

# Welcome to the IEA Bioenergy Task 39 Business Meeting

(Thanks to BUCT for hosting us!)

7-8 April 2018  
Beijing, China



## Task 39 Business Meeting - Overview of program,

Arrival of international participants. Evening social: Hotel bar Crowne Plaza	Friday, 6 April
Task 39 business meeting Day 1 & formal dinner	Saturday, 7 April
Task 39 business meeting Day 2 & informal social event	Sunday, 8 April
Technical tour - COFCO & Great Wall	Monday, 9 April
Meeting of China-Canada Joint Centre for BioEnergy Research and Innovation (C-CJCBERI) <a href="http://www.ccjcberi.center">www.ccjcberi.center</a>	Tuesday, 10/11 April

# Saturday, 7 April 2018

8h30	Coffee
8h45	Welcome by IEA Bioenergy (Jim Spaeth, US DoE and IEA Bioenergy ExCo Chairperson) Welcome to IEA Bioenergy Task 39 meeting. Jim McMillan (NREL) / Huili Zhang/Tianwei Tan (BUCT)
9h00	Overview presentation on the ongoing and proposed activities of IEA Bioenergy Task 39 (Liquid Biofuels) Jim McMillan, Jack Saddler and Susan van Dyk
9h30	Summary of projects covered in the current triennium
10h00	Detailed coverage of the Implementation Agendas report (the compare & contrast of Biofuels targets/policies)
10h15	An update of RED II negotiations - Tomas Ekbom
10h30	Coffee/tea break
10h45	Focus on different biofuels policies in countries, current and future trends - Australia, Brazil, Canada, Denmark, European Commission, Germany, Japan, Korea, Netherlands, New Zealand, Sweden, USA
12h45	Invited speakers from potential Task 39 members (15 min each) - China (Huili Zhang (BUCT)) - Indonesia (Mr. Paulus Tjakrawan, Vice Chairman Aprob)
13h15	Lunch
14h00	Advanced Fuels for Advanced Engines - Final report presentation by Germany (Ulrich Arnold)
14h30	Drop-in Biofuels report update (Susan van Dyk / Jack Saddler)
15h00	Coffee/Tea break
15h15	IEA Bioenergy Roadmap - Adam Brown (Via Skype)
15h30	Proposed Task 39 activities for new triennium (Jan 2019 - Dec 2021)
17h00	Future meetings Future Newsletters - country profiles for feature stories General Discussion
18h00	Close of meeting
19h00	Formal banquet - Da Zhai Men (大宅门) Chinese Restaurant: #3 Building, Huixinbeili, Anyuan Road, Chaoyang District, Beijing

# Sunday, 8 April 2018

8h30	Welcome - Review and program for the day's discussions (Jim McMillan / Jack Saddler)
8h40	Panel presentation & discussion: Sustainability of biofuels and life cycle assessment (Moderator: Jim Spaeth, IEA Bioenergy ExCo Chair and ExCo US member (US DOE)) <ul style="list-style-type: none"> <li>a) Michael Wang (Argonne National Laboratory, USA)</li> <li>b) Mark Staples (MIT)</li> <li>c) Don O'Connor (via skype) (S&amp;T<sup>2</sup> Consultants)</li> <li>d) Rolf Hogan (Roundtable on Sustainable Biomaterials)</li> <li>e) Nan Li - WWF (China)</li> </ul> DISCUSSION
10h00	Coffee/tea break
10h15	Panel presentation & discussion: The role of biofuels - focus on aviation (Moderator: Elisabeth Martin, Boeing) <ul style="list-style-type: none"> <li>a) Elisabeth Martin, Managing Director, Boeing Research &amp; Technology - China</li> <li>b) Robert Boyd, IATA (International Air Transport Association)</li> <li>c) Ken Lai, VP Asia, Lanzatech "Waste to Wing: Converting Residues to Jet Fuel"</li> <li>d) Shutong Liu, Motioneco</li> </ul> DISCUSSION
11h30	Panel presentation & discussion: Biofuels development in China (Moderator: Paul Bennett) <ul style="list-style-type: none"> <li>a) Fang Yunming, Beijing University of Chemical Technology (BUCT)</li> <li>b) Fan Li / 李凡, Senior Researcher, COFCO (Biofuel producer)</li> <li>c) Hailong Lin / 林海龙, Chief Engineer, National Investment Bio-technology Ltd. Co. / 国投生物科技投资有限公司</li> </ul> DISCUSSION
12h15	Lunch
13h15	Opening speeches Mr. Siqiang Wang, Director of Technology and Facility Division / 科技装备司, China National Energy Administration (NEA) Ms Shuhua Jiang, Division of International Organizations and Conferences, Department of International Cooperation, MOST Mr. Jim Spaeth, IEA Bioenergy ExCo Chair and ExCo US member (US DOE) Prof Tianwei Tan, BUCT
14h15	The work of IEA Bioenergy: Presentations from other IEA Bioenergy Tasks <ul style="list-style-type: none"> <li>a) Task 43 (Mark Brown) sustainable production and use of biomass for bioenergy/biofuels</li> <li>b) Task 33 and 34 (Gasification/pyrolysis) (/Paul Bennett/Timo Gerlagh)</li> <li>c) Paul Bennett (IEA Bioenergy ExCo New Zealand member; Scion)</li> </ul>
15h30	Coffee/tea break
16h00	Final/summary discussions. (Moderator: Jack Saddler) Invitation to end-of-triennium meetings in San Francisco, 5-9 November 2018 Signing ceremony
17.00	Close of meeting & Informal social event - Pizza Maru: 2nd floor, Jia #35 Building, Area 11, East Beisanhuan Road, Chaoyang District, Beijing (Opposite to BUCT gate)



