

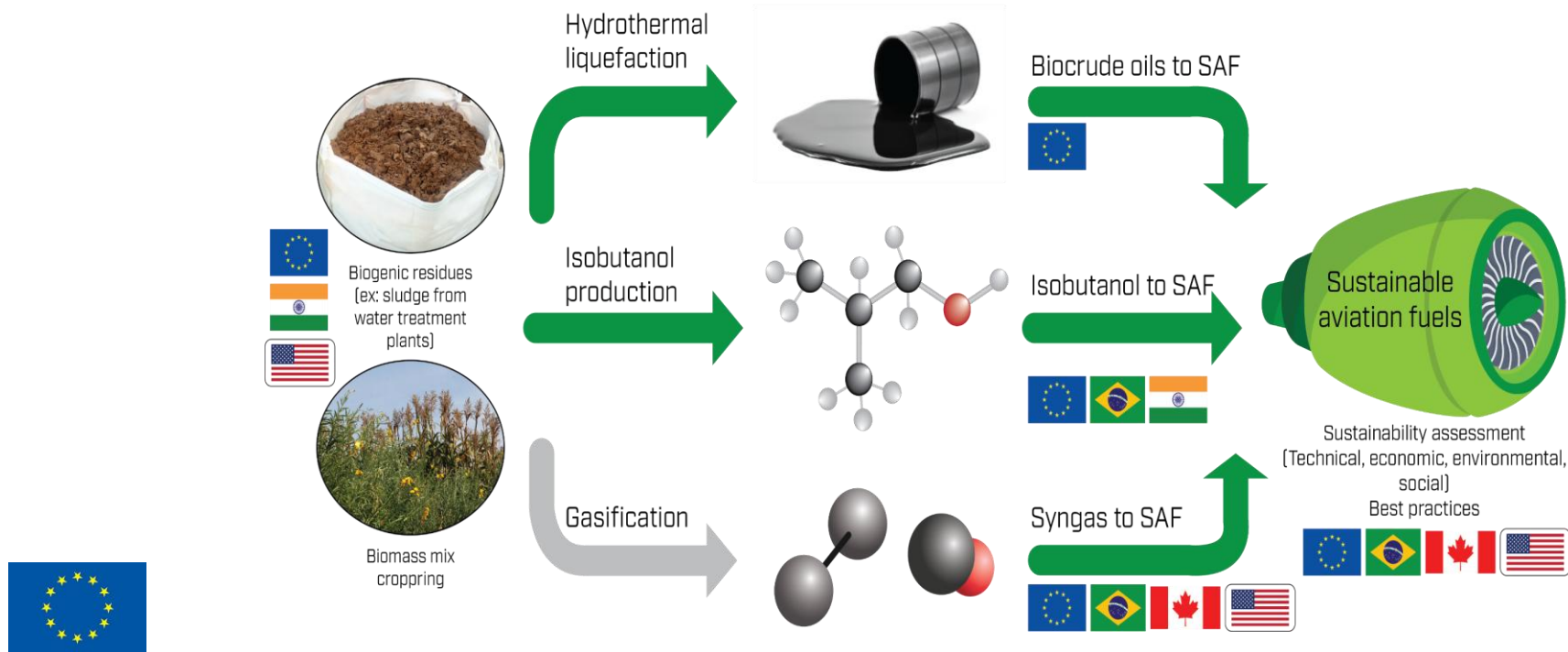
International Cooperation for Sustainable Aviation Biofuels



