A clean shift for EU transport fuels?

T&E recommendations for the RED review

November 2021

Summary

The review of the Renewable Energy Directive (RED) is a unique opportunity to accelerate the use of renewable alternative fuels needed for the long-term decarbonisation of transport - renewable electricity, renewable hydrogen and e-fuels - while strengthening the sustainability safeguards for advanced biofuels and phasing-out of crop based biofuels.

The new architecture proposed by the Commission increases the share of renewable fuels in transport, but doesn't provide the changes necessary to maximize the environmental and climate benefits of the transport provisions. Compared to the current RED, the Commission creates new incentives for electricity and renewable fuels of non-biological origin (RFNBO), suggests a new transport target, but doesn't make any meaningful changes to fix the failed biofuels rules.

To maximise the climate benefits of the RED review for transport, we recommend MEPs and EU governments to adopt these recommendations:

- Support the proposed credit mechanism to reward renewable electricity, expand its scope to private charging and incentivise EV charging with additional renewable electricity.
- Support an ambitious but lower RFNBO target, reduced from the proposed 2.6% to 1.6% to match the 2030 demand for RFNBOs in aviation and shipping. Include a dedicated sub-target to supply RFNBOs to shipping.
- Phase-out high ILUC risk biofuels by 2022 at the latest, including palm, soy and their co-products.
- Remove all crop biofuels, including intermediate crops, from the target by 2030 at the latest.
- Exclude unsustainable feedstocks from the Annex IX list of advanced biofuels and maintain the previous target level for these fuels. Continue limiting the contribution of Annex IX part B.
- Strengthen safeguards for advanced fuel production - especially advanced biofuels and RFNBOs - to avoid negative impacts on land, water use and local communities.
- Lower the greenhouse gas intensity reduction target, to maximize climate benefits and to avoid driving the use of unsustainable fuels.
- Ensure that targets in ReFuelEU (Aviation) and FuelEU (Maritime) are harmonised with the RED targets to avoid driving unsustainable volumes of alternative fuels.
- Ensure that the RED sustainability criteria and limits on certain fuels also apply to transport fuels under the new proposal for an Emissions Trading System (ETS2).

1. Transport fuels in the RED - a turbulent history

The Renewable Energy Directive (RED) is the main EU legislation that regulates the use of renewable fuels in Europe. From the beginning, the RED started on the wrong basis. It included a high target for renewables in transport - 10% in 2020 for each country - without the right sustainability safeguards in place. As a result the target drove mainly the use of unsustainable biofuels such as biodiesel from palm oil or rapeseed. Because of sustainability concerns, a first revision of the biofuels rules took place well before 2020 - between 2012 and 2015. Then, as part of the so-called "Clean Energy Package" in 2016, the Commission published a proposal for the review of the RED for the period 2021-2030 and the EU legislators agreed on the final RED compromise in June 2018. Unlike the REDI, the REDII creates a bigger space for advanced fuels and sets a direction to move away from crop-based biofuels - but not fast enough.

10 years of failed fuels policies - Looking back, the last 10 years of EU fuels policies haven't been a success. The thirst for EU biofuels required around 8.4 million hectares of land for all crop based biofuels, to grow rapeseed, palm, soy, and sunflower crops - twice the size of the Netherlands. Since 2011, EU drivers have burned around 39 Mt of palm and soy biodiesel together, which emitted around 381 Mt CO2eq - more than what would have been emitted by using fossil diesel instead.[1] Because of the heavy reliance on crop biofuels, the carbon intensity of EU fuels hasn't decreased substantially since 2010. The European Environmental Agency (EEA) reports that in 2019, the average GHG intensity of transport fuels was only 2.6 % lower than in 2010, when taking into account ILUC impacts (and 4.3% without ILUC)[2]. It concludes that "*as of 2019, the EU was not on track to meet its 2020 target.".*

The main changes proposed in the new review

Compared to the 2018 RED, the Commission is not proposing a major shift in its fuels policy in the new review. It creates new incentives for electricity and renewable fuels of non-biologic origin (RFNBOs), suggests a new transport target, but doesn't make any meaningful changes to fix the biofuels rules:

- The proposal supports renewable electricity through a new dedicated system and rewards the use of renewable hydrogen & e-fuels through a new dedicated sub-target.
- The limit on food & feed based biofuels remains the same and the Commission retained a key feature for these fuels to be optional for member states. Palm oil is still subject to a phase-out date by 2030, despite eight countries already applying earlier phase-out dates.[3]
- On advanced biofuels, the Commission only increases the target for these fuels, without improving the sustainability rules.
- The proposal changes the target, previously a 14% energy target, to a 13% target reduction on carbon intensity.

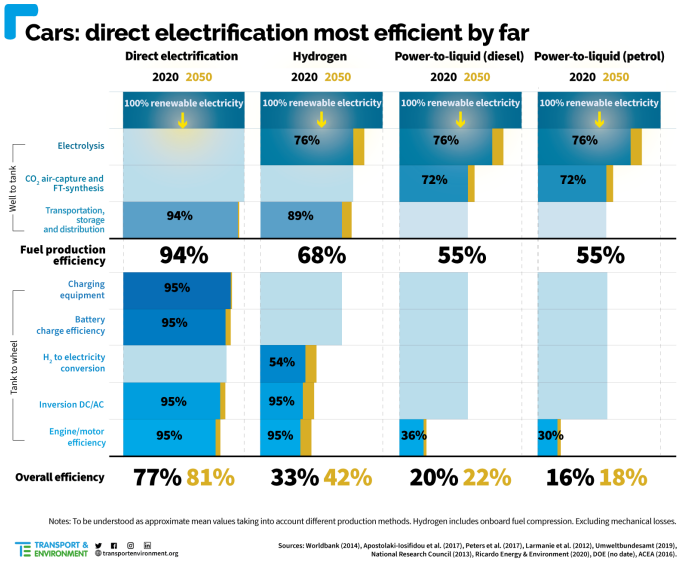
[1] Including ILUC emissions from the GLOBIOM model
[2] The EEA factors in ILUC factors from the RED , not the latest values from the Globiom model:
[3] France, Denmark, Austria in 2021; Netherlands, Portugal, Sweden in 2022; Germany and Belgium in 2023.

