REALISING THE POTENTIAL

The UK should build on its leadership in global aerospace and aviation to capitalise on the emerging sustainable fuels market to reduce emissions, create jobs and bolster investments in science and technology.

FORGING A PERFECT PARTNERSHIP

SA recommends the establishment of a public–private sector initiative to progress this shared vision.

DELIVERING SUCCESS

Long-term policy stability and financial support for the scaling-up and rollout of sustainable fuel production capacity will also be needed. SA recommends that the UK:

• Create a level playing-field for aviation by allowing sustainable fuel producers to claim Renewable Transport Fuels Obligation certificates for aviation fuels to bring these in line with road transport fuels
• Assist project finance through existing institutions such as the Green Investment Bank, which involves the Government underwriting risk at different development stages.
• Give priority to dedicated research and development (R&D) into sustainable fuels. Some countries are already providing R&D support for new feedstock sources and processing technologies to reduce fuel cost.

ABOUT SUSTAINABLE AVIATION

Sustainable Aviation is a unique alliance of the UK’s airlines, airports, aerospace manufacturers and air navigation service providers. Together we drive a long-term strategy to deliver cleaner, quieter, smarter flying. SA is the first alliance of its kind in the world and reports regularly on progress in reducing aviation’s environmental impact. For a full list of members see: www.sustainableaviation.co.uk/about/signatories

COLLABORATING TO INNOVATE

Industry is rising to the challenge. SA members are currently developing a number of sustainable fuel initiatives globally. We believe that a successful UK industry is possible with the right long-term policy support. Success of these and future projects is dependent on SA continuing to work with the Government to create a shared vision for sustainable aviation fuels.

Airbus is working with a number of global partners to develop Low Indirect Land Use Change feedstocks.

The British Airways-Solena Greensky London project will convert half a million tonnes of waste p.a. into sustainable fuels.

Boeing’s green diesel project has a potential global supply of 800m gallons p.a. for aviation.

Rolls Royce has worked with the USA CLEEN programme to develop innovative test methods for early stage novel fuels.

Thomson has operated commercial flights from the UK using sustainable fuels sourced from waste cooking oils.

Virgin Atlantic and LanzaTech’s partnership to convert waste gases from steel mills into sustainable aviation fuels is at demonstration scale in China.

The UK’s aerospace and aviation industries are important contributors to the UK economy. The UK has the largest aerospace sector in Europe and UK aviation sustains around 1 million jobs and contributes £50 billion GDP to the UK economy.
The UK could become exporters of these technologies.

**Sustainable Aviation (SA)** is committed to working collaboratively to find sustainable solutions for the aviation sector. In 2012 SA developed a CO2 Roadmap which gave initial estimates of the impact of sustainable fuels on UK aviation’s carbon emissions. Progress to develop new fuel pathways has been rapid, with three fuel pathways fully approved for use in commercial aviation.

To fully explore the potential of this emerging sector, SA has commissioned new independent research by sustainable energy consultants E4tech.

### Sustainable Aviation Fuels Road-Map

**2014** Biomas to liquids  
Alcohol to jet including SIP  
**2020** Pyrolysis fuels  
Sugar to jet including SIP  
**2030** Novel hydro routes  
**2040** HEFA from algae  
**2050** Biosynthesis routes

#### Sustainable Fuel Volumes

- **2020**: 0.7 million tonnes per annum  
- **2030**: 5 - 12 plants could be built by 2030  
- **2040**: 4.5 million tonnes per annum  
- **2050**: 10 - 15 plants could be built by 2050

#### Annual Growth

- **2020**: 0.7 million tonnes per annum  
- **2030**: 5 - 12 million tonnes per annum  
- **2040**: 5 - 10 million tonnes per annum  
- **2050**: 10 - 15 million tonnes per annum

### 2030 Targets

- **£265m Gross Added Value**  
- Up to 12 operational plants  
- 4,400 jobs

### 2050 Targets

- **£220m export value**  
- **£220m export value**  
- **£4,400 jobs**

### Potential UK Sustainable Fuels Roadmap

- **2020**: 0.7 million tonnes per annum  
- **2030**: 5 - 12 million tonnes per annum  
- **2040**: 4.5 million tonnes per annum  
- **2050**: 10 - 15 million tonnes per annum

### Sustainable Aviation Fuels

- **Are a reality.** There are three types of fuel approved for use in aviation.  
- **Can deliver credible carbon reductions towards long-term carbon targets.**

### Policy Support

- **Policy support is needed to help these innovative projects get to commercial scale and to build confidence in emerging technologies.**

### Aviation Fuels

- **Aviation fuels need a level playing field with other fuel and energy incentives.**

### Other Countries

- **Other countries are supporting low carbon fuel technologies.**

### SA Fuels

- **Sustainable Aviation Fuels produced in the UK would reduce our dependence on fossil fuels.**

### Sustainability

- **Sustainable Aviation is working in collaboration to develop some of these technologies.**
  - These technologies can use a whole range of materials to make fuels, including wastes and residues.

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**The UK could become exporters of these technologies.**

**BY 2030**

- These fuels could reduce the UK’s aviation emissions by up to 24%  
- **£265m Gross Added Value**

**CREATING 4,400 JOBS**

- If government policy is supportive

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**EVOLUTION OF SUSTAINABLE FUEL TECHNOLOGIES**

- Biomass to liquids  
- Alcohol to jet including SIP  
- Pyrolysis fuels  
- Sugar to jet including SIP  
- Novel hydro routes  
- HEFA from algae  
- Biosynthesis routes

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**SUSTAINABLE AVIATION FUELS**

- **They deliver high CO2 savings and do not cause indirect Land Use Change.**

**Public-Private partnerships are needed to bridge the “valley of death”**

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**CO2 footprint of aviation fuels**

- **Sustainable aviation fuels**  
- **5% CO2 footprint**  
- **10% CO2 footprint**  
- **12% CO2 footprint**

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**SUSTAINABLE AVIATION**

- **Cleaner. Quicker. Smarter.**