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Objectives

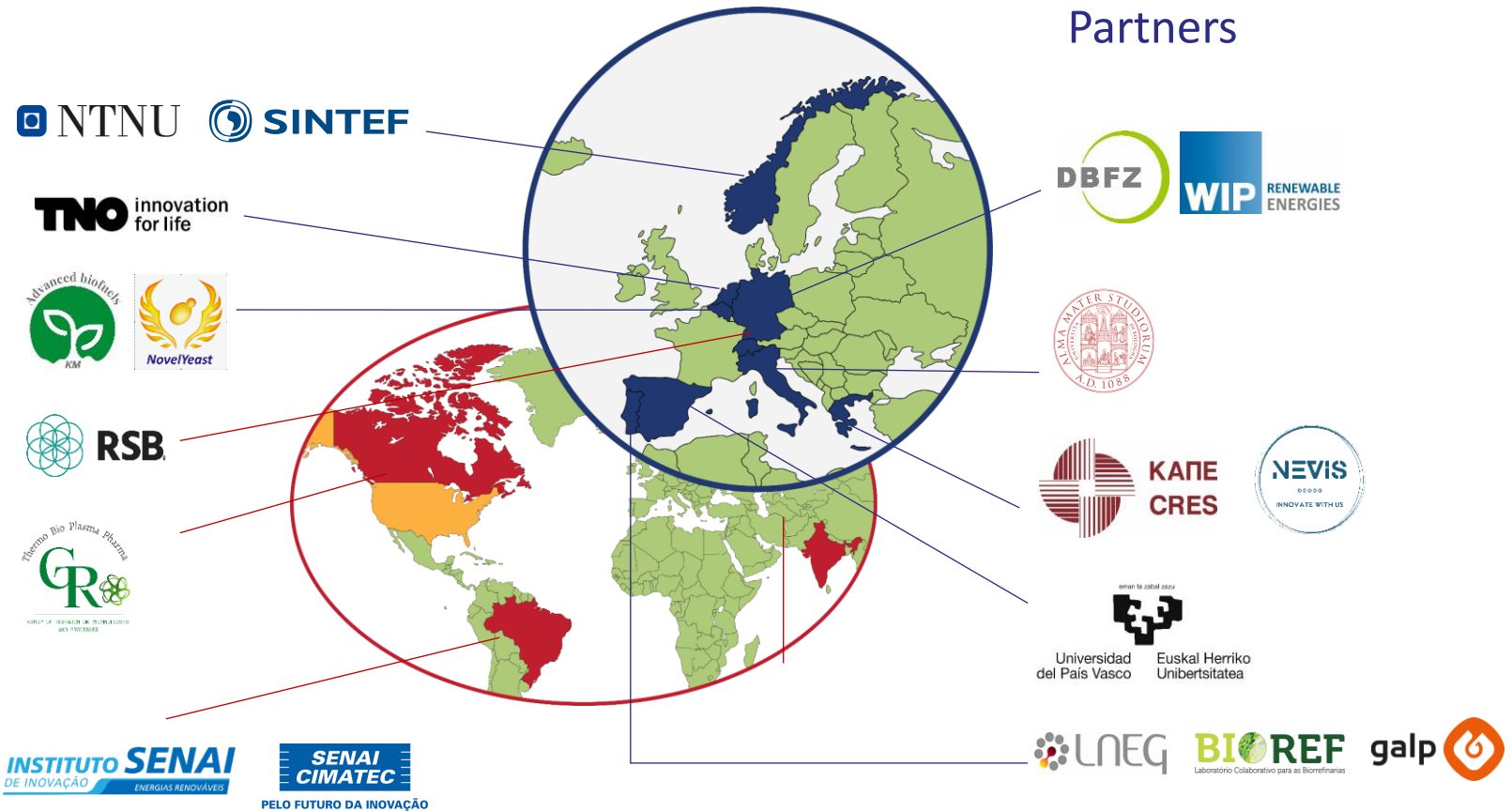
To develop **best practices** (based on improved innovative technologies) and **concepts** (founded on market access knowledge) along **three most promising pathways for SAF development** in both Europe and Mission Innovation Countries, considering their technical feasibility, economic viability, and environmental impact.



Project details

- ✓ International Cooperation on Sustainable Aviation Biofuels
- ✓ HORIZON EUROPE
- ✓ 36 months
- ✓ 15 European partners from 9 countries
- ✓ 5 partners from 3 Mission Innovation countries
- ✓ €3 161 948.25

The consortium



Associated Partners

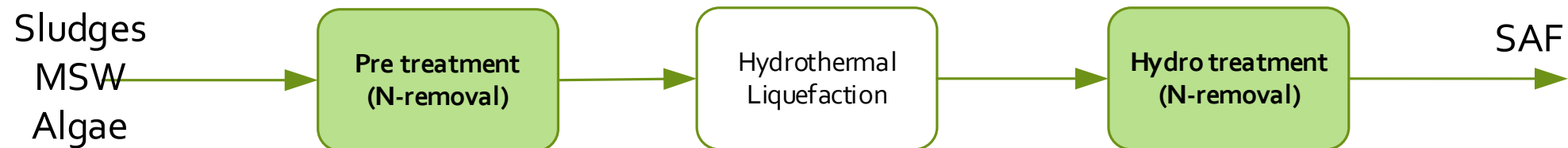
Collaboration with Mission Integrated Biorefineries

