Becoming a Sustainable Organization

A Project and Portfolio Management Approach

Kristina Kohl

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Dedication

I am dedicating this book to my husband, Morris. Thank you for your continuous support in all of my endeavors.

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Preface

Sustainable strategy is a business model that focuses on creating long-term financial value while preserving natural and social capital. Increasingly, management is adopting sustainable strategy as part of their business strategy in order to garner benefits such as opening new markets, creating new products and solutions, reducing costs, improving customer relations, reducing risk, and engaging employees. However, a gap exists between strategy and benefit realization, as the process of integrating sustainable strategy into people, processes, and policies is challenging. Leveraging project management and human capital professionals facilitates embedding sustainability into an organization's culture, unlocking the value creation potential of sustainable strategy on financial, social, and natural capital.

The target audience for this book includes organization leaders who wish to create a sustainable culture in order to reap the full benefits of a sustainable approach; sustainability champions who are driving an organization's sustainability agenda forward; project management professionals who have been tasked with managing portfolios, programs, and projects in order to integrate sustainability within their organizations; and human capital professionals who are seeking to add organizational value through developing a culture of sustainability. The case studies and interviews in this book include sustainability stories and projects from a wide variety of organizations in both function and size, such as family-owned businesses, higher-education institutions, NGOs, municipal and federal government agencies, and large global organizations. These cases are based on interviews with experienced sustainability and project management professionals who have not just "talked the talk" but also "walked the walk." The voices of these professionals provide inspiration and guidance to sustainability champions and to program and project managers seeking to move their sustainability portfolio components forward within their own organizations.

As a global society, we are facing megatrends such as population growth, natural resource depletion, climate change, divergent living standards, and biodiversity destruction. Leading global organizations have adopted sustainable strategy as an approach to create long-term value by addressing both the challenges and opportunities created by these megatrends. However, sustainable strategy is not just for global companies; increasingly, organizations of all sizes are being encouraged by customers, regulators, and communities to consider environmental, social, and governance standards as part of their business model.

Becoming a sustainable organization is a journey that requires significant change in the ways in which organizations conduct their operations, including identifying and focusing on material issues, engaging with diverse stakeholders, managing climate- and resource-related risks, creating new sustainability-driven opportunities, and reporting transparently on actions and performance. Understanding the stages of the sustainability journey and the indicators and drivers of sustainable

strategy at each of the stages facilitates the process of sustainability visioning and organizational integration and adoption.

Driving sustainability into an organization's culture requires the C-suite to adopt sustainability as an organizational pillar. In order to maximize value creation, management must align business and sustainable strategies and create an organizational structure that promotes cross-functional collaboration. Leveraging organizational assets to drive sustainability includes incorporating all business functions and utilizing their expertise to drive transformative organizational change. Interconnectivity is key to a sustainable approach, and collaborations among business functions, industry, community, and government promote sustainable solutions. This approach requires complex, multifaceted stakeholder engagement and a broad array of tools and techniques to handle the large and increasingly influential number of stakeholders.

As drivers of change within an organization, project management professionals have an important role to play in planning and implementing sustainable change. While project management methodologies provide beneficial structure and techniques to manage the process, project management professionals require additional tools and techniques in order to maximize their effectiveness. We discuss tools such as the Sustainability Accounting Standards Board (SASB) model for selecting material issues, life-cycle assessment (LCA), and the circular economy. Sustainability reporting frameworks such as the CDP and Global Reporting Initiative (GRI) are discussed in terms of their organizational impacts. A variety of checklists, matrices, and assessment tools are made available to facilitate the process of embedding sustainability into an organization. For those interested in utilizing these tools and templates, downloadable copies are available at the companion website at http://www.becomingsustainable.org.

In order to promote broad-based understanding and acceptance of sustainability across the organization, we highlight the beneficial impact of leveraging the skill set of human capital management (HCM) professionals. As keepers of the organizational culture, experts in change management, communication, and compensation incentives, HCM professionals are well positioned to drive sustainability into the people, process, and policies of an organization.

In addition, a sustainable approach creates value for HCM professionals by impacting their core business mission of employee attraction, retention, and engagement through promoting a positive corporate image relative to natural and social capital. We include an in-depth look at tools and techniques available to human capital professionals to drive programs and projects that promote a sustainable workforce. It is people, not technology or equipment, that drive sustainability within an organization.

This book provides a roadmap for organizations during their sustainability journey by sharing case studies, best practices, and lessons learned, as well as tools and techniques to drive change. Effecting transformation into a sustainable organization begins with senior management support but requires embedding a culture of sustainability within the organization so that it becomes part of every employee's daily function, mindset, and actions. Best of luck with your organization's sustainability journey.

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If I have overlooked anyone, please accept my personal thank you for all of your help. Best of luck with your sustainability journey!

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About the Author

Kristina Kohl is the managing principal of HRComputes, a management consulting firm that provides strategic guidance, program, and project management to corporate clients in order to maximize their human capital investment through technology and change management. Kristina leads the Corporate Social Responsibility and Sustainable Strategy practice for the firm and provides strategic guidance to senior management on the value proposition of adopting a sustainable strategy. HRComputes is a registered New Jersey Sustainable Business, WBE, and SBE. They are recipients of the Gotham Green Award for sustainable strategy and a certificate of recognition from the New Jersey EPA for sustainability innovation.

Kristina speaks at industry events including the PMI Global Conference and the Society for Human Resource Management Global Conference. In addition, she has been a guest lecturer for the University of Pennsylvania, La Salle University, and the Project Management Institute. She has authored white papers and articles for online publications of Project Management.com, Sustainable Brands, and the Wharton Magazine.

Kristina brings over 25 years of executive business management experience in the corporate and not-for-profit areas. Her background includes serving as Vice President and Manager at JPMorgan Chase and President of the Moorestown Home and School Association. She has served on numerous boards including the La Salle University Human Capital Advisory Board, the Tender, an Alzheimer respite care center, the Moorestown Home & School Association, and the Moorestown Education Foundation. Kristina holds an MBA from the Wharton School, University of Pennsylvania. She is also a Project Management Institute member and a certified PMP.

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Chapter 1

What Is Sustainability? Why Does It Matter?

Sustainability is defined as considering the short- and long-term environmental, social, and economic impacts of organizational decisions and actions. Sustainability is a megatrend impacting the way in which successful business currently is and will continue to be conducted in the future. Increasingly, management is tasked with steering their operation through a world of environmental, social, and economic constraints while seeking new opportunities to create value for stakeholders. Sustainable initiatives and policies are changing product design, material selection, resource allocation, supply chain management, logistics, waste management, and product disposal. A reminder of the importance of management addressing megatrends is the bankruptcy of Kodak, the one-time market leader that failed to adapt to the rise of digital film. Kodak's management was unable to adapt in a timely manner and the end result was bankruptcy, with significant losses for investors, employees, and the community. Sustainable strategy is the new paradigm for global business.

