Directive 2009/30/EC amending Directive 98/70/EC on fuel quality

Consultation paper on the measures necessary for the implementation of Article 7a(5)

The aim of this consultation is to solicit views and information in respect of establishing a methodology for calculating the life-cycle greenhouse gas (GHG) intensity of fuels, other than biofuels, and for energy supplied for transport for use in any type of road vehicle and non-road machinery as defined in the Directive 2009/30 (the "Directive") (Article 7a(5a)); establishing a baseline GHG intensity against which future GHG intensity is to be measured (Article 7a(5b)) and establishing any necessary rules to enable a group of suppliers to choose to meet the GHG reduction obligations jointly (Article 7a(5c)). It also considers issues relating to electrical road vehicles (Article 7a(5d)) as well as those of flaring and venting and the administrative burden of reporting.

1. Background

The Directive adopted by the Council and Parliament on 22 April 2009 modifies Directive 98/70 on the quality of petrol and diesel. The Directive introduces a new element in the legislation that sets as an objective the reduction of the GHG intensity of energy supplied for use in road vehicles and non-road mobile machinery. The main article establishing these elements is Article 7a of the Directive.

The three main goals of Article 7a are to provide an incentive to:

- optimise GHG performance of biofuels
- encourage the use of lower GHG intensity fuels
- reduce GHG emissions from fossil fuel pathways

The elements dealing with the calculation of GHG emissions for biofuels are already included in Annex IV of the Directive. However, the methodology for the calculating and reporting of GHG intensity of other energies and fuels were not included in the Directive but are instead foreseen to be adopted through the comitology procedure.

2. The need for consultation

The aim of Article 7a is to ensure that a fuel supplier makes choices to achieve, in an optimal manner, a reduction in aggregate GHG intensity for the fuel and energy supplied to road transport and non-road machinery. The assessment of GHG emissions of biofuels is on the basis of the methodology established in Annex IV of the Directive.

Stakeholders' views are sought on six matters:

- Part 1: article 7a(5a): A methodology is needed for fuel and energy that does not encourage any unwanted behaviour such as counting only a part of the savings achieved, and one that, as reasonably as possible, reflects the actual emissions from different fuels. Article 7a(5a) requires that this methodology is established for calculating GHG intensity of fuels other than biofuels and for energy supplied to road transport and non-road machinery.

At this stage two approaches have been identified for calculating the GHG emissions of fuels and energy as well as a hybrid of both of these approaches. The first approach would be to establish fixed values (i.e. default values) for the various fuel and energy sources. The second approach would be to establish a methodology for calculating the GHG intensity of every consignment of fuel. A hybrid approach would broadly mimic the approach taken for biofuel GHG calculations where a default value is established but the possibility exists for suppliers to use another methodology if they can demonstrate that their fuel performs better than the default value.

- Part 2: Article 7a(5b) requires the establishment of the baseline GHG intensity against which future GHG intensity is to be measured. The baseline shall be based on the EU average level life cycle GHG emissions per unit of energy from fossil fuel products in 2010. EU average could be based on weighing determined by volume, mass, or energy.

- Part 3: Article 7a(1) states that: *"in the case of providers of electricity for use in road vehicles, Member States shall ensure that such providers may choose to become a contributor to the reduction obligation laid down in paragraph 2 if they can demonstrate that they can adequately measure and monitor electricity supplied for use in those vehicles."* It is desirable to obtain some indication of what is required and how this might be achieved.

  Article 7a refers to the need for compatibility with Directive 2009/28 in accounting for electricity use in vehicles. Article 3(4)c of that Directive states: *"for the calculation of the contribution from electricity produced from renewable sources and consumed in all types of electric vehicles for the purpose of points (a) and (b), Member States may choose to use either the average share of electricity from renewable energy sources in the Community or the share of electricity from renewable energy sources in their own country as measured two years before the year in question. Furthermore, for the calculation of the electricity from renewable energy sources consumed by electric road vehicles, that consumption shall be considered to be 2,5 times the energy content of the input of electricity from renewable energy sources."* The key aspect to ensure compatibility is the value of the multiplier. However, it is necessary to identify the GHG intensity value to be used and how it is possible for suppliers to demonstrate that they can adequately measure and monitor electricity supplied for use in road vehicles.

- Part 4: Recital 9 of the Directive clarifies that: *"this reduction should amount to at least 6 % by 31 December 2020, compared to the EU-average level of life cycle greenhouse gas emissions per unit of energy from fossil fuels in 2010, obtained through the use of biofuels, alternative fuels and reductions in flaring and venting at production sites."* Consequently the reduction of flaring and venting at production sites may contribute to achieving the Article 7a target. The means through which this can be accomplished and how it would be calculated need to be defined.

  The reduction of flaring and venting at production sites is foreseen to be included in measures to achieve the Article 7a reduction target. As a first step, it is necessary to identify the amount of savings eligible and the range of sites from which such reductions could be accepted. As a second step, how the reductions could be calculated and attributed over the compliance period needs to be defined. The third step is that an approach needs to be defined for the verification of such emission reductions.

