1

WHAT IS SUSTAINABILITY?

What is sustainability?

Sustainability is a measure of whether (or to what extent) a process or practice can continue. This is a very general characterization. People flesh it out in many ways. The process or practice can be very ordinary, such as going to the grocery store to do your weekly shopping. Or it can be exceedingly complex and comprehensive: the entire system of production and exchange that makes up the global economy, for example. Sometimes you can measure how long or to what degree something can continue by collecting data. Other times, you just estimate whether something is sustainable, making a seat-of-the-pants kind of judgment. One way or another—whether precisely or generally—people can analyze sustainability for an exceedingly large number of different activities. We can assess the sustainability of a particular farming method or of the entire food sector. We can determine the sustainability of one particular building or architectural design, but we can also look at the built environment for a city. Given the right data and theoretical tools, one can evaluate the sustainability of a company's business practice or an entire sector of the economy. Specialists can compute ratings for the sustainability of alternative types of packaging and even apply the concept

to natural processes, such as a population of organisms or a volcanic eruption.

While people talk meaningfully about the sustainability of many different processes or practices, in this book we emphasize sustainability of systems. Big systems, like the economy or a regional ecosystem, are composed of smaller-scale practices that affect one another. Trying to understand how they fit together leads one to think about connections and connectedness. Or to put it another way, it leads us to understand seemingly isolated and unconnected activities or processes as occurring within a system. The answer to questions about whether any process or practice can continue depends on the larger system in which it is embedded. Continuity of the smaller systems it depends on also matters. This has led people who focus on the sustainability of a business enterprise, a community, an ecosystem, or a way of life to develop a general approach to systems thinking: conceptualizing things in terms of the larger and smaller systems on which they rely and probing the ways in which seemingly disparate activities and happenings are connected to one another.

The flexibility with which systems can be described leaves some people dazed and confused. One person may have a very narrow understanding of a given practice or process, while someone else may understand it more broadly. If one car gets better gas mileage than another one, for example, it can be said to be more sustainable because it goes further on a gallon of fuel. But some would say that *any* combustion of fossil fuel is unsustainable because our supply of petroleum is finite and will eventually run out. Even more generally, the idea of sustainability has been advanced as a broad, comprehensive social goal over the last four decades. In this sense, people are thinking about a large interconnected set of practices that are fundamental to our current way of life, and sustainability is a measure of whether (or to what extent) that way of life can continue. If this larger social context is what someone has in mind, the sustainability of a more specific practice or process

(such as driving a car with low or high gas mileage) has to be assessed in terms of whether it promotes the continuance of a particular way of life or inhibits it.

Getting a handle on what makes a particular practice sustainable is useful for people who have an interest in it. Yet sustainability would not have become a buzzword except for the way that it often implies something about the totality of practices and processes on which everyone depends. This is the sense in which sustainability is a *big idea*. To get a handle on sustainability as a big idea, one must imagine all the different meanings and activities associated with the way people live today and then ask how they connect to form a total system of practices and processes. Like most big ideas, what any given individual thinks is important reflects that person's experiences and life goals. When people start to think about things that connect to our way of life, they start from different places. Differences among individuals' starting points—their experiences and life goals—explain much of the disagreement about what sustainability is.

If everything is interconnected with everything else, where do you start?

This is a challenge. You could say that it doesn't matter much where you start in systems thinking, because thinking through connections will eventually lead you to consider the larger context. But choosing a starting point is important for launching a conversation (or writing a book) because the entry point into sustainability that is obvious for one person will seem obscure (or boring) to someone else. We (or most of us) care deeply about the continuation of *some* things that can be understood in systems terms: the company we work for, the community we live in, the church we attend, the forests and streams where we like to hike, camp, or fish. But people may not immediately consider how all these things are connected to each other or how continuing one of them might affect another. Some people

do think comprehensively about the earth as one big system, but the planet earth may continue even as places and institutions within it that other people care about vanish. However, you can learn a lot about the principles of sustaining a church, a community, or a favorite natural area by examining what it takes to sustain a business—or at least that's the premise of our book. We start by thinking about what it takes to sustain a business. Getting the hang of these principles is what we, your authors, think everyone should know about sustainability.

Is sustainability always about the environment?

