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# **Green Construction**

*An introduction to  
a changing industry*

Alison Dykstra

**Also by the Author**

*Construction Project Management: A Complete Introduction*  
*LEED Certification: An Introduction to Certifying a Green Building*

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# Introduction

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## Background

Many of us know from personal experience that the construction industry is changing. There are multiple reasons for these changes—demographics, technology, financing—but behind many construction-industry changes is the increased understanding among the general public, government agencies, businesses and others that what and how we build may cause problems for people and for the environment. This is translating into new—greener—construction practices, and it is becoming harder and harder for contractors to sit on the sidelines and not actively participate.

As a result of the links between a healthy economy and a healthy building sector, there is growing worldwide understanding that we need to change the way we build. The United States and the global community have been adopting more sustainable building practices that include how projects are conceived and constructed, what materials and systems are specified, and how projects are managed, operated, and decommissioned. This transformation of the construction industry means new ways of thinking and enhanced skills, which impacts builders, designers, engineers, suppliers, manufacturers, owners, and users.

Green construction is gaining prominence in the United States and globally. Although much of the growth in the green market is occurring in the commercial sector, the application of green design and construction principles are not specific to one building or project type but cross all sectors; residential, institutional, and infrastructure projects now boast green credentials. The

growth of green construction is reflected in the data: according to McGraw-Hill Construction's 2013 *Green Outlook*, the value of new green building in the United States grew in 10 years from \$10 billion in 2005 to almost \$250 billion.<sup>1</sup> Green construction is becoming so common that *not* seeking some sort of green certification is noteworthy.

The numbers from McGraw-Hill and others represent both a challenge and an opportunity for those in the construction industry. As the field has matured, it is clear that green building is here to stay, and evidence points to it becoming the new industry norm. As a consequence, it is increasingly important for contractors and others in the industry to prepare themselves for this reality.

This book comes out of the author's experience teaching construction project management at a community college in northern California. At the start of each new class, with a student body that ranged from young people recently out of high school to experienced contractors, a recommendation that students explore green construction was typically met with yawns. There was skepticism in both the classroom and among many in construction that "green" was anything more than a passing fad.

After 2008 and 2009, attitudes were changing. The recession, unemployment in construction and other industries, increasing scientific evidence regarding emissions and climate change, continued instability in the Middle East, President Obama's emphasis on renewable sources of energy,<sup>2</sup> and other factors were contributing to a shift in public attitude about energy and green jobs. Almost overnight, jobs in a new green economy didn't seem so farfetched and the author's students (among many others) began to ask, "What do I need to do to take advantage of this opportunity?"

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## Workers in a changing industry

Figuring out how to compete in the new and still evolving green economy is not necessarily straightforward; perhaps more than at any time in the past, success is dependent upon the acquisition of a variety of new skills, knowledge,

and attitudes. It's challenging for workers in many industries to sort through the chatter and figure out what's going on and how to respond. This book provides guidance for those trying to figure out how to be successful in this shifting world, and is intended to provide critical information to those transitioning within the industry as well as those just starting out.

This book does not focus on the practical skills that will be required by some: for example, how to install flat plate solar collectors, specify high performance energy systems, or repair wind turbines. The intention is broader: to help contractors, designers, students, and others move forward in an industry that is changing. Although the information contained in this book will be useful to anyone in the building industry—owners, developers, designers, and users—the emphasis will be on the contractor's team: the general contractors, project managers, and superintendents, specialty contractors, and tradespeople working in the field.

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## Organization of the book

The book is organized in two parts: Part 1 (Chapters 1–6) provides context. Chapters 1 and 2 begin the book with background information. Chapter 1 describes the ways in which our conventional approaches to design and construction create problems. Chapter 2 defines green construction and reviews how the application of green principles addresses these problems.

Why has the industry embraced green, what are the implications for workers, and what does this changing industry look like? These are some of the questions we'll look at in Chapter 3. Chapter 4 delves into specifics regarding changing standards and codes and introduces the reader to several of the systems used to "rate" green buildings and energy, including LEED, Green Globes, Energy Star, and more.

Green building assumes the use of healthy, durable, and efficient products. Chapter 5 explores the challenges both designers and builders face when choosing materials and products, and looks at several resources available to help sort through often conflicting information.

Chapter 6 completes Part 1 with a discussion of the short- and long-term benefits derived from a shift into green building models: the creation of jobs; tax and other incentives on the front end and, on an ongoing basis, reduced energy and water costs; lower maintenance costs due to system durability; improved health; and environmental benefits.

Part 2 (Chapters 7–12) focuses on how the changes outlined in Part 1 affect the men and women who work in construction. Chapter 7 opens this section with a discussion of how green construction impacts owners, architects, and, especially, general contractors. The role of the GC—from the design phase through construction—has changed dramatically. This chapter explores the ways in which this is due to green construction requirements. Chapters 8 and 9 look at the specialty trades and how their roles have changed, and Chapter 10 reviews renewable energy systems and the opportunities they present to workers.

Success in a new, green economy relies on a skilled work force. Chapters 11 and 12 explore the variety of green credentials, classes, workshops, and other tools available to those in the industry. We'll look at several professional credentials as well as programs designed to enhance skills. Chapter 12 also discusses, briefly, how to find work, the continuing changes in the industry, and how workers can keep abreast of these changes.

Terminology in bold is defined in glossaries at the end of each chapter, and in the glossary toward the end of the book.

The appendices provide helpful, expanded information, including a history of the green movement, a more extensive discussion of our energy sources and uses, an overview of the LEED building certification process, and an alphabetized summary of the URLs in this book.

The book concludes with a glossary, endnotes, bibliography, and comprehensive index.