A target for advanced biofuels

T&E's proposal for a sustainable target level in the RED II

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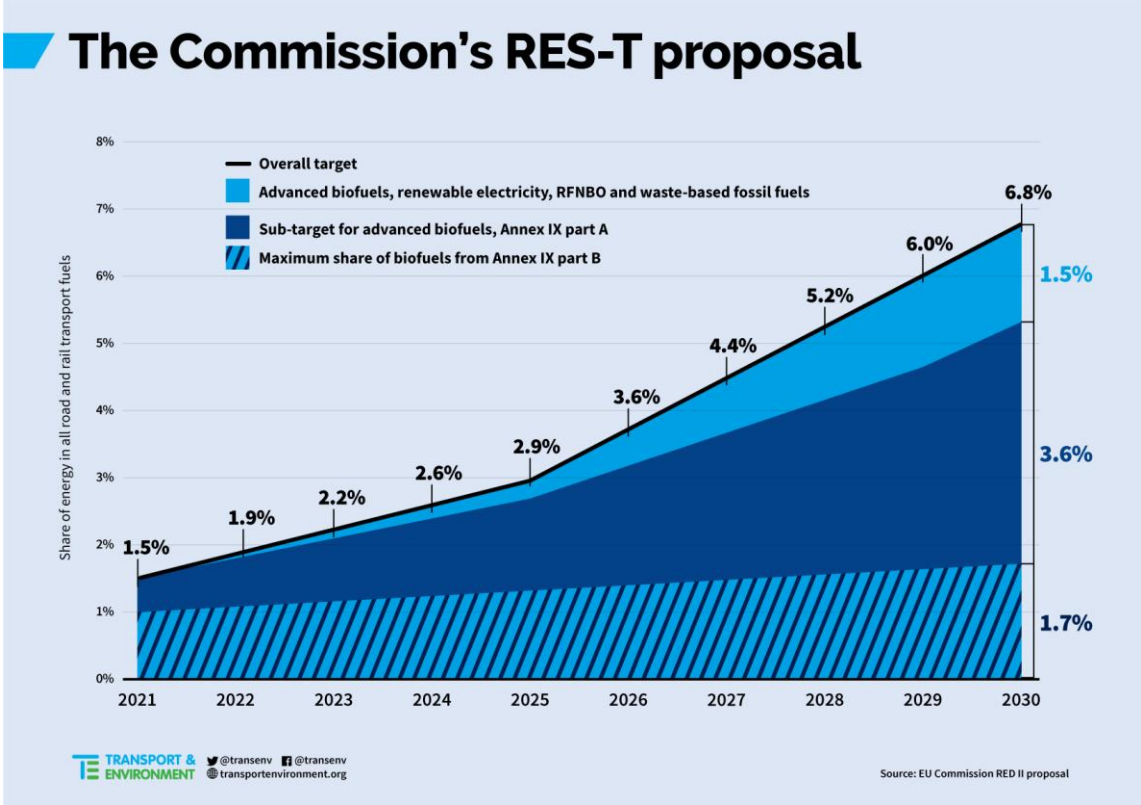
Introduction

Sustainable advanced biofuels can provide significant savings of greenhouse gas emissions (GHG) compared to fossil fuels, without using productive agricultural land. A generally accepted definition of advanced biofuels limits their scope to biofuels produced from wastes and residues. Hence their availability is by definition going to be limited, as there is only a certain amount of waste and residue feedstocks available.

The European Commission's proposal on the REDII sets a specific sub-target for advanced biofuels. The target is binding on fuel suppliers, starting at 0.5% of energy consumed in road and rail in 2021 and ending at 3.6% in 2030. The proposal defines advanced biofuels as "biofuels that are produced from feedstocks listed in part A of Annex IX", with the Annex IX A being a list adopted in 2015 as part of the ILUC directive. The list includes materials which are not wastes and residues such as energy crops and pulpwood. Finally, there is insufficient transparency in the Commission Impact Assessment on how the target level has been determined.



