

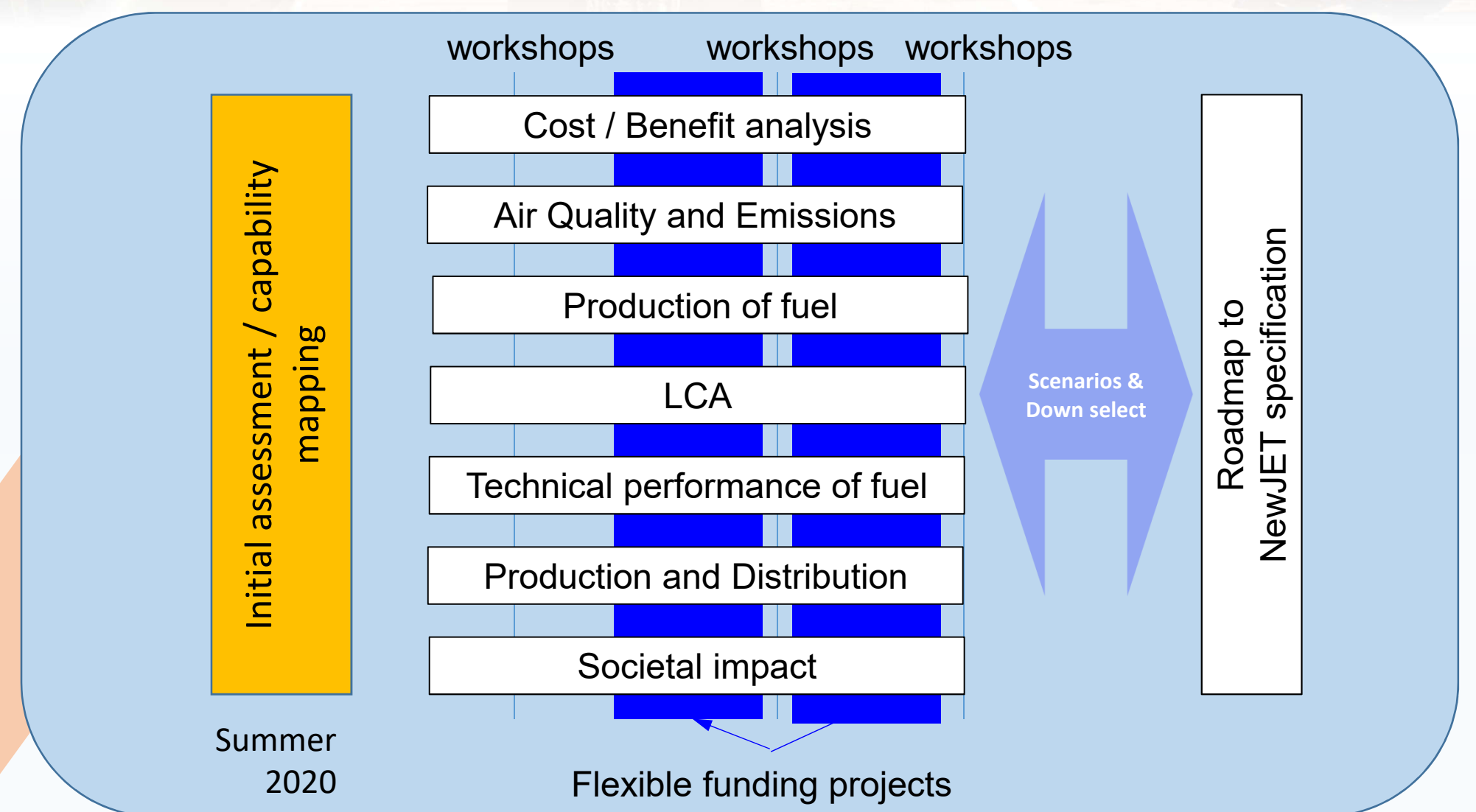
NewJET Network+ Investigating additional benefits of Sustainable Alternative Fuels for aviation

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The NewJET Network+ brings together an innovative research community, focused on exploring the advantages offered by the increasing levels of low carbon, synthetic fuel or modified conventional fuel production beyond the existing fuel specification. The project will run for three years from Summer 2020. The network will create a forum (free from commercial restraints that would limit freedom of forward and more strategic thinking) where an exploration of a new jet fuel specification can be investigated. The Network will carry out a number of workshop events to bring together expertise in these areas as well as running a series of flexible funding project calls during the funded period to investigate gaps in understanding.



