

## IEA Bioenergy Task 39

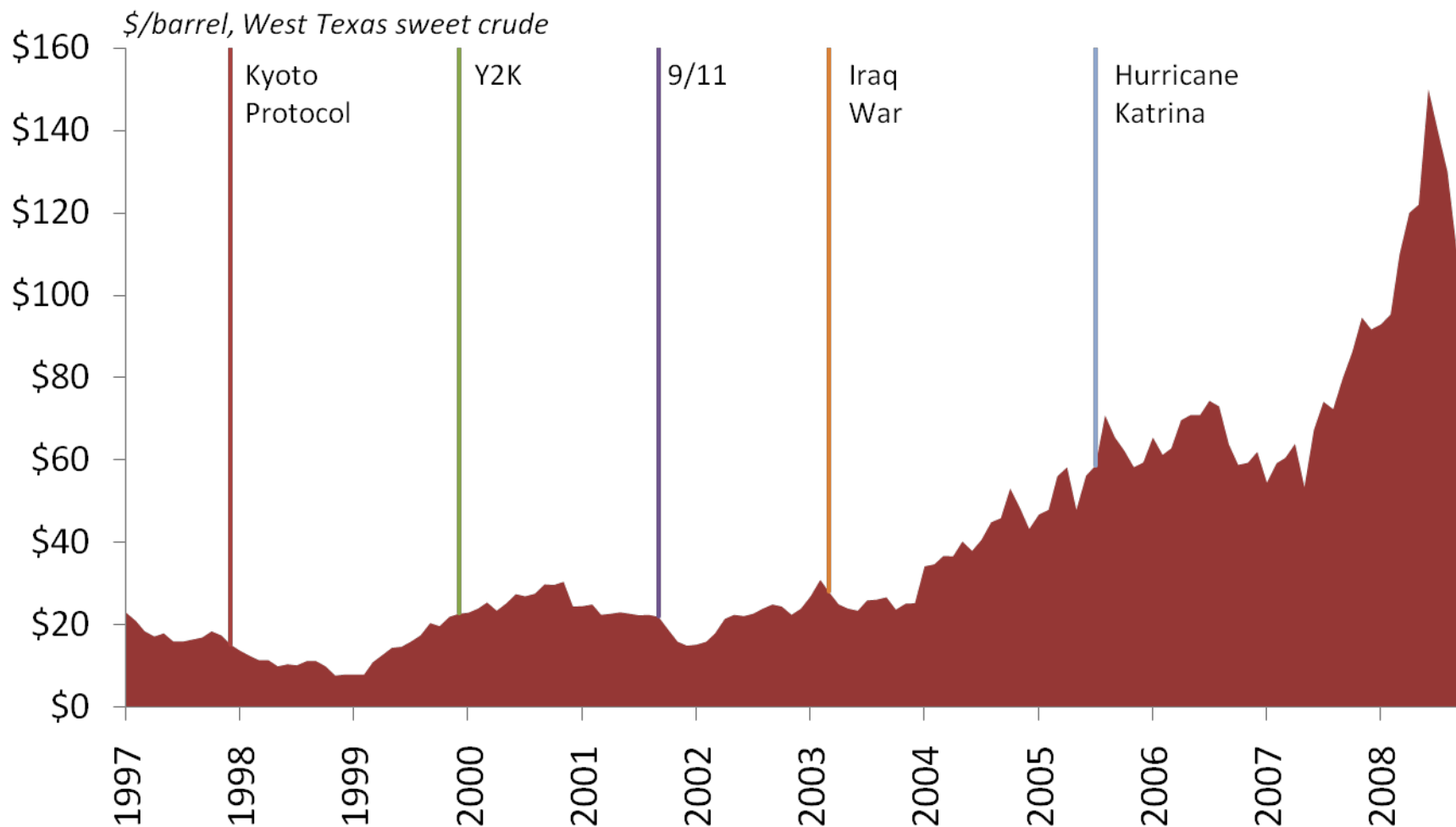
*Commercializing 2<sup>nd</sup>-generation liquid biofuels from biomass*