Global trends in natural resource scarcity, population growth, urbanization, climate change, and interconnectivity among organizations, communities, and nations are influencing how internal and external stakeholders view value creation. As a result, senior management is receiving increased pressure from stakeholders to consider both traditional financial indicators as well as environmental and social performance indicators as they guide their organizations. Investors view the inclusion of environmental, social, and governance metrics as a proxy for a well-managed firm. Because of global competition, consumer and investor demands, stakeholder requirements, and governmental regulation, the success of an organization is increasingly tied to its purpose-driven values and ethics as they relate to environmental and social capital. As this change in value creation unfolds, the strategies and processes of running an organization are changing. Leaders in their industries, such as Nestlé and Alcatel Lucent, are embracing sustainability as a competitive advantage. They are striving to create corporate cultures that embed sustainability into the core of their operations, including project, program, and portfolio management. One of Nestlé's goals is to address the challenge of world population growth and the corresponding increased demand for water by committing to a 40% reduction in direct water usage per tonne of product by 2015 from a 2005 baseline level.[1] They are engaging with internal and external stakeholders to address water stewardship opportunities within their own operation and throughout their supply chain. In addition, they are committed to establishing and implementing guidelines to address the

fundamental human right of access to clean water and to ensure equitable access. As corporations develop major strategic initiatives around sustainability, it creates opportunities for portfolio, program, and project managers to use their skills for planning and integrating these strategies through program and project selection and implementation. Adoption of sustainable strategy is essentially managing a complex, highly visible program that is designed to create long-term change within the organization.

1.1 Defining Sustainability

Sustainability is sometimes referred to as corporate social responsibility (CSR), corporate responsibility (CR), product stewardship, or environmental compliance. When the topic of sustainability is raised, people ask: "What do you mean by sustainability?" Even among practitioners of sustainability, there is discussion about the meaning and factors that should be included. This book defines the concept of sustainability as considering the short- and long-term environmental, social, and economic impacts of organizational decisions and actions. This definition takes a holistic view and includes concepts such as greenhouse gas emissions, product stewardship, regulatory compliance, and supply chain management, but also community impacts, employee health and safety, and workforce diversity. Known as the *triple bottom line* (TBL), this three-pronged approach was created by John Elkington in 1994, as a way for organizations to consider the social, environmental, and economic impacts of their decisions and actions.[2] The concept is partially based on the call to action for business leaders in the publication of *Our Common Future* by the Brundtland Commission (now known as the UN World Council for Economic Development). Their recommendation is to use sustainable development, focusing on the

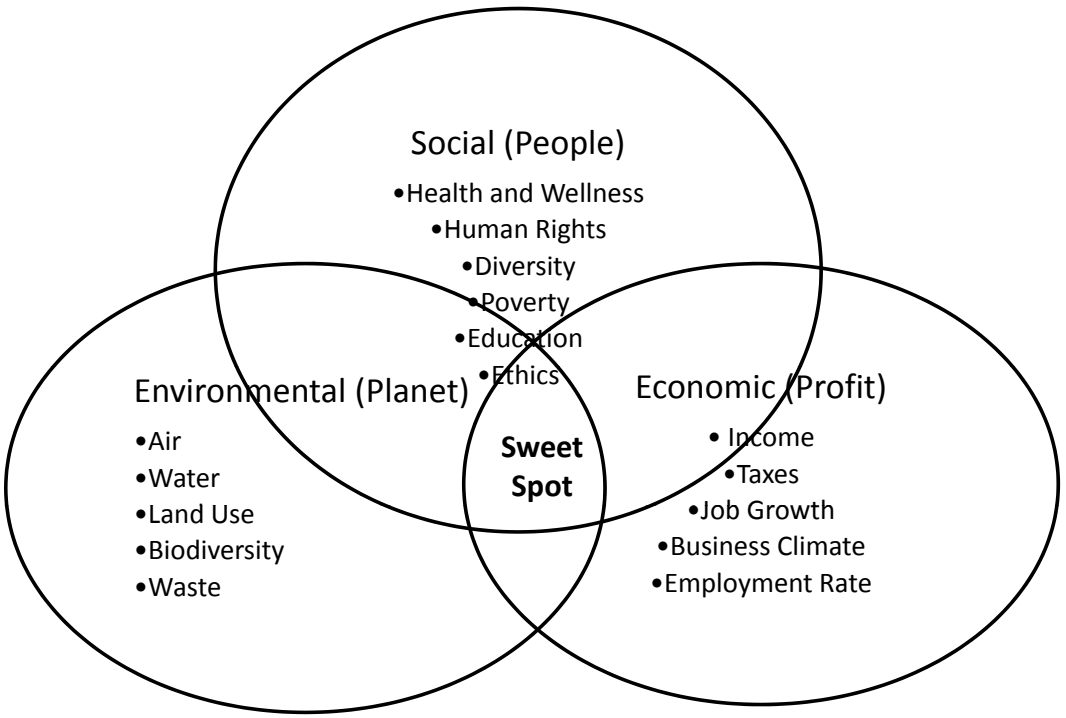

Figure 1.1 The Triple Bottom Line

three pillars of the economy, environment, and society, as a means of addressing global challenges such as resource depletion, poverty, and vastly different global living standards. (Another term for the concept is the "3 Ps," which stand for people, planet, and profit as the basis for measuring organizational success.) Rather than focus just on financial metrics such as net income or return on investment (ROI), the TBL approach seeks to understand the impact of organizational decisions on the world, including their impact on natural, social, and human capital. The TBL approach facilitates management focusing not only on shareholder value creation but also on environmental and social value creation or depletion. With the tremendous challenges facing our global society, a new paradigm is needed in order to more accurately assess and measure organizational value creation.

Figure 1.1 depicts environmental, social, and economic impacts as equally important aspects of determining an organization's performance. Each of the circles represents people, planet, and profit. The area of intersection of the three overlapping circles is the sustainability sweet spot, where outcomes are evaluated on all three types of criteria. While there is no universal standard for calculating TBL, the figure includes some examples of variables to consider in establishing metrics for measuring economic, environmental, and social impacts.[3] The size and type of organization, project scope, and geographic location are some of the factors that will determine the metrics selected. Economic measures might include profit, personal income, expenditures, investment, and employment. Environmental indicators look at air quality, water supply and quality, energy usage, natural resource depletion, waste, and land use. Social issues consider quality of employment, education, health and wellness, and quality of life in the local and regional community. Using this paradigm, management evaluates performance on metrics that include economic as well as social and environmental measurements known as externalities. Historically, financial statements and market valuation have not accounted for externalities. As a result, the full picture of performance and risk was incomplete.

The TBL approach moves beyond traditional financial metrics such as net income, ROI, cash flow, and earnings before interest, taxes, depreciation, and amortization (EBITDA) that are based solely on Financial Accounting Standard Board (FASB) compliant financial statements and considers other forms of capital such as natural, social, and human capital. As investors, customers, communities, and regulators evaluate future performance of an organization, they are looking for how externalities can impact this valuation. Financial statements focus on historical performance. They provide limited information on an organization's utilization of natural capital such as natural resources, energy, water, and pollution generation, and social capital such as human rights, health and wellness, diversity, and living wage. Metrics that might be considered in a TBL approach include environmental metrics such as fossil fuel consumption measured by absolute or relative greenhouse gas (GHG) emissions or social metrics on diversity, such as the percentage of women in senior management.[4] Sustainable strategy as measured by the TBL approach considers each of the economic, environmental, and social dimensions equally in order to better assess a long-term and holistic valuation.

