

Bio4Fuels

Norwegian Centre for Sustainable Bio-Based Fuel and Energy



Bio4Fuels Days 2024

Duncan Akporiaye
Centre Leader
SINTEF

Bio4Fuels Days – Opening Speakers

- **HES**

- **No tests planned today – Alarm is a real incident**
- **Instructions from staff and over Tannoy**
- **If no other instructions – exit through the Lobby**

- **Welcome Duncan Akporiaye, Centre Leader Bio4Fuels**

- Opening speakers

- 09:10 – 09:30

NESTE: Industrial Perspective to Innovation, Susanna Forssell

- 09:30 – 09:50

- Silva Green Fuel, Klaus Schöffel

- 09:50 – 10:10

- TNO Energy Systems, André Faaij

- 10:10 – 10:30

- VTT's strategy on producing fuels and chemicals from CO₂, Tom Granström

Nordic Bio-resources

Technologies

- Biochemical
- Thermochemical
- Chemical

Stakeholders

- Resource owners
- R&D institutes
- Industry
- Authorities
- NGOs

Bio-resource,
Environment, Climate

Primary Biomass
Conversion

Secondary Conversion and
upgrading

Process design and
End Use

SUSTAINABILITY

Markets

Aviation fuel • Heavy Diesel • Biogas • Valorised Side Streams

