

## **Qatar biofuel: research, development, education, infrastructure**

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In view of the burgeoning market in international carbon trading and the long-term global regulatory constraints on fuel emissions, the need for an alternative to petroleum oil is both large and immediate. The primary goal of our project is to establish a global infrastructure for the production of biofuel from cyanobacteria and microalgae that can sustain economic and environmentally sound operations of the aviation industry. The business plan includes biofuel production as a driver for the development of a diverse biotechnology industry in Qatar, based on research, development, acquisition of intellectual properties, training and education. These activities are in full accordance with the 2030 National Vision for Sustainability in Qatar. The partners in this enterprise are the state airline of Qatar (Qatar Airways), the state university of Qatar (Qatar University) and the conduit for support of innovative research in Qatar; Qatar Science and Technology Park. Our research program is conceived to trigger the paradigm shift in technology that is required to make the near-term establishment of a viable biofuel technology in Qatar a reality. The program is focused on the growth, physiology and molecular biology of cyanobacteria and microalgae isolated from extreme terrestrial, freshwater and marine environments in Qatar. A diverse culture collection of photosynthetic microorganisms is now established at Qatar University and strains are currently under investigation for their utility in large-scale growth, expression of superior survival in engineered Qatar environments, amenability to novel harvesting techniques, and capacity for copious oil production.