IEA Bioenergy

IEA Bioenergy Experiences

California Bioresources Economy Summit

Jim Spaeth

Chair IEA Bioenergy Executive Committee

IEA Bioenergy Technology Collaboration Program

Mission:

To increase knowledge and understanding of bioenergy systems in order to facilitate the deployment of:

- **environmentally sound**
- **socially acceptable and**
- **cost-competitive bioenergy systems**

Key Role:

Independent collaborative body focused on delivering clear and verified information on bioenergy

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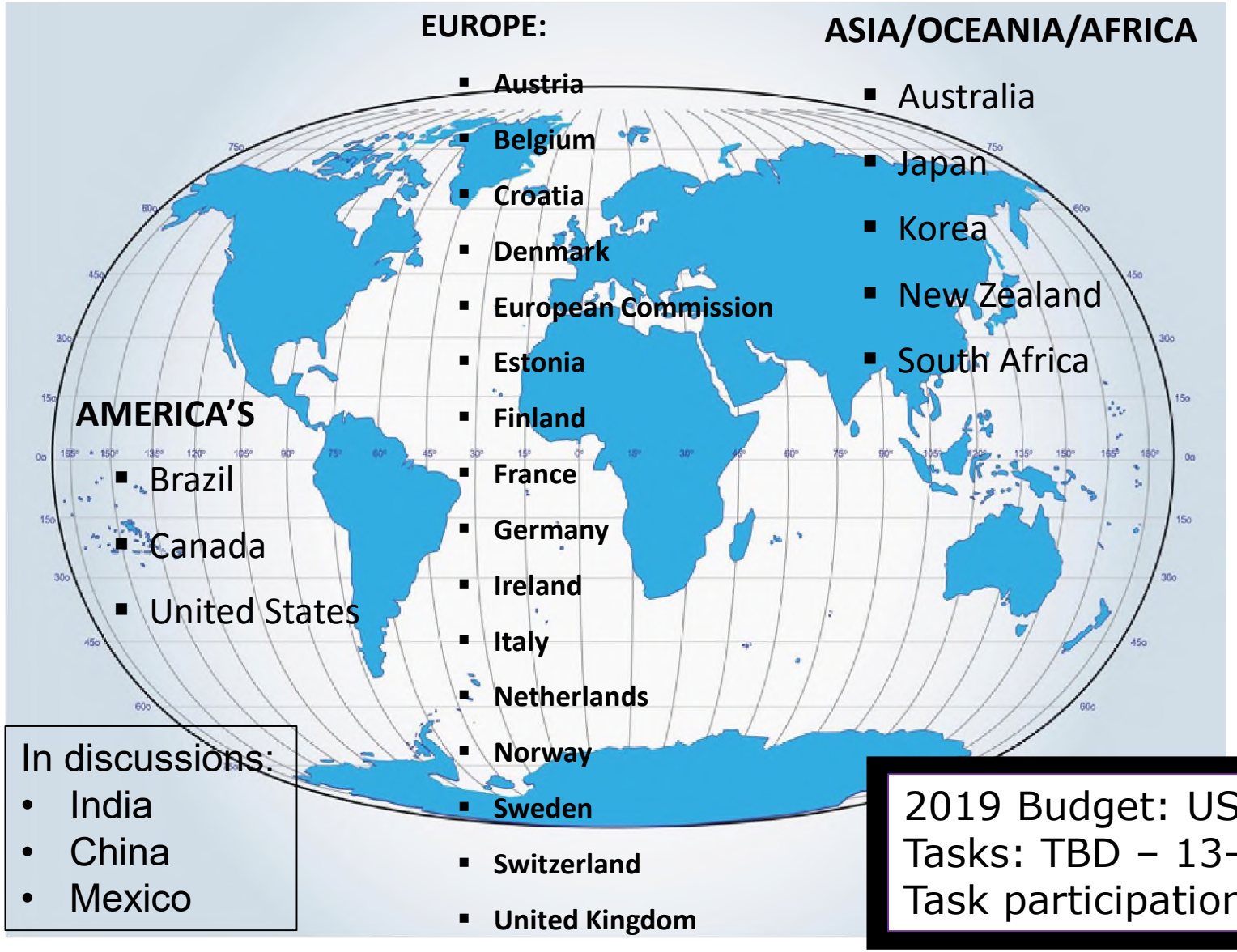
Membership - 24 Contracting Parties



