

# How to incentivize renewable aviation fuels through the RED

September 2017

## Summary

Whilst fuel and ticket taxes, an effective Emissions Trading scheme, aircraft standards and other policies (discussed in our [decarbonisation of aviation briefing](#)) are essential to lower aviation emissions; sustainable, advanced low carbon fuels will likely have to contribute too. This paper outlines how supply of sustainable fuels could be encouraged through the Renewable Energy Directive (REDII) in the period 2020-30. A prerequisite for any incentives within the REDII is that biojet or other low carbon alternatives to kerosene are produced from wastes and residues and subject to robust sustainability criteria<sup>i</sup> and that their climate impact is significantly better than a fossil fuel. [Power-to-liquids](#)<sup>ii</sup> (PtL) produced using *new* sources of renewable electricity could also make a contribution.

Partially as a result of kerosene being exempt from excise duty and VAT, sustainable alternatives are significantly more expensive. A mandate may therefore be required to encourage their supply into the aviation sector, as a multiplier as part of the REDII results in additional costs being met by the road sector. However, such a mandate should NOT increase the total volumes of renewable fuels supplied through the REDII as the proposed Commission target (3.6%) is already very stretching. Indeed, our analysis shows it cannot be met sustainably. Instead, T&E therefore supports the idea developed by MEP Bas Eickhout<sup>iii</sup> that suppliers to the aviation sector are required to supply renewable fuels in the same proportion to their current supply of road and aviation fuels. However, aviation fuels should NOT count towards the denominator of the total volume of fuel to be supplied so no additional demand is created.

## 1. Context

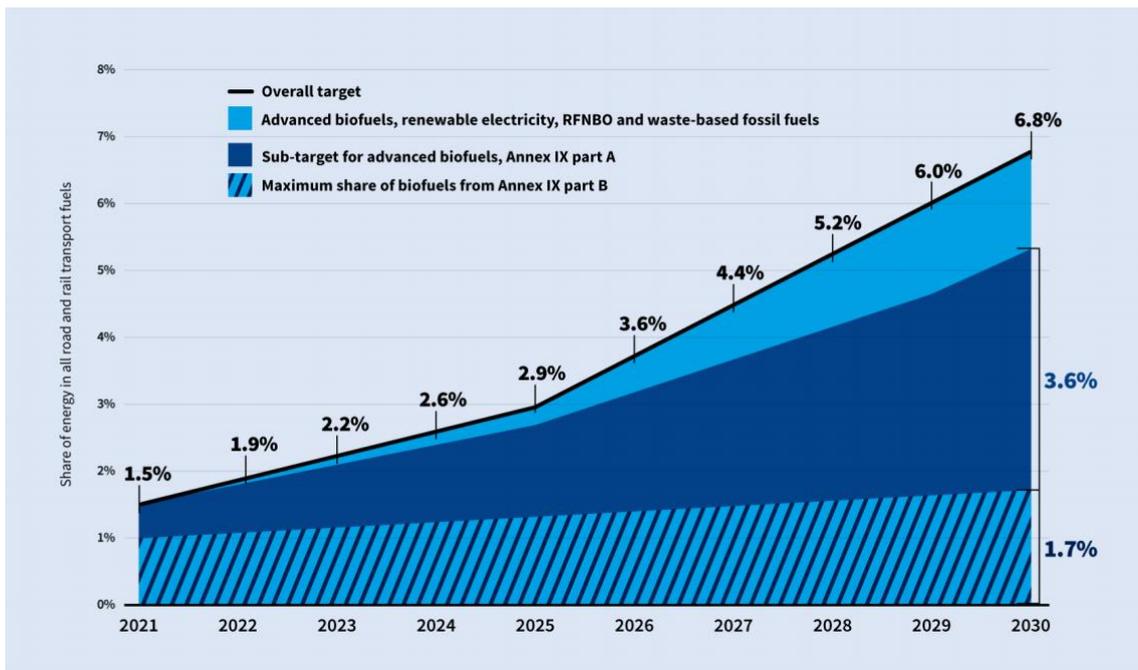
Aviation is responsible for an estimated 4.9% of man-made global warming and is Europe's fastest growing source of emissions. In 2016 intra EU aviation CO<sub>2</sub> alone grew almost 8%. Although there are [plenty of measures](#)<sup>iv</sup> to reduce aviation emissions, in the long-term the sector is one of the hardest to fully decarbonise. In the absence of a breakthrough in propulsion technology, cleaner aviation fuels such as advanced biofuels and power-to-liquids may be able to contribute to reducing the sector's emissions.

