

1. Record Nr.	UNINA9910966500203321
Autore	Chhetri Arjun B
Titolo	Inherently-sustainable technology development / / Arjun B. Chhetri and M. Rafiqul Islam
Pubbl/distr/stampa	New York, : Nova Science, c2008
ISBN	1-61728-523-4
Edizione	[1st ed.]
Descrizione fisica	1 online resource (470 p.)
Altri autori (Persone)	IslamRafiqul <1959->
Disciplina	628
Soggetti	Environmental engineering Technology - Environmental aspects Sustainable development Sustainable design
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. [387]-424) and index.
Nota di contenuto	Intro -- INHERENTLY-SUSTAINABLE TECHNOLOGY DEVELOPMENT -- INHERENTLY-SUSTAINABLE TECHNOLOGY DEVELOPMENT -- LIBRARY OF CONGRESS CATALOGING-IN-PUBLICATION DATA -- Dedication -- CONTENTS -- PREFACE -- REFERENCES -- ACKNOWLEDGEMENTS -- Chapter 1 INTRODUCTION -- 1.1. TOWARDS DEVELOPING INHERENTLYSUSTAINABLE TECHNOLOGIES -- 1.2. DELINEARIZED HISTORY OF TECHNOLOGY DEVELOPMENT -- 1.2.1. Introduction -- 1.2.2. About Linking "History", "Time" and Delinearization: SomeIntroductory Remarks -- 1.2.3. Delinearized History of Time and Knowledge - The Starting Point -- The Summary -- A Discussion -- 1.2.4. A Reflection on the Purposes of Science -- 1.2.5. Time- conceptions, the Tangible-intangible Nexus, and the Social Roleof Knowledge -- 1.2.6. Delinearized History of Time, Science, and Truth -- 1.2.7. Other Considerations in Mathematics and Science -- Numbers in the Qur'an -- Fractions -- Natural Ranking -- Mathematical Operations -- The Number Seven and its Multiple in the Qur'an -- 1.2.8. Modeling Natural Phenomena in Multiple Dimensions -- Transition from Mathematics of Tangibles to Mathematics of Intangibles -- 1.3. THE ROLE OF INTENTION IN TECHNOLOGY DEVELOPMENT -- 1.3.1.Origin of Intention -- 1.3.2. Nature for Sale -- Energy -- No Air -- Water -- Food -- 1.3.3. The Science of Inefficiency

