Energy: *Reducing our Dependence on Fossil Fuels*

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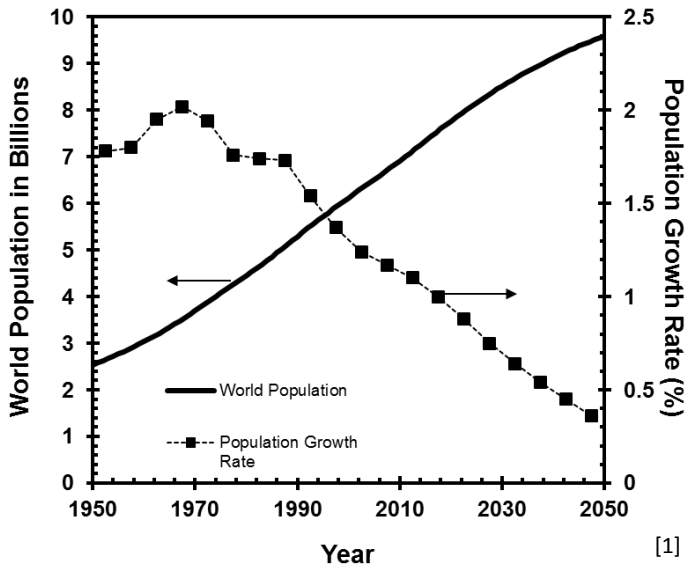E-mail: berberoglu@mail.utexas.edu
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Our dependence on Fossil Fuels:

- Currently fossil fuels supply more than 80% of world's energy needs

Problems associated with our dependence on Fossil Fuels:

- Depletion of easily accessible and inexpensive fossil fuel resources causing world wide problems
- Environmental issues related to GHG and pollutant emissions
  - In 2010 CO_2 emission rate reached over 30 billion tons per year
  - The atmospheric CO_2 concentration has increased from about 280 ppm in 1750 to 398.5 ppm in 2013
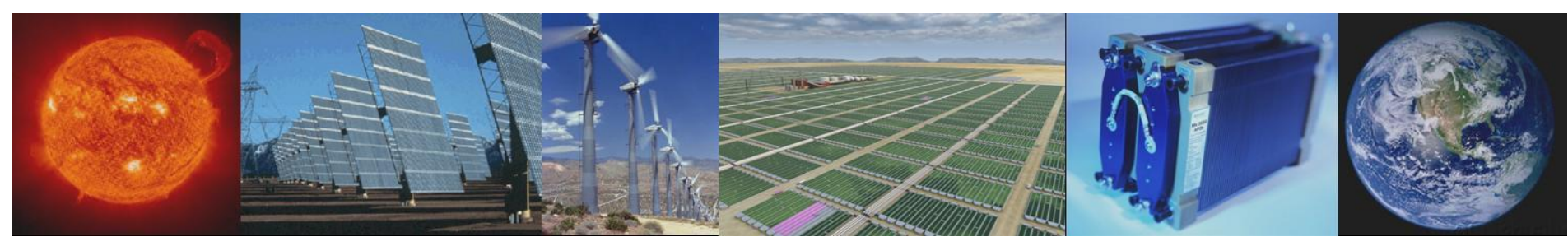
How can we reduce our dependence on Fossil Fuels?

- Changing the way we think about and use energy and fuels
- Technology innovation and adoption

Year	Population (billions)	Total Energy Consumption Rate (TW)	Energy Consumption Rate per Capita (kW/person) [2]
2005	6.5	15	2.3
2010	6.8	17	2.5
2050	~ 9.6	~ 39	~ 4.1 (+0.04W/year increase)

By 2050 we will more than double our energy consumption rate!

[1] United Nations, World population prospects: The 2012 revision, New York, 2013.
[2] International Energy Agency, Key World Energy Statistics 2012.

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"Energy from Fossil Fuels: Challenges and Opportunities for Technology Innovation"

Laura Díaz Anadón

Science, Technology, and Public Policy program

John F. Kennedy School of Government

Harvard University

"Bioenergy Technologies and Strategies - A New Frontier"

Joyce C. Yang

Bioenergy Technologies Office (BETO)

U.S. Department of Energy

"Drivers for successful Biofuel production scale-up"

Willem Rensink

Innovation and R&D Department

Shell International Exploration and Production Inc.

"Artificial Solar-Fuel Generators"

Rachel Segalman

Joint Center for Artificial Photosynthesis

Lawrence Berkeley National Laboratories

University of California, Berkeley