2. Renewable electricity and RFNBOs

2.1. A new mechanism to reward renewable electricity

In view of the recent surge in electromobility, not allowing fuel suppliers to use renewable electricity as a renewable transport fuel to meet their obligations is no longer an option. T&E welcomes the proposal by the Commission to oblige all EU27 Member States to move away from biofuel-blending mandates towards a mechanism for trading credits for different types of renewable transport fuels. Such a credit mechanism establishes a proper renewable fuels market that offers a level-playing field for all advanced fuels in all EU member states. How? A credit mechanism will allow different fuel suppliers to trade renewable fuel credits - biofuels, renewable electricity, green hydrogen and various e-fuels - and will ensure that they can meet their RED obligation in the most cost-efficient way, with more options than only biofuels blending. Crediting renewable electricity as a transport fuel will provide a boost to the roll-out of public charging infrastructure for electric vehicles and electromobility more generally. This system is already fully in place in the Netherlands and Germany, and from 2022 in France.

The 2018 review of the Renewable Energy Directive followed the overarching 'efficiency first' principle, by recognizing the higher efficiency of a direct use of renewable electricity - compared to its indirect use as green hydrogen or liquid e-fuels - with **a multiplier** of 4 (Article 27.2 (b)). This 4x multiplier accurately reflects the real world efficiency of using renewable electricity directly vs. indirectly in green hydrogen or liquid e-fuels.



As an alternative to the energy-based multiplier, the Commission now proposes to reward the greenhouse gas savings from renewable electricity on the basis of a higher fossil fuel comparator than the

one used for liquid transport fuels.[4] In practice, this system acts as an implicit multiplier, having a similar effect as the 4x multiplier.[5] T&E supports the implicit multiplier provided by the higher fossil fuel comparator for renewable electricity, since it properly rewards the efficiency of renewable electricity. Another added benefit is that GHG savings from directly using renewable electricity in transport will be uniformly rewarded across the EU27, regardless of the local grid electricity mix. As one of the key motivations behind the credit mechanism is to promote electromobility and the business case of public recharging stations in particular, this will help the roll-out of an EU-wide charging network. An important caveat to add: if the switch to a GHG-based target would not be agreed by the EU institutions and Member States are offered a choice between the two - GHG savings or renewable energy - approaches, the use of the 4x multiplier should be grandfathered in the existing energy-based credit mechanisms and become mandatory in those Member States that continue an energy-based approach to fairly reward renewable electricity

The Commission proposal offers a solid basis, but there are two areas of improvement. The proposal only allows the crediting of renewable electricity charged at public recharging stations. However, most charging of EVs happens at home or at the workplace. **Private charging** accounts for around 80% of all electricity charged, possibly even more. Excluding private charging from the scope of the credit mechanism severely limits the potential contribution of renewable electricity towards the targets for renewable transport fuels. Allowing this option is feasible in practice and will provide a major boost to the electrification of fleets of vans, buses and trucks. For example, Germany implemented a major overhaul of its credit mechanism as part of its transposition of the 2018 RED. It not only opened its credit mechanism to operators of public recharging stations, but also found a pragmatic solution to enable private EV drivers to generate credits. It uses a flat rate on the basis of the average amount of electricity consumed by a private car driver (2 MWh/y) and credits the average renewable share of the German grid mix over the last two years. It has allowed third parties to pool these renewable electricity credits charged through non-public recharging stations.

A second change to the proposed system should not restrict renewable electricity to the *"the average share of renewable electricity supplied in the territory of the Member State in the two previous years"*.[6] Given the RED's objective to promote energy from renewable sources, charge point operators, operators of electric fleets and drivers of EVs should be **incentivised to invest in additional, up to 100%**

[4] Instead, the Commission proposes to use the fossil fuel comparator $EC_{F(e)}$ of 183 gr. CO2eq/MJ (Annex V section C.19). This value is based on the carbon savings from using bioliquids used for the production of electricity, whereby renewable electricity replaces a fossil fuel-intensive electricity mix on the grid. The greenhouse gas savings from renewable electricity are based on a weighted average EU fossil power mix (46% coal, 53% gas, 2% oil). More details in Table 1, page 16 of this JRC (2017) publication.

[5] For example, 1 MJ of renewable electricity generates 183 gr of CO2 savings, whereas a biofuel that performs poorly in terms of greenhouse gas savings will generate about 4 times lower savings. For example, 1 MJ of rapeseed biodiesel with typical savings of 52% compared to the 94 gr. CO2eq/MJ fossil fuel comparator will only generate ~ 49 gr. CO2eq/MJ (or ~ 27% of the 183 gr. CO2eq/MJ of 1 MJ of renewable electricity).