However, when producing biofuels or other kerosene alternatives it needs to be ensured that they are produced [sustainably](#)<sup>v</sup> and their climate impact is significantly better than that of kerosene. Airlines should therefore only use advanced (waste and residue) biofuels – that are subject to robust sustainability safeguards. Besides sustainable advanced fuels, there are other potential alternatives such as [power-to-liquids](#)<sup>vi</sup> (PtL) produced from renewable electricity. PtL could in theory be produced at scale – e.g. it doesn't require huge amounts of agricultural land - but it would require a very robust framework to ensure PtL is genuinely sustainable.

Renewable aviation fuels remain invariably more expensive than kerosene and would seem to require policy measures to ensure their uptake. There are little or no fiscal instruments - no kerosene tax, tolls, VAT and a very weak carbon pricing signal - which could provide room to allow incentives for sustainable biofuel or PtL production. Because of this, policy makers are currently discussing other policy measures, including

the possibility of imposing a mandate on fuel suppliers or airlines, both of which are discussed in the sections below.

The discussion about a mandate for aviation is part of a **larger debate on the reform of the EU’s renewable energy directive**. In November 2016 the European Commission (EC) presented a recast of the Renewable Energy Directive (REDII). The review proposed by the EC is now being negotiated in the European Parliament and the Council of the European Union. The EC proposed a series of binding targets for fuel suppliers in article 25: a general target of 6.8% advanced fuels by 2030, of which at least 3.6% must be advanced biofuels (such as agricultural or forestry residues), a maximum of 1.7% of certain biofuels (used cooking oil, animal fats and molasses), while the rest can be more advanced biofuels, renewable electricity, waste based fossil fuels, or renewable fuels of non-biological origin (RFNBO).



The percentages are a percentage of a total amount, which includes all energy consumed by road and rail transport. More information about the REDII and how we propose to improve the Commission proposal can be found in [the following briefings](#).<sup>vii</sup> In particular, [our analysis](#) shows the EC targets for advanced biofuels are too high and should be revised downwards to 2,3%.

## 2. Aviation biofuels in the Renewable Energy Directive

To meet the blending mandate, fuel suppliers can count all eligible fuels (as described above) sold to all transport modes (*numerator*), including biojet fuel sold to the aviation sector. Fuels sold to the aviation sector benefit from a multiplier of 1.2 which incentivises the supply of aviation alternative fuels (biofuels and PtL) compared to road fuel. However, currently aviation biofuels are two to five times more expensive than kerosene and a 1.2 multiplier will do little to compensate for this. Hence, in its current form the REDII proposal is unlikely to drive the supply of alternative aviation fuels.

Multipliers are a flawed instrument<sup>1</sup> to promote sustainable fuels in aviation because they are ineffective and unfair:

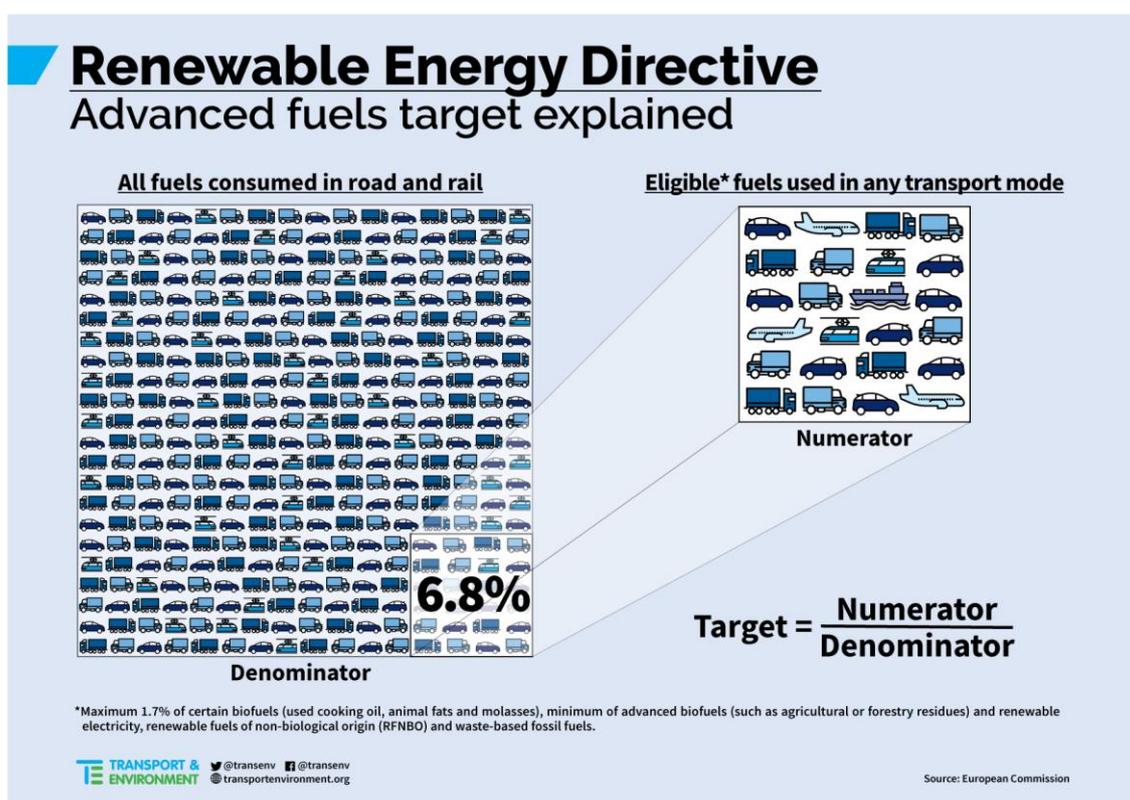
- At low levels multipliers are ineffective as they do not compensate for the price difference with the fossil alternative. On the other hand, high multipliers would completely undermine the targets set

<sup>1</sup> This is not the case for electricity where a multiplier is justified. This is because electricity is a much less voluminous, and much more efficient transport “fuel”. A 2.5 multiplier for electricity - [as proposed in this briefing](#) - is needed to avoid the REDII discriminating against electricity.

by the renewable energy directive. Indeed a multiplier of e.g. 3 means 3 times less advanced fuels are required to meet the same target. The problem is similar to the super-credits used to double count electric cars in the car CO2 regulation.<sup>2</sup>

- Aviation multipliers shift the cost of complying with the target from airlines to road users. Given the higher level of competition in the kerosene market, and the fact that not all fuel suppliers will sell biojet, fuel suppliers will likely refrain from passing on the full cost to airlines. Instead fuel suppliers will pass the cost to their road customers. Given that airlines are already exempt from fuel tax and VAT on tickets, an additional subsidy at the expense of road users – that pay fuel tax, tolls etc – would be unfair **and only further spur aviation’s unsustainable growth**. Airlines should bear the costs for advanced fuels themselves.

When calculating the binding targets for fuel suppliers, the percentage set out in the Commission proposal that has to be met is based on the total amount of fuels sold only to the road and rail sector by that specific supplier. Kerosene sold by that supplier to the aviation sector is not counted in the total amount to which the percentage targets apply (*denominator*)<sup>3</sup>. This is positive because, if kerosene would be included in the denominator, the total supply of biofuels required to meet the target would increase, as long as the same percentage target is kept.



