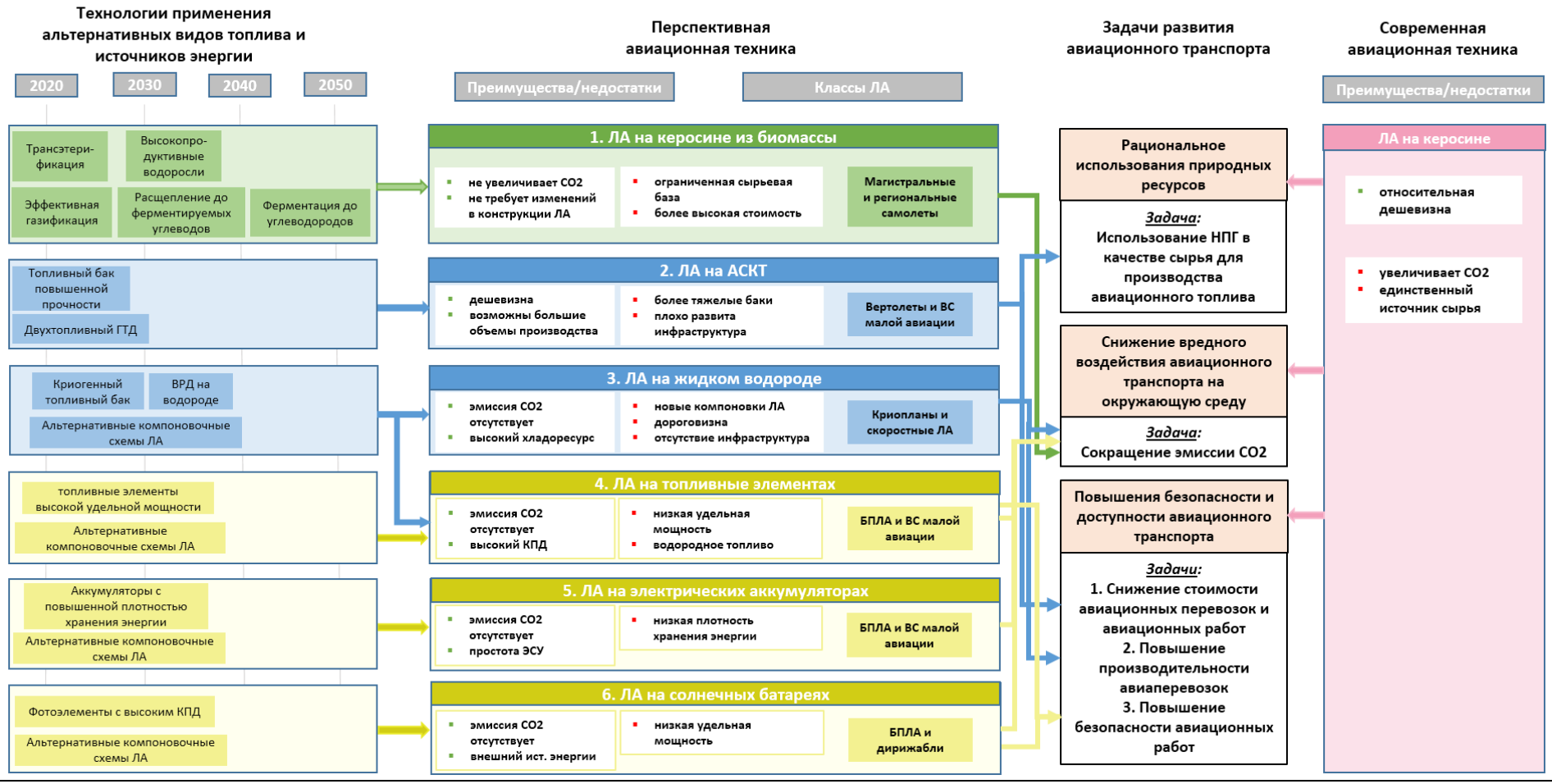
Overview of Alternative Fuels Research at TsAGI

