

IEA Task 39 Fourth Business Meeting

IEA Bioenergy Task 39 Biofuels to decarbonize transport

**12-13 September 2022
Gävle, Sweden**

Task 39 Fourth Business Meeting Minutes

Details

Class/Project	Task Business Meeting
Date/Time/Location	12-13 September 2022
Goal	Progress update, country reports, task deliverables, future meetings
Attendees	Paul Bennett, Jack Saddler, Isabelle Ausdal, Andrea Sonnleitner, Dina Bacovsky, Glaucia Mendes Souza, José Muisers, Marco Buffi, Paul Sinnige, Rubens Maciel Filho, Stephan Janbroers, Yuta Shibahara, Sune Tjalfe Thomsen, Stephen Rodgers, Franziska Mueller-Langer, Tomas Ekbom and Hannah Edgren

Meeting notes

1. Welcome, General update (Tomas and Hannah)

- China informed us they will join, possibly starting next year.
- Ireland will not join, may pay for 2022, not 2023 or 2024.
- Australia's position regarding T39 participation is still unclear. Currently only participating in ExCo and T43 with forestry industry funding.
- Sweden must appoint a female after 2024 as NTL.
- Certification report is ready to be published, should have been published already. Procedure on publishing process discussed. Some advantages to member countries should be given with private access. ISBN issued by Andrea Rossi. T39 leaders should inform Andrea. Website migration is underway. Tomas will contact Andrea for ISBN, ask for a report to be on the website, and add it to the newsletter.
- Hannah showed the website. ETA Florence defined design. OneDrive is suggested as a possible workspace. Dina suggested keeping it as it is with all documents. The mixed solution suggested editable files in a workspace if needed and final documents on the website. Jack mentioned difficulties managing individual passwords. IEA templates are available for documents.

2. Member Country Reports

- **Australia (Stephen)**
Steve informed that funding for Bioenergy Tasks is still uncertain. The recent change in government resulted in changes in the appropriate department which are still being worked through. The election resulted in increased representation from the Greens and Independents who have a strong mandate to further action on climate change and establish an Independent Commission Against Corruption (ICAC). Climate Change Act now passed. 43% cut of emissions in relation to 2005. Mostly electricity and LU/LUCF. A new bill implementing enhanced emissions reductions stands to benefit biofuels. Focus on hard to Decarbonize sectors and aviation, Qantas and Airbus joint investment in SAF infrastructure. Marine, 1MT VLSFO. From seven refineries in the past, now two. Marine fuels are also more expensive in Australia. Licella plants under construction in the UK using non-recyclable plastics (KBR, DOW) and in Canada using Biomass (Arbrios Biotech – Canfor JV) and BC Government funding.
- **Austria (Dina)**
NTL will in the future be represented by Andrea Sonnleitner. Dina presented on issues of energy security. High electricity prices, high natural gas prices. Austria is 80% reliant on Russian gas. Renewable gas production is very high on the agenda, and biomass is now very attractive. Industry 40%, households 20%. The industry will take heat in the industry, pulp, and paper, ceramics. EU regulatory framework, EU Fit-for-55, and RED might be finalized by end of 2022. Re-fuel trialogue is ongoing. SAF action plan, 10 key points, 750 million euros needed. OMV already producing, Agrana considering Lanzatech technology, AVL developing SOEV do-electrolysis + FT, and Wien Energy demo plant using waste. SAF demand and supply analysis indicate sufficient biogenic but competition with renewable gas will happen.
- **Brazil (Glaucia)**
Presented an update on the 416 ethanol, biodiesel, and biomethane plants and 811 biogas plants. Ethanol production has reached 30 billion L in 2021, biodiesel and biomethane are on the rise. Ethanol is predominantly produced from sugarcane, but corn ethanol is also increasing. A new policy framework is in place since 2021 called Future Fuel to integrate public policies affecting the theme, propose measures to improve fuel quality, with a view to reducing the average carbon intensity of the fuel matrix, reducing emissions in all modes of transport and increasing energy efficiency; propose a methodology of complete life cycle analysis (from well to wheel) in the various modes of transport; assess the possibility of bringing reference fuels closer to the fuels actually used; propose actions to provide the consumer with the appropriate information in order to contribute to the conscious choice of the vehicle and the energy source considering the life cycle of fuels; propose studies to create high-octane gasoline specification; propose studies to enable ethanol fuel cell technology; evaluate conditions for the introduction of sustainable aviation kerosene in the Brazilian energy matrix; establish a national strategy for the use of sustainable fuels in maritime transport.
- **Canada (Jack)**
UBC/BC SMART newsletter announced. Combination of market pull and push policies. Significant investment in the US for biojet, Canada providing feedstocks. With significant international traveling in Canada, international policies need to Decarbonize. Regulations will establish a credit market with 3 compliance categories. CFR includes a new LCA model, well-to-wheel. Co-processing growing, alternative to oil companies. LCA modeling needs to work and much discussion to bring about consensus. Alberta is positioning itself as a green hydrogen producer.

