SkyNRG was founded in 2010 and officially launched after supplying the first commercial biofuel flight, operated by KLM in 2011. SkyNRG was set up to create a market for sustainable jet fuel and has built up a track record in recent years, supplying most of the biofuel flights to date.

The need for aviation to become part of the bio-based economy was evident. Especially as there has been a strong focus in recent decades from governments and industry on the development of a bio-based economy. This trend has emerged for three reasons: the need for carbon emissions reductions, energy security and resource resilience, and economic development and industry innovation.

However, the global nature of the aviation industry makes it difficult to regulate biofuels and carbon emissions as in some other industries. The aviation industry has recognized the need for sustainable biojet fuel as there is no other known practical alternative to liquid energy carriers. Biofuels are the only option to bridge a transition to any (yet unknown) new propulsion technology, which may emerge in the next 30 years.

In the last five years, aviation has emerged as one of the front runners in voluntarily embracing the development of sustainable fuels. After SkyNRG supplied the world’s first commercial biofuel flight in 2011, the company received biofuel requests from all over the world and over the following two years the company supplied biofuel to more than 20 customers, including: Finnair, Alaska Airlines, Etihad, Qantas Australia, LAN Chile, and Air Canada. The biofuel flights by those companies demonstrated the feasibility of the product and that biofuel, when produced according to strict standards, is a safe and sustainable aviation fuel. Since then, there has been growing interest from the aviation industry in sustainable jet fuel and a large collective effort is underway to scale production capacity.

However, high price premiums have been the biggest challenge that limited the uptake of sustainable jet fuel to-date. This has partly been caused by an uneven playing field with the mandated road transport biofuels sector (in the EU and USA). The road transport suppliers are under these mandated systems obligated to blend biofuels into the existing fuel system. As the aviation industry is not obligated, existing production capacity allocates its resources towards road transport biofuels, consequently driving up the prices of biojet fuel. Since airlines do not have enough capital to pay the premium for sustainable jet fuel, SkyNRG installed several “smart” co-funding mechanisms to bridge the price gap with fossil fuels. For example, in 2013 SkyNRG started to actively involve other stakeholders such as governments, airports and even an airline’s corporate customers; all parties which can also benefit from developing a market for aviation biofuels. By co-funding the premium, these parties help to aggregate demand and enable production capacity in the short term.

A successful example is the KLM Corporate BioFuel Programme that was launched in 2012. This programme offers KLM’s corporate customers such as ABN AMRO, Nike and Accenture an opportunity to reduce their corporate carbon footprint from business travel by flying (partly) on sustainable biofuel. The programme enabled SkyNRG and KLM to launch the first weekly series of biofuel flights between New York and Amsterdam, demonstrating that biofuel can provide a real sustainable solution for the aviation industry in the long term.

SkyNRG & Sustainability

From the start, SkyNRG set the bar high when it comes to the sustainability of biojet fuel. SkyNRG has its operations RSB certified and is advised by an independent Sustainability Board in which the World Wide Fund for Nature (WWF-NL), Solidaridad, and The Energy Academy hold a seat. SkyNRG’s sustainable jet fuel has the potential to reduce CO2 emissions by up to 80%, compared with fossil jet fuel.
Another initiative is a business model that engages airports as key stakeholders in growing the market for sustainable jet fuel. For this initiative, SkyNRG is partnering with Carbon War Room, a non-profit entity that accelerates the adoption of business solutions that reduce carbon emissions and advance the low-carbon economy (see article page 159). Currently, SkyNRG is also working on an end-customer proposition, offering individual travellers the opportunity to buy their personal ‘biofuel-ticket' and contribute to sustainable flying.

In parallel with these co-funding programmes, SkyNRG is setting up regional supply chain “BioPorts” for sustainable jet fuel. The company is teaming up with airlines and airports around the world to create the structure and the market pull that will enable regional sustainable jet fuel supply chains to get financed and built. The BioPort model is based on a regional approach which means that the benefits can go well beyond carbon reduction. SkyNRG sees energy security, reduced price volatility, (potential) development of local communities and rural areas, adding value to (marginal) lands and economic growth, as main drivers to engage a broader group of stakeholders (e.g. governments, farmers, investors, NGOs). For a Bioport, SkyNRG uses the feedstock that makes most sense for the subject region and engages the right conversion technology.

SkyNRG already launched several BioPorts including: BioPort Karlstad, BioPort Brisbane, and BioPort Holland. Apart from SkyNRG being a Dutch company, an important reason why a BioPort is being developed in the Netherlands, is the incentive structure, offered by the government. Since 2013 the Dutch government has allowed biojet fuel to voluntarily opt-in under the European Renewable Energy Directive (RED) mandate for road transport fuel. This opt-in allows biojet fuel suppliers to generate biofuel certificate, which can be sold to the obligated party in the road transport sector. Therewith, biojet fuel counts towards the member states’ 10% Renewable Energy Share target and at the same time this mechanism helps to bridge the price gap between fossil and bio jet fuel. SkyNRG is currently actively encouraging other EU Member States to follow this example as the company considers this a very important tool to accelerate the development of sustainable aviation biofuels in Europe.
Currently the company is involved in a number of feedstock projects. One of these collaborations is project Project Solaris, an effort to develop sustainable jet fuel in South Africa from the nicotine-free tobacco plant variety, called Solaris. The project involves SkyNRG and Sunchem, and is supported by Boeing, South African Airways, and RSB. In Canada, SkyNRG is involved in a project with Boeing, Air Canada, WestJet, Bombardier and
the University of British Columbia to turn forestry-industry waste into sustainable jet fuel.

In the coming years, SkyNRG expects that an important change in supply dynamics will come from the certification of renewable diesel as a blend-stock with fossil jet fuel. The certification of this product as a jet fuel component is expected in the second half of 2016 and will increase the capacity to 3 million tons globally. At the same time, there are a growing number of initiatives that focus on optimizing the supply process of biofuel by moving from delivery by truck to an integrated supply chain, whereby the fuel will be distributed via the hydrant system of the airport. Oslo Airport is a great example of this. These are very important steps to truly integrate sustainable jet fuel into the existing infrastructure, making this fuel just like any other fuel, but with the extra advantage that it is much more sustainable.

The RenJet Project – by Climate KIC
The RENJET project accelerates the development of sustainable Bio Fuel supply chains that may account for up to 20% of jet fuel demand in the European Union in 2025. The project develops knowledge, practices, procedures and tools, tests and pilots them, towards the overall goal of a self-sustaining network of regional renewable jet fuel supply chains throughout Europe and beyond.

The activities range from: selecting and expanding the supply of available feedstock(s), managing stakeholders and conversion steps, support of ASTM certification up to signing offtake agreements for certified Bio Fuel, and defining business models that take all stakeholders into account.