As will become clear when we start to look at some examples, many processes and practices draw upon natural resources or depend upon services produced by the earth's ecosystems. It would be meaningless to estimate the sustainability of such practices without taking their use of and effects on natural systems into account. What is more, much of the impetus for interest in sustainability derives from growing awareness of natural resource depletion and damage to the quality of the water people drink and the air that people breathe. Sustainability is, in many people's minds, primarily defined in terms of environmental impact.

Yet there are other ways in which people evaluate sustainability that are only indirectly related to the environment. As will become clear later, part of the reason sustainability became a watchword in international politics was that poorer countries were resisting global initiatives to constrain economic development in the interest of environmental protection. They were more comfortable with the idea of *sustainable development* precisely because they saw this notion as recognizing the priority of meeting crucial human needs. Even more generally, the sustainability of some practices depends on whether they have a secure financial base. When administrators in government, universities, charitable foundations, and other large organizations ask whether a new program will be sustainable,

they are often interested in whether it will generate an ongoing source of its own financial support (through user fees or client payments, for example). If they will have to keep putting more and more money into it in order to keep it going, they will judge the program unsustainable. So, despite widespread suppositions to the contrary, there are many ways in which sustainability is *not* just about the environment. It is a concept applied to evaluate the regenerative capacity of many different processes, including some that have little relationship to natural resources or ecosystem services.

Is sustainability primarily about climate change?

Many people who started with a concern for environmental quality are now shifting their focus to the way that greenhouse gas emissions threaten permanent changes to earth's climate. There is little doubt that changes to average temperature and concomitant effects of melting in the polar icecaps are already affecting the stability of many global ecosystems and threatening the lives of wild species. Farmers are struggling to cope with these changes, and if predicted shifts in rainfall, drought, and temperature materialize, the planet's ability to provide enough food for its human population will be challenged in a matter of a few decades. Effects of this kind certainly sound like problems for sustainability. Some authors have placed this concern right at the forefront of sustainability thinking.

While we don't doubt the significance of climate change for sustainability, climate change isn't our focus here. If you wish to read about that important topic in the same question-and-answer format we use here, we recommend *Climate Change: What Everyone Needs to Know*® by Joseph Romm, published in the same series as this book. We focus on explaining how the idea of sustainability draws upon more familiar kinds of interconnected processes that can be found in many domains, not just the atmospheric flows that are driving climate change. We hope the answers that we give to questions about

sustainability will equip readers to make connections between the impacts of climate change and dimensions of sustainability that derive from business practice, the challenges of governance, economic development, and other social domains where concepts of sustainability are applicable.

Does progress in the economy, society, and the environment add up to sustainability?

A simple diagram with three overlapping circles is often used to represent sustainability. The circles are sometimes labeled *society*, *environment*, and *economy* or *people*, *planet*, and *profit*. We call this *three circle sustainability.* Sometimes the three domains are described as the three pillars of sustainability, but the idea is the same. As we show in chapter 2, this model may derive from triple bottom line discussions in business. The good thing about this model is that it takes people beyond the environment, suggesting that other areas matter too. But it has weaknesses. First, it can easily be understood to imply simply that efforts to protect the environment have to allow businesses to make profits and people to meet needs. Profitability and social progress are viewed as constraints on environmental sustainability, but not necessarily as activities that can be more or less sustainable in themselves. Second, although it suggests that all three domains must be satisfied, it does not tell us how or even whether they are interconnected. Are there, for example, business practices that feed back to the environment, and do things happening in the environment impact the sustainability of business? The three-circle diagram does not encourage us to think that such connections are crucial for considering sustainability. Third, the tendency to focus on the nexus of the three circles as some sort of sweet spot overlooks the likelihood that sustainability decisions may require significant trade-offs among goals in each domain. Finally, the notion of three domains may wind up being limited. Are taxation and government finance in the society circle or the economy circle?

Or have these practices been left out altogether? What about scientific research, religion, and the arts? Are they adequately accounted for by the term *society*? Although we discuss activities that could be placed within one of these three domains, we prefer to think of sustainability as a way to imagine and evaluate a much broader array of practices and processes.

Is sustainability always a good thing?

