

POLICY BRIEFING

# RECYCLED CARBON FUELS IN THE RENEWABLE ENERGY DIRECTIVE

**BELLONA**



RETHINK PLASTIC



# INTRODUCTION

The revised *Renewable Energy Directive*<sup>1</sup> (REDII) establishes a common framework for the promotion of energy from renewable sources in the electricity, heating and cooling, and transport sectors for the 2021-2030 period.

As a part of the transport target, member states may choose to include “Recycled Carbon Fuels.”

The REDII includes liquid and gaseous fuels that are either produced from (a) liquid or solid waste streams of non-renewable origin or (b) from waste processing gas and exhaust gas of non-renewable origin as part of the definition of “recycled carbon fuels.”<sup>2</sup>

This means that **fuels derived from non-renewable waste streams (such as fossil wastes like plastic, rubber, gaseous wastes etc.) could be promoted through transport targets and support schemes, despite recognition that they cannot be considered to contribute to overall renewable energy targets.**

This briefing highlights key concerns and recommendations to ensure that the REDII is implemented in a way that decarbonises transport fuels in a sustainable manner.

<sup>1</sup> Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable source (Renewable Energy Directive)

<sup>2</sup> ‘recycled carbon fuels’ means liquid and gaseous fuels that are produced from liquid or solid waste streams of non-renewable origin which are not suitable for material recovery in accordance with Article 4 of Directive 2008/98/EC, or from waste processing gas and exhaust gas of non-renewable origin which are produced as an unavoidable and unintentional consequence of the production process in industrial installations.

# NEEDED SUSTAINABILITY CRITERIA FOR RECYCLED CARBON FUELS



At this stage, the EU sustainability rules for Recycled Carbon Fuels haven't been completely finalised. The rules have been largely left to delegated acts, the last of which are due by the end of 2021. Even though member states have the option to include Recycled Carbon Fuels into their national frameworks, this decision would be based on unknown criteria, and should not be made before the last delegated act is published. **We therefore recommend that member states do not include Recycled Carbon Fuels into their national targets until a proper evaluation of their environmental impact is made by 2021.**

Despite their fossil origin, Recycled Carbon Fuels will still be evaluated in the Renewable Energy Directive under a delegated act. In the context of this evaluation, **we urge the European Commission to incorporate the following criteria into their assessment:**

1. GHG emissions savings need to be at least 70% compared to fossil fuels; the same threshold is applied for Renewable Fuels of Non-Biological Origin (RFNBO).
  - a. To ensure that all of the emissions related to these fuels are taken into account, the GHG accounting must include all stages of the lifecycle of the product. This includes emissions related to energy inputs, production, and to the use or combustion of the fuel.<sup>3</sup> Any use of resources must be thoroughly evaluated and 'waste' carbon flows to the atmosphere must not be discounted.
  - b. Emissions avoided elsewhere in the system cannot be included into the calculation of greenhouse gas emission reductions, since there is no proven causality between such emission reductions elsewhere in the system and the production of plastic fuels.
  - c. Energy inputs need to be counted in a similar way as electricity and fossil energy inputs are calculated for biofuels when determining their GHG performance. For electricity inputs similar provisions to those identified for RFNBO should be considered. Data which does not reflect real-life and real-time emissions in the system, such as predictions of the electricity in 2050, should not be included.
  - d. The CO<sub>2</sub> reductions should not be counted as abatement twice (e.g. both under *EU Emissions Trading System*<sup>4</sup> and the transport sector).
2. Any potential support to recycled carbon fuels needs to be fully in line with other environmental and climate policies (e.g. ensure that efforts to improve recycling are not jeopardised).