Setting targets is always a risky and uncertain exercise. If a target is set for advanced biofuels, we need to ensure that the target is set at a level which takes into account the development of the bioeconomy and complies with the principles of waste hierarchy[1] and cascading use[2]. Also, a prerequisite to the adoption of a

[1] The waste hierarchy is defined as follows in the waste framework directive: The following waste hierarchy shall apply as a priority order in waste prevention and management legislation and policy: prevention; preparing for re-use; recycling; other recovery, e.g. energy recovery; and disposal.

[2] The cascading use principle gives priority to higher value uses that allow the reuse and recycling of products and raw materials and promotes energy use only when other options are starting to run out. Further explanation available here.

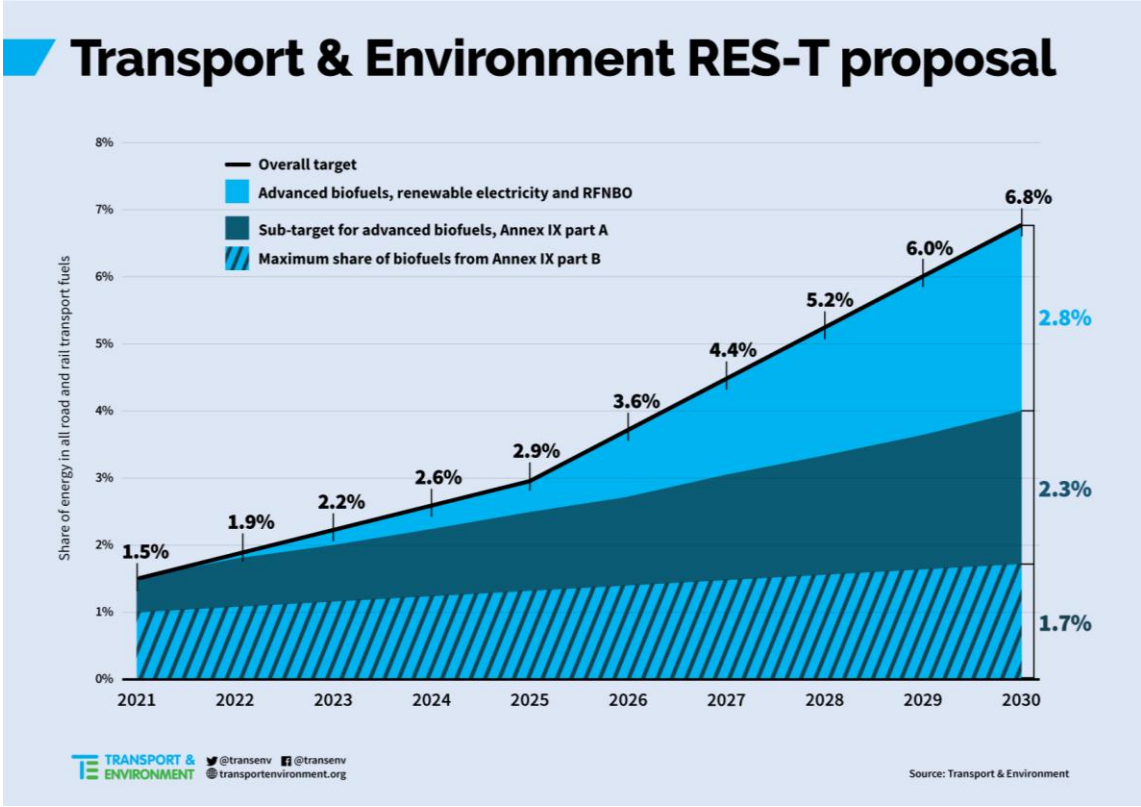
binding target is the adoption of adequate sustainability criteria. This briefing is an attempt to suggest a more realistic and sustainable target level for advanced biofuels in the new Renewable Energy Directive.

