



Flightpath

European Advanced Biofuel Flightpath 2020

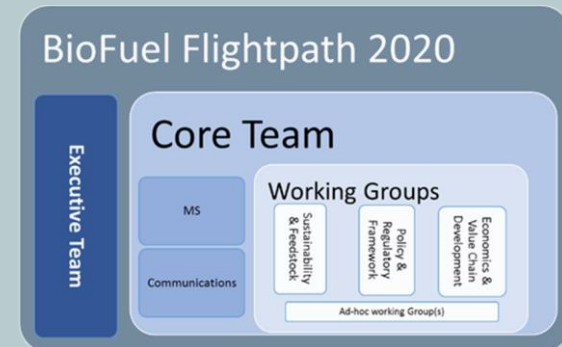
IATA Alternative Fuels Symposium
Vancouver, November 17, 2017

Objectives

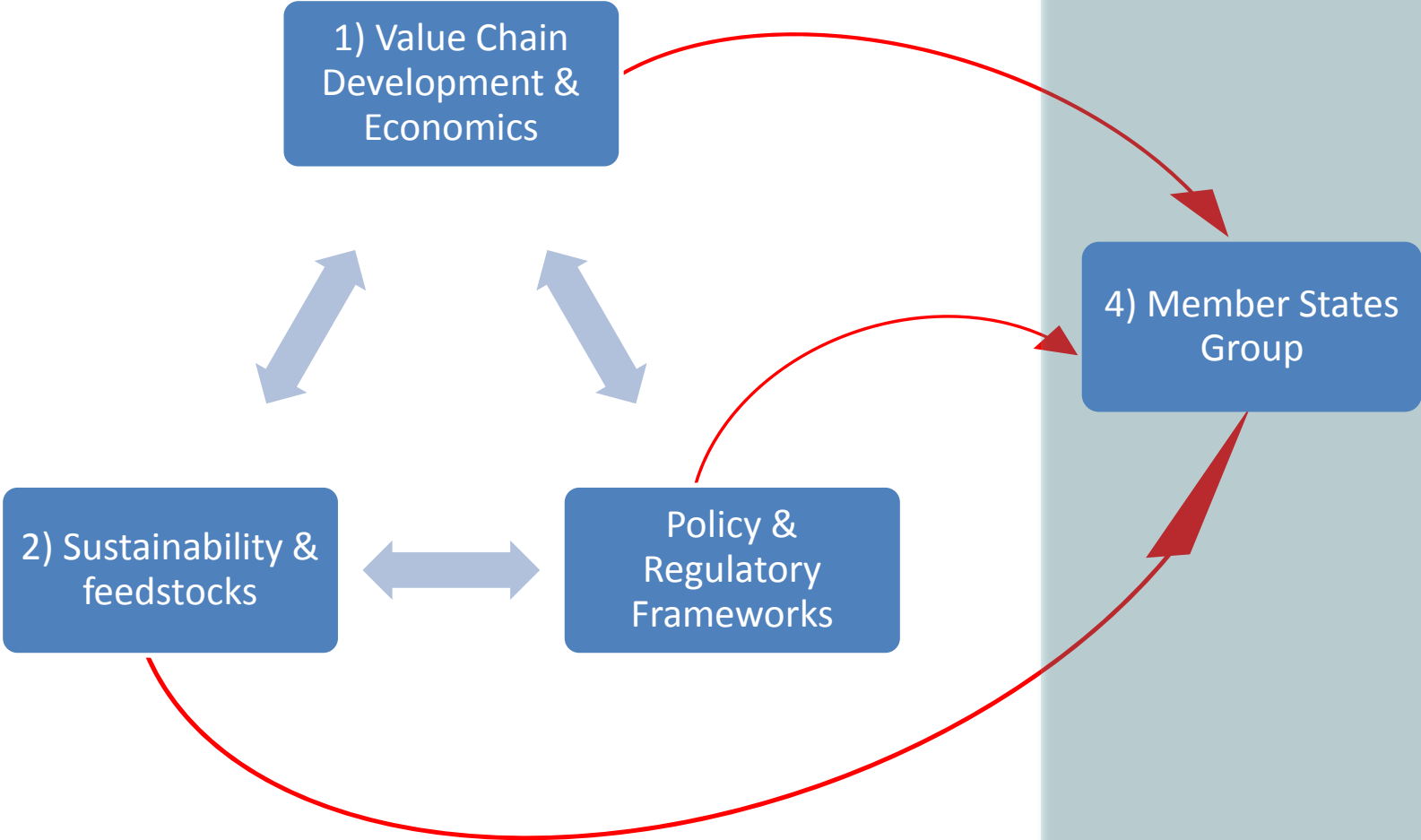
Aim to get sustainably produced low carbon fuels to the market faster, amongst other through the development of regional bioports in Europe. 'Bioports' are regional initiatives where Sustainable Aviation Fuel (SAF) is produced and distributed to one or more airports in a continuous matter, commonly involving feedstock suppliers, governments and infrastructures in the region.