[6] Admittedly, the 2018 RED does allow crediting of renewable electricity beyond the grid average, but only "where electricity is obtained from a direct connection to an installation generating renewable electricity". However, installing a wind turbine or solar PV installation next to each charging point is not practically feasible or even desirable from a grid management perspective.

renewable electricity, beyond what is available on the grid. The new RED should task the Commission to develop, by means of a delegated act, a specific additionality framework for electricity supplied to road vehicles to be supplied as 100% renewable.

Apart from crediting more renewable electricity, the proposed new article in the RED on '**system integration of renewable electricity**' will galvanise the enormous potential of EVs as 'batteries on wheels': Grid operators and battery and vehicle manufacturers must enable smart charging and Vehicle-to-Grid.[7]

2.2. Creating the conditions for a robust RFNBO target

2.2.1 The target level and the need for a sub-target for shipping

The Commission has proposed a 2030 target for RFNBOs to meet 2.6% of all transport demand (not only road and rail, but also aviation and shipping). This is a very high target that comes on top of the other target in the RED proposal to replace 50% of industry's current fossil gas-based hydrogen demand with green hydrogen by 2030. Meeting this target will require a massive expansion of additional renewable electricity. Adding up the RFNBOs for industry and transport together, this will require about 500 TWh of renewable electricity generation, equivalent to the current electricity consumption of France or all wind power generated in the EU.[8] The key lesson learnt from 10 years of EU biofuels policy is to refrain from setting high targets, without a clear view on how these fuels will be sustainably produced. The Commission has not yet published its proposals for delegated acts for RFNBOs.[9] Without more clarity about the applicable sustainability framework for RFNBOs, T&E remains sceptical about endorsing such a high target for RFNBOs. Should the Commission introduce adequate & robust sustainability requirements on e.g. additionality, T&E would be more inclined to consider the possibility of a higher RFNBO target.

Already in our response to the Roadmap consultation, T&E stressed that the approach adopted in ReFuelEU (Aviation) and FuelEU (Maritime) should be closely coordinated with the RED targets to avoid driving unsustainable volumes of alternative fuels.[10] T&E regrets that the Commission's impact assessment does not provide details on how the volumes of RFNBOs will be allocated within the transport

[7] For more details see T&E (2019) Batteries on wheels: the role of battery electric cars in the EU power system and beyond

[8] The Commission set in its EU hydrogen strategy a target for 10 million tonnes of renewable hydrogen, or 333 TWh. Assuming a ~ 66% efficiency of the electrolyser, this will require about 500 TWh of additional renewable electricity. The demand for renewable hydrogen will be evenly split between hydrogen demand in industry (both as energy and as feedstock) and transport.

[9] By the end of 2021, the Commission must adopt a greenhouse gas methodology for RFNBOs. A second delegated act must define key terms from the 2018 RED such as additionality, temporal and geographic correlation.

[10] See T&E (2021) https://www.transportenvironment.org/discover/tes-response-roadmap-consultation-inception-impact-assessment-revision-directive-eu/

sector: aviation, shipping, road, rail and also the use of green hydrogen in refining.[11] For T&E, RFNBOs need to be targeted at the aviation and shipping sectors, the transport modes where the feasibility of direct electrification is limited. T&E has always called on the Commission to ensure that the ambition in the proposals for ReFuelEU (Aviation) and FuelEU (Maritime) are closely coordinated and harmonised with the RED targets to avoid driving unsustainable volumes of alternative fuels. But the current 2.6% RFNBO target does not meet that test. The RFNBO volumes implied in that target go beyond what can be realistically absorbed by the aviation and in particular shipping industry. As a result, fuel suppliers will meet their targets by producing RFNBOs for road transport, diverting limited renewable energy resources to a sector which is rapidly moving to direct electrification. Hydrogen demand in road transport will remain negligible, as models of fuel cell trucks will only become available from 2027. The TCO or Total Cost of Ownership is an important factor in the decision-making of freight companies and Battery electric trucks have a competitive advantage, compared to fuel cell trucks.[12]

As an alternative, T&E's projections for 2030 suggest an ambitious, but lower RFNBO target at 1.6%. This target level promotes an ambitious supply of e-fuels in the aviation and shipping industry by 2030, yet also takes into account the challenges involved in deploying the additional renewable electricity capacity needed. This target level adds up the T&E ambitions for RFNBOs under the ReFuelEU and FuelEU initiatives:

1. ReFuelEU (Aviation): 44PJ of e-kerosene, equivalent to a 2% e-kerosene mandate for aviation fuel suppliers without demand management in 2030. The Commission proposes 0.7%.
2. FuelEU (Maritime): 85PJ of e-fuels, equivalent to e-fuels supplying 6% of shipping's energy demand in 2030, based on the limited MRV scope proposed for FuelEU (Maritime).[13] The Commission proposal does not include a dedicated tool to promote the supply and demand of shipping e-fuels.

