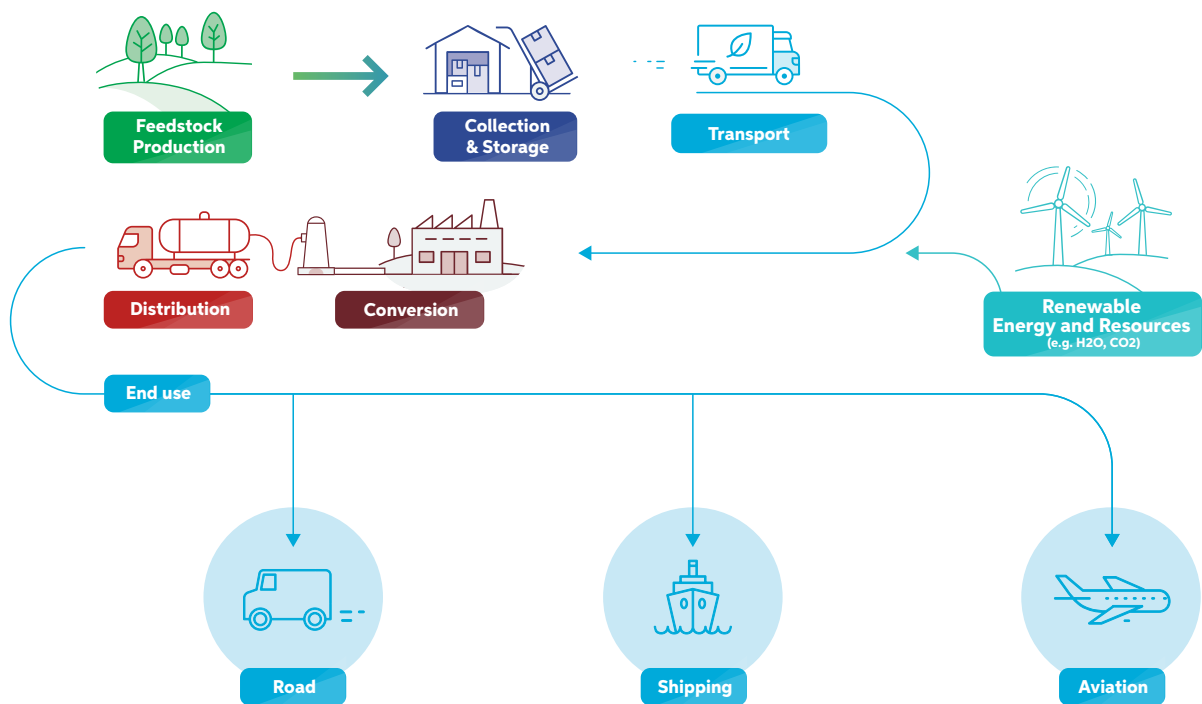




ADVANCEFUEL

Market Uptake of Advanced Renewable Fuels



Market Analysis

The transport sector is the only major EU sector where greenhouse gas (GHG) emissions are continuously increasing. In 2017, transport emissions (excluding international aviation and maritime), represented close to 22% of all total emissions, and were 20% higher than emissions recorded in 1990.

Advanced fuels from renewable energy sources (RESfuels), including biofuels, are among the most viable options available to reduce GHG emissions within the transport sector. While electrification becomes more significant (mainly in road and rail transport), advanced biofuels are viable for shipping and aviation sectors.

Based on lignocellulosic feedstocks, advanced RESfuels are not yet produced at a commercial scale. High production costs of advanced biofuels, coupled with the current low price of fossil fuels, remains as a considerable obstacle in the way of their development and deployment. Their future ability to compete in the market depends on cost reductions (from technological learning, economies of scale, efficiency improvements, more affordable novel sustainable feedstocks etc.) and the fossil fuel price development.

FIGURE 1. GREEN HOUSE GAS EMISSIONS IN 2017

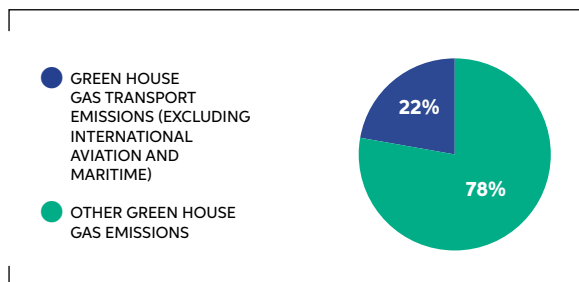
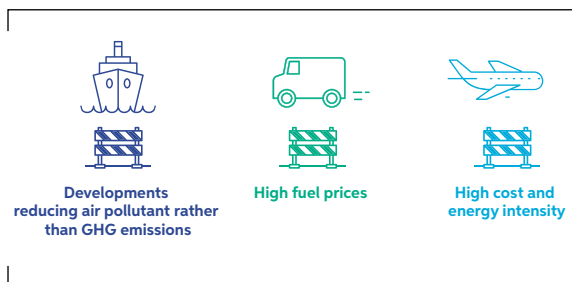
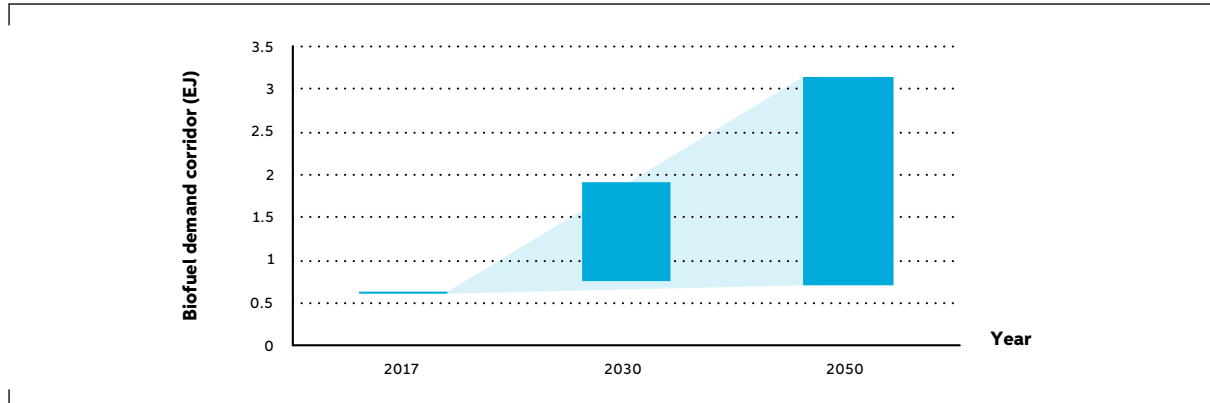