Dr. Andrey Shustov,
Associate Professor, MIPT
Head of Department, TsAGI

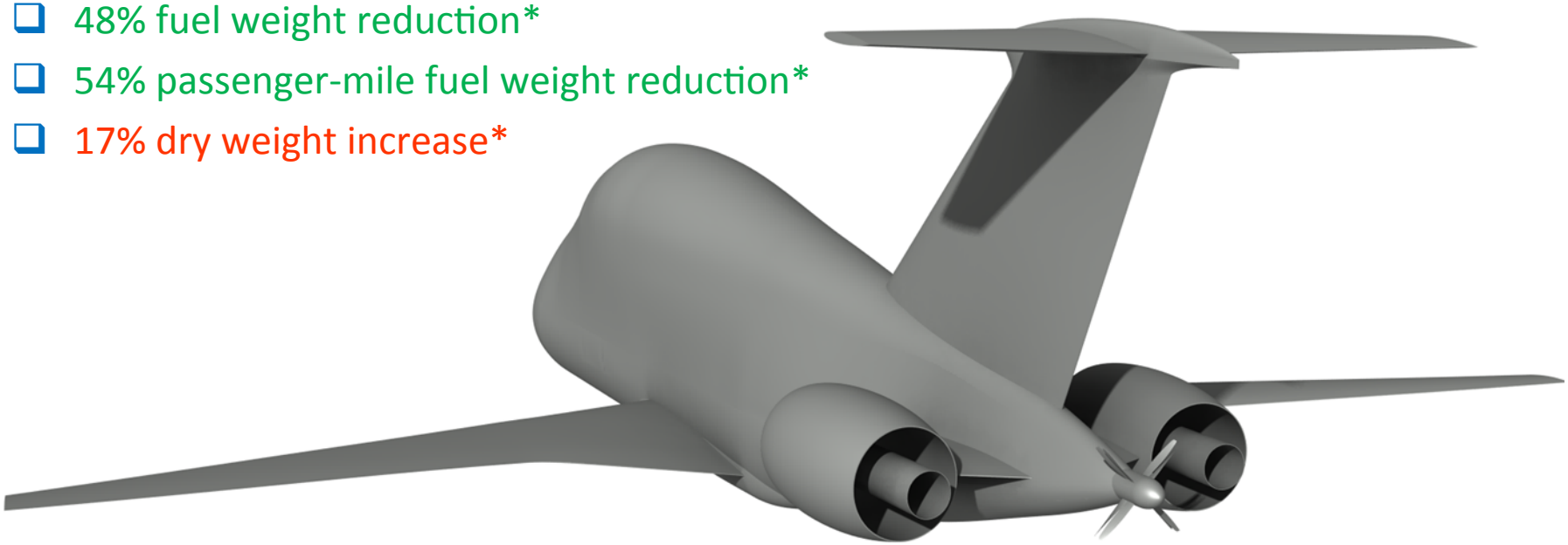
Scientific technology roadmap concept of application of alternative fuels and energy source in aviation



Hydrogen

Wide body long-range cryogenic airplane powered by two engines and a propeller.

- 48% fuel weight reduction*
- 54% passenger-mile fuel weight reduction*
- 17% dry weight increase*



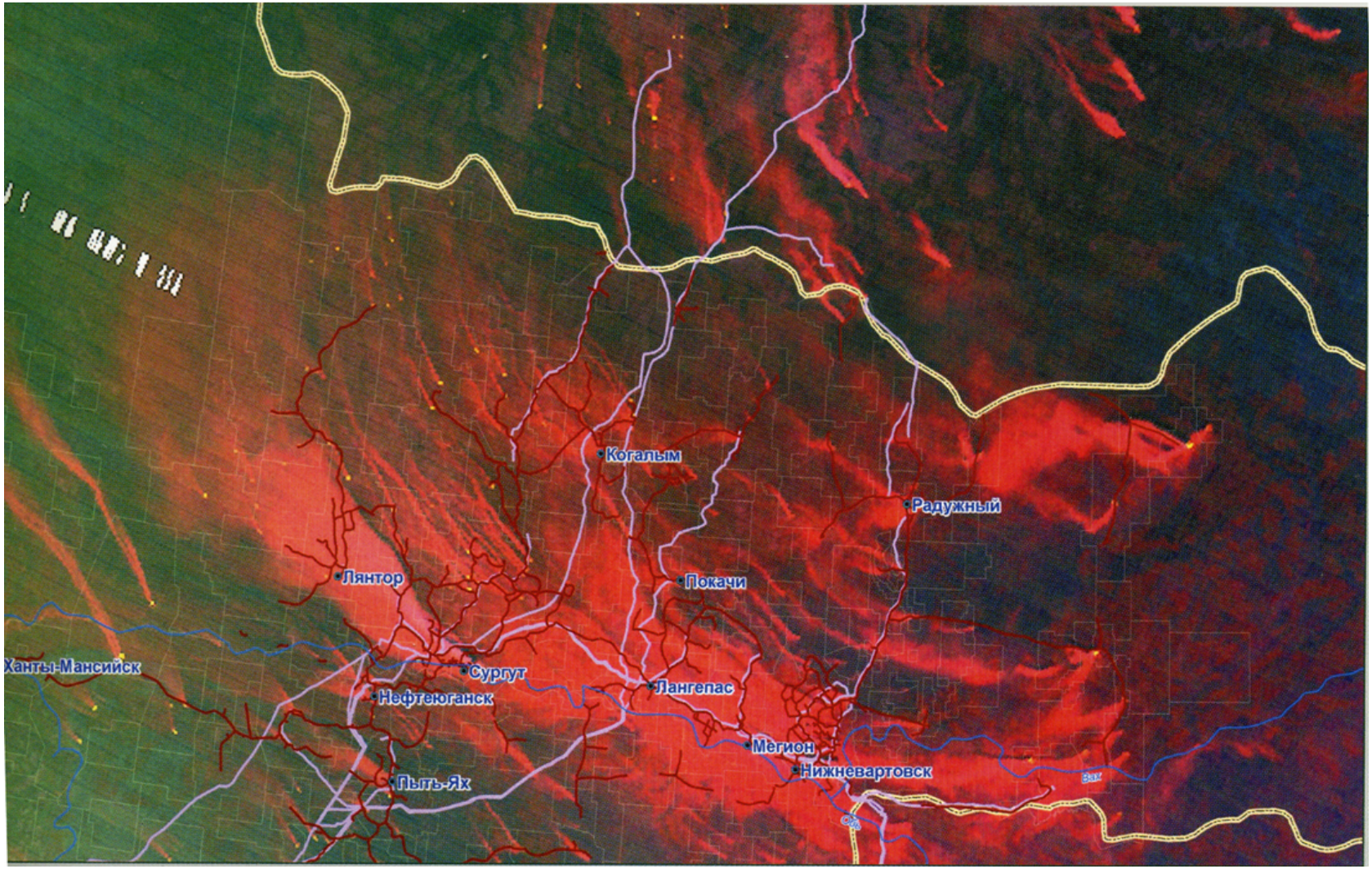
*in comparison with perspective airplane using aviation kerosene

