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EUROPEAN COMMISSION

Brussels, 27.10.2010
SEC(2010) 1252 final

COMMISSION STAFF WORKING DOCUMENT

Accompanying document to the

Proposal for a

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

amending Directive 2000/25/EC as regards the implementation provisions for tractors placed on the market under the “flexible scheme”

Executive summary of the Impact Assessment

{COM (2010) 607}

{SEC (2010) 1251}

This report commits only the Commission's services involved in its preparation and does not prejudge the final form of any decision to be taken by the Commission

1. CONTEXT AND PROBLEM DEFINITION

The tractors emissions Directive 2000/25/EC¹ regulates the exhaust emissions (carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NOx) and particulate matter (PM) from diesel engines installed in agricultural and forestry tractors (hereafter: tractors). It is fully in line with Directive 97/68/EC on emissions of non-road mobile machinery (NRMM), for which recently a similar proposal and IA Report were produced.

For the various types of tractors, Directive 2000/25/EC stipulates the maximum permitted engine exhaust emissions as a function of the power of the installed engine. Moreover, the Directive includes a series of emission limit stages of increasing stringency with corresponding compliance dates. Tractor manufacturers must ensure that new engines used in their machines comply with these limits when placing them on the market.

Directive 2005/13/EC² amended the original tractors Directive and introduced the currently applicable stage of emission limits for the majority of diesel engines (referred to as Stage IIIA). These limits will be replaced by the more stringent Stage IIIB limits entering into force progressively, depending on the power category, affecting vehicles placed on the market from 1st January 2011 onwards. From 1st January 2010 the type approval period for these engines has started. As the Stage IIIB limits are stricter, current engines will need to be modified and re-designed in order to respect the new limits. This redesign affects tractor manufacturers who have to adapt the design of their vehicles to accommodate the modified engines. This is a time and resources consuming procedure; the efforts needed depend heavily on the required changes to the engines and to the body of the tractor in which the engine is to be installed.

Directive 2005/13/EC introduced a so-called "flexibility scheme" to facilitate the transition from one emission stage to the next. The flexibility scheme allows the tractor manufacturers to place on the market, during one stage of exhaust emissions limit values, a limited number of tractors fitted with compression ignition (CI, diesel) engines that still comply with the exhaust emission limits of the previous stage. A tractor manufacturer has the option to place on the market either (1) for each engine power category a limited number of tractors not exceeding 20% of the tractor manufacturer's annual sales (calculated as the average sales in the EU of the latest 5 years) or (2) a fixed maximum number of tractors as stipulated in the Directive. This second option was intended to be used by smaller enterprises producing lower volumes of tractors.

The flexibility scheme was designed to:

- permit smooth integration of new engine requirements applicable to the tractors. The majority of tractor manufacturers do not produce their own engines, but have to purchase these from engine manufacturers. Once the engine manufacturer is satisfied that engine and after-treatment development³ is satisfactory and ready for production, then the tractor manufacturer can follow-up with its integration and optimisation in the vehicle and arrange for type-approval. This situation is unique compared with other (mostly road) vehicle manufacturers, who can develop and produce both vehicle and engine at the same time.

¹ OJ L173, 12.7.2000, p.1

² OJ L 55, 1.3.2005, p. 35

³ Additional equipment installed with the engine, that chemically or physically reduces the exhaust emissions emitted from the engine before releasing them to the atmosphere e.g. Diesel Particulate Filters, NOx adsorber Catalyst or Selective Catalyst Reduction systems.

- provide the necessary environment for the tractor manufacturers to develop and adapt, initially, tractors with bigger volume sales and fewer problems and then utilise the experience gained to adapt the rest of the tractors, produced at smaller volumes for niche markets. This experience makes the adaptation of the rest less costly.
- avoid excessive impacts during the transition to the next Stage on low volume products, since development in these series requires relatively high fixed costs.

The *tractors emissions directive 2000/25/EC* was set up fully in line with the NRMM directive and implemented the requirements specifically for tractors under the framework Directive 2003/37/EC, including the Stages IIIA, IIIB and IV, the timeframe and the flexibility scheme. Because the provisions for tractors are aligned with those for NRMM, the text of this impact assessment draws on the impact assessment for flexibility for NRMM. A general difficulty was encountered in obtaining specific information for tractors. Sources like EUROSTAT treat tractors as part of 'agricultural machinery' and don't show them separately. Because of the similarities between NRMM and tractors with regard to engines, some of the data on NRMM can still be used.