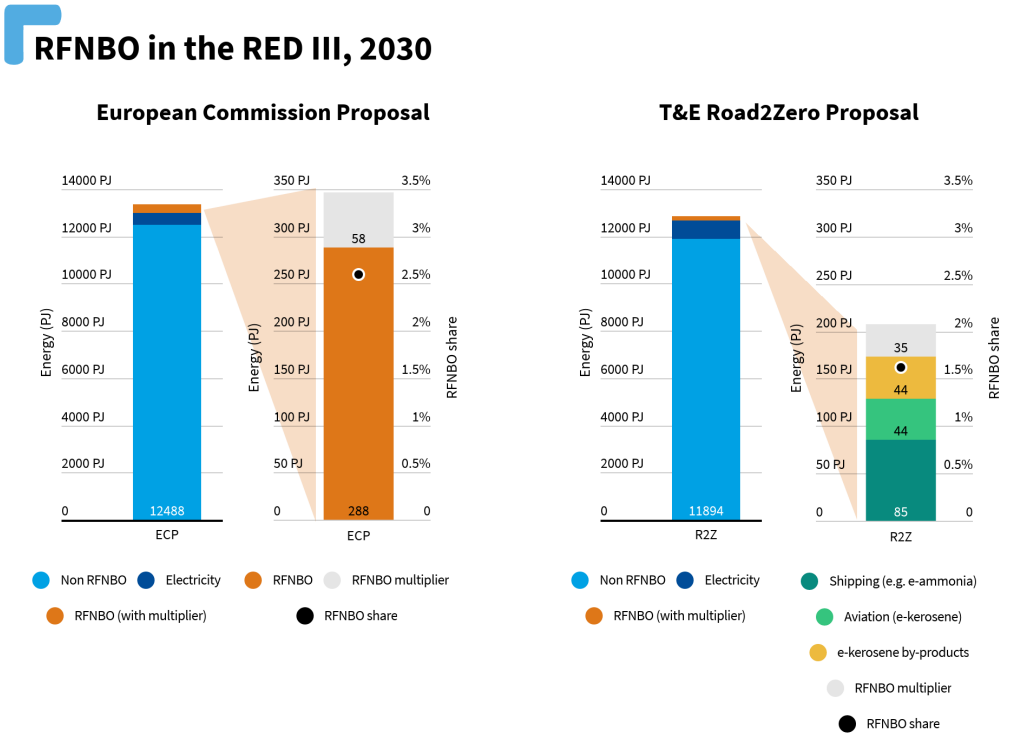
As the below graph makes clear, the T&E proposal sets the target at a level that avoids incentivising any use of RFNBOs in road transport. The 1.6% RFNBO target takes into account the 1.2 multiplier to all RFNBOs supplied under the RED's RFNBO mandate (including efuel by-products). Moreover, the lower target also avoids incentivising a substantial portion of RFNBOs and green hydrogen to be used in refining

[11] The use of green hydrogen/RFNBOs as "intermediate products for the production of conventional fuels" counts towards the RED targets for the transport sector, and is not included in the RED targets for the industry sector. Hydrogen is used for hydrocracking of crude oil.

[12] For more details, see T&E (2019) Batteries on wheels: the role of battery electric cars in the EU power system and beyond

[13] The scope of the proposed FuelEU Maritime regulation does not cover all shipping demand, but covers the MRV Regulation (2015/757)'s semi-full scope, i.e. all demand from intra-EU shipping and ports as well as the demand of half of inbound and half of outbound voyages.
For more details, see T&E (2021) 7% green fuels by 2030 would decarbonise EU shipping mid-century – study

of fossil fuels.[14] As an added benefit, the lower target also relieves some of the pressure on deploying additional renewables to meet the overall RED target.



Under the Commission's proposal for a regulation under ReFuelEU (Aviation), there is a mandate on fuel suppliers to meet 0.7% of aviation fuel demand with e-kerosene. Under the FuelEU (Maritime) proposal, there is no such requirement. Instead, the Commission opted for a low-carbon (i.e. not only renewable) energy standard for ship operators. This means that not only RFNBOs can be used to meet the emission reduction targets, but also lower-carbon fossil fuels, such as LNG.[15] Given that low carbon fuels such as fossil LNG and biofuels are cheaper than e-fuels from the shipowners' perspective, there are no market incentives for suppliers to produce marine e-fuels. In theory, the 1.2 multiplier could provide an incentive for fuel suppliers towards producing e-fuels for planes (e-kerosene) and ships (e-ammonia, liquefied green hydrogen, e-methanol, etc.), but there is no certainty about the effect of the multiplier. To ensure that e-fuels will be available for shipping, **the RED must include a specific RFNBO subtarget of 0.8% (which takes into account the 1.2 multiplier) for fuels supplied to the maritime sector in EU countries with access to sea, in line with the suggested share of 85 PJ in T&E's Road2Zero proposal.**

[14] The RED is not a framework that should aim at reducing emissions of fossil fuel production, rather at ensuring a clear shift to renewable transport fuels. Moreover, grey hydrogen receives strong public support by means of free allocation under the EU Emissions Trading System, valued at € 18 billion in free allowances distributed to steam methane reformers between now and 2030. For more details, see Sandbag: https://sandbag.be/index.php/2021/06/25/untangling-the-knots/

[15] For T&E's response to FuelEU Maritime, see T&E (2021) What the EU climate plan means for shipping fuel

There are three main reasons for having a dedicated shipping target under RED III:

1. Switching to expensive and technically challenging electro-fuels requires policy certainty both on the supply and demand side. The proposed FuelEU Maritime regulation will only drive *demand* for alternative fuels in shipping. An RFNBO subtarget for shipping in the RED will ensure that the ship operators wanting to comply with their obligations under FuelEU (Maritime) with e-fuels can be assured that fuel suppliers will *supply* a minimum level of RFNBOs
2. Introducing the RFNBO subtarget for shipping will ensure that the supply of RFNBOs by fuel suppliers to bunkering infrastructure in EU ports will match the demand for alternative fuels from ships calling in EU ports, mutually reinforcing each other.
3. The RFNBO subtarget for shipping addresses the potential competition for RFNBOs between the road and shipping sectors. The road fuels market is much bigger than the maritime market (i.e. ~260Mt vs. 33 Mt) and gasoline and diesel for road transport fuels are more expensive (largely due to high fuel taxes). Hence, blending a low level of expensive RFNBOs in the larger pool of higher-priced road fuels could be an interesting compliance option for fuel suppliers instead of supplying e-fuels to shipping. This would go against the 'energy efficiency first'-principle.