The Commission’s REDII proposal does not provide adequate safeguards to ensure advanced fuels are sustainable (as explained in [this briefing](#)) and is already very stretching in terms of required volumes (see [our briefing](#) on why the 3.6% target for advanced biofuels should be reduced to 2.3%). Hence, changes to the REDII that would require *more* advanced biofuels would likely have to be met through unsustainable biofuels.

<sup>2</sup> This is explained in more detail [in this study by Element Energy](#)

<sup>3</sup> For an explanation on how the denominator/numerator would change under different scenarios, see last section of this position paper.

### 3. T&E position on alternative aviation fuels in the renewable energy directive

T&E's position on aviation renewable fuels in the renewable energy directive is based on the following principles:

1. Land based biofuels should not receive any policy support by 2030.<sup>4</sup> This is especially necessary in the absence of a proper accounting of indirect land use change emissions (ILUC), They should not count towards the EU target and should not be eligible under mandates.
2. Advanced renewable fuels (in aviation) can only be eligible for policy support provided they follow strict [sustainability criteria](#)<sup>viii</sup>, including environmental and social criteria, as well as the delivery of substantial greenhouse gas savings compared to the fossil alternative, taking into account full GHG emissions over the life cycle, both direct and indirect.
3. The definition of advanced biofuels must include only real waste and residues. The supply of wastes and residues is inelastic and **doesn't** follow demand, i.e. supply is limited.
4. There are limited amounts of sustainable feedstocks available to produce advanced aviation biofuels. T&E [calculations show](#)<sup>ix</sup> the Commission's 3.6% advanced biofuels target is high and should be lowered to 2.3%. This should be taken into account when designing policies. Many feedstocks are already being used by other sectors, and displacement effects should be avoided.
5. Power-to-liquid can only qualify as sustainable if it follows robust sustainability criteria and it is 100% based on new renewable energy. The CO<sub>2</sub> that is used to turn hydrogen into PtL should be based on air capture or from a biological source. PtL must not become a vehicle that allows polluting industries to greenwash their CO<sub>2</sub> emissions.<sup>5</sup>
6. The cost of the aviation alternative fuels should fall on the airlines and those who fly. This is especially the case given that the sector is exempt from most taxes (i.e. fuel duty and VAT) and therefore should not be further subsidised.

With those six principles in mind, below a detailed explanation on T&E's views on how aviation renewable fuels could be reflected in the REDII.

#### 3.1. What role for an alternative fuels mandate for aviation?

A fuel supplier that supplies fuels to both the road and aviation sector will likely fulfil its obligations by supplying road fuels, as these are cheaper to produce than aviation fuels. Similarly, the Emissions Trading Scheme or CORSIA – ICAO's 2016 offsetting deal for aviation emissions - will not drive the uptake of alternative fuels in the foreseeable future due to low carbon prices. As a result, fuel shifting in the aviation sector not foreseen to happen any time soon.

This is why policymakers are discussing measures to overcome the abovementioned market barriers and stimulate the uptake of sustainable alternative fuels in the aviation sector. One proposal that is currently discussed in the European Parliament (see [Bas Eickhout's draft report](#)<sup>x</sup>) is to replace the - ineffective and unfair - multiplier by mandating fuel suppliers to split their obligation proportionally between land and air traffic.

---

<sup>4</sup> Use of energy crops for bioenergy could be allowed in exceptional circumstances where strong evidence is provided by the economic operator that the crops are being grown on unused land and that its use for energy does not cause direct or indirect land use change (ILUC), displacement of other material uses of biomass and does not lead to significant loss of biodiversity, soil degradation or water pollution.

<sup>5</sup> A recent paper by Bellona argues this is a real risk

<https://www.google.be/search?q=bellona+ptx&oq=bellona+ptx&aqs=chrome..69i57.1932j0j9&sourceid=chrome&ie=UTF-8#q=bellona+power+to+liquids>

In practice this means that if a fuel supplier sells 80% road transport fuels and 20% aviation fuels, this same **proportion will apply to his blending mandate obligation**. In other words, 20% of “advanced fuels” supplied as part of the 6.8% mandate need to be sold to aviation. This proposal is a variation on a simpler approach - i.e. 6.8% of fuels sold to airlines should be advanced - but has the advantage that it creates no additional demand for advanced fuels, as their sustainable availability is unknown, **in comparison to the EC’s proposal** (because it keeps aviation out of the denominator). It also ensures advanced fuels are proportionally distributed across sectors.

