= The Clean Tech Revolution =

The Clean Tech Revolution : The Next Big Growth and Investment Opportunity is a 2007 book by Ron Pernick and Clint Wilder , who say that commercializing clean technologies is a profitable enterprise that is moving steadily into mainstream business . As the world economy faces challenges from energy price spikes , resource shortages , global environmental problems , and security threats , clean technologies are seen to be the next engine of economic growth .

Pernick and Wilder highlight eight major clean technology sectors : solar power , wind power , biofuels , green buildings , personal transportation , the smart grid , mobile applications , and water filtration . Six major forces , which they call the six C ? s , are pushing clean technology into the mainstream : costs , capital , competition , China , consumers , and climate . Very large corporations such as GE , Toyota and Sharp , and investment firms such as Goldman Sachs are making multibillion @-@ dollar investments in clean technology .

The book has been reviewed in USA Today , Business Week , Energy Priorities , Sustainability Investment News and several other magazines , and has been translated into seven languages . Clean Tech Nation is the sequel to The Clean Tech Revolution .

= = Themes = =

Pernick and Wilder explain that , in the 1970s , clean technology was considered ? alternative , ? the province of back @-@ to @-@ the @-@ land lifestyle advocates , altruistic environmentalists , and lab scientists on research grants . Such technology was in an early stage of development , was too expensive , it did not have widespread political support , and very few large , established companies were embracing the sector . Even at the start of the 21st century , the term clean tech was not yet in the financial or business community ? s vocabulary . But now , throughout much of the world , in trends large and small , there is " the beginning of a revolution that is changing the places where we live and work , the products we manufacture and purchase , and the development plans of cities , regional governments , and nations around the globe . "

Pernick and Wilder define " clean tech " as " any product , service , or process that delivers value using limited or zero non @-@ renewable resources and / or creates significantly less waste than conventional offerings . " They highlight eight major clean technology sectors : solar power , wind power , biofuels , green buildings , personal transportation , the smart grid , mobile applications (such as portable fuel cells) , and water filtration . The authors explain how investors , entrepreneurs , and individuals can profit from technological innovation in these areas . Pernick and Wilder identify some specific clean technologies , companies , and regions that are leading the way .

The authors present a list of drivers for clean tech : " high energy prices , depleted natural resources , volatile sources of foreign oil , record deficits , and unprecedented environmental and security challenges " . The central message , which is repeated in almost every chapter , is that a clean tech revolution with benefit humanity worldwide , and will require significant collaboration between the public and private sectors .

Pernick and Wilder present examples which show that the " clean tech revolution " is already under way . Very large corporations such as GE , Toyota and Sharp , and investment firms such as Goldman Sachs are making multibillion @-@ dollar investments in clean technology . Emerging clean tech cities are seen to include Copenhagen , where wind power generates 20 percent of Denmark 's electricity , and Chicago , a leader in " green " buildings saving energy , heating and cooling costs . Statistics from the U.S. and from abroad , especially from China , India , Brazil , and Europe are presented .

The authors ' say that nuclear power and clean coal are not clean technologies . Apart from the risks associated with nuclear power , " multibillion @-@ dollar nuclear plants are simply not cost @-@ effective when compared with other energy sources . " The authors also believe that clean coal is an oxymoron for a myriad of reasons , including the sheer number of coal mine @-@ related deaths and the fact that coal @-@ fired plants , even some cleaner ones , are major contributors to serious illnesses such as asthma , heart disease , and mercury poisoning .

Pernick and Wilder do not recommend specific stocks or securities . They prefer to lay out a blueprint of opportunities , technologies , companies , and trends that may build successful businesses and strengthen economies .

= = Six C 's = =

Pernick and Wilder identify six major forces , which they call the six C ? s , that are pushing clean technology into the mainstream and driving rapid growth and expansion : costs , capital , competition , China , consumers , and climate .