In discussions:
- India
- China
- Mexico

2019 Budget: US$1.9 Million
Tasks: TBD – 13-16
Task participation: >150 persons

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Tasks

Task 32 - Biomass **Combustion** and Co-firing

Task 33 - **Gasification** of Biomass and Waste

Task 34 - Direct Thermochemical **Liquefaction**

Task 36 - Material and energy valorisation of **waste** in a circular economy

Task 37 - Energy from **Biogas**

Task 39 - Commercialising Conventional and Advanced **Transport Biofuels**

Task 40 - **Deployment** of biobased value chains

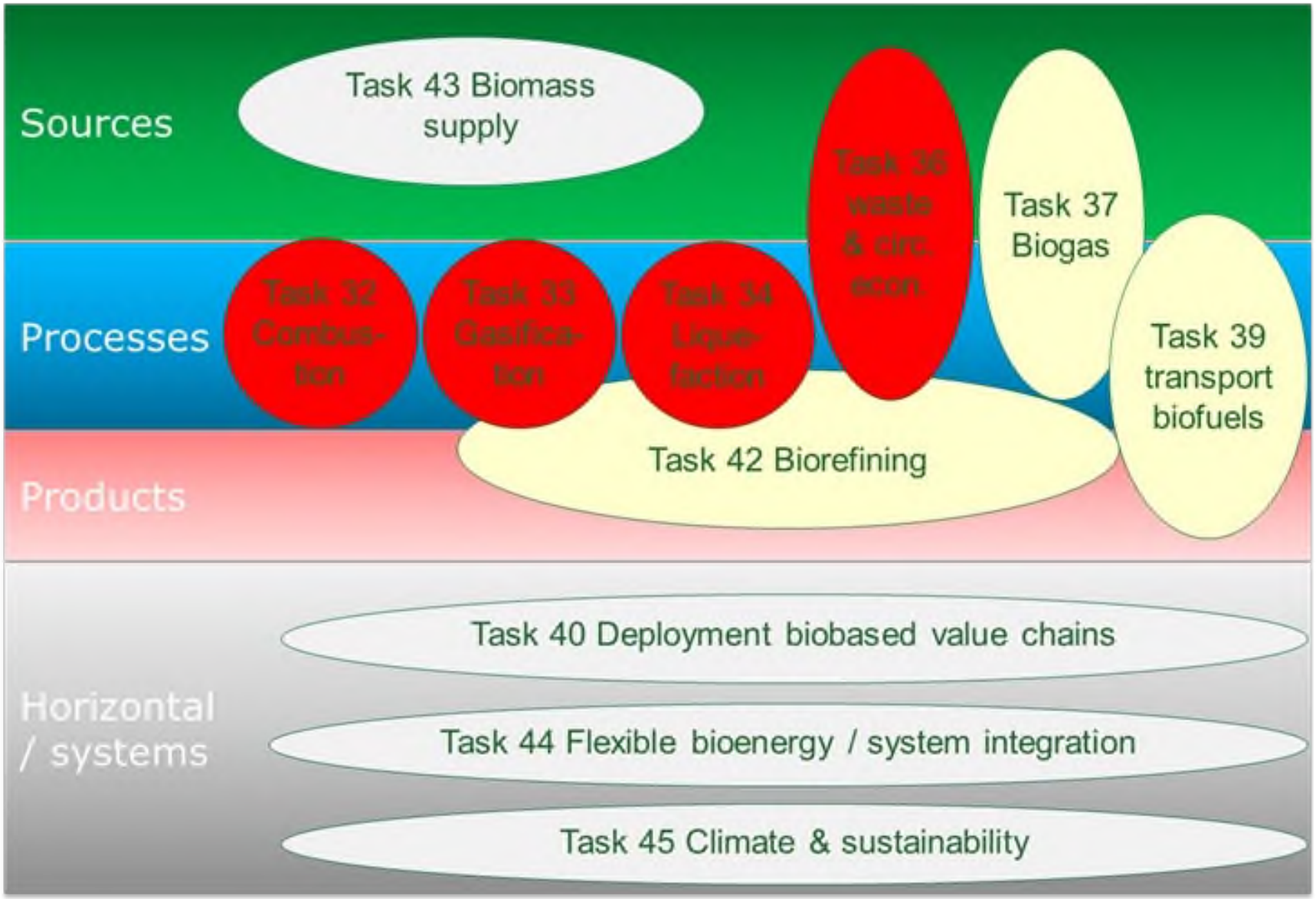
Task 42 - **Biorefining** in a Future BioEconomy

