Thoughts on Hydrogen and Governance

Frano Barbir
Associate Director for Science and Technology
United Nations Industrial Development Organization –
International Centre for Hydrogen Energy Technologies, Istanbul, Turkey
barbir@unido-ichet.org

Hydrogen is a permanent solution for the present energy problems.

Will transition to hydrogen economy cause economic hardship?
Probably yes! But, continuing the status quo may cause even harsher economic hardship in the long term (price of oil, depletion, geopolitical issues, effects of global warming and climate change)

Can the present energy system be extended for another century or so?

- Political/business issues – large stake in the existing energy system and resistance to potentially disruptive technologies; no sudden moves

What the engineers/scientists should be working on?

- Fuel cells – materials: new improved catalysts; new improved proton conductors; system simplifications, manufacturing processes
- Internal combustion engines; jet engines
- Hydrogen storage (size, weight, safety)
- Hydrogen transport and delivery
- Hydrogen production (from water and biomass; involving electricity and heat)
- Safety related issues (understanding and preventing hazardous situations)
- System studies; techno/economic analyses as guides for public policy/legislation (what if scenarios)

Are any breakthroughs needed?