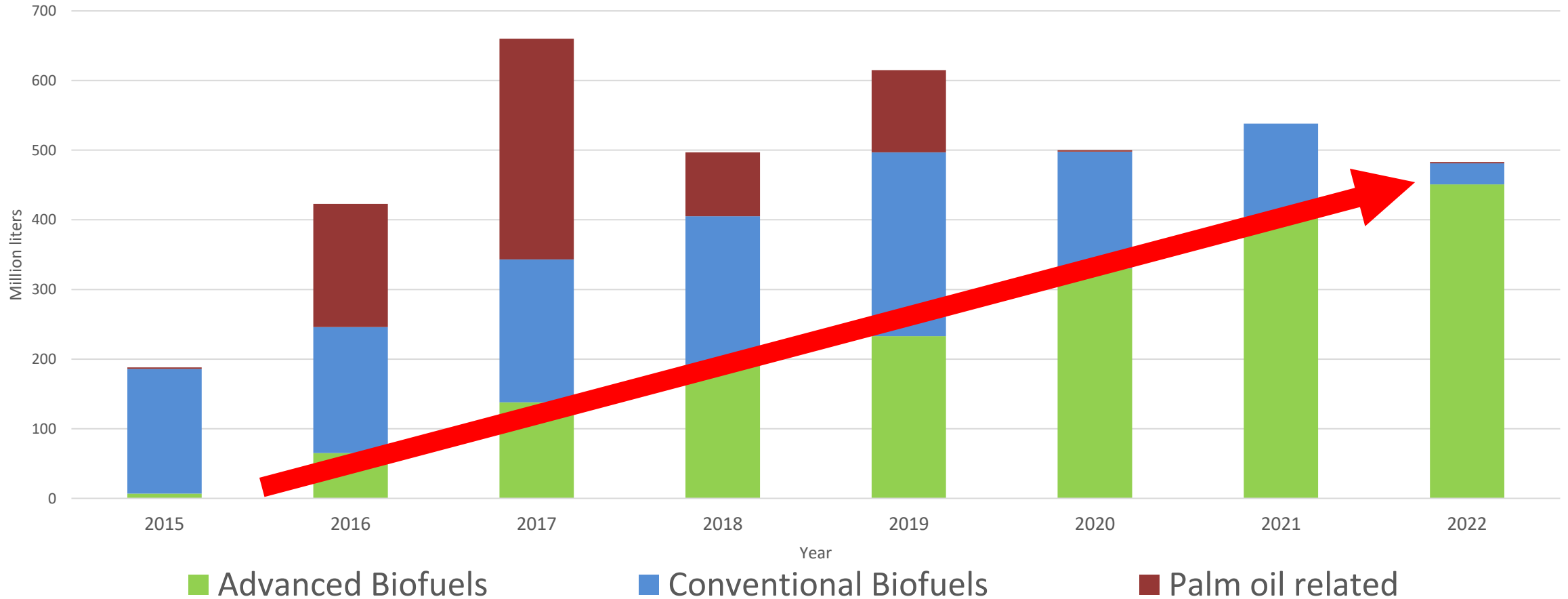
Vision of Bio4Fuels

2016

*Enabling sustainable
biofuels production
in Norway*

Norway has fulfilled strict blending mandates for Advanced Biofuels:

- However nearly all biofuels are imported – from USA, China and EU



Europe 2024 – Focus on transport

Industrial Carbon Management:

Capturing, storing and using CO₂ to reach our climate goals

Europe's 2040 climate pathway
A path to climate neutrality by 2050

**ReFuelEU
AVIATION**



Greater focus on security of supply

Royal Air Force Net Zero 2040 strategy:

- By 2040, the Royal Air Force has Net Zero emissions, the first Net Zero Air Force in the World.
- Royal Air Force plays key role in developing fossil-free fuel

Global Air and Space Chief's 2022 Conference:

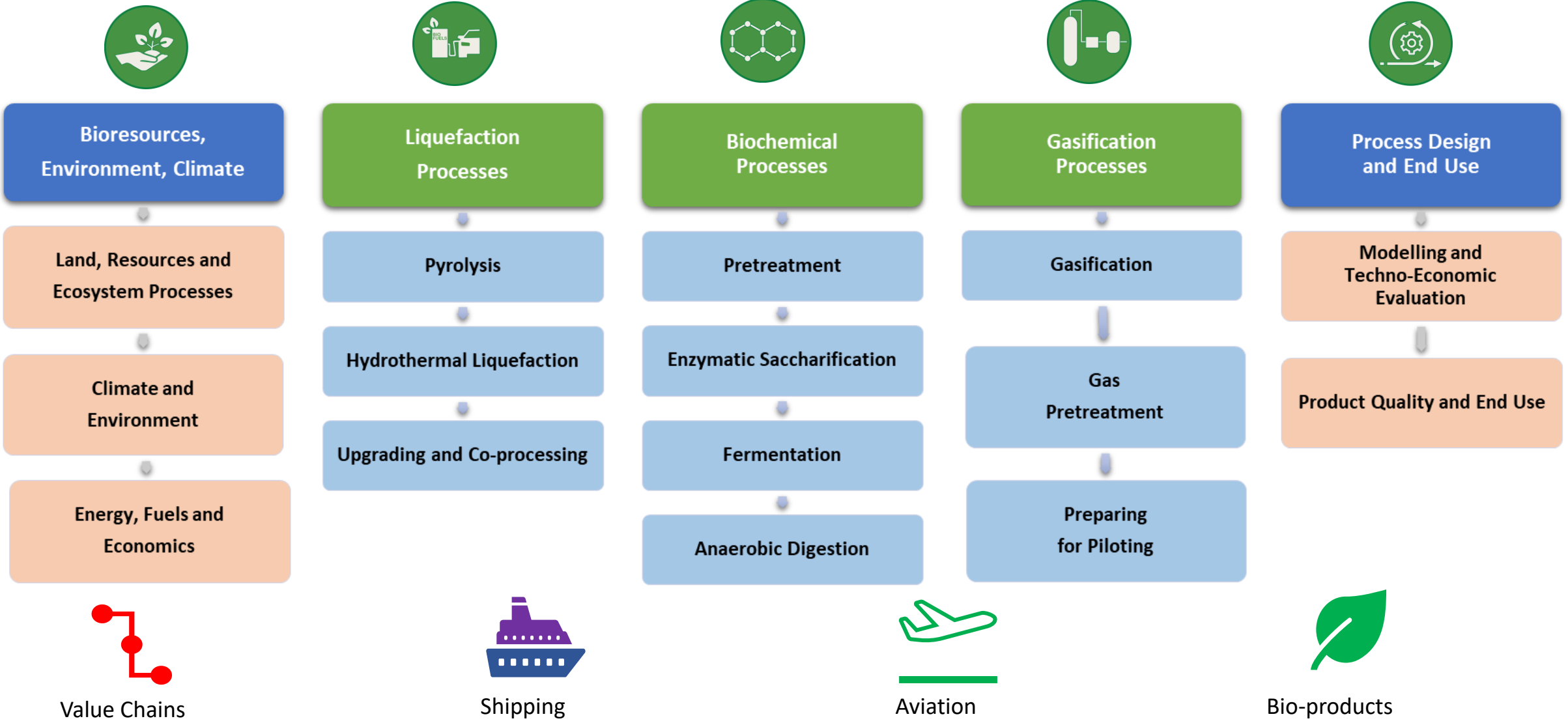
- Felles forpliktelse til å jobbe sammen for å redusere avhengigheten av fossilt brensel og eksisterende forsyningskjeder, ved å bruke ny teknologi, inkludert bærekraftig og syntetisk flydrivstoff og alternative energikilder.