Given the unknown availability of the suitable waste streams, and potentially decreasing sources,<sup>5</sup> **these fuels will not be a game changer in transport emissions reductions, and are incompatible with a renewable and carbon free transportation system.**

<sup>3</sup> [Counting Carbon: A Lifecycle Assessment Guide for Plastic Fuels](#), Rethink Plastic alliance 2020

<sup>4</sup> [Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a system for greenhouse gas emission allowance trading within the Union and amending Council Directive 96/61/EC](#)

<sup>5</sup> For example, the *Circular Economy Action Plan* proposes to cut residual waste by half by 2030

# CASE STUDY ON MUNICIPAL SOLID WASTE SPECIFIC FUELS

## 1. Fossil waste should not be credited as low-carbon

Fuels derived from fossil waste will never be low-carbon and are therefore at odds with efforts to bring Europe's carbon footprint to zero.

Some manufacturers claim that their fuel cuts the emissions of conventional, diesel or petrol fuel in half. However, studies on fuels have shown that there is a correlation between the amount of fossil waste and the carbon footprint of the fuel. Put simply, **the more fossil waste there is in municipal solid waste turned to fuels, the worse their climate impact will be.**

When municipal solid waste containing 65% of non biogenic waste (mostly plastic) is turned into fuel, the emissions range between 52.6gCO<sub>2</sub>eq/MJ to 124.6gCO<sub>2</sub>eq/MJ.<sup>6</sup> **When all of the waste going into the fuel production process is non-renewable, these figures increase, making the impact worse than that of conventional diesel, petrol or kerosene.**<sup>7</sup> Even if there are some reductions in emissions, they range from 1-14% compared to conventional fuels.<sup>8</sup> **This reduction is far below the EU requirement for other renewable transport fuels. Recycled carbon fuels do not deliver the reductions needed to reach emission reduction targets or net-zero emissions by 2050.**

Considering that the GHG savings, as well as the methodologies to count them, are uncertain, the decision to include RCF should happen in 2022 at the earliest, after the delegated act on GHG methodology (due end of 2021) and the required savings threshold (January 2021) has been published.

## 2. Waste to fuel could compete with mechanical recycling

**The definition of “recycled carbon fuels”<sup>9</sup> intends to guarantee that what can be recycled mechanically won't be used for waste to fuel applications, in line with the waste hierarchy<sup>10</sup> in the waste framework directive.**

However, as there is no definition of mechanical recycling, authorities have no way of determining which wastes are mechanically recyclable. Therefore, the REDII prescribes that anything that can be recycled mechanically is recycled in that fashion, but it offers insufficient guarantee that this waste will not actually be turned into fuel.

For instance, only a couple of plastics are more or less successfully recycled right now, such as HDPE and PET bottles and flasks through selective collection. These plastics and other possibly recyclable plastics, could still very well end up in mixed waste streams (except for beverage bottles)<sup>11</sup> which would be considered economically “unrecyclable” and there is no basis for an authority to

<sup>6</sup> [Environmental and economic assessment of transportation fuels from municipal solid waste](#), Suresh 2016


<sup>7</sup> [LCAs of petrol and diesel: a literature review](#), Ahlgren and Eriksson 2013

<sup>8</sup> [Life-cycle analysis of fuels from post-use non-recycled plastics](#), Benavides et al. 2017

<sup>9</sup> [Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources](#) (recast) 2018

<sup>10</sup> According to the Waste Framework Directive the following waste hierarchy shall apply as a priority order in waste prevention and management legislation and policy: (a) prevention; (b) preparing for reuse; (c) recycling; (d) other recovery, e.g. energy recovery; and (e) disposal.

<sup>11</sup> The Single Use Plastics Directive introduces an obligation to integrate recycled content for beverage bottles (objective at 2025 and 2030)



contest it. In fact, several reports<sup>12</sup> and composition analysis<sup>13</sup> indicate that a clear majority of ‘residual waste’ is readily recyclable, and doing so would result in carbon savings and other environmental benefits.

Furthermore, **if the REDII does not provide adequate environmental safeguards, businesses will be stimulated to add non-renewable fuels from waste to a fuel mixture.** The EU currently lacks a similar policy for waste materials meaning there are no EU legal requirements to integrate recycled materials in plastic products, except for a few specific examples.<sup>14</sup> While mechanical recycling is surely more beneficial from an environmental perspective we see that here too, mechanical recycling is at a disadvantage compared to fuels from waste.

