Part I

The multidimensional concept of sustainability

In Part I of this book, we discuss the nature (Chapter 1) and evolution (Chapter 2) of the multidimensional concepts of sustainability and sustainable development.

Chapter 1 begins by exploring two central components of sustainable development – meeting basic human needs and equality, which are discussed in the context of governance. We then consider the current economic growth model and the importance given to technological innovation as the key to solving the sustainability challenge. The chapter ends by highlighting several critical issues that we argue must be included in future development strategies. A narrow focus on one issue, such as climate change, or even a small group of concerns will limit options and ignore opportunities to develop cross-cutting approaches to address unsustainable trends in a comprehensive manner.

Chapter 2 provides a brief historical context for the ideas and themes discussed in Chapter 1. It identifies a number of important texts, national and international events, U.S. regulations from 1951 to 2018, and Multilateral Environmental Agreements (MEAs) that helped shape the current and continually evolving notion of sustainable development. It also discusses the 2015 Sustainable Development Goals (SDGs) and makes the argument that employment is a critical and overlooked component of sustainable development.

1 Concern for a global future

At the beginning of the twenty-first century, the industrialized world might have been described as one of significant technological progress, industrialization, and globalization. In developed nations, energy systems supply power to our homes, places of work, and general environment. When we become ill, we find an abundance of modern drugs that can ease or cure our suffering, maintaining or improving our physical and emotional well-being. Global financial and commodity markets provide trillions of dollars a day to supply our investment and consumption needs. The agricultural sector, through mechanization and other technological and biological advances, has been able to supply our growing sustenance requirements. Telecommunications systems have enabled friends, families, businesses, organizations, and governments to communicate verbally and visually across thousands of miles. Combine these technologies with our modern transportation systems, and we remove the notion of the frontier.

Having achieved such progress, why should we now be concerned about the future of humankind on a global scale? Primarily, because this progress has not been equitable or sustainable. In 2013, 766 million people lived in extreme poverty on less than $1.90 a day (UNDP 2016). It is estimated that some 3 billion people live below the "ethical poverty line," which is defined as the income needed for someone to achieve a normal life expectancy of 70 years (Edward 2006; Oxfam 2017). Thus, a majority of the 7.3 billion people alive today may not have any meaningful access to the resources and quality of life described above. Even within the developed countries, many people do not have access to an adequate supply of essential goods, services, housing, health care, and other necessities and, in a financial crisis like the one in 2008, are at risk of losing their homes and/or their

jobs. Furthermore, inequality is increasing, leading toward a world of growing disparity both between industrialized and developing nations and among different segments of the population within those countries. In effect, the communities of less-developed regions and poor areas are held captive to the needs and wants of those who are well-off in industrialized (and some in industrializing) nations, whose living and consuming habits are in many ways condemning billions of people to a lower (material) quality of life. Put simply, if each member of the global community were to live the lifestyle of the average U.S. or UK citizen, holding technology constant, we would need the resources of somewhere between 1.5 and 8 planet Earths (McLaren et al. 1997; Wilson 2002; WWF 2006, 2016; McDonald 2015). It is clear that a global drive to reach the Westernized view of the good life, without a drastic change in production processes and consumption patterns, will soon bring us up against ecological and physical limits and force us to rethink what we mean by a secure and fulfilling lifestyle.

These introductory paragraphs present a highly simplified view of the world, and there is clearly a continuum of positions between those presented. The central argument of this book is that if we are interested in the well-being of current and future generations, we not only should be concerned for the future of the world but also should be actively searching for new ways to enable individuals, communities, and nations to live a sustainable life through sustainable livelihoods. If present trends continue and the structural forces driving them remain substantially unchanged, there is a strong possibility that within a few generations the world will be incapable of sustaining the human population at an adequate level of material well-being and health, and that it will lack sufficient and equitable opportunities for the realization of human potential. These trends include persistent (and often growing) inequalities between and within nations (including the United States) and persuasive evidence that we are living beyond our ecological and physical means.

Further, the social and political environment in which policy responses to these trends must be made is a difficult one. It is defined by globalization and rapid technological change, which are mutually reinforcing and create a set of conditions that shortens the necessary response time for policy, restricts national policy options, and possibly exacerbates distributional inequality and ecological damage. This chapter lays out the challenge of meeting human needs in a sustainable and equitable way, given these social and political conditions.

1.1 Human needs and sustainability

Understanding the fundamental needs of humans is essential if we are to develop strategies to transition society toward more sustainable forms of development. We define a human need as any need, both physiological and psychological, that is inherently universal, across both space and time, for our species. What it is not is a want or desire, nor is it the specific means with which we seek to fulfill a need. Furthermore, unlike Maslow's hierarchy of human need (1943), it is increasingly apparent that "human needs are irreducibly plural" and neither hierarchical nor substitutable (Gough 2015, p. 1201). Despite the universality of fundamental human needs, any individual, group, or society will develop *actions* and *value systems* in an effort to realize only their *perceived* needs, based on the information and opportunity available. This is especially important when considering differences in the needs of people in developed versus developing nations, where livelihoods and opportunities vary significantly. It also means that the satisfiers of needs will change over time and across cultures with socioeconomic change.

For example, if societal and cultural values perceive and nurture basic psychological needs, it is likely that the social fabric of a community will strengthen, which in turn will facilitate the well-being and integrity of individuals within that community (R. M. Ryan 1995). Not acknowledging or supporting basic psychological needs will likely result in the

opposite effect, as the underlying human need remains, whether perceived or not. Hence, if we are concerned for humankind, then we need to understand the difference between