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For immediate release

The Hydrogen Economy: Which Way Forward for the South?

Given the right support, there could be 5-10 million fuel cell vehicles globally by 2020...

The time horizon for the Hydrogen Economy is long - it is at least 20 years away for developed countries. But long term change requires short term change...

China, India and Brazil have already developed active programmes of research on hydrogen fuel cells, which are tailored to their own needs and development goals...

By developing their hydrogen roadmaps now, developing countries have the opportunity to monitor progress in the North and make informed, strategic decisions concerning this latest wave of technological change...

These are among the many issues discussed at the recently concluded international conference on hydrogen fuel cells, their application in the transport sector, and the implications for developing countries. Hosted by United Nations University Institute for New Technologies (UNU-INTECH) in Maastricht, The Netherlands, from 7-9 November, the conference brought together forty researchers, energy experts, industry representatives, and policymakers from key public institutions across the world.

The conference was part of a global United Nations University research and capacity building project coordinated by Professor Lynn Mytelka, Senior Research Fellow at UNU-INTECH, and Grant Boyle, Associate Project Coordinator at the University's Environment and Sustainable Development Programme (UNU-ESD) in Tokyo, Japan. UNU's Geothermal Training Programme (UNU-GTP) in Iceland is also participating in the project.

The purpose of the project is to raise awareness of emergent hydrogen and fuel cell technologies and to enhance long-term transport and energy decision-making in developing countries by benchmarking hydrogen fuel cell activities in the transport sector around the world. Topics discussed at the conference included: Hydrogen Production, Distribution and Storage; Fuel Cells and Fuel Cell Vehicles; the State of Activities and Knowledge in Developing Countries; Implications for Oil and Gas and Automotive Industries in Developing Countries; Programmes, Policies, Education and Research in Developing Countries; and Hydrogen and Fuel Cells in the Context of Alternative Transport Pathways.

More than 30 research papers and case studies were presented at the conference. Participants learned that while the greatest investments have been made in Europe, North America and Japan, developing countries have made significant advances as well with a growing number of countries preparing

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hydrogen ‘road maps’ that reflect their national goals and needs. Whatever their motivation - environmental concerns in the North, or the need to achieve energy security in the South – a critical feature of these emerging programmes is their focus on building domestic capacities for research, development and sustained policy support in moving towards a hydrogen economy.

China is carrying out fuel cell vehicle and refueling station demonstrations in Shanghai and Beijing, as well as undertaking its own national research and development activities. The country’s R&D programme is aimed at developing advanced hybrid-electric and fuel cell vehicles and involves a large number of universities, public sector research institutes and private firms. India too is rolling out hydrogen-fueled two and three-wheeler vehicles, while at the same time exploring ways of tapping hydrogen for stationary power. Brazil has a well established alternative energy programme based on biodiesels and ethanol. South Africa’s ambitious R&D programme covers a range of alternative applications, with a major emphasis on exploring opportunities to exploit its vast platinum reserves in fuel cell catalysts. Nigeria is putting in place a comprehensive energy strategy aimed at expanding its production of natural gas, which is one of the bases for creating methanol and hydrogen to fuel the future hydrogen economy. And Malaysia has adopted a dual strategy to simultaneously develop hydrogen and solar energy as alternative fuel sources.

In his keynote address, Professor Turner Isoun, Minister of Science and Technology in Nigeria stressed that the way forward “...is to develop deliberate strategies to stimulate and sustain institutional R & D in the developing countries through support by their counterparts in the developed countries.”

But the uncertain future of the Global Environment Facility initiative to test fuel cell buses in five mega cities with serious pollution problems – Shanghai, New Delhi, Sao Paulo, Mexico City and Cairo – demonstrates that even with the right technology and support available, embarking on hydrogen economy activities at this early stage is a complex undertaking that involves trade-offs and strategic decisions related to costs, public policy goals, industrial development and a range of alternative transport modes and fuels.

According to Gabriel de Scheemaker, General Manager of Shell Hydrogen in the Asia Pacific, the first steps must be taken in the North, through ‘Lighthouse Projects’ – “hydrogen clusters where over a hundred hydrogen vehicles from different car companies are served by more than four hydrogen stations operated by two or more energy companies, involving fleet owners, operating on a semi-commercial bases, in international collaboration with the government.” The aim of such public-private partnerships is to pool resources in the expensive initial phases and catalyze a critical mass of researchers and entrepreneurs, accelerate best practice and give confidence to investors.

“If the future is still ‘hydrogen’,” notes Prof. Mytelka, “...countries will need to make some tough decisions now: on whether to wait until all pieces of the system are in place or to take action; how to build a path today that does not compromise change in the future; how to incorporate a range of options - gasoline, natural gas and hydrogen without wasteful investment.” This requires that governments, both in the North and South, must start to build public awareness of all the choices available now, to enable consensus building on the best way forward for individual countries.

The consensus at the meeting was that the South should not make the jump yet, but must start now to put the conditions in place to enable it to leapfrog into a hydrogen economy - when the time is right, and on its own terms. This will require that developing countries make, and be supported in efforts to understand these technologies, and to monitor the lessons being learned in industrialized countries so as to plan for their own participation.

Participants at the conference expressed interest in working with UNU in undertaking follow-up activities in two broad areas: (i) developing networks of centres of excellence and collaborative partnerships, and (ii) creating training and demonstration opportunities to strengthen research capacity in developing countries, establish mechanisms to monitor progress in moving towards a hydrogen economy, and enable information sharing that would widen the range of choices and strengthen the base for informed policy in developing countries.

The Conference organizers are preparing a Technology Policy Brief summarizing the main issues for developing countries. The papers commissioned for the meeting will be compiled into a book to be published by UNU Press in 2006/7.

The Conference programme, with links to the presentations made at the meeting, is available at: http://www.intech.unu.edu/events/workshops/hfc05/workshop_materials.php

For more information on the UNU Hydrogen Fuel project and follow up activities please contact:

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About UNU-MERIT

[United Nations University](http://www.unu.edu) (UNU) is an international community of scholars engaged in research, postgraduate training and the dissemination of knowledge aimed at resolving the pressing global problems of human survival, development and welfare, in line with the purposes and principles of the Charter of the United Nations.

[UNU-MERIT](http://www.unu.edu) is the United Nations University – Maastricht Economic and social Research and training centre on Innovation and Technology. It integrates the former UNU-Institute for New Technologies (UNU-INTECH) and the Maastricht Economic Research Institute on Innovation and Technology (MERIT). UNU-MERIT provides insights into the social, political and economic contexts within which innovation and technological change is created, adapted, selected, diffused, and improved upon. The Institute's research and training programmes address a broad range of relevant policy questions dealing with the national and international governance of innovation, intellectual property protection, and knowledge creation and diffusion. UNU-MERIT is located at, and works in close collaboration with Maastricht University in The Netherlands.