Task 43 - Sustainable **biomass supply**

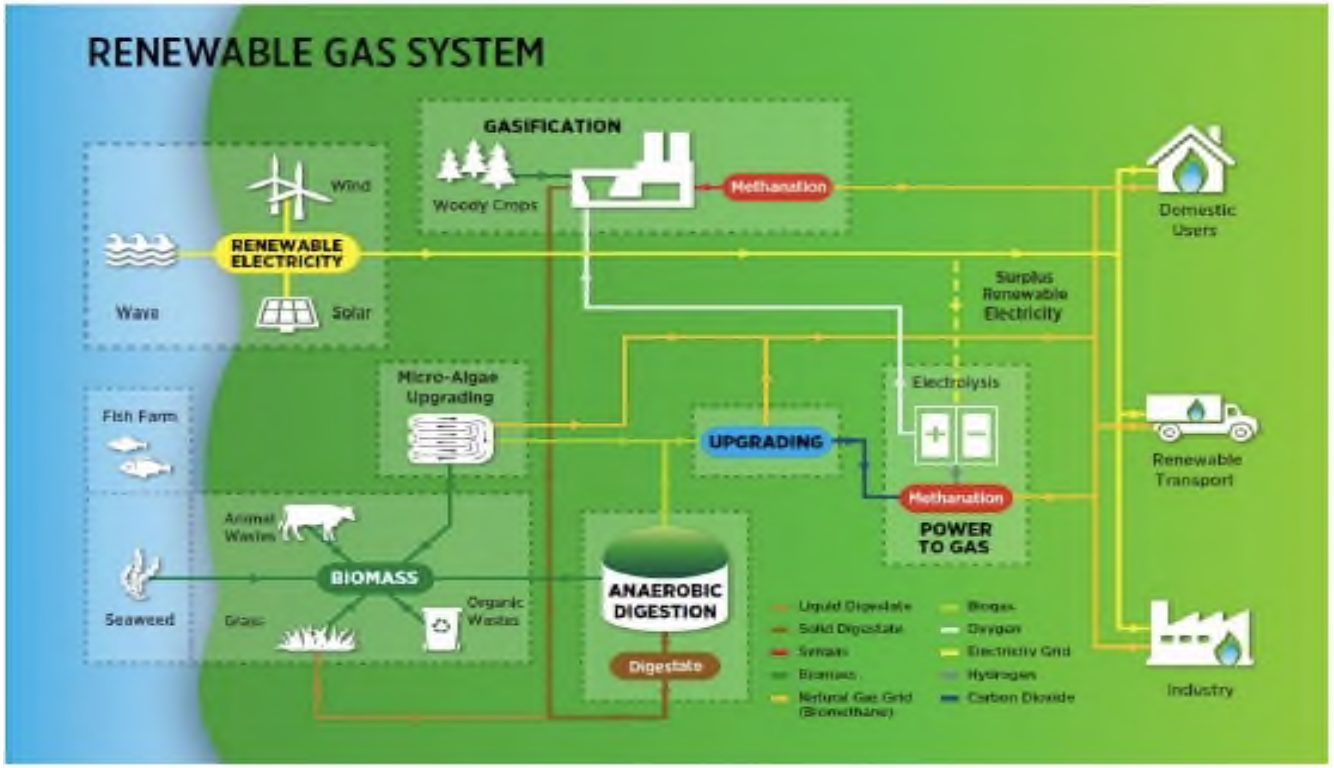
Task 44 - Flexible bioenergy and system **integration**

Task 45 – **Climate and sustainability effects** of bioenergy within the broader bioeconomy

