

High-quality advanced biofuels: an available solution for effective greenhouse gas emissions reduction and air quality improvement

Neste Oil comments to the European Commission (EC) Green Paper on "a 2030 framework for climate and energy policies "

INTRODUCTION

Over the last years Neste Oil¹ has invested more than 1.5 billion euros into development and production of very high-quality renewable diesel. This renewable diesel is a so-called "drop-in fuel" that can be used in any diesel engine at very high - up to 100 % - blends. It has the same molecular structure as fossil diesel and a quality superior to fossil diesel. Therefore, unlike traditional biodiesel, it can fully utilize existing infrastructure such as tanks, pipelines and pumps and therefore is an economic choice for customers and societies as a whole. Neste Oil's renewable diesel can use a wide variety of sustainably produced raw materials: both vegetable oils and different wastes and residues. Demand is growing both in Europe and US in transport sectors for high quality advanced biofuels. In its answers to the EC's Green Paper, Neste Oil focuses on how renewable energy can contribute to greenhouse gas emission savings in transport, in particular through policy instruments that promote high-quality advanced biofuels.

It is crucial that visibility into the post-2020 period is provided soon by the EU - otherwise it will become difficult to sustain research and development efforts into new raw-materials and high-quality "drop-in" fuels. Lack of clarity on future regulatory framework will entail loss of Europe's competitiveness in biofuels, weakening trade balance and continuation of high degree of energy independence.

Going forward towards the post-2020 era, whatever regulatory instrument is chosen, it is important to keep in mind the following principles:

- Regulation should be based on incentives to industry to improve both the quality and GHG-performance of its fuels.
- Regulation should give a clear, stable and realistic pathway towards higher quality biofuels based on waste, residue and new raw materials.
- Tighter EU-level harmonization, perhaps in the form of a Regulation instead of Directive, is necessary to avoid current fragmentation of the single market.
- It should not allow for public operating subsidies or selective production quotas to protect unviable businesses.
- It should be based on free trade and WTO principles, with a particular view to the trans-atlantic marketplace and access of developing country raw materials to EU markets.
- It should include stringent but stable and science-based sustainability criteria, which also should be applied to other industries using the same raw materials.

¹ Neste Oil is a refining and marketing company, with a focus on premium-quality, lower-emission traffic fuels. The company produces a comprehensive range of major petroleum products and is the world's leading supplier of renewable diesel. The company had net sales of EUR 17.9 billion in 2012 and employs around 5,000 people. Neste Oil's share is listed on the NASDAQ OMX Helsinki.

GREEN PAPER QUESTIONS AND NESTE OIL ANSWERS

4.1. General

- **Which lessons from the 2020 framework and the present state of the EU energy system are most important when designing policies for 2030?**

The EU 2020 framework has been successful in creating a European biofuels industry which is already contributing significantly to the fight against climate change². Despite of its shortcomings and slow implementation, the regulatory framework for renewable energy in transport³ has triggered a wave of investments, innovation and job creation in the biofuels sector. As always, new industries go through a tumultuous start with some successes and some failures before they develop into more established, economically sustainable industrial sectors.

However, significant barriers to full success of biofuels remain. National transposition of the Renewable Energy Directive (RED) and Fuel Quality Directive (FQD) has progressed slowly and resulted in very variable national legislation. The lack of EU-level harmonization has allowed various types of ways to favour local production and/or certain types of biofuels over others. At the same time, some key comitology decisions and Commission guidelines to effectively implement RED and FQD are still pending adoption. For the time being there is no genuine single market for biofuels.

Fragmented markets have created significant difficulties for companies, who were prepared to act according to community rules and slowed down scaling up of the still young industry. Allowing for extensive national production subsidies and quotas have shown - not surprisingly - their effect of slowing down of emergence of single market where companies' innovation and product quality determine success.

Therefore it is still early to give a full judgment of the success of the EU regulatory framework for biofuels. The current "ILUC-revision" to RED and FQD further blurs predictability, but should - and needs to - result in long-term clarity about how to deal with the risk of potentially harmful ILUC-emissions.

It is key that the post-2020 policy for renewable energy in transport seeks tighter EU-level harmonization and ensures technology neutrality. The greenhouse gas (GHG) and local emission reduction potential as well as other quality characteristics of the products should be the objective metrics against which companies can innovate and improve.

