

THE CARBON CHALLENGE SERIES

Energy: The Tie that Binds

We live in the age of the “hydrocarbon human.” Since the acceleration of the industrial revolution in the middle of the 19th century, we have hugely expanded our use of carbon- and hydrocarbon-based fossil fuels such as coal, petroleum, natural gas, and non-conventional oil such as oil sands and oil shales. These energy resources have made our modern lifestyle possible.

Energy use is a tie that binds the world together. Our collective response to the *carbon challenge*—our need for energy at the same time our supplies of fossil fuels are dwindling, and environmental degradation caused by our use of that energy—is important for all of us. Ultimately, success in this great challenge will not come from a single “silver bullet” technology or strategy, but rather a series of interdependent solutions.

The Florida Energy Systems Consortium (FESC) is researching, developing, and deploying some of these potential solutions. This fact sheet, the first in The Carbon Challenge Series, explains the approach we will use in future fact sheets. It lays the groundwork for understanding our reliance on energy. We have four goals: (1) provide information that increases your understanding of climate and energy, (2) offer ways to decrease your energy use, (3) review emerging renewable energy technologies, and (4) increase your awareness of issues surrounding our energy future.

Meeting Our Needs

Humans have five basic needs: (1) food, (2) water, (3) shelter, (4) mobility, and (5) sociability/communication. During the 20th century, inexpensive and abundant energy supplies have enhanced our lives by creating markets for an ever-expanding array of goods and services. Yet the choices consumers make in seven major product and service categories account for the vast majority of energy use and environmental problems (*Figure 1*). Our needs and wants may change with cultural fads (anybody remember 8-track tapes?), but our quality of life and that of our environment still comes down to how we meet the same five basic needs.

As the carbon challenge intensifies, the quality and availability of many goods and services may change. To ensure social stability, economic security, and community resilience, the industries that provide consumers' choices in these seven categories listed below must be the first to lead the way in using fossil fuels wisely, as a bridge both to long-term non-fossil sources and to reducing greenhouse gas (GHG) emissions and other problems of environmental degradation.

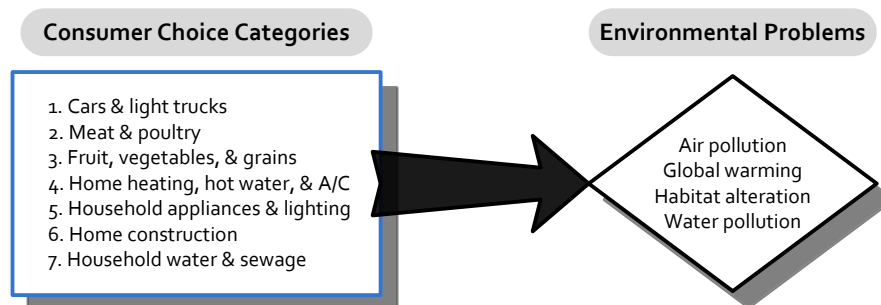


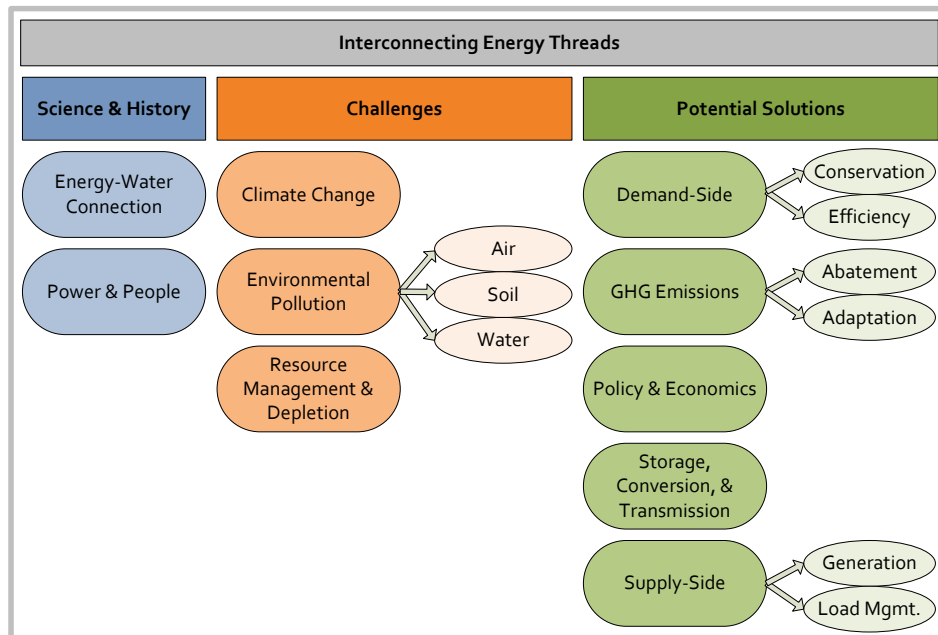
Figure 1. An analysis conducted by the Union of Concerned Scientists suggests that seven major consumer choices lead to four major environmental problems.¹ Can you see the linkages between food, water, shelter, mobility, and sociability/communication?

¹ Brower, M. and W. Leon (1999). The consumer's guide to effective environmental choices: Practical advice from the Union of Concerned Scientists. New York, New York, Three Rivers Press.

Conscientious Choices & Potential Solutions for Floridians

We hope the innovations emerging from within the Florida Energy Systems Consortium will have global relevance. However, The Carbon Challenge Series of fact sheets will primarily focus on how information and potential solutions are likely to have an impact on Floridians.

The general content of each fact sheet will fall within one or more of the major interconnecting energy threads outlined below. Each fact sheet will include questions and answers, guidance for making conscientious energy choices, and potential solutions to the twin problems of energy consumption and environmental degradation.



Acknowledgements

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This is the first fact sheet in *The Carbon Challenge Series* for the Florida Energy Systems Consortium (FESC). Note that upon completion, all of the fact sheets in this series will be available under the heading of Public Outreach at http://www.FloridaEnergy.ufl.edu/?page_id=10 for online viewing and/or printing.

About the Florida Energy Systems Consortium (FESC)

The goal of the consortium is to become a world leader in energy research, education, technology, and energy systems analysis. Specific goals include:

- Coordinate and initiate collaborative interdisciplinary energy research among the universities and the energy industry.
- Share research results with a wide audience, including the science community, media, business, governments, and industry.
- Assist in the creation and development of a Florida-based energy technology industry.
- Provide a state resource for objective energy systems analysis.
- Develop education and outreach programs to prepare a qualified energy workforce and informed public.

For more information, go to www.FloridaEnergy.ufl.edu