Besides, the possibility to count waste to fuel as recycling might incentivise authorities to make use of this technology to reach recycling targets for e.g. plastic packaging. As the new *Packaging and Packaging Waste Directive*<sup>15</sup> has set the target at 55% in 2030, there is a concrete risk that the objective is pursued through waste-to-fuel, at the detriment of mechanical recycling.

Therefore, while the intention of this inclusion is possibly in line with the waste hierarchy, the actual implication of it might run against it and could undermine the EU strategy to move towards a circular economy.

### 3. Incentives for plastics to fuels can prevent new designs for recycling

An important element in moving to a circular economy is to make plastics easier to recycle. As acknowledged by the *European Strategy for Plastics in a Circular Economy*,<sup>16</sup> the goal is to have plastic products designed for greater durability, reuse, and high-quality recycling. The REDII aims to offer a solution for waste that cannot be mechanically recycled, but these types of waste will decrease in volume as increasing levels of plastics are recycled. As pointed out, this is not a category that is currently clearly defined, but neither is it a static category: e.g. plastics that are difficult to recycle now could be redesigned to make them easier to recycle in the future. The phasing out of certain additives, the use of monomaterials and bans on specific plastics for specific product groups could help to change plastic products and make them suitable for mechanical recycling. **If these plastics are turned into fuel, the incentive to redesign plastic products will be lost. Instead, there will be a lock-in of an inferior technology that produces energy from fossil fuels.** Plastics-to-fuels is a step back for the circular economy, which prevents the EU from achieving its ambitious goals under the *Circular Economy Action Plan*,<sup>17</sup> including having all plastics packaging placed on the market from 2030 as reusable or easily recycled.

Given the risk above, we recommend that municipal solid waste is not used as a feedstock for recycled carbon fuels, as doing so risks undermining the recycling target.

<sup>12</sup> See for example: [EU Taxonomy technical report](#) and [Integration of environmental concerns in Cohesion Policy Funds](#) (ERDF, ESF, CF)

<sup>13</sup> A number of surveys carried out around 2014/15 in different areas of England found that the kerbside recyclability of municipal waste put in residual waste bins, based on the kerbside recycling services available at the relevant local authorities, ranged from 52% to 57.9%, and one study. South Gloucestershire Council, [Waste composition – kerbside](#).

<sup>14</sup> There are only voluntary commitments such as the Circular Plastic Alliance that aims at reaching 10 millions tonnes of recycled content on the EU market by 2025. This is not legally binding though, industry led initiative and with very light monitoring.

<sup>15</sup> [Directive \(EU\) 2018/852 of the European Parliament and of the Council of 30 May 2018 amending Directive 94/62/EC on packaging and packaging waste](#)

<sup>16</sup> [A European Strategy for Plastics in a Circular Economy](#), EU Commission 2020