4.2. Targets

- **Which targets for 2030 would be most effective in driving the objectives of climate and energy policy?**

The ideal climate and energy policy for 2030 will be a combination of an overall target and some sub-targets in the sectors of economy, such as in transport, where the characteristics of that sector call for specific targets and regulatory instruments.

² According to the European Commission Renewable Energy Progress report [COM(2013)175], biofuels consumption in the EU are estimated to have generated 25,5 Mt CO₂eq savings at the level of 4,7% of traffic fuels.

³ The Renewable Energy Directive (RED), 2009/28/EC and the Fuel Quality Directive (FQD), 98/70/EC.

An EU-wide target for greenhouse gas reduction should be the overall target. Fixing the final level of the target should be conditional on the outcome of global climate change agreement in 2015.

Despite its current difficulties due to economic conditions, emission trading (ETS) can be seen as a promising market-based mechanism to drive emission reduction in industry and power generation also in the future. EU should be active to promote global emission trading. While waiting for global solutions, carbon leakage continues to be an important consideration. To safeguard competitiveness and maintain an industrial base in Europe, the current carbon leakage sectors need to be maintained until such time that a more global system is possible.

For sectors outside ETS, where emission trading is not effective o/and would be very difficult to implement, such as in transport, sector specific instruments with their own targets are necessary.

The need for renewables targets is being discussed lively. When developing policies further, it is important to keep in mind that the current renewable energy directive (RED) includes two sets of targets:

1. Targets for **power generation** by renewables. This may require re-evaluation, in order to keep subsidies at a tolerable level to avoid unintended market distortion and overlap with ETS.
2. Target for **renewables in transport**. It has a different dynamics and must be evaluated separately from other RED targets. Biomandates in transport have offered a readily available and effective means to cut GHG emissions. For targets in the transport sector, please see below.

At what level should they apply (EU, Member States, or sectoral), and to what extent should they be legally binding?

A combination of targets at the EU level which translate into binding national targets is the only way to create a genuine European single market in energy in general and for renewable in transport in particular. A European single market will allow for sufficiently large market potential to drive significant investments and provide a level-playing field for effective competition. Diverging national solutions will fragment the market and lead to intra-EU protectionism, and hence discourage investment and growth.

Given the growing disparity in energy prices between the US and EU, Europe simply cannot afford economic nationalism but has to look for EU-level solutions. For the post-2020 period, the Commission should consider proposing more directly applicable Regulations instead of Directives to drive stronger EU-level harmonization.

• Have there been inconsistencies in the current 2020 targets and if so how can the coherence of potential 2030 targets be better ensured?

The obvious and well-known overlap exists between ETS and renewable targets and subsidies for renewable power generation.

As far as renewables in transport are concerned, the main problem has been slow and inconsistent implementation of RED and FQD and insufficient level of harmonization at the EU level. This has lead into inconsistency of national rules and fragmentation of the single market. Of course, the fact that there are two Directives aiming at reducing CO2 emissions from transport - albeit through a different mechanism - namely RED and FQD, has raised a number of open questions about their inter-linkages. Going forward, a mutual consistency between the RED and FQD directives, or whatever regulatory approach and instrument is chosen, has to be of course ensured.

Also the uncertainty over the question of potential ILUC-emissions and how to regulate them has had a chilling effect on investments. The "ILUC-Directive" currently in the co-decision process hopefully provides full, long-term clarity about how to consider ILUC in EU renewables legislation.

• Are targets for sub-sectors such as transport, agriculture, industry appropriate and, if so, which ones?

Yes, specific targets for transport, which contribute to the overall CO₂ reduction target are necessary and an effective and available means to reduce GHG emissions.

The continuing demand for, and dominance of, liquid fuels is a reality in most modes of transport in the foreseeable future, despite of emergence of alternative fuels such as natural gas and electricity. And for example in aviation liquid fuels are the only available option, as the Commission has recognized in its Communication "European Alternative Fuels Strategy (COM(2013) 17). Specific targets for biofuels in the aviation sector should be considered for the post-2020 period.

