

SAF market development

International perspective throughout the supply chain

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SkyNRG's mission is to help create and accelerate the market for Sustainable Aviation Fuel since 2009

SKYNRG's goals & activities

1

Term

Short term – Supply & Operations

Goal

Provide a one stop shop for sustainable aviation fuel

Activities



Operations

Fuel sourcing and into wing delivery



Co-funding the premium

Closing the gap for airlines



Sustainability

Ensuring sustainability throughout

2

Long term – Market development

Develop regional SAF supply chains that convert local feedstocks into cost-competitive SAF



DSL development

Creating local supply chains



Tech development support

market development



Regulatory efforts

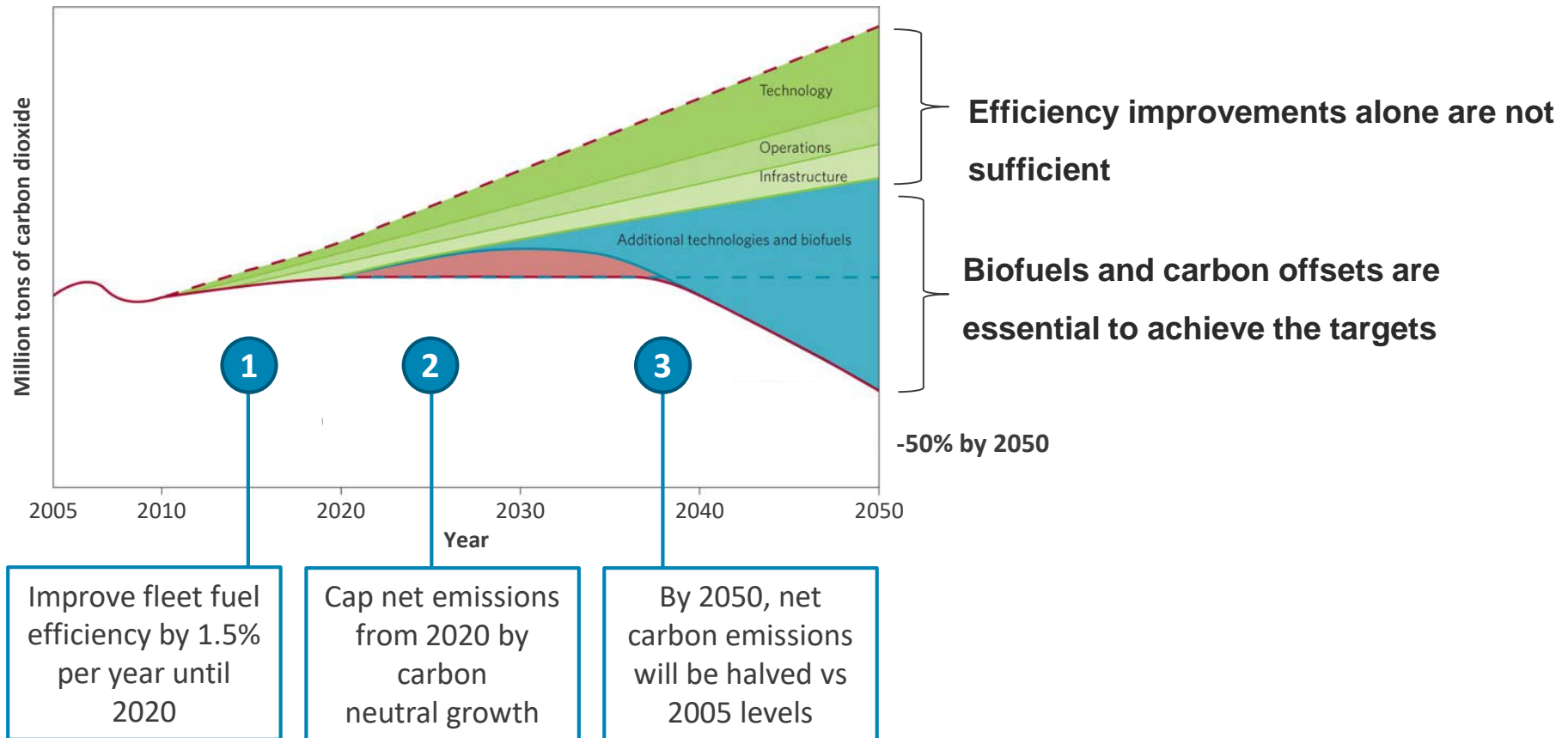
Interaction with key legislators

Track record of SkyNRG since founding in 2009



Bio-jet is the most effective measure for the aviation industry to significantly reduce its carbon footprint