## Current triennium 2016-2018

- Members (14) - Australia, Austria, Brazil, Canada, Denmark, European Commission, Germany, Japan, Netherlands, New Zealand, South Africa, South Korea, Sweden, USA
  - Progress in recruiting new members: China, India, Mexico, Indonesia
- Deliverables - ongoing and future
  - See Gantt chart on the following slide
  - Ongoing and future deliverables will be discussed separately
- Budget and spending (see following slides)



# Gantt chart 2016-2018

"Alarm"																	
Colour code																	
	<---Item will be delivered on scheduled																
	<---Item has some challenges and may miss scheduled delivery																
	<---Item has major challenges and will miss scheduled delivery																

Project No.	Topic (collaboration)	Deliverable	Status	2016				2017				2018				Alarm		
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
T39-T1	Update status and potential for <u>algal</u> biofuels production in a biorefinery context	Report	Planning															Completed
			Actual															
T39-T2	Advanced biofuels <u>in advanced engines</u> (with IEA AMF)	Report	Planning															Completed
			Actual															
T39-T3	Comparison of LCA models (with Task 38 & contributing to intertask) 3 Phases	3 Reports	Planning															Phase I com
			Actual															
T39-T4	Assessment of <u>large-scale</u> demonstration plants (with Bioenergy 2020+)	Database updates; report	Planning															On-going
			Actual															
T39-T5	<u>Definitions and terminology of biofuels</u>	Report	Planning															cancelled
			Actual															
T39-T6 (& P2)	Update drop-in report, specifically focusing on aviation and maritime fuels	2 Reports	Planning															In progress
			Actual															
T39-T7	Biofuel production and consumption in <u>emerging economies</u> (China, India, etc.)	Report	Planning															Completed
			Actual															
T39-P1	Update on country policies and implementation agendas	Report	Planning															In progress
			Actual															
--	<u>Roadmap</u> for Integration of advanced biofuels (with IEA AMF)	Report	Planning															Planned/on hold
			Actual															
--	Assessment of advanced biofuels commercialization success (with Task 42)	Workshop	Planning															Planned/on hold
			Actual															
--	Co-products and biorefineries (with Task 42)	workshop	Planning															Planned/on hold
			Actual															
--	Potential of "generation 1.5" feedstocks (with China and possibly Task 43)	Report	Planning															Planned/on hold
			Actual															
--	<u>Spatial</u> analysis of biofuel feedstock reserves (with Task 43).	Report	Planning															Planned/on hold
			Actual															
--	Task 39 Newsletter		Planning															On-going
			Actual															
--	IEA Annual Report (Task progress)		Planning															On-going
			Actual															

# Resource allocation for current triennium

- Current projects and budget

Website, response to enquiries, coordination of newsletters, author reports (Implementation Agenda, Drop-in, etc.), liaise with other TCP's, IEA HQ, FAO, etc.