- Part 5: the administrative burden on Member States needs to be considered.

- Part 6: Article 7a(5c) requires the establishment of any necessary rules to enable a group of suppliers to choose to meet the reduction obligations jointly. It is necessary to consider whether any such rules are needed.

3. Part 1: key points in the calculation of GHG emissions of fuels and energy

GHG methodology: accuracy versus administrative burden

The administrative burden of conducting actual GHG emission calculations rather than using default values must be considered against the potential risks and benefits arising from the degree to which the actual values vary with respect to the default values. It is clear that the variation in GHG emissions from biofuels ranges more significantly than the variation in GHG emissions from fossil fuels (see Annex 3). According to the JRC-CONCAWE-EUCAR consortium (JEC) Well to Wheel (WTW) analysis underlying the approved biofuel GHG methodology (Annex IV of the Directive), the variation in the total life cycle emissions of biofuel varies up to 90% for major biofuels regulated by the Directive and up to 4% (including a maximum 1.8% of potential savings) for fossil fuels regulated by the Directive.

It appears that allowing actual calculations in addition to default values for estimating biofuel emissions may help reveal quite a large differentiation in GHG intensity which may result in a substantial benefit for the biofuel suppliers and to society from encouraging the use of better performing fuels, while at the same time, also result in a more substantial administrative burden for them.

The necessity of allowing actual calculations for biofuels becomes clearer when considering the minimum amount of GHG savings required from biofuels with respect to their fossil fuel comparator. A graph of the variation in GHG savings suggests that certain biofuels from rapeseed, soybean, and wheat feedstocks may fall below the 35% threshold required by the Directive (See Annex 4).

On the other hand, fossil fuel suppliers would see a smaller potential for reducing GHG emissions given that the reported savings are of the order of 1.8 % and, as discussed in the next section, these actual savings are difficult to calculate. Even if all emissions could be eliminated at the refineries this would only amount to around 10% of life cycle emissions. The default values are therefore closer to the actual emissions. It may be argued that, given the far higher volume of fossil fuels involved, a small percentage reduction in GHG emissions from fossil fuel could lead to large GHG saving benefits if actual savings were easy to calculate and corroborate. It could also be argued that allowing actual calculations may yield negligible results and not justify the corresponding burden since it may severely impact economic operators with performing quite complex calculations that reflect the complicated fossil fuel extraction and processing industries, while Regulators would face the challenge of corroborating them for apparently negligible benefit.

Refinery issues

In the WTW study the JEC consortium derived values for the GHG intensity of many different fuel pathways, including fossil petrol and diesel. Using an EU-wide refinery model developed by CONCAWE the GHG footprint of the marginal EU petrol and diesel production was estimated and reported by the JEC in the WTW study. The marginal production considered was consistent with the anticipated biofuel introduction targets. The CONCAWE model represents the EU refining industry through 9 refineries each having the aggregate capacity and complexity of all actual refineries within a certain region. This so-called marginal method appears to be compatible with the earlier stated presumption that GHG savings will most likely be achieved with substitution of fossil fuels with biofuels. Default values consistent with this approach are presented in Annex 1.

Use of a more precise method to estimate the GHG impact of products from each individual refinery could run the risk of leading to incorrect or perverse conclusions. The level of GHG emissions of a refinery reflects primarily its size and complexity rather then its carbon efficiency. Consequently, the derivation of a GHG intensity for each product is difficult because it varies depending on the complexity of the refinery and on one of the multiple refining pathway that can utilized within each refinery to create the same product. Although this appears to be desirable for the purpose of GHG savings, it may lead to some unintended consequences that are further explored below.

Overall a certain level of complexity, and therefore a certain level of emissions, is necessary to produce the product slate required by the market. Simple and complex refineries working in concert meet this demand. Simple refineries have a lower carbon footprint than complex ones but they do not meet the range of products required by the market. They only survive because complex refineries directly or indirectly convert the excess surplus residual material that simple refineries produce to supply the entire slate of products demanded by the market. It is therefore entirely appropriate to only consider the combined GHG intensity of all refineries within a supply envelope. Disaggregation of GHG intensities of a product per individual refinery could disrupt the synergy between complex and simple refineries. The potentially unintended consequences of this scenario are fully explored in the Security of Energy section below.

The 6% GHG intensity reduction under Article 7a, as outlined in Recital 9, does not foresee the inclusion of any GHG reductions from refineries. However, the list is not exclusive. In view of this, the possibility to include reductions from refineries is not essential for the purposes of making the first element of Article 7a operational. It should be noted that in the context of its 2012 report, due under article 9 of the Directive, the Commission intends to look at a wide range of issues relating to Article 7a. These include in particular aspects such as CCS for refineries and the use of CDM for flaring and venting. In this context, it may be more appropriate to consider a wider assessment of an appropriate methodology if this appears justified.