IEA Bioenergy – Depth and Breadth



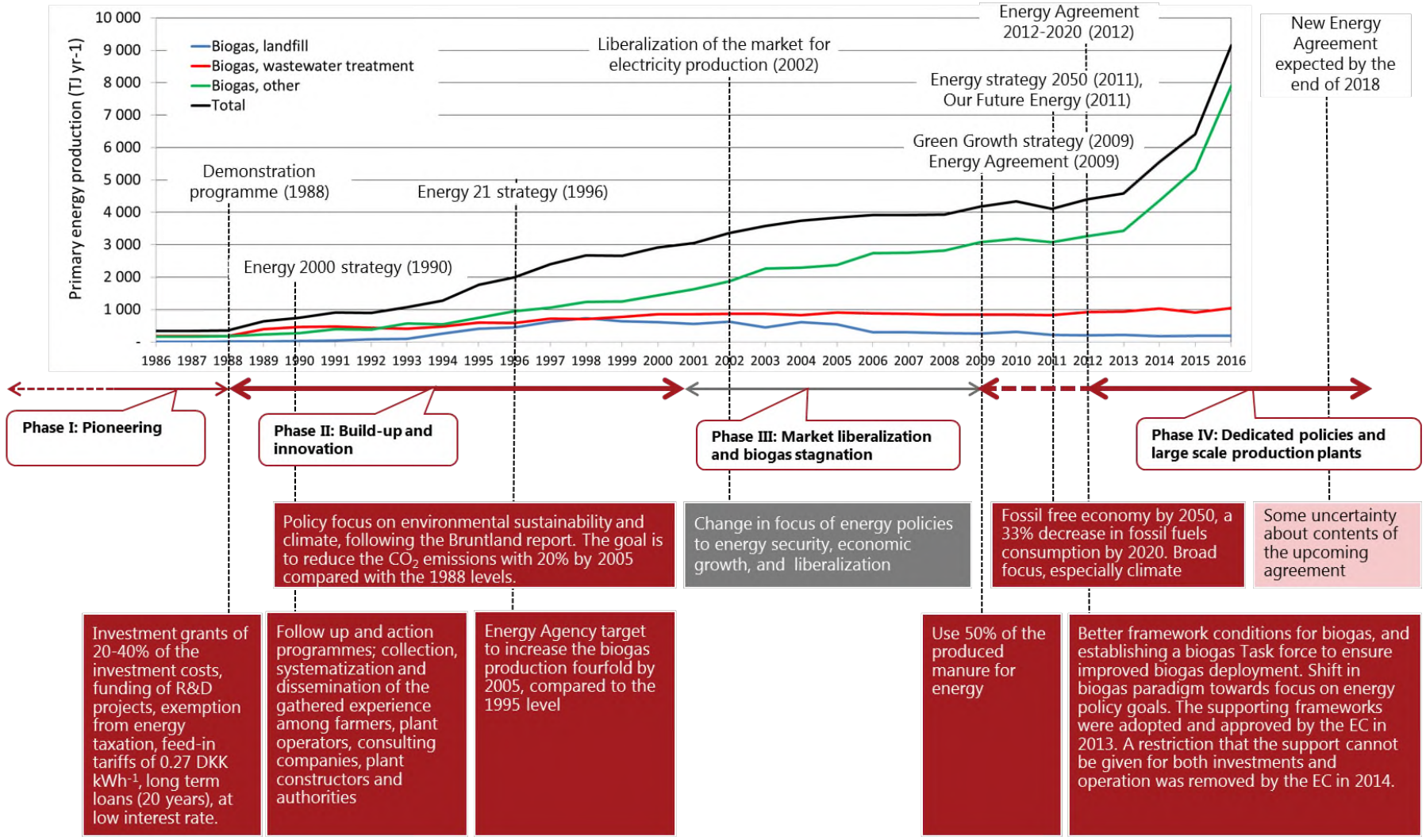
Task 37:
Renewable gas - deployment, markets and sustainable trade



6 European gas grids have committed to 100% green gas in the gas grid by 2050

- Includes biogas from macro and micro-algae; gasification of woody crops; and power to gas systems.