Organise meetings, workshops, etc. Recruit additional contributing countries (i.e., China, India, Mexico, Indonesia, Thailand, Italy, Finland, etc.), others.

Monitoring reports by others (e.g., IEA HQ, EU, RFA, UNICA, US DoE, US EIA, etc.)

Inter-Task activities (Comparing LCA models, etc. (Post docs, students, administrator).

- On-going projects and budget commitments

Comparison of LCA models; Database update; Newsletters

- Budget Allocation - see budget next slide

Labour: Leverage post docs, grad students, task coordinator to extent possible



# Budget status and spending

## Budget break down (2018)

Category		Budget	Spent as of	Estimated
		2017	28-Feb-18	Total Expenses by
		(US \$)	(US \$)	31-Dec-18 (US \$)
Salaries, administration, website, newsletter		75,000	9,109	75,000
Total budget for Projects in 2017		202,000		
Commissioned Work (included in projects)				
• Jim McMillan (NREL) Updated TSA	25,000			25,000
• Advanced Fuels for advanced engines (Mueller-Langer \$27,000 pd + \$27,000 in	27,000		27,000	27,000
• GHG model comparison (Phase II)	60,000			60,000
• Update demoplant database (D. Bacovsky \$15,000 annually over three years)	15,000			15,000
• Update to Drop-in biofuels Report (\$15,000 2016 + \$10,000 2017)	45,000			45,000
• Implementation Agendas	30,000		863	30,000
Travel, workshops, meetings		48,730	3,215	48,730
Materials & supplies, courier, bank charges and exchange rate		4,135	174	4,135
<b>Subtotal</b>		<b>329,865</b>	<b>40,361</b>	<b>329,865</b>
Overhead (8%)		26,389	3,229	26,389
<b>Total</b>		<b>356,254</b>	<b>43,590</b>	<b>356,254</b>

# POTENTIAL OUTSTANDING DELIVERABLES

- Spatial analysis of biofuel feedstock reserves (with Task 43) (Jim and Jack)
- Potential of “generation 1.5” feedstocks (with China and possibly Task 43)
- Co-products and biorefineries (with Task 42) WORKSHOP??? (But has this already been covered in Gothenburg?) (Jack and Jim)
- assessment of advanced biofuels commercialization success (with Task 42) WORKSHOP? (But already covered by ExCo project?) (Jim and Jack)
- Possibility of AMF funding future joint studies (i.e. Roadmap for integration of advanced biofuels) with Task 39 (Franziska M-L/Dina)

(See Gantt chart)

## Implementation agendas

- Significant changes in policies since original report
- Country sections have become difficult to compare
- Supply and Accuracy of data?
- New questionnaire developed (response?)

### Several reasons to try and make this activity work

- Overview of policies used to promote biofuels development
- Trends and effectiveness of policies proven
- Likely ongoing “price-gap” will need policy help

# An update on RED II

- Tomas Ekbom

# Biofuels policies in countries - current and future trends

- 5-10 minute presentations from Task 39 members

## Invited guest speakers (15 min each)

- Indonesia (Mr. Paulus Tjakrawan, Vice Chairman Aprob)



# UPDATE ON COMMISSIONED WORK

- Advanced Fuels for Advanced Engines - Final report presentation by Germany (Ulrich Arnold)
- Discuss possible follow-up work with Advanced Motor Fuels (AMF) TCP

# UPDATE ON COMMISSIONED WORK

## T39-T3 - Comparison of Biofuel Life Cycle Assessment Tools

- Phase II to go ahead in 2018 (Phase III postponed to next triennium)
  
- Project leaders: Antonio Bonomi (CTBE, T39); Helena Chum (NREL, T38)
  - CTBE, NREL and IEA Bioenergy Tasks 38 & 39
  - Phase 1 (2016) completed -
  - Phase 2 -
  - Phase 3

# DROP-IN BIOFUELS UPDATE

- Update of companies and technology developments
- Co-processing
- Policy
- Sustainability