Security of energy, carbon leakage and domestic refining capacity

Analysis done by Wood MacKenzie (2007) shows that trade in crude oil in comparison to trade in refined products provides greater flexibility as well as better security of supply. Therefore, EU energy security should be understood in the context of the EU's capacity to supply refined products in addition to its ability to use diversified crude oil sources. A major deciding factor on the choice of GHG calculation methodology should be the impact of that choice on energy security and carbon leakage.

It is conceivable that allowing actual calculations of GHG emissions of fossil fuels may result in a shift of product supply towards imports. A clear example of this situation could be the current state of supply of diesel. Current EU diesel demand results in a trade deficit that is satisfied by the supply of diesel from former Soviet Union (FSU) refineries. These have a much simpler configuration resulting in a lower diesel GHG intensity and substantial surplus of residual fuel on the market. Moreover, the strength of FSU's diesel supply is sustained by subsidies that are directly proportional to the cost of crude oil. Allowing actual GHG calculations would exacerbate this perverse dynamic.

An increase in supply of diesel from the FSU could flood the market with unutilized inexpensive residual fuel which could replace more efficient natural gas power and heat generation elsewhere. This scenario could lead to carbon leakage. Further carbon leakage may be experienced as a result of crude switching. GHG intensity of different crude oil sources may vary. While this variation is slight, it might become economically attractive to divert higher GHG intensity oil from the EU market and bring less GHG intensive oil to the EU market. At a global level this could increase GHG emissions due to increased transport, while enabling suppliers to achieve a lower GHG intensity in the EU market.

Overlapping Philosophies with other Low Carbon Fuel Standard Regulations

The California low carbon fuel standard (CA LCFS) was adopted on April 23rd. In it the GHG intensity of fuels is determined using default values. For petrol and diesel, these values are based on US refinery efficiencies that yield a similar product balance and similar retail costs to that achieved by Californian refineries.

Some flexibility exists for suppliers to introduce additional default values. Modifications to calculations of GHG intensities of fuels is closely controlled. Namely, substantial change in the value of the intensity must be demonstrated. Furthermore, the introduction of new default values is predicated on governmental approval and public review. Although no clear mention of carbon leakage or energy security is made, it is obvious that any deviation from using default values is strictly controlled.

Where default values are used, should there be a mark-up over expected values?

Within the biofuel GHG methodology a distinction is made between "typical" values which are the central figures derived from the range of values for each biofuel pathway and "default" values which have a 40% increase on the estimated processing emissions of the "typical" values. This 40% increase is to reflect the wide variation in the pathway emissions (shown in Annex 3) and is intended to ensure that the values used are not likely to be below the actual values in most circumstances.

This situation is different for most fossil fuel pathways. For most of these, there is very little variation depending on the way that the fuel is processed while the actual fuel pathway has a large impact. A significant reason for this variation is because for most fossil fuel pathways, the vast majority of GHG emissions occur in the combustion phase and are therefore negligibly affected by how the fuel is processed. In view of this, there is no justification for such a large mark-up in default values above the "typical" values. However, the use of the same approach with a lower differential between typical and default values could be envisaged.

Advantages and disadvantages of the GHG methodology options

Option 1 – fixed default values

Advantages

- Provides certainty over GHG intensity values
- Administratively simple
- No carbon leakage
- Maintains current balance in security of supply

Disadvantages

- Does not provide any impetus for reductions of GHG intensity in the refinery sector

Option 2 – methodology for calculation of consignment GHG intensity

Advantages

- Provides possibilities for small reductions in GHG intensity from fuel processing.

Disadvantages

- Administratively complex
- Less certainty over GHG intensity values since it may be necessary to refine or modify the methodology in the future
- Potential for carbon leakage
- Potential for greater imbalance in security of supply

Option 3 – hybrid with default values and option to calculate actual values

Advantages

- Administratively more complex than option 1, but less than option 2 since companies would choose whether it was worthwhile to perform the calculations under the methodology.
- More certainty over future values than option 2, although less certain than option 1.
- Provides possibilities for small reductions in GHG intensity from fuel processing.

Disadvantages

- Potential for carbon leakage
- Potential for greater imbalance in security of supply

4. Part 2: points to consider for baseline calculations

Article 7a(5b) requires the Commission to establish the baseline GHG intensity against which future GHG intensity reported by suppliers is to be compared for the purpose of meeting

Article 7a. The legal text states that the baseline shall be based on the EU average level life cycle GHG emissions per unit of energy from fossil fuels sold in 2010.

To determine the baseline, there are essentially three aspects that need to be determined. These are: how the GHG intensity for each type of fuel used is to be determined, what quantity of each fuel is used in the reference year, and how the proportion of different fuels should be weighted.

The first aspect is addressed in the first part of this consultation document. The choice made will apply both to how suppliers need to report GHG intensity as well as how the baseline is calculated.

