



INPUT PAPER I

Recognizing the position of biofuels within the Renewable Energy Directive II (REDII)

KEY RECOMMENDATIONS

AMBITION IN RENEWABLES

The increased 2030 targets for renewables in relation to 2020 (total energy and energy for transport, increasing respectively from 20% to 32% and from 10% to 14%) are welcome since renewables have an important role to play in the energy decarbonisation and transition. However, they will probably need to be increased to meet the targets set by the Paris Agreement in 2015.

INCREASING ROLE FOR BIOFUELS

Renewable fuels and especially biofuels are key to help reducing the carbon footprint in transport segments that will continue to rely on internal combustion engines, and are complementary to new mobility modes that are expected to make a significant market impact. An integrated bio-based technology development strategy (and exploiting synergies in combining biomass - BTx and electricity/power - PTx based technologies) can help to stay on track to reach targets in time.

AN EU-WIDE DETERMINATION

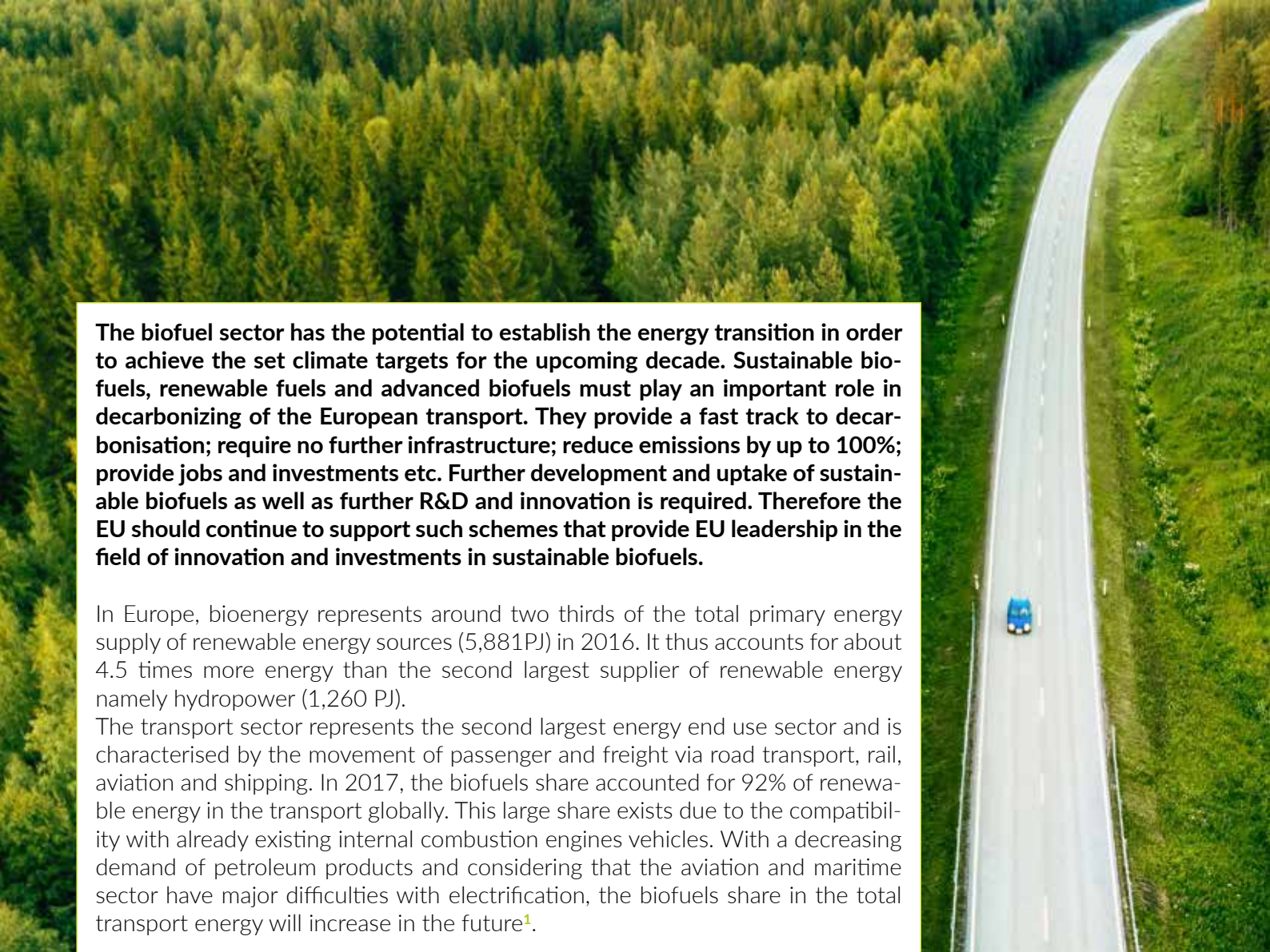
The EU should encourage Member States (MS) to take an overall harmonized approach and to strive for the highest share possible (within the 7% limit) of sustainable conventional biofuels. There will still be a certain flexibility for each MS, concerning to which extent different biofuels will be used to reach this target. In addition, the EU should be encouraged to refrain from using the option to decrease the 14% target, (if conventional biofuels share is below 7%). All efforts are needed to reduce emissions in line with the Paris Agreement!