2.2.2 Sustainability

Setting high targets for renewable fuels without a detailed impact assessment of how renewable fuels will be sourced is a recipe for disaster. This is the lesson learnt from 10 years of failed EU policies to promote the use of crop-based biofuels in road transport. Without clear sustainability criteria for RFNBOs, endorsing a very high target carries major risks. The Commission has set its 2.6% target for RFNBO, without detailing its proposals on how the carbon footprint of these RFNBOs will be determined. The current RED requires two delegated acts on RFNBOs to be adopted by the end of 2021, but there are still no proposals on the table. Additionality is key to avoid diverting renewables from the grid, which would result in more fossil fuel-fired power generation to fill the gap.[16]

The sustainability concerns about RFNBOs go beyond the carbon footprint alone and also cover other environmental and social dimensions:

- The synthetic hydrocarbon category under the RFNBO heading (e.g. e-kerosene) should not only rely on fossil sources of carbon, but also start using **Direct Air Capture.**[17]
- Producing RFNBOs will also require considerable **land use** (for deploying the wind and solar power needed) and consume **water resources** (in the electrolysis). These impacts and their consequences for local populations must be addressed.
- Industry players with plans to invest in e-fuels have pinned high hopes on RFNBO imports from locations, where these fuels can be produced more cheaply as a result of better solar and wind potential. Where investments in RFNBO production are made outside the EU, we must ensure that investments also **benefit the decarbonisation of the local economy.** A scenario whereby the

[16] For more details, see T&E (2021) How to ensure the sustainability of electrofuels
[17] For more details, see T&E (2021) Why direct air capture holds one of the keys to sustainable aviation

best renewables locations are used for RFNBO production, while the local energy mix continues to rely on fossil fuels must be avoided at all cost.

- To avoid the 'resource curse' often associated with fossil fuel extraction, the local population, and indigenous people in particular, must be fully consulted. It is crucial to ensure the respect of the principle of **free, prior and informed consent** of the local population and ensure that there is full **transparency** about the size of such projects and their local impacts.

3. Biofuels

3.1. Phasing-out palm & soy in 2022 latest, all crops by 2030

Biofuels produced from food and feed commodities make up the majority of the alternative fuels in Europe and are associated with high greenhouse gas (GHG) emissions due to Indirect Land Use Change (ILUC).[18] This land use impact has been officially recognised in the RED framework. Several models have been developed to estimate ILUC emissions and demonstrate that the demand for biofuels leads to significant additional GHG emissions. When adding direct emissions and estimates for indirect impacts, all crop based biodiesel ends up being worse for the climate than fossil diesel. Yet, the EU decided to not take these emissions into account.

3.1.1 Strengthening measures on all crop biofuels

Apart from these land use change impacts, the increased demand for food and feed commodities for biofuels perpetuates an agricultural model based on intensive agriculture, contributing to the alarming decline in biodiversity and intensifying the pressure on land access worldwide, increasing the risk of land grabbing in developing countries, infringing on the rights of local communities and Indigenous Peoples. More generally, biofuel crops are a very inefficient use of our lands. Solar panels can produce a 100times more energy compared to energy crops.[19] Land is also needed for additional carbon sequestration, to reduce atmospheric CO_2 levels. This can happen through reforestation or by letting the land revert to forests or grasslands through natural processes, which could sequester more carbon per hectare than could be saved in emissions by using the same area of land for biofuel production.[20]

Most biofuels are also a waste of money. Recently, prices for vegetable oils increased to an extent that biodiesel has become twice as expensive than fossil diesel. The consumer is being impacted by this price difference only to a small extent, yet, due to the low share of biofuels in fuels sold at the petrol station. Modern technologies (like HVO) that allow for increasing this share to 100% without damage to the cars' engine, would lead to consumers feeling the full impact of these price increases in the food commodities market.

[18] T&E (undated) What the science says
[19] Searchinger et al (2019) Does the world have low-carbon bioenergy potential from the dedicated use of land?
[20] WWF (2017) EU Bioenergy policy

The current policy limits the share of food and feed biofuels based on their 2020 share in a country, with a 1% flexibility and always for a maximum of 7%. However, this limit doesn't cover all crop biofuels. For example, it excludes intermediate crops (crops planted before or after the main crop), creating a major loophole in the limit. According to the ICCT[21], intermediate crops can include winter corn and soybean from Brazil. The production of winter ('safrinha') corn in Brazil reached 77 million tons, representing nearly three quarters of all corn produced in the country's 2020/21 growing season.[22]

Under a carbon intensity target, adding ILUC values derived from the EU commissioned Globiom study[23] would be a useful measure to disqualify the highest emitting crop biofuels. However, accounting for ILUC emissions has always been rejected by EU decision-makers. The current biofuels rules should thus be amended to reflect the following requirements:

- **The limit on crop biofuels should be gradually reduced to 0% in 2030.** To ensure the highest emission savings, crop based biodiesel should be phased-out earlier, in 2025.
- **All crop biofuels should be subject to the limit and progressively phased-out by 2030, including intermediate crops and other crops grown for energy purposes** (not used for food or feed).