Case study: Biogas in Denmark
Four phases of policy and market development



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Task 38:
Climate Effects Of Biomass And Bioenergy Systems

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Quantifying the climate effects of bioenergy – Choice of reference system

Kati Koponen[a,f,*], Sampo Soimakallio[b,f], Keith L. Kline[c,f,1], Annette Cowie[d,f], Miguel Brandão[e,f]

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of Technology, Stockholm, Sweden
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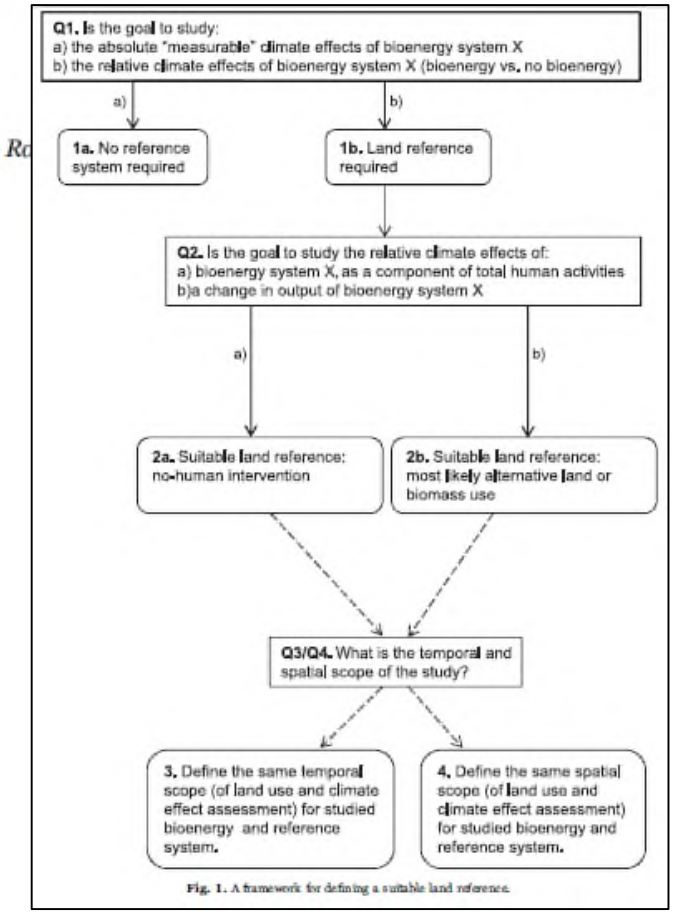


Fig. 1. A framework for defining a suitable land reference.

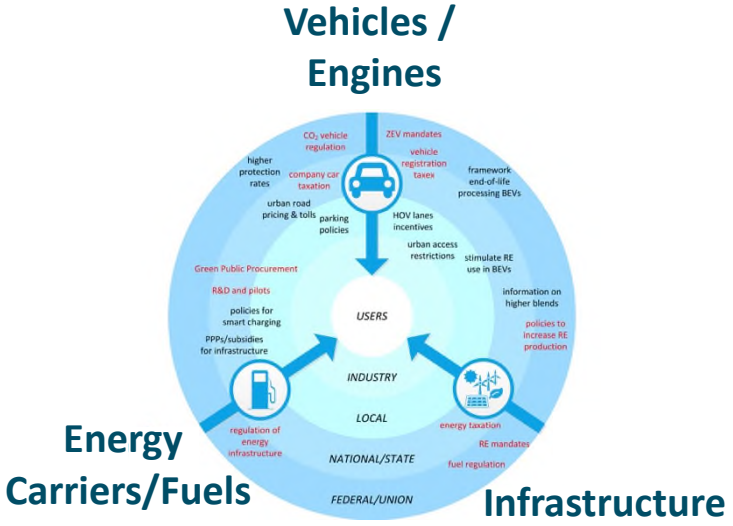
Reference system paper published in
Renewable and Sustainable Energy Reviews

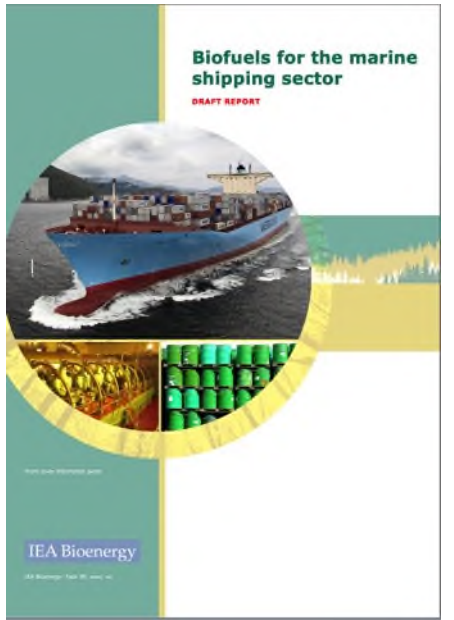
Task 39:
Commercialising Conventional and Advanced Transport Biofuels