What is the problem?

In analogy with the situation for NRMM manufacturers, the technological challenge for tractor manufacturers is that the next generation of engines must achieve emission reductions in PM and NO_x comparable to those required and deployed in on-road engines and vehicles (trucks, buses etc.). This is not possible with the current technology. Further research and technological development by industry is required in order to ensure that tractors can be placed on the market with Stage IIIB compliant engines.

There are approximately 40 tractor manufacturers (most are part of 6 major groups) in the EU producing a wide variety of tractors that have to comply with the emission limits laid down in the Directive, while the engines are produced by only a few large companies (approximately 10 manufacturers in the EU and 20 companies worldwide). Only very few large tractor manufacturers produce their own engines. The adaptation of the vehicles can only be done by the tractor manufacturers after the finalisation of the configuration of the engine, since this redesigning procedure cannot be done in parallel (except for tractor manufacturers producing their own engines). According to information from the industry, the total turnover for tractor manufacturing in 2008 should have reached some € 8 billion. Directly linked jobs reach 24 000 for tractors production and another 10 000 jobs are indirectly related.

Influence of the Crisis

From early 2009 onwards most of the EU based industry producing tractors has been unexpectedly and severely hit by the global financial and economic crisis. Steep falls in sales caused a large decrease in income and available capital to finance the necessary technology research and development for tractors to be equipped with Stage IIIB compliant engines in all power categories and applications within the time limits in the Directive. Firms prioritise their R&D expenditure to cover firstly those products with high existing and potential sales volumes. These sales then provide the business with revenues that can be used for R&D in order to develop technical solutions for smaller niche markets.

For tractors the market in Europe started to drop sharply in the 1st quarter of 2009⁴; the sales over the year 2009 have dropped by 20 % in units (180 000 in EU15 for 2008. No figures are available for EU12; for all equipment this may probably be 15% of the total). According to the industry association (CEMA) the turnover in 2009 decreased by 20-25% compared to 2008. This is the consequence of the decrease in downstream demand. For 2010 tractor manufacturers are expecting a further 5-10% decrease. Figures for the 1st quarter 2010 show - 22% compared to 2009.⁵

Industry has not been able to do all necessary R&D yet, which is now aggravated by the influence of the crisis. There is a risk that no tractors (or not enough) complying with IIIB will be available in 2011. At the same time not enough IIIA compliant tractors can be put on the market. This would mean that older tractors have to run longer, which entails an increase in pollution and require more expensive maintenance work, manufacturers might go bankrupt and/or have to lay-off staff, etc

2. DOES THE EU HAVE THE RIGHT TO ACT?

The legal basis of this initiative is the same as for the tractors emissions Directive 2000/25/EC, namely Art. 114 of the TFEU. The subsidiarity principle is respected by the proposal, since amending the Directive is only possible at EU level. Member States cannot take action individually on emission limits and related deadlines. Therefore EU action is necessary and provides value added in maintaining the internal market for tractors.

3. OBJECTIVES

The **general objective** of the proposal is to safeguard economic development of the tractors industry and maintain a high level of environmental protection.

The table below describes the general, specific and operational objectives.

| GENERAL | SPECIFIC | OPERATIONAL |
|---|---|--|
| 1. Maintain the functioning of the internal market for tractors | <p>1. Maintain a level playing field for tractor producers by upholding a harmonised regulatory framework across all Member States (and thus eliminating the risk of national deviations).</p> <p>2. Prevent the foreseeable aggravation of an already difficult economic situation for the tractor industry that has been caused by the economic crisis.</p> <p>3. Ensure that demand for new tractors</p> | <p>1. Introduce a cost-effective and timely measure that will allow EU producers to keep selling tractors under the same rules across the EU and will allow users to replace end of life tractors.</p> <p>2. Allow tractor manufacturers to generate revenues that can be used to invest in the necessary R&D to comply with foreseen emission limits.</p> |

