oil export has the lowest score at 0.4 kg eq. ethene/ton, whereas palm kernel oil has the highest score of all vegetable oils being 2.3 kg eq. ethane/ton. From looking at each oil in detail it is evident that the oil extraction is the core contributor to photochemical smog production in all but three of the oils.

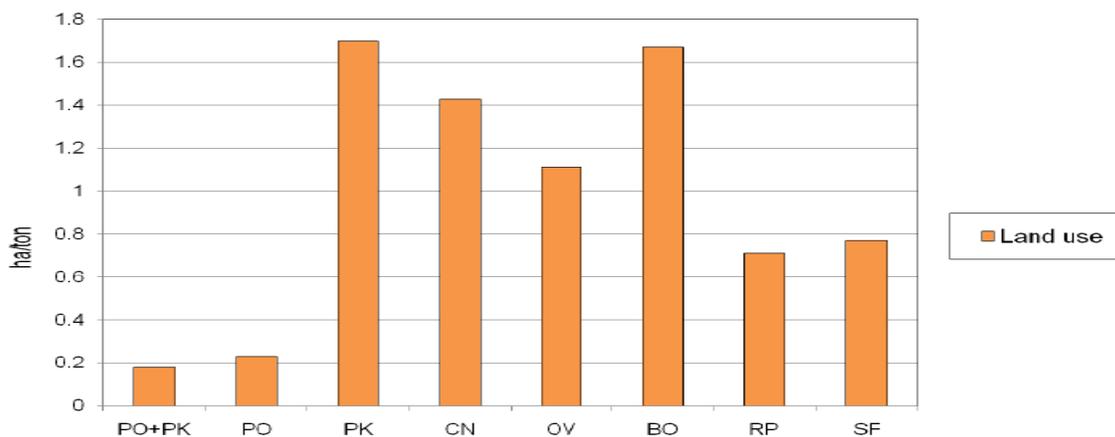


Figure . Land Use of Vegetable Oils (Dumelin 2009)

From the land use map which is represented by ha/ton it can be seen that palm oil and palm kernel oil (extracted from the same fruit) are the lowest when it comes to the amount of land is required for it to be produced at just below 0.2 ha/ton. It can also be observed that palm kernel oil alone needs the highest amount of required land at 1.7 ha/ton.

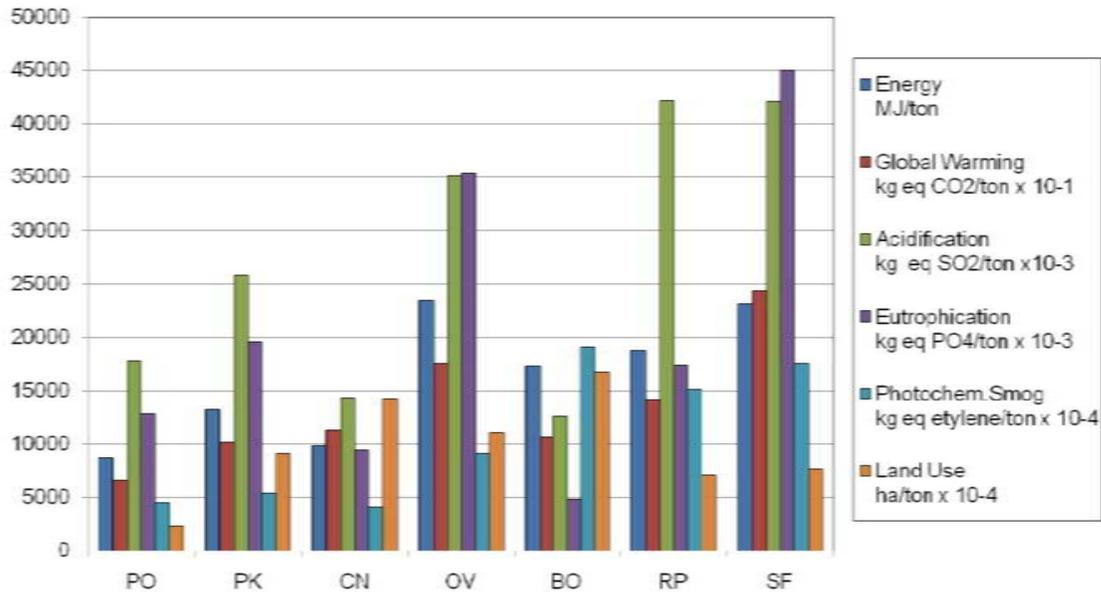


Figure. Overall Environmental Impact of Vegetable Oil Graph (Dumelin 2009)

Finally in Figure . all the environmental profiles can be compared. It is clear that palm oil overall is the least detrimental to the environment. This poses the question as to whether or not if the tax was implemented if MNCs would want to change to alternatives, purely because of how much more damage it would do to the environment. Furthermore if alternatives did in fact become used increasingly that data shows how some are much more environmentally derivative. Sun flower oil in particularly being the worst.

## Economical findings

Wassily Leontief is the founder of Input-output analysis (Dunchin and Steenge, 1999 and Vöhringer and Dellik 2005). The aim of this methodological approach is to explain and describe how national economies are constructed and how various sectors within an economy interact with each other. All the sectors are placed in a table, the input-output table. This table presents the input per sector and the amount of output which is used as input for intermediary or final use. The input-output table quantifies the volume and thereby the input mix is utilized for each sector. The input output table for the Dutch economy is provided by CBS and functioned as base of this analysis. The data of 2011 is used due to the fact that the most recent data (2012) are not published while conducting this research.

The direct flows of the Nutella tax oils to France are taken for the analysis, see table beneath. The added value to the Dutch economy is even smaller than this value. However, due to lack exact data of the added value this values is used to simulate a “business as usual” and “total collapse scenarios”.

	Total Export (kg)	Total Export(€)	Price	Export to France (kg)	Value €
Coconut oil	223.838	324.748	1,451	26,7	38,74
Palmoil	1.273.450	1.178.469	0,925	165	152,69
Palm kernel oil	71.950	99.209	1,379	2,7	3,72
					<b>195,15</b>
<b>all x 1000</b>					

Results: In 2011 the Gross Domestic Production of the Netherlands had a value of EUR 601, 973 million (CBS 2012). A possible negative impact on the Dutch economy between the EUR 0,- and EUR 277 million will be the range of the possible impact, given the assumption for the input-output analysis. Concluding, the possible impact on the Dutch economy will be a fraction of this direct flow value and vary between 0% and - 0,046 % on the Dutch GDP. So, even impact on the added value is even smaller and probably negligible.

## Conclusions

In conclusion, there is evidence to suggest through the alternatives comparison that if producers are forced into using alternative vegetable oils. It could have severe future implications when it comes to the degradation of the environment. With the lack of crop yield ratio comparison however it seems highly likely that the tax will not influence this transition to alternative vegetable oil production. Purely due it not being economically viable for them to do so.

When it comes to the opinions of the stakeholders as to why the tax is wanting to be introduced by the French government; the findings suggest they want to protect their Farmers at a local level from Multinational Corporations out pricing them from the market. In particular the French Sunflower industry. This leads to the pretense that the Frances proposed reasoning of products with high palm oil content, influencing human health to be a false agenda. With the large farmers lobby being the core reason behind the implementation of the tax.

Economical an implementation of this additional tax will not affect the Dutch economy that much. Palm oil industry is important for the Dutch economy but the direct flows to France are not the most important for the Netherlands. According some interviews conducted the Dutch economy could possible benefit from implementing this tax. Palm oil clusters in France would possible move to the Port of Rotterdam.

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