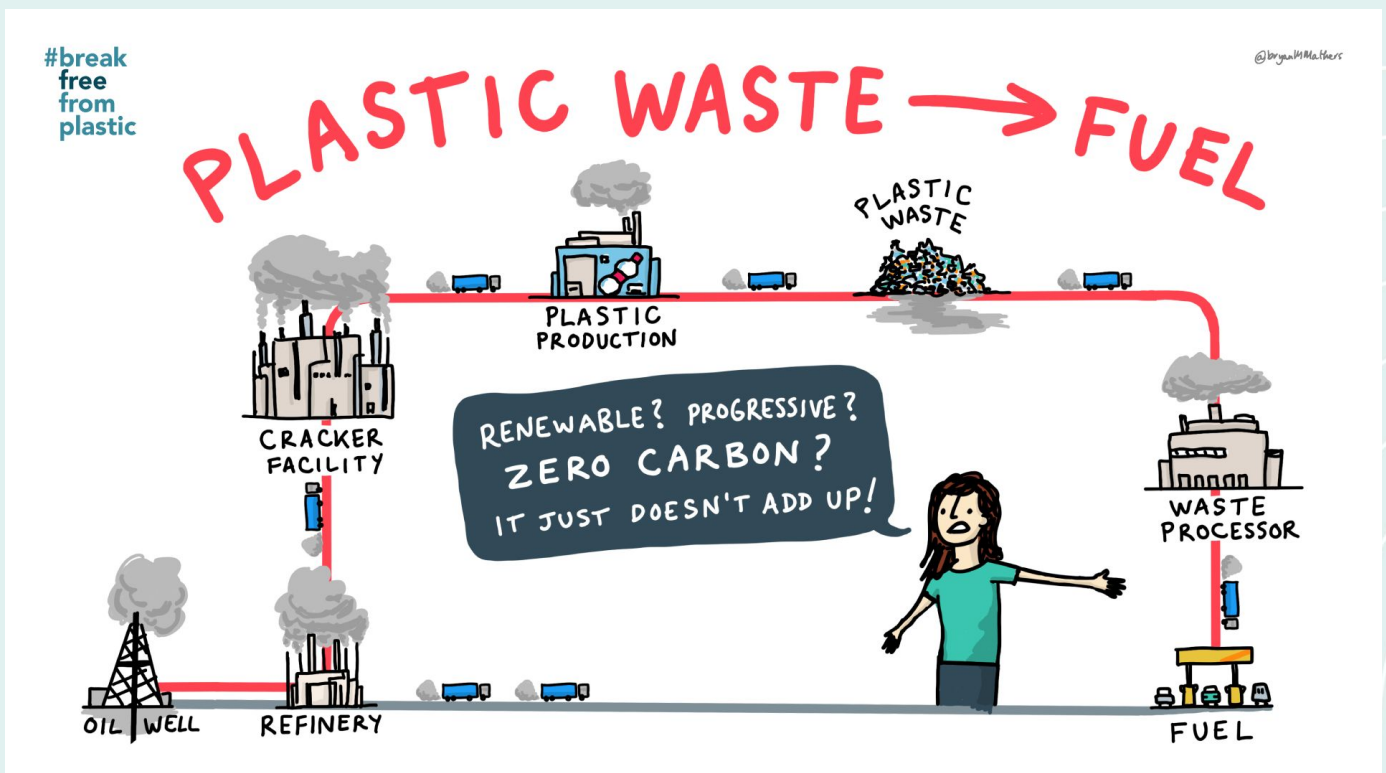
<sup>17</sup> [Circular Economy Action Plan: For a cleaner more competitive Europe](#), EU Commission 2020

# CONCLUSIONS

This briefing has highlighted the main concerns regarding fuels derived from non-renewable waste streams in the REDII. As our brief case study shows, the production of these fuels could have harmful effects on both climate change mitigation and circular economy measures.

We therefore urge member states not to include these fuels into their transport targets.

In the meantime, due to the inclusion of these fuels in the REDII, we urge the European Commission to develop a set of robust environmental criteria that ensure the impacts of these fuels are accounted for properly.



## RETHINK PLASTIC

Rethink Plastic, part of the Break Free From Plastic movement, is an alliance of leading European NGOs, representing thousands of active groups, supporters and citizens in every EU Member State.

## BELLONA

Bellona Europa is the Brussels-based branch of the Norwegian Bellona Foundation, an independent non-profit organisation working on the environmental, climate and social issues of our time. We aim to identify, promote and help implement realisable solutions for the protection of nature, the environment and health. To achieve these goals, Bellona continues to work with – and against – relevant actors and stakeholders.



Zero Waste Europe is the European network of communities, local leaders, businesses, experts, and change agents working towards the same vision: phasing out waste from our society. We empower communities to redesign their relationship with resources, to adopt smarter lifestyles and sustainable consumption patterns, and to think circular.



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