The effect of such a binding obligation on fuel suppliers would be two-fold. *First*, being a legal obligation it would ensure a certain level of volume being supplied to the aviation sector. Great care would need to be taken to ensure the sustainability of these fuels. Indeed, if there is one lesson from a decade of EU biofuels policy, it is that a volume based approach without quality controls is counterproductive. The *second* impact would be that the cost of the mandate would more likely be borne by the airlines and their customers - as opposed to if multipliers were used in which they would be borne by the road sector.

An advantage of this approach is that those fuel suppliers selling only aviation renewable fuels could sell the surplus obligations to other fuel suppliers that decide not to produce them if article 25(4) is implemented in a way which allows also the trading of clean fuel credits. In addition, as the obligation falls on the fuel supplier, it is stronger from an international law perspective, **as ICAO’s Chicago Convention and Air Service Agreements do not have a say on obligations to fuel suppliers**.

One complication is that most aviation fuel suppliers are registered as a separate company, even if they are part of a bigger holding. For this, it is very important for member states during the transposition of the directive to ensure that if a company only supplies aviation fuels, they are not part of a larger corporation. For instance, if a hypothetical company has two subsidiaries, XX Air and XX Road, even if they are registered under different names, as long as they belong to the same holding, the holding as such should meet the obligations. However, this problem can be overcome **and has for example been addressed through “brand pooling” in the car CO2 regulation**. Article 3 states “a group of connected manufacturers means a manufacturer and its connected undertakings”, and it includes criteria to know when an undertaking depends on another one. A similar approach could be used for fuel suppliers.

As all equivalent fuel suppliers will have equivalent obligations, there is no competitive disadvantage for aviation fuel suppliers. Similarly, all airlines will be operating under the same market conditions in Europe. Reducing the risks of market distortions increases the chances of the price premium of sustainable aviation fuels falling on airlines. There is the risk of airlines deciding to tanker more in third countries where the fuel might be cheaper, but this practice already takes place but is limited because tankering requires airlines to bear the cost of carrying excess fuel which would partly cancel out any cost advantage.

A second but inferior option is to simply oblige fuel suppliers to sell 6.8% advanced fuels to airlines. Although this option could be perceived as an easy solution to ensure that the cost falls on airlines, the problem is that it would create additional and unsustainable demand for alternative fuels (as aviation would need to be included in the denominator). The established target for advanced biofuels is [already too high – as discussed above](#)<sup>xi</sup>. Under the architecture of the Commission proposal, reating a mandate for aviation only would increase demand for advanced biofuels<sup>xii</sup>. In comparison, energy demand from aviation is around 20% of the road and rail sector, so a mandate for aviation would increase demand by 20%. For this reason, Europe should *not include aviation fuels in the denominator*

If the aviation fuels would be included in the denominator or a mandate would be mandated for the airlines, the numerator (the target percentage) needs to be decreased in order to avoid increasing overall demand. The table below summarises most of the options described in this position paper.