As organizations have matured in their sustainability journey, they have collaborated with partners from government, academia, and others to develop and adopt a more encompassing definition of sustainability. The United Nations Global Compact (UNGC) is the largest corporate social responsibility program in the world, with 12,000 corporate, government, academic, and non-governmental organization (NGO) participants from over 145 countries. These corporations and institutions have agreed to align their strategies and operations with sustainable and responsible business practices based on 10 principles concerning human rights, labor, the environment, and anti-corruption.[5] As drivers of globalization, businesses that have adopted these principles help ensure that commerce, development, markets, technology, finance, sourcing, and manufacturing are conducted in a manner that benefits society, the environment, and the economy. Included in the list are market leaders such as Johnson & Johnson, 3M, Kimberley-Clark, and Citi.[6] A significant number of global businesses believe that adopting sustainable and responsible business practices provides a sound foundation for creating value for their stakeholders, and they are willing to state their commitment publicly.

The 10 UNGC Principles[7]

- **Human Rights**
  Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights; and
  Principle 2: make sure that they are not complicit in human rights abuses.
- **Labor**
  Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
  Principle 4: the elimination of all forms of forced and compulsory labor;
  Principle 5: the effective abolition of child labor; and
  Principle 6: the elimination of discrimination in respect of employment and occupation.
- **Environment**
  Principle 7: Businesses should support a precautionary approach to environmental challenges;
  Principle 8: undertake initiatives to promote greater environmental responsibility; and
  Principle 9: encourage the development and diffusion of environmentally friendly technologies.
- **Anti-corruption**
  Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.

These principles provide a framework through which to consider the broad-base impact of sustainable strategy on organizational values and culture. As drivers of globalization, business leaders who incorporate sustainability into their value systems through strategies, policies, and procedures are creating a positive impact on global economies and societies and a foundation for long-term sustainable development. The UNGC shares best practices, management tools, and resources to advance sustainable solutions to global challenges. The UNGC philosophy is that strong global markets and strong societies can coexist through strategic alignment with the 10 Principles and partnerships between public and private entities. The UNGC is an excellent resource for establishing a corporate sustainability program with tools, risk assessment frameworks, and compliance lists to facilitate integration into organizational programs, projects, and processes.

To understand sustainability from a slightly different perspective, one needs only look at the evaluation criteria for sustainability performance by the leading global ranking agency. The Dow Jones Sustainability Index (DJSI) is one of the most recognized and respected sustainability ranking indices in the world. Annually, RobecoSAM produces the DJSI by selecting top performers for inclusion and naming global businesses as leaders in their industry based on their responses to industry-specific sustainability questionnaires. The RobecoSAM Corporate Sustainability criteria are evenly distributed among economic, environmental, and social dimensions and are further segmented between industry-specific criteria (57%) and general criteria (43%).[8] As indicated in Figure 1.2, corporate governance, ethics, and human capital programs are evaluated and measured alongside more traditional environmental metrics such as GHG emission, product ingredients, and risk strategy to determine the sustainability leaders. We can clearly see that sustainability focuses not only on environmental stewardship but also on social, human, and ethical considerations.

Each of the categories—Economic, Environment, and Social—is further divided into subcategories such as corporate governance, climate strategy, and stakeholder engagement, requesting details on specific programs and actions. While participation in the DJSI Assessment is on an invitation-only

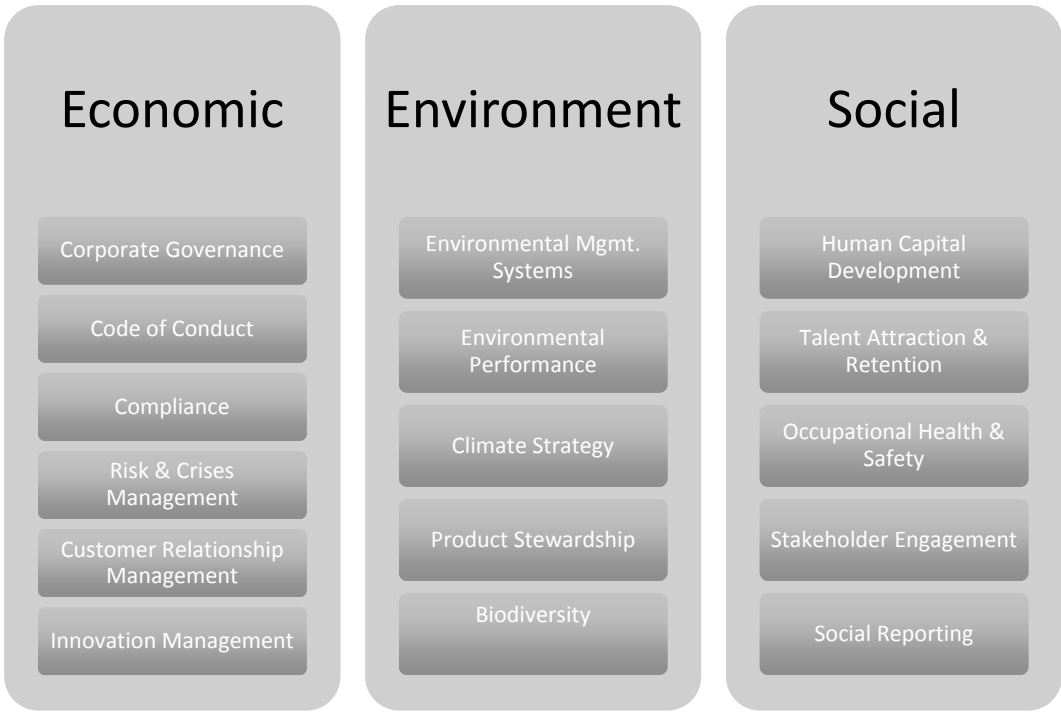

Figure 1.2 RobecoSAM Corporate Sustainability Assessment Criteria[9]

basis, reviewing the dimensions and categories provides sustainability leaders with a best-of-industry framework on which to begin to build their own organization's program.

To understand how a global corporation incorporates sustainability into its core operations, we will look more closely at Nestlé SA, which was the 2013 DJSI Food Products group leader. Nestlé's approach to sustainable development is outlined in the concept of "Creating Shared Value," which links the long-term prosperity of the business to the communities it serves. Here is a quotation from the letter introducing the 2012 Corporate Social Responsibility Report from Chairman Peter Brabeck-Letmathe and CEO Paul Bulke about Shared Value:

> We believe that we can create value for our shareholders and society by doing business in ways that specifically help address global and local issues in the areas of nutrition, water and rural development. This is what we mean when we speak about Creating Shared Value (CSV). We proactively identify opportunities to link our core business activities to action on related social issues.[10]

Their philosophy is that they can deliver better returns to shareholders by sustainably addressing social and environmental challenges, especially in the areas of nutrition, water, and rural development. Nestlé is a founding participant in the UN Global Compact LEAD, a select group of sustainability leaders from around the globe who represent the cutting edge of the UNGC, and is committed to incorporating the UNGC principles into its business model. In addition, the company engages in training and educating both internal and external stakeholders on key environmental, social, and governance issues and makes investments in technologies designed to lower their environmental impact. Management recognizes that leadership comes with responsibility, and they are committed to governance standards including compliance with international standards and national laws as well as their own internal

ethics, values, and guidelines.[11] Their values are based on respect for people, cultures, environment, and the future of the world. As we can see from this example, sustainability at Nestl**é** is holistic and meets the broad-based economic, environmental, and social criteria outlined by RobecoSAM, including standards to address corporate governance, ethics, risk and compliance, and human capital development.