STRONG R&I STRATEGY FOR ADVANCED BIOFUELS

To reach the deployment of advanced biofuels and other renewable fuels, an integrated approach of strong policy measures, research, innovation and improved financing solutions is necessary. The future focus should not only consider e-mobility and electricity for the transport sector. The combustion engine will be part of the energy transition and therefore sustainable biofuels as well.

A ROBUST SUSTAINABILITY IS MANDATORY

In addition, strong sustainability criteria for biofuels and their feedstocks are essential, and R&D efforts are also needed to properly assess the sustainability of biofuels (which includes the low-ILUC concept development). With regard to sector coupling, well-to-wheel (WTW) approaches should be considered when assessing GHG emission reduction, e.g. REDII for renewable fuels linked to CO₂ fuel regulations for vehicles.



The biofuel sector has the potential to establish the energy transition in order to achieve the set climate targets for the upcoming decade. Sustainable biofuels, renewable fuels and advanced biofuels must play an important role in decarbonizing of the European transport. They provide a fast track to decarbonisation; require no further infrastructure; reduce emissions by up to 100%; provide jobs and investments etc. Further development and uptake of sustainable biofuels as well as further R&D and innovation is required. Therefore the EU should continue to support such schemes that provide EU leadership in the field of innovation and investments in sustainable biofuels.

In Europe, bioenergy represents around two thirds of the total primary energy supply of renewable energy sources (5,881PJ) in 2016. It thus accounts for about 4.5 times more energy than the second largest supplier of renewable energy namely hydropower (1,260 PJ).

The transport sector represents the second largest energy end use sector and is characterised by the movement of passenger and freight via road transport, rail, aviation and shipping. In 2017, the biofuels share accounted for 92% of renewable energy in the transport globally. This large share exists due to the compatibility with already existing internal combustion engines vehicles. With a decreasing demand of petroleum products and considering that the aviation and maritime sector have major difficulties with electrification, the biofuels share in the total transport energy will increase in the future¹.

The Renewable Energy Directive (RED) and the Fuel Quality Directive have been the key pieces of EU legislation guiding the development of the biofuels market since 2009, complemented by the ILUC-directive from 2015. In November 2016 the European Commission made its proposal for the recast of the RED for the period 2020 – 2030. This has been discussed heavily until June 2018, when a political agreement between Commission, Council and Parliament was achieved. The new REDII was finally approved on 11 December 2018.

ETIP Bioenergy produced a position paper on the revision of the Renewable Energy Directive in October 2017².