## Update on IEA HQ Roadmap and the role of biofuels

- Adam Brown via Skype

# IEA Bioenergy Task 39 Proposal for Prolongation, 2019-2021

## “Commercialization of Conventional and Advanced Liquid Biofuels from Biomass”

Proposers: Jim McMillan<sup>1</sup> (Task Leader)  
and Jack Saddler<sup>2</sup> (Co-Task Leader)

<sup>1</sup>National Renewable Energy Laboratory, USA

<sup>2</sup>University of British Columbia, Canada

Task 39 meeting  
Beijing, China, April 7-9<sup>th</sup>, 2018

## IEA Bioenergy Task 39 - objective

- “To facilitate commercialization of conventional and advanced liquid biofuels”
- Collaboration between 14 countries
- Analyze policy, markets and sustainable biofuel implementation
- Focus on Technical and Policy issues
- Catalyze cooperative research and development
- Ensure information dissemination & outreach with stakeholders

TECHNOLOGY AND COMMERCIALIZATION

POLICY, MARKETS, SUSTAINABILITY  
& IMPLEMENTATION

**Catalyze Cooperative  
Research**

**State of  
Technology &  
Trends Analysis**

**Policy, Market  
and Deployment  
Analysis**

**Biofuel  
Deployment  
and Information  
Sharing**



# IEA Bioenergy Task 39

## Liquid biofuels focus

### 14 member countries 2016-2018

[www.Task39.org](http://www.Task39.org)



**European Commission** - Luisa Marelli,  
Jacopo Giuntoli

**Sweden** - Tomas Ekbohm

**Denmark** - Claus Felby, Henning Jorgensen,  
Michael Persson, Anders Kristoffersen

**Germany** - Franziska Mueller-Langer,  
Nicolaus Dahmen

**The Netherlands** - Timo Gerlagh, Johan  
van Doesum

**Austria** - Dina Bacovsky

**Canada** - Jack Saddler, Warren Mabee, Steve Smith

**United States** - Jim McMillan

**South Korea** - Jin Suk Lee, Kyu Young Kang,  
Seonghun Park

**Japan** - Satoshi Aramaki, Shiro Saka

**Brazil** - Paulo Barbosa, Antonio Bonomi,  
Eduardo Platte

**South Africa** - Emile van Zyl, Bernard Prior

**New Zealand** - Ian Suckling

**Australia** - Les Edye, Steve Rogers

## Collaborations

- IEA Headquarters collaboration  
Update to Biofuels Roadmap
- IEA Bioenergy secretariat collaboration
- Collaboration with Advanced Motor Fuels  
Implementing Agreement
- Collaboration with other groups, FAO, World  
Bank, National programs
- Extensive Industry involvement - DSM,  
Borregaard, Novozymes, etc.



## Conventional and Advanced Biofuels

- Conventional biofuels (ethanol, biodiesel) face three main criticisms:
  - *Insufficient (>20%) GHG emission reductions (on an LCA basis)*
  - *“Food” is basic feedstock for fuel*
  - *Blend walls and infrastructure incompatibility*

*However, will continue to be the primary biofuels for the next 5-10 yrs!*

- Ideally advanced biofuels address all three criticisms by aiming for:
  - *Reduced GHG footprint (e.g., by utilizing less land and minimizing changes to existing infrastructure)*
  - *Non-food, abundant feedstock (terrestrial biomass or aquatic algae/plants)*
  - *Petroleum-equivalent ‘drop-in’ fuels (i.e., containing less oxygen, being more stable, and having higher energy density than ethanol and FAME)*

## Work Scope, 2019-2021

- Ongoing areas:
  - (1) Accelerate the maturation of 'Drop-in' biofuels in long distance transportation sectors (Marine, Aviation, Trucking and Rail)
    - Facilitate co-processing and refinery integration and the development of standards to commoditize the produced bio-intermediates in biorefineries (potentially joint activities with Tasks 33, 34 and 37)
    - Assess effective financial and policy frameworks attracting the production of drop-in biofuels
    - Assess international "technology providers" working on the production of drop-in biofuels (i.e. Neste, UPM, Fulcrum, Red Rocks, Gevo, Amyris, etc.)
    - Facilitate the evaluation of sustainability of transportation sectors using reliable and accurate methods to calculate the carbon intensity
    - Identify key R&D gaps and how these might be addressed (potentially joint activity with new deployment Task)
    - Identify potentials to develop "advanced biofuels/biojet" ports at locations such as maritime ports, airports, cities and municipalities.