CO₂ reduction options for aviation 2005-20





ACA404

MANITOBA

ONTARIO

QUEBEC

NEWFOUNDLAND
AND LABRADOR

NORTH
DAKOTA

MINNESOTA

SOUTH
DAKOTA

WISCONSIN

Chicago

Toronto

Montreal

MAINE

NOVA SCOTIA

ILLINOIS

Philadelphia

MISSOURI

KENTUCKY

WEST VIRGINIA

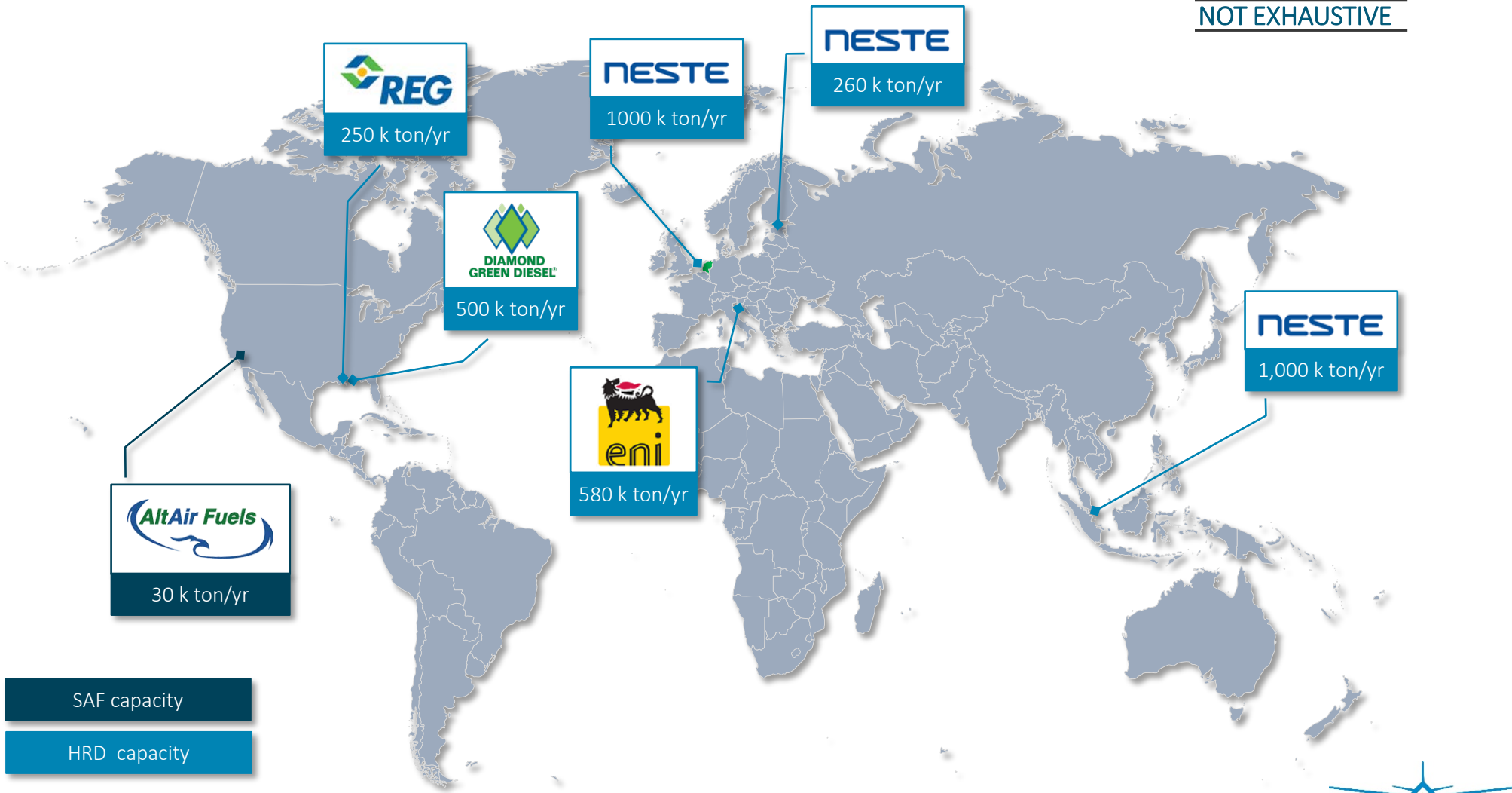
ARKANSAS

LOUISIANA

United States

Renewable fuels capacity is growing, but there is still very little capacity of SAF compared to renewable diesel.