Sustainability goes beyond environmental stewardship and energy efficiency projects; it is a strategic approach that fundamentally changes the mission and vision of an organization. In order to effect this transformation, the sustainability champion, the person tasked with driving sustainability within an organization, must understand how her organization defines value creation and then develop a sustainable strategy that aligns with that value creation process. In the Nestl**é** example, 10 principles of business operation are used across global operations and provide the foundation for "Creating Shared Value."

Nestlé's 10 Principles[12]

1. Nutrition, Health and Wellness
2. Quality Assurance and Product Safety
3. Consumer Communication
4. Human Rights
5. Leadership and Personal Responsibility
6. Health and Safety
7. Customer and Supplier Relations
8. Agricultural and Rural Development
9. Environmental Sustainability
10. Water

These principles have been distributed to employees around the world and have been supported by employee education and training programs. Projects, programs, and people are evaluated on these principles in the areas of impacting consumers around nutrition, quality and communications, human rights and labor practices, leadership, personal responsibility, health and safety, supplier and customer relations, and the environment including water. In order to track performance to plan, key performance indicators (KPIs) are selected and tracked. Nestl**é** is committed to sustainable strategy and has transformed its operation to embed these principles into its core operation. Understanding the concepts of sustainability is important for project managers, program managers, and portfolio managers as they are well positioned within the organization to drive adoption of sustainability principles and standards into an organization.

1.2 History of Sustainability

The definition of sustainability traces back to the Brundtland Commission, which defined the concept of sustainable development as "to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs."[13] In 1983, Javier Perez Cuellar, the Secretary General of the United Nations, asked Gro Harlem Brundtland, a medical doctor and former Prime Minister of Norway, to become the Chairwoman of the World Commission of Environment and Development (UNWCED), widely known as the Brundtland Commission after its first Chair. The Commission's publication of its report, *Our Common Future,* in April 1987 has provided the framework

for the conversation on sustainable development and the foundation for future global summits such as Earth Summit/UNCED in 1992, the UNCED conference in Johannesburg, South Africa, in 2002, and the UNCSD conference in Rio, Brazil, in 2012. The concept of the triple bottom line was based on the Brundtland report's three pillars—environmental, social, and economic considerations.

As the Brundtland Commission was forming, nations around the globe were facing many environmental and social challenges as well as a diverse and divergent socioeconomic world. While strides had been made in terms of life expectancy, infant mortality, literacy rates, and per-capita food supply, the world still faced many challenges, such as poverty, population growth, urbanization, future economic growth given finite natural resources, and continued food security.[14] In addition, the commissioners were witnesses to numerous natural and man-made disasters that helped form their foundational beliefs. The following is a partial list of environmental and social catastrophes mentioned in the report that occurred from 1984 through 1987, between the formation of the commission and the issuance of its final report.

- In Africa, a drought-triggered, environment-development crisis killed 1 million and put 36 million people at risk.
- In Russia, the explosion of the Chernobyl nuclear reactor created nuclear fallout across Europe.
- During a warehouse fire in Switzerland, the Rhine River was polluted with chemicals, solvents, and mercury, killing millions of fish and threatening drinking water in Germany and the Netherlands.
- Globally, diarrhea from unsafe drinking water and malnutrition was responsible for the deaths of approximately 60 million people, the majority of whom were children.[15]

Reacting to their own experiences and these tragedies, it was apparent to the commissioners that significant change needed to take place in how we were developing the world and using its resources. In addition to the environmental and social challenges facing the globe, there were economic issues such as valuing natural capital used in production processes. While global society had generated economic gain, natural resource utilization fell into a paradigm of 20% of the countries utilizing 80% of the natural resources. This model is unsustainable as the Earth's population continues to grow. For all of the people of the globe to coexist, we were going to need to rethink our policies, processes, and priorities around resource distribution.

Despite the enormous challenges facing the commissioners, they believed that as a society, we would be able to utilize our human capability of innovative thought to create new technologies and solutions to address the global challenges of today and tomorrow. They said:

> Human progress has always depended on our technical ingenuity and a capacity for cooperative action. These qualities have often been used constructively to achieve development and environmental progress: in air and water pollution control, for example, and in increasing the efficiency of material and energy use. Many countries have increased food production and reduced population growth rates. Some technological advances, particularly in medicine, have been widely shared.[16]

The members of the Brundtland Commission believed that, through government, business, and NGO cooperation and partnerships, solutions could be developed to meet global challenges. In the years since the publication of *Our Common Future,* there have been a host of conferences, summits, and meetings to help the world better address the environmental, social, and economic challenges to our global society. In 2012, the UN Conference on Sustainable Development met in Rio de Janeiro, Brazil, to outline a proposal for "The Future We Want." While the attendees found that substantial progress had been made, the path to sustainable development continued to be fraught with numerous obstacles. In their report, eradicating poverty remained the greatest global challenge. In order to address these

global challenges, the UN has called for increased collaboration among governments, NGOs, and the private sector. In addition, the UN recognized the importance of sustainability reporting and encouraged large public companies to integrate sustainability reporting into their reporting cycle.[17] In order to achieve the transformative global changes originally envisioned by the Brundtland Commission and subsequent meetings of the UNWCED, corporations need to partner with NGOs, academia, and governments to develop solutions that ensure long-term success of both the corporation and human society. While large corporations have been called upon to lead the initiative, small and mid-size organizations must take up the sustainability mantle in order to create the desired global sustainability impact.

1.3 Sustainability in Business

Businesses significantly impact natural and social capital through their global operations. Management's view on the importance of sustainability as a core strategy in their business has a significant impact on their success in preserving and enhancing natural, social, and human capital. Table 1.1 highlights corporate sustainability statements from a selection of companies named as industry leaders in the 2013 Dow Jones Sustainability Index (DJSI).

These firms are industry leaders, and they have adopted sustainable strategy as part of their core mission and values. They view sustainability as a way to create competitive advantage and to better manage their organizations. Their visions of sustainability are holistic and include environmental, social, and economic impacts. Alcatel, SAP, and Roche Holding specifically cite the use of technology and innovation as a tool to assist in the process of addressing challenges such as poverty, environmental protection, health and wellness, living standards, and socioeconomic disparity. While guiding current decisions, these statements are forward thinking and represent management's plan for future value creation. These visionary sustainable strategies seek to address significant global challenges using their own expertise and technologies while creating value for their more traditional stakeholders, such as shareholders, employees, and clients. In short, they are following a path for innovation and change that was originally envisioned by the Brundtland Commission.

