



Country Update Brazil



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➤ New Policy Initiatives

- Reduction of annual state tax for electric vehicles in seven Brazilian states;
- In the city of São Paulo all electric vehicles have been exempted from the weekday driving restriction;
- The National Bank for Social and Economic Development (BNDES) offers better financing conditions for the purchase of hybrid and electric buses, with lower interest rates and longer financing times.



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➤ R&D Update

- The Itaipu Technological Park Foundation has been studying the feasibility and life cycle of hydrogen produced using turbinable water from their hydroelectric plant;



- The National Institute of Technology is developing fuel processors for hydrogen production from ethanol or natural gas to feed fuel cells.
- Since 2004 Brazil has created and animated networks on fuel cells and hydrogen production, involving institutions from different regions of the country (≈ 50). This year a National Network on Science and Technology was created involving main 13 institutions to foster national development on fuel cells based energy systems.



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➤ R&D Update

- The oil industry is developing processes and catalysts to produce hydrogen from ethanol or heavy oil, as alternatives to natural gas.
- Energy and Nuclear Research Institute (IPEN): three patents obtained in 2016, related to the production of catalysts and electrocatalysts used respectively in the steam reforming process and in fuel cells.
- Shell and Fapesp have partner together to install at the University of São Paulo a Research Center of Gas Innovation, for which hydrogen plays an important role.
- At LabH2 – Coppe/UFRJ a four year project has just finished with patented technologies for solid oxide fuel cells for electricity generation with the direct utilization of ethanol and for the electrosynthesis of selected hydrocarbon from methane.
- The National Regulatory Agency for Electrical Energy (ANEEL) has been financing R&D projects for several years. In the last 2016 call for projects more than 100 companies applied on the subject of energy storage.



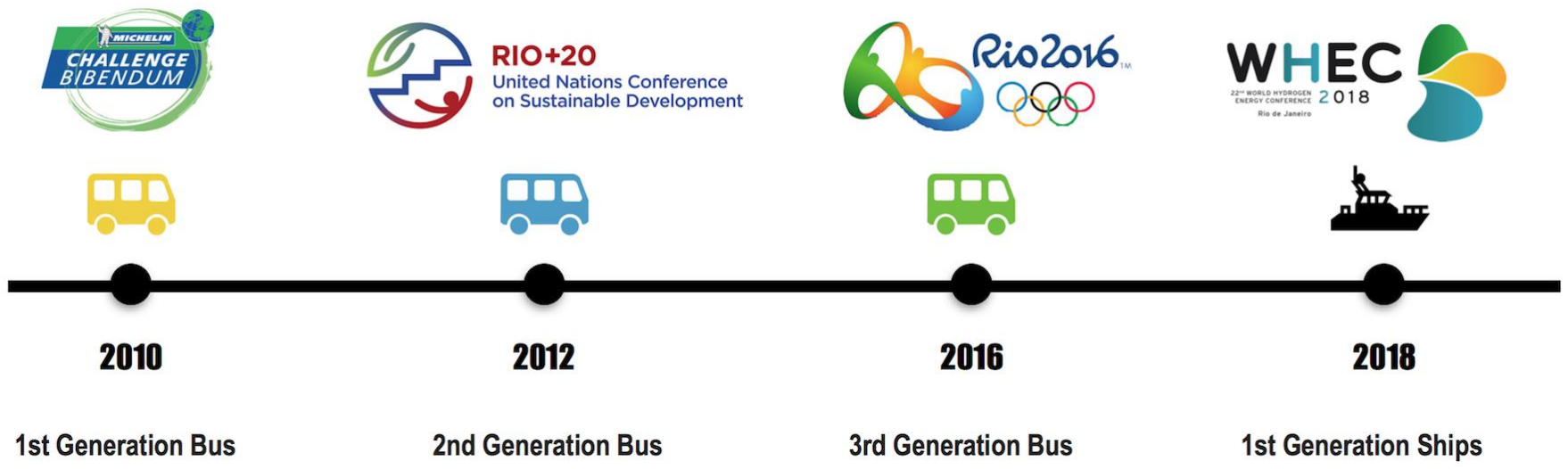
➤ Demonstration and Deployments Update

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- UFRJ – Furnas/Aneel – Tracel
- Hydrogen fuel cell city bus
- A new hydrogen refueling station is presently under construction at UFRJ
- Two ships are under construction



Prototypes





The project “Hydrogen Fuel Cell Buses for Urban Transport in Brazil” was successfully concluded in 2016 with three HFC buses and one hydrogen production and refueling station. Partnership included: UNDP; GEF; AES Eletropaulo; Ballard; EPRI; Hydrogenics; Marcopolo; Nucellsys; Petrobras; Tuttotrasporti; Ministry of Mines and Energy; EMTU/SP

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The three new HFC buses, each one painted with colors representing Brazilian birds



Hydrogen production and refueling station



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➤ Events

- On April 5th, an event occurring in Rio de Janeiro/RJ marked the foundation of the Brazilian Hydrogen Association (ABH2).





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