FIGURE 2. CHALLENGES FOR MARKET UPTAKE



Several scenarios conducted by the European Commission (and by the IEA) indicate the need for large quantities of RESfuels in demand by 2050. The PRIMES scenarios that aim to achieve the 2015 Paris Agreement goals also project a major increase in current biofuel use. If the demand target for 2050 is to be met completely by advanced biofuels, this implies a 10-18 fold increase of their uptake in the time frame between 2017-2050.

FIGURE 3. DEMAND FOR BIOFUELS ACCORDING TO DIFFERENT PROJECTIONS



Source: 2030 data derived from PRIMES an IEA projections; 2050 data derived from PRIMES, 2018 projections.



Policy is Key for the Market Roll-Out of Advanced RESfuels

The future market roll-out of advanced RESfuels depends very much on stable and long-term policy support. National and EU policies have mainly driven the deployment of renewable fuels within the transport sector. Since 2009, a mandatory target for renewable energy in road and rail transport within the EU has been enforced. However, this was shown as not sufficient in bringing lignocellulosic feedstock-based advanced RESfuels to the market. In 2019, REDII introduced the advanced fuel sub-obligation. Though this was a good start, it is still not sufficient in making a substantial contribution to the Paris Agreement ambitions.

Results produced from the ADVANCEFUEL project suggest that there is a significant opportunity for policy reformation within the EU. For this to occur, policy-makers would need to step back from the current standing on RESfuel and advanced biofuel policies, and explore options in which to steer future market uptake through a combination of policy interventions. This would mean addressing all elements of the value chain, which are also interlinked with the perspectives of UN Sustainable Development Goals (SDGs), the EU Common Agricultural Policy (CAP) and the overall European Bioeconomy. The integrated policy framework suggested by ADVANCEFUEL could potentially provide an initial baseline for EU policies to tackle these interlinked challenges, by analysing the current value chains, and developing new policy recommendations across all sustainability dimensions: economic, social and environmental.

As opposed to road and rail transport sectors, aviation and shipping are regulated at an international level. Starting in 2021, a global market-based measure, “Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)” – will become operational in order to address the amount of CO₂ emissions in the aviation sector. Compliance will be voluntary until 2027, whereas after this term, the provisions of the measure will be considered mandatory. The target is to reduce GHG emissions by 50% by 2050, as compared to 2005. Until recently in the shipping sector, the focus has been on minimising air polluting emissions (specifically SO_x, NO_x, PM). In spring 2018, the IMO adopted a strategy to reduce total GHG emissions in shipping by 50% in 2050, reduce the average carbon intensity by 40% in 2030, and 70% in 2050, compared to 2008.

Appropriate policy options to facilitate the end use of advanced biofuels according to initial findings from the ADVANCEFUEL policy assessment (See full assessment in D5.2)

GHG emissions reduction targets



Road:

60%
by 2050



Aviation:

50%
by 2050



Shipping:

50%
by 2050



| Challenges | Policy options | Policy mechanism | Value chain stage that policy would impact most |
|---|--|------------------|---|
| Long-term, consistent framework | Sub-target of GHG emissions savings for transport sectors with limited low carbon options (road, shipping and aviation sector) | Regulation | End-Use |
| | RESfuels strategies and action plans that integrate rural land-use planning and agricultural incentive schemes | Financing | Land Use |
| | information campaigns for farmers on the positive impacts of RESfuels on rural development and sustainable agriculture practices | Soft measures | Biomass production |
| | Public awareness campaigns for benefits of RESfuels in specific transport sectors (road, shipping and aviation sector) | Soft measures | End-Use |
| Controversy over environmental benefits of RESfuels | Certification-labelling schemes for RESfuels based on their value chain sustainability | Soft measures | <ul style="list-style-type: none"> • Land Use • Biomass production • Conversion • End-Use |
| RESfuels require high investment and market stability | Establish public-private partnerships to invest in the flagship and First of a Kind RESfuels plants and infrastructure | Financing | Conversion |
| | Reduce consumer costs by introducing taxation, tariffs, etc. | Financing | End-Use |