⁴ Reference: CEMA letter and attached "Background material for the Request to Enlarge Flexibility from 20% to 50% for Stage IIIB", 14-07-2009, addressed to Commission VP G. Verheugen. Additional information on market share can be found in the study 'Competitive analysis of the EU Mechanical Engineering', p. 4, available at the link: http://ec.europa.eu/enterprise/mechan_equipment/companalysis-eu-mechengin.pdf

⁵ Source: CEMA, June 2010.

| | | |
|----------------------------|---|---|
| | can be satisfied by industry. | |
| 2. Protect the environment | <p>1. Reduce the risk that older, more polluting (pre-Stage IIIA) tractors cannot be replaced by newer cleaner tractors, i.e. make sure that the potential for emission reductions from replacing end of life tractors is not jeopardised.</p> <p>2. Maintain the incentive for the industry to invest in R&D necessary to develop cleaner tractors compliant with the foreseen future emission limit stages.</p> | <p>1. Enable the replacing of older, more polluting and fuel consuming engines and tractors by cleaner ones by adjusting the emission requirements in such a way that demand for new tractors can be met by the cleanest available models.</p> <p>2. Send a clear signal to industry that further emission reductions are required and that the current path of reducing emissions is maintained.</p> |

4. POLICY OPTIONS

The following options to tackle the identified problem have been identified:

Option 1 - No action = Baseline scenario

The provisions of the current flexibility scheme remain unchanged, i.e. 20% (or absolute numbers of engines) continue to apply.

Option 2 - Provision of government backed loans for purchasing stocked engines manufactured under the so called sell-off period

Article 4 of Directive 2000/25/EC states that requirements shall be postponed by two years in respect of engines with a production date prior to the said date, the 'said date' being one of the deadlines specified in point 2 of that article, after which non-compliant engines and tractors shall not enter into service anymore.

While Stage IIIA is in force, industry may produce engines and tractors and stock them in the EU territory. These Stage IIIA engines and tractors are manufactured to keep industries running and to cover the needs of other countries that do not have exhaust emissions limitations as strict as EU. After the beginning of implementation of Stage IIIB (between 1-1-2010 and 1-1-2013 depending on power category), these stocked engines and tractors may be placed on the market for a period of two years. This option suggests the use of government backed loans to be granted to tractor manufacturers to purchase Stage IIIA engines on stock.

Option 3 - Implementation of a scrapping scheme.

The use of a scrapping scheme would be a subsidy, given as an incentive, to the user to buy new tractor with a Stage IIIB engine.

Under this option, the owner of an older, more polluting tractor will deliver the tractor for scrapping (destruction-recycle etc). A national public authority would grant a lump sum to the owner of the scrapped tractor. The owner will receive the money via banking or the tax system when the purchase of new the tractor is proven.

Option 4 – Implementation of alternative types of provisions under the flexibility scheme

Under this option additional flexibility will be granted for the transition from Stage IIIA to Stage IIIB. No additional measures for future stages are envisaged.

- Option 4.1 - Implementation of a scaled percentage of the flexibility scheme

The option suggests a different percentage for the various categories of tractors, depending on the particular transitional problems from Stage IIIA to Stage IIIB plus a similar approach with regard to the fixed numbers of engines.

- Option 4.2 - Increase of flexibility percentage to 50%

This option suggests increasing flexibility from 20% to 50% for all tractor categories. The fixed maximum number of engines would be amended accordingly.

- Option 4.3 - Increase of flexibility percentage to 80%

This option suggests increasing flexibility from 20% to 80% for all tractor categories. The fixed maximum number of engines would be amended accordingly.

- Option 4.4 - Conditional expansion of the flexibility scheme, with penalty mechanism

In order to maintain the incentives to develop Stage IIIB engines, a system could be introduced where additional flexibility used in the transition from stage IIIA to Stage IIIB will trigger payment of a penalty after several years. This would maintain the incentive for the tractor manufacturers to develop tractors with IIIB engines and use only the minimum additional flexibility they need. It requires a penalty to be set at the right level.

- Option 4.5 - Implementation of a trading system

A system similar to that of the EU Emissions Trading Scheme could be developed for the flexibility measure. A system could be established whereby firms that would not use the entire flexibility could sell their flexibility rights to firms that need additional flexibility. This scheme would require a mechanism to sell flexibility (permits) and a system in place to monitor the scheme. The price of each permit of flexibility would be determined by the market.