-- 1.3.4. The Myth of Emulating Nature -The Aphenomenal Model -- False Promises -- 1.3.5. WHY IS THE CURRENT DEVELOPMENT MODE ANTI-NATURE? -- Transition to Tangible -- 1.3.6. Development of a Sustainable Model -- Problem with the Current Model -- The Importance of Truth as a Criterion -- Violation of Characteristic Time -- 1.3.7. Observation of Nature: Importance of Intangibles -- 1.3.8. Intangible Cause to Tangible Consequence -- 1.3.9. The Science of Intention -- 1.3.10. How does One Revert? -- Chapter 2 2. ENERGY TECHNOLOGIES -- 2.1. COOKING -- Introduction. 2.1.1. Fossil Fuel -- Cooking with Kerosene -- Cooking with Natural Gas -- 2.1.2. Cooking Stoves (Wood, Charcoal, Rice Husk, Dung, Straw, Pellets) -- Pellet Stoves -- 2.1.3. Solar Cooking -- 2.1.4. Biogas Cooking -- 2.1.5. Microwave and Electric Cooking -- Microwave Cooking -- Cooking in Electric Ovens -- 2.1.6. Cooking from Wind and Nuclear Electricity -- 2.2. HEATING -- 2.2.1. Fossil Fuel -- Kerosene Heating -- Burner Fuel Oil Heating -- Natural Gas Heating -- Coal Heating -- 2.2.2. Solar Heating (Passive Heating and Cooling, Direct Heating) -- Passive Heating -- Passive Cooling -- Direct Solar Heating -- Solar Air Heating -- Solar Hot Water System -- Oil Heating System -- 2.2.3. Geothermal -- 2.2.4. Hydropower -- 2.2.5. Direct Heating Engines -- 2.2.6. Biomass Heating (Wood, Biogas, Charcoal, Rice Husk, Dung, Straw) -- 2.3. LIGHTING -- 2.3.1. Fossil Fuel Based Lighting -- Kerosene Oil and its Use -- 2.3.2. Electric Lighting -- 2.3.2. Natural Lighting -- 2.3.3. Plant and Vegetable Oil Based Lighting -- Lighting from Bio-hydrocarbons -- Pine Oils -- Jatropha Oil -- Seabuckthorn Oil -- Algal Oil -- Environmental Benefits of Bio-hydrocarbons -- Economic Development -- 2.3.5. Biogas Lighting -- Biogas as a Fuel for Lighting -- Benefits of Biogas Lighting -- Positive Impact on Health, Sanitation and Safety -- Benefit on Agriculture and Sustainable Land Use -- Environmental Benefits -- Socio-economic Benefits -- 2.4. FOSSIL FUEL REFINING AND PROCESSING -- Introduction -- 2.4.1. Pathways of Oil Refining -- 2.4.2. Pathways of Natural Gas Processing -- Pathway of Glycol -- Pathways of Amines and their Toxicity -- 2.4.3. Additives in Oil Refining and Gas Processing and their Functions -- Additives Used in Gas Processing -- 2.4.4. Natural Alternative Catalysts for Oil Refining and Gas Processing -- 2.4.5. Direct Use of Crude Oil in a Jet Engine. 2.4.6. CO2 Emission, Natural and Industrial CO2 and Global Warming -- 2.5. GLOBAL ENERGY SCENARIO -- 2.5.1. Global Energy Problems -- 2.5.2. Global Energy Status: Model for Prospective Solution -- Solar Energy -- Hydropower -- Ocean Thermal, Wave and Tidal Energy -- Bioenergy -- Liquid Biofuels -- Biodiesel -- Nuclear Energy -- Geothermal Energy -- Hydrogen Energy -- Impact of Energy Technology and Policy on Global Energy Scenario -- Energy Demand in Emerging Economies -- Conventional Global Energy Model -- Renewable vs Non-Renewable: No Boundary as Such -- Sustainable Energy Model -- 2.5.3. Reversing Global Warming -- Current Status of Greenhouse Gas Emission -- Water and its Role in Global Warming -- Characterization of Energy Sources -- The Kyoto Protocol and Global Warming -- Sustainable Energy Development -- Development of Zero Waste Energy Systems -- Chapter 3 3. INDUSTRY AND TRANSPORTATION FUELS -- 3.1. BIODIESEL -- Biodiesel Definition and Controversy -- Biodiesel as an Alternate Fuel to Petrodiesel -- Biodiesel Feedstocks -- Advantages of Biodiesel Fuel -- Current Biodiesel Production Procedures -- 1. Alkali/Base Catalyzed Reaction -- 2. Acid Catalyzed Reactions -- 3. Supercritical Methanol Method (without Catalysts) -- The Chemistry of Transesterification -- Variables Affecting Transesterification Process -- Biodiesel in Industrial