F-35 er miljøversting i Forsvaret: – Jeg vil fly på biodrivstoff innen året er omme

De nye F-35 jagerflyene er bygd for å kunne fly på alternativt drivstoff. Så langt er det ikke gjort i Norge. NRK

Bio4Fuels Centre – Focus on key Value chains for Norway



Education of the future generation- PhDs and Post Docs



PhD student:
Prajin Joseph
(WP3.1), NTNU/RISE-Pfi



PhD Student:
Vedant Pushpahas Ballal
(WP1.2); NTNU



PhD student
Zhihui Li (WP2.2),
NTNU



PhD Student
Robert Pujan
(WP5.1), NTNU



Post doc:
Carolin Fischer
(WP1.1), NIBIO



Post Doc
Marjorie Morales
(WP1.2), NTNU



Post Doc
Radziah Wahid
(WP3.4), NMBU/NIBIO



Post Doc,
Michal Lewandonski
(WP5.3), NTNU



PhD student
Eirik Ogner Jåstad
(WP1.3), NMBU



PhD student
Junhui Hu
(WP1.3), NMBU



PhD student
Martina Cazzolaro
(WP2.4), NTNU



PhD Student
Line Degn Hansen
(WP3.2), NMBU



PhD student
Camilla Fløien Angeltveit
(WP3.2), NMBU



PhD Student
Karl Oskar Pires Bjørgen
(WP5.3), NTNU



PhD Student
Nastaran Ahmadpour Samani
(WP4.3), USN



PhD student
Simona Dzurendova
(WP3.3), NMBU



PhD student
Cristian Bolaño Losada
(WP3.3), NMBU



PhD student
Oscar Luis Ivanez Encinas
(WP4.2), NTNU



PhD Student
Ramesh Timsina
(WP4.3), USN



PhD student
Ask Lysne
(WP4.2), NTNU



PhD student
Zhongye Xue
(WP5.3), NTNU



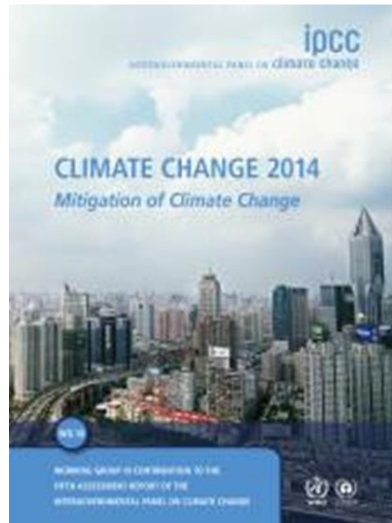
PhD Student
Shivang Khare,
(WP5.3), NTNU