To have effective targets that drive maximal benefits to economies and societies, it is important that more emphasis is put on the quality of biofuels in addition to GHG reduction. Advanced biofuels, such as HVO or BTL have several benefits:

- 1) They decrease local emissions such as small particles and nitrogen oxides.
- 2) They are "drop-in" fuels, namely fully compatible with existing fuel infrastructure (tanks, pipelines, pumps, ships).
- 3) They can be used in very high blends in existing engines, and therefore their use is not limited by "blend walls".
- 4) Their high Cetane and Octane number enable engine manufacturers to develop more fuel efficient engines with less emissions. Meeting the Eurostandards on local emissions requires development of new engines, and high-quality advanced biofuels are needed for this to happen. These quality aspects are important to be integrated into the post-2020 transport renewables policy in order to achieve both better alignment with the car manufacturing industry and consumer acceptance, as well as to improve air quality. Currently, the level of "advancement" and different "generations" - which have not been authoritatively defined - consider only raw materials and GHG saving potential as criteria. Quality characteristics such as local emission reduction, blend ratios, "drop-in" quality should enter into a proper definition of what an "advanced biofuel" is.

Adding renewable energy to fuel distribution by mandate through RED has been a fast and pragmatic way to reduce GHG and local emissions from transport compared to conversion of transport infrastructures and developing new types of vehicles for alternative fuels. The effect and efficiency of the FQD's GHG intensity reduction requirements is yet to be seen, as the Directive has not yet been effectively implemented at the member state level.

The existing public and private assets related to liquid fuels are very significant. They include petroleum refineries, marine tanker fleets, terminals, rail and road tankers, service station networks, whole passenger car fleet, heavy vehicles, agriculture and forestry tractors, motorbikes, boat engines, etc. as well as oil heating unit in properties. This entire downstream infrastructure is fully suitable for distribution and use of advanced biofuels. When assessing alternatives to liquid fossil and renewable fuels, it is important to consider that most alternatives require either new distribution infra or new

vehicles - or both. At the same time, liquid fuels should anyhow be available as long as there is demand from the market.

Maintaining the positive GHG reduction contribution and ensuring a long-term pathway towards more advanced biofuels will continue to require a separate legislative instrument or instruments, due to a higher cost of renewable feedstocks compared to crude oil. This disparity is likely to continue and might even be growing because of the large scale exploitation of shale gas and shale oil.

Sustainability of biofuels has been much debated during the last years. These concerns have to be taken seriously, but at the same time it has to be remembered that RED and FQD already include very stringent sustainability criteria which ensure sustainable sourcing of raw materials. No other sector using the same raw materials has such sustainability requirements.

The current transport fuel targets in RED and FQD have already driven a significant greenhouse gas (GHG) emission reduction (According to the European Commission Renewable Energy Progress report [COM(2013)175], the EU's biofuels at 4,7 % have estimated to generate 25,5 Mt CO₂eq savings) This emission reduction contribution is poised to grow as the industry is moving towards new raw materials. The use of different wastes and residues is already common place and growing. And completely new raw materials such as algae offer promising opportunities. The proposals of the European Commission of October 2012 in view of handling the risk of ILUC-emissions guides the industry to this direction.

European Commission estimates that biofuel industry is responsible directly and indirectly for over 200 000 jobs in the EU⁴. However, biofuels production is a capital intensive and relatively young industry. The path towards complete use of new raw materials is a long and risky one. Therefore binding, EU-wide renewable targets for transport beyond 2020, coupled with clear and harmonized sustainability criteria are necessary to keep this industry on a path of economically and environmentally sustainable future.

As a general rule, public subsidies are neither necessary nor in general desirable for biofuel production. Public grants for R&D and for scaling up new, risky technologies where the market will not fund the investments are the limited exceptions to the rule. Ambitious binding targets, clear and predictable regulatory framework and a genuine single European market will allow efficient companies to have economically and environmentally sustainable biofuels business.

For example, is a renewables target necessary for transport, given the targets for CO₂ reductions for passenger cars and light commercial vehicles?

Yes, renewable target for transport is necessary as it is complementary with CO₂ regulation for cars. CO₂ regulation for cars does not apply life cycle analysis (LCA) for fuels. Failing to use this well established method, the CO₂ regulation for cars does not credit the fact that growing biomass absorbs CO₂.

Nevertheless, a greater coherence between fuel legislation and vehicle performance legislation needs to be ensured to unlock the synergy between the two sectors. It is crucial for vehicle industry to be able to use high quality, fully compatible "drop in" fuels. Therefore, renewable fuel targets should ensure these aspects through incorporating the quality aspects into legislation. Ensuring high-quality

⁴ European Commission Renewable Energy Progress report [COM(2013)175] .

fuels in the market and predictable fuel standard development, engine and car manufacturers can tune up the energy efficiency in the best possible way.

