

Puerto Rico's energy challenge

The smoking ruins in Cataño are a grim reminder of Puerto Rico's extreme dependence on fossil fuels. Indeed, one of the biggest challenges we currently face lies in transforming our fossil fuel-based energy economy to a stable, sustainable energy economy. This transformation must be achieved in a timely manner and taking into account three different, but overlapping policy objectives. First, we must limit the damage to Puerto Rico's natural environment and its component ecosystems. This will require investment in carbon mitigation technologies as well as planning for the rational, sustainable long-term use of land and water resources.

Second, our economic development objectives need to be: (1) balanced against environmental objectives and (2) redefined as the Earth and its resources are not infinite. Everyone agrees that the supply of energy at reasonable prices, subject to minimal volatility, is essential for Puerto Rico's long-term economic development, but these needs have to be satisfied in an environmentally sustainable manner.

Finally, our environmental and economic objectives have to be balanced against security objectives. Security in this sense means that energy supplies are reasonably protected and stable and that the island's energy infrastructure is reliable. The challenge lies in that all three policy imperatives need to be addressed simultaneously within a



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relatively short timetable.

Therefore, transforming Puerto Rico's current energy system — which depends overwhelmingly on fossil fuels for: (1) air, sea, and land transportation, (2) electricity generation, (3) residential, commercial, and industrial cooling needs, and (4) the production of manufactured goods — to a sustainable energy system, one that is carbon neutral, affordable, secure, and efficient, based on a diversity of supply options, with minimal impact on natural resources, and that creates sustainable jobs, is a colossal undertaking.

It is in this context that Puerto Rico needs to develop a comprehensive energy policy. Such a policy would include the following components:

Analysis and diagnosis

Puerto Rico needs to undergo deep analysis and diagnosis of its energy system: its current status, its needs for the future, its environmental impact, and its affordability. In addition, the sustainability of

Puerto Rico's economy needs to be assessed scientifically by determining the appropriate rate of depletion for specific resources and then applying economic analysis to determine the most cost-efficient way of achieving those environmental objectives.

Safeguarding the environment

According to the United Nations Intergovernmental Panel on Climate Change (IPCC), the consequences of global climate change, such as rising sea levels, depletion of water resources, forced migration of people, and the reduction of the food supply, are likely to affect millions of people through: increases in malnutrition, with adverse implications for child growth and development; increased deaths, disease, and injuries due to heat waves, floods, storms, fires, and droughts; the increasing burden of chronic diarrheal disease; increased frequency of cardio-respiratory diseases due to higher concentrations of ground-level ozone; and the altered spatial distribution of some infectious disease vectors.

Puerto Rico needs to prepare for and address these challenges head on. At a minimum, this means taking some steps for carbon mitigation. This, in turn, requires (1) establishing a carbon price, through tax or trading and regulation; (2) providing incentives to support the development and adoption of low-carbon technologies; and (3) re-

moving barriers to behavioral change, such as lack of information, high transaction costs, and behavioral inertia.

Developing the green, sustainable economy

Any successful action program on climate change must achieve two objectives: stabilizing atmospheric greenhouse gases and maintaining economic growth. The key to reconciling these two objectives, according to a recent report by McKinsey & Co., lies in increasing the "carbon productivity" of the economy, which is defined as the amount of GDP produced per unit of carbon equivalents emitted. According to their estimates, global carbon productivity must increase from approximately \$740 of GDP per ton of CO₂ equivalent today to \$7,300 of GDP per ton of CO₂ equivalent by 2050 in order to stabilize atmospheric greenhouse gases at a level that would limit the adverse consequences of climate change. This change is comparable in magnitude to the labor productivity increases recorded during the Industrial Revolution. The difference is the timeframe. The ten-fold increase in labor productivity was achieved over 125 years; the "carbon revolution" needs to be achieved in only 41. This carbon productivity challenge offers the opportunity to develop new industries and create thousands of new jobs in fields related to sustainable energy, from research and development of new

technologies, to manufacturing of equipment, to consulting and advisory services.

Energy security

Puerto Rico is a small player on the world stage. Therefore, it is up to us to insure that our energy supplies are reasonably secured and that our internal energy infrastructure is reliable. Achieving energy independence is no mean task, but the government could analyze ways of reducing Puerto Rico's extreme dependence on foreign energy sources, identify international benchmarks and best practices, and develop policy alternatives for increasing the island's energy security.

We still have time to address the energy challenge and mend our ecologically destructive ways. Doing that, however, requires we start living in accordance with what American environmentalist Aldo Leopold called the "land ethic." Leopold said, we should "examine each question in terms of what is ethically and esthetically right, as well as what is economically expedient. A thing is right when it tends to preserve the integrity, stability, and beauty of biotic community. It is wrong when it tends otherwise." The pestilential boiling cauldrons in Cataño remind us that we have ignored this land ethic for too long.

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