# Yesterday, Today and Tomorrow

Jack Saddler & Warren Mabee

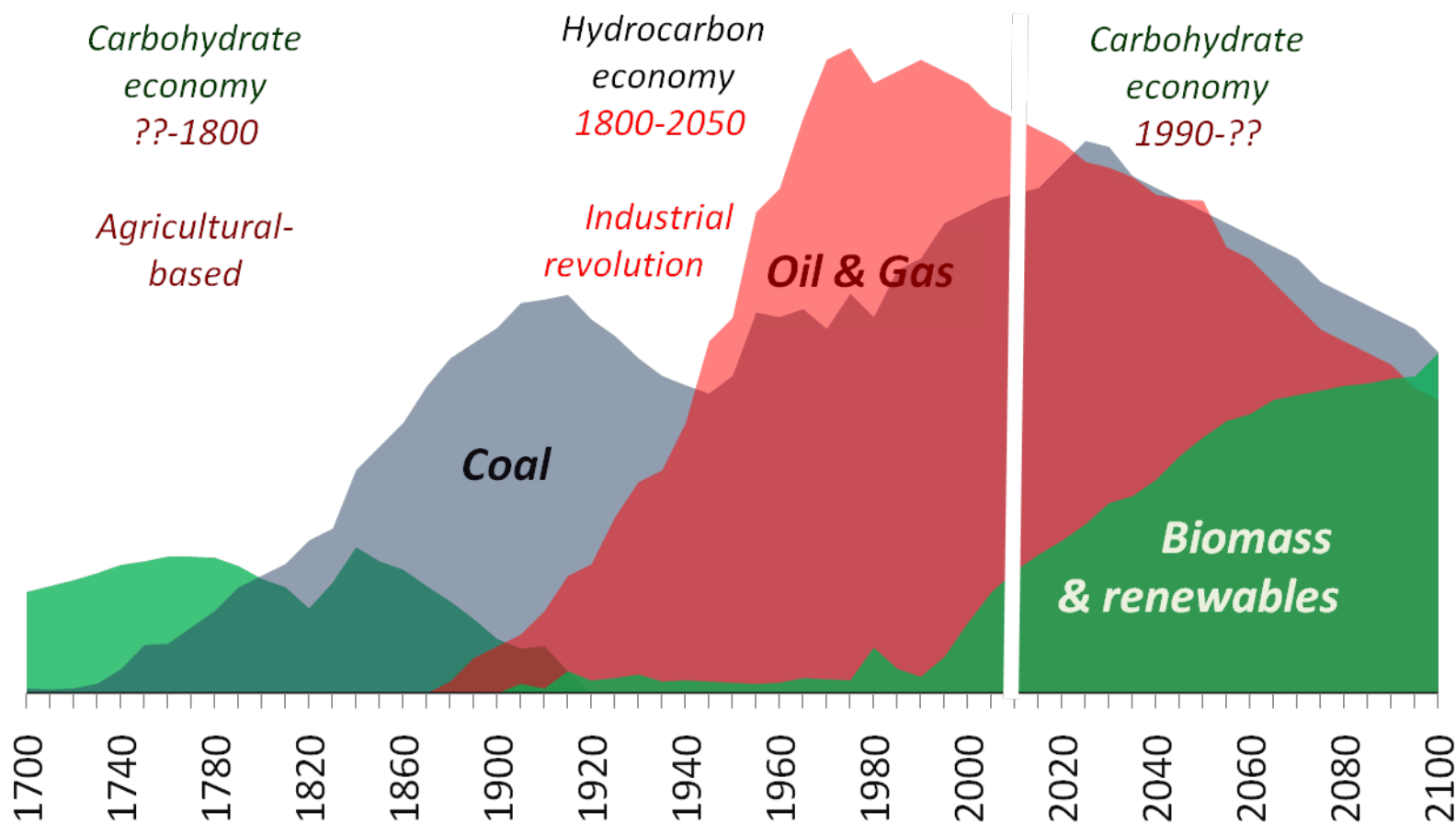


# Oil Prices



# Looking back and forward...

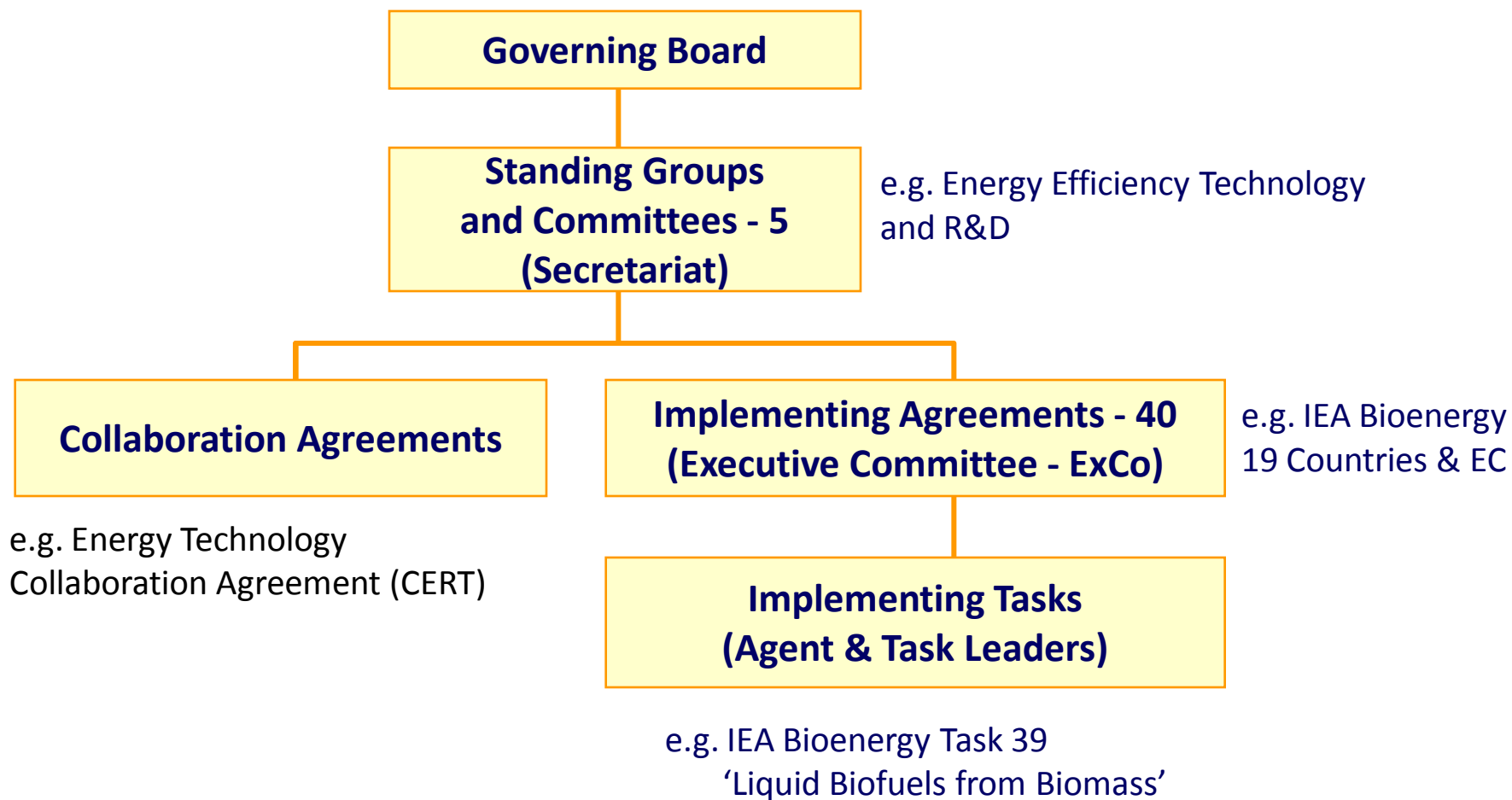
log (primary energy use) by category



# International Energy Agency (IEA)

- Founded 1974
- Autonomous agency linked to Organisation for Economic Co-operation and Development (OECD)
- Forum for energy co-operation among 26 Member countries
- Interacts with non-OECD countries to:
  - enhance security of supply
  - advise on energy policy and regulatory reform
  - promote energy efficiency and technology
- Headquartered in Paris

# IEA Structure



# IEA Objectives

- Maintain and improve systems coping with oil supply disruptions
- Promote rational energy policies in a global context through co-operative relations with non-Member countries, industry and international organizations
- Operate a permanent information system on the international oil market
- Improve the world's energy supply and demand structure by developing alternative energy sources and increasing efficiency of energy use
- Assist in integration of environmental and energy policies

# IEA Members

- Australia
- Austria
- Belgium
- Canada
- Czech Republic
- Denmark
- Finland
- France
- Germany
- Greece
- Hungary
- Ireland
- Italy
- Japan
- Korea
- Luxembourg
- The Netherlands
- New Zealand
- Norway
- Portugal
- Spain
- Sweden
- Switzerland
- Turkey
- United Kingdom
- United States
- European Commission

# IEA Bioenergy

[www.ieabioenergy.com](http://www.ieabioenergy.com)





# IEA Bioenergy

- Objective
  - Realising the use of environmentally sound and cost-competitive bioenergy on a sustainable basis to make a substantial contribution to meeting future energy demands
- Wide-ranging topics
  - Production, processing and utilisation of biomass resources for energy purposes
- Tasks
  - Implementing agreement work is conducted through a series of tasks with a designated work programme
  - Implementing Agent & Task Leader