3.1.2 Earlier phase-out of palm & soy biodiesel

The REDII sets a phase-out date for "*high ILUC risk biofuels for which a significant expansion onto high carbon stock areas is observed*". Biofuels recognised as such will be frozen and eventually phased out of the target by 2030. The Commission developed a delegated act in 2019[24], with a methodology to identify such feedstocks. Palm oil is so far the only feedstock classified as 'high risk'. There are three issues with the current RED rules that should be tackled:

- **Soy should also be considered 'high risk', together with palm oil.** A study conducted by Cerulogy in 2020 finds that soy meets the criteria to be categorized as high-ILUC risk.[25] As a consequence of the phase out of palm oil biodiesel, Europe's use of soy biodiesel could increase 2 to 4 times by 2030 compared to what we use today, causing deforestation equivalent to an area greater than the size of London.[26]

[21] ICCT (2021) Changes to the Renewable Energy Directive revision and ReFuel EU proposals: Greenhouse gas savings and costs in 2030
[22] Soybean & Corn Advisor (2020) Conab - 2020/21 Brazilian Soy Production up 7.1%, Corn up 2.6%
[23] Ecofys et al (2015) The land use change impact of biofuels consumed in the EU
[24] EU Delegated Regulation (2019/807). https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0807&from=GA
[25] Based on recent evidence, the fraction of soy expansion affecting high carbon stock areas is at 10.5%, which is above the threshold stipulated in the delegated act for categorisation as a high ILUC-risk biofuel. For details see Cerulogy (2020) Soy, land use change and ILUC-risk
[26] T&E (2021) Is soy the new palm oil?

- **The EU should follow the leadership of key member states with earlier phase-out dates.** Eight member states have already adopted rules to end support for palm-based biofuels earlier than 2030 and some also tackle soy in their decisions (Belgium, Denmark, France and The Netherlands). We recommend phasing-out of high ILUC risk biofuels by 2022 at the latest (with palm, soy and their co-products).
- **The exception to the phase-out, the 'low ILUC' category, should be removed**. Some palm oil biofuels can escape from the phase-out if they can qualify as "low-ILUC risk", by meeting several specific criteria. T&E' 2019 report shows why this is a bad idea.[27]

3.2. Strengthening safeguards for advanced biofuels

The RED provides specific incentives for biofuels produced from certain feedstocks, listed in its Annex IX. The part A of the Annex lists feedstocks that are considered 'advanced biofuels', mainly because the technology for these biofuels is not yet really scaled up. Whereas part B includes used cooking oil (UCO) and animal fats category I and II, which are already heavily used for biofuels production.

3.2.1 Sustainability and availability issues related to Annex IX

There are very limited biomass feedstocks that have no other uses and that could be used for biofuels production without any significant impact on existing markets, on the environment and the climate. The Annex IX of the RED includes wastes and residues, but also coproducts and some primary products. There are many issues associated with the listed feedstocks:

- **Many feedstocks listed in Annex IX have existing uses which impacts their availability for energy uses. Based on the principles of the waste hierarchy[28] and cascading use, the use of certain feedstocks for biofuels should not be incentivized by the RED.** For example, Crude Tall Oil (CTO) is a by-product of the pulp & paper industry, already used to produce paints, detergents, etc. Its use for biofuels would lead to these industries being forced to revert to fossil or virgin vegetable oils as feedstocks, consequently leading to higher emissions in these sectors.[29]
- **The EU's biofuels policy has created a new dependence on dubious imports. Advanced & waste/residue based biofuels must preferably be produced from EU sourced feedstocks, but the targets are leading to the opposite.** More than half of the Used Cooking Oil in the European biofuels market travels all the way mainly from China, but also from the US, Malaysia and Indonesia[30]. Rightly so, these countries are increasingly using UCO to decarbonize their own economies.[31]

[27] T&E (2019) High & low ILUC risk biofuels
[28] Zero Waste Europe (2019) https://zerowasteeurope.eu/2019/05/a-zero-waste-hierarchy-for-europe/
[29] ICCT (2017) Potential greenhouse gas savings from a 2030 greenhouse gas reduction target with indirect emissions accounting for the European Union
[30] T&E (2021) Used Cooking oil demand likely to double, and EU can't fully ensure sustainability
[31] Greenea (2021) Which investments will see the light in the biofuels industry? January 6th, 2021

- **Sustainability safeguards are needed to avoid negative biodiversity impacts. Sustainable extraction levels need to be enforced, before incentivizing the use of residues, like straw.** Straw is at least partially needed to increase soil carbon content, and for maintaining soil health. Only a certain proportion could be sustainably removed for other purposes and those should also be used in a material way first, like for animal bedding or paper production.[32]
- **The overall quantities of sustainable feedstocks for advanced biofuels are very limited. The target for advanced biofuels should hence be set at a realistic and sustainable level.** The current RED proposal increases the target for advanced biofuels to 2.2% of energy share and applies it to a broader scope (now incl. aviation and shipping). We recommend keeping the target at 1.75%.

3.2.2 Excluding unsustainable feedstocks from Annex IX part A and limiting Annex IX part B

Because of the issues highlighted above, the Annex IX Part A needs to be amended to ensure that high risk feedstocks are excluded from the list. Some categories are also very broad and should be tightened.