Table 1.1 Corporate Vision of Sustainability: Selection of 2013 DJSI Group Leaders[18]

Company	Industry	The Company's Vision of Sustainability
Alcatel-Lucent	Technology hardware & equipment	"Our vision is to make communications more sustainable, more affordable and more accessible in line with our company's industrial focus on 'The Shift Plan.' The goal is to increase the capacity and reach of communications technology, making it more accessible and affordable for users worldwide."[19]
SAP AG	Software & services	"Our mission is to help every customer become a best-run business. We do this by delivering technology innovations that address the challenges of today and tomorrow without disrupting our customers' business operations."[20]
Roche Holding AG	Pharmaceuticals, biotechnology, & life sciences	"We use innovations in science to drive research and development of medicines and diagnostics that address some of medicine's most pressing challenges. At the same time, we must also deliver sustainable growth and value for our stakeholders, be they employees, investors, society or patients."[21]
Citigroup Inc.	Diversified financials	"Integrating environmental sustainability into our core business generates value for our clients, customers, communities and our firm."[22]

As indicated in Table 1.1, Alcatel-Lucent is seeking to bridge the digital divide by improving education and socioeconomic standards of those in less developed countries through new technologies. Through this process, Alcatel creates shared value for both itself, by identifying new markets and developing new solutions, and for the countries in which it operates, by raising living standards through education and access to technology. Each of these vision statements guides its organization forward through planning, creating, and implementing strategic change, further driving sustainability into their organizations.

1.4 Social Capital

Social capital includes issues such as the health and wellness of the population, education access and quality, safety and crime, community citizenship, human rights, standard of living and poverty rates, child labor, diversity and inclusion. In order to better understand social capital from a company perspective, we will analyze SAP's sustainability vision and how it relates to social capital. SAP's vision includes using its own innovation and expertise to develop new technology and solutions for its clients and prospective clients, including fast-growing emerging markets.[23] In order to build relationships within the developing world, SAP collaborated with PlaNet Finance, a NGO, to address poverty in Africa. This voluntary collaborative project dovetails with SAP's core business strategy to develop innovative solutions for customers. It also allows SAP to maximize its investment in human capital by driving employee engagement through meaningful volunteer opportunities.

Ghana, an impoverished West African nation, is a significant grower of shea nuts and producer of shea butter for use in cosmetics. In order to improve the standard of living in Ghana, SAP formed a joint venture with PlaNet Finance in 2009. The program was designed to provide a better business model to 1500 women who farm shea nuts and produce shea butter in Northern Ghana. Through the use of education, mobile technology, and microfinancing, the women were able to improve their processing techniques, purchase better equipment, maintain inventory, and gain access to the global market. Using cell phones, they have real-time access to market prices, allowing them to hold and then sell their shea butter to end users at the best price. In the past, they were subject to selling at below-market price to middlemen. Income levels of these women have risen 82%. The quality and stability of supply has also improved for the cosmetic companies that use the shea butter in their products. This venture has grown into a self-sustaining business serving over 10,000 women, and their StarShea network has become a worldwide market leader of organically produced shea butter.[24] More information about the StarShea Network program is available at http://www.sap-tv.com/video/#/7334/sustainable-business-in-ghana.

While the project has been a resounding success from the perspective of Ghanaian women, it has also benefitted SAP. This opportunity allowed SAP to develop innovative solutions using cloud and mobile technologies to meet the needs of other high-growth emerging markets, such as 500 million small farmers in developing countries who face similar challenges. From a human-capital perspective, this venture improved employee engagement and provided an opportunity to develop employee skill levels through 2000 volunteer hours and highly coveted fellowships.[25]

Management has embraced the concepts of sustainable development as a means to create value for their stakeholders through developing an innovative solution to meet global challenges of poverty and the digital divide. Using their products, skills, and expertise, they have aligned their business and sustainability strategy to address global challenges while creating and furthering their core business mission.

1.5 Natural Capital

Interestingly, it was the advent of space exploration that made us more aware of our own planet's natural resources. From the photos sent back of Earth, we gained a new perspective on its role in the planetary

system, and we saw that Earth is dominated by interconnected natural systems such as oceans, clouds, mountains, deserts, and plains.[26] As a global society, we began to think about the impact of human activity on these natural ecosystems. We saw the interconnections of waterways and began to understand that in a watershed, each upstream farmer and factory impacts those communities downstream. We all depend on the Earth's resources for our survival, yet the distribution and usage of global natural resources is uneven between developed and developing nations.

Part of the Brundtland charter and those of subsequent UN conferences was to discuss a unified approach for sharing common space such as land, rivers, oceans, air, and space, and to address environmental stress as a source of conflict. A social problem such as poverty can lead to an environmental problem such as land degradation, as people misuse resources in an attempt to raise their living standard. Poverty and land degradation move in tandem. This concept is known as "the tragedy of the commons."

The Tragedy of the Commons

In 1968, Garrett Hardin wrote an article referring to "the tragedy of the commons," in which he highlighted the opposing interests of individuals and the long-term collective good of the group. The traditional example is a finite pasture area that is available to the community for shared grazing. If each household has 1 cow, the grassland is sufficient to support the community herd. Everyone's standard of living is relatively the same. However, a family that is, somehow, able to afford to have 2 cows on the pasture will have a higher standard of living through more milk production, meat, and additional calves to sell. If others in the community see this improved living standard and also add a second cow, the demand on the shared pasture will increase. As this process unfolds, the pasture eventually cannot support the additional grazing cows. The community loses the pasture, reducing everyone's standard of living.[27]

A short YouTube clip depicting the inherent conflict can be found at https://www.youtube.com/watch?v=MLirNeu-A8I.

With open-access resources such as rivers, oceans, and air, it becomes very difficult to limit resource utilization. All parties are trying to maximize their own standard of living. If they do not seek to exploit the shared resource, someone else will. The traditional resolution has been either public or private ownership of open-access resources, but this remains a problem in globally shared resources such as oceans.

In order to feed expanding populations in the mid-twentieth century, governments around the globe created favorable policies, loans, and subsidies to support the expansion of large industrial fishing fleets, which supplanted smaller local fisherman. By 1989, we were taking 90 million tons of fish from the oceans. Since then, fish yields have been declining. Combining overfishing with pollution, climate change, and increasing acidity of the oceans, this once-abundant resource is projected to collapse by 2048.[28] Scientists believe that fisheries can be saved through better global fishery management, enforcement of laws governing catches, and improved aquaculture. Stocks of some species, such as bluefin tuna, are already collapsing. Greater international cooperation is needed among businesses, governments, and NGOs to meaningfully address this marine "tragedy of the commons." As organizations develop their long-term strategies, these are the types of challenges and risks that need to be addressed as part of the planning process.

