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Preliminary report[1]

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Biodiesel has been produced for the German market since 1993. The raw material is rapeseed oil that is chemically transesterified. As with other renewable energy sources (RES), the cultivation of RES rape (in German: Nawaro-Raps) for biodiesel production and the establishment of this economic sector is promoted by governmental supports. Presently there are transesterification plants with a processing capacity of 533 kT of oil in Germany. In addition plants with an additional capacity of 390 kT are under construction. With domestic biodiesel production of the year 2001, about 450 to 500 million litres of fossil diesel, which must be imported or produced from imported crude oil, could be substituted. At the same time, glycerine is produced as a by-product, which is marketed predominantly as distilled glycerine, in pharmaceutical quality. The rapeseed grown for biodiesel production have not only enlarged the volume of oil mills but have also produced rape meal, a high-quality protein fodder, which substitute as much as 450 kT of imported soy meal. The value-added from the rape biodiesel production chain creates income and consumption demand. The necessary investments in production capacities and logistics have induced a demand for capital goods. The economic output of the rape biodiesel production chain contributes directly and indirectly to additional government revenue. These must be offset with the tax shortfalls arising from the non-taxation of biofuels in Germany and must be taken into consideration in a macroeconomic assessment of biodiesel activity. Summing up the tax return flows and additional social insurance income, the »compensating performance« of the rape biodiesel production chain amounts to 73% and 83% respectively of government revenue shortfalls.

European policy-makers turn to biofuels

Faced with the strong dependence of the European power industry on crude oil as a major energy carrier and the goals agreed upon in the Kyoto Protocol for the reduction of greenhouse gases, the European Commission has developed plans to promote alternative energy sources. Now that there are mature and field-tested technologies for the production and use of biofuels, the Commission has placed priority on measures for the promotion of biofuels to reach its short- and medium-term goals. In the medium- to longer-term perspective, additional, alternative energy technologies based on natural gas and hydrogen (in fuel cells) will be deployed in the transportation sector.

In a Commission plan, a strategy has been introduced for this purpose, with which up to the year 2020 a twenty-percent substitution of traditional fuels is to be achieved. A corresponding directive designates as a first step that alternative energy should have a minimum share on all fuels sold of 2% by 2005 and 5.75% by 2005. A further draft directive would allow the member states to introduce a reduced consumption tax rate on pure or enriched biofuels which can be lowered to 50% of the tax rate on mineral fuels. For pure biofuels that are employed in public local transportation (including taxis) the member states can apply, according to the draft guidelines, a further reduced tax rate all the way to a tax exemption.

A transitional period to the end of 2003, in which business can adjust to the new regulations, will apply to countries such as Germany which have excluded biofuels from taxation. The possibility exists, however, that some states may claim the acquis communautaire and apply for a procedure with the Council of the EU (envisioned in the mineral oil tax directive) for a longer-term, durable continuation of exemption from consumption taxes.

The proposal for a decreased taxation of biofuels has caused some unrest among informed groups in Germany, especially

[1] Final report is published in Ifo Schnelldienst of 27.03.2002.

since there are fears that the German Minister of Finance could use the current favourable circumstances to introduce taxation on biofuels in light of the coming EU regulation. The manufacturers of biodiesel would be affected, or in more technical terms rape methyl ester (RME) or fatty acid methyl ester (FAME), as well as their entire marketing chain. They fear that in contrast to countries in which biofuels are added to fossil fuels in a certain proportion, the sale of pure biodiesel would no longer be competitive at a fifty percent taxation compared to fossil diesel. Necessary downward price corrections would call into question the efficiency of the whole production and marketing chain, beginning with raw material production and all the way down to the service stations.

With an input-output analysis the economic effects of the biodiesel production chain can be quantified

The task of this study was to assess the macroeconomic effects of all activities that stand in an indirect as well as direct connection with the *rape biodiesel production chain*. This includes

- rape cultivation on so-called set-aside fields (non-food fields), as well as
- rape cultivation on traditional production fields (food fields),
- oil production and transesterification to biodiesel,
- all associated transport and commercial services.

All additional services associated with rape cultivation as well as the by-products of oil production and transesterification must also be taken into consideration. An assessment must also be made of displacement effects, either in the use of agricultural land or in the various by-products.

For the macroeconomic effects, changes in the following areas are important:

- GDP,
- employment,
- tax revenue,
- subsidies,
- imports,
- capital consumption (depreciation),
- consumption (private),
- income from employment,
- income from property and entrepreneurship.

