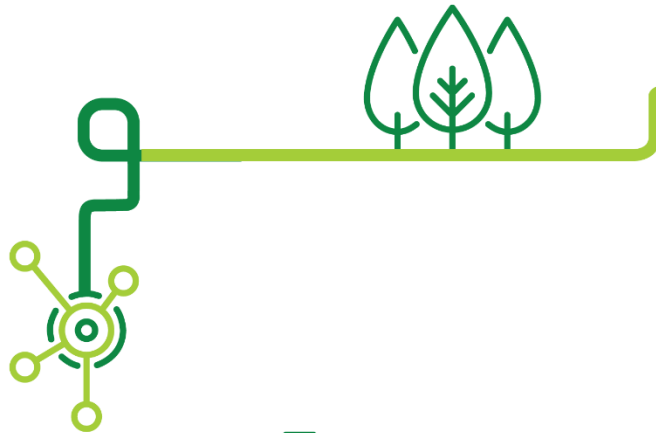
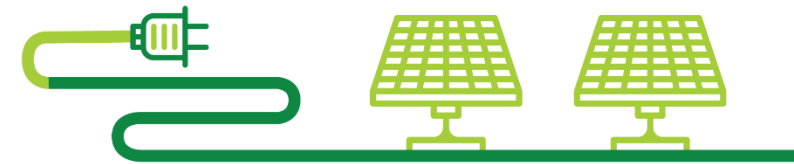


AVIATION CO₂ REDUCTIONS



STOCKTAKING SEMINAR

TECHNOLOGY · OPERATIONS · SUSTAINABLE AVIATION FUELS





Boosting innovation and implementation

Christian Pho Duc

Managing Director H2 Projects –
Smart Energy





SMARTENERGY

Synthetic e-fuels for sustainable aviation – *An investor's perspective*

Christian Pho Duc

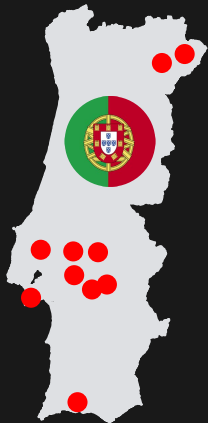
ICAO Stocktaking Seminar on aviation in-sector CO₂ emissions reductions

11.09.2020

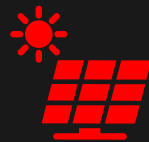
Who we are

Smartenergy is a private investment firm committed to sustainable investments into renewable energy & related innovation ventures

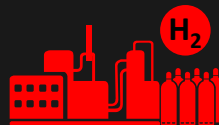
We follow a hands-on investment approach and break new ground to create value – for example via our green H₂ projects in Portugal



>1GWp PV project pipeline in Portugal



4 green H₂ projects selected by government under IPCEI



Why we are here today

We see significant investment potential in e-fuels for aviation – but also obstacles to overcome to build investment-ready projects

Today, we would like to bring the investors' perspective to the table to contribute to getting projects off the ground

From an investor's standpoint, synthetic e-kerosene production projects are interesting for a number of reasons



High urgency

- > Pressure to de-carbonize aviation industry to keep societal "license to operate"
- > High likelihood of "market-making" political intervention via quotas and/or support mechanisms



Limited competition from technology alternatives

- > High energy density requirements for commercial aviation (especially intercontinental) cannot be met via direct electrification



Sustainable footprint

- > Power-to-liquid pathway based on RES outperforms other SAFs in terms of CO₂ balance, feedstock availability, and land/water use



Limited adaptation cost

- > Compatible with existing aviation fleets (combustion engines)
- > Compatible with existing infrastructure (refining, liquid fuels transport & distribution)

We see a set of key success factors to be addressed by future projects to meet the mark as attractive investment cases

Value-chain coverage

Holistic project approach – involving project partners from feedstock (RES, CO₂, H₂O) over intermediate products (H₂, Syngas, e-crude) to refined final product ready for drop-in – to control process chain and allocate/manage risk effectively

“

What we
are looking
for in
projects



Technology edge & process integration

Leading, innovative technology solutions to effectively integrate the fragmented value chain steps (RES, electrolysis, CO₂ capture, Syngas production, FT-synthesis) – Enhance process efficiency to overcome poor conversion economics and accelerate path to cost competitiveness

Commercial de-risking

Commitments from offtake partners (refineries, airlines as final offtakers) with long-term take-or-pay agreements to de-risk high Capex investment into e-fuels production plants



Thank you!

Christian Pho Duc

Managing Director H₂ Projects

c.phoduc@smartenergy.net

Smartenergy Invest AG

Sihleggstrasse 17

8832 Wollerau SZ

Switzerland

[smartenergy.net](https://www.smartenergy.net)

Thank You