1.6 Megatrends

As management teams create strategies to navigate an ever more complex global economy, they need to consider major trends that are developing in their competitive marketplace. Some of these "megatrends"

Table 1.2 Megatrends[29,30]

Megatrend	Highlights
Population growth and demographic changes	Growth of the global middle class Population growth in developing countries Increased governmental regulation Aging population in developed countries
Increased urbanization	Increased population density in urban areas Increased need for infrastructure for power, water, and services Change in delivery and usage of products and services
Climate change	Property damage and operations interruption from storms and flooding Loss of habitat and biodiversity Melting ice caps Food production limitations Rising sea levels
Natural resource scarcity	Commodity price volatility Global hot spots Regional instability and war Water scarcity Increased government regulation
Global interconnectivity and technology	Global events & news available 24/7 Social media Innovation and new solutions Transparency "Internet of things" Ubiquitous cell phones Digital divide Cyber attacks vs. traditional warfare
Increased stakeholder interest in sustainability	Investors' desire for environmental, social, and governance (ESG) information Consumers' desire for green products and services Millennial generation sustainability "hot button" NGO watchdog activities Increasing governmental regulations and standards Shifting global power

are listed in Table 1.2. Growth in population and income in the developing world is creating opportunities for those corporations that are creating value-added sustainable solutions to serve these expanding middle-class populations. Challenges also are increasing with increasing risks from weather-related damage and disruption, raw-material limitations, and growing investor concern about sustainability issues. There are many management teams like Kodak's, who misread megatrends such as the impact of innovation and technology, making their products and services obsolete. Leading management teams are embracing sustainable strategy as a framework for long-term planning in order to maximize opportunities and mitigate the threats posed by these megatrends.

The balance of the chapter takes a deeper dive into megatrends and the potential impacts for governments, organizations, and society.

1.7 Natural Resource Scarcity

Global conflict continues to arise over use of international commons such as oceans, especially concerning access to natural resources. Because of growth in its population and economy, China's demand for energy and food has grown. It has become increasingly aggressive in claiming rights to shared resources

in the South China Seas. In 2012, Chinese naval ships fenced off one of the most abundant fishing grounds near the Philippines.[31] In the spring of 2014, China towed an oil drilling rig accompanied by military aircraft and ships into a disputed area of the South China Seas. Vietnam disputed China's right to drill for natural gas in the area, which is close to their coast, and tensions escalated between the two countries. Reaction moved beyond the normal governmental diplomatic discourse. The Vietnamese people responded violently to China's actions by rioting against factories they thought were owned by Chinese nationals. The violence spread to other factories. To control the rioting, the government of Vietnam had to send in police and troops.[32]

Shared access to limited resources remains a difficult global challenge, but one to which we must find a solution in order to facilitate a future of economic prosperity and global stability. International conflict, trade disputes, embargoes all impact an organization's ability to conduct business on a global scale. Potential risks arising from conflict over natural resource scarcity need to be incorporated into an organization's risk management plan and risk response strategy.

Because of acts of aggression stemming from natural resource limitations, we are experiencing an increase in governmental intervention and regulation. The Democratic Republic of the Congo (DRC) has been an area of conflict and abuse of human rights. Militias have used forced labor for extraction of rare earths to fund their military actions. In order to stem the flow of funds to these groups, the U.S. Congress drafted the Conflict Mineral Declaration required under Section 1502 of the Dodd-Frank Act. As part of the legislation signed into law by President Obama in 2010, public companies must report to the U.S. Securities & Exchange Commission (SEC) on the source and usage of conflict minerals such as tantalum, tin, gold, or tungsten originating from the Democratic Republic of Congo (DRC) or adjoining countries in their supply chain.[33] The purpose of the act is to reduce funding of violence in this region and to encourage responsible sourcing by U.S. firms. Going forward, additional governmental regulation is anticipated in order to provide frameworks to allocate natural resources more justly and equitably. Many firms have been challenged by this legislation because of their complex, global supply chains. Projects have been undertaken to identify and track the source of these materials through a complex supply chain. Intel has emerged as a leader on conflict mineral identification. It has gained a competitive advantage by being able to produce the first conflict mineral–free microprocessor. By strategically addressing this regulation and its supply chain complexity in a transparent manner, Intel has gained this competitive advantage in its marketplace. A video about Intel's assurance of conflict-free minerals in their microprocessors can be accessed at https://www.youtube.com/watch?v=HZDsNXtM-rk.

As natural resources become scarcer, prices become more volatile and supply becomes increasingly uncertain for companies. Remaining reserves are in locations that are more difficult and costly to access. As a result, organizations are becoming increasingly interested in raw material and component reclamation, recycling, and reuse, as the source of supply is often less expensive and more stable. As a result, product life cycles are moving from a linear to a circular plan, whereby resource utilization is maximized and waste creation is minimized. As future programs and projects are proposed, natural resource utilization will need to be considered from the design, sourcing, reclamation, and end-of-life disposition perspective. In order to address resource limitations, the process of new product and service development, manufacture, and distribution will need to change.

1.8 Climate Change

According to the U.S. Environmental Protection Agency (EPA), the Earth's average temperature has rise 1.4 degrees Fahrenheit over the past century and is expected to rise another 2 to 11.5 degrees over the next century. Global warming is primarily attributable to higher levels of greenhouse gases (GHG) trapped in the atmosphere. Human activity has been the major source of GHG emissions. Although

we may not all agree on the severity of the issue of climate change, it is important to understand how researchers view its impact on our air quality, ecosystems, and biodiversity. Rising global temperatures have been tied to changes in rainfall, which have caused flooding, droughts, and severe storms. Climate change includes not only changes in temperature but also changes in precipitation and wind patterns. Ice caps are melting, sea levels are rising, and oceans are becoming more acidic.[34]

What Are Greenhouse Gases?

Greenhouse gases are gases that trap heat in the atmosphere. Scientists believe that they are a major cause of global warming. Major components include:

- Carbon dioxide (CO_2)—A by-product from burning fossil fuels
- Methane (CH_4)—Created by livestock and other agricultural processes and the decaying of organic matter
- Nitrous oxide (N_2O)—Emitted from agricultural and industrial activities and the burning of fossil fuels and waste
- Fluorinated gases (SF_6, HFC, PFC)—Synthetic gases created in industrial processes[35]

Changing temperatures and rising sea levels are impacting ecosystems and the biodiversity of plant and animal species. According to a recent study by the World Wildlife Foundation (WWF) in conjunction with the Zoological Society of London and several other groups, Earth has lost half of its wildlife in the past four decades. The decline has been seen across habitats and has been attributed to climate change, habitat destruction, commercial fishing, and hunting. The fastest declines have been in rivers and other freshwater ecosystems. From a geographic perspective, Latin America has seen the most significant decline. It experienced an 83% decline in overall population of wildlife.[36] Based on this research, human consumption of natural capital is outstripping the natural world's ability to regenerate itself. Current estimates are that we would need the resources of 1.5 Earths to supply the annual usage of natural goods and services. According to Carter Roberts, CEO of the WWF, "As we lose natural capital, people lose the ability to feed themselves and to provide for their families-it increases instability exponentially."[37] Without these species, we no longer have them in the mixture of the Earth's interconnected life system. A less diverse biosphere provides less opportunity to discover new solutions to our global health and food security challenges.

