Turkey

Turkey announced the National Research and Technology Foresight (Vision 2023). In the Vision 2023 report, medium and long-term technological opportunities were identified for Turkey. However, there is no dedicated and active national program for hydrogen and fuel cell technologies. Concerning to hydrogen and fuel cell technologies, transport and stationary applications were selected as the most promising application areas in which high priority technologies are PEMFC, SOFC, MCFC.

Turkey has been investigating applications of boron compounds, which are considered as promising candidates among metal hydrides for hydrogen storage. Turkey is planning to upgrade the utilization of this natural source, and would like to invite researchers, investors and international organizations to close cooperate on Hydrogen Energy Studies. To this end, National Boron Institute was established in 2003, which is investigating new application areas for boron and its compounds including hydrogen studies.

The Ministry of Energy and Natural Resources signed an agreement with the United Nations Industrial Development Organization (UNIDO) in October, 2003 to build an International Centre for Hydrogen Energy Technology (ICHET) in Istanbul. It was a $40 million investment and it is entirely financed by Turkey. The mission of ICHET is to help convert the world to the hydrogen economy. Being a hydrogen technologies bridge between developed and developing countries, the centre will work on developing hydrogen energy technologies, their adoption and their widespread use in Turkey and in the world. Additionally it will conduct research and development studies on hydrogen energy technologies. This is a historic mission to provide people with a clean, abundant and sustainable energy system.

There are various universities, and mainly three institutions; The Scientific and Technological Research Council of Turkey (TUBITAK), UNIDO-ICHET and National Boron Institute working on hydrogen R&D. TUBITAK Marmara Research Centre (TUBITAK-MRC) is involved in hydrogen related projects and fuel cell development. Much of the work on hydrogen is currently oriented toward utilization in transport and stationary applications on both civil and military levels. TUBITAK-MRC is also working on catalytic hydrogen combustion, hydrogen combustion, hydrogen utilization in PEM fuel cells, and hydrogen production from fossil fuels.

With the efforts of UNIDO-ICHET, the attention of private sector and industry has been caught up to invest in hydrogen and fuel cells. For instance, a FC powered fork-lift and a sea taxi (running on hydrogen) projects are being realized with two industrial partners. Besides, some private sector entrepreneurs have been studying on application of fuel cells.

Turkey was a project base partner in EU 5th FP and now is the full partner in the EU 6th and 7th FP. Turkey has also participated in Western European Armament Organization research areas. Besides, Turkey is a member of the Black Sea Economic Cooperation (BSEC) and tries to realize hydrogen projects with the other member states of BSEC.
Turkey has a good potential for hydrogen applications. Since the country has a high renewable energy potential, various renewable-hydrogen systems can be applied in Turkey. Besides, Black Sea is a rich H₂S source. The separation of H₂ from H₂S with advanced technologies makes it possible to use the produced H₂ as an energy source. On the other hand, Turkey is the richest country in the world in terms of boron reserves and hydrogen storage with sodium borohydride could be an important research area for Turkey. The lacking point about hydrogen and fuel cell technologies in Turkey is the determination of well established strategies and action plans by the Government.