With regard to the second aspect, final precise figures will only be available after 2010. For petrol and diesel this information is reported under the Fuel Quality Monitoring mechanism. For other fossil fuels, data needs to be sourced from other sources. However, even though the precise quantities will only be available after 2010, the proportions of different fuel types used will not differ significantly in 2010 from preceding years, since the fuel types are determined by the available engines and equipment in the fleet. In view of this, a first approximation can be calculated based upon the most up to date figures available and this can be updated when the actual sales information is available

With regard to the method for establishing the baseline, the only question where a decision is required is in respect of the third aspect – how the proportion of different fuels should be weighted. Essentially the EU average value could be based on a weighting determined by the volume, mass, energy or value of the different fossil fuels that are sold. These options are discussed below:

Option 1 - average based on volume

Volume has no relation to energy content and therefore to the useful work that can be done with the energy. In addition, its use may not be appropriate for gases because volume varies at different temperatures and pressures. The measure has no relevance at all for electricity.

Option 2 - average based on mass

Mass has no relation to energy content and therefore to the useful work that can be done with the energy. The measure has no relevance at all for electricity.

Option 3 - average based on energy

The objective of Article 7a is to establish GHG emissions per unit of energy. In view of this it is desirable that the overall approach to setting the baseline also takes account of the energy value of the fuel.

Option 4 - average based on pre-tax value

Value provides an indication of the usefulness of the energy, as well as some indication of the processing difficulty. Value varies and will be dependent on a range of factors unrelated to the usefulness of the energy itself.

The Commission concludes that option 1 and 2 can be excluded on the grounds that they are inappropriate for the purpose of the comparator. Option 1 has additional problems in relation to gas. Option 4 can be excluded on the grounds that it is to a degree arbitrary, as the relative values will change in the market over time with no relevance to the determination of the GHG intensity.

In view of this, it is proposed that option 3 should be selected as the basis for calculation of the baseline GHG intensity.

Proposed calculation of the baseline GHG intensity

Since the overall objective of the proposal is to address GHG intensity of fuel in terms of its GHG emissions per unit of energy, it appears sensible to establish the baseline in the same manner. Doing this would result in the interpretation of this as EU-energy weighted-average fossil fuel emissions intensity (gCO2 eq./Mj)

It is proposed that this will be calculated as follows:

Baseline GHG intensity =

$$\frac{\sum_{a\ to\ z} (GHGi_{fuel\ x} * MJ_{fuel\ x})}{\sum MJ_{a\ to\ z}}$$

Where fuel x refers to the different fossil fuels placed on the EU market in 2010 for use in any type of road vehicle and non-road machinery as defined in the Directive.

Based upon recent years, it can be seen that the majority of relevant fuel is road diesel, followed by petrol then by off-road gas-oil, liquid petroleum gas (LPG) and compressed natural gas (NG). Any other types of fossil based fuel that may be used in the fuel marketed are believed to represent less than 1% of the overall EU market and it is proposed that these should not be taken into account for the purposes of setting the baseline.

Indicative value of fossil GHG intensity baseline

The most recent data available to the Commission enables a preliminary calculation of the fossil fuel GHG intensity. This data is as follows:

Fuel	Consumption (TJ)	Source
Diesel	$8.121214 * 10^6$	FQM report 2006
Non-road gasoil	$0.8 * 10^6$	estimate
Petrol	$4.355345 * 10^6$	FQM report 2006
LPG	[$0.34224 * 10^6$	AEGPL data]
CNG	$0.172 * 10^6$	http://www.ngvaeurope.eu/downloads/statistics/090416-ngvs-and-fuel-consumption-in-europe.pdf

On this basis, the GHG intensity is calculated as being: 84.5gCO2/MJ.

5. Part 3: key points in relation to electricity

Article 7a(1) states that Member States shall ensure that providers of electricity for road vehicles may choose to become a contributor to the reduction obligation laid down in paragraph 2 if they can demonstrate that they can adequately measure and monitor electricity supplied for use in those vehicles.

There are two partially linked questions to be addressed. The first is what requirements should be put in place as regards the measuring and monitoring of electricity use in vehicles. The second is the GHG intensity value that should be sued for electricity use.

Measuring and monitoring of electricity use

The key problem is how it can be ensured that only electricity used in vehicles is reported, and that electricity does not get used for other purposes. Where vehicle electric batteries are exchanged at an authorised point, there does not seem to be any reasonable risk that the electricity stored in them would be used for any purpose other than that of road transport. Where recharging points are supplied on street for electric vehicles, this also would indicate that there would be a small risk of the electricity being used for purposes other than road transport.

In other circumstances, for example where electricity is supplied in homes or other buildings, there currently does not appear to be any way to be certain of how the electricity is used, unless meters are installed that are able to recognise the vehicle to which they are supplying electricity. This appears at present to exclude the supply of electricity in such locations from complying with Article 7a. The development of such sophisticated metering will also enable a link to be made with the GHG intensity of the electricity supplied at the time, avoiding the problem of estimating the relevant GHG emissions.