NewJET Network+ Vision

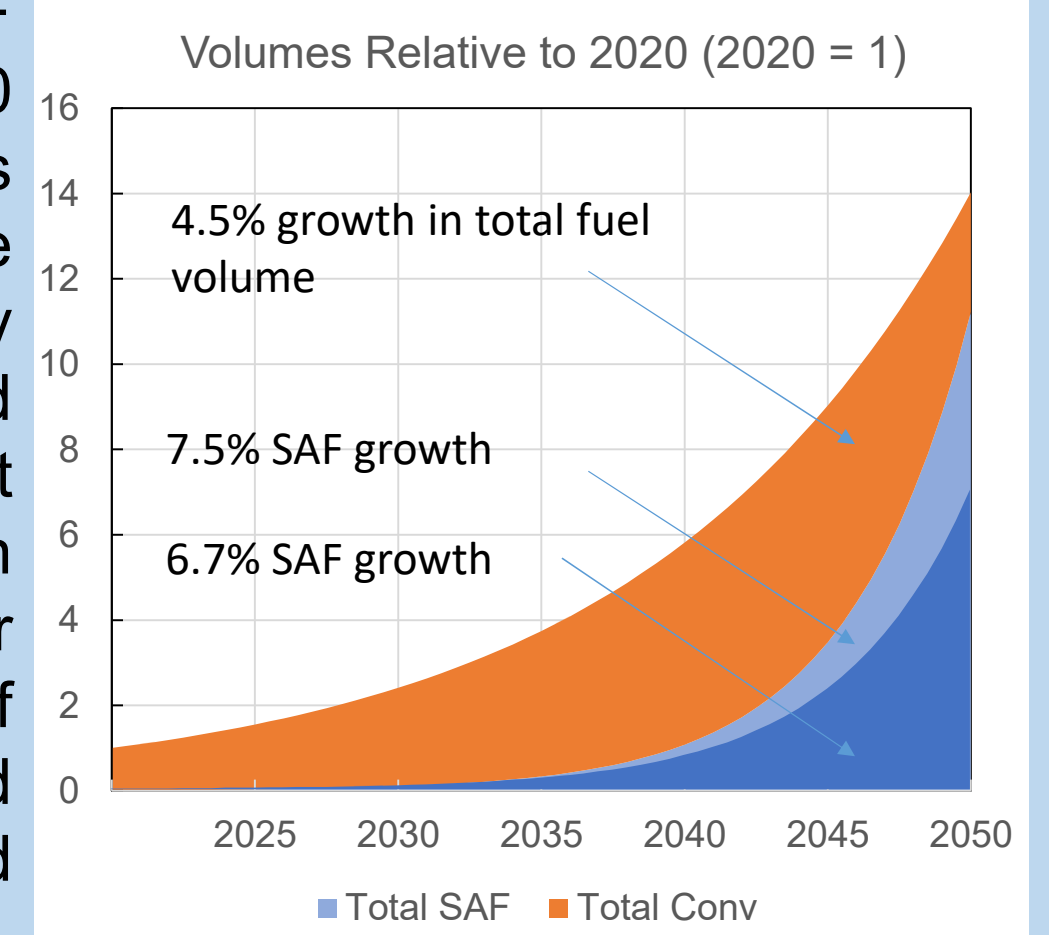
The NewJET Network+ is one of five Networks funded by the EPSRC in the UK to investigate the decarbonisation of Transport.

The NewJET Network+ will provide new understanding and insights into **the benefits and barriers to a new fuel specification for aviation by 2040** for conventional and alternative fuels – in terms of CO₂ reductions, non-CO₂ benefits, performance and cost of ownership.