# IEA Bioenergy Members

- Australia
- Austria
- Belgium
- Brazil
- Canada
- Croatia
- Denmark
- Finland
- France
- Germany
- Ireland
- Italy
- Japan
- The Netherlands
- New Zealand
- Norway
- South Africa
- Sweden
- Switzerland
- United Kingdom
- United States
- European Commission

# IEA Bioenergy - Tasks 2007-2009

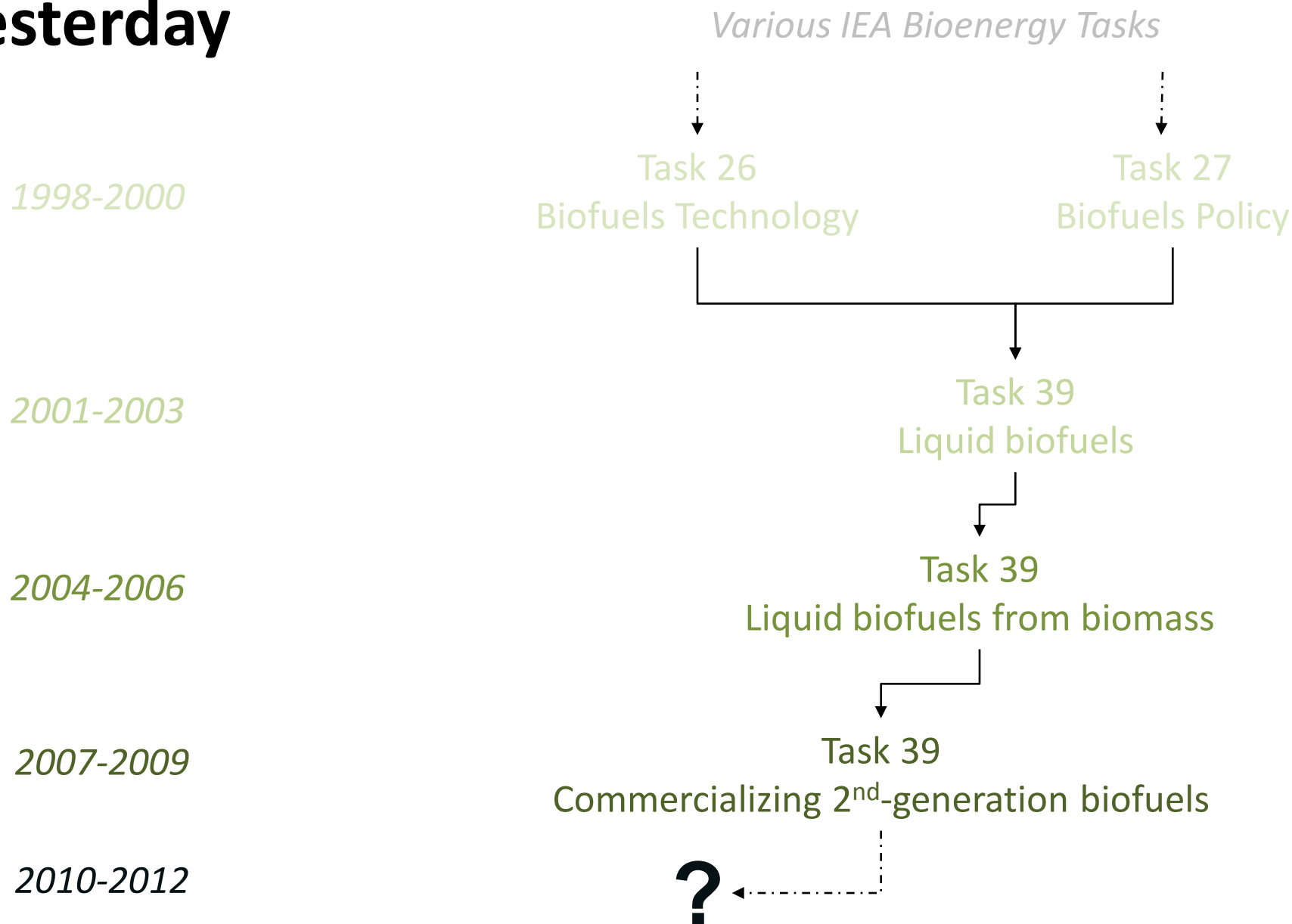
- Task 29 - Socio-economic drivers in implementing bioenergy projects
- Task 30 - Short rotation crops for bioenergy systems
- Task 31 - Biomass production for energy from sustainable forestry
- Task 32 - Biomass combustion and co-firing
- Task 33 - Thermal gasification of biomass
- Task 34 - Pyrolysis of biomass
- Task 36 - Energy recovery from municipal solid waste
- Task 37 - Energy from biogas and landfill gas
- Task 38 - Greenhouse gas balance of biomass and bioenergy systems
- **Task 39 – Commercializing 1<sup>st</sup>- and 2<sup>nd</sup>- generation liquid biofuels**
- Task 40 - Sustainable international bioenergy trade
- Task 41 – Bioenergy systems analysis
- Task 42 - Biorefineries and biorefining

