

# The Interdisciplinary Benefits of Fossil Fuel Technology with Alternative Energy

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## Abstract

There are four critical issues we are seeking to answer regarding The Interdisciplinary Benefits of Fossil Fuel Technology with Alternative Energy technology for specific Market Segments in the Integrated Oil & Gas Energy Industry. These four critical issues are 1) The potential Threat/Opportunity from Alternative forms of Energy Renewables to the Integrated Oil & Gas Industry, 2) Regulatory, meaning the need to have the EIA and IAEA track global developments in the Energy Field, 3) the International dimension of the Regulatory landscape which makes the responsibilities of the US EIA and the US Cabinet level Energy Secretary indeed now Global in scope, and 4) the New Venture Capital financing of promising new Alternative Energy particularly in the field of biofuels' science, Research and Development.

## Executive Summary

### 1.1 Background of Industry and Competition

The Integrated Oil and Gas Industry is comprised of 3 major segments. The Exploration and Production Segment generated Total Revenues of \$ 4,368.2 B in 2008, however, the forecasted compound annual growth rate (CAGR) for the next 5 year period from 2009 - 2013 is -0.9% with the Segment reaching a value of \$ 4,179.5 B by 2013. The Transportation and Storage Segment generated Total Revenues of \$ 146.5 B in 2008 however; the Segment has been forecasted to have a CAGR of -0.2% for the next 5 year period of 2009 – 2013, with forecasted Total Revenues of \$ 145.2 B in 2013. And the Refining and Marketing Segment generated Total Revenues of \$ 5,076.6 B in 2008, however, the forecasted CAGR for this Segment is -1.7% for the next 5 year period of 2009 – 2013, with forecasted Total Revenues of \$ 4,667.1 B in the year 2013.

Renewable Energy, along with coal, is one of the fastest growing energy sources, with consumption increasing at an annual average rate of 2.1 %. With projected high prices for oil and natural gas, as well as the rising concerns over the environmental impacts of Fossil Fuels, this improves the prospects of use for Renewable Energy sources. And the main forms of Renewable Energy are Biomass, Wind, Hydro-electric, Solar, and Geothermal.

Supermajor companies are companies that exceed \$ 100 B in Market Capitalization. Currently there are only six that qualify for this status and in the year end of 2008 they represented 48% of the market value of all publicly owned oil companies for the Global Energy Sector. These Supermajor companies are BP PLC, Chevron Corp., ConocoPhillips, ExxonMobil Corp., Royal Dutch Shell PLC and Total SA. These companies are heavily involved in the Integrated Oil and Gas Industry and are increasingly becoming involved in the Alternative Energy Industry.

## **1.2 Environmental Analysis Using Scenarios, ESCAN & ETOP- Environmental Threats and Opportunities Profiles:**

World energy consumption is projected to expand by 50% from the year 2005 to 2030. One of the main concerns has been finding a sustainable solution for this demand in the near future. After examining Two Classic Scenarios (defined as Future Histories), such as Global Accommodation Scenario and Global Conflict Scenario one can start to analyze the Environmental Impact from the Outside-In perspective. In Environmental Analysis using the Trend analyses in the ESCAN Qualitative Methodology, one can then do a Quantitative ETOP Analysis using a 9-Dimensional approach to figuring out this impact of the External Environment on the future of the Energy Industry and its Specific Market Segments. There are nine factors that determine these concerns and these Dimensions are: Technology, International, Politics, Social, Ecology, Energy, Economics, Competition, and Spirit /Ethics/Spirituality.

In the Integrated Oil and Gas Industry, there is a growing emphasis on achieving cleaner burning fuels and the investment into environmentally friendly, sustainable, and economically competitive Renewable Energy Sources. Developments and innovations in technology have been invested in, there are international concerns regarding National Oil Companies and the countries that are affected by the Integrated Oil and Gas Industry. Some of these International Issue are indeed global, witness the current debate to replace the dying KYOTO Protocol for International cooperation as it had concentrated only on the globe's leading economies which had done most of the global polluting and the major push to include the newly industrializing countries and increasing polluters such as the BRIC countries of Brazil, Russia, India, and China and other fast developing countries which in this process of fast and rising economic growth inevitably also emit Green House gases. Hence the push to include in the upcoming Copenhagen Round of International Talks the focus is on these Developing countries in addition to the usual large country polluters like the US, Western Europe and Industrializing Asia, including Japan, China and India . Politically there have...