GHG intensity of the electricity used

The second question concerns the GHG intensity value of the electricity that is used. Until sufficiently sophisticated metering systems are put in place to enable the time of charging, and therefore the carbon intensity of the electricity used to be known, there is considerable uncertainty about the GHG impact of charging an electric vehicle. There is however a wide variation in the GHG intensity of electricity used in different Member States. In some, even at the average level of GHG intensity, the use of an electric vehicle can result in greater GHG emissions than the use of an ICE vehicle. This would imply that the use of an EU average value would not provide a reasonable indication of the GHG intensity or an appropriate signal to suppliers.

Alternatively, suppliers could be required to use the average GHG intensity for electricity supplied in the Member State where it is being used. This will be less inaccurate than an EU average and seems preferable and is the proposed approach.

6. Part 4: key points to consider in relation to flaring and venting

Scope of savings

The legislative text stipulates that the GHG target should in part be met by achieving reductions in flaring and venting at production sites. Approximately 80 MT CO2eq GHG emissions are associated with EU-bound global oil production from both flaring and venting. The proportion of this amount that could be used to meet fuel suppliers' obligations under the Fuel Quality Directive depends on the measurement methods used.

One option would be to only count savings calculated using "co-product allocation", under which the benefits of reductions in flaring and venting would be divided proportionately between all the different oil products including those that are not subject to the regulated GHG reduction target. Under this option the annual potential for savings from flaring and venting under the Fuel Quality Directive would be about 10 MT CO2eq. If the savings were not linked to "co-product allocation", then this would imply that 20MT CO2eq emissions could theoretically count as the reduction potential.

Information available to the Commission indicates that costs of avoiding these emissions differ between regions. The cost of the GHG avoided will tend to decrease as fuel prices get higher since the benefit from the alternative use of the captured gases increases in value. It should be noted that the cost of reducing flaring and venting would be the same regardless of whether the co-product allocation principle was observed. Capital investment in flaring and venting reductions for a single well will cost the same whether all of the captured gas is counted or just the smaller amount associated with co-products because it is only possible to capture all of the gas rather than the amount only associated with the co-products. In other words, if the co-product allocation principle was selected, the cost of achieving possible savings would double since for the same capital cost, only approximately half of the savings would be eligible.

It would still need to be ascertained which production sites would be ones from which reductions would be accepted in view of the desire that these are linked to consumption in the EU. While oil consumed could be traced back to a number of oil wells, this would not help to answer the question since oil from a particular country is likely to have been mixed in pipelines and storage depots with oil from multiple wells before shipment. An alternative approach would be to identify the countries that supply more than a certain proportion of EU oil consumption and allow some or all of flaring and venting savings in those countries to be counted towards the reduction in the GHG intensity.

Calculation options

Once the overall level of GHG emissions avoided is known, it is still necessary to establish how these should be accounted for. Given the volume of energy supplied, it is straightforward to convert tonnes of CO2 equivalent avoided into a saving of CO2 per unit energy (see Annex 2). It should be noted that reduction can be counted without modifying the default values.

However, it is also necessary to establish how such savings should be allocated. Without any rule for this, the only mandatory incentive to achieve flaring and venting reductions occurs in 2020, when the 6% overall GHG intensity reduction needs to be met. In view of the fact that the overall obligation to reduce GHG intensity extends over the period between 2010 and

2020, it could be argued that all flaring and venting savings should be averaged over the whole period. On the other hand, it could be argued that savings from flaring and venting should be allocated across the time period starting from when they are proved to have occurred in line with the actual reduction of GHG achieved; closer to the indicative reduction profile suggested in Article 7a. Stakeholders' comments are welcome on the appropriate approach to follow.

To ensure that the flaring and venting reductions are not counted in other areas, it would be necessary for the allowances related to the GHG reduction that are being claimed to be cancelled when the supplier is being credited with the reduction in GHG intensity.

Verification of savings

Another methodological question relates to counting and verifying flaring and venting savings. It appears that the same issue arises with biofuels imported from third countries. Fortunately, gas capture hardware and connection to a delivery network can be verified once to assure that it is always being used. This is because the largest obstacle to capturing vented gas is the initial investment. After the hardware and the infrastructure is in place, capture and delivery of the gas pays for itself. Many methods for verifying the financial as well as the GHG saving potential of such projects have been developed by the UN as part of the CDM (Clean Development Mechanism). Suppliers could invest in similar projects and hire third party certification consultants to conduct assessment and provide certification of GHG savings of each project to their respective Member States for approval.

7. Part 5: potential administrative burden on Member States and suppliers for calculating GHG intensity using Default Values

Calculation

According to the Directive, suppliers are responsible for reporting life cycle GHG intensity of fuel and energy supplied to the EU market. A supplier is defined in the Directive as an entity responsible for passing fuel or energy through an excise duty point or, if no excise is due, any other relevant entity designated by a Member State. GHG intensities to be reported by suppliers can be readily calculated using volume data collected via the excise duty scheme and default values. An example calculation is presented in Annex 2.