## Work Scope, 2019-2021

- Ongoing areas:
  - (2) Strengthen the on-going collaborations with other tasks
    - Focus on sustainability issues and certifications and identify key metrics beyond GHG reduction, spanning both feedstocks and conversion technologies (Tasks 33, 34, 36 and 37, 40, 42 and 43 and new sustainability and deployment tasks)
    - Evaluate oleochemical, lignocellulosic biomass resources and residues, and other processing “waste” feedstocks and their conversion technology pathways (Task 43, Task 42, Task 38 (Sustainability Task) and conversion technology Tasks, especially Tasks 33 and 34 as technology platforms for drop-in biofuels production.
    - Continue working on TEAs on the feedstock/technology pathways for advanced biofuels, in particular drop-in and algal biofuels, to assess the economic viability of the pathways and to provide direction to research, development, investment, and policy making.

## Work Scope, 2019-2021

- Ongoing areas:
  - (3) Recruit new members
    - Keep pursuing China, India, Thailand, Indonesia, Malaysia, Mexico and Chile to join IEA Bioenergy Task 39. The economy in these countries is growing with increased manufacturing and consumption leading to increases in freight such as long-distance trucking, shipping and aviation.



## Work Scope, 2019-2021

### ■ New areas of interest:

#### (1) Evaluate the potential development of potential certification schemes across all of the “waste”, oleochemical and lignocellulosic supply chains

- Map out supply chains for sugar, starch, oleochemical and lignocellulosic feedstocks and downstream production of conventional, advanced and drop-in biofuels
- Outline the need for sustainability/certification programs across the supply chain
- Identify the connections that can be made among different actors in the supply chain and their certification needs
- Identify national/regional requirements/regulations for the biofuel industry related to certification programs
- Provide recommendations on the development of certification schemes and sustainable metrics that help promote the production of biofuels

## Work Scope, 2019-2021

- New areas of interest:

(2) Collect current estimated costs for production of advanced biofuels from project developers and experts in the EU, North America, Brazil, Asia and other regions.

(3) Assess the potential to reduce the final cost of producing advanced or drop-in biofuels by “piggy-backing” them to more conventional feedstock/conversion technology routes

(4) Better understand how much financial support will be required to “buydown” the costs while better informing the policy needs to promote the development of such fuels.

# Work program

Cover all liquid biofuels including conventional and advanced liquid biofuels, but with an increased focus on advanced and especially advanced drop-in biofuels for long distance transport.

Address policy/legislative/regulatory and infrastructure concerns regarding expanding conventional and advanced (including drop-in) liquid biofuels

Technology and commercialization

Policy, markets, sustainability & implementation

Multifaceted communication strategy

facilitate knowledge transfer and dissemination of information between IEA Bioenergy members and other liquid biofuels stakeholders

## Work program, 2019-2021: Technology and Commercialization

- Ongoing assessment of demonstration plants and commercialization progress
- Evaluate economic, technical and policy barriers and opportunities to integrate with existing refineries and their downstream distribution networks in collaboration with refineries such as Neste, Alt air, Preem.
- Discuss the developments in algal technologies for biofuels with the increased focus on a co-product approach (e.g. fish feed, nutraceuticals, cosmetics)
- Assess the potential of so-called “generation 1.5” feedstocks for biofuel production to act as a bridge between conventional (“generation 1”) and advanced (“generation 2”)
- Assess the potential of electrofuels, particularly the strategic relevance and potential of electrofuels, in a context of emerging availability of low cost electricity from renewable energy sources
- Assess the overall sustainability of electrofuels when compared with alternatives, including direct use of electricity, conventional and advanced biofuels, based on well-to-wheel GHG emissions and land use requirements.