- **Comparison of Leading LCA Models for Evaluating GHG Reduction and Environmental Performance of Biofuels**
- **Commercial Opportunity For Marine Biofuels**
- **Advanced Biofuels For Advanced Engines**
- **Algae 2017 State of Technology Review**

GHG impacts [g CO2eq per MJ of fuel]

	GREET	BioGrace	GHGenius	CTBE VSB
Gasoline	90.2	83.8	95.0	87.5
Sugarcane ethanol	25.3	24.0	43.3	16.0
GHG savings	72%	71%	54%	82%





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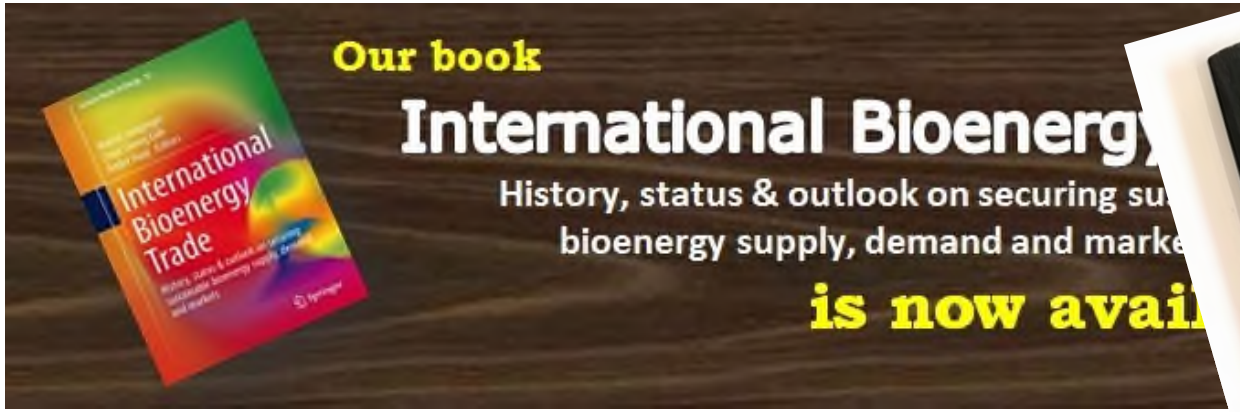
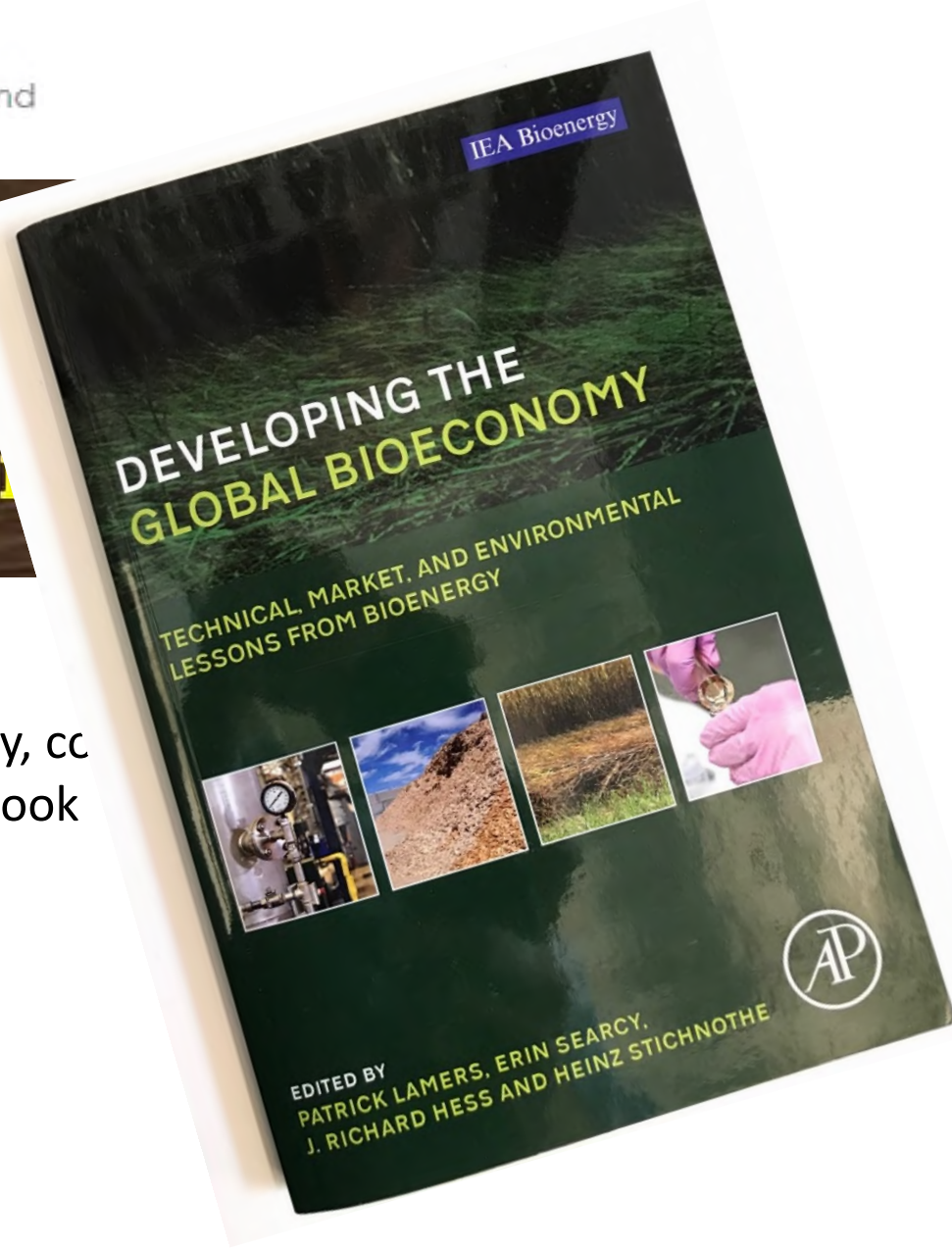
IEA Bioenergy TASK 40