The most common measure of greenhouse gas (GHG) emissions is CO_2e, carbon dioxide equivalent. Total GHG emissions for the United States in 2012 were 6525 metric tons of CO_2e. As indicated by Figure 1.3, carbon dioxide represents the largest component of GHG emission at 82%. Figure 1.4 identifies the largest producers of GHG emissions by source. Generation of electricity creates the most significant impact. Gaining an understanding of the source of emissions is the first step toward addressing the issue.

Burning of fossil fuels is the largest contributor of carbon emissions in the United States, followed by the combustion of gasoline and diesel to power cars and trucks. The United States experienced a 5% rise in CO_2 emissions from 1990 to 2012, due primarily to fossil fuel consumption. In 2012, the International Energy Agency (IEA) predicted that average temperatures would rise 6 degrees Celsius by the end of the twenty-first century given the current trajectory.[40] Based on a report released by DARA, a humanitarian organization, the cost of air pollution and global warming is currently 1.6% of global Gross Domestic Product (GDP) and is anticipated to rise to 3.2% by 2030.[41] The most significant drain is on the economies of the developing nations. According to former Bangladesh Prime Minister Sheikh Hasina, a 1 degree Celsius rise in temperate is a associated with a 10% loss in farming

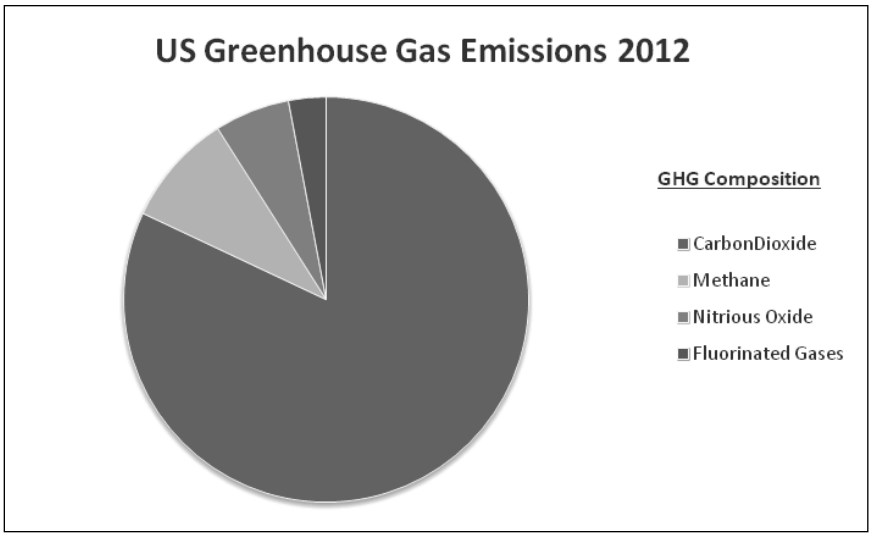

Figure 1.3 U.S. 2012 Greenhouse Gas Emissions by Type[38]

productivity, which equates to about 2.5% of the 2012 Bangladesh GDP.[42] The impacts to developing economies can be significant, driving up prices and reducing availability of life essentials such as food and drinking water.

From an organizational perspective, climate change increases physical, operational, and investment risk. In 2014, the Carbon Disclosure Project (CDP), an organization that gathers climate change–related information from public companies on behalf of their institutional investors, reported that S&P 500 firms were reporting higher actual and projected costs associated with facility damage, operation disruption, lower product demand, loss of productivity, and increased operating costs, owing to storms, flooding, and drought related to climate change.[43] Risk related to climate change is being considered as part of the risk management plan for these leading firms.

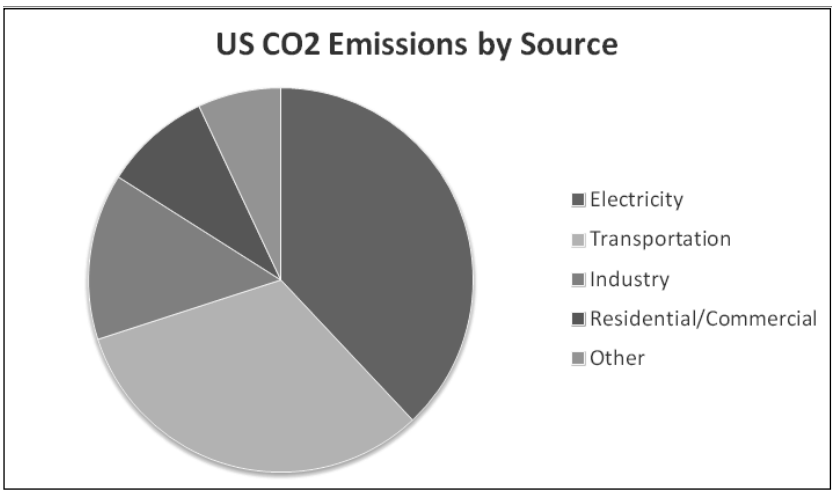

Figure 1.4 U.S. 2012 CO_2 Emissions by Source[39]

1.9 Population Growth, Urbanization, and Demographic Change

By 2050, the world's population is expected to grow 38%, from 6.9 billion in 2010 to 9.6 billion in 2050, with most of that growth occurring in developing nations.[44] The challenge is to provide an environment in which all people are living well but within the constraints of Earth's resources. Approximately half of the world's population is currently living in urban environments, and that number is predicted to grow to approximately 66% of the population living in an urban setting by 2050.[45] For fast-growing cities such as Mumbai, India, challenges will include adequate infrastructure, affordable and ecologically sound housing, energy, waste management, education, and social services. By 2030, the global middle class in low- and middle-income countries is expected to triple, from 400 million to 1.2 billion.[46] As people move up the economic ladder, they consume more resources on a per-capita basis. Demand for labor-saving devices such as washing machines and cars increases. Food preferences change to include more meat in the diet, and energy usage rises. All of this consumption leads to more demand for scarce natural resources and higher GHG emissions. While the growth in population will create many resource allocation challenges, it also creates opportunities for businesses to develop new products and services to address these challenges.

Infrastructure development will be a major growth area in the developing world. Concrete is crucial to constructing roads, bridges, and buildings, but its manufacture and distribution have a significant environmental footprint resulting from raw material mining and high natural resource usage rates. As we discuss in Chapter 4, the Canadian concrete industry has undertaken an analysis of its environmental footprint to reduce its impact while continuing to meet growing demand for concrete from the developing world. Business has tremendous opportunity to rethink its products and services and to deliver value while protecting natural and social capital.