The question of whether a process or practice can continue is understood in multiple ways. Someone might think of this as a simple matter of fact: either the practice will in fact keep going, or some limiting factors will cause it to decline, degrade, or come to a stop. Yet sometimes the word *can* implies permission, and saying that one cannot continue to do something means that they will not be allowed to do it. Of course, these two meanings of *can* sometimes conflict with one another. The teacher at the front of the room bangs the desk and says, "This behavior simply cannot continue," while the smart alecks in the back row are saying to one another, "Why not? We can keep it up indefinitely!" With respect to sustainability, this means there is a built-in tension. Conceptualizations that stress the underlying feasibility of the process or practice coexist with those that emphasize its desirability or permissibility. Sometimes, in other words, sustainability reflects a judgment about whether a process or practice *should* continue.

Some highly undesirable phenomena certainly seem to be all too sustainable. War, poverty, disease, and human misery show no signs of ceasing any time soon. Although it is logically possible to ask whether some evil is sustainable in the factual sense of being continued into the future, this is not how the concept of sustainability is used by people who are stressing the goodness or permissibility of continuing. Indeed, when talking about the comprehensive system of practices that supports our general way of life, people typically assume that sustainability implies progress in dampening or eradicating vices

such as prejudice, oppression, or injustice. Here again there are opportunities for disagreement and misunderstanding, because people differ in the way they perceive progressive social goals. This may be a different kind of disagreement than the one arising from different starting points. Some disagreements over the meaning of sustainability have their root in disagreements about what is possible and desirable in social life.

This tension between measuring whether a process can continue and recommending that it should (or should not) continues to pop up in several chapters. We address it directly in chapter 6 in the context of social justice. More generally, we do not recommend tying your idea of sustainability too closely to specific social or ethical goals. On the one hand, the act of promoting sustainability emphasizes the good things people want to sustain. On the other, understanding how evils persist is a prerequisite for change. Someone can use the idea of sustainability to support both types of thinking. In our approach, sustainability is an umbrella term that covers a diverse set of social and natural processes, not all of which are unambiguously good. So no, sustainability is not always a good thing.

Is sustainability a social movement?

A social movement is a large and wide-ranging group action generally intended to bring about significant change in social norms and expectations. The means by which change might be pursued are variable; sometimes they require formal actions by political parties or organizations (such as labor unions), while other times they are informal and occur through changes of attitude. Social movements may—and indeed generally do—encompass a number of mutually incompatible objectives. They are often easier to identify after they are over rather than while they are occurring. Some social movements succeed in achieving key objectives, and others fail. Besides the labor movement, other key twentieth-century social movements include the civil rights movement and the women's movement.

Undoubtedly, some people view sustainability as a program of very comprehensive and even radical social change. However, given our starting characterization of sustainability as a measure of the extent to which any process or practice might continue, it can be applied in many situations that have very little to do with social change. During the first two-thirds of this book, we emphasize concepts and methods that have very wide application and can be (and indeed are being) deployed by actors and organizations that have little interest in institutional change. These include businesses, some of which are very large multinational corporations with a significant interest in maintaining the status quo. In short, we think that viewing sustainability as a social movement suffers from the same problem as assuming that sustainability is always a good thing. It gets in the way of thinking about underlying or more comprehensive systems that support both good things and bad things.

Is sustainability opposed to economic growth?

No. In fact, much of the technical research on sustainability has been developed within the economic theory of growing economies. As we discuss in chapter 5, growth is a key criterion for economic development, but it is not the only criterion. For the time being, it is important simply to recognize that economic growth can take many forms. While some forms of growth can cause the depletion of resources and irreversible damage to earth's ecosystems, other forms of growth use very few resources and actually restore ecosystems. Sometimes growth helps everyone, but other types of growth encourage social instability, warfare, and revolution. The question, then, is what kind of growth we are talking about. A more detailed answer to that question requires some setup discussion on the measurement of growth and its relationship to development. All of that is the subject of chapter 5.

Does sustainability imply a political agenda?

Again, no, though many people who promote sustainability do have political agendas. Very broad definitions of sustainability can be filled in with differing ideological viewpoints, cultural assumptions, and political opinions. Nevertheless, the idea of sustainability is not in itself inherently tied to one political perspective or another. Nor is it subjective or simply a matter of opinion. We recall a friend who, in a discussion with members of a farm organization, was asked whether he supported sustainable agriculture. It was a loaded question reflecting the view that sustainable agriculture is a political attack on mainstream farm practices. Given the context, being critical of mainstream agriculture was not politically acceptable. Our friend responded that he certainly didn't support unsustainable agriculture. The questioner was associating sustainability with a particular political orientation, but he was called up short by the suggestion that he might be advocating unsustainable agriculture. The underlying issue is whether any form of agriculture itself is sustainable rather than the type of food system one supports for political reasons. The lesson here is that thinking about the sustainability of a practice or process has a factual basis, even when there may be sharp political divisions about the practice or process itself.

