steeper ENERGY

Next Generation Road Fuel
A change management process and how Steeper Energy® approaches this

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Road to Commercialization

How to get to Next Generation Road Fuel
A change management perspective

Need to fully understand the value network

Need to fully appreciate the concerns of various stakeholders

- Change also means challenges for some in the value network
- Challenges means resistance
- Challenges may exist on several levels

Need to address and answer the questions of concern

The change process starts from the answers

Road to commercialization

How to get to Next Generation Road Fuel
A change management perspective

Steps towards remedying concern and creating willingness to invest

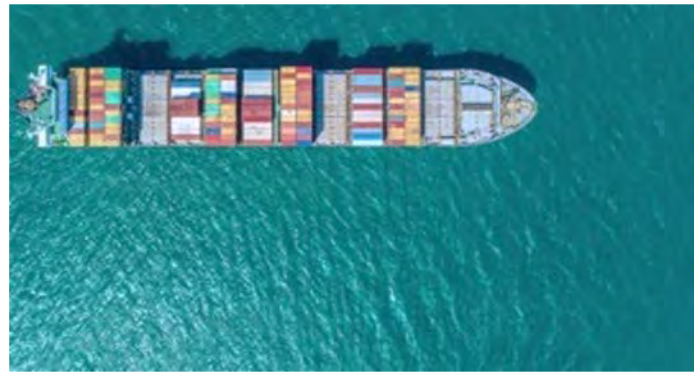
Demonstration plants will reduce technical concerns and hence financial concerns

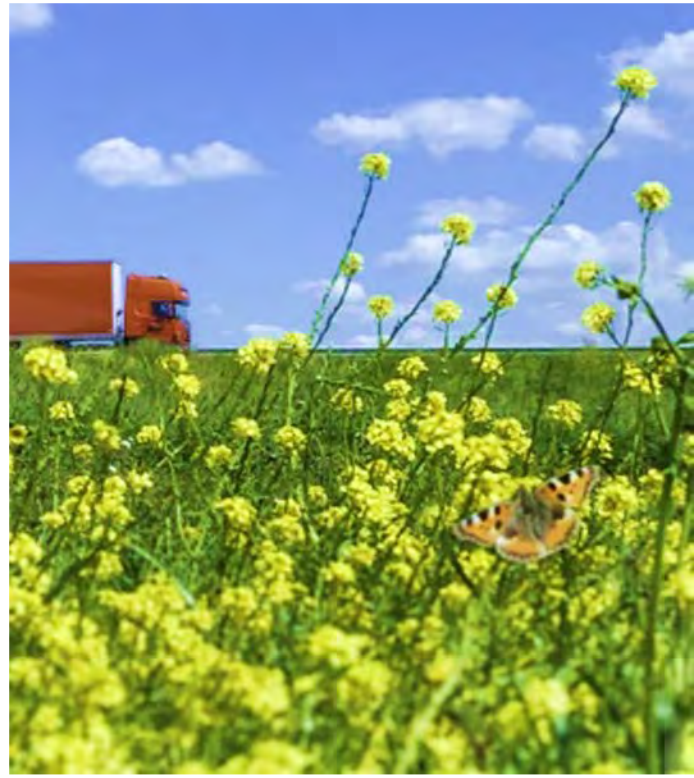
Demonstration of the viability of the entire value chain from feedstock to finished fuel, will reduce financial concern

Demonstration the transfer from existing value chain to new value chain will reduce personal and organizational concern

Incentives may mitigate resistance if directed to the right stakeholders

Create a critical mass of stakeholders to drive the change





The Steeper Energy pathway

Efficient production of biocrude
Full characterization for woody biomass
On the way to full characterization
for urban waste streams

Downstream handling
Demonstrated pathway for stand alone upgrading or co-refining with fossil counterpart

Hydrofaction® Oil Product

- **Petroleum-equivalent** advanced biocrude
- Targeting heavy transport sector – that is **incompatible with electrification or low energy density fuels**
- **Compatible** with petroleum infrastructure or refineries (co-processing)
- **Upgradable** to diesel, marine and jet fuels
- Base input for **renewable** lubricants and fine chemicals

Steeper Advanced Biofuels Center (ABC)

An advanced bio-crude laboratory for characterization and upgrading of bio-crude oils to drop-in fuels and value-added chemicals, under construction in Calgary Canada.

The ABC will increase Steeper's expertise on upgrading its bio-crude to ASTM Standard Advanced Renewable Fuels.

Forestry: Commercialization in two phases

Silva Green Fuel: JV between Norway's **Statkraft** (Europe's largest generator of renewable energy), and Sweden's **Södra** (major producer of paper pulp, sawn timber and bioenergy)

- Woody residues to renewable diesel and marine fuels
- SGF evaluated **40** technology pathways before choosing Hydrofaction®

Commercialization in two phases

- Phase I: **€50 M** industrial-scale demonstration and de-risking plant at Tofte, Norway
- Phase II: Commercial facility capable of producing **2,000 bpd or 100,000 Fuel Tonnes per Annum** (≅ €200 M)

In Summary:

Most efficient thermochemical platform to convert waste/low-value biomass into valuable resources, such as biocrude, liquid CO_2 and fertilizer products

- Proven chemistry with strong enforceable IP positions + Know-How + Experience

Commercial viability in forestry

- Silva Green Fuel licensed Hydrofaction® as the preferred pathway after investigating over 40 competing technologies
- Phase 1: €50+ M Industrial Demonstration Project (“Demo”) underway in Norway
- Phase 2: Commercial facility to produce 2,000 bpd (100,000 tonnes/yr) to be built after demo is operational

Poised to enter urban biogenic waste management market segment leveraging forestry efforts

- New regulations and community concerns require novel solutions for municipalities to deal with bio-organic wastes
- Disposal costs or fees enable Hydrofaction® economic deployment at smaller-scale
- Forestry *Demo* in Norway is equivalent scale to a commercial sewage plant – thus, leveraging learnings from forestry *Demo* directly to urban wastes commercial solution

Advanced Biofuels Center

- Competitive edge for adoption of Steeper’s biomass-to-liquid fuel solution into existing fossil value chain
- Leading the way for broad market acceptance of Hydrofaction® derived advance biofuels