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Preface

This book offers students and instructors the opportunity to analyze businesses whose products and strategies are designed to offer innovative solutions to some of the twenty-first century's most difficult societal challenges. A new generation of profitable businesses is actively engaged in cleantech, renewable energy, and financially successful product system design and supply chain strategies that attempt to meet our economic development aspirations while addressing our social and ecological challenges. This textbook offers background educational materials for instructors and students, business cases illustrating sustainability innovation, and teaching notes that enable instructors to work effectively and accelerate student learning.

The industrial revolution marked an era of tremendous growth, innovation, and prosperity in many parts of the world—but those achievements also have had unintended consequences that are increasingly obvious. Climate change, pollution, water scarcity, toxins in products and food, and loss of ecosystem services and biological diversity, among other problems, pose serious threats that may undermine the remarkable human progress achieved. Major forces behind these challenges are the unprecedented global population explosion and advances in technology that have caused dramatic increases in industrial production, energy use, and material throughput. As a consequence, technology races to keep pace with the demand for land, water, materials, energy, and food. At the same time, technology is being applied to address the growing volume of waste that disrupts and impairs natural systems worldwide, including our bodies and physical health. These burdens fall most heavily on those least able to avoid the adverse impacts, fight for resources, or protest: children and the poor.

We know that those same natural systems being undermined by industrialization provide the critical ecological services on which we depend for life, health, and the pursuit of prosperity. Furthermore, it is implicitly assumed our health must be sacrificed in the name of economic growth, as evident in growing environmental health problems and chronic health threats such as asthma, diabetes, and cancer that accompany expanded economic activity worldwide.

While some people observe the entrenched business paradigm and the deteriorating state of natural systems with a resigned, “what can I do?” mentality, innovative entrepreneurial individuals and firms naturally see opportunity. The resulting entrepreneurial activity, what we discuss as *sustainability innovation*, represents a wave of change that is moving rapidly into mainstream business.

Pioneers, whether building enterprises within large organizations or starting new ventures, aim for the profitable provision of needed goods and services to meet demand *while at the same time* contributing to ecological and human health and larger community prosperity. This book is about these innovators. Studying them, through example and analyses, helps us to understand alternative business models, a new-century mind-set, and a future in which prosperity can be extended to greater numbers of global citizens.

The book was written in response to the paucity of teaching materials that enable instructors to integrate sustainability concepts in their business courses. Business students are poorly served by an education that omits the useful scholarly literature and advances made over the past few decades. Nor is their education complete if they are not aware of global ecological and environmental health trends and their implications for business. Available business cases that touch on larger societal and ecological challenges often view the problems as ethical concerns or as unavoidable Environmental, Health, and Safety (EH&S) expenses, or even exclusively the concern of regulators, policy folks, and corporate lawyers. A gap exists in management curricula between conventional business practices that assume infinite resources and safe waste disposal on the one hand, and the sustainability innovation that today's new market conditions demand. There are now well-developed and vetted frameworks, analyses, and tools, such as cradle-to-cradle design, green chemistry, industrial ecology, The Natural Step, and markets for ecological services, as well as newly forged and creative ways of collaborating and organizing to maximize innovative outcomes. These ideas are explored. Emphasis in the collection is on private sector examples, but social enterprise and entrepreneurship cases are also included.

Case Examples

- As the first company to deliver aesthetically appealing, ecologically friendly home-cleaning products to mainstream retailers (as opposed to just natural products stores), Method, created in the early 2000s, has changed the rules of that game to such an extent that major consumer packaged goods global companies followed the lead of these upstart entrepreneurs.
- Project Frog was formed to fill the market gap between the expensive conventional school buildings that school districts could no longer afford and the less-than-adequate and sometimes toxic trailers often seen next to public schools to accommodate growth in student populations. FROG's buildings are less expensive, naturally lit, monitored with custom-adjusted, state-of-the-art climate control technology, and far superior and healthier learning environments for children.

- Frito-Lay's (owned by PepsiCo) Casa Grande manufacturing facility in Arizona provides a systems innovation example of a large firm experimenting with one site to demonstrate strategic and operating benefits from going off-grid. A carbon footprint analysis, extensive eco-efficiency measures, and renewable energy for process heating and electricity needs combine to create cutting-edge innovation in production facility management.

The sustainability pioneers that we spotlight throughout this book represent a small subset of a much larger pool of entrepreneurial activity and innovation whose ranks are rapidly expanding. They are forging viable commercial paths that optimize across financial goals, strategic thinking, operating protocols, and high-quality goods and services with ecological stability, human health, and community prosperity considerations built in. These efforts *are* the company's strategy to succeed. Collectively, though not necessarily visible from their dispersed locations around the world, these creative individuals and firms are fueling a massive wave of innovation. This innovation is even more essential today than it was a decade ago to meet the rapidly growing needs of global markets, as billions more people aspire to higher prosperity and quality of life within the limits of finite resources.