

The Hydrogen Economy



We've been hearing about the "hydrogen economy" for [a long time](#). NASA was developing fuel cells in the 1960s and United Technologies started commercializing stationary power plants in the 70s. Jeremy Rifkin [wrote about it](#) in 2002. [The Bloom Box](#) got a lot of attention in 2010. In 2013, several US states agreed to pursue a mandate for a percentage of [zero-emission vehicles](#), including fuel cell electric vehicles, to be sold in their jurisdictions. [The Hydrogen Initiative](#) was launched in Europe in 2018, building on the work of the EU's [Fuel Cells and Hydrogen Joint Undertaking](#), a robust public-private partnership begun in 2008. An even [broader international consortium](#) was launched only last month. Companies, governments, and research institutes around the world have been pursuing the vision of a hydrogen economy at an increasing pace and with more tangible breakthroughs every year. I was struck early this year, for instance, by the fact of [South Korea's enthusiastic embrace of hydrogen](#).

Now there's a new, comprehensive report just out from the International Energy Agency: *The Future of Hydrogen*. You'll find it at the [IEA's web page for hydrogen](#).

I sat in on the launch of a new and pretty exciting enterprise the other evening: [The H₂ Refuel Accelerator](#). It's a partnership of several heavy-hitting clean tech players: [Fraunhofer TechBridge](#), [Greentown Labs](#), and the [Urban Future Lab](#) with the support of [Shell](#), [Toyota](#), and the [New York State Energy Research and Development Authority](#) (NYSERDA).

The [launch](#) featured a panel of experts in the vanguard of the development of renewable hydrogen production and fuel cell development. These were Matthew Blieske, the Global Hydrogen Product Manager for Shell; James Kast, a Fuel Cell Business Analyst for Toyota; Adam Ruder, the Clean Transportation Program Manager for NYSERDA; and Michael Peters, a Hydrogen Technologies Engineer for [NREL](#); all moderated by Nick Rancis, Program Lead for Fraunhofer TechBridge.

Some highlights for me included the consensus that we are truly – and finally – at the launch point for a broad commercialization of fuel cell and other hydrogen-driven technologies; that the best – and really the only way – to advance is to create partnerships and build on them; that hydrogen needs to be "green" – that we need to be using renewable power to produce it; and that these technologies have applications across a range of different end uses: not only for [light-duty vehicles, but also aviation, marine shipping, trucks and buses](#), and even [trains](#); for heating and cooling, and [power production](#). Here's [a menu of key technologies](#) from Hydrogen Europe.

The evening culminated with the announcement of the first cohort of the H₂ Refuel Accelerator companies, all doing some pretty exciting advanced engineering and chemistry. They are [Celadyne](#), [electro-active technologies](#), [Ecolectro](#), [HyGen](#), [pH Matter](#), [Protium Innovations](#), and [Skyre](#).

During the program, I was thinking of the six main criteria to gauge the success of energy systems from the book I use in my clean tech classes, [Reinventing Fire](#) from the Rocky Mountain Institute:

- affordability,
- technical feasibility,
- security,
- reliability,
- environmental responsibility and public health,
- public acceptability

The hydrogen tech that is here for us to develop and to use meets all of these criteria, or will in a relatively short time particularly if we can continue to focus as these companies and their expert partners are doing so well.