# IEA Bioenergy Task 39

**‘Commercializing 1<sup>st</sup>- and 2<sup>nd</sup>-generation  
liquid biofuels  
from biomass’  
*2007-2009***

[www.task39.org](http://www.task39.org)

# Yesterday



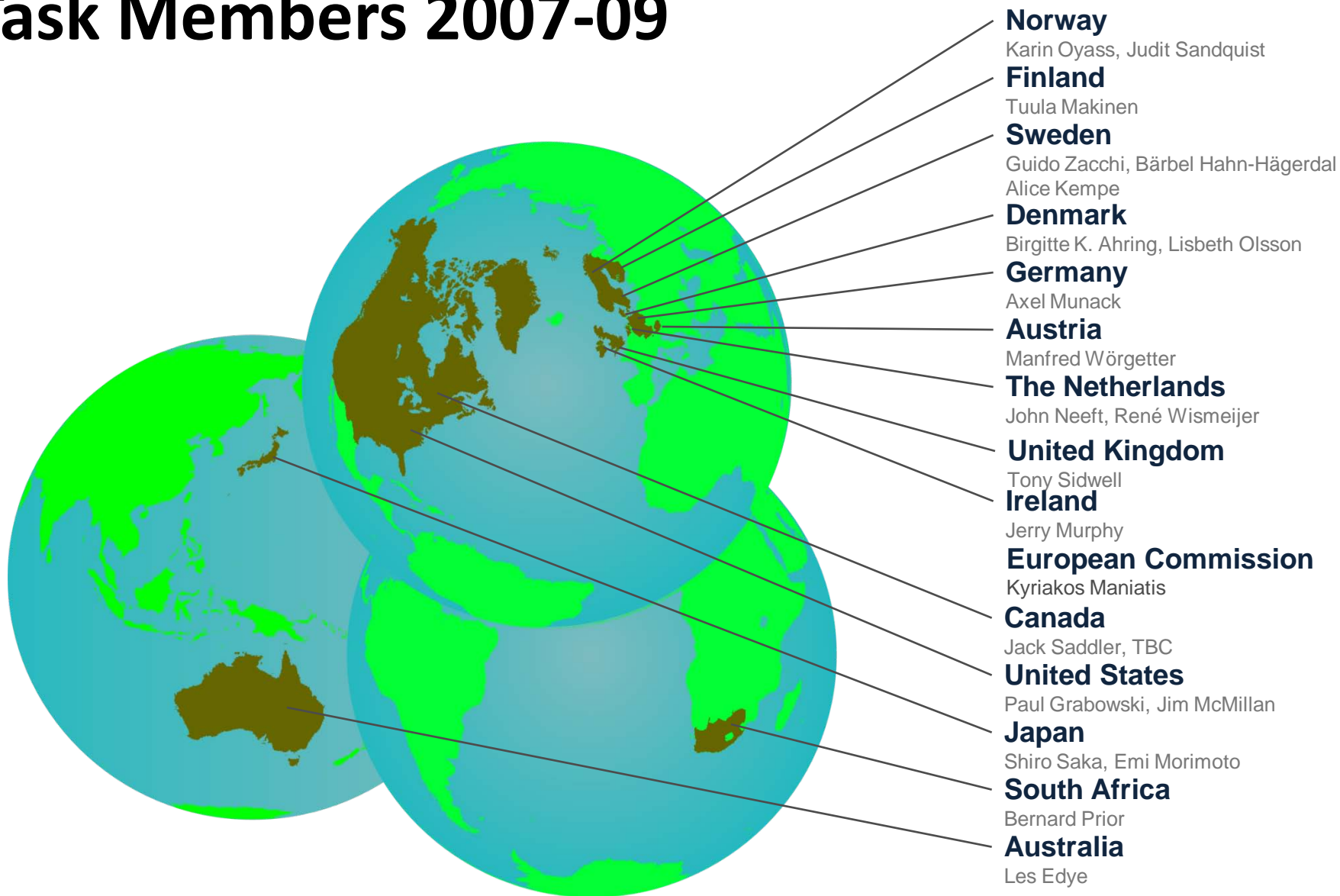
# Today

- Puts focus equally on:
  - Policy & Implementation issues
  - Technical issues of biomass-to-liquid platforms
- Focuses on two technological platforms:
  - Bioconversion/Ethanol (builds on existing Task expertise)
  - Thermochemical conversion/Fischer-Tropschs or biosyn diesel (builds on expertise found in Tasks 33, 34)
  - Includes a new focus on coproducts/biorefining
  - Each technological platform would be represented by a Subtask
- Stresses commercialization of technologies:
  - Policy subtask links to technology subtask
  - Strong implementation group within the Task
  - Europe/North America focus

# Our evolving goal

- To encourage coordinated policy and technical networks that will assist participants in their efforts to develop and deploy 1st- and 2nd-generation biofuels, including ethanol from sugar, starch and lignocellulosics, biodiesel, and biomass-to-liquid fuels such as BTL or biosyndiesel made from synthesis gas

# Task Members 2007-09





# Reports - examples



## ***Ethanol from Lignocellulosics: Views to Implementation***

A REPORT TO IEA BIOENERGY TASK 39

### AUTHORS:

Mabee, Warren E.  
Gregg, David J.  
Saddler, Jack N.

### ACKNOWLEDGEMENTS:

Gilkes, N.  
O'Connor, D.V.



Forest Products Biotechnology



University of British Columbia

Report T39-P1 07 January 2004

Mabee, W.E., Gregg, D.J. and Saddler, J.N. (2004). *Ethanol from Lignocellulosics: Views to Implementation*. IEA Task 39 Report T39-P1, 70 pp. + 4 App. (12 pp.), 131 ref.