International Engagement

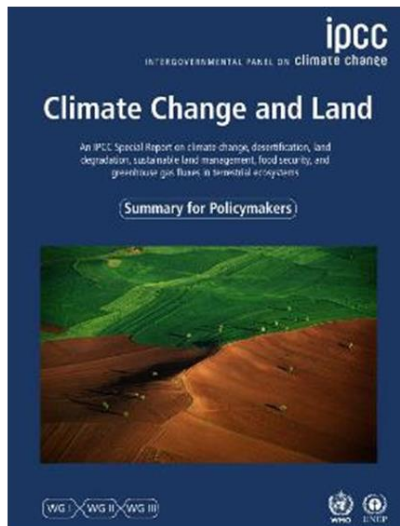
BIO4
FUELS



2014



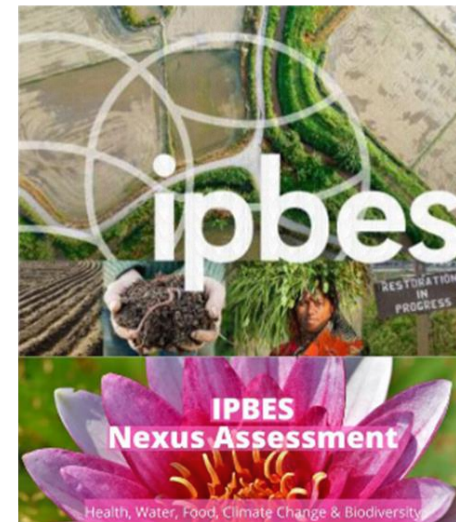
2019



2022



2024



Policy, Public engagement and Dissemination



Sintef (12.00-12.45) • Fysisk + streaming

Kortreist og bærekraftig biodrivstoff: Er det mulig?

BIO4 FUELS

Webinar

Advanced Biofuels and the EU Directives

24 August 2023, 09:00 - 10:00, Central European Time

[Click here to join](#)

Program

09.00 Welcome and introduction, Bio4Fuels
09.05 Biofuel in the Report "Klimatiltak i Norge mot 2030", Norwegian Environment Agency
09.25 The Transition from RED II to RED III, Schjodt
09:50 Q&A and end

For more information:

Haldis Watson: haldis.watson@sintef.no
 Janne B. Ulviken: janne.beate.ulviken@nmbu.no



SPEAKERS



Mats Nordum
 Senior Advisor, Director
 Norwegian Environment Agency



Torkjel K. Grøndalen
 Fjell
 Schjodt



Mari Cecile Havnæs
 Associate
 Schjodt

A Webinar Organized by Norwegian Centre for Sustainable Bio-based Fuels and Energy, Bio4Fuels, A Centre for Environmentally Friendly Energy Research (CFE)

BIO4 FUELS

Webinar

Novel applications of anaerobic digestion processes

15 June 2023, 09:00 - 10:00, Central European Time

[Click here to join](#)

Program

09.00 Welcome and introduction, Bio4Fuels/NMBU
09.10 Production of acids from organic residues for fish feed, SLU
09.30 Anaerobic Digestion Biorefinery, UB
09:50 Q&A and end, NIBIO

For more information:

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 Janne B. Ulviken: janne.beate.ulviken@nmbu.no



SPEAKERS



Anna Schinnerer
 Professor
 Department of Molecular Sciences,
 Swedish University of Agricultural Sciences, SLU



Mohammad Taherzadeh
 Professor
 Department of Resource Recovery and Utilization,
 University of Guelph, UG



Svein Jarle Nørre
 Professor / BioProcess Lead
 Department of Resource Recovery and Safety Technology,
 Norwegian University of Life Sciences, NMBU



Lu Feng
 Researcher
 Norwegian Institute of Bioeconomy Research, NIBIO

BIO4 FUELS

Webinar

Forest Resources

10 February 2023, 12:00 - 13:00, Central European Time

[TEAMS link to Webinar](#)