Option 4.6 - Replace the flexibility scheme by a combination of flexibility for tractors manufacturers and ABT, as applied in the USA.

An ABT scheme similar to the one used in the USA could be developed for engine manufacturers, together with a flexibility scheme for the tractor manufacturers.

5. ASSESSMENT OF IMPACTS OF THE OPTIONS

The policy option of **doing nothing** would not be effective in reaching the objectives. Industry would continue to struggle in the current economic climate and would not have tractors ready for Stage IIIB. Industry would then not be able to place products on the market beyond what is offered in the 20% flexibility scheme and some firms would subsequently go out of business which would lead to job losses.

Clients of tractor manufacturers are currently much more prudent towards buying new tractors as a result of the economic climate. Users cut capital costs by extending the use of old tractors and not purchasing newer, cleaner tractors, thus causing a larger negative environmental impact in the short term. Also they would have to pay more for maintenance in order to keep their old tractors operational.

The system for **loans** would be very complex to put into place in a short time which is required due to the fact that Stage IIIB limits apply as of 2011 onwards. The time taken to develop a working system would not be effective in meeting the immediate requirements of the industry. Additional EU / national resources would be required to set up and regulate this system. This scheme would not help the firms who are experiencing problems with financing R&D to reach Stage IIIB. Those firms not ready for Stage IIIB would have to pay for additional R&D.

Another possibility to continue its operation is that a tractor manufacturer could buy **stocked** engines from an engine manufacturer to be able to continue selling IIIA compliant tractors. In order to be used after a stocking period of more than three months, engines require a special treatment⁶ that is time consuming and costly and could reach up to 5% of the sale price of the engine.

It could also be argued that the incentive to produce more Stage IIIA engines would result in a high number of Stage IIIA engines, instead of development of the cleaner Stage IIIB engines; it would act as a counter incentive to innovate and develop more environmental friendly tractors. Thus, a loan to purchase stocked Stage IIIA engines would reduce the incentive to design compliant Stage IIIB tractors which is less environmentally damaging. In addition, this option raises issues regarding compatibility with the EU state aid provisions.

The use of a **scrapping** subsidy will provide an incentive to the users to buy new tractors with a cleaner Stage IIIB engine, under the condition that they destroy their older, more polluting tractor. This will encourage the purchase of Stage IIIB tractors and have positive environmental impacts. However, it will not assist tractor manufacturers in financing the R&D to make Stage IIIB tractors available. Whether the prospect of a scrapping scheme would be sufficient to induce banks to hand out additional loans to tractor manufacturers for R&D remains doubtful. In addition, if Member States implemented the scrapping scheme in different ways, this could lead to a fragmentation of the internal market and to distortion of competition. In any event, no plans from any MS to introduce a scrapping scheme for this sector are known to the Commission.

Implementation of **scaled percentages** of flexibility for the different types of tractors, depending on the problems they encounter for the transition from Stage IIIA to Stage IIIB is not feasible since

⁶ When the engine is manufactured to be stocked, it is filled with a special oil. When it is placed on the tractor, this oil must be changed to a specific one and then with a specific fuel the engine is kept running for a few hours. After that period the oil must be changed again to normal and with a normal fuel it must run for some time and then it is ready and safe to be sold. The required time and cost of the procedure depend on the size of the engine and its power.

there is no specific inventory of the tractors in the various categories, nor a relevant system to survey the number of sales.

Increase of flexibility percentage to 50% for all tractors and proportionate adjustment of the fixed numbers has to take account of environmental, social and economic impacts. Environmental impacts have been determined for all NRMM in the impact assessment for NRMM flexibility based on external costs of calculated emissions. As there is a complete lack of specific information for tractors in EUROSTAT and environmental databases, it is not possible to provide more specific information for tractors only. However, the nature of the impacts is similar for tractors as for all non-road mobile machinery.

The environmental costs represent the cost generated from the additional emissions of the engines under the amended 50% flexibility scheme compared to the current 20% flexibility scheme.