EU industry - both fuel and engine manufacturers - have developed a strong competence and cooperation in this field. EU regulator should help this long-standing cooperation by designing regulation such that it drives synergies between the sectors.

In addition to on road transportation, also aviation sector should have own specific targets. In aviation, there are no other alternative fuel options to advanced biofuels that could offer considerable emission reductions. It would follow the logical pathway that EU would also include aviation sector to its GHG policies for transport.

• **How can targets reflect better the economic viability and the changing degree of maturity of technologies in the 2030 framework?**

As discussed above, the quality aspects of biofuels need to be considered in the post-2020 framework in order to ensure consumer and car manufacturer acceptance, drive economic efficiency through utilization of existing infrastructure that "drop-in" biofuels allow and to achieve local emissions reductions in addition to GHG savings. This will incentivize producers to invest in improving the quality of their products.

From the raw material standpoint, using mechanisms to incentivize use of wastes, residues and new raw materials such as algae are welcome. Separate sub-targets for such biofuels, or a nested system along the lines of US RFS2, seem to be promising mechanisms.

• **How should progress be assessed for other aspects of EU energy policy, such as security of supply, which may not be captured by the headline targets?**

The three key objectives of a good energy policy: competitiveness, security of energy supply and sustainability must be in proper balance when designing new policies.

As far as security of supply is concerned, wide diversification of energy sources is the key. Both fossil petroleum products and their renewables-based equivalents will be necessary also in the foreseeable future energy mix.

Refining industry which is fit to invest and develop better solutions for future needs a predictable regulatory environment, which is supporting sustainable growth and jobs.

4.3. Instruments

• **Are changes necessary to other policy instruments and how they interact with one another, including between the EU and national levels?**

Adding renewable energy to fuel distribution by mandate through RED has been a fast and pragmatic way to reduce GHG and local emissions from transport compared to conversion of transport infrastructures and developing new types of vehicles for alternative fuels. RED has been criticized on the one hand for its relatively weak or "artificial" (double counting) incentives for industry to improve the GHG performance, and on the other hand for not taking into account the risk of potential ILUC-emissions. The on-going revision of RED and FQD through the so-called "ILUC-Directive" proposal of October 2012 should address these concerns. At the end of June 2013, it seems that a sub-category for "advanced biofuels" - albeit based solely on the feed-stock, not quality characteristics of the

product - will be included into RED, which is certainly a step to the right direction. Biofuels regulation should create incentives for the market players to move towards more GHG saving solutions. The Renewable Fuels Standard 2 of the USA is an instructive example in this regard. It has nested volume mandates for less and more advanced biofuels. Production of more advanced biofuels generate more credits (RINs) towards fulfilling the mandates. This system provides an incentive to develop and produce more advanced biofuels while allowing a fall-back mechanism if such biofuels are not available at a given time.

The effect and efficiency of the FQD's GHG intensity reduction requirements is yet to be experienced, as the Directive has not yet been effectively implemented at the member state level, and as some key decisions, including the method to calculate life-cycle emissions of fossil fuels is pending approval. The apparent attractiveness of FQD's GHG intensity reduction requirement is that it clearly does provide incentives for GHG intensity reduction: the more GHG-saving biofuels and other solutions are, the more economic value they have. In addition, it is based on full life-cycle analysis of fuels, including fossil fuels, so it provides an objective metric towards which to compare different fuels. For FQD to work properly, its approach should be maintained strictly-science based and rely on internationally agreed life cycle emission standards (ISO and CEN). For example, phenomena such as ILUC which can not be measured, should be addressed by other means than relatively arbitrary ILUC-factors in the GHG calculation.

Going forward towards the post-2020 era, whatever regulatory instrument is chosen, it is important to keep in mind the following principles:

- Regulation should be based on incentives to industry to improve both the quality and GHG-performance of its fuels.
- Regulation should give a clear, stable and realistic pathway towards higher quality biofuels based on waste, residue and new raw materials.
- Tighter EU-level harmonization, perhaps in the form of a Regulation instead of Directive, is necessary to no more allow fragmentation of the single market.
- It should not allow for public operating subsidies or selective quotas to protect unviable businesses.
- It should be based on free trade and WTO principles, with a particular view to the trans-atlantic marketplace and access of developing country raw materials to EU markets.
- It should include stringent but stable and science-based sustainability criteria, which also should be applied to other industries using the same raw materials.

