

# 4. SUSTAINABLE ALTERNATIVE FUELS

## SE4ALL SUSTAINABLE BIOENERGY GROUP: PARTNERING TO PROMOTE SUSTAINABLE AVIATION BIOFUELS

BY GERARD J. OSTHEIMER (SUSTAINABLE ENERGY FOR ALL)

### Aviation and Climate Change

The Aviation Sector is showing tremendous leadership in addressing climate change. The International Civil Aviation Organization (ICAO) adopted aspirational goals of 2 per cent annual fuel efficiency improvements and carbon neutral growth from 2020 and a “Basket of Measures” to reduce international aviation CO<sub>2</sub> emissions. The aviation industry, through the Air Transport Action Group, committed itself to the ambitious goals of carbon-neutral growth from 2020 onwards and a subsequent reduction of net aviation emissions by 50% by 2050, relative to 2005 levels. ICAO reports progress on all elements of its “basket of measures”, including aircraft technologies, operational improvements, sustainable alternative fuels and a global market-based measure. While improvements in aircraft technologies and operations are expected to contribute to reducing emissions, it is expected that the necessary deep cuts will come from the use of Sustainable Low Carbon Fuels that provide significant net reductions in CO<sub>2</sub> emissions relative to fossil-based aviation fuel.

After years of Research & Development investments, technological advances and the development of numerous strategic partnerships between airlines and fuel producers, sustainable aviation biofuels are emerging as a viable way to decarbonize the aviation sector. The ICAO Sustainable Alternative Fuels (SUSTAF) Experts Group recognized the potential for Sustainable Aviation Biofuels but also recognized that the nascent sector needs to:

- Establish robust biomass feedstock supply chains;
- Ensure that the biomass feedstock is produced in an environmentally, socially and economically sustainable manner;
- Attract the necessary investment to build the first production facilities;
- Put in place policies that promote the use of Sustainable Aviation Biofuels; and
- Improve fuel production technologies by investing in Research and Development so as to achieve price parity with fossil-based aviation fuels.

Overcoming the complex, inter-dependent challenges of creating a vibrant, sustainable aviation biofuels industry *de novo* requires extensive participation of all stakeholders, including government support through stable, forward-looking energy policies and legislation. Establishing and maintaining such policies and triggering investment has proven to be a difficult task in mature

aviation markets. Creating a viable biojet fuel supply industry in developing countries requires considerable international support, although several have the climate and biomass resources suitable for producing sustainable aviation biofuels at scale. If sustainable aviation biofuels could be produced in these countries, then the combination of global climate change mitigation benefits and local socio-economic benefits could generate a valuable “Win-Win” outcome. This is what SE4ALL is seeking to support.



SUSTAINABLE ENERGY  
FOR ALL

### Sustainable Energy for All

The Sustainable Energy for All initiative (SE4All) is a multi-stakeholder partnership between governments, the private sector, and civil society that was launched by the UN Secretary-General in 2011. SE4All has three interlinked objectives to be achieved by 2030:

- Ensure universal access to modern energy services;
- Double the global rate of improvement in energy efficiency; and
- Double the share of renewable energy in the global energy mix.

SE4All leverages the global leadership and unprecedented convening power of the United Nations and the World Bank to assemble an unparalleled network of leaders from all sectors of society into a partnership that can transform the world's energy sector and contribute to advancing the 2030 Agenda for Sustainable Development adopted by the United Nations in 2015. Especially, we are committed to Sustainable Development Goal 7: “Ensure access to affordable, reliable, sustainable, and modern energy for all” and “to increase substantially the share of renewable energy in the global energy mix by 2030”.

SE4All seeks to mobilize stakeholders around best practices, supports the adoption of innovative solutions and the creation of the conditions that will enable a massive scale-up of private investment in energy access and clean energy. As of 2016, SE4All has connected development agencies, development finance institutions, civil society organizations and multilateral

institutions, such as the International Renewable Energy Agency (IRENA), into a powerful collaborative network capable of facilitating renewable energy projects in developing countries across the globe. Importantly, the SE4All community recognizes that only by harnessing the power of the private sector will renewable energy be deployed at the scales necessary to impact the global energy mix.