Description	Denominator	Numerator	Where will it end up?	Who will pay the price premium?	T&E's assessment
EC's proposal	All fuels supplied to road and rail	All eligible fuels for any transport mode	In the road sector, as it is cheaper to produce than aviation fuels	Road drivers	 No eligible fuels will end up in the aviation sector, which needs them to decarbonise
EC proposal + higher multiplier	All fuels supplied to road and rail (denominator stays the same)	All eligible fuels for any transport mode (numerator decreases in size, as less fuel are needed to achieve the target, so less reductions are delivered)	In the road and aviation sector (if the multiplier is high enough)	Road drivers only, as aviation fuel suppliers are not obliged to deliver eligible fuels, but they benefit from the scheme	 Road drivers will be paying the price premium, as road fuel suppliers are obliged to meet the targets but aviation fuel suppliers only benefit from the incentives
EC proposal + mandate to aviation fuel suppliers	All fuels supplied to road, rail and aviation (denominator increases in size)	All eligible fuels for any transport mode (numerator increases in size, as the denominator increases, if the same target is applied, the demand for eligible fuels increases compared to EC proposal)	In the road and aviation sector	Road drivers and aviation users	 Even if the price premium would be paid by aviation users, this option increases the demand for an already too high target. The target would need to decrease under this option to avoid unsustainable demand
Bas Eickhout's proposal (EC proposal without aviation multiplier + obligation to proportionally deliver to aviation from fuel suppliers)	All fuels supplied to road and rail (denominator stays the same)	All eligible fuels for any transport mode (numerator stays the same, so no new demand for eligible fuels is created compared to EC proposal)	In the road and aviation sector, in the same proportion as they are supplied. As aviation grows, more will go to aviation	Road drivers and aviation users	 No new demand for eligible fuels is created, some eligible fuels would be used by the aviation sector, and aviation users pay the bill

## Further information

Carlos Calvo Ambel  
Transport and Energy Analyst  
Transport & Environment  
carlos.calvoambel@transportenvironment.org  
Tel: +32(0)2 851 213

## Endnotes

---

<sup>i</sup> [https://www.transportenvironment.org/sites/te/files/publications/2016\\_06\\_Aviation\\_biofuels\\_briefing\\_FINAL.pdf](https://www.transportenvironment.org/sites/te/files/publications/2016_06_Aviation_biofuels_briefing_FINAL.pdf)

<sup>ii</sup> <https://www.umweltbundesamt.de/en/publikationen/power-to-liquids-potentials-perspectives-for-the>

<sup>iii</sup> <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-%2f%2fEP%2f%2fNONSGML%2bCOMPARL%2bPE-604.700%2b01%2bDOC%2bPDF%2bV0%2f%2fEN>

<sup>iv</sup> [https://www.transportenvironment.org/sites/te/files/publications/2017\\_02\\_briefing\\_aviation\\_decarbonisation.pdf](https://www.transportenvironment.org/sites/te/files/publications/2017_02_briefing_aviation_decarbonisation.pdf)

<sup>v</sup> [https://www.transportenvironment.org/sites/te/files/publications/2016\\_06\\_Aviation\\_biofuels\\_briefing\\_FINAL.pdf](https://www.transportenvironment.org/sites/te/files/publications/2016_06_Aviation_biofuels_briefing_FINAL.pdf)

<sup>vi</sup> <https://www.umweltbundesamt.de/en/publikationen/power-to-liquids-potentials-perspectives-for-the>

<sup>vii</sup> <https://www.transportenvironment.org/node/2563/publications>

<sup>viii</sup> [https://www.transportenvironment.org/sites/te/files/publications/a\\_new\\_EU\\_sustainable\\_bionenergy\\_policy\\_FINAL.pdf](https://www.transportenvironment.org/sites/te/files/publications/a_new_EU_sustainable_bionenergy_policy_FINAL.pdf)

<sup>ix</sup> <https://www.transportenvironment.org/publications/target-advanced-biofuels>

<sup>x</sup> <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-%2f%2fEP%2f%2fNONSGML%2bCOMPARL%2bPE-604.700%2b01%2bDOC%2bPDF%2bV0%2f%2fEN>

<sup>xi</sup> [https://www.transportenvironment.org/sites/te/files/2017\\_06\\_Advanced\\_biofuels\\_target.pdf](https://www.transportenvironment.org/sites/te/files/2017_06_Advanced_biofuels_target.pdf)

<sup>xii</sup> [https://www.transportenvironment.org/sites/te/files/publications/2016\\_04\\_TE\\_Globiom\\_paper\\_FINAL\\_0.pdf](https://www.transportenvironment.org/sites/te/files/publications/2016_04_TE_Globiom_paper_FINAL_0.pdf)