• How should specific measures at the EU and national level best be defined to optimise cost-efficiency of meeting climate and energy objectives?

EU should ensure that the national implementation of the directives are not in contradiction with the EU goals. This can be established by more accurately defining the policies at EU level and by acting swiftly if member states delay transposition of EU legislation or intentionally transposing it incorrectly or maintaining legislation that infringes EU law.

• How can fragmentation of the internal energy market best be avoided particularly in relation to the need to encourage and mobilise investment?

Legislation should be designed to create a genuine single market in the EU which would increase competitiveness of EU business. Use of Regulation instead of Directive as legislative instrument should be considered.

- **Which measures could be envisaged to make further energy savings most cost-effectively?**

In the transportation sector the fuel quality is linked, in addition to emissions, also to performance of the engines. By increasing the quality of fuels, the engine manufactures are able to produce more energy efficient engines. This issue had not been considered in Renewable fuels legislation.

- **How can EU research and innovation policies best support the achievement of the 2030 framework?**

EU support for R&D should be linked to the projects that can show progress and potential for commercialization within certain period of time.

4.4. Competitiveness and security of supply

- **Which elements of the framework for climate and energy policies could be strengthened to better promote job creation, growth and competitiveness?**

EU should not forget global and local conditions and economic growth when 2030 targets will be deployed. The targets for traffic fuels should be set by understanding the requirements from fuel producers as well as from vehicle manufacturers 'side. Developing appropriate regulatory instruments that foster synergy between these two sectors is important for European competitiveness. Incentivising the production of higher-quality advanced biofuels which will help engine manufacturers to meet the requirements they have will be important.

- **What are the specific drivers in observed trends in energy costs and to what extent can the EU influence them?**

The biggest observable trend is the emergence of shale oil and shale gas as economically viable sources of fossil energy. This is likely to contain the prices of fossil fuels during the coming years. This trend underlines the need to have specific policy measures for renewable energy in transport, as renewable raw materials are likely to remain more expensive than fossil ones.

- **How should uncertainty about efforts and the level of commitments that other developed countries and economically important developing nations will make in the on-going international negotiations be taken into account?**

Setting the level of the EU-wide, overall CO₂ reduction target should be done once the outcome of international climate change negotiations is known in 2015. This should not, however, stop the EU to advance in designing the post-2020 framework - the final level of overall target can be inserted into the legislation once, and as soon as the international negotiations are finished. Pending that decision, the assumption should be that the current targets will be maintained in order to provide certainty to industry.

- **How to increase regulatory certainty for business while building in flexibility to adapt to changing circumstances (e.g. progress in international climate negotiations and changes in energy markets)?**

Pending the outcome of international climate change negotiations, the assumption should be made clear that the current targets will be maintained in order to provide industry certainty about a plausible outcome.

- **How can the EU best exploit the development of indigenous conventional and unconventional energy sources within the EU to contribute to reduced energy prices and import dependency?**

Indigeneous energy sources, such as forestry and agricultural residues and various processing residues from industry can be promoted by incentives for their use, such as creation a specific sub-target and related mandates to wastes and residues, or taking waste or residue status into account in the excise duty on fuels. The traceability requirements of wastes and residues need to be kept pragmatic as they currently are in RED and FQD. However, the EU policies should not create trade barriers between EU and developing countries but to ensure that these countries can access EU markets on a fair basis and could continue to improve, where necessary, the sustainability of their raw material production.

- **How can the EU best improve security of energy supply internally by ensuring the full and effective functioning of the internal energy market (e.g. through the development of necessary interconnections), and externally by diversifying energy supply routes?**

The support for renewable fuels is creating diversification and thus security of supply. To foster investment, innovation and competition on a level playing field in the renewable fuels for transport sector, a genuine single market needs to be established in the EU.

4.5. Capacity and distributional aspects

- **Are new financing instruments or arrangements required to support the new 2030 framework?**

No. What is needed, is a clear long-term regulatory framework that creates a genuine European single market for energy, and in particular for biofuels.