IEA Bioenergy  
Task 39 - Liquid Biofuels



## **BEST CASE STUDIES ON BIODIESEL PRODUCTION PLANTS IN EUROPE**

Prepared for

**IEA Bioenergy Task 39, Subtask „Biodiesel“**

Prepared by

**Austrian Biofuels Institute, [www.biodiesel.at](http://www.biodiesel.at)**

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IEA Bioenergy

February 11, 2004

# Reports - examples

SECOND GENERATION BIOFUELS  
A REVIEW FROM A  
MARKET BARRIER PERSPECTIVE

Prepared For:

IEA Bioenergy  
Task 39  
Liquid Biofuels from Biomass

Prepared By

(S&T)<sup>2</sup> Consultants Inc.  
11657 Summit Crescent  
Delta, BC  
Canada, V4E 2Z2

Date: October 12, 2006

# Task administration

- Responses to inquiries
  - Secretariat/ExCo members
- Coordination of task meetings
- Newsletter/Website oversight
- Coordination of commissioned reports
- Liaising with other Tasks, Implementing Agreements, and Organizations (i.e. FAO)
  - Other Tasks – Gasification/Pyrolysis
  - Advanced motor fuels IA
- Forum activities
- Responses to enquiries
- Contingency funds

# Meetings 2007-2009

- Vancouver, Canada – 27-30 August 2006 (*Joint conference/business*)
- Peterborough, UK - 15-16 January 2007 (*Planning Session*)
- Denver, USA - 28 April 2007 (*Planning Session*)
- Denver, USA - 1 May 2007 (*Special Session*)
- Rotterdam, the Netherlands - 9-10 January 2008 (*Planning/Tech'I Session*)
- Salzburg, Austria - 5 February 2008 (*Special Session in Task 38 Meeting*)
- Cork, Ireland - September 2008 (*Planning/Technical Session*)
- San Francisco, USA - 3-6 May 2009 (*Planning/Special Session* )
- Potsdam, Germany – 3-5 June 2009 (*Policy workshop*)
- Vancouver, Canada - August 2009 (*Planning/Technical Session - Multiple Tasks*)