Application -- Problems with Conventional Biodiesel Production -- 1. Use of Toxic Catalysts and Chemicals -- 2. Biodiesel is Dependent of Fossil fuel -- 3. Similar Pathways as that of Petrodiesel -- 4. Biodiesel Toxicity -- 5. Degradation of Rubber Parts, Cold Filter Plugging Point and Storage Stability -- A New Approach to Render the Biodiesel Production Truly Green -- Economics of the New Approach -- 3.2. BIO-ETHANOL -- Problems with Current Ethanol Production. Sustainability of Ethanol as Transportation Fuel -- 3.3. STRAIGHT VEGETABLE OIL AS FUEL -- 3.4. BIOGAS -- Feedstocks for Biogas Production -- Landfill Gas -- Biogas from Municipal Sewage -- Manure Digestion -- Cleaning of Organic Industrial Waste Streams -- Biogas as a Cooking Fuel -- Biogas as a Fuel for Lighting -- Advantages of Biogas Production and Use -- 1. Positive Impact on Health, Sanitation and Safety -- 2. Benefit on Agriculture and Sustainable Land Use -- 3. Environmental Benefits -- 4. Socio-economic Benefits -- 3.5. DIRECT HEAT FROM SOLAR ENERGY -- 3.6. WATER POWER -- Environmental, Social and Economic Impacts of Hydropower Projects -- Decentralised Micro-hydro System and their Sustainability -- Sustainability of Decentralized Micro-hydro Projects -- A. Condition one: Environmental Condition, $dC_n/dt = 0$, (from Figure 3.22 $C_{n2} - C_{n10}$) -- B. Condition Two: Economic Condition, $dC_c/dt = 0$, (from Figure 3.22 $C_{c2} - C_{c1} = 0$) -- C. Condition Three: Social Condition, $dC_s/dt = 0$, (from Figure 3.22 $C_{s2} - C_{s1} = 0$) -- Chapter 4 4. WATER AND WASTE WATER MANAGEMENT -- 4.1. INTRODUCTION -- Definition of Fresh Water and Sustainability -- 4.2. WATER MANAGEMENT -- Conventional Guiding Principles in Water Supply and Management -- Water Reuse -- Water Privatization -- Water Pricing -- 4.3. WATER AND WASTEWATER TREATMENT -- Chemicals Used in Water and Wastewater Treatment -- 4.4. CURRENT WATER AND WASTEWATER MANAGEMENT MODELS -- Water and Waste Water Contamination due to Storage and Transportation Materials -- International Standards and Guideline for Water Contamination -- 4.5. KNOWLEDGE BASED WATER AND WASTEWATER MANAGEMENT MODEL -- Chapter 5 AGRO-PROCESSING -- 5.1. HUSKING -- 5.2. MILLING, GRINDING AND EXTRACTION -- 5.3. USE OF MOTIVE POWER -- Chapter 6 6. FOOD PRODUCTION AND PROCESSING -- INTRODUCTION -- 6.1. FOOD PRODUCTION PROCESS. 6.2. ORGANIC AND NON ORGANIC FOOD -- 6.3. USE OF ORGANIC AND SYNTHETIC FERTILIZERS -- 6.4. IMPACTS OF PESTICIDES IN FOOD QUALITY -- 6.5. FOOD PROCESSING -- 6.6. ADDITIVES IN FOOD PROCESSING -- 6.7. GENETIC MODIFICATION/FORTIFIED FOODS AND HEALTH IMPACTS -- 6.8. FAST FOOD PRODUCTS -- 6.9. CHIPS, CHOCOLATES, AND OTHERS READY-TO-EAT FOODS -- Chips -- Chocolates and Others Ready-to-Eat Foods -- 6.10. QUALITY ASSURANCE OF FOOD PRODUCTS -- Chapter 7 FOOD PRESERVATION -- INTRODUCTION -- 7.1. FREEZING AND THAWING -- Freezing -- Effect of Freezing on Food Quality -- Thawing -- 7.2. REFRIGERATION -- Refrigerant Fluids Used in Refrigeration -- Innovation in Refrigeration Systems -- 7.3. PASTEURIZATION -- 7.4. HEATING AND DRYING -- 7.5. CANNING AND PACKAGING -- 7.6. IRRADIATION -- UV Radiation -- Ionizing Radiation -- 7.7. CHEMICAL PRESERVATION -- 7.8. NATURAL FOOD PRESERVATION -- Natural Cooling System for Preservation -- 7.9. NATURAL PRESERVATIVES -- Chapter 8 DRINKING FLUIDS -- INTRODUCTION -- 8.1. MINERAL WATER, ULTRA PURE WATER, CHLORINATED WATER -- 8.2. SPORTS DRINKS -- Gatorade -- Citric Acid -- Sodium Benzoate -- Malic Acid -- Artificial Flavor and Modified Corn Starch -- Powerade -- Little Squirts -- 8.3. COCA COLA, PEPSI, SODA, SPRITE OTHER DRINKS -- Coca Cola -- Diet Coke --

Pepsi, Soda, Sprite and other Drinks -- 8.4. BOTTLED AND CANNED JUICES -- 8.5. MILK -- 8.6. COFFEE, TEA -- Chapter 9 PERSONAL CARE PRODUCTS -- INTRODUCTION -- 9.1. CHEMICALS AND SURFACTANTS USED IN PERSONAL CARE PRODUCTS -- 9.2. NATURAL SOAPS PRODUCTION -- Ingredients of Natural Soap Production -- Olive Oil -- Palm Oil -- Beeswax and Honey -- Coloring and Fragrance Materials -- Turmeric, Neem Leaf, Cinnamon Powder -- Natural Fragrance -- Production of Natural Soap -- 9.3. SAMPOO, BODY MIST, CLEANSING PRODUCTS. 9.4. COSMETICS (LIPSTICK AND NAIL POLISH, EYE MASCARA, HAIR COLORING GELS, HUMECTANTS AND MOISTURIZERS ETC).

Sommario/riassunto

Following an introduction that dwells on the philosophical and religious roots of sustainability, including lengthy discussion of passages from the Quran, this volume presents practical methods for achieving sustainable alternatives to current energy-using technologies. Chapters are included on fuel, water, waste water management, agriculture, food preservation, and personal care products, among other topics. Many B&w photos are included. The authors' affiliations are not noted; both cite numerous talks and publications, in journals that include Energy sources, EEC innovation, and Petroleum reservoirs.