For the quantification of these economic effects, an input-output analysis is used. The input-output tables of the Federal Statistical Office are the starting point for the calculations. These represent the linkages of goods and production within the entire national economy as well as to the rest of the world. The current official tables for the year 1995 have been updated to 2000 with regard to productivity and price developments. For use in models and for the quantification of the economic effects of the *rape biodiesel production chain*, own sectors are formulated for the activities of the *rape biodiesel production chain* and integrated into the overall system of the input-output calculation with their respective linkages in terms of quantity and value.

The input-output method offers the advantage that in addition to the **direct** effects also all **indirect** effects of the intermediate input links and the multipliers of income achieved on macroeconomic demand can be registered and taken into consideration. With this method, not only the additionally stimulated demand for goods and services but also the additional tax revenue can be quantified.

One caveat is that this is a quantitative-static model. The actual dynamic reactions and market processes are not foreseeable in terms of the model. Only conditional statements can be made, which must be evaluated in light of the included assumptions. In this respect, the assumptions to be made take on a key importance.

As a reference situation, the German economy without the activity or production chain from *rape to biodiesel* is used. A hypothetical situation for the year 2003 is assumed, for which the following assumptions are valid. With this approach the entirety of the economic effects is evaluated that can be attributed to the existence of the *rape biodiesel production chain* for the chosen target year 2003.

Not considered in the model are the different ecological effects that are ascribed to the use of biodiesel in place of fossil fuel. To do this, other economic approaches are necessary (for example, eco-balances), whose results can enter the overall discussion as elements that must be evaluated separately.

Rape from set-aside areas is no longer sufficient for domestic biodiesel production

Added to the assumptions on agricultural production is that the instrument of creating set-aside areas (for the reduction of food production) will be adhered to also in 2003 and that the cultivation of renewable raw materials will be permitted on these areas. However, according to the Blair House Agreement, the cultivation of oil seeds on the so-called non-food fields is limited to an extent that is measured by the soy meal equivalent of 1 million tons. For this reason, the cultivation of rape in Germany on non-food fields will be on an estimated area of 350,000 ha. As a result of an increasing demand for biodiesel, it is assumed that an additional 350,000 ha of rape will be cultivated on traditional food fields. In light of high oilseed imports in recent years, it is assumed

Table 1
Assumptions and data on agricultural production

Cultivation area for rape	On 350,000 ha of set-aside areas (non-food areas) 350.000 ha on food areas
Marketable rape yields	3.5 tons per ha in total, 2.45 million tons
Competing production processes	On set-aside areas: active greening On food areas: winter wheat
Prices and performance of rape on set-aside areas	Producer price **m** of € 181.51/ton from farm Producer price **h** of € 232.64/ton from farm Pre-fruit value of € 153.39/ha Margin **m** of € 274.82/ha including pre-fruit value Margin **h** of € 453.77/ha including pre-fruit value
Performance of active greening on set-aside areas	Pre-fruit value of € 76.69/ha Margin of € – 105.33/ha including pre-fruit value
Prices and performance for rape on food areas	Producer price **m** of € 186.62/ton from farm Producer price **h** of € 237.75/ton from farm Pre-fruit value of € 153.39/ha Margin **m** of € 269.71/ha including pre-fruit value Margin **h** of € 448.66/ha including pre-fruit value
Prices and performance for wheat on food areas	Marketable yield of 7 tons/ha Producer price of € 102.26/ton from farm Margin of € 194.29/ha
Transport and commercial services	Rape: € 20.45/ton (difference between mill cost price and from-farm price) Wheat: € 20.45/ton (using the transportation lump sums employed by the BLE).

for the model that as a result rape cultivation for biodiesel no restriction of the food rape cultivation will occur so that we can assume an expansion of rape cultivation on non-fallow fields of 350,000 ha.

The most important commercial alternative for the »use« of fallow fields in Germany is »active greening«. The economic demands and profits of this »branch of production« are thus to be considered quantitatively in the approach.