### Se4all Sustainable Bioenergy High Impact Opportunity

In response to the UN Secretary General's call for the Private Sector to partner with SE4All, the global biotechnology company Novozymes catalyzed the creation of an open, voluntary partnership of likeminded stakeholders committed to promoting sustainable bioenergy solutions so as to assist SE4ALL in reaching its goals of universal energy access and doubling the use of renewable energy. The SE4ALL Sustainable Bioenergy High Impact Opportunity (HIO) was launched in May 2015. The HIO Founding Members are Bloomberg New Energy Finance, Carbon War Room, IEA Bioenergy, KLM/SkyNRG, Novozymes, Roundtable on Sustainable Biomaterials, UN Food and Agriculture Organization and UN Foundation. Of SE4ALL founding members, the Carbon War Room, SkyNRG and RSB are particularly active in promoting Sustainable Aviation Biofuels. Their work is also described in this publication (Chapter 4).

Several types of bioenergy projects are being promoted, including:

- on-farm bioenergy production to boost agricultural yield and reduce post-harvest losses;
- distributed electricity production using sustainable biomass from forestry and agriculture coproducts;
- electricity and fuels from municipal solid waste (MSW);
- ethanol for clean cooking and transportation;
- and sustainable aviation biofuels.

Already, the HIO is actively collaborating with its SE4All partners, such as IRENA and the Regional Hubs, to up-scale bioenergy development through knowledge enhancement and information sharing, policy support and deployment support. Additionally, the HIO is developing means of financing sustainable biomass power projects and renewable fuels projects across the globe.

### Below50: A Public-Private Partnership to Promote Low Carbon Fuels

The Sustainable Bioenergy HIO moved a step forward in partnering with the World Business Council for Sustainable Development to create *Below50*, which is a global collaboration of forward-thinking companies that will grow the global market for the world's most sustainable fuels and accelerate the shift away from fossil fuels so as to achieve a carbon neutral transport sector.



The partnership was launched on 1 June 2016. Below50 is to be composed of companies that span the entire transportation fuel value-chain including fuel producers, investors, equipment manufacturers and end-users. Below50 is well suited to create linkages between aviation fuel consumers such as airlines and biojet fuel producers. Below50 is designed to:

- Increase the number of companies choosing Below50 fuels;
- Create inter-sectoral business-to-business opportunities across biofuel supply chains;
- Demonstrate that Below50 fuels make good business sense; and
- Address legislative and financial barriers to sourcing Below50 fuels.

Any company that produces, uses or invests in alternative fuels that are at least 50% less carbon intensive than conventional fossil fuels can join below50. They must publicly commit to the campaign, provide evidence of production, use, or investment in below50 fuels, and disclose their progress towards achieving promoting uptake of below50 fuels. Low carbon fuels is a major business opportunity, with the market for sustainable fuels estimated to reach \$185 billion in the next five years. Sustainable fuels now make up only 3% of transport fuels, but this figure must grow to 10% by 2030 to meet economic growth and help keep global warming below 2 degrees.

Overall, Below50 wants to create a paradigm shift in the low carbon fuel sector, reach new customers and create new markets.

### References

- Hileman, J.I., E. De la Rosa Blanco, P.A. Bonnefoy and N.A. Carter, 2013: The carbon dioxide challenge facing aviation. *Progress in Aerospace Sciences* **63**: 84–95.
- International Air Transport Association (2014) IATA 2014 *Report on Alternative Fuels*.
- Nakada, S., Saygin, D. and Gielen, D. (2014) *IRENA Global Bioenergy Supply and Demand Projections: A working paper for REmap 2030*.
- Novelli, P. (2013) *The Challenges for the Development and Deployment of Sustainable Alternative Fuels in Aviation: Outcomes of the ICAO's SUSTAF Experts Group*.