

Sustainable Energy – **without the hot air**

David JC MacKay

The quest for safe, secure and sustainable energy poses one of the most critical challenges of our age. But how much energy do we need, and can we get it all from renewable sources? David MacKay sets out to find the answer through a forensic numerical analysis of what we use and what we can produce. His conclusions starkly reveal the difficult choices that must urgently be taken and readers interested in how we will power our society in the future will find this an illuminating read. For anyone with influence on energy policy, whether in government, business or a campaign group, this book should be compulsory reading. This is a technically precise and readable account of the challenges ahead. It will be a core reference on my shelf for many years to come.

Tony Juniper
Former Executive Director, Friends of the Earth

This is a really valuable contribution to the continuing discussion of energy policy. The author uses a potent mixture of arithmetic and common sense to dispel some myths and slay some sacred cows. The book is an essential reference work for anyone with an interest in energy who really wants to understand the numbers.

Lord Oxburgh KBE FRS
Former Chairman, Royal Dutch Shell

This remarkable book from an expert in the energy field sets out, with enormous clarity and objectivity, the various alternative low-carbon pathways that are open to us. Policy makers, researchers, private sector decision makers, and NGOs, all will benefit from these words of wisdom.

Sir David King FRS
Chief Scientific Adviser
to the UK Government, 2000–08

Started reading your book yesterday. Took the day off work today so that I could continue reading it. It is a fabulous, witty, no-nonsense, valuable piece of work, and I am busy sending it to everyone I know.

Matthew Sullivan
Carbon Advice Group Plc

A total delight to read. Extraordinarily clear and engaging.

Chris Goodall
Author of *Ten Technologies to Save the Planet*

“Sustainable Energy – without the hot air” makes clear the science behind the headlines on energy issues. It is a fine guide for both experts and beginners.

Prof Daniel Kammen
Co-Director, Berkeley Institute of the Environment

MacKay’s book shows how, when it comes to energy, you too can do the simple arithmetic and learn the simple scientific facts needed to work out what energy you need and where it might come from.

Prof David Mumford
Professor of Applied Mathematics
Brown University
Member of the US National Academy of Sciences

Common sense, technology literacy, and a little calculation go a long way in helping the reader sort sense from nonsense in the challenges of developing alternatives to fossil fuels. MacKay has provided a high priority book on a high priority problem.

Professor William W. Hogan
Raymond Plank Professor of Global Energy Policy
John F. Kennedy School of Government
Harvard University

This is a complete resource for assessing the many options for choosing between different energy options and for using energy more efficiently. Teachers, students, and any intelligent citizen will find here all the tools needed to think intelligently about sustainability. This is the most important book about applying science to public problems that I have read this year.

Prof Jerry Gollub
Professor of Physics, Haverford College
and University of Pennsylvania
Member of the US National Academy of Sciences

MacKay’s book is the most practical, solidly analytical, and enjoyable book on energy that I have seen. This heroic work gets the energy story straight, assessing the constraints imposed by physical reality that we must work within.

Prof Tom Murphy
Assistant Professor of Physics, UC San Diego

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David MacKay's book is an intellectually satisfying, refreshing contribution to really understanding the complex issues of energy supply and use. It debunks the emotional clap-trap which passes for energy policy and puts real numbers into the equations. It should be read by everyone, especially politicians.

Prof Ian Fells CBE
Founder chairman of NaREC,
the New and Renewable Energy Centre

Preventing climate chaos will require sophisticated and well informed social, economic and technological choices. Economic and social 'laws' are not immutable – politicians can and should reshape economics to deliver renewable energy and lead cultural change to save energy – but MacKay reminds us that even they "cannot change the laws of physics"! MacKay's book alone doesn't have all the answers, but it provides a solid foundation to help us make well-informed choices, as individuals and more importantly as societies.

Duncan McLaren
Chief Executive, Friends of the Earth Scotland

MacKay brings a welcome dose of common sense into the discussion of energy sources and use. Fresh air replacing hot air.

Prof Mike Ashby FRS
Author of *Materials and the environment*

By focusing on the metrics of energy consumption and production, in addition to the aspiration we all share for viable renewable energy, David MacKay's book provides a welcome addition to the energy literature. "Sustainable Energy – without the hot air" is a vast undertaking that provides both a practical guide and a reference manual. Perhaps ironically for a book on sustainable energy, MacKay's account of the numbers illustrates just how challenging replacing fossil fuel will be, and why both energy conservation and new energy technology are necessary.

Darran Messem
Vice President Fuel Development
Royal Dutch Shell

This is a must read for anyone who wants to help heal our world.

Carol Atkinson
Chief Executive of BRE Global

At last a book that comprehensively reveals the true facts about sustainable energy in a form that is both highly readable and entertaining. A "must read" for all those who have a part to play in addressing our climate crisis.

Robert Sansom
Director of Strategy and Sustainable Development
EDF Energy

So much has been written about meeting future energy needs that it hardly seems possible to add anything useful, but David MacKay has managed it. His new book is a delight to read and will appeal especially to practical people who want to understand what is important in energy and what is not. Like Lord Kelvin before him, Professor MacKay realises that in many fields, and certainly in energy, unless you can quantify something you can never properly understand it. As a result, his fascinating book is also a mine of quantitative information for those of us who sometimes talk to our friends about how we supply and use energy, now and in the future.

Dr Derek Pooley CBE
Former Chief Scientist at the Department of Energy,
Chief Executive of the UK Atomic Energy Authority
and Member of the European Union Advisory Group
on Energy

The need to reduce our dependence on fossil fuels and to find sustainable sources of energy is desperate. But much of the discussion has not been based on data on how energy is consumed and how it is produced. This book fills that need in an accessible form, and a copy should be in every household.

Prof Robert Hinde CBE FRS FBA
Executive Committee, Pugwash UK

What a lovely book . . . I feel better in a way that a cancer patient might feel after reading something in-depth about his disease.

Richard Procter
Beautifully clear and amazingly readable.

Prof Willy Brown CBE
I took it to the loo and almost didn't come out again.

Matthew Moss