Biofuel

- wouldn't require new engines and airframes
- same gravimetric and volumetric energy densities*
- biodegradable and nontoxic
- always competes with food production

*as aviation kerosene

Flare heat trails in Western Siberia*

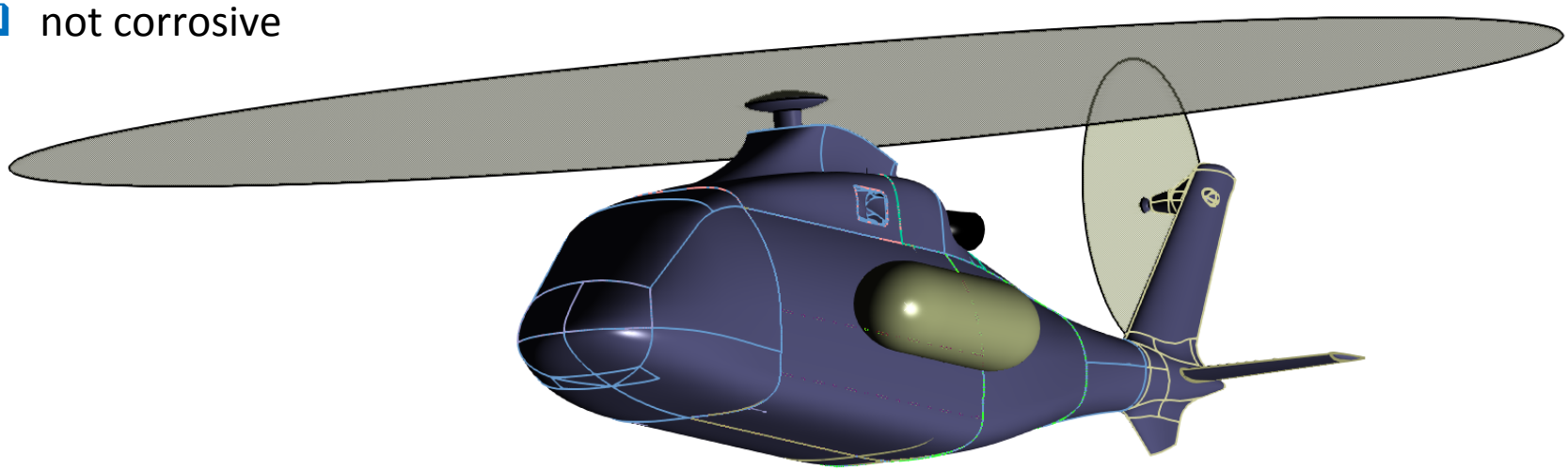


*Satellite photograph made in 2006

Liquefied propane-butane

Casing-head gas:

- cheaper*
- unsubstantial life-cycle CO2 emissions
- not corrosive



*in comparison with aviation kerosene

THANK YOU FOR YOUR ATTENTION!