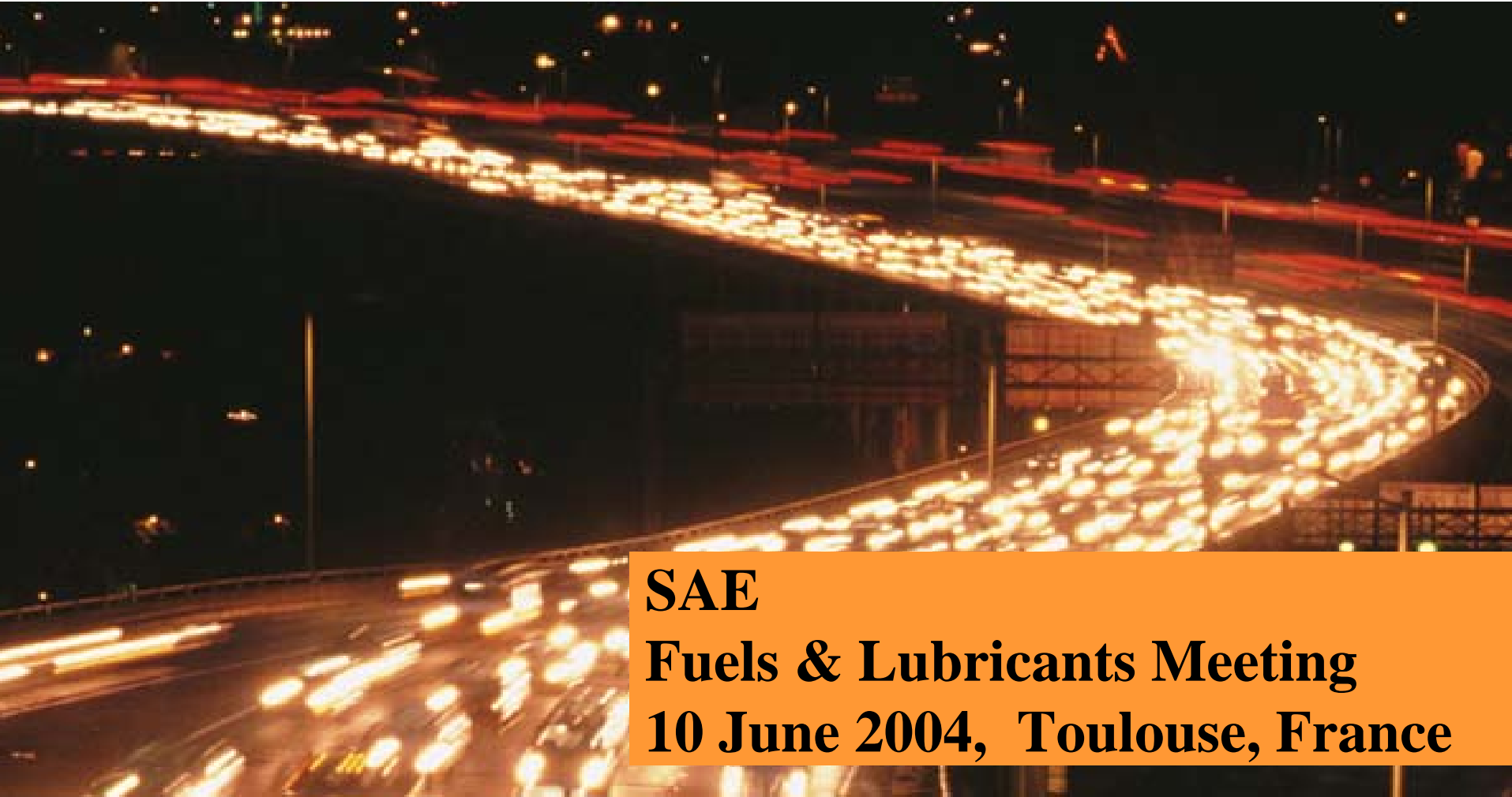


**Panel:  
Future Automotive Fuel Directions –  
Alternatives and Renewables**



**SAE  
Fuels & Lubricants Meeting  
10 June 2004, Toulouse, France**

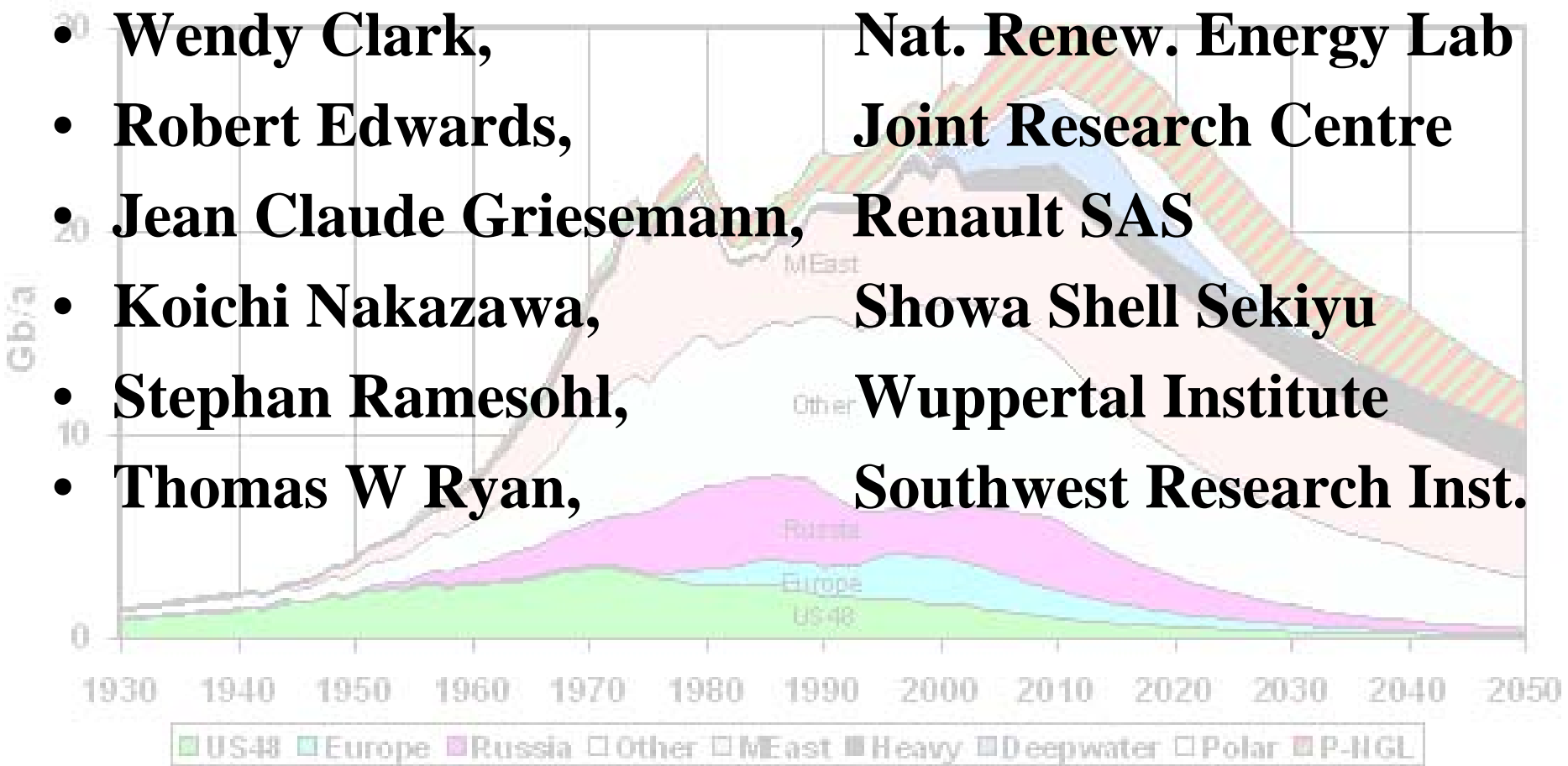
**Organizers/Moderators:**

**Jean François Larivé & Heinz Hass**

# Panellists

- **Ausilio Bauen,** Imperial College London
- **Norman D Brinkman,** General Motors
- **Wendy Clark,** Nat. Renew. Energy Lab
- **Robert Edwards,** Joint Research Centre
- **Jean Claude Griesemann,** Renault SAS
- **Koichi Nakazawa,** Showa Shell Sekiyu
- **Stephan Ramesohl,** Wuppertal Institute
- **Thomas W Ryan,** Southwest Research Inst.

Regular Oil & Natural Gas  
2003 Base Case Scenario



# Panel:

## Future Automotive Fuel Directions – Alternatives and Renewables



- **POWERTRAINS**

What are the key powertrain technical developments and how they may impact on the emergence of alternative fuels?

- **BIOFUELS**

What role for biofuels is there in this decade and what are the benefits? Production technologies, WTW energy and GHG, Availability and cost.

- **THE OVERALL PICTURE**

WTW balances and the competition for limited resources