- **Denmark (Sune)**
Low-temperature pyrolysis in development. BioRefine produces green proteins for feed, and juice used to produce biogas. Maersk investigated the whole chain to reduce emissions to neutral in 2040, pilot with green methanol, bio-based or e-methanol, 10 k ton/yr. Need 15 x more, partnerships with Orsted, European Energy, CIMIC, Proman, Wastefuel, Green Technology Bank. Meliora Bio (former DONG), 2G Ethanol, and hemicellulose go into prebiotic fiber for Comet Bio making it economically viable.
- **European Commission (Marco)**
European Green deal (neutrality by 2050), REDII revision 13 % GHG reduction in transport, EU Methane Strategy to identify and monitor fugitive emissions, renewable hydrogen, ReFuelEU, and FuelEU Maritime, RePowerEU with biomethane 35 bcm by 2030, Innovation Fund, methodology to account emissions calculations. Opportunities for crop biofuels and anaerobic digestion to biomethane. The main activities in JRC are to give support to REDII, a well-to-wheel study for aviation and maritime.
- **Germany (Franziska)**
A strong debate regarding food vs fuels. Need to reduce fossil fuels to levels had in 2060s. Since 2015 with a GHG quota, raised in 2022 to 7% minimum share now for biofuels. Food feedstocks phase-out to 0% and used cooking oil has slightly increased. Scenarios are being evaluated for GHG quota until 2030 in road transport. With none of the scenario's targets to be met. Minister suggests targets to be met with increasing PTL. No clear plan for investors. Some projects develop battery storage of electricity.
- **Japan (Shibahara)**
Energy security issues, self-sufficiency 11%, most fuel use is gasoline, the maritime project "Shipping Zero Emission Project", development of tech Synthetic Fuels, FT Synthetic for SAF. The latest ministry report indicates the need for a 150 trillion JPY investment in clean energy. NEDO SAF Project, algae SAF, 2G ethanol through biomass gasification FT synthesis. Policy driving investments.
- **The Netherlands (Paul)**
TNO introduction from Stephan. Renewable targets, 100% electricity, 28% transport. Climate obligation complying to REDII, Dutch Climate agreement, FQD. Renewable methane 20% mixed into methane, uncertain of sources. To demonstrate by 2030, 28% renewables in total energy supply, food, and feed max 1.4%, Advanced min 7% double counted, Annex IX B max 10% double counted, opt-in marine and aviation until 2025. Doing roadmaps. Inland shipping kept out. Neste mainly on aviation.
- **New Zealand (Paul)**
New Zealand imports 100% of fuel. One company blends ethanol, some from whey some imported from Australia. Two biodiesel plants. Forestry residues and waste as the main feedstocks. Proposal of new routes, biooil, advanced biofuels, wood chips. Short rotation research and processing research underway are funded by the government. Start with imports of renewable diesel from Singapore. Four projects to FEL1 on the aviation front, 80% of aviation emissions come from medium to long haul. Import/export 54% in marine fuels.
- **Sweden (Tomas)**
Nuclear power coming back to the matrix. Sweden leads in renewables in Europe. World's highest diesel price. Several prices going down for different biofuels. Plug-in hybrid car sales are on the rise. Quota increases in pause. Biofuels tax exemption renewal in evaluation by EU, ILUC cap of 7% hinder biofuels. Mandate quotas for SAF in effect from 1% to 100%. Eight plants are in operation, 9 in development.

- USA (Isabelle)
44% CI reduction of US ethanol, 57% in California, and 70% by 2030. Increasing blending to E15 increasing after thorough testing, approved in all vehicles, Biden expanding its deployment. Adoption is state dependent. ATJ & ETJ corn ethanol approved for pathways. IRA includes credit for SAF. No SAF mandates, missing policy to reinforce.