¹ International Energy Agency . (2018). Renewables 2018 - Analysis and Forecasts to 2023

² http://etipbioenergy.eu/images/ETIP_Bioenergy_Position_paper_on_RED_II.pdf, accessed 18 Jan 2019

Key provisions of the Renewable Energy Directive II (RED II) 2018/2001 of 11 Dec 2018

- Confirmation of the EU target to reduce GHG emission by 40% until 2030 compared to 1990
- 32% target for renewable energy until 2030 in relation to total final energy consumption; review and possible upward revision in 2023
- Including also biomass sustainability/GHG requirements for heat/electricity installations above 20 MW rated thermal input
- 14% target for renewables in the transport sector by 2030 review and possible upward revision in 2023
- High iLuc risk biofuels limited to 2019 consumption level and phase out until 2030. Definition of low and high iLuc risk feedstocks/biofuels by 1 Feb 2019, revision in 2023
- 7% cap for conventional biofuels or 2020 consumption plus maximum of 1%. Member States can reduce the cap by 7% maximum.
- Mandate for the advanced biofuels will be set at 0.2% in 2022, which will rise by 2030 up to 3.5%.With double counting effectively 0.1% and 1.75%, respectively. Other multipliers that will be used: 1.2 for aviation, 1.5 for rail and 4.0 for electricity in EV's.
- Member States allowed to transpose the targets differently into national regulations, which means it is a flexible implementation
- New and adjusted sustainability and greenhouse gas emissions saving criteria for biofuels, and bio-liquids and biomass fuels.

The REDII provides the direction for the next decade and needs to be implemented in the Member States. As ETIP Bioenergy it is to be recommended that this implementation takes place as swiftly as possible. The increasing targets for renewables (total energy and energy for transport, respectively from 20% (2020) to 32% (2030) and from 10% to 14%) that the Directive sets up go in the right direction since renewables have an important role to play in the energy decarbonisation and transition.

The green box about the REDII below presents all new binding targets that have to be transposed into national legislation by Member States (MS) until 30 June 2021. Consequently, each MS has the flexibility to create its own suitable legislation in order to achieve these targets. For ETIP Bioenergy, a support for this implementation phase of the REDII is one major goal.

This position paper of ETIP Bioenergy focuses on transport, as it is one key sector to reduce EU GHG emissions substantially³. Due to the initial additional costs for new installations, advanced biofuels and renewable fuels need dedicated promotion during the market introduction phase.

THE PARIS AGREEMENT IS MORE AMBITIOUS THAN THE REDII TARGETS

1. The Paris Agreement sets very ambitious targets such as keeping the increasing global average temperature below 2°C above pre-industrial levels and even to increase the efforts to limit the temperature increase to 1.5°C above pre-industrial levels. Furthermore, the food production system should not be endangered, which means that the world/we are expected to increase the ability to adapt to the adverse impacts of climate change

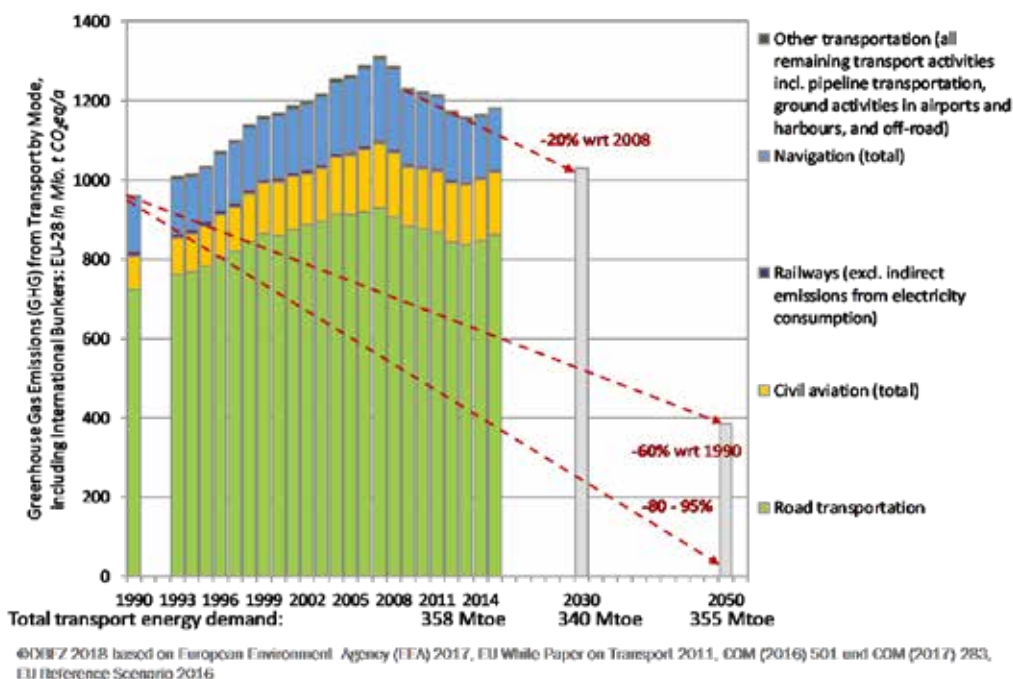



Figure 1: Representing the increased GHG emissions from Transport by Mode over the time