Costs . " Perhaps the most powerful force driving today ? s clean @-@ tech growth is simple economics . As a general trend , clean @-@ energy costs are falling as the costs of fossil fuel energy are going up . The future of clean tech is going to be , in many ways , about scaling up manufacturing and driving down costs . "

Capital . " An unprecedented influx of capital is changing the clean tech landscape , with billions of dollars , euros , yen , and yuan pouring in from a myriad of public and private sector sources . "

Competition . " Governments are competing aggressively in the highstakes race to dominate in the clean @-@ tech sector and build the jobs of the future . "

China . " Clean tech is being driven by the inexorable demands being placed on the earth not only by mature economies but also by the explosive demand for resources in China , India , and other developing nations . Their expanding energy needs are driving major growth in clean @-@ energy , transportation , building , and water @-@ delivery technologies . "

Consumers . " Savvy consumers are demanding cleaner products and services that use resources efficiently , reduce costs , and embrace quality over quantity . "

Climate . " The debate around climate change has gone from question mark to peer @-@ reviewed certainty , and smart businesses are taking heed . "

The six C ? s are a simple list of factors , not necessarily a useful framework for understanding , or profiting from , the clean technology industry .

= = Release and reception = =

The Clean Tech Revolution was published by Collins as a 320 @-@ page hardcover book on June 12 , 2007 . An e @-@ book version was published by HarperCollins on June 7 , 2007 . In 2008 , a revised paperback edition was published , with a new sub @-@ title : Discover the Top Trends , Technologies and Companies to Watch . The book has been translated into seven languages .

Paul Gruber from the Erb Institute states that the The Clean Tech Revolution is logically organized and is " an excellent resource for those who would like a solid understanding of clean tech and the potential of each sector " . He also says that it is very useful for those seeking out the names of companies , NGOs , agencies , and people working on each technology . Gruber identifies one omission : the concern that major investments in clean technology parallel those made during the Internet boom , with the attendant fear that there " may be a bubble burst with clean tech " .

The physicist and environmentalist , Joseph Romm , has recommended The Clean Tech Revolution to people who are looking for one book to help them understand what is happening in clean technology . He says The Clean Tech Revolution is the only book that covers the whole gamut of the latest in clean energy .

Russ Juskalian from USA Today says The Clean Tech Revolution shows the green movement not in " heartstring terms " but as economically profitable . The real power players are the mainstream consumers , investors , entrepreneurs , governments and multinational corporations whose " eyes are trained on that most crucial of economic fundamentals : the bottom line " .

According to Reena Jana from Business Week , The Clean Tech Revolution is a " readable , straightforward guide to earth @-@ friendly business strategies " . The authors explain how businesses can follow the lead of companies such as Toyota by designing , selling , or funding inventive eco @-@ friendly products and services . Jana says that the Toyota Prius is just one well @-@ known example of successful clean technology in action .

Denis Du Bois , editor of Energy Priorities magazine , commented on the realistic and comprehensive coverage of the book . However , he suggests that The Clean Tech Revolution is not an explanation of the technologies and how they work , nor is it an analysis of energy or environmental policy . Policy is complicated and the authors avoid discussing it in detail . Little discussion ties the various clean technologies together and a " single @-@ minded American focus " dominates . There is very little on the influence of mass transit and urban planning in Europe and other progressive regions . The chapter on water focuses on filtration , which is already an area of considerable opportunity , affecting even " green " industries , such as photovoltaics manufacturing .

Francesca Rheannon in Sustainability Investment News says that the book does not ask the most challenging question of all : is " clean growth " an oxymoron ? She says that at a time when some experts say carbon emissions will need to be cut by 80 to 90 % by 2050 , the world may have to accept steady or even decreasing energy production , no matter how clean it is . Rheannon also states that there is little coverage of social issues . For example , nowhere is there mention of how water supply privatization and delivery by multinational corporations could affect the poor people of the world .

The Clean Tech Revolution was followed by the 2012 book Clean Tech Nation : How the U.S. Can Lead in the New Global Economy .

= = Authors = =

Author Ron Pernick is co @-@ founder and managing director of Clean Edge , a research and strategy firm in the United States which focuses on the commercialization of renewable energy and other clean technologies . Clint Wilder is senior editor at Clean Edge , and a veteran business and technology journalist . Both authors have been mapping clean technology trends for many years , and identifying business opportunities for prospective investors .