3. Task Deliverables

- **T39-T1: SAF project proposal (Jack)**
Jack presented the project, discussion followed on aspects of LCA and Certification, that might be in separate proposals. The discussion was also initiated on green sources of electricity (Glaucia), competing uses (Jack), covering of feedstocks (Jose), and technologies (Steve). In the SAF project, Robert Molina will be a partner on LCA. Jose suggested ICAO could be interviewed to provide data. Boeing was mentioned by Jack as the main partner. Variations in carbon intensity among regions and technologies are mentioned as possible issues in certification. Clarification in the objective of the project was made, to define how the report will be placed in the field where many competing roadmaps and reports are made. A suggestion was made by Austria to have intermediate reports, before the end of 2024. Boeing's contribution is only in kind, with no editorial rights. A suggestion was made to provide an infographic with the report for social media dissemination. AMF Activity on SAF was mentioned by Franziska with a suggestion to align.
- **T39-T2: Co-processing and drop-in biofuels project proposal (Jack)**
Way of engaging the oil companies. Led by Jianping, Susan, and Jack. Aviation, marine, rail, and long-distance transportation. Potential of biocrude co-processing, contacting leaders, TEA, LCA. Discussion on emissions, tracking of green content (Marco), and different approaches to be tried, to verify credibility and compare. A preliminary analysis will be needed. Synergies with the Demo plants project mentioned (Andrea) and possible exchange of information, will be received by the project leader. Challenges for the TEA analysis highlighted (Franziska), with Task 42 (Biorefineries) mentioned as a possibility to provide methodology as T39 provides data. Challenges in tracking (costs and technical) mentioned (Marco). A suggestion of organizing a workshop with oil companies (Jack).
- **T39-T3: Marine (Sune)**
In a preliminary proposal presented, in the previous report, barriers were identified after stakeholder interviews including sustainability criteria, fuel standards, and financial incentives. For the next steps seeking inputs, the initial suggestion is lowering investment risks through continued R&D of potential pathways, development of appropriate standards, and enabling suitable policies. A suggestion was made (Tomas) to organize a workshop (Sune and Steve). The policy was discussed in The Netherlands. Reporting on cases might be a way to go. Focus on pollution mentioned (Jack) as a current trend (SOX, NOX, black carbon).
- **T39-P3: Certification proposal (Jose)**
Report 1 coming out. Next project proposal to understand sensitivities, impact of sensitivities, how approval bodies act on them. Need to revisit the definition of advanced biofuels (Glaucia). Topics to be covered in the 6 work packages were described: framework, building blocks, benchmarking, robustness, verification, and synthesis. Potential supply chains and case studies were identified, along with correct claims of climate impact with CCU. Drax and the pellets market are mentioned in

the context of the dynamic nature of the certification arena (Jack). Pellet certification was discussed; in Brazil, the market was explained as still in development as incentives do not exist to produce pellets from wood but grow from bagasse (Glaucia). Policy framework ICAO, CLFCS, Renovabio, and EU RED II are listed as potential targets of the study. The chains should be a mix of established and new and tied in with Task 45. . It was advised to strongly limit the selection of cases to representative supply chains. Study is mainly important for aviation (Dina). Budget in preparation that might include funds allocated to partners. Austria, Brazil and Germany are interested.

- **T39-T4:** Demoplants status report (Andrea)
274 active demonstration plant entries in the database. Filter options include TRL, technology, status, raw material, output. Gasification to SAF shown as an example, Fulcrum, Sierra, USA, using household garbage. Power and biogas to liquid, Capphenia, Germany. Suggestion to include oil-companies and hybrid forms of technologies such as co-processing. Issues on failures and successes, as well as policies that could help to be addressed in a report.
- **T39-T6:** Synergies of green hydrogen and biomass value chains (Franziska)
Work packages and teams are listed. Kick-off of the project in June 2022. First Workshop in October/November 22. Intertask will be paid 25 k from Task 39. Task 39 will contribute with Cases. Need for cases on BECCUS. LCA matrix in development (Marco).
- **T39-P1:** Implementation Agendas (Jack)
Questionary out to Group with a request for feedback on the format/questions. Added to volumetric data on carbon intensity being asked along with LCA model. Ways of looking into ILUC added now.
- **T39-P4:** Emerging markets (Rubens)
Integrated analysis to be conducted that considers TEA, LCA, and Exergy for China, India, Malaysia, Thailand, and South Africa for this triennium. Showed articles published in Argentina, Brazil, Colombia, and Guatemala and noted the policy brief is circulated for comments. Presented a comparison between electric, hybrid, and flex-fuel engines. Presented the TEA showing ethanol and biodiesel are economically competitive in the four emerging economies of Latin America studied.

4. Task deliverables – Planning and current projects in the triennium

- **LCA (Glaucia)**
Presented the circulated LCA POW goals. Proposal to be submitted in early 2023 for a project to be led by Marco.
- **Lessons Learned (Tomas)**
The final presentation for ExCo is in preparation.

5. Future Meetings

- One physical meeting (3 days) a year.
- 2023 - Autumn (not defined where)
- 2024 - São Paulo together with End of Triennium Conference, October.

Follow-ups

Task	Responsible	Completed?
Certification report. Tomas will contact Andrea for ISBN, ask for the report to be on the website, and add it to the newsletter.	Tomas	☐
Set up OneDrive	Hannah	☐
Seek out Task 42 members for a possible collaboration on TEA	Franziska	☐
Marine Biofuels workshop to be organized.	Sune	☐

Approvals

Decisions
SAF project proposal led by Jack, Susan, and Robert approved (US\$ 40 k)
Drop in biofuels proposal led by Jianping, Susan, and Jack approved (US\$ 40 k)

☐ Meeting Notes Distributed to the Team

☐ Tasks & Projects Completed, Processed or Delegated

☐ Key Dates Completed or Scheduled