Program

12.00 Welcome and Introduction, Duncan Akporiaye, SINTEF AS / Bio4Fuels Centre Director
12.05 Biofuel in the context of LULUCF in EU's Fit for 55, NIBIO
12.20 The quantification and tracing of harvest leakage in the Northern Europe, NMBU
12.35 How to balance the use of forest for carbon storage and as feedstock for industry, NMBU
12:50 Q & A

For more information:

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 Janne B. Ulviken: janne.beate.ulviken@nmbu.no

SPEAKERS



Gunnhild Sogaard
 Head of Research
 Department of Forest and Climate,
 Norwegian Institute of Bioeconomy Research, NIBIO



Junkal (Juna) Hu
 PhD Candidate
 Faculty of Environmental Science and Natural Resource Mgmt
 Norwegian University of Life Sciences, NMBU



Per Kristian Korstad
 Associate Professor
 Faculty of Environmental Science and Natural Resource Mgmt
 Norwegian University of Life Sciences, NMBU

A Webinar Organized by Norwegian Centre for Sustainable Bio-based Fuels and Energy, Bio4Fuels, A Centre for Environmentally Friendly Energy Research (CFE)

BIO4 FUELS

Webinar

Sustainable Aviation Fuels

27 April 2023, 09:00 - 10:00, Central European Time

[Click here to join](#)

Program

09.00 Short welcome and Introduction, Duncan Akporiaye, SINTEF / Bio4Fuels Centre Director
09.05 Climate change impacts of e-fuels for aviation in Europe under today's conditions and future policies, NTNU
09.20 SAF – challenges and opportunities from an R&D perspective, SINTEF
09.35 Production of e-fuel at Hørefya Industrial Park, Nordic Electrofuel
09:50 Q & A

For more information:

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 Janne B. Ulviken: janne.beate.ulviken@nmbu.no

SPEAKERS



Duncan Akporiaye
 Centre Director
 Bio4Fuels



Vedant Pushpakesh Belal
 PhD Candidate
 Department of Energy and Process Engineering
 Faculty of Engineering, NTNU



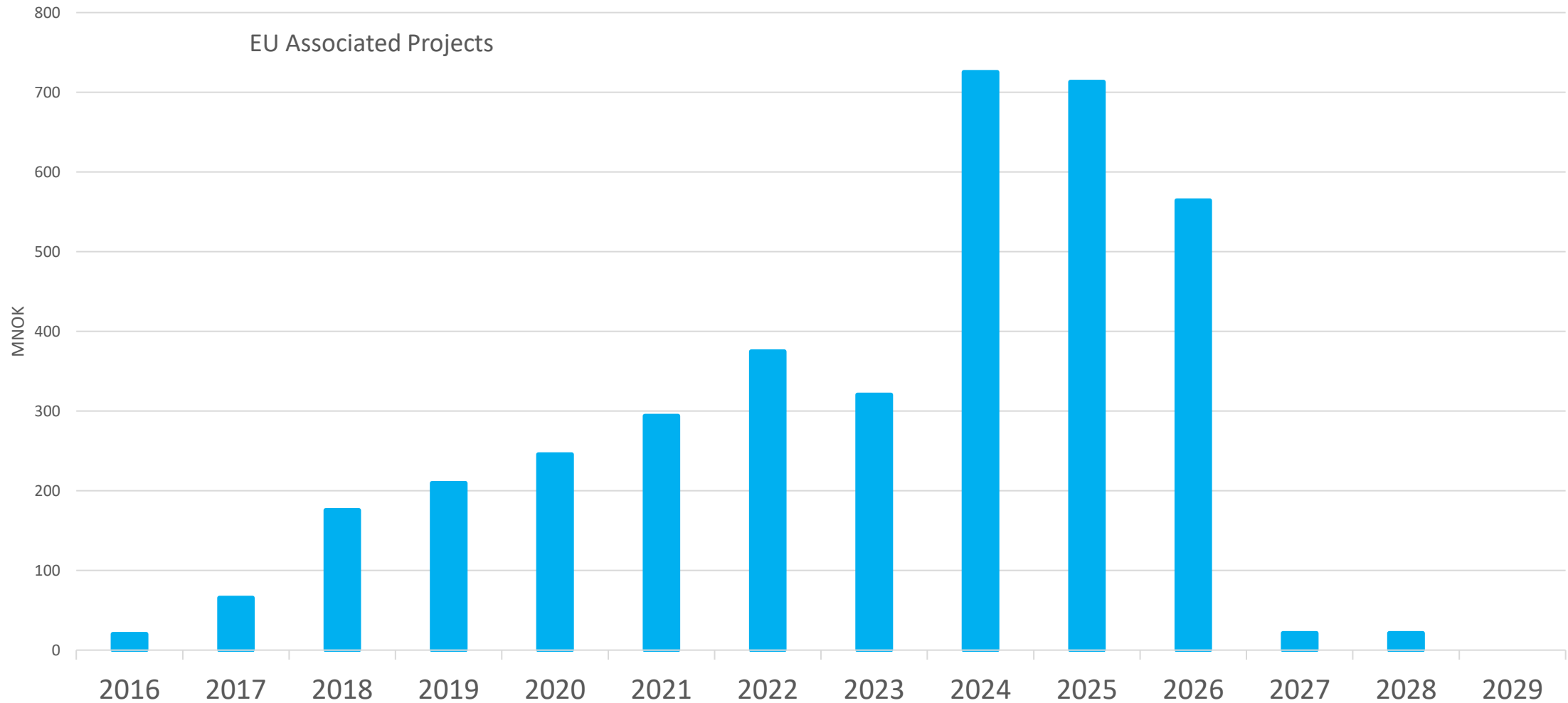
Bjorn Christies Enger
 Senior Research Scientist
 SINTEF