Advanced biofuel target level in 2030

In order to assess the realistic contribution of advanced biofuels towards the energy share and greenhouse gas (GHG) emissions reductions in the transport sector, we analysed how much advanced biofuels can be produced from the sustainable feedstocks available, taking into account existing and competing uses of the raw materials. We focused only on wastes and residues listed in Annex IX part A, excluding co-products that are currently in the list. Use of energy crops for energy could also be allowed in exceptional circumstances[3], but due to high uncertainty in the availability and potential mobilisation of unused lands for these biofuel feedstocks, energy crops have been left out of this analysis.

We conclude that waste and residues can provide 6.3 - 7.8 Mtoe of advanced biofuels in 2030, which is around 2.3 - 2.8 % of projected[4] business as usual road and rail transport energy demand in 2030. We recommend a cautious approach and hence **suggest to change the level of the binding target to 2.3%** in 2030. Such a binding target on advanced biofuels is only acceptable if proper sustainability criteria are put in place. The annually binding targets would follow a similar pathway as in the Commission's proposal: slow growth until 2025 and accelerating to 2030.

The proposed target is a conservative, yet realistic, target level for all EU fuel suppliers. It also allows for flexibility to meet the overall blending obligation with more advanced biofuels or other advanced fuels such as renewable electricity. A conservative approach is needed as there is high uncertainty and limited knowledge regarding feedstock availabilities and the existing and future competing uses by other industries.



[3] 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.

[4] EU Reference Scenario 2016 http://ec.europa.eu/energy/en/data-analysis/energy-modelling

Methodology

The methodology and data sources are crucial in estimating the accuracy of any potential availability. Our approach is to be as transparent as possible in our assumptions and sources. We considered only EU waste and residue potential, as the EU target level should reflect EU's ecological footprint[5]. This is a common approach in evaluating potentials and not a protectionist approach. Trade will naturally still take place, but the overall target level needs to be set at a level achievable by the EU's share of the sustainable global biomass resources.

The technical availability of Annex IX part A agricultural residues, forestry residues, and biogenic wastes was based on a peer reviewed study by Searle & Malins (2016)[6]. The study does not consider all the Annex IX A feedstocks. It does not cover feedstocks that do not fall within the strict definition of a waste or a residue and focuses on the most voluminous wastes and residues. The study focuses on 2020, but provides feedstock data for 2030. The 2030 technical feedstock potential amounts to 15.7 - 18.2 Mtoe sustainable advanced biofuels. The study is a continuation of a previous research work by the International Council on Clean Transportation on feedstock availability, commissioned by the European Climate Foundation.

As the study captures only the technical availability, a conservative factor of 0.6 was used to convert the technical availability to economic availability (the amount which could realistically be collected and processed into fuels or other products). The study already considered most competing uses, but assumed they would be either stable or grow linearly from 2010 to 2030. In view of the potential for an accelerated development of a broader bioeconomy, we decided to capture more of the increasing competition for feedstock use. In addition to the competing uses already taken into account in Searle & Malins (2016), we also considered the competing uses for manure, sewage and biopolymers from BRE 2015[7] decreasing potential by 3.1 Mtoe. With this extra step we arrive at a potential contribution of 6.3 - 7.8 Mtoe advanced biofuels.

The percentage contribution towards road and rail transport energy was calculated based on the projected business-as-usual transport energy consumption of road and rail transport in 2030 from the EU reference scenario 2016[8] (278 Mtoe). The percentage contribution of sustainable advanced biofuels in 2030 appears to be between 2.3% and 2.8% of road and rail transport.

Further information

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[5] An ecological footprint is a measure of human impact on Earth's ecosystems, so the amount of land and sea needed to sustain one's lifestyle.
[6] (Searle & Malins 2016) Waste and residue availability for advanced biofuel productions in EU member states. Biomass and Bioenergy 89. http://www.sciencedirect.com/science/article/pii/S0961953416300083
[7] (BRE 2015) Potential and implications of using biomass for energy in the European Union
[8] EU reference scenario 2016 http://ec.europa.eu/energy/en/data-analysis/energy-modelling