NOT EXHAUSTIVE



SAF capacity

HRD capacity

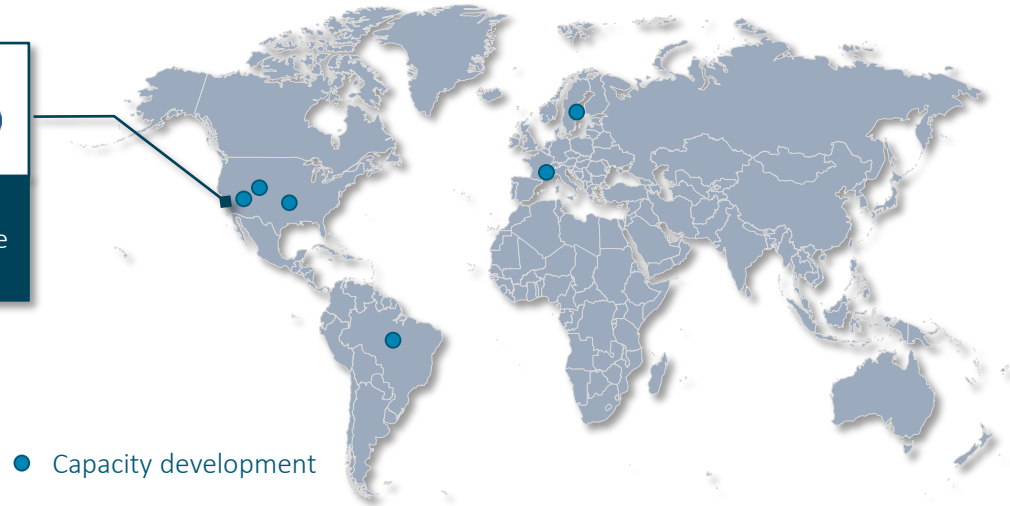


But, steps are being taken towards SAF commercialization

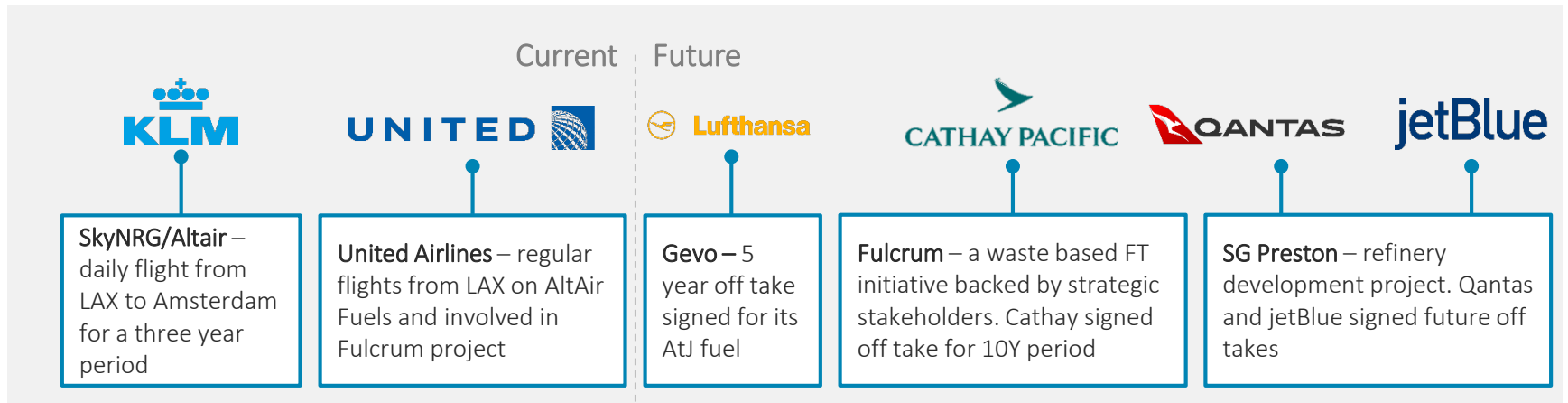
Production capacity



AltAir Fuels
Dedicated biojet
Produced from waste oils and fats



Airline off-takes



Government support is required to create an appropriate market structure and give the right signals to innovators and financiers

Barriers to biojet growth

1

Price premium

Biojet fuel commands a premium over conventional jet

Main barrier

2

Technology development

Need to develop technologies that offer a better business case than the current technology (HEFA)

3

Feedstock availability

The amount of sustainable oils and fats is insufficient to meet future demand

Potential government actions



Create a stable demand

Promote stable, long-term policy to ensure markets and attract investment for biojet production.