Bjorn Bringsedal
 Chief Technical Officer
 Nordic Electrofuel

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Success in the spin-offs from EU research arena



Demonstrating sustainable value creation from industrial CO₂ by its thermophilic microbial conversion into acetone



Industrial symbiosis at **Herøya Industrial Park**, Porsgrunn, Norway

The PYROCO₂ demonstrator plant will feature a production capacity of up to 4,000 tons acetone annually from 9,100 tons of industrial CO₂ and green hydrogen. (Demo of product diversification at smaller scale.)

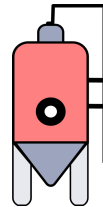


Bioprocess development
Strain optimization
Scale-up strategy
Feedstock flexibility
etc.



again

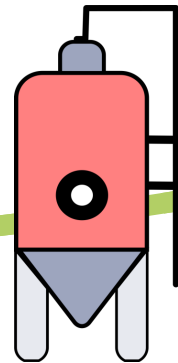
Lab-scale:
Up to 100 L
gas bioreactors



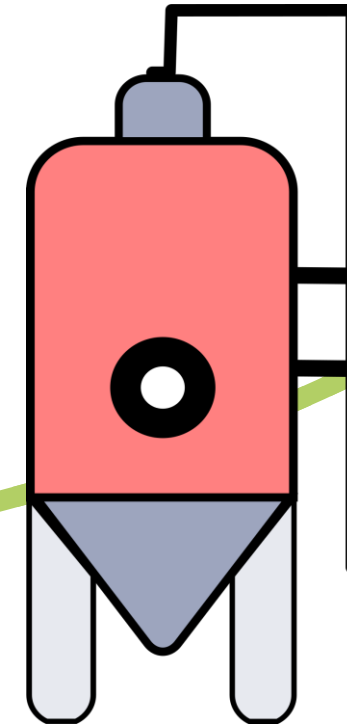
TRL4

2021

Intermediate scale system:
Process integration and optimisation



2024



2026

Further scale-up and replication



Demonstration at TRL 7:
Up to 200 m³
gas bioreactor



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101037009.

