Requirements for a successful future deployment of low carbon fuels

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REG converts waste fats and oils into high quality renewable fuels and chemicals to meet growing global demand for cleaner products.
Large Scale International Production

13 Biomass-Based Diesel Plants → 520 MMGY NAMEPLATE Capacity → 1.73 MMT NAMEPLATE Capacity

Map of biomass-based diesel plants' locations in the United States and Europe.
Chinese activities:
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Regulation is key

Early hours June 13th…RED II compromise EU Parliament in Strasbourg
Elements of future successful deployment of low carbon fuels: example RED II

1. Extra-incentivization, e.g. double counting
2. Long duration: until 2030
3. Cap for less low carbon fuels
4. Mandate: 14% obligation on fuel suppliers by 2030
5. Constant improvement: new legislative proposal in 2023 (preparatory work to start in 2021)
6. Flexibility: EU Member States to set national action plans
7. Transparency: EU database
8. Reputation through solid certification, e.g. ISCC
illustrative
RED II: general target and transport target

[Diagram showing the targets for renewable energy in the transport sector, with percentages of EU road and rail energy consumption:
- 14% for food-based biofuels (optional)
- 7% for renewable electricity, electrofuels, recycled carbon fuels, and advanced biofuels (binding)
- 3.5% minimum contribution of advanced biofuels (binding)]

Notes:
Source:
Create new outlets for low carbon fuels

• Marine fuels:

Incorporation of biofuels from advanced feedstocks (annex IX) counts 1.2 times

...so, mainly uco & tallow
Avoid market distortions compromising environmental targets

Original double counting for aviation in RED II would have diverted feedstocks
• to higher GHG emitting technologies
• resulting into higher cost for tax payers

Solution: „British approach“ excludes uco & tallow from extra-incentivized category („developmental fuels“)
Getting the facts right: GHG Values
(annex V of RED II)

Waste biodiesel reduces more GHGs than other waste biofuels

...original values in RED II were erroneous
Beware of superficial Co-processing: the next „dieselgate“?

- Renewable biomass can—and will—be converted to materials other than fuel
- Potential for significant carbon loss to gas, CO/CO$_2$, asphalt, and coke

  renewable content has to be verified analytically

- US EPA
  Only approving new pathways using radiocarbon assay for bio-based carbon content
- EU JRC
  Leans towards analytical methods for verification
Europe is just an example: other North American mandates

Historic and Forecasted Global BBD Production

- **Biodiesel Mixture Excise Tax Credit (BTC)**: $1/gal. of biodiesel blended fuel, first enacted as part of the American Jobs Creation Act of 2004
- **RFS2 Enacted**: Policy mandating the use of BBD for obligated parties
- **New York Bioheat Mandate**: New York City passes 2% Bioheat mandate
- **EU Passes Renewable Energy Directive (RED)**: 20% of energy consumed in the EU is renewable by 2020
- **California LCFS Passed**: Implementation starting in 2010
- **BTC Reinstated**: Income tax credit for blended fuel retailers
- **BTC Reinstated**: Implementation of B2 blend requirement
- **BTC Reinstated**: Policy mandating the use of biomass based diesel (BBD) for obligated parties
- **BTC Reinstated**: Implementation of B20 blend between April 1 and September 30 each year
- **BTC Reinstated**: 10 year extension through 2030
- **BTC Reinstated**: Extended production and retail tax credits

Source: LMC International, National Biodiesel Board