When we get down to specific cases, it is often possible to identify the underlying structure and requirements of a process or practice and develop genuine insight into what allows it to continue or be reproduced from one period of time to the next. There is no recipe for sustainability that is applicable to every case, but as we move from context to context in this book, we consider ways to ascertain the sustainability of certain practices in a manner that is objective and factually based.

Our friend's answer to the sustainable agriculture question also shows that beliefs about *which* processes or practices should be sustained may indeed depend upon a person's political orientation. The approach we take in this book is to

illustrate some of the ways that methods and criteria have been developed for determining the sustainability of business practices, public policies, and ways in which human beings affect the broader natural environment. In considering these examples, we usually focus on the more factual sense of "can continue." Conceptualizations of sustainability that stress a normative evaluation of whether something should continue are especially inclined to be described as articulating a social goal. In situations where sustainability is being put forward as an agenda for changing social practices in order to make them more fair, just, or equitable, we explicitly indicate that by using phrases such as *social goal* or *justice*.

Is sustainability achievable?

Nothing lasts forever, as the saying goes. There are waggish types who move from that thought to the conclusion that sustainability is a logical impossibility. Yet who said that a practice or process has to continue throughout eternity in order to be considered sustainable? There are many ways to measure how long or to what extent a practice can endure, given its background conditions. There is no reason to think that it is not sustainable just because there is some dramatic change in those conditions. This is the "What would happen if the earth was hit by a comet?" thought experiment. Current thinking is that a mass extinction event occurred when some large celestial object struck our planet about sixty-five million years ago. The climatic disruption led to the extinction of an estimated 50 percent of the species in existence at that time. It is not clear what someone might mean by saying that these extinct species had an unsustainable life process because they did not survive a meteor impact.

Some environmental scientists are predicting that people alive today could see a comparable loss of species diversity within their lifetime. As noted already, some scientific models of climate change include scenarios that would make the planet

uninhabitable by many current life forms (including human beings). Such a dramatic change in the background conditions for life on earth really would render many of the ongoing attempts to be more sustainable meaningless. Religious and philosophical traditions speculate about the possibility of an end time, an Armageddon, an apocalypse, or a return to chaos. In some traditions, these events are viewed positively, while in others they are stages in a recurring cosmic cycle. They always imply that much of what makes our lives meaningful in the present is subject to destruction, upheaval, and desolation. Both scientific and theological-cosmological questions about whether sustainability is achievable thus deserve a response. So perhaps the question is not so silly after all.

We don't presume to address whether sustainability is achievable in such cosmic or ultimate terms. It is still meaningful to examine each step on life's journey and ask whether someone might be damaging the systems on which everyone depends. This points us away from thinking about sustainability as an end point, as something that could be accomplished once and for all. Indeed, what specialists learn from looking at natural systems (in chapter 3) is that they respond to and change with shocks caused by things like earthquakes, hurricanes, or floods. As others adapt this lesson to human systems such as the economy, a household, or a government, one can assess whether these systems seem able to continue and respond to disruption or whether a major shock would threaten their very survival.

Scientific approaches aim to strengthen the integrity of key systems, even as they investigate the potential for their disruption. Theological and philosophical traditions claim that everyone must carry on with our daily lives, that no one should abandon the belief that their life is meaningful. Neither scientific predictions of disruption nor religious speculations on humanity's ultimate fate justify immoral behavior in the here and now. No religious or philosophical tradition has ever held that the eventual end of life as humans know it absolves

people of their duty to do the best they can while the world endures. Continuing our way of life while trying to end the evils that beset us is a responsibility for the present, even *if*, in the end, everything must go. In fact, the thought of apocalyptic collapse reminds us that failures and losses are already occurring. Acknowledging this can help us appreciate that some people experienced the end of their world decades or a century ago. Industrialization and colonial expansion have so thoroughly altered the environments in which many indigenous peoples lived that they think of themselves as adapting to a post-apocalyptic situation. This does not make survival and sustainability any less of an imperative for them, but it should inject a note of humility into those who think of sustainability strictly in terms of saving the world or warding off collapse.