³ Concerning the upcoming-delegated acts related and other aspects to the REDII, the ETIP Bioenergy will take position in forthcoming separate papers. ETIP will also start working on exploiting synergies in combining biomass (BTx) and electricity/power (PTx) based technologies in context of SynBioPTx (e.g. by using bio-CO₂, using PT-Hydrogen for product synthesis and fuel refining).



and foster climate resilience as well as low GHG emissions development. The Paris Agreement also anticipates making finance flows consistent with a pathway in order to lower the GHG emissions and climate resilient development.

A sustainable energy mix plays a key role to drastically reduce the GHG emissions in the EU and worldwide. The EU transport sector has shown stable or even increasing GHG emissions over time (as to be seen in figure 1). The future EU policy and national legislation needs to be supportive in order to push the transport sector in the right direction of lower GHG emissions. **Still there exists a big gap between the targets set within the Paris Agreement, the REDII provisions and the national pledges.**

REDII - THE IMPLEMENTATION WILL MAKE THE DIFFERENCE

Sustainable biofuels are already available today on a large scale. Therefore, it is important to make sure that existing, technologically mature sustainable conventional biofuels can still be used, while further developing capacities for advanced biofuels and other renewable fuels.

Sustainable biofuels are essential to help reducing the carbon footprint in transport now, they complement new mobility modes and they will adapt over time focusing on the transport modalities that continue to rely mainly on liquid fuels.

Alternatives such as battery electric vehicles and renewable fuels of non-biological origin (PtX) will require large amounts of renewable electricity and time to achieve significant market shares. Large contributions of biofuels will be needed as much as other low carbon alternatives. **Looking at the Paris Agreement, the specific 14% RES target set in the REDII for the transport sector is positive, but by far not enough. It is vital that the 14% target is (at least) met, on time, and not watered down by multiple counting.** Consequently, sustainable conventional biofuels are needed preferably at 7% level. The focus should be put on continued improvement and development of these and their sustainability and not on banning existing biofuels. Further, it is important to count only actual biofuels volumes and to limit multiple counting to the extent possible. Double counting of advanced biofuels are essential in the first phase of the Directive to favour advanced biofuels deployment, however on the long term double counting will undermine the targets and leads to virtual renewable energy amounts. True GHG savings can only be achieved through the physical deployment of renewable fuels. Unbalanced multiple counting of renewable electricity (x4 for road transport) leads to virtual renewable energy amounts.

HARMONIZATION OF REDII IMPLEMENTATION NEEDED

It is important to take into account that several national energy and transport policies are being developed for the time-horizon 2030 – in line with all relevant EU transport, climate and energy legislation. These policies need to be harmonised where possible to avoid fragmentation and ensure reliable inter-connection for transport (and fuel distribution). This will be a key issue for the national implementation of REDII.

The flexibility allowed by the new Directive could represent a risk: the Directive will introduce the possibility for a Member State (MS) to reduce the cap

for crop-based biofuels in its national regulations. It also states that the European Commission may allow a MS to increase the share of biofuels from waste described in Annex IX B of REDII (used cooking oil, animal fats) if it proves its availability. Therefore, **there is a risk that the transposition of the Directive will result in a patchwork of national regulations for renewable energy and fuel markets.** MS should be encouraged to strive for as high a share as possible (within the 7% limit) of sustainable conventional biofuels and not to use the option to decrease the 14% target (which they may when food/feed based biofuels lower than 7%). Otherwise a fragmented EU fuel market with various fuel blends will occur. Such a flexible implementation may thus represent a major drawback for downstream industries and impacts on e.g. fuel retailing, engine calibration, etc. National regulators should coordinate when transposing the REDII into national laws. It is expected that within each MS different sustainable biofuels will be implemented due to the different requirements and conditions in each country. It is crucial that this should only concern to which extent each implemented biofuel will be used in order to reach the set REDII targets. Consequently, each MS keeps a certain flexibility and to certain extent different markets for biofuels will develop. However, the overall goal should be to reach a harmonized implementation of the REDII targets to create a united EU biofuel market.