Sustainable International Bioenergy Trade - Securing Supply and Demand





- Summarizing the lessons of 10 years
- Solid & liquid biomass trade, logistics, sustainability, cc studies, barriers & opportunities for trade, outlook trade flows & required investments, and more…
- www.bioenergytrade.org

Task 42 Case Study:

Standards and Labels related to Biobased Products

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Study of Standardisation approaches

- Biobased products
- Plastic products
- Wood plastic composite in Europe
- Ongoing/future standard developments

Case Study:
Bioenergy - Renewable Energy Systems Hybrids

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Key findings

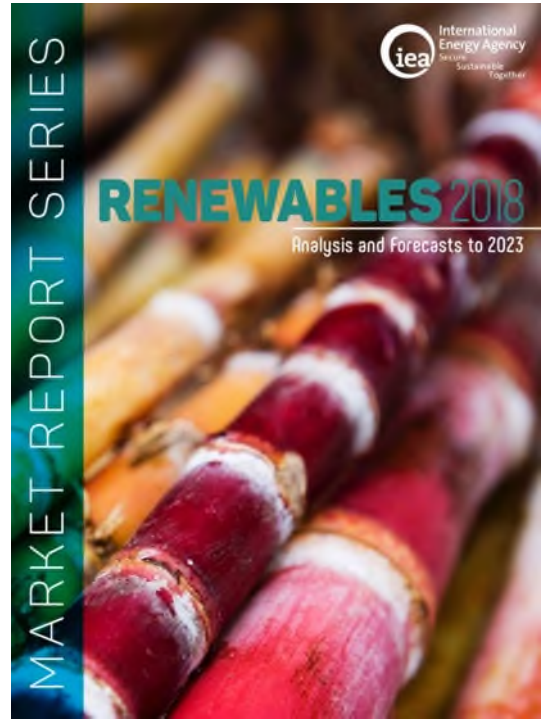
- Technical potential for integrated bioenergy hybrids is considerable
- No significant limitations have been identified
- Hybrids already available for the domestic energy sector
- Lack of standardised interfaces between technologies requires multiple control systems and thus adds costs

International Energy Agency
Secure Sustainable Together

“Reaching the full potential of modern bioenergy would complement the success already achieved for wind and solar technologies.

Modern bioenergy can significantly strengthen the renewables portfolio and – most importantly – aid the establishment of a more sustainable and secure energy system, something the world very much needs.”