For the cultivation of rape on food fields, we assume that this activity is at the expense of grain cultivation even if crop rotation on individual farms could lead to other decisions. In the list of the most customary crop rotations, rape is ahead of winter wheat. A reduction of sugar beets or silo corn, both of which are also frequently ahead of winter wheat, is not to be expected as a result of rape cultivation. Sugar beets will continue to be grown in present amounts because of their great relative advantages. The extent of the silo corn cultivation, however, is determined by roughage requirements in cattle raising. If restrictions occur here, this will not be caused by the introduction of the *rape biodiesel production chain.* From this it follows that also the economic demands and profits of »lost« grain cultivation must be included in the approach. This affects not only agricultural production (for example, intermediate input) but also the marketing level. On surplus markets a decreased grain production means savings with regard to intervention or export refunds.

Field grants and fallow bonuses are not taken into consideration since the two competing production methods on both food as well as non-food areas receive the same premiums and grants under the conditions of 2003. Thus a difference does not result either for the receiving farmers or for the state.

The extent to which, in fact, rape is grown on food fields for biodiesel production and in which regions this is done depends very significantly on the anticipated rape and grain prices and hence the relative advantage of rape cultivation –evaluated differently from region to region – in comparison to grain. Rape cultivation on grain fields will only occur to an appreciable extent when the marginal income from rape – enhanced by its pre-fruit value – corresponds to the marginal income from grain. The regional distribution that emerges cannot be determined with an input-output model. Here, information can be gained from investigations by Kiel University (Langbehn and Pleßmann 1998)[2] which have determined the relative advantages of rape at various locations and at various price constellations.

For the economic effects, starting from the agricultural production level, the prices to be assumed for rape and the alternative fruit, wheat, are of key importance. If we keep constant the assumed intermediate input structure and the assumptions about the intermediate input costs and we vary the producer prices, these directly effect the contribution margins.

As already mentioned, for the individual farm the pre-fruit value of rape is an important criterion for the assessment of the relative

Table 2
Assumptions and data for apiculture

Business profits	Honey harvest per ha rape 20 kg, corresponds to one colony Business profits with one colony: € 143.57
Business expenditure	Business expenditure with one colony: € 80.30
Margin apiculture	Margin/ha rape € 63.27 Total margin € 22.14 million

[2] C. Langbehn, F. Pleßmann (1998),»Rapsanbau nach der Agenda 2000«, study of the Institut für Agrarökonomie, University of Kiel.

advantage of rape in the agricultural production. It results from natural increments of the subsequent crop, usually grain, as well as from cost savings during their cultivation. Since this »secondary performance« of rape production is monetary, it must also be included in the economic assessment.

A frequently overlooked connection is that due to the displacement of grain by rape, the extent of areas of arable land with blossom plants increases. In order to achieve a good rape harvest, the presence of insects that pollinate the blossoms is useful, which is guaranteed to a large extent by the activities of beekeepers (creation of additional colonies, transport of the colonies to the rape sites). An economic viewpoint must thus also consider the accompanying honey production as an added value induced by the enlargement of rape cultivation and to integrate this added value into the model. However, because of the poor data situation for the bee-keeping industry, only cautious assumptions should be made. For rape cultivation on set-aside areas no additional honey yields were added to the model because with the different methods of greening, blossoming plants also play an important role.

Transportation and commercial services are only partially included

Transportation between the agricultural production level and the oil mills and shipping warehouses (for the alternative, grain) as well as the corresponding commercial services are also to be included in the model. Since a differentiated inclusion of these services is extremely difficult, in case of oilseeds a simplified approach of the difference between the cost price at the oil mill and the agriculture selling price is used and estimated at € 20.45 per ton. For the transportation of grain to the shipping warehouse and the corresponding commercial services, a rate is used which is based on the transport lump sums used by the German Federal Agency for Agriculture and Nutrition (BLE), which also amounts to € 20.45 per ton. The further distribution of costs for transportation and commercial services is carried out on the basis of other (larger) sectors of the input-output model. From the standpoint of transportation, the rape harvest on 700,000 ha stands in comparison to substituted grain production on 350,000 ha. With the assumed yield proportion, the amounts of rape to be transported and the amounts of grain that no longer need transport are of an equal amount, so that the effects cancel each other.