According to the methodology followed based on the Net Present Value (NPV), per type of pollutant the environmental costs resulting from a 50% flexibility compared to the current 20% flexibility are in the magnitude of:

| Pollutant | 50% flexibility for all NRMM | 50% flexibility for tractors |
|-----------------|------------------------------|------------------------------|
| PM | 200 | 80 – 90 |
| NO _x | 350 | 130 – 150 |
| Total | 550 | 210 - 240 |

These figures (million Euros) represent the total cost over the period of 2008-2030, while for the present Impact Assessment the benefit has been calculated for the period of three years as covered by the accompanying proposal. The figures for tractors are based on the assumption that tractors will still have the same relative share in pollution.

The estimated impact of an enlarged flexibility scheme is 0,3% of the overall emissions (both of PM and NO_x) of all NRMM in use, in the first year.

On the other hand, enlarged flexibility would allow manufacturers to continue selling tractors and thereby generating revenue to finance R&D costs for stage IIIB tractors. Similarly to the NRMM impact assessment, it is expected that the economic benefits outweigh the environmental harm.

As alternative to 50% flexibility, a possibility to postpone the introduction of Stage IIIB might be considered until the introduction of Stage IV. The consequence of this would be that the effect of the 90% reduction in PM limits would be delayed for three years. The Commission is also of the opinion that a similar rise in flexibility for the introduction of Stage IV should not be considered; as stated before, the R&D work done for Stage IIIB should guarantee that this would not be justified. The Commission will inform the stakeholders about this.

Increase of flexibility percentage to 80% for all tractors and proportionate adjustment of the fixed numbers, similar to option 4.2, with the following differences: 80% would not be coherent with the NRMM proposal (50%); flexibility would now be closer to the US system while maintaining the EU fundamental system; it would lead to more environmental harm, while industry stated that this high figure is not necessary for them to be able to comply with the Directive.

The use of the **flexibility scheme with penalty mechanism** would limit concerns that competitive distortions may occur from enlarged flexibility. However, there is a lack of available information

concerning compliance of tractors which would place a significant burden on competent National authorities that render this option practically unfeasible and the preparation and implementation of such a mechanism would entail disproportionate costs (notification and surveillance) with regard to the benefits triggered by its application.

A **flexibility trading system** by which firms could buy additional flexibility from those firms that do not need it, would provide a strong incentive to comply as soon as possible with the new emission limits. However, setting up such a complex system in a short time scale would be disproportionate to the expected achievements.

Similarly an **ABT** is not considered to be a feasible option as described before; it was already turned down by Council and Parliament.

Comparison of the listed options:

| | Effectiveness | Efficiency | Coherence | Feasibility |
|--|--|---|--|-------------------------------------|
| Option 1 – Baseline | Not effective | Not efficient | Partly coherent | Feasible |
| Option 2 - Provision of government backed loans to finance stocking of IIIA engines | Partly Effective | Not efficient | Not coherent | Feasible, if MS would be willing |
| Option 3 - National scrapping schemes | Partly effective | Not efficient | Partly coherent | Unfeasible |
| Option 4.1 – Scaled Flexibility | Effective | Efficient | Coherent | Unfeasible |
| Option 4.2 – 50% Flexibility | Effective | Efficient | Coherent | Feasible |
| Option 4.3 – 80% Flexibility | Effective only with respect to objective 1 | Not efficient due to environmental trade-off | Coherent with environmental policy | Feasible |
| Option 4.4 – Penalty mechanism | Effective | Not Efficient | Coherent | Unfeasible |
| Option 4.5 - Trading scheme | Effective | Partly efficient | Coherent | Unfeasible |
| Option 4.6 - ABT | Effective | Partly efficient | Coherent | Unfeasible |

5.1. Conclusion

As a result of the above analysis, it is concluded that extending the flexibility to 50% is the most appropriate measure to ensure that the objectives of the policy are met.

6. MONITORING AND EVALUATION

An assessment of the impacts of the enlarged provisions of the flexibility scheme after its implementation and completion will be based on information provided by the industry and by Member States, as already required in Directive 2000/25/EC. Thus, no increase in costs for manufacturers or national authorities is expected.

Key indicators to assess the effectiveness of this initiative could be the use of the flexibility scheme until end of 2013, the development of the number of firms going out of business, and the development of NO_x and PM emissions attributed to tractors.

It is the Commission's intention to evaluate the impact of the revised flexibility measure at the end of the period defined in the accompanying proposal, i.e. in 2014 and to draw the necessary conclusions from the results obtained.