Dr. Fatih Birol
Executive Director
International Energy Agency



Bioenergy
The overlooked Giant of Renewables

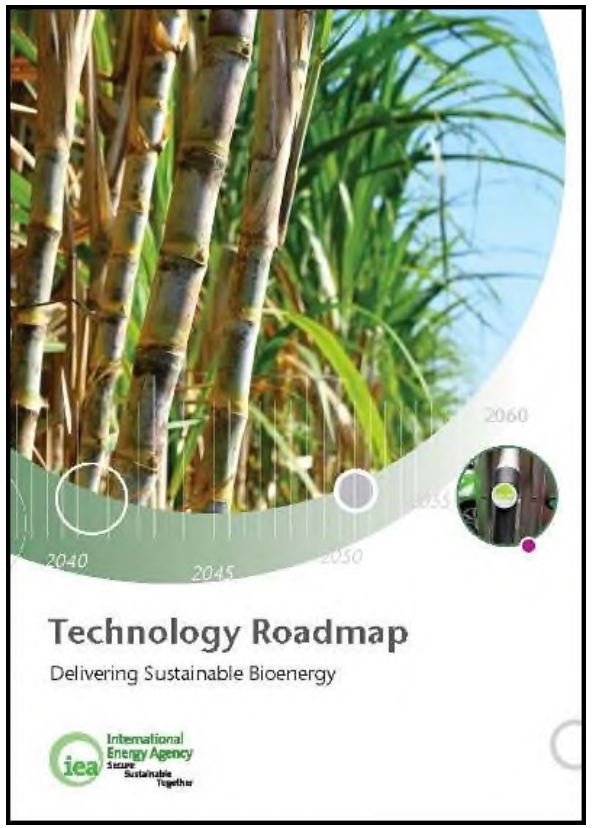
Dr. Paolo Frankl, Head Renewable Energy Division

ABLC, San Francisco, 7 November 2018

IEA

IEA Technology Roadmap: Delivering Sustainable Bioenergy

Cooperation between IEA and IEA Bioenergy



Published November 2017

Technology milestones and **policy actions** needed to unlock the potential of bioenergy in a sustainable energy mix

Links:
http://www.iea.org/publications/freepublications/publication/Technology_Roadmap_Delivering_Sustainable_Bioenergy.pdf

http://www.ieabioenergy.com/publications/technology-roadmap-delivering-sustainable-bioenergy/

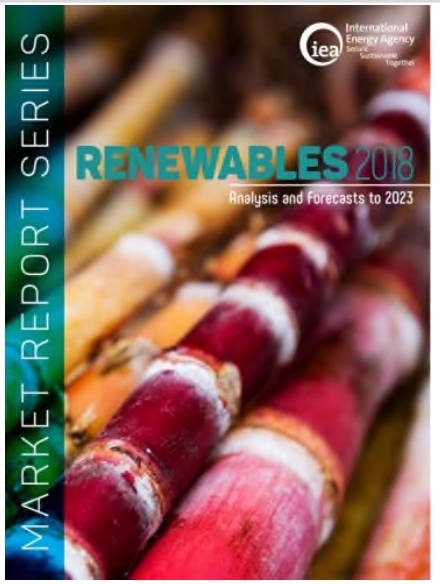
Other IEA Reports and Resources

- Renewables 2018 Market Report
- World Energy Outlook (WEO) 2018
- Technology Roadmap - delivering sustainable bioenergy
- How2Guide for Bioenergy (free)
- The Future of Trucks (free)
- Global EV Outlook (free)

For more information see: www.iea.org/publications/

- Tracking clean energy progress in the transport sector:

www.iea.org/tcep/transport/



Opportunities for Growth: Linking Multi-lateral Efforts

Governing Sustainability In Biomass Supply Chains For The Bioeconomy

Workshop: May 23, 2019, Utrecht, the Netherlands

- New Task 45: Climate and Sustainability Effects Of Bioenergy Within The Broader Bioeconomy
  - Aims to identify approaches and implementation strategies for sustainable cross-sectoral supply-chain management
  - Together with international organisations and institutions
- Workshop
  - Present an overview of what relevant sustainability governance already exists and what more may be needed
  - Develop plans for how collaboration of policy and market actors could support a sustainable bioeconomy

GBEP RSB

Thank you for your consideration

IEA Bioenergy

iea Energy Technology Network

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