

## **The Promises and Challenges of Biofuels**

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Current over-dependence on fossil fuels has created intense supply-price volatility in the energy markets, resulting in uncertainty and increasing pressure on economic growth. In addition, continued fossil fuel use increases greenhouse gas levels through net carbon emissions. A potential solution that will help alleviate these economic and environmental pressures is to accelerate the development of bio-based resources, such as biofuels, to drive a shift to a more sustainable energy platform.

Via the natural process of photosynthesis, plants capture solar energy and incorporate carbon dioxide from the atmosphere, making biofuels an attractive possibility. In 2006, the U.S. generated ~5 billion gallons of ethanol from corn, and this ethanol used as an oxygenate in the ~140 B gallon gasoline market. Reaching much higher levels of fuel replacement, as called for in the Energy Policy Act, will probably require the utilization of a range of feedstocks. In addition, considerable R&D is required to create high-volume systems that are economically attractive and environmentally-acceptable. For example, while crops collect “free” solar energy, the harvested parts and subsequent processing methods are not well-optimized for biofuels. Biotechnology breakthroughs are providing a new toolset that offers opportunities to significantly improve the production of feedstocks, the composition of harvested parts, and the process methods used for conversion to biofuels.

Fifty years ago science and technology was used to begin generating multiple valuable products from each barrel of black sticky “crude”. Today, science and technology hold the keys to alternative solutions that will allow a sustainable “bio-platform” with a smaller anthropogenic footprint on the environment.

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Dr. J. McLaren is the Founder and President of StrathKirn Inc., a business consulting company that is focused on new technology applications and emerging markets, across the agriculture, biotechnology, and biofuel industries.