

1. Record Nr.	UNINA9910822410103321
Autore	Smil Vaclav
Titolo	Making the modern world : materials and dematerialization / / Vaclav Smil
Pubbl/distr/stampa	Chichester, West Sussex, United Kingdom : , : John Wiley & Sons Inc., , 2014
ISBN	1-118-69796-0 1-118-69798-7 1-118-69797-9
Descrizione fisica	1 online resource (243 p.)
Classificazione	TEC021000
Disciplina	306.3
Soggetti	Waste minimization Materials Raw materials
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover; Title Page; Copyright; Contents; Preface: Why and How; Chapter 1 What Gets Included; Chapter 2 How We Got Here; 2.1 Materials Used by Organisms; 2.2 Materials in Prehistory; 2.3 Ancient and Medieval Materials; 2.4 Materials in the Early Modern Era; 2.5 Creating Modern Material Civilization; 2.6 Materials in the Twentieth Century; Chapter 3 What Matters Most; 3.1 Biomaterials; 3.2 Construction Materials; 3.3 Metals; 3.4 Plastics; 3.5 Industrial Gases; 3.6 Fertilizers; 3.7 Materials in Electronics; Chapter 4 How the Materials Flow; 4.1 Material Flow Accounts; 4.2 America's Material Flows 4.3 European Balances4.4 Materials in China's Modernization; 4.5 Energy Cost of Materials; 4.6 Life-Cycle Assessments; 4.7 Recycling; Chapter 5 Are We Dematerializing?; 5.1 Apparent Dematerializations; 5.2 Relative Dematerializations: Specific Weight Reductions; 5.3 Consequences of Dematerialization; 5.4 Relative Dematerialization in Modern Economies; 5.5 Declining Energy Intensities; 5.6 Decarbonization and Desulfurization; Chapter 6 Material Outlook; 6.1 Natural Resources; 6.2 Wasting Less; 6.3 New Materials and Dematerialization; 6.4 Chances of Fundamental Departures; References; Index

"How much further should the affluent world push its material consumption? Does relative dematerialization lead to absolute decline in demand for materials? These and many other questions are discussed and answered in *Making the Modern World: Materials and Dematerialization*. Over the course of time, the modern world has become dependent on unprecedented flows of materials. Now even the most efficient production processes and the highest practical rates of recycling may not be enough to result in dematerialization rates that would be high enough to negate the rising demand for materials generated by continuing population growth and rising standards of living. This book explores the costs of this dependence and the potential for substantial dematerialization of modern economies. *Making the Modern World: Materials and Dematerialization* considers the principal materials used throughout history, from wood and stone, through to metals, alloys, plastics, and silicon, describing their extraction and production as well as their dominant applications. The evolving productivities of material extraction, processing, synthesis, finishing, and distribution, and the energy costs and environmental impact of rising material consumption are examined in detail. The book concludes with an outlook for the future, discussing the prospects for dematerialization and potential constraints on materials. This interdisciplinary text will provide useful perspectives for readers with backgrounds including resource economics, environmental studies, energy analysis, mineral geology, industrial organization, manufacturing, and material science"--