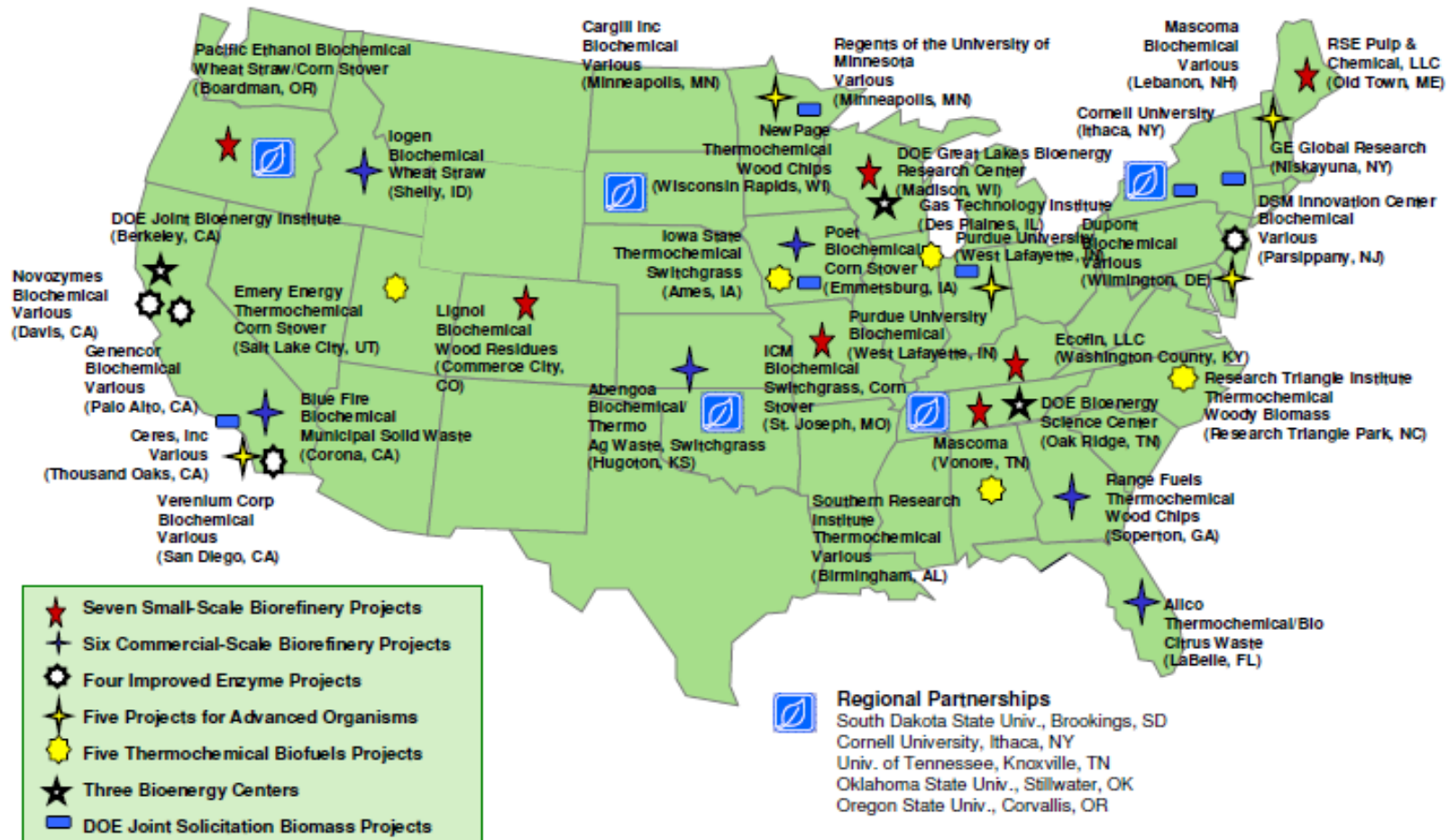
# Tomorrow

*Next triennium (2010-2012) areas of focus:*

- Expanded list of emerging liquid biofuel technologies
  - Lignocellulosic ethanol (bioconversion)
  - Synthetic biodiesel and BTL (thermochemical)
  - Algae (as a feedstock)?
  - Hybrid bio/thermo platforms?
  - Others?
- Continued dual subtasks - technology and policy
- Continued focus on implementation and commercialization
- Continued emphasis on 1<sup>st</sup>- and 2<sup>nd</sup>-generation co-development