If there is a demand, the rest will follow



Fill in RD&D funding gaps

Funding programs that enable technology providers and feedstock developers to scale-up their solution and bridge the “valley of death”



Encourage international collaboration

Incorporate sustainability considerations and work towards certification of new biojet pathways

There are governments that support Bio-fuel policy schemes that incentivize the use of SAF

Current



United States

RFS2 allows for SAF to generate RIN credits



European Union

RED: voluntary opt in
RED II: Incentive or mandate for SAF



Norway

Mandate in place:
1% in 2019
30% in 2030



Indonesia

2% mandate in place (not enforced)

Proposed



Canada

5-10% mandate for internal flights



Brasil

Tax exemption internal flights



China

Ambition: 30% SAF in 2030



ICAO

SAF as mitigation option under CORSIA

Zooming in on Europe , we believe EU RED 2 will be an important drive for the development Bio-jet

RED II is in final draft, but there are still components that need to be negotiated by Q1 2019

RED 2 Highlights

- ▶ Takes effect from 2021 onwards
- ▶ headline target of 32% energy from renewable sources at EU level for 2030
- ▶ 14% of their transport fuels are derived from renewable energy sources
- ▶ Food-based are capped at 7%
- ▶ Palm oil feedstock volumes are frozen at 2019 levels and will be phased out to 0 by 2030
- ▶ Aviation will be included on a voluntary basis, with a 1.2 multiplier

Annex IX

- ▶ Specifies which feedstock can count towards the advanced biofuel sub-target.
- ▶ Annex IX consists of two parts: A and B.
- ▶ The exact content is not available yet

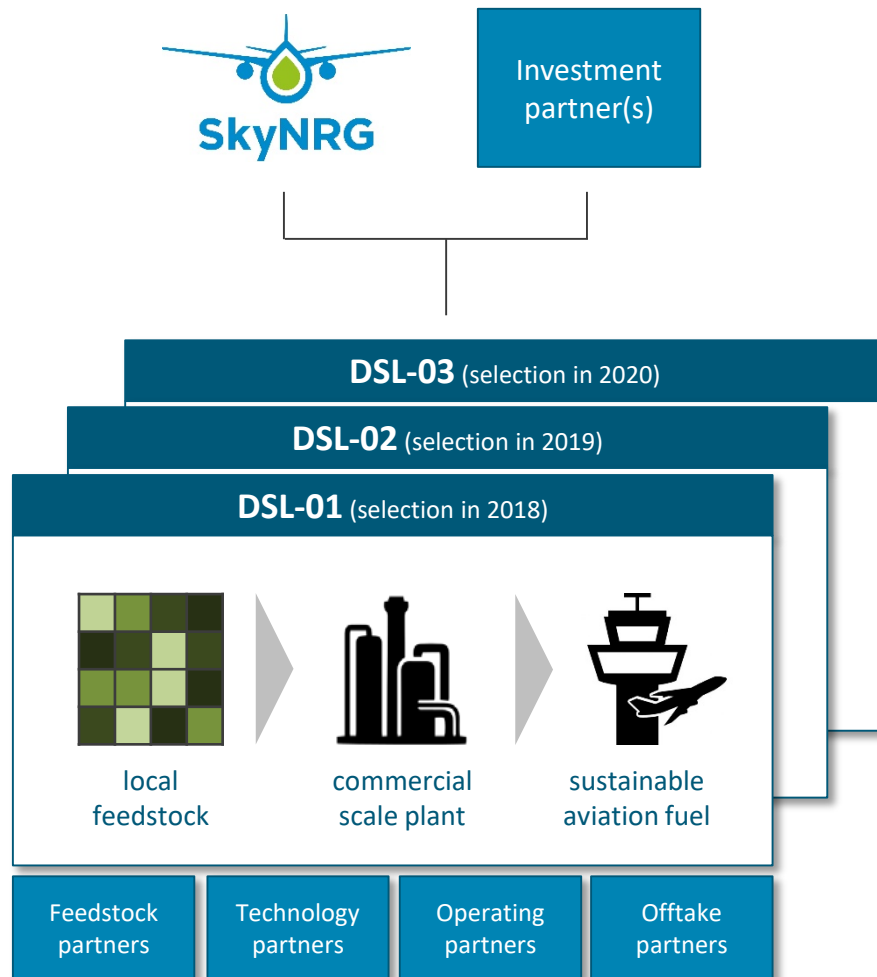
Part A

- ▶ Fuel volumes from part A feedstocks show a steady growth track: 0.2% in 2022, 1% in 2025, 3.5% in 2030

Part B

- ▶ Fuel volumes from part B feedstocks are capped at 1.7% in 2030.

SkyNRG is developing SAF production capacity build on local feedstock, a commercial scale plant and long-term offtake partners in EU



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