Table 3
Assumptions and data for oil extraction and refinement

Processing amounts	1.225 million tons from set-aside areas 1.225 million tons from food areas
Prices for rapeseed free oil mill	Cost price **m** for crop from set-aside areas € 201.96 Cost price **h** for crop from set-aside areas € 253.09 Cost price **m** for crop from food areas € 207.07 Cost price **h** for crop from food areas € 258.20
Oil yield (raffinate)	39% of the raw material input in total 955,500 tons
Groats yield	59% of the raw material input in total 1.445 million tons
Selling prices from oil mill	Selling prices **m** for oil € 511.29/ton Selling prices **h** for oil € 613.55/ton Selling prices **m** for groats € 104.8/ton Selling prices **h** for groats € 123.99/ton
Processing costs	€ 35.53 rapeseed/ton
Oil sales	To annex plants 400,000 tons To single plants 555,500 tons
Transportation and commercial services	For deliveries to single systems € 12.78/tons oil

Facilities for oil extraction and transesterification are structured very differently

The sizes of oil mills ranges from small enterprises only with local feedstock purchases to large food-industry plants. A similar situation applies to transesterification plants of which the smallest have a working capacity of 2,000 tons and the largest 120,000 tons. Faced with the different size structures, it was a great challenge to define the cost and inter-

Table 4
Assumptions and data for transesterification

Processing amount	955.500 tons rapeseed oil (raffinate)
Prices for rapeseed oil (freely transesterification plant)	Annex plants **m** price level of € 511.29/ton Annex plants price level **h** of € 613.55/ton Single system **m** price level of € 524.07/ton Single system price level **h** of € 626.33/ton
Production	Biodiesel of 955,500 tons Glycerine, distilled 85,995 tons Potassium sulphate (fertiliser) 19,110 tons
Selling prices from transesterification plant	Biodiesel price level **m** € 579.29/ton Biodiesel price level **h** € 723.99/ton Glycerine price level **m** € 920.33/ton Potassium sulphate € 102.26/ton
Processing costs	In single plants: € 102.26/ton oil or biodiesel In Annex plants: € 68.00/ton oil or biodiesel

mediate-input structure so that they correspond to the »mean« in the German biodiesel industry.

Some transesterification plants use the so-called annex procedure, that is oil production and transesterification take place in direct spatial proximity and in associated enterprises. With regard to distribution it is assumed that 400 kT of rape oil is transesterified in annex plants and the rest in single plants that are not in the direct proximity of an oil mill. The cost prices from the transesterification plant includes the costs for the delivery of the oil and corresponding commercial services. For the processing costs € 102.25 per ton were estimated for single plants, with costs a third lower for annex-plants.

Oil extraction and transesterification are different processes from a technical standpoint. For the presentation of results they are grouped into a sector, since they are linked only by a fixed amount relationship, the oil to be transesterified. The costs to be estimated for transportation and commercial services that result for rape oil produced in single plants are regarded as costs for the whole *oil production – transesterification* sector. With annex-plants this position is dropped by way of definition.

Price scenarios must be included

Since with the input-output calculation, the ensuing prices are not determined endogenously but they must be given exogenously, it must be ensured that, on the one hand, the number of price variants remains limited, but on the other hand that the strongly varying market prices are represented by means of alternative and realistic levels. For the most important price components employed in the model, three differently high levels were formulated in each case. The medium price, as a rule, corresponds to a level in this case, that in retrospect can be taken as an average for recent last years. For the model calculation a medium price level is initially assumed at all levels. This basic variant is designated in the tables as **m**. A high price variant, marked **h**, produces results which are completely realistic. The low price variant is so unattractive for agriculture that a persistence of such a price level can lead to shortfalls in production. For the quantification of the economical effects of a coming year, it is thus of little relevance.

Intermediate input and production costs were set as non-variables at all levels of the *rape biodiesel production chain*. The relevant alternative methods of »active greening« and »grain production« as well as honey production are also constants in terms of performance.

For rapeseed, rapeseed oil, rape groats, biodiesel, glycerine and fossil diesel, three alternative price scenarios were formulated in each case, for example for rapeseed: € 143.15, € 204.50 and € 255.65 per ton of rape ton free oil mill. Assuming a country average of € 20.45 per ton for transportation and commercial services (from the farm – free oil mill) and estimating, because of the high administrative overhead for RES rape, a price gap to »normal« rape of € 5.11 per ton, the following price constellations result:

	RES rape	»normal« rape
low	120.15 €/t	125.25 €/t
medium	181.51 €/t	186.62 €/t
high	232.64 €/t	237.75 €/t

Oil prices and groats prices were assigned to these low, medium and high price scenarios, as can be see in the respective data frameworks.