## Work program, 2019-2021: Policy, Markets, Implementation and Sustainability

- Address policy/legislative/regulatory and infrastructure concerns regarding expanding conventional and advanced (including drop-in) liquid biofuels
- Keep updating Implementation Agendas analysis and biofuels policies
- Extend the policy evaluation to specifically include recent and under-development national and regional carbon tax and low carbon fuel standard and mandates for sectors such as aviation and fuel categories such as drop-in biofuels.
- Discuss the success of policies such as low carbon fuel standards in California and British Columbia to promote production and consumption of biofuels
- Ongoing review and assessment of LCA tools and models
- Study the existing and emerging certifications schemes for both oleochemical and lignocellulosic supply chains to develop potential certifications for advanced biofuels.



# Work program, 2019-2021: Communication strategy

## Continue current strategy

- Information dissemination through commissioned reports, newsletters, website
- Interaction and collaboration through meetings, conferences, workshops, personnel exchanges
- strengthen the communication with IRENA, FAO and national organisations such as the US DoE to collaborate on biofuels developments in IEA- and non-IEA countries.
- Extend our engagement with the World Business Council for Sustainable Development's (WBCSD) below50 initiative



# Proposed Task 39 deliverables, 2019-2021

## Technology and commercialization

- Report: Assessment of drop-in biofuels, with a focus on refinery integration and co-processing and the development of standards for bio-intermediates
- Report: Building on past work for marine and aviation fuels, and expanding to all long distance transport sectors including aviation, maritime, rail and truck biofuels. Decarbonisation strategies will be developed for these long distance transport sector. Report
- Database & Report: Ongoing assessment and mapping of demonstration plants and commercialization
- Report: Ongoing assessment of the successes and lessons learned for advanced biofuel technologies, commercialization, including cellulosic ethanol
- Report: Continued analyses of key issues limiting the integration of advanced biofuels into existing infrastructure and engines.



# Proposed Task 39 deliverables, 2019-2021

## Technology and commercialization

- Report: Ongoing monitoring of algal biofuel technologies assuming a co-product approach (fish feed, nutraceuticals, cosmetics, etc.)
- Report: Potential of so-called “generation 1.5” feedstocks for biofuel production to act as a bridge between conventional and advanced biofuels
- Report: Assess the potential of electrofuels, particularly the strategic relevance and potential of electrofuels to provide cheap, sustainable transportation fuels in the next ten years (in cooperation with IEA HQ).

# Proposed Task 39 deliverables, 2017-2021

## Policy, Markets, Implementation and Sustainability

- Report: Distribute template and collation of data to provide a compare-and-contrast of each country's implementation agenda/biofuels policies
- Database & Report: Review the status of conventional and advanced biofuels demonstration and commercial facilities that are planned, under construction and operating.
- Report: Investigate and recommend policies that will be optimal for decarbonisation of the aviation and marine sectors, based on the international character of these areas.
- Report: Ongoing assessment of the sustainability of biofuels, as well as review and evaluation of biofuels policies to assess how much they incorporate social and environmental aspects of sustainability.
- Report: Carry out a specific analysis of the potential success of various policies including, volumetric mandates, carbon taxes and low carbon fuel standards, etc. on transport decarbonisation.

## Proposed Task 39 deliverables, 2017

# 2021

## Policy, Markets, Implementation and Sustainability

- Report: Analyze sustainability of feedstock and technology pathways and the specific impact of various “new/advanced” feedstocks on carbon intensity of biofuels.
- Report: Review the existing and emerging certifications for both oleochemical and lignocellulosic feedstock-to-biofuel supply chains and develop potential certifications in the supply chain to help promote the production of advanced biofuels.
- Database & Report: Conduct a supply chain approach to identify all the potential areas across the feedstock-to-biofuel supply chain to reduce both capital and operating costs of advanced biofuels and to understand how much financial support will be required to “buydown” the costs
- Report: Analyze status and development of biofuel production and consumption in emerging markets (e.g., China, India, etc.) (with IEA HQ, FAO and World Bank);