Examples of feedstocks that should be excluded include:

- *Crude tall oil, crude glycerine* because of competing and higher value uses.
- Cellulosic energy crops (under p) and woody energy crops (under q).
- *Palm oil mill effluent, empty palm fruit bunches and bagasse*, because of the risk of import dependence and the need for the countries of origin to decarbonise their own economy.
- For forest biomass, only biomass from wood product manufacturing and post-consumer wood ("secondary woody biomass", excluding forestry residues) should be eligible to count towards renewable energy targets, but only if such materials cannot be turned into durable products ('cascading principle'). This means deleting wastes and residues from forestry, such as bark, branches, pre-commercial thinnings, leaves, needles and tree tops from Annex IX.

Sustainability criteria need to be fit for the new challenges posed by advanced biofuels. This means adding **new binding criteria for removal rates for agricultural residues** to maintain or enhance soil quality and avoid negative environmental impacts. These rates should be science based and specified at national/regional level, together with a strong verification system. Finally, **the RED should enable the adoption of additional sustainability criteria at national level, also for biofuels** (ar. 29).

The contribution of Used Cooking Oil and animal fats from Part B of Annex IX is constrained by the limited availability of these feedstocks. The use of part B feedstocks must be monitored and limited to EU sourced feedstocks, to avoid driving unsustainable practices. There is also limited room for growth within the EU's capacity for UCO collection and related biofuels production. EU countries should avoid going

[32] Bioenergy International (2021) Essity begins tissue production with wheat straw fibre, 30th September 2021

beyond the soft cap of 1.7% for part B feedstocks currently in the RED. More information on UCO in this T&E briefing.

Some unsustainable biofuels outside of Annex IX

Some feedstocks are not considered 'advanced' biofuels, but can still be counted towards the overall transport target. This is problematic as these feedstocks are not residues but by-products[33] and already have important existing uses. Three examples of feedstocks that shouldn't be eligible under the RED, ReFuel (Aviation) or Fuel EU (Maritime):

- **Palm Fatty Acid Distillate (PFAD)** - is a by-product of the palm oil refining process. It has a high value in other industries, such as oleochemicals. Its use for biofuels is likely to cause significant displacement emissions.[34]
- **Animal fats cat III** - are by-products from the animal slaughter process and are already being used for the manufacture of oleochemicals (e.g. soaps, cosmetics), pet food and animal feeds.[35]
- **Molasses** - are by-products from the processing of sugar cane and sugar beet into sugar and are already being used for animal feed and in the yeast sector.

4. Reality check - How to ensure the transport target delivers the highest environmental and climate benefits

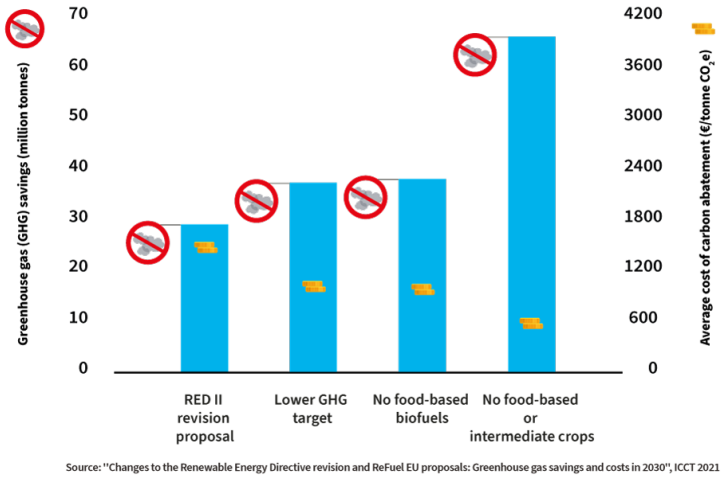
4.1. The case for a lower GHG intensity target

The proposal by the Commission changes the type of the transport target in the RED from an energy target to a carbon intensity reduction target. The first type requires a certain share of renewable energy in total transport energy, whereas the second type focuses on a certain reduction in the carbon footprint of the fuels supplied. It is important to keep in mind that the current RED accounting rules for transport do not account for all emissions related to transport fuels, in particular land-use emissions of crop based biofuels and indirect displacement emissions of advanced biofuels. The change to a carbon intensity target doesn't correct those loopholes. The change in itself makes it more difficult to understand the actual impacts of the transport target in terms of the different quantities of fuels likely to be placed on the market.

The International Council on Clean Transportation (ICCT) modelled the new Commission proposal and came to important conclusions. First, the report concludes that the new target provides *"greater GHG reductions at a lower cost than a renewable energy mandate (...) because a GHG intensity target rewards*

[33] UK Gov. - Dep. of Transport (2021) List of feedstocks including wastes and residues: year 2021 - GOV.UK (www.gov.uk)
[34] Cerulogy (2017) Waste not want not
[35] Ecofys (2016) Indirect emissions from rendered animal fats used for biodiesel

efficiency and production improvements more than a renewable energy target." But the report also shows that, if nothing changes, the target is likely to drive unsustainable biofuels. It recommends excluding crop based biofuels from the target, including intermediate crops, while reducing the target accordingly, to increase GHG savings and reduce cost (see graph below).



Source: "Changes to the Renewable Energy Directive revision and ReFuel EU proposals: Greenhouse gas savings and costs in 2030", ICCT 2021

Based on the ICCT work and factoring the questions around the feasibility of the RFNBO target, **we recommend setting the transport target at a lower level than 13%.** The ICCT work shows that a scenario without crop based biofuels would be equal to a target of 8% reduction in carbon intensity. EU decision-makers should seriously consider this lower target level and closely link the final target also to the outcome of discussions on ReFuel and Fuel EU maritime. In case the final target is finally expressed in energy terms, T&E recommends setting the target at around 16% for renewable advanced fuels, not higher. This is based on a scenario with enhanced policies compared to today, excluding crop biofuels and fossil-based fuels such as blue hydrogen[36].