External Executive Advisory Board Key expertise	Contribution in the project
Dr Robert Baldwin, National Laboratory of the Rockies (NLR) Expert in catalysis, reaction engineering, biomass gasification, liquefaction, upgrading of bio-oil,	Innovation in Syngas-SAF Value Chains
Dr Marisol Berti, North Dakota State University (NDSU) Expert in forage, cover crops, bioenergy crops and cropping systems.	Innovation in feedstock
Prof. Glaucia Souza, FAPESP Bioenergy Research Program Coordinator University of São Paulo, IEA Bioenergy TCP Task 39 Co-Leader on Biofuels for Transport	Capacity building globally
Tomas Ekbom, Program Director, BioDriv, Svebio – Swedish Bioenergy Association IEA Bioenergy TCP Task 39 Co-Leader on Biofuels to Decarbonize Transport	
Marco Buffi and Anne Bouter, JRC Experts in GHG emissions calculations of SAF for both REDIII and ICAO CORSIA' initiative	Sustainability assessments
Themistoklis Neokosmidis and Abinash Ramasary, Concawe Low Carbon Pathways Science Associate	Coordination with the Oil Sector
Stephen Dooley and Yuan-His Chier, Trinity College Dublin, Experts in SAF Standardisation process at the EU SAF Clearing House	Standardization of biofuels
Sergi Alegre and Andrea Ivasivka General Director and Policy Expert in Airport Regions	Coordination with the Aviation sector

Value chain 1 – Biocrude oils to SAF

Innovations

- Improvement of feedstock pretreatment and HTL processing to reduce the nitrogen in the biocrude prior hydrotreating.
- Creation of an innovative catalyst bed with blends of strategical catalysts to simplify the hydrotreatment process by decreasing the steps, energy/H₂ consumption and materials applied.

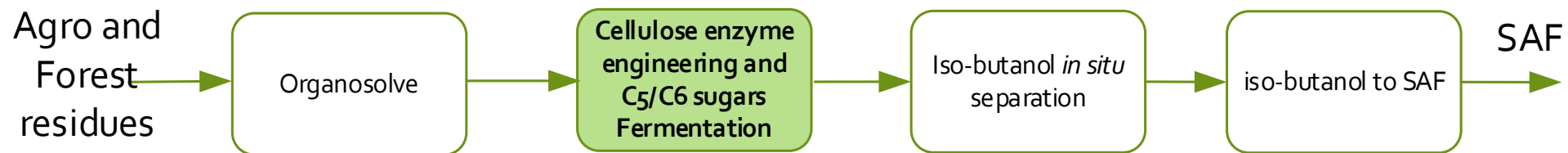


- KPIs:** ➤ Production of SAF from the upgrading of HTL bio-crude, with oxygen contents lower than 5 wt.% and 2 wt.%, respectively

Value chain 2 – Isobutanol to SAF

Innovations

- to optimize yeast for the direct conversion of cellulose and C5 and C6 sugars into isobutanol
- to engineer secretion of cellulolytic enzymes in 2G isobutanol yeast
- to minimize the need for an expensive cocktail of enzymes and lower enzyme cost in biomass saccharification



- KPIs:**
- Decrease of enzyme requirements for processing 2G biomass to alcohols: 25%
 - C12-C16 iso-paraffin productivity from isobutanol at 2 gprodgcath-1 and >95% selectivity, and stable catalytic activity at TRL5 demonstrated over 72 h

Value chain 3 – Syngas to SAF

Innovations

Design and testing of a new FT catalyst,

- to produce only liquid products
- to allow smaller sized plants fitting much better with the local availability of biogenic residues.



KPIs:

- Develop/select FT-type catalyst with >30 C% to SAF (C8-C18) direct from syngas with Jet-A1 properties @ M36
- Demonstrate direct SAF production in FT pilot reactor (TRL-4/5) for >40 hours continuous, producing >2 kg SAF (C8-C18 wide

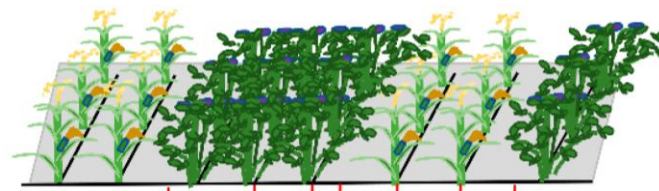
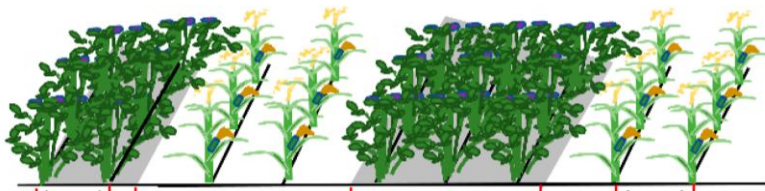
Feedstock– Technical novelties

Feedstock

Assure sustainable, affordable and diversified biomass feedstock

Innovations

- Biomass sorghum mix cropped with legumes and cover crops
- Managing the species combination ratios in the mixed cropping system, the lignocellulosic, oil and mineral composition of blended feedstocks can be somehow regulated.



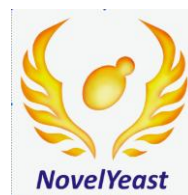
KPIs: ➤ Increase of biomass production from the studied cropping strategies: >100%

Thank you

Name
Institution



Partners



Associated Partners



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