Most interesting is the changing demographics of the population. Across the globe, the population is aging. By 2050, people age 65 and over are expected to reach 1.5 billion compared to 532 million in 2010.[47] The average age in the developed countries is anticipated to rise because of lower birth rates. The majority of the population in Japan, South Korea, and Germany will be older than 50.[48] Also, the average population of Latin America is anticipated to age more rapidly than that of the United States by mid-century.[49] As a result, the need for goods and services in these countries will skew toward those sought by an aging population, such as health care. Also, the working-age population will experience increased pressure to allocate more earnings to support a larger percentage of dependents than in developing countries such as India. Africa's population is expected to grow the most and will ultimately make up the largest portion of the global population, offering great opportunity to the business community to deliver products and services to this expanding market. European and Asian populations are expected to decline, and populations in the Americas are projected to remain constant. Projections suggest that India will become the most populated country, surpassing China, and further increasing its needs for goods and services.[50]

Malthusian Catastrophe

In the eighteenth century, Thomas Malthus wrote *An Essay on Population,* in which he predicted that population would grow to the level supported by food supply limitations. And then the population would be kept in check by the natural world's limitations. His premise was that the population grows at an exponential rate and the food supply increases at an arithmetic rate. Once the population exceeded the sustainable level, civilization would collapse into famine, war, and disease. Of additional concern to Malthus was a society that approached the unsustainable point in terms of the marginal lifestyle for the vast majority and their inability to improve their lifestyle. This point of unsustainable human expansion is known as the "Malthusian catastrophe."[51]

We are several centuries beyond the eighteenth century, and we have experienced continued improvements in life expectancy, food security, and infant mortality in both the developed and developing worlds. So what happened? We innovated and created new technologies to increase food production per acre through the use of fertilizer, labor-saving machinery, irrigation, and improved seed. While we are facing a world of real limitations, we do have the power to make the Earth a place to provide a quality standard of living for both today and into the future. It requires us to think differently about our limited resource pool and how we can reduce, reuse, recycle, and innovate to preserve our Earth for future generations.

1.10 Global Connectivity and Information Transparency

Information moves around the globe instantaneously. By the end of 2014, the number of cells phones was predicted to reach 7.3 billion globally, which means there are now more cells phones than people.[52] Many users have more than one device in order to maximize their connectivity options. Governments, not-for-profits, and businesses can no longer confine information internally. If something happens in a factory in Bangladesh, the world is aware almost immediately via text, video, and photos. For companies with supply chains around the world, this means being better informed about the practices of your suppliers and setting safety and labor standards through the use of a supplier code of conduct. Transparency and full disclosure are the new norm. From a brand perspective, a company can be accused of "greenwashing" if its environmental and social marketing claims are not supported through actual operational performance and transparent reporting. Using social media, watchdog groups can quickly disseminate information on greenwashing, causing damage to the brand of the targeted organization.

As demonstrated in the SAP joint venture in Ghana, the use of mobile technology and an innovative financing structure creates new opportunities for businesses to bridge the challenges of the digital divide. Global connectivity has the potential to improve health and living standards and to deliver solutions to remote locations. The "internet of things" provides new ways for devices and infrastructure systems to communicate, thereby optimizing operational efficiency. One example is having smart garbage cans that are tagged to send data on the fullness of the can. Logistic software can then design a pick-up route to maximize efficiency and reduce fuel usage and GHG emissions by the garbage truck fleet. Governments, institutions, and companies are seeking to innovate to zero in terms of emissions, worker health and safety incidents, and product safety issues. Innovation continues to create adaptive technologies such as wastewater reclamation, water desalination, and on-demand floodgates to meet the challenges of a changing world. Organizations that develop solutions to global challenges create long-term opportunities for value creation.

While technology and innovation can help address many of our resource limitations, they introduce additional risk. Along with greater connectivity comes the increased likelihood of cyber attacks. Some predictions are that cyber attacks will be the next generation of warfare. While big data, technology, and interconnectivity provide solutions to complex problems, they also introduce another layer of both positive and negative risk into the project management process.

After a series of high-profile data breaches such as the one that involved Target having 40 million credit and debit card numbers compromised by hackers, corporate boards are taking the risk of cyber attacks seriously. Approximately, 1500 companies listed on the New York Stock Exchange (NYSE) and the NASDAQ exchanges include cyber-threats as a component of risk management. Boards have enacted a variety of actions, ranging from adding new board members with technology backgrounds to creating new roles such as Information Security Officer. Data security changes include additional governance, policies, protocols such as data encryption, and training of employees.[53] While the "internet of things" can provide innovative solutions to sustainability problems, it also introduces new risks and challenges. The risk of cyber attack needs to be part of the risk analysis, and project managers must ensure that their resources have been educated on the issues and well trained to follow protective protocols.

1.11 Stakeholder Interest in Sustainability

Stakeholders including investors, customers, regulators, communities, and NGOs see the value of sustainable strategy to an organization. From an investor viewpoint, management teams that take this holistic view are thought to be better managers, producing better results through opportunity maximization and risk minimization. Consumers are increasingly demanding more sustainable products and services as they seek to achieve their own sustainability and business goals. Increasingly, employees are seeing sustainable organizations as employers of choice. The Millennial generation, in particular, is focused on purpose-driven employment and is looking for opportunities to have an impact on the environment and society through their employment.[54]

1.12 Portfolio, Program, and Project Management Impact

In order to address global megatrends through the adoption of sustainable strategy, an organization must begin its sustainability journey. Adoption of sustainable strategy involves transforming an organization's values, mission, and priorities to realign its strategic focus on sustainable business strategy. Transforming an organization requires a comprehensive sustainability program designed to deliver strategic benefits through portfolio component identification, selection, and implementation. Project management professionals are well positioned to facilitate this change process utilizing project management methodologies. Following a project management approach helps to frame the material issues and provide rigor and structure to the sustainability transformation process. Organizations with mature project management standards and processes have an advantage in adopting sustainable strategy.

From a project management perspective, the relevance of sustainability is pervasive and can impact each step of the project management process. From initiation through closing, sustainable concepts impact all aspects from developing the business case and understanding the stakeholders to planning each phase. Projects, not just green projects, require greater project manager awareness of organizational sustainability principles and best practices around requirements for design, materials, risk, quality, procurement, production, and logistics. In addition, benchmarks such as water usage, waste diversion, energy usage, or percentage of minorities in leadership roles will increasingly be part of project metrics. From a leadership perspective, managing a project in a sustainable organization impacts many important basic aspects of the business, including stakeholder engagement, communications, risk management, and governance requirements for your team and key business partners. By the very nature of their role, project management professionals help embed sustainable strategy into the fiber of the organization.

From a program management viewpoint, sustainable strategy can provide benefits to all projects, not just so-called green projects, through improved resource utilization, stakeholder engagement, and collaboration. As an organization moves forward on its sustainability journey, project requirements, deliverables, and metrics align with sustainable business goals and targets. Areas such as stakeholder engagement, procurement management, benefits management, and risk management are impacted. Program management office (PMO) standards and templates incorporate sustainability requirements to ensure that projects and programs reflect the organizational vision. Through providing best practices and sharing lessons learned, the PMO facilitates the process of supporting programs and projects that further embed sustainability within the organizational culture. Through embedding sustainability, management seeks to improve projects, processes, and outcomes while ensuring that their organization is a better steward of natural and social capital, preserving them for future generations.

Program directors and portfolio managers identify, evaluate, and recommend projects based on criteria that align sustainable and corporate strategy. Allocation of scarce organizational resources is always a challenge, and portfolio managers are integral to determining a project's alignment with corporate sustainability vision. The adoption of sustainable strategy creates opportunity for practitioners of