In recent years, many top leaders have committed their companies to the concept of sustainable development. The practical implications of such a commitment for a corporation is that performance is considered along three dimensions – economic, environmental, and social – rather than a single-minded drive for immediate economic value. While this growing commitment to sustainability has been driven by many complex factors, such as changing societal expectations, stakeholder activism, and regulatory activity, for reasons regarding competitive advantage, business leaders are considering the possibility of long-term economic performance being enhanced by a commitment to strong environmental and social performance. This means that in the next decade or so, competitive advantage may migrate to those firms that learn to create customer and shareholder value in ways that do not harm the environment and benefit a broader spectrum of society.

For those of us who have been working in the field encompassing sustainable development, sustainability, or corporate social responsibility – among an array of other terms-of-art – it is heartening to observe the recent explosion of venues and opportunities featuring this topic. In the United States, these expanding venues include publication of books and journal articles, conferences, technical society and industry association initiatives, and university initiatives in the form of new centers and institutes, course additions, or campus physical site planning and management. Recent initiatives among technical and industry associations include the new Institute for Sustainability (IfS) at the American Institute of Chemical Engineers (AIChE), Green Chemistry Institute at the American Chemical
Society (ACS), US Green Building Council, US Business Council for Sustainable Development (USBCSD), SD Planner and the newly formed Metrics task forces at the Global Environmental Management Initiative (GEMI), as well as the Auditing Roundtable’s new initiative to include sustainability auditing.

In addition, there is a proliferation of global agreements, standards, guidance documents, and frameworks related to sustainability practices, and increased stakeholder pressure to subscribe to them. They include the United Nations’ Global Compact, Caux Roundtable Principles for Business, CERES Principles, Sustainability Reporting Guidelines of the Global Reporting Initiative (GRI), the Global Sullivan Principles, Organisation for Economic Development and Cooperation’s Guidelines for Multinational Enterprises, Social Accountability SA 8000, and Dow Jones Sustainability Index (refer to Sections 4.7 and Appendix 2 of this book). The investment community is beginning to pay attention to sustainability, as sustainability ratings with respect to corporate performance are drawing the attention of Socially Responsible Investing (SRI) funds as the number of rating organizations is growing. The evidence that sustainability is becoming a more accepted concept to business and is emerging as a driving force is a subtext of this book.

While many companies embrace the concept of sustainability, few know how to make it operational. Further, there is a lack of accepted methods to assess an organization’s progress toward this important goal. If the goal of sustainability is to be incorporated into management decision-making, indicators of progress are needed that take into consideration the impacts of the organization, its processes and products, in terms of resource depletion and pollution emissions, corporate and societal costs and value-added, and impacts along the lifecycle that the processes, products, and services generate.

The principal strength of this book is that it provides a framework to enable companies to adopt sustainable business practices. The book is intended to:

- provide managers with a practical framework to identify and assess options for improving the sustainability of their companies’ and supply chains’ current and future business practices, products, and manufacturing or production methods;
- demonstrate how businesses in the chemical sector can translate sustainability strategies into action;
- focus on operationalizing the environmental, economic, and social value of sustainable development for chemical industries; and
- contribute to the body of evidence regarding the business case for sustainability.

Building on current initiatives and leveraging partnerships, this unique work provides practical mechanisms to help managers understand how to recognize and monitor the value of sustainability in their decisions. The work focuses on operational aspects, decision support, practical tools for measuring progress, and case studies of barriers and opportunities associated with the pursuit of corporate sustainability – all with a look to the chemical industry.
The focus on the chemical industry is made because of the prominence of its role in the global economy and in society. The impact of the chemical industry is felt in every area of commerce, as chemicals are ubiquitous in all value chains and affect all ecosystems, no matter how seemingly pristine, on the planet. The lessons presented here, then, can extend to other business sectors.

The book is intended for a primary audience comprised of professionals in the chemical industries, including those designated managers in business, research, and development, operations, health, safety and environment, security, and sustainable development. Yet, managers from other industries in the value chain of chemical companies will benefit from this text. Future decision-makers, such as students, are provided with a framework with which to lead in a world where social and environmental stewardship skills are just as important as technical, financial or marketing skills.

As this is a book for industry and its current and future practitioners of sustainability, the intent has been to present a balanced perspective, one from multiple points of reference. This book represents the views of many different experts on the subject of sustainability. It is written in their voices. Lessons can be learned not only from what companies feel they do right but also by what they either have done or have been perceived as doing wrong.

While some of the issues dealt with in the book are contentious, they have served to galvanize efforts by the public and forward-looking governments and companies to reduce the impacts of chemicals harmful to ecosystems and human health. It is in that spirit that we present the nature of the controversy. Where companies are spotlighted regarding their practices, opinions are those of the individual authors and are not necessarily reflections of how the editors feel. They have been included in the interest of presenting an array of stakeholder positions for purposes primarily of advancing the broader discussion and ultimately encouraging action.

1.1 ORGANIZATION OF THE BOOK

The book has been organized into the following major sections.