Such a programme is required now as it builds on several key drivers:

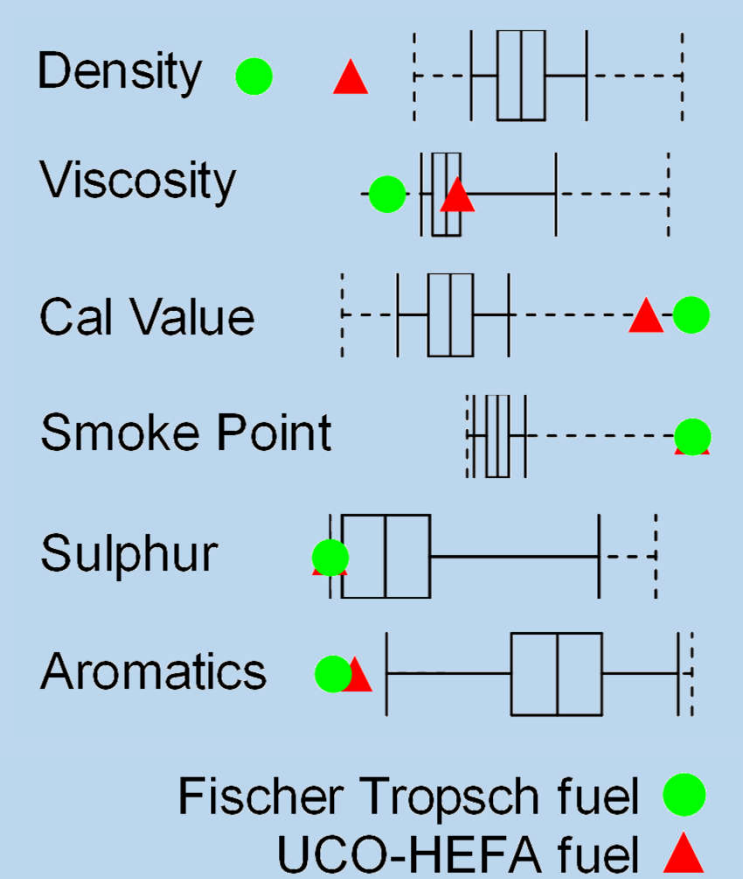
- The potential opportunities demonstrated by synthetic fuels.
- Recognition that while aircraft and engine technology continues to advance with each generation, fuel fuels remain essentially the same as when first standardised in the 1960's.
- Jet fuel is rapidly becoming a design, performance and emission profile limiting factor for future generations of engines and airframes.

As the volumes of SAF fuel grow over the next 20 years, the blending ratios of SAF fuels will rise to the point where they may exceed the 50% blend limitations for current aviation fuels (drop in fuels). To allow any further increase, an evaluation of a new, or adapted specification is required (near drop in fuels).



These near drop in fuels with high ratio blends of SAF fuels will have properties outside of the norm of the jet fuel we "know and love" today.

This presents a challenge and an opportunity to the OEMs and airlines to adopt technologies which can exploit this change, and further reduce the environmental impact of aviation, initially using existing hardware, and eventually to design hardware to a new specification.



NewJET Network+ initial assessment

The impact of moving to a beyond specification SAF fuel currently is currently estimated to be:

- Between 2% and 4% reduction in *sfc* due to improved fueling and higher calorific values of fuels
- Up to a further 5% reduction in *sfc* by designing aircraft around a higher new specification (figure under review)

The additional impact of non-CO₂ effects in use needs evaluating – and possibly converting to CO₂ equivalency.

The additional impact of production shift from conventional to sustainable sources (from 87 to 20 - 30gCO₂eq g/MJ)

flexible funding

A flexible fund budget of £300k will be managed by the Network to permit a competitive call for proposals

The topics for these calls will be identified by the state of the art exercise and workshop events in the first and second years of the network.

The budget for these proposals is fixed, although the network may get additional funds from industrial and government partners to increase the available budget.

Watch this space for funding calls!