In order to contribute to the harmonization, the European Commission can fund research, which identifies harmonized good practice framework setups and supports MS to choose from different implementation options. Fragmented national regulations may become a barrier for biofuels to contribute sufficiently to the Paris Climate Agreement. For that reason, it is recommended that the European Commission establishes an observatory in order to have control of the harmonized implementation of the REDII. The ETIP Bioenergy would be happy to contribute on this.

ACCOMPANYING MEASURES FOR REDII REQUIRED - STRATEGIC BIO-BASED TECHNOLOGY DEVELOPMENT POLICY

In addition to the mandatory quota for advanced biofuels, which is essential for creating stable framework conditions, the widespread use of advanced biofuels should be supported by a series of accompanying measures, adapted to the national conditions.

For the short-term in all subsectors and for the long-term in focal areas like aviation, marine transport and long-distance freight transport, biofuels remain an important element in transport decarbonisation. National policy strategies aiming at compliance with the REDII obligations should also consider this long-term development. Even though the 2030 obligation for advanced biofuels is relatively modest (3.5% with double counting), the corresponding technologies will be essential for the developments beyond 2030 and therefore deserve to be part of a strategic technology development policy. This technology development should be part of an integrated bio-based technology strategy, in which bio-refining and biomass applications for chemicals also play a part, as well as co-generation of heat and power. As all bio-based options rely on sufficient availability of sustainable biomass, **a complementary strategy to improve the mobilisation of biomass and safeguard its sustainability** remains pivotal.





While the corresponding chains and technologies are still in an infancy stage, renewable fuels from non-biological origin deserve attention as well, as they can also contribute to stabilising electricity systems with high shares of intermittent power generation (wind and solar). Moreover, exploiting synergies in combining biomass (BTx) and electricity/power (PTx) based technologies in context of Syn-BioPTx (e.g. by using bio-CO₂, using PT-hydrogen for product synthesis and fuel refining) will help developing integrated technology concepts.

R&D efforts are truly needed to properly assess the sustainability of conventional biofuels and renewable fuels (which includes the low-ILUC concept development), as the perceived lack of sustainability for some conventional biofuels has been the angle of attack for opponents. Sustainability related tools and data of high quality should be a priority for public R&D funding at EU and national level⁴.

IMPORTANCE OF EXPLOITING EU'S HUGE SUSTAINABLE FEEDSTOCK POTENTIAL FOR BIOFUELS AND OF SUPPORTING FOR NEW SUPPLY CHAINS AS THE BASIS FOR COST-EFFICIENT RAW MATERIAL SUPPLY

In the EU only a small part of the available raw materials is currently used. There are sufficient sustainable biomass feedstocks available to strongly increase the current amounts of biofuel production (although they cannot by themselves provide a sustainable transport sector). Biofuels (both so called conventional and advanced) give – with few exceptions – substantially lower GHG emissions than fossil fuels and their performance is continuously improving thanks to technological development. To provide the amounts of biofuels needed, different technology pathways will be needed, depending on feedstock availability, regional conditions, and the requirements of different transportation sub-sectors and vehicle markets.

R&D should continue or even accelerate to make sure all potential raw materials (in nature, beyond the lists of Annex IX, but also where they are grown and cropped/collected e.g. using marginal lands) can be made available for advanced biofuels. In addition, strong sustainability criteria have to be made available to properly assess the acceptability of the innovative pathways.