Chapter 2: Addressing Sustainability in the Chemical Industry
This chapter looks at the scope and scale of the chemical industry; the industry’s response to formative developments and drivers; and the evolution of its signature program, Responsible Care®, with a look at its current role in advancing sustainability as well as future positioning.

Chapter 3: Views on Key Issues Facing the Chemical Industry
This chapter looks at the public’s perception of the chemical industry. The numbers of chemicals produced and the range of products that contain the chemicals have raised serious concerns about the impacts of chemicals on human health and ecosystems, which often boil down to the public’s mistrust of the industry as a whole. This chapter highlights key issues, challenges and opportunities for the chemical industry, including the complex process of quantitative risk assessment
and the limits of this approach; the limits of the current risk management approach and emerging policy directions that the industry must face; impacts to human health and ecosystems through the chemical life cycle of manufacture, use and disposal; security vulnerabilities; and balancing the implementation of sustainability programs with the sector’s competitiveness.

Chapter 4: Planning Frameworks for Sustainable Development
The planning section of this book offers a range of planning frameworks, from an elaboration on the elements to consider in planning for sustainability and steps to take, to broader conceptual frameworks regarding the systems in which business operates, what contributes to their unsustainability, and how to make the systems as well as the companies operating within them more sustainable. This chapter attempts to capture the essence of these “frameworks” as a way of demonstrating the breadth of ways to move sustainable development into management practice. It is complemented by a more in-depth discussion of the application of management systems and auditing protocols to sustainability presented in Chapter 6.

Chapter 5: Designing for Sustainable Development
Design is a critical element in the implementation of sustainable development. Meeting the needs of the growing global community while minimizing negative impacts to the environment and societal well-being requires us to come up with alternative patterns of resource utilization, production, and consumption. This chapter provides an overview of approaches to designing for sustainability, details cradle-to-cradle materials assessment and product design, and highlights aspects of more sustainable process design strategies.

Chapter 6: Implementing Sustainable Development: Decision-Support Approaches and Tools
This chapter describes some of the approaches and tools that companies use to demonstrate their commitment to sustainability and support decision-making. While the approaches and tools are demonstrated throughout the examples and case studies elsewhere in the book, a few are covered here in more depth. This section looks at management systems, auditing, indicators and metrics, assessing value, reporting, security, and corporate social responsibility. In particular, the authors identify opportunities for leveraging existing efforts and look at the role of each of the tools in advancing sustainability.

Chapter 7: Future Directions for the Chemical Industry
The transition to a sustainable chemicals industry requires a thorough reconceptualization of the industry and its products. New directions for the industry are emerging. This chapter takes a broad, futuristic, and macro-view of the chemical industry. We find here ideas that link chemical production to biological processes, the phase out and substitution of the most dangerous chemicals, and the dawn of new means of transforming chemicals at the molecular and submolecular level. Chemical stewardship, biomimicry, chemical substitution, and nanotechnology all provide approaches that are potentially cleaner, greener, and more productive.
Chapter 8: The Business Case for Sustainable Development

The key question asked by companies considering pursuit of sustainability practices is what is the business case – the business value proposition – that can create justification for allocating resources and the attention of corporate boards and executives to this practice area. As was written in *Walking the Talk* (Holliday *et al.*, 2002), companies tend to get involved in activities long before they can prove the business case for doing so. However, the case is emerging and aspects of it are presented in this chapter. The chapter is divided into four parts: (1) results from The 2004 Chemical Industry Sustainability Survey and related Focus Groups, developed in a collaboration between BRIDGES to Sustainability, PricewaterhouseCooper (PwC), and AIChE, and conducted by PwC for this book; (2) an overview of sustainability and performance, linking the intangibles of sustainability to market performance; (3) five business cases presented by sustainability managers at companies with significant chemical operations and a major customer of chemicals; and (4) various other provocative perspectives on the business case for the industry.

The editors recognize that the book’s objective, of providing a framework for companies to adopt sustainable business practices, is ambitious. If we have achieved but a fraction of this goal, then the book is of great value to industry. However, collectively as a society, the journey towards sustainable development is in the early stages and our knowledge continues to strengthen. We cannot promise that a company will become sustainable just by adopting the actions outlined in this book, but we can assure you that the company will have begun one of the most important journeys of its evolution.

What does sustainable development/sustainability mean?

- In 1987, the World Commission on Environment and Development (Brundtland Commission) published a report entitled “Our Common Future,” in which it defined Sustainable Development as “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

- More recently, the concept of sustainability has been captured within the framework of the “Triple Bottom Line,” which companies seek to address in order to minimize harm resulting from their activities and to create economic, social, and environmental value. The Global Reporting Initiative (GRI) is one effort to develop a triple-bottom-line reporting framework.

- The Dow Jones Sustainability Group Index defines “corporate sustainability” as “a business approach to create long-term shareholder value by embracing opportunities and managing risks deriving from economic, environmental and social developments.”

- A Native American sentiment, oft quoted, opines that we do not inherit the Earth from our ancestors; we borrow it from our children.

REFERENCE
