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The Energy and Climate Policy Debate: An Introduction

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The Tennenbaum Program for Fact-Based Policy gathers, analyzes, and disseminates facts and data on the nation's most highly debated policy issues. It generates essays by prominent experts from diverse policy perspectives, such as those influential in different political parties. It then provides easy-to-digest shorter written summaries and videos in order to disseminate reliable information to the broader public. The topics are chosen based on nationally representative surveys conducted by YouGov soliciting the policy areas where respondents believe they would most benefit from receiving more accurate and reliable information and analysis.

Reliable and affordable energy is essential for virtually all human activity: heating, lighting, transportation, agriculture, and industry. The history of harnessing energy to meet human needs maps to the tremendous progress in achieving material well-being, in opening new vistas, and in freeing people from the extreme physical toil and constraints of time and place faced by earlier generations. But now there is concern that human activity, particularly the release of greenhouse gases such as carbon dioxide from the burning of fossil fuels—coal, oil and natural gas—will cause warming that may lead to serious problems.

How sure are we of the nature, scale, and timing of climate change? Are there any offsetting benefits? What should be done to combat the threats? And how would that course of action compare to what is being done now and to what countries, even subnational governments like California, have putatively committed to do by certain future dates?

Four distinguished experts from different disciplines and policy viewpoints, Daniel Yergin, Steven E. Koonin, Bjorn Lomborg, and Arun Majumdar, discuss what they believe are the most important facts in the debate over the contentious issue of energy and climate policy. While they come to somewhat different conclusions about what makes for sensible policy responses, and over what time frame, they have many areas of agreement and emphasis.

First, and perhaps most importantly, they agree that sensible responses to these risks will include considerable reliance on fossil fuels for some time to come. Second, while mitigating emissions is an important policy component, what, how and when mitigation policies are implemented can involve considerable risks to economic progress and must be consistent with energy security and national security objectives. Third, the authors emphasize that mitigation policies must be accompanied by sound adaptation policies and technology breakthroughs from research and development that dramatically lower the costs of deploying renewable energy sources at the immense scale of the global energy system—for it is the total global atmospheric concentration of greenhouse gases that determine climate effects.

Previous energy transitions—from wood to coal, coal to oil—have largely added to, not replaced, previous energy sources. Global energy demand is projected to increase 50 percent in the next twenty-five years, mostly from economic growth in Asia, Africa, and Latin America, where large populations still lack access to electricity and safe drinking water. Coal, oil, and natural gas account for about 80 percent of global energy use, but because of natural field decline, it will require trillions of dollars of investment just to stay even, let alone meet any growing demand. While wind and solar power have been growing rapidly, they meet just 2 percent of total energy use; despite large subsidies, they are encountering technical and marketplace resistance and will also require trillions of dollars of annual investment if they are to scale to reach climate goals.

The climate and how it evolves is quite complex, and while climate knowledge and modeling continue to improve, considerable uncertainty remains. Long-run forecasts involve many assumptions, and over many of these, such as economic growth rates in various countries and technology breakthroughs, there is also great uncertainty. Furthermore, it is necessary to examine the net, full-cycle effects of any energy and climate policy. For example, while electric cars do not emit carbon dioxide, manufacturing the components and assembling them, mining and processing the minerals for the batteries, and charging the batteries certainly do so, although these effects will gradually abate as electrification continues and becomes more reliable.

People expect rising material living standards. There has been increasing resistance by citizens in the rich democracies to aggressive climate policies and the costs and disruptions they require. And polling shows that public concern for the environment, including climate risks, falls to the bottom as soon as there is economic hardship such as a recession or nontrivial inflation. Thus, climate policies must be compatible with rising living standards, and that mandate necessitates energy security if such policies are to be sustained over the long period of time necessary.

And because climate effects depend on the global atmospheric concentration of greenhouse gases, the politics become exponentially more complex, requiring actions—not promises—across many countries. Some of these countries are mixed capitalist democracies, where the necessary citizen acceptance relies on voting over many elections and the use of market forces, such as huge R&D investments by private firms expecting to earn returns. Others, including the biggest emitter of greenhouse gas emissions, China, and the main candidates for future emissions growth, are poorer, less capitalist, some autocratic, with less interest in intellectual property protection and more insistence on transfers of income and technology from advanced economies to carry out climate policies.

Concerns about the climate and about the efficacy and the economic, energy, and national security costs of climate policies will be with us for a long time. I commend these four essays to you: Daniel Yergin's sweeping history over a half century of energy security concerns and what it might portend for the future; Steven Koonin's penetrating summary of the major scientific uncertainties about energy and climate; Bjorn Lomborg's incisive analysis of exaggerated claims, facts and figures, costs and benefits, in the climate debate; and Arun Majumdar's panoramic insights into potential game-changing technological breakthroughs necessary for decarbonization across the major energy production and use sectors, and time scales. They will help you better understand the facts surrounding the energy and climate policy debate, and separate sense from nonsense in the media and political discourse.

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