One should not think of sustainability as an endpoint, especially when thinking of sustainability in the "big idea" sense. Some people like to make this point by saying that sustainability is about the journey, not the destination. It is possible for the systems on which everyone depends to be more sustainable than they currently are, and it is possible to evaluate our choices in terms of their impacts on the sustainability of other practices and processes. This neither implies nor depends upon some perfect world where sustainability is a finished project.

Where did the idea of sustainability come from?

There is no single answer to this question. Environmental historians often point to the emergence of methods for determining how much timber could be harvested from a stand of trees on a continuous basis. Yet political theorists were formulating questions about the sustainability of a state or political regime for many years before these methods first appeared in German forestry. There is reason to think that the idea of sustainability has been around for a long time. Yet we can assign a date for the beginning of its recent growth in popularity. That would be 1987, the year that the World Commission on Environment

and Development published its report *Our Common Future.* In subsequent discussions, this group came to be known as the Brundtland Commission, and *Our Common Future* is often called the Brundtland report. Gro Haarlem Brundtland, the former president of Norway, chaired the World Commission on Environment and Development. She is a leading figure in promoting global initiatives to address environmental issues.

The Brundtland report documented the challenge of continuing to promote economic development, especially in countries that were not enjoying the benefits of industrialization, while also maintaining environmental quality. The eventual exhaustion of finite resources (such as fossil fuels) was one of the key challenges noted in the report; the potential for damage to ecosystems that support renewable resources (such as food or clean water) was another. The Brundtland report stressed that all countries must face these challenges and achieve sustainable development. The Brundtland Commission then gave us a memorable phrase: sustainable development "meets the needs of the present without compromising the ability of future generations to meet their own needs."

The Brundtland report affected global policy and planning in a number of dramatic ways. It basically stated that when developed economies (such as the United States and Europe) deplete resources and damage ecosystems, they are failing to meet a responsibility to future generations. It also said that societies with high rates of poverty and low standards of living must be allowed to continue economic growth. The imbalance in global standards of living should not be allowed to persist. This vision stimulated a surge of research and reports on how and whether economic development activities in Africa, Asia, and Latin America could continue without violating the maxim that future generations should be able to meet their needs. This upsurge of discussion on sustainable development eventually spread into other areas of planning and policy. The basic problem identified by the Brundtland Commission was generalized to apply broadly in local and national planning, in building

construction, and in activities ranging from architecture to agriculture. For many, the idea of meeting the needs of the present without compromising future generations' ability to meet their own needs came to be equated with sustainability itself.

Has the idea of sustainability changed over time?

This is not a question that can be answered in a sentence or two. The examples we discuss in the following chapters illustrate that shifting from one practice or process to another (say from forestry to global economic development) involves a change in the meaning of sustainability. Whether or not something can continue depends a great deal upon what that something is. But our examples also show how there is a core meaning to sustainability that allows us to extrapolate from one practice or process to another. When we talk about sustainability as a social goal, however, we note some important changes since the Brundtland report brought its definition of sustainable development to prominence in the late 1980s.

When people first began to talk about sustainability in the 1980s, the key challenges revolved around resource depletion, pollution, and preservation of natural variety. Economic development requires energy, but fossil fuels are finite (and potential supply was viewed as more limited in 1987 than it is today). Industrial processes cause pollution, which has harmful effects on human health. Sustainable development was imagined as a process that would reduce pollution dramatically while increasing the efficiency of resource use. But for less industrialized countries, preserving rainforests or vast tracts of undeveloped areas that were havens for wildlife may have seemed in direct conflict with their goal of economic growth. The commitment to sustainable development was, in that context, a commitment to increasing the wealth and welfare of the human population, while also ensuring plenty of room for nature and minimizing environmental damages. By the 2020s, environmental scientists have learned that human societies cannot

protect natural variety simply by drawing a line on a map and restricting human access to or use of these protected areas. Succinctly put, the polluting impact of emissions from industrial society is much more widespread than was previously thought. Gases such as carbon dioxide and methane interact with solar radiation to create perturbations in cycles of warming and cooling, wind, and rainfall. The gradual rise in average global temperature associated with climate change is but one of these effects. As people observe change in these cycles, they rethink some key social goals. What they mean by sustainability shifts accordingly. In some cases, people are saying that it's time to move beyond sustainability; the new goal should be resilience.