NO RESTRICTION IN FEEDSTOCKS FOR ADVANCED BIOFUELS

Contrary to conventional biofuels that rely on global, commodity raw materials (thus largely available in volume), advanced biofuels rely on wastes, residues and lignocellulosic biomass, which in essence are more of a local nature and (for wastes and residues) more limited in volume. It is thus important to ensure that all potential raw materials can be eligible for the production of regulated advanced biofuels. This is not the approach in REDII. REDII is limiting eligible feedstocks by means of a fixed list (Annex IX A and B). The option to broaden this list should be followed on closely, based on sound sustainability assessments. Furthermore, in order to support truly advanced biofuels, the list in Annex IX part A should be kept as it is in 2019. The delegated act scheduled for June 2019 to potentially add additional feedstocks is too early. The ink has hardly dried under the REDII agreement that discussions restarted on the feedstock list.

⁴ Further position papers of the ETIP Bioenergy can be found here: <http://etipbioenergy.eu/about-ebtp/the-role-of-etip-bioenergy/ebtp-discussion-papers>



PROMOTION OF RESEARCH, DEVELOPMENT AND COMMERCIALIZATION

An adequate R&I policy is needed, which supports clear and ambitious targets, enables policy harmonization backed by scientific evidence, and takes into consideration the time frame given by the Paris Climate Agreement. This policy also needs to help finding sustainable solutions to enlarge the resource base needed to provide sufficient volumes and a framework for concerted R&I efforts, including workable financing solutions.

New raw materials demand new technologies. Most processes to manufacture advanced biofuels look back on a very recent history and are still not completely mature to fulfil the 2030 objectives of REDII in terms of volume. Even if the first production facilities are already running successfully, further process improvement cycles will be necessary to improve yields and achieve cost reductions. At the same time, research and development will continue to be needed to drive new technology developments. For this reason, public funding will have to support these activities in order to strengthen the role of Europe as a key region for research and development.

Consequently, R&D&D should be accelerated and prioritized to ensure that advanced biofuels can be used at industrial level within the tight time constraints (i.e. before 2030). The SET-Plan Action 8 “Renewable Fuels and Bioenergy” Implementation Plan provides an excellent starting point.

It is important to note that the deployment of biofuels can only be pursued if the research within the different areas and aspects of biofuels is linked and collaborated actions are implemented. Technology and market development need to go hand in hand. Future research funding should consider the global benefit offered by biofuels, but also local resources, environments and infrastructure as well as a harmonized approach.

OFFER HIGHER BLENDS AT THE PUMP

Achieving higher renewable fuel shares in transport will be difficult with current technical fuel standards. Current fuel standards limit the addition of ethanol to gasoline (10%, E10) and biodiesel to diesel (7%, B7). To take the example of ethanol, in Germany, the share of E10 in the gasoline market is just over 12%. France, Finland and Belgium are significantly further, with market shares ranging from just over 40% to over 80%. E10 should become the standard across Europe. Highly oxygenated gasoline (mid-blend oxygenate) could be introduced in the near future. Other examples are diesel fuels available at public fuel stations (e.g. blend of several diesel fuels according to EN 590 with limits due to fuel density, example diesel R33 with a mixture of biodiesel/FAME and HVO) and the example of biomethane which is currently the only fuel that can be blended up to 100% to CNG.

There is need for investments in replication via grants or loan guarantees, using existing public funding and financing tools (Structural Funds, EFSI, EIB, etc.) to leverage and de-risk private investments.

The key priority is to incentivize the construction of new commercial-scale plants based on technology developed and demonstrated in the region. This will support the fast deployment of commercially demonstrated and optimized technologies into first-of-its-kind plants, with larger plants being built with time resulting in greater economies of scale and lower production costs. The



demonstration in first-of-its-kind plants is also required to leverage sufficient financing for broad replication of technology. The grants and loans would greatly assist the acceleration in the market deployment of innovative technologies by lowering the cost of capital. Most importantly, it will allow the technology developers to continue investment in further improvements and development of the technology that it has strived to commercialize for over a decade.

SECTOR COUPLING

When assessing CO₂ emission of a vehicle, it is of paramount importance to take into consideration the GHG reduction of the biofuels used in the tank, in order to incentivize car manufacturers to commercialize cars and light duty vehicles capable to use high shares of biofuels. The current regulation concerning emission performance standards for new passenger cars and for new light commercial vehicles is completely missing the benefit of biofuels, and is only favouring one type of technology (i.e. electrical vehicle) while all solutions are required to reach the Paris agreement targets.