Among the technical advantages of biodiesel is that this biofuel can be used in mass-produced engines and that any mixture with traditional diesel is possible. For price determination this means that biodiesel is exchangeable and car drivers as well as fleet operators with one or several vehicles suitable for biodiesel can purchase economically. Therefore, the prices that can be obtained on the market for biodiesel depend on the diesel prices that apply at a particular date and/or crude oil prices on the international market as well as the dollar exchange rate. For 2003 as well, a price markdown of 9.2 cent per litre in comparison to diesel fuel is assumed, as currently prevails on the market. From transesterification plant a medium price level of € 0.51 per

Table 5
Assumptions and data for the substitution of diesel and soy meal as well as intervention costs for wheat

Biodiesel production. quality. substitution	Production 955,500 tons Quality 93%[a)] Substitution of fossil diesel: 888,615 tons
Import prices for fossil diesel	Price level **m**: 19.43 cent/litre Price level **h**: 24.54 cent/litre
Mineral oil tax shortfalls	Mineral oil tax rate 47.04 cent/litre Density of diesel fuel: 840 gr./litre Mineral oil tax shortfalls € 559.99/ton Total shortfalls € 497.612 million
Rape groats production, quality, substitution	Production of 1,445,500 tons Quality 75%[b)] Substitution of soy meal: 1,084,125 tons
Intervention costs	Wheat: assumption € 20.45/ton

[a)] Coefficient considers differences in density, energy content and efficiency of both fuels. –
[b)] Coefficient is based on the content of digestible protein of both kinds of groats.

litre is calculated; the high price level of € 0.64 per litre is applied.

In the model approach it is assumed that imports of fossil diesel are replaced by domestic biodiesel production (approx. 15–16% of imports of recent years). With this one can ignore substitution relationships which would be expressed in a reduction of the previous crude oil processing.

In the determination of the glycerine price, it is assumed that in the year 2003 the entire resulting raw glycerine is distilled and sold in pharmaceutical quality. In the selling of glycerine and potassium sulphate, open markets are assumed with active international trade. Thus it is assumed that from an additional production of glycerine and potassium sulphate, there will be no direct displacement or substitution on the German market. However, in light of the increasing supply of glycerine, no high price level is applied.

In view of the situation on the German fodder market, it is assumed that resulting meal from rape extraction is entered at the expense of imported soy meal in fodder production. In this connection, the different qualities must be taken into consideration that result from the share of digestible protein.

Transportation and commercial services are not included for rape groats. There are no usable data for whether and the extent to which during the marketing of imported soy meal from the receiving station, different costs for transportation and commercial services arise in comparison to the marketing of rape meal free oil mill. The same applies for the substitution of imported diesel vis-à-vis domestically produced biodiesel. For glycerine and potassium sulphate, the market and transport conditions are so difficult to estimate clearly that an estimation of transport and commercial services was not undertaken.

Rape generation adds to savings in intervention costs for grain

Intervention costs are all costs that accrue for purchasing, storage and the sale of grain by intervention agencies. They can be reasonably estimated, based on empirical data of recent years. In the past intervention costs amounted to approximately € 51.13 per ton. Payments for exports were lower, in general. Since as of 2001 a comparably lower intervention price of € 101.31 per ton applies, lower producer prices than previously are to be expected also for the year 2003 with a concomitant smaller payment requirement for exports. Depending on international market conditions, payments of up to € 40.90 per grain ton were possible in the past. In the future, an average rate of € 20.45 per ton is likely.

Saved intervention costs have no influence on the internal calculations of the model. They are computed separately and can be regarded as savings in government expenditures similar to additional tax revenue or tax refluxes.

According to the model assumptions, the government will lose a half a billion euros in mineral oil taxes in 2003

At a mineral oil tax rate of € 0.47 per litre of diesel fuel for 2003, at a biodiesel production of 955 500 tons, as assumed in the model, the government would lose € 497.5 million in taxes. This must correctly downwards by around € 0.5 million, because since the introduction of the second stage of the ecotax for diesel fuel that is used in public local transportation, a tax refund of 3.83 cent per litre has been granted. Together with further shortfalls in revenue which result from lower imports, the total tax losses amount to € 501 million.

