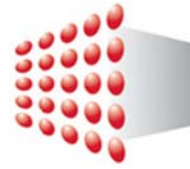


# ESI



ENERGY  
STUDIES  
INSTITUTE

## REVIEW ARTICLE

**Tilak K DOSHI**

### **Conserving Energy: Paradox and Policy**

**Straits Times, 15 March 2010**

**ABSTRACT**

*Studies show that people are slow to adopt cost-effective energy-conserving technologies. Examples include compact fluorescent light bulbs, improved insulation materials and energy-efficient household appliances. This then is the paradox: Why does there seem to be so little investment in these forms of technology when they save money and energy?*

**KEY WORDS**

*Emission Abatement Curves, Carbon-capture Technologies, Rational Behaviour, Market Failure, Energy Technology Choices*

1. Since the Copenhagen climate change meeting in December, much ink has flowed on the subject of energy efficiency and what governments can do about it.
2. Much of the literature has focused on 'emission abatement curves'. These curves trace the outlook for new energy-saving or carbon-capture technologies that become competitive as the cost of carbon emissions increases.
3. For example, when petrol or diesel prices are high enough to reflect the carbon content of such fuels, hybrid petrol-electric cars become more attractive to consumers. Likewise, at even higher fuel prices, fully electric vehicles may begin to compete with hybrids, and so on. Abatement cost curves provide a map of possible technology futures in an increasingly carbon-constrained world.
4. Yet the most remarkable aspect of these curves is not what they tell us about emerging technologies but about those that are already cost-competitive. Studies show that people are slow to adopt cost-effective energy-conserving technologies. Examples include compact fluorescent light bulbs, improved insulation materials and energy-efficient household appliances. This then is the paradox: Why does there seem to be so little investment in these forms of technology when they save money and energy?
5. To this seeming paradox, economists have generally responded in one of two ways: Either it is a market failure of some sort or consumers' behaviour does make sense despite apparently objective cost-benefit calculations to the contrary.

6. One obvious source of market failure is the lack of information about the available technologies. If companies fail to publicise them on a large enough scale, as is likely, there is a case to be made for the authorities to provide the information free or at subsidised rates.
7. But what if the slow spread of cost-effective technologies is due not to consumer ignorance but rather to rational behaviour? In this case, there would be no basis for government intervention.
8. Consumers and businesses may come to the conclusion that there is little point in investing in new technologies at the moment, especially when the costs of adoption are likely to fall as the technologies become more commonplace in the future. It may pay to just 'wait and see'. So what may seem at first like a market failure, may in fact be the result of rational choice.
9. Another example of market failure arises when the party which invests in energy-saving technology hardly benefits from it. If the owner of a house cannot ask for a higher selling price for his property even if he makes it more environmentally friendly, he will have no incentive to invest in energy-efficient appliances. Similarly, landlords who rent out their homes have no interest in energy efficiency since they do not pay the bills and enjoy the cost savings.
10. In this case, it may make sense to develop an audited home energy rating system to give house buyers and renters reliable information about their likely savings on energy bills. This would make energy-efficient properties more attractive and encourage landlords and homeowners to invest in green technology.

11. In making energy technology choices, some situations suggest a role for government intervention while others do not. Depending on the specific nature of market failure or apparently poor consumer choices, correct responses may range from better education and regulations - mandatory product labelling, energy efficiency audits of new buildings, etc - to using market-based incentives such as carbon taxes and 'cap-and-trade' regimes. In some cases, the correct policy may well be to do nothing.
  
12. Those who would argue for aggressive taxpayer-financed investments in green technology should beware of premature and costly transitions to low carbon-emission technologies. The tendency for government funding initiatives to be captured by special interests has been widely observed. The promotion of ethanol in the United States, for example, has probably more to do with the clout of powerful senators from corn growing states than with the national interest.
  
13. Despite the apparent paradox of energy conservation, consumers and entrepreneurs betting their own money on new energy-efficient technologies are the ones making intelligent choices.

## **About the Author**

Dr. Tilak K. Doshi is the Chief Economist and a Principal Fellow with the Energy Studies Institute. He is an industry expert with over 15 years of international work experience in leading oil and gas companies. Currently, Dr. Doshi is Senior Advisor to the Board of Falcon Equity Advisors GmbH, a financial advisory and private equity firm with headquarters in Switzerland and offices in Dubai and Abu Dhabi. He is also consultant to a number of ventures, including LNG business in the Arabian Gulf and Asia, carbon emission reduction programs and in mergers and acquisition initiatives in the upstream oil and gas sectors in the MENA and Southeast Asia regions. Among his prior executive management positions, Dr. Doshi was appointed by Dubai Multi Commodities Centre (a Dubai World company) as Executive Director for Energy in 2005 to specifically drive regional market and product development for the Dubai oil, gas and petrochemical sectors. Prior to joining DMCC, he worked as Consultant for Saudi Aramco in Dhahran, Saudi Arabia in the crude oil sales and marketing and corporate planning departments. Previously, he has held senior positions as Director of Industry Analysis at the Atlantic Richfield Company (ARCO), Los Angeles; Chief Energy Economist, Unocal Corporation, Los Angeles and Singapore; Head of Research, Louis Dreyfus Energy Asia, Singapore; and Principal Consultant at Arthur D. Little Inc., Singapore.



Before joining the private sector, Dr. Doshi was Head of the Energy Project at the Institute of Southeast Asian Studies. Dr. Doshi is the author of the first book to be published on the Singapore oil industry (*Houston of Asia: The Singapore Petroleum Industry, ISEAS, 1989.*)

He received his Ph.D. Economics from the University of Hawaii on a scholarship provided by US government to pursue energy economics studies under leading oil and gas industry consultant Dr. F. Fesharaki at the East-West Center, Honolulu. His dissertation was on an Indonesia computable general equilibrium model for studying the impacts of energy-economy interactions. He was one of two candidates which were granted the 1984 Robert S. McNamara Research Fellow award by World Bank, Washington, D.C., and he received a Distinction for MA in Economics by Victoria University of Wellington, New Zealand.

This commentary is prepared by the Energy Studies Institute to provide insights on emerging developments and trends in the energy landscape. We welcome questions, feedback and critique towards our commentaries which represent work still in progress. These may later transform into strategic briefs, reports or research papers that form the cornerstone of our work. Readers may write to Ms May Koh at [esikamm@nus.edu.sg](mailto:esikamm@nus.edu.sg) to express their views; citing the reference number of the commentary. We welcome dialogue directed towards the refinement and enhancement of the institute's research work.

The material contained in this document has been developed with considerable effort. The contents herein shall not be reproduced in any manner without the written consent of the Energy Studies Institute. Certain materials may be copyrighted and should not be reproduced without permission of the copyright holder. The Energy Studies Institute makes no claim to the copyrighted materials of others contained herein.

**Energy Studies Institute**  
**National University of Singapore**

29 Heng Mui Keng Terrace, Block A #10-01  
Singapore 119620

Tel: (65) 6516 2000 Fax: (65) 6775 1831 [Http://www.esi.nus.edu.sg](http://www.esi.nus.edu.sg)