PENALTIES FOR NON-COMPLIANCE / INCENTIVES TO ENCOURAGE COMPLIANCE

Clear government mandates with precise indications of penalties/incentives are of paramount importance to provide a stable basis to financially evaluate a project, which is a necessity to make the project bankable. For instance in Finland a law was recently adopted to gradually increase biofuel targets to 30% in 2030. Furthermore, the law sets a world-leading advanced biofuels target of 10% in 2030 with discouraging penalties in case of non-compliance as a way to ensure target fulfilment. Italy has introduced an incentive system for biomethane and advanced biofuels through the emission, for twenty years, of certificates, providing long-term clarity and stability for investors and Germany introduced a GHG quota with CO₂ prices (within this quota) that shows positive effects. It is important to couple the sectors with each other and thereby considering the WTW approaches when assessing the GHG reductions (e.g. REDII for renewable fuels linked to CO₂ fuel regulations for vehicles).

BACKGROUND



The European Technology and Innovation Platform Bioenergy (ETIP Bioenergy) aims to contribute to the development of cost-competitive, innovative world-class bioenergy and biofuel value chains, to the creation and strengthening of a healthy European bioenergy industry and to accelerate the sustainable deployment of bioenergy in the European Union, through a process of guidance, prioritisation and promotion of research, technology development and demonstration.

ANNEX

Key recommendation points of the ETIP Bioenergy position on the European Commission proposal for a revised REDII from October 2017

1. ETIP Bioenergy believes that sustainable bioenergy has a key role to play to reduce GHG emissions in the EU energy mix, as required by the Paris Climate Agreement, and to decrease our fossil fuel dependence. The promotion of bioenergy in the EU should be based on sound sustainability criteria, including a high GHG emission reduction performance. As for the use of biofuels in transport, attention should be given to the need for high quality biofuels so that they can be successfully introduced and gain high market shares.
2. ETIP Bioenergy welcomes the new binding obligation for low emission and renewable fuels including a separate share for certain biofuels (Annex IX, part A). It, however,
 - Questions the relatively low level of ambition for renewables and low emission fuels (6.8% by 2030). This objective seems incompatible with the need to strongly decarbonise the transport sector up to 2050 and should be set significantly higher;
 - Supports that a specific minimum sub-target for advanced biofuels produced from Annex IX Part A feedstocks (distinct from Annex IX Part B) should be defined. However, as Part A also contains feedstocks that can be converted by conventional technologies into biofuels with application potential, we are concerned that this waters down the incentive for advanced technologies. Furthermore, specific measures will be required to ensure a sufficiently stable market for a sustainable deployment of advanced biofuels based on lignocellulosic feedstocks, taking into consideration their higher market and technology risks. Moreover, EU biofuel policy U-turns in the past decade have effectively stalled investments and should not be repeated;
 - Is concerned by the proposed gradual phase out of crop-based biofuels: it does not take into account that many crops-based biofuels have good actual GHG performances, including low ILUC. We call for more refined regulations for crop based biofuels, with specific incentives and disincentives: to allow for further development of sustainable crop-based biofuels with low risk and improved performance, and to eliminate unsustainable practices. There is significant existing capacity of EU crop-based biofuels which can contribute to 2030 climate goals without bringing the adverse side effects that led to the phase-out policy, and this volume can be further increased with the appropriate incentives in place.
3. The RED II also covers synthetic fuels from renewable hydrogen and fossil CO₂. While in principle, this route could provide new opportunities, there is a clear risk of 'CO₂ leakage' effects and improper administration of emissions. It is pivotal that a scientifically sound method for estimating GHG merits is developed and agreed upon. While the hydrogen could be produced by renewable electricity, when mixed with CO₂ such fuels should not be termed 'renewable' unless the carbon content is of non-fossil origin (e.g. from biomass or air capture), in which case they may be treated equally with biofuels. For all such fuels, the same minimum requirements for CO₂ reduction should apply (as compared with conventional fossil fuels) as will apply to biofuels.