4.2. Other measures to maximise climate benefits

4.2.1. Keep a clear renewable scope

It is crucial that the RED remains a policy tool that supports only renewable based technologies and doesn't support fossil based alternatives, often labelled as 'low carbon'. This is especially true for hydrogen produced from natural gas with Carbon Capture and Storage (CCS), the so-called 'blue hydrogen', which shouldn't be supported under the RED, like any other kind of non-renewable hydrogen. Similarly, 'recycled carbon fuels' are part of the current RED framework as an option for member states but should be removed from the framework.

To avoid driving unsustainable fuels, the scope of the RED target should cover only **biofuels from Annex IX, renewable electricity and Renewable Fuels of Non-Biological Origin (RFNBOs).** This would ensure

[36] T&E (2021). Advanced renewable fuels in EU Transport. Evaluation of a realistic target for the upcoming RED review

that the RED doesn't incentivize the use of crop biofuels with an associated land demandas well as other unsustainable options like Palm Fatty Acid Distillates (PFAD).

INFO BOX: Fuels should not be credited under CO2 standards

Adding credits for advanced and synthetic fuels into the EU vehicle CO2 standards has been suggested by the oil and gas industry for a number of years now. But car, van and truck CO2 standards work because they regulate what vehicle manufacturers have control over, i.e. powertrains. Fuel suppliers on the other hand are covered by the RED, where their remit - the fuel production and supply - is addressed. Adding fuel credits into the vehicle standards is a cumbersome approach, open to loopholes and double counting. We thus recommend that the RED remains the only tool to credit alternative advanced fuels supplied to road transport. More information here.

4.2.2 Include flexibility mechanisms

- **The RED should leave a certain level of flexibility for member states to restrict the eligibility of certain fuels,** based on their true environmental and climate impacts, as well as competing uses. This can help in securing the highest level of sustainability and environmental integrity for the transport target. The current target enables member states to reduce it, if they do not wish to support crop biofuels anymore and this provision should remain.
- **Countries can set more ambitious targets,** on the basis of a robust assessment of the available quantities of sustainable fuels in their country, excluding crop based biofuels. New elements of flexibility could be added (e.g. transfer mechanism between member states, etc.). Finally, if the shift to a GHG target is too complex, we recommend allowing a country to implement an energy target/system, as long as it meets the overall GHG target.
- **A final point relates to energy efficiency.** Member States should strive to increase energy efficiency and reduce energy consumption in transport, to minimize the amount of alternative fuels needed in the sector. The RED currently takes into account energy efficiency measures indirectly, for the sub-mandates in energy terms but not for the overall carbon intensity target. New elements need to be included to reflect the importance of the energy efficiency first principle, especially in the case of RFNBO (e.g. ensuring the focus on aviation & shipping).

4.2.3 Harmonised GHG savings and transparency

The current RED framework sets different GHG savings thresholds, depending on the starting dates of installations and types of fuels. **The GHG savings from all advanced biofuels must be at least 70%, regardless of when the installations started operating.** In the worst case scenario, whereby crop based biofuels are not entirely excluded from the 2030 target, the GHG savings requirement should go up to 80%, to compensate for the lack of accounting of ILUC emissions.

The Commission proposes to set an EU-wide database to ensure a higher level of transparency and avoid fraud. This is a step in the right direction. In addition to this, **the actual provisions on transparency and reporting should be harmonized** to ensure that information about biofuels' origin and type are centralized by the competent authorities at country level, per fuel supplier.

3. Conclusions

To maximise the climate benefits of the RED review for transport, we recommend MEPs and EU governments to adopt the following recommendations:

- Support the proposed credit mechanism to reward renewable electricity, expand its scope to private charging and incentivise EV charging with additional renewable electricity.
- Support an ambitious, but lower RFNBO target, reduced from the proposed 2.6% to 1.6% to match the 2030 demand for RFNBOs in aviation and shipping. Include a dedicated sub-target to supply RFNBOs to shipping.
- Phase-out high ILUC risk biofuels by 2022 latest, including palm, soy and their co-products.
- Remove all crop biofuels, including intermediate crops, from the target by 2030 at the latest.
- Exclude unsustainable feedstocks from the Annex IX list of advanced biofuels and maintain the previous target level for these fuels. Continue limiting the contribution of Annex IX Part B.
- Strengthen safeguards for advanced fuel production - especially advanced biofuels and RFNBOs - to avoid negative impacts on land, water use and local communities.
- Lower the greenhouse gas intensity reduction target, to maximize climate benefits and avoid driving the use of unsustainable fuels.
- Ensure that targets in ReFuelEU (Aviation) and FuelEU (Maritime) are harmonised with the RED targets to avoid driving unsustainable volumes of alternative fuels.
- Ensure that the RED sustainability criteria and limits on certain fuels also apply to transport fuels under the new proposal for an Emissions Trading System (ETS2).

Further information

Geert Decock
Electricity & Energy Manager
geert.dc@transportenvironment.org

Barbara Smailagić
Fuels Policy Officer
barbara.smailagic@transportenvironment.org

Laura Buffet
Energy Director,Transport & Environment
laura@transportenvironment.org