Data collection

All fuels used for transport are taxable in the EU under the Taxation of Energy Products and Electricity Directive 2003/96/EC. Duties for road fuel are collected per volume of fuel. Fuels are defined in the Directive and Directive 2003/96 with the same standardization codes (i.e. CN standards) and can be easily cross referenced. Member States will have to report volumes of fuels placed on the market by the respective suppliers and verify them to be pertinent to the GHG target by cross checking their reported CN codes in both Directives and by verifying their final point of consumption. For example, fuels for rail transport are aggregated with all excise duties falling under propulsion but are excluded from fuels considered in the Directive. Similarly, diesel for off-road vehicles is usually subject to lower excise rate so would be taxed separately, but such rate can also apply to non-mobile machinery.

Currently, the Community does not separately regulate excise duties for electricity use in transport. Nevertheless, some Member States have developed various schemes for this purpose. Some Member States reimburse the excise duty to the suppliers after proper documentation has been submitted proving its use for that purpose. Currently this option is applied to electricity use in railways, which is excluded from the GHG target in the Directive. When excise duties are not collected for transport energy (e.g., electricity), Member States may choose to identify suppliers of such fuels and oblige them to report the required data pursuant to the existing excise duty data-reporting scheme.

Alternatively, Member States may elect to expand the current annual fuel quality and fuel volume reporting conducted pursuant to the Directive by expanding its scope to include supplier reported volume quantities and GHG intensities of fuels and energy disaggregated down to the supplier level. When expanding the existing reporting under the Directive and in order to avoid creation of completely new reporting requirements, Member States might, as far as possible, rely on the existing excise procedures of Directive 92/12/EEC[1]. Finally, the Commission plans to propose a standard reporting spreadsheet to facilitate potential collaboration between suppliers from several Member States intending to meet the GHG reduction target together.

8. Invitation to Comment

Stakeholders' comments are invited on the different possible approaches to addressing the method for establishing GHG intensity values for fuel and energy used other than biofuels. Consultees are invited to comment in particular on the options identified, but are also welcome to put forward additional options for consideration.

Consultees are invited in particular to respond to the following questions:

PART 1 - METHODOLOGY FOR THE CALCULATION OF LIFE CYCLE GREENHOUSE GAS EMISSIONS FROM FUELS OTHER THAN BIOFUELS AND FROM ENERGY

Do the options raise specific issues of fairness, accuracy, efficiency, effectiveness, perverse incentives, energy security, carbon leakage or administrative burden?

Do you have any specific comments on the proposed approach for calculating default values or actual values?

Do you have any specific comments on the proposed options for fuel suppliers to calculate their GHG intensity?

PART 2 - METHODOLOGY FOR THE CALCULATION OF LIFE CYCLE GREENHOUSE GAS BASELINE

Do you have any comments on the proposed options for calculating the baseline GHG intensity?

[1] OJ L 76, 23.3.1992, p. 1.

In view of the fact that the value proposed herein will only vary slightly between now and 2010, is there merit in fixing the currently calculated value as the baseline value?

PART 3 – ISSUES RELATING TO ELECTRICITY

Do you have any comments on the proposed approach to accounting for the GHG intensity of the use of electricity in road vehicles?

Do you have any suggestions on how to devise and implement a scheme for measuring and verifying electricity use in electric vehicles at decentralized locations (e.g. residential complexes and individual homes).

PART 4 – FLARING AND VENTING

Do you have any comments on the options put forward to account for the GHG reductions achieved through flaring and venting reduction and for including these in a supplier's reported GHG intensity?

Do you consider CDM verification methodologies adequate to corroborate GHG savings associated with flaring and venting projects?

PART 5 – GAUGING OF THE ADMINISTRATIVE BURDEN FOR MEMBER STATES

Could you verify if the current administrative schemes employed by suppliers in your and/or other Member States for reporting excise duty taxes and fuel quality pursuant to the Directive need to be modified to facilitate collection of the following data?

- Supplier identification or number
- Fuel type as identified by the following 8 digit CN codes
  - Petrol: CN Codes 2710 1141, 45, 49, 51, 59(2)
  - Diesel: CN Codes 2710 1941(2)
  - Gas oil: CN Codes 2710 1941, 45
  - Liquid Petroleum Gas: CN Codes 2711 1211, 1900, 2900
  - Compressed Natural Gas: CN Codes 2711 1100, 2100
- Fuel volume

Could you describe the necessary steps to accomplish such modifications and to conduct the reporting and the associated potential administrative burden on suppliers and Member States?