Approach

1. Support the 'supply chain approach'.
2. The Core Team to steer and guide.
3. Working groups with experts work together on specific subjects, ensure efficiency by using expertise, existing studies and reports and available knowledge.
4. Involve, disseminate and cooperate with national and European governments, other advisory bodies & biofuel initiatives to ensure a coherent approach and common understanding of bottlenecks, policy issues and opportunities.



WG Interaction



European policies



1. Europe introduced in 2009 the Renewable Energy Directive (RED), a policy for the production and promotion of energy from renewable sources.
 - In 2020 - 20% of the energy needs fulfilled by renewable energy.
 - For transport fuels the target is at least 10%.
 - The directive sets out sustainability criteria for all biofuels produced or consumed in Europe.
2. In November 2016 the European Commission published a proposal for a revised Renewable Energy Directive (RED II), with an increased ambition:
 - In 2030 - 27% of the energy needs fulfilled by renewable energy.
 - More stringent sustainability criteria, including Indirect Land Use Change (ILUC).
 - Limitation on feedstocks allowed, increased Green House Gas (GHG) threshold for production plants.

RED II & aviation fuel



The RED II proposal contains Annex IX specifying feedstock allowed for biofuels. Part A to be considered feedstocks for advanced. Part B are considered conventional low carbon fuels.

Annex IX – Part A
▶ Algae
▶ Biomass fraction of MSW
▶ Biowaste
▶ Biomass fraction of industrial waste
▶ Straw
▶ Animal manure and sewage sludge
▶ Palm oil mill effluent and empty palm fruit bunches
▶ Tall oil and tall oil pitch
▶ Crude glycerine
▶ Bagasse
▶ Grape marcs and wine lees
▶ Nut shells
▶ Husks
▶ Cobs cleaned of kernels of corn
▶ Biomass fraction of forestry wastes and residues
▶ Non-food cellulosic material
▶ Ligno-cellulosic material

Annex IX – Part B
▶ Used cooking oil (uco)
▶ Animal fats
▶ Molasses
Crop based
Crop based (or first generation) include:
▶ Palm oil
▶ Rapeseed oil
▶ Soybean oil
▶ Sugar (cane and beet)

Limited to 1,7% in 2030

Excluded in REDII



European F/T options

The RED II proposal significantly reduce short term opportunities to start production of SAF:

1. Only HEFA – technology is proven at large scale production. Feedstock availability is reduced under new directive.
2. Other ASTM certified pathways still need to be proven at commercial scale or feedstocks do not meet RED II directive.

Action required

- a. Stipulate to focus on GHG reduction potential, not feedstock types
- b. Avoid blending mandate in Europe, as production capacity is not available
- c. Find solution to fix part of price premium to stimulate value chain development and off take.



Questions?

Thank you for your
attention