What is resilience?

Defined narrowly, resilience is a measure of an ecosystem's ability to recover after a very stressful event like a flood or a forest fire. But the word is also used for other types of recovery or rebound. A company able to return to profitability after a major economic setback might be called resilient, and a community that weathers and recovers from an economic or social catastrophe (like losing a major employer or experiencing a pandemic or a destructive episode of racial violence) might also be called resilient. This broad way of thinking about resilience has long been one of the ways that people measure sustainability. A measure of whether a system (e.g., an ecosystem, an organization, a social group) can recover from major stressors is, in an obvious sense, also an indicator of whether that system is sustainable: Can it continue? We ask about resilience again in the context of ecology (in chapter 3), and the answer is more detailed.

What's the difference between sustainability and resilience?

Good question. Sometimes these words are used interchangeably. When people want to mark a difference, a lack of

sustainability would usually be associated with a shortfall in key resources or inputs that are needed for a practice or process to continue. Worries about running out of oil or water are seen as challenges for sustainability in just this sense. In contrast, when a process or system of practices is especially vulnerable to disruption, the problem might be described in terms of inadequate resilience. Our approach in this book is to treat the factors associated with resilience as indicators of sustainability. In contrast to a shortage of resources, sustainability as resilience highlights weaknesses in the way systems are organized, like poor coordination of responses or blockages in the flow of information. We give more examples as we move through each chapter. But readers should be aware that the tendency to see resilience and sustainability as two different things may be growing.

Why has sustainability become fashionable? What is it good for?

We will admit that the trend toward sustainability is partly just a matter of doing whatever is currently in vogue: everybody seems to be talking about sustainability, and so there is a bandwagon effect. However, interest in sustainability is also growing for more important reasons. More people are becoming aware of climate change. People want to keep doing many of the things they are doing, and, even more importantly, some practices are essential to our survival: eating food and drinking water, for instance. If there were reasons to think that our access to these essential goods was threatened by climate change (or something else), that would be evidence that our way of life is not as sustainable as everyone would like it to be. Although readers should not lose sight of this bedrock reason for being interested in sustainability, there are, in fact, more subtle and perhaps more interesting ways in which thinking about sustainability has become important.

When someone makes an explicit attempt to gauge how sustainable humanity's current practices are, they're typically

led to consider how one process or practice is dependent on and affects many others. That is, they think in terms of systems. Discovering interdependencies and interconnections through systems thinking is useful in itself. It can uncover vulnerabilities but also opportunities that someone might otherwise overlook. Thus, one of the reasons why sustainability has become trendy in fields ranging from business management and urban planning to architecture, farming, and international development is that achieving a better grasp of sustainability can help people achieve a host of other goals: security, profitability, and even social justice. Thinking about sustainability is thus useful as a tool; it can help ensure that the processes and practices people depend upon will continue to be operable and effective in the future. In other words, sustainability is a bridge to systems thinking, and systems thinking is useful for achieving many goals.

What is more, systems thinking can help us understand the way in which many evils recur and persist. In coming to a better understanding of what is needed to make the positive elements in our way of life secure and resilient, people gain tools for understanding why the negatives revisit us with such depressing regularity. A person or group can apply the conceptual, planning, and managerial tools gleaned from analyzing whether processes and practices can continue to processes and practices that they would like to see controlled and ended. In general, then, despite sources of confusion and disagreement associated with the idea of sustainability, integrating measures for sustainability into our thinking increases the capacity to maintain and improve the positive features in ways of life pursued by cultures and social groups around the world. It helps people understand the mechanisms that reproduce unwanted features of social life as well.

In short, once people begin to think about what it is that makes a practice or process more sustainable, they find themselves being drawn into a more powerful way of thinking about a lot of things that are important to them. Although facts about

resource consumption and environmental vulnerabilities are crucial aspects of the recent trend toward sustainability, we think that the underlying power of thinking in systems is really what everyone should know about sustainability. So we've organized the rest of the book to help readers get the hang of thinking about how the things that matter to us depend on the continued functioning of both social and natural systems. We start with examples that involve money because we hope they are more familiar. Almost everyone can appreciate how having a constant flow of money coming in is crucial to whether our way of life can continue. We move on to natural systems that continue to function and regenerate themselves with little input or direction from human beings. In both cases, measuring sustainability requires one to understand how each component is embedded within a larger system.

