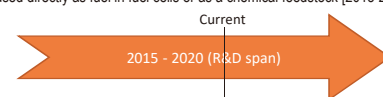
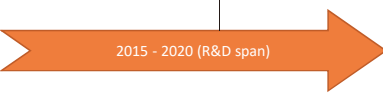
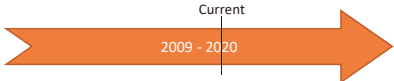


Country	Institute	Category	Related programs (with short summary)	Target / Goal Outcome	Lead person / Organization	Partnership (if any)	Related information
Turkey	TÜBİTAK MAM Energy Institute	Production / Storage	<p>Technology development for hydrogen production through gasification of biomass as a renewable energy source. Hydrogen purification and storage with related separation and purification techniques will be applied. Hydrogen will be used directly as fuel in fuel cells or as a chemical feedstock [2015-2020].</p> <p style="text-align: center;">Current</p> 	<p>Design and validation of a novel two staged-fluidized bed gasifier for terrestrial biomass. Development of catalytically active candle filter. Application of pressure swing adsorption for hydrogen separation. Hydrogen storage through pressurized cylinders. Pilot scale field tests for hydrogen production.</p>	Dr. Yeliz Çetin, Dr. Hakan Karataş / TUBİTAK MAM	(Domestic) Yıldız Technical University for catalyst development, Yalova University for process modelling	http://ee.mam.tubitak.gov.tr/en
Turkey	TÜBİTAK MAM Energy Institute	Production / Storage	<p>A Field Application of a Fuel Cell Microcogeneration Unit . Technology development for hydrogen production through autothermal reforming of natural gas and a low temperature PEM fuel cell system. Hydrogen purification with related purification techniques has been applied. Hydrogen which is produced by the FPU (Fuel Processing Unit) will be used directly as fuel in fuel cell module to produce electricity (2 kWe) or as a chemical feedstock [2016-2020].</p> <p style="text-align: center;">Current</p> 	<p>Design and integration of a microcogeneration unit using existing conventional natural gas as a fuel feedstock. Development and application of a microcogeneration system including FPU and FCU (Fuel Cell Unit) , where natural gas is used as a feedstock and integrated to a 2 kWe PEM fuel cell system for residential application. Novel and compact designed PEM fuel cell for microcogeneration. Development of a real time embedded control system unit which is designed for both hydrogen reformer/fuel cell and data acquisition of the power converter. Design of an embedded data acquisition and control system to provide a self-regulated process of the hydrogen reformer unit (FPU). Lab and pilot scale field application & long term tests for two microcogeneration unit</p>	Assoc.Prof. Cigdem KARADAG cigdem.karadag@tubitak.gov.tr Assoc. Prof. Atilla ERSOZ, atilla.ersoz@tubitak.gov.tr TUBİTAK MAM Energy Institute	Republic of Turkey Ministry of Energy and Natural Resources	http://ee.mam.tubitak.gov.tr/en

Country	Institute	Category	Related programs (with short summary)	Target / Goal Outcome	Lead person / Organization	Partnership (if any)	Related information
Turkey	TÜBİTAK MAM Energy Institute	Carbon Capture	<p>CO2 capture studies has started within a national project entitled "Liqued Fuel Production from Blends of Biomass and Coal (TRIJEN)" in June 15, 2009. The aim of this project is to produce economical, efficient, and clean liquid fuels from biomass and coal mixtures, two resources that are nationally widespread, develop new technologies for such plants, and finally to demonstrate the project outcome as a pilot scale plant.</p> <p>Applied research and new technology development will be conducted through the following key topics with this project;</p> <ul style="list-style-type: none"> • Coal and biomass gasification technologies, • Gas cleaning technologies, • Gas conditioning technologies, • CO2 separation technologies, • Syngas to liquid fuels conversion systems, and • Usage of syngas for power generation technologies. <p style="text-align: center;">Current 2009 - 2020</p> 	A lab-scale carbon dioxide capture test unit based on chemical absorption was designed; constructed and parametric tests were conducted. Later "a pilot-scale CO2 capture system" was designed and constructed for TRIJEN pilot plant site in Manisa/Turkey near to a coal reserve of TKI (Turkish Coal Enterprises). This system was integrated with gas cleaning and liquid fuel production systems and operated successfully.	Ozgur Can Korkmaz ozgurcan.korkmaz@tubitak.gov.tr Egemen Akar egemen.akar@tubitak.gov.tr	Turkish Coal Enterprises (TKI)	http://ee.mam.tubitak.gov.tr/en