# Proposed Task 39 deliverables, 2019-2021

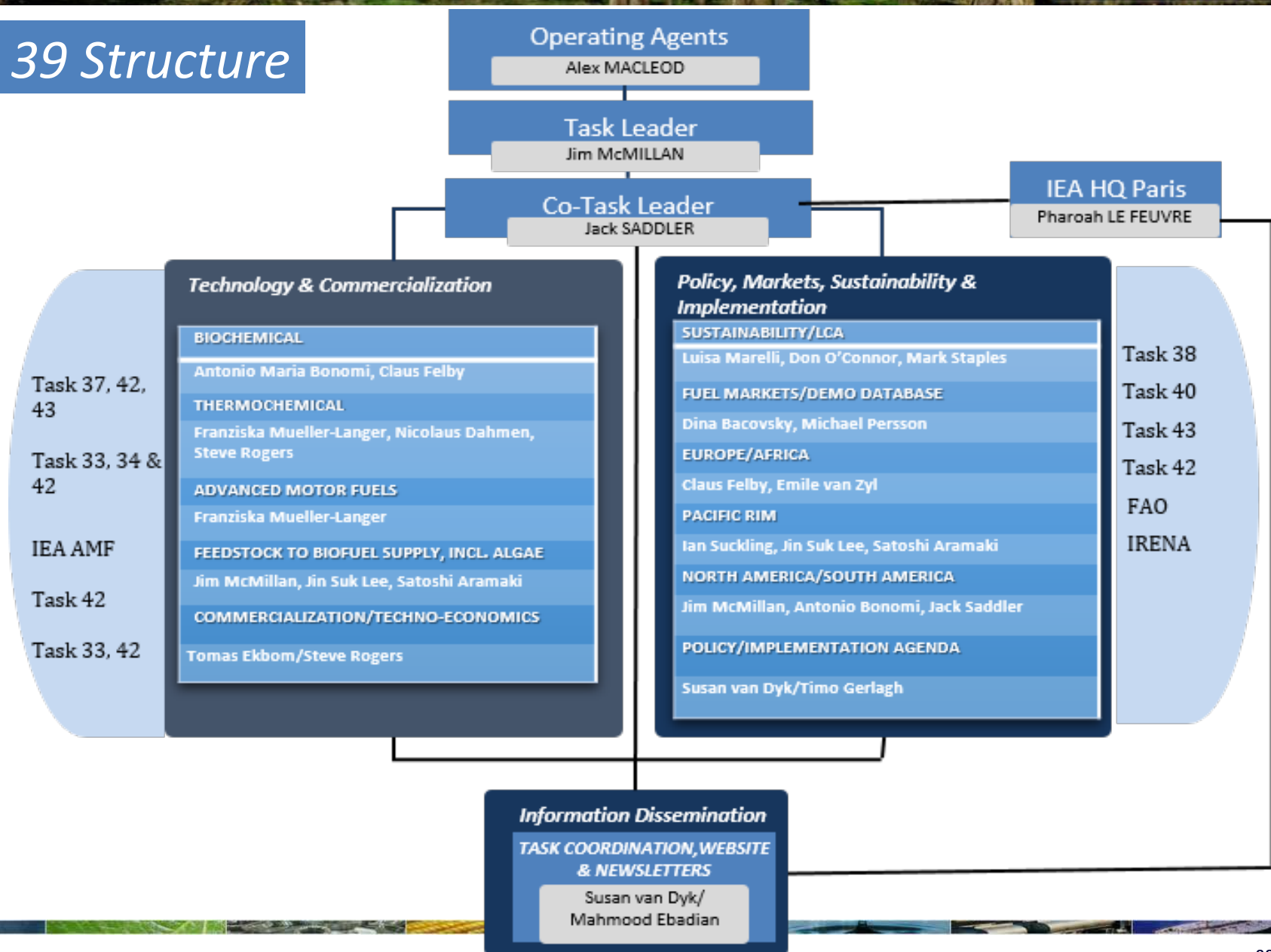
## Communication strategy

- Newsletters (3/year)
  - Featuring country reports and latest developments in industry, policy, sustainability
  - Distributed to >3000 recipients and available on website
- Facilitating communication and international collaboration
  - 2 Business meetings/ year
  - 2 Conference sessions/year
  - Workshops with other tasks and collaborators
- Website ([www.task39.org](http://www.task39.org))
  - Updated website as a resource for biofuels stakeholders
  - publishing 2-3 newsletters per year
  - implementing the already initiated planning efforts for business meetings in the 2019-2021 triennium
  - published proceedings of technical meetings





# Task 39 Structure



## Upcoming meetings

- San Francisco, USA, November 2018
- First half of 2019?