- Do Member States collect supplier and fuel volume information for fuels corresponding with the following CN fuel standards? Does the Member State currently employ a scheme to disaggregate within this data fuels falling under the Directive? Are there any specific problems envisaged in relation to collecting data on the supply of gaseous fuels and the energy supplied for non-road mobile machinery?

PART 6 - RULES NEEDED TO GIVE EFFECT TO ARTICLE 7A (4)

Do you think that specific rules are needed in relation to the possibility for suppliers to jointly comply with the requirements of Article 7a as foreseen in Article 7a (4).

Specifically,

- Do you consider the current administrative schemes developed by your and/or other Member States for reporting excise duty taxes and corresponding quantities adequate and easy to amend to add a function for reporting if suppliers should be considered as a joint supplier for specific fuel pathways for the purpose of complying with Article 7a of the Directive?
- How important would it be to allow suppliers from multiple Member States to jointly report their GHG intensity? What new reporting schemes or modifications to existing schemes could facilitate this?

Please provide comments by e-mail to ENV-98-70-Implementation@ec.europa.eu by 25 September 2009.

Annex 1 - Suggested Default Values

Petrol, diesel
Values for the extraction portion of the life cycle were adjusted to be more consistent with values calculated in other regions of the world.

LPG
It is conservatively assumed that LPG is a by-product of natural gas production. LPG is likely to be marginal in the fossil fuel supply chain. Fairly constant GHG intensity is expected.

CNG
Assumed 3000km pipeline supply as marginal.

Electricity
Assume EU-average mix. Key issue is adjustment for electric vehicle efficiency. Data illustrates that electric vehicles use approximately 3 times lower energy per km for a comparable vehicle. The GHG/MJ is divided by 2.5 as in the Renewable Energy Directive to get comparable GHG per useful work done.

Tar Sand
Emissions vary widely. However part of reason is the need for upgrading. Emissions for a combined in-situ mine and upgrader are taken as the basis.

CTL
Taken from WTW study

GTL
Taken from WTW study

Hydrogen
Selected pathways taken from WTW study. It is desirable to have an efficiency adjustment for fuel cell vehicles. However this is not needed at present. Will be a challenge if FC and ICE hydrogen vehicles co-exist.

Plastic based fuels
Not been analysed in WtW study. Based upon published information about the processes the Commission services have carried out an assessment of the probable GHG intensity of such fuel. This based on the assumption that the material used is waste plastic and therefore has zero GHG emissions associated with it – in line with the biofuel GHG methodology.

Table of draft default values

	GHG (gCO2eq)/MJ				Reference
	Extraction	Refining	Transport Distribution and Combustion*	Total	
Petrol	4.5	7	1+73.3	85.8	
Diesel	4.6	8.6	1+73.2	87.4	
LPG				73.6	WTT app 1
CNG				76.7	WTT app 1
Electricity (EU average)	120 = [48g] adjusted for vehicle efficiency				WTT app1 p 14
Tar Sand	25	8.6	73	107	Based on Trucost Research Note: "Oil sands: Exposure to energy and carbon costs"
CTL	100	1	70.8	172	WTT app 1
CTL with CCS	9	1	70.8	81	WTT app 1
GTL	25	1	70.8	97	WTT app 1
Hydrogen – wind based electrolysis				9	WTT app 1 p 37
Hydrogen – steam reformed NG				72-82	WTT app 1
Hydrogen from coal				190	WTT app 1
Hydrogen from coal with CCS				6	WTT app 1
Plastic based fuel				86	Commission calculations

*Includes an efficiency factor reflecting the current conversion efficiency of vehicles likely to be used in each fuel.

Annex 2 - Methodology for reporting greenhouse gas intensity using default values

1. Formula for the calculation of GHG intensity

A supplier's GHG intensity may be calculated as follows: GHG intensity =

$$\frac{\sum_{a\ to\ z} (GHGi_x * MJ_x) - FVR}{\sum MJ_{a\ to\ z}}$$

Where:

$GHGi_x$ is the GHG intensity of the annual supply sold on the market of fuel x expressed in gCO2eq/MJ

MJ_x is the total energy supplied and converted from reported volumes of fuel x expressed in Mega Joules.

FVR is the reduction in flaring and venting emissions expressed in gCO2eq

2. Proposed default values

	GHG (gCO2eq)/MJ
Petrol	85.8
Diesel	87.4
LPG	73.6
CNG	76.7
Tar Sand	107
CTL	172
CTL with CCS	81
GTL	97
Hydrogen – wind based electrolysis	9
Hydrogen – steam reformed NG	82
Hydrogen from coal	190
Hydrogen from coal with CCS	6
Electricity (EU average)	48
Plastic based fuel	86

3. Adjustment factors for vehicle and engine efficiency

Conversion technology	**Efficiency factor**
Internal combustion engine	1
Electric motor	2.5

4. Specific requirements to take account of experimental use of electricity

For the experimental use of electricity foreseen in Article 7a, the Member State's average level of GHG emissions for electricity generation will be used.

