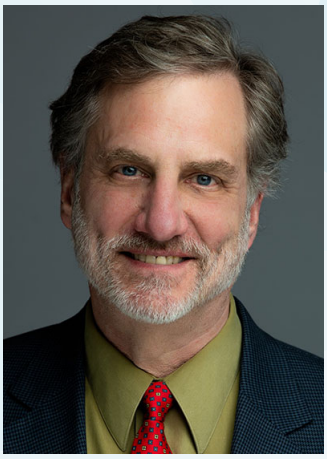
iFAST: The International Forum on Advanced Environmental Sciences and Technology

A series of distinguished seminars by eminent scientists

8 a.m. CST; 9 a.m. EST; 2 p.m. GMT; 10 p.m. Beijing

Wednesday, Jan. 20, 2021



Bruce Logan

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Bruce E. Logan is an Evan Pugh University Professor in Engineering, the Stan & Flora Kappe Professor of Environmental Engineering, and director of the Engineering Energy & Environmental Institute at Penn State University. His current research efforts are in renewable energy production and the development of an energy-sustainable water infrastructure. Logan has mentored over 130 graduate students and post docs and hosted over 40 international visitors to his laboratory. He is the author or co-author of several books and over 500 refereed publications (>90,000 citations, h-index=148; Google scholar). Logan is a member of the U.S. National Academy of Engineering, a foreign member of the Chinese Academy of Engineering, and a fellow of the American Association for the Advancement of Science, the International Water Association, the Water Environment Federation, and the Association of Environmental Engineering & Science Professors. Logan is a visiting professor at several universities, including HIT, Tsinghua University and Dalian University of Technology (China), with ties to several other universities in Saudi Arabia, the UK, and Belgium. He received his doctorate in 1986 from the University of California, Berkeley, and prior to joining Penn State in 1997 he was at the University of Arizona in Tucson.

You need to learn more about your daily energy use and carbon emissions to better understand the challenges of slowing climate change

Addressing climate change may be the greatest environmental challenge of the century, affecting everyone in the world, but most of us have only a limited understanding of how our own personal activities translate into energy consumption and CO_2 emissions. Part of the challenge is that energy use is expressed in so many different units that it is difficult to add up our own use in our daily lives. For example: food is reported in energy units of calories or megajoules, driving our car is evaluated by fuel use in gallons or liters, our home electric bills are listed as kilowatt hours and natural gas heating in CCF or therms. How much energy does that sum up for you? As a scientist or engineer, you could figure this out, but likely you never have taken the time to do that. And when you did, what would you compare your own use to? For example, if you were told that the United States uses about 100 quads of energy annually, how would you relate that to the energy you personally use, or CO_2 emissions from your own activities, to the national average? In this talk, I introduce the concept of the energy unit D, and a CO_2 emission unit of C, and explore daily energy use and how these activities lead to CO_2 emissions. One D is the energy in the food you eat every day (1 D = 2000 Calories), and then all other energy units are calculated on the basis of how they compare to the minimum energy you use. Some of these comparisons will surprise you. For example, would you think your car could consume more energy than your house? For CO_2 emissions, each person emits about 2 lb/d due to the food we eat. By setting 1 C=2 lb/d, we can see how much CO_2 is emitted from a gallon of gas (about 9.8 C) or using electricity for our home (5.4 C) relative to our own human emissions. After this lecture it is hoped that you will view your lifestyles and energy choices with greater clarity as that is needed for us all to address energy use, CO_2 emissions, and climate change.

INSTITUTE FOR ENVIRONMENTAL GENOMICS
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Register for the Zoom conference at www.ou.edu/ieg/seminars

Organizing Committee Chair: Jizhong Zhou (University of Oklahoma, USA; https://www.ou.edu/ieg)
Xueduan Liu (Central South University, China)