## Proposed Upcoming Newsletters for 2018

- April 2018 - Feature article on United States
- August 2018 - Feature article on Canada
- December 2018 -

# Sunday, 8 April 2018

8h30	Welcome - Review and program for the day's discussions (Jim McMillan / Jack Saddler)
8h40	Panel presentation & discussion: Sustainability of biofuels and life cycle assessment (Moderator: Jim Spaeth, IEA Bioenergy ExCo Chair and ExCo US member (US DOE)) <ul style="list-style-type: none"> <li>a) Michael Wang (Argonne National Laboratory, USA)</li> <li>b) Mark Staples (MIT)</li> <li>c) Don O'Connor (via skype) (S&amp;T<sup>2</sup> Consultants)</li> <li>d) Rolf Hogan (Roundtable on Sustainable Biomaterials)</li> <li>e) Nan Li - WWF (China)</li> </ul> DISCUSSION
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14h15	The work of IEA Bioenergy: Presentations from other IEA Bioenergy Tasks <ul style="list-style-type: none"> <li>a) Task 43 (Mark Brown) sustainable production and use of biomass for bioenergy/biofuels</li> <li>b) Task 33 and 34 (Gasification/pyrolysis) (/Paul Bennett/Timo Gerlagh)</li> <li>c) Paul Bennett (IEA Bioenergy ExCo New Zealand member; Scion)</li> </ul>
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# Sustainability of biofuels and life cycle assessment

- Panel presentation & discussion

(Moderator: Jim Spaeth, IEA Bioenergy ExCo Chair and ExCo US member (US DOE))

- a) Michael Wang (Argonne National Laboratory, USA)
- b) Mark Staples (MIT)
- c) Don O'Connor (via skype) (S&T<sup>2</sup> Consultants)
- d) Rolf Hogan (Roundtable on Sustainable Biomaterials)
- e) Nan Li - WWF (China)
- DISCUSSION

# The role of biofuels - focus on aviation

- Panel presentation & discussion

(Moderator: Elisabeth Martin, Boeing)

- a) Elisabeth Martin, Managing Director, Boeing Research & Technology - China
- b) Robert Boyd, IATA (International Air Transport Association)
- c) Ken Lai, VP Asia, Lanzatech "Waste to Wing: Converting Residues to Jet Fuel"
- d) Shutong Liu, Motioneco
- DISCUSSION

# Biofuels development in China

- Panel presentation & discussion

(Moderator: Paul Bennett)

- Fan Li, Fuel ethanol industry in China, status and brief outlook. (COFCO Biochemical Co., Ltd.)
- Hailong Lin, Technical Progress of Bioethanol in China, (SDIC Biotech Investment Co., Ltd. )
- DISCUSSION

# Opening speeches

- Opening and introductory speech by Mr. Jim Spaeth, IEA Bioenergy ExCo Chair and ExCo US member, US DOE
- Welcome speech by Prof. Tianwei Tan, (Beijing University of Chemical Technology, BUCT)
- Opening speech by Mr. Siqiang Wang, (China National Energy Administration, NEA)



# The work of IEA Bioenergy: Presentations from other IEA Bioenergy Tasks

- Task 43 (Mark Brown) sustainable production and use of biomass for bioenergy/biofuels
- Task 33 - Gasification (Timo Gerlagh)
- Task 34 - Direct Thermochemical Liquefaction.  
Paul Bennett (IEA Bioenergy ExCo New Zealand member; Scion)

# Biofuels in China

- Prof Tianwei Tan

16h00	Final/summary discussions. (Moderator: Jack Saddler)  Invitation to end-of-triennium meetings in San Francisco, 5-9 November 2018
17.00	Close of meeting & Informal social event -  Pizza Maru: 2nd floor, Jia #35 Building, Area 11, East Beisanhuan Road, Chaoyang District, Beijing (Opposite to BUCT gate)

## *Monday, 9 April 2018*

- Technical Tour (Greater Beijing area) for both IEA Bioenergy and C-CJCBERI meeting participants

## *Tuesday, 10 April 2018 (and possibly part of 11 april)*

- Meeting of China-Canada Joint Centre for BioEnergy Research and Innovation (C-CJCBERI) [www.ccjcberi.center](http://www.ccjcberi.center)