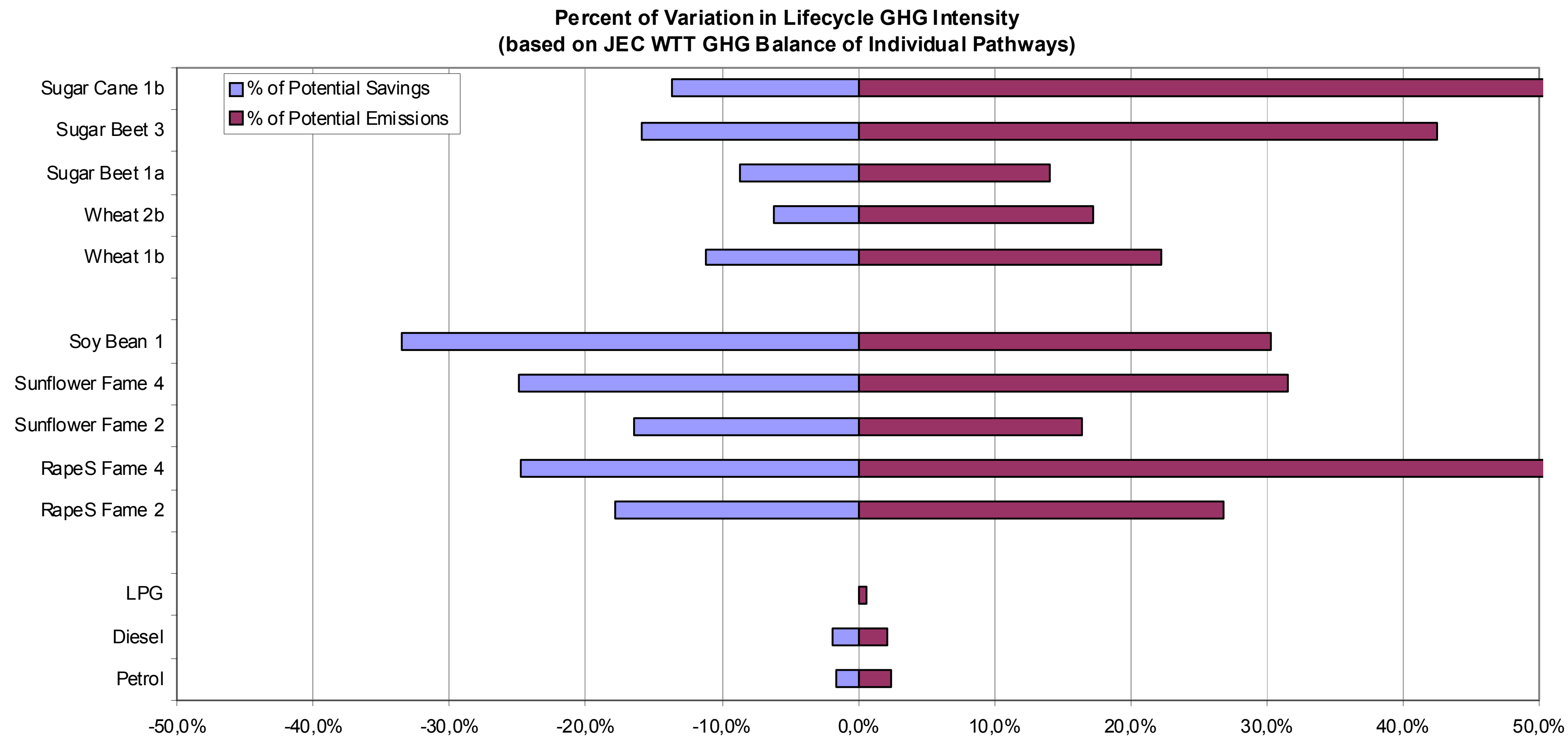
5. Accounting for flaring and venting reductions

A tonne of CO2 equivalent avoided through a flaring and venting reduction project is a million grammes of CO2 equivalent. This means it can provide a supplier with a 1gCO2 reduction for every TJ of energy they supply.

If the approach is taken of allocating all flaring and venting reductions over the whole compliance period, this would mean that the reduction in GHG intensity would be divided by ten to give the change in annual GHG intensity. This approach would provide a 0.1gCO2eq/MJ reduction for a tonne of CO2 avoided for a supplier supplying a TJ of energy including in the year 2020, when the 6% GHG intensity reduction is mandatory.

If the approach is taken of allocating flaring and venting reductions progressively over the compliance period, this would mean that the allocated reduction in GHG intensity would increase progressively. This approach would provide approximately a 0.2gCO2eq/MJ reduction for a tonne of CO2 avoided for a supplier supplying a TJ of energy over the whole period.

Annex 3 - Graph showing the percentage variation around the expected value for different fuel pathway Lifecycle GHG intensity



The 0% line indicates the expected value.

Annex 4 - Variation in Percent of GHG Savings over the Fossil Fuel Comparator