Is pursuing sustainability an individual or social responsibility?

Both. Most people already do at least a little thinking about the sustainability of their own household or way of life. They try not to overspend, and they repair their homes or automobiles long before they find themselves in a crisis. These ordinary types of planning are contributions to sustainability at a personal level. At the same time, it will become obvious that most of the examples we discuss involve larger and more complex social and natural systems. Whether a regional ecosystem or economy is sustainable is a function of the way that many individuals interact. None of us can secure the sustainability of these larger systems all on our own. What people do as individuals adds up, however. A pattern of individual choices can make these larger and more comprehensive social and natural systems unsustainable.

Some readers may be troubled by our claim that pursuing sustainability is a responsibility and our earlier claim that it can be evaluated with data and analysis. In reply we say, "Hey, give us a break! Haven't we been over this before?" We support

pursuing sustainability as a more responsible way of thinking about our personal and social options, but this doesn't mean that we have a moral obligation to help any randomly chosen practice or process continue. As we said above, evaluating the sustainability of a practice or process and evaluating whether that practice or process should continue are not unrelated. It would be foolish to pin your hopes on a process that cannot be sustained. Although the tension between these two evaluative processes becomes evident from time to time, we hope that the context in which we discuss any given practice or process will help resolve it. That includes the big, vague system of processes we call "our way of life."

Even if individuals lack the power needed to bring the behavior of their fellow citizens in line, they can help to make their societies more sustainable by acting in ways that promote the continued functioning of key social and ecological systems. Anyone can contribute in three ways. First, since consequences add up, what people do as individuals contributes directly to the overall maintenance of social, economic, and environmental integrity. Second, living a more sustainable lifestyle models a key form of civic virtue for all of us living in the twenty-first century. By reflecting on the way our actions interact with the behavior of others, one exhibits the qualities of responsible citizenship needed to achieve greater sustainability at the social level. Finally, individuals can act through the political process to encourage businesses, policymakers, and other leaders to make decisions that improve sustainability at a social level. The last chapter discusses some specific things that individuals can do to promote sustainability and especially some important questions to ask about those things.

How can I use this book?

Books in Oxford University Press's What Everyone Needs to Know® series are intended to give the reader an introduction to essential ideas in technically complex areas of subject

matter. They pose a series of questions that anyone trying to get a handle on the main topic might ask. Our answers explain key ideas and offer illustrations and examples to show how these ideas apply to situations that any reader will know. We have organized these questions so that a reader who works through each of them in order will gradually build up more and more familiarity with the systems way of thinking that is at the heart of sustainability. Nonetheless, readers should feel free to skip ahead to the questions that most interest them.

We start in chapter 2 by looking at the way concepts of sustainability are used in running a business because we presume that people will have some fluency in understanding what it takes for a firm to survive in a competitive economy. Chapter 3 illustrates how similar ideas are applied in developing an understanding of ecosystem processes. Chapter 4 continues the environmental theme by discussing some key ways sustainability thinking has been used as a response to pollution, resource depletion, and other threats to environmental quality. Chapter 5 introduces readers to basic ideas in economic development and explains how the Brundtland Commission's approach to global economic development came to dominate thinking on sustainability in general. The Brundtland Commission was motivated to rethink global development in the context of limits to growth and framed its approach in terms of being fair to both future generations and the impoverished people of our own generation. This leads into the topic of chapter 6: sustainability and social justice. As we already noted, sustainability is inherently bound up with our ideas of good and bad, of fairness and unfairness, and of progress and degeneration. We try not to preach, but chapter 6 provides an overview of the way that ethics and values shape discussions of sustainability. This is followed by a chapter on sustainable governance. In chapter 7, we frame our discussion around two queries: What factors influence the sustainability of governance systems? And how do governance processes affect sustainability more generally? In

chapter 8, other domains of society—the arts, religion, and especially science—are discussed in light of the sustainability ideas developed in earlier chapters. The book concludes with a chapter considering what everyone needs to ask about promoting sustainability.