Our Stakeholders are the heart of the Centre



Bio-resources



Norwegian Technology



International Technology



End Users



Government, Public and NGO



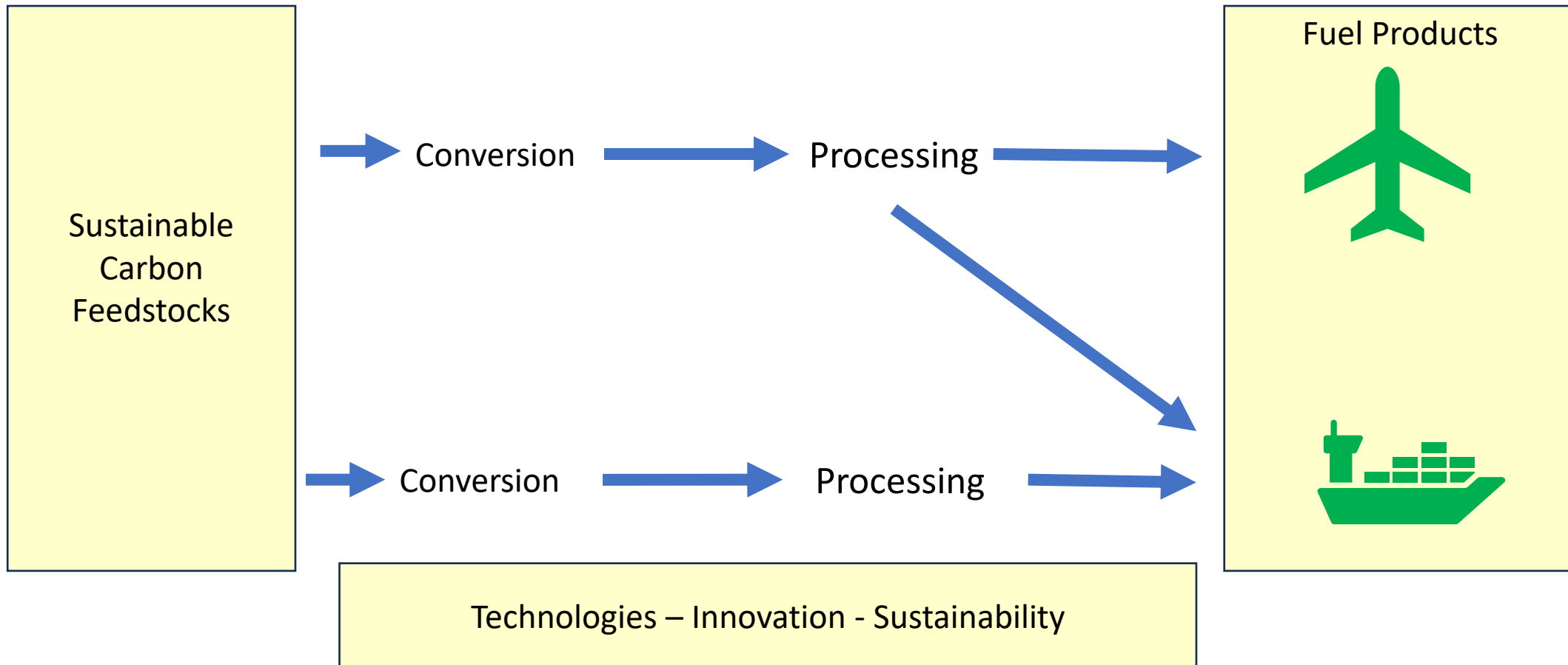
Engagement with our Stakeholders



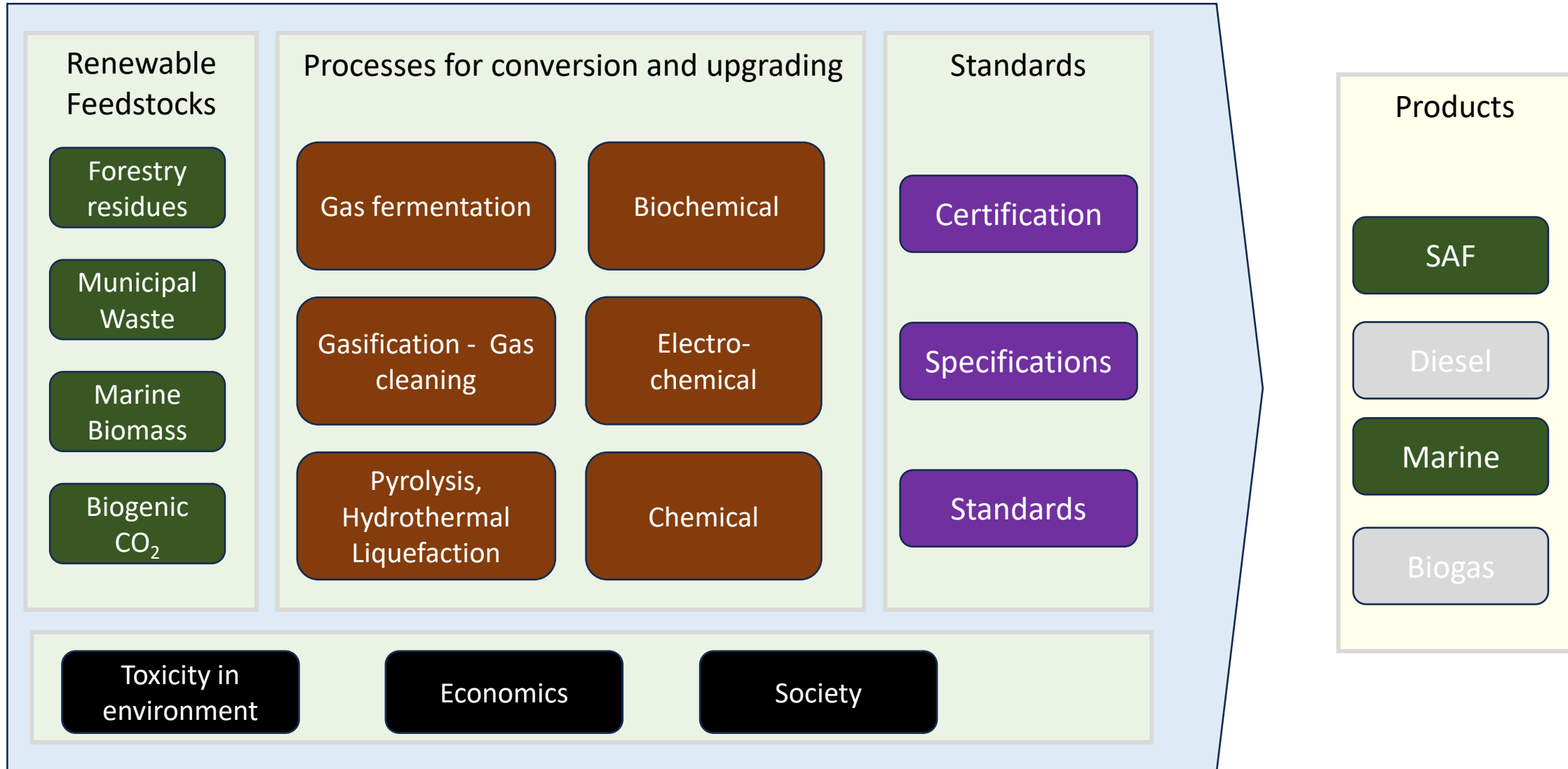
Next Steps after Bio4Fuels?

SusFuels SFI Centre

Sustainable Transport Fuels for reduction of hard-to-abate emissions from the transport sector; through research, development and innovation



Basis for Prioritization of topics towards SFI



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Acknowledgements of Speakers

- Allowing children to go to school, is one of the most important things you can do for children in emergency.
- On the occasion of this event, instead of speaker gifts, Bio4Fuels has made a donation to UNICEF for two sets of “School in a box”. It is a unique box with everything needed to teach up to 40 students when the regular school is no longer available.





Bio4Fuels

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