Additional revenue and investments lead to a general compensation of government revenue shortfalls

The *rape biodiesel production chain* contributes to the origin of employee earnings and income from property and entrepreneurship. With the price variant **m** these amount to € 524.6 million, and € 690.8 with the price variant **h**. With the Keynesian multiplier and the accelerator effect, these increase to € 807.8 million and € 1.03 billion, respectively. While the Keynesian multiplier is for quantifying consumption demand induced by additional earnings, the accelerator is for capital consumption (depreciation) and

Table 6
Combined results

	Price scenario **m**	Price scenario **h**
Income from employment	€ 462.16 million	€ 499.69 million
Income from property and entrepreneurship	€ 345.48 million	€ 530.62 million
Depreciation	€ 341.54 million	€ 355.96 million
Additional gains of the state (tax refluxes)	€ 154.67 million	€ 193.98 million
Savings from intervention costs	€ 50.11 million	€ 50.11 million
Shortfalls in state revenue[a)]	€ 501.22 million	€ 501.22 million
Net flows/savings in% of tax shortfalls	41%	49%
Social insurance income	€ 134.37 million	€ 147.35 million

[a)] Mineral oil tax shortfall, correction for local puclic transport, revenue shortfalls in import levies.

Table 7
Apiculture

Income from employment	€ 38.81 million
Income from property and entrepreneurship	€ 38.09 million
Revenue of the state (tax refluxes)	€ 14.01 million
Revenue of social insurance	€ 11.40 million

the re-investment it induces. This increase in income in the economy corresponds to additional employment of 18,230 persons with price variant **m**, comprised of self-employed persons, the dependently employed and assisting family members, and with price variant **h** it is 19,720. Of this only 7,170 additionally employed persons (price variant m), and 8,660 (price variant h) are from the Keynesian and accelerator effects.

Faced with the rapid structural change in agricultural production, it is problematic to speak of a job increase. It is rather a question of additional labour volume that is paid, and for which in typical family farms, for example, correspondingly more available family labour is employed. In agricultural companies with external workers, which are widespread in east Germany, this could indeed be a »genuine« job creation effect.

The tax refluxes amount to € 154.7 with the **m** variant, and to € 194 with variant **h**. Together with the intervention costs on grain that are saved, amounting to € 50.1 million, this corresponds 41% and 49%, respectively, of the tax shortfall. If one adds the tax refluxes from bee keeping (apiculture) to the amount of € 14 million, the coefficients increase to approximately 44% and 51%. In addition to the tax authorities, also the social insurance system profits from additional income, which totals (including apiculture) € 145.8 million (**m**) and € 158.8 million (**h**). These returns cannot be strictly compared with tax refluxes since future claims will be made on them. For this reason they have their own argumentative value, which in light of the situation of social insurance is also important. However, grouping together tax refluxes and additional social insurance revenue, the additional compensating performance of the *rape biodiesel production chain* amount to 73% and 83% respectively of governmental revenue shortfalls. The figures may even be slightly higher in reality, since, for lack of dependable data, all levels of induced economic activity have not been taken into consideration in the model. These include:

- transport and commercial services that result from the marketing of biodiesel (and which could be offset against corresponding savings in conventional diesel),
- investments in the infrastructure of service stations and
- investments and jobs at the manufacturers of motors and cars, in the context of making engines biodiesel compatible and providing testing procedures and releases.

Confronted with the determined economic effects of the *rape biodiesel production chain,* in particular the extensive compensation of the tax shortfalls from forgoing an introduction of a fuel tax on biodiesel, the opinion can be supported that it is socially justifiable to attribute the remaining revenue shortfalls to the positive effects of the use of biodiesel. These consist in lower emits of pollutants, which has a favourable effect in urban areas, and particularly in the simple biodegradability which is particularly important in environmentally sensitive areas. The prophylactic protection of soil, water and drinking water suggests forgoing the use of fossil fuels where there is a potential danger to the soil, groundwater and drinking water reservoirs, especially since suitable and environmentally friendly alternatives are available in the form of biofuels. In any case full use should by made by national policy-makers of the possibilities offered by the EU proposals.

Table 8
Influence of the multiplier effects on the results (€ million)

Variant m	Rape biodiesel production chain	Keynesian multiplier	Accelerator	Sum
Employee remuneration	261.58	78.48	122.10	462.16
Earnings from property and entrepreneurship	263.16	40.14	42.18	345.48
Depreciation	279.63	30.17	31.70	341.50
Variant h	Rape biodiesel production chain	Keynesian multiplier	Accelerator	Sum
Employee remuneration	261.58	116.01	122.10	944.69
Earnings from property and entrepreneurship	429.13	59.31	42.18	530.62
Depreciation	279.63	44.58	31.70	355.96