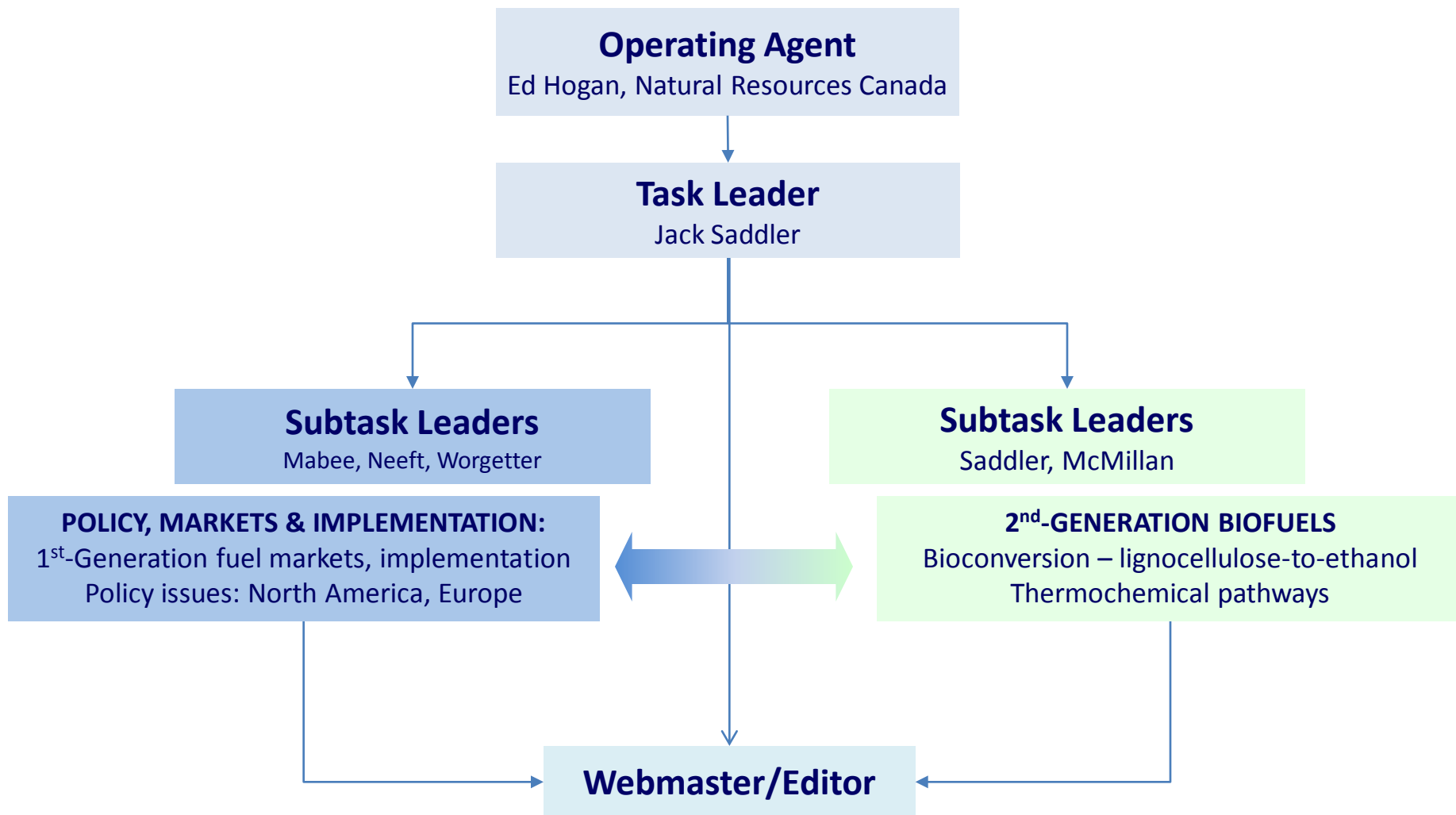
**U.S. Department of Energy**  
**Energy Efficiency and Renewable Energy**  
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

## Major DOE Biofuels Project Locations





# Current Task Structure





# Policy subtask

- Publication of periodic update reports on the development of biofuels policies in participating countries and worldwide;
- Publication of a report on the development of 1st -generation biofuels markets within the framework of market drivers and barriers established by the IEA;
- Release of a comprehensive report covering biomass availability, with specialized country-level presentations as requested by Task membership;
- Production of a folder of country-level recommendations on effective funding strategies for biofuels research and implementation;
- Development of a basic educational package to be adapted by members of the Task; and
- Publication of a short report on development of research work on advanced hydrogen based transport systems

# Technical subtask

- Publication of specialized reports, as guided by Task membership, comparing technological platforms using Task data and literature reviews;
- Release of a publication folder containing a series of country analyses summarizing technological needs, and abilities of active industrial participants;
- Publication of a report describing biorefining applications within the context of the technical platforms under investigation (in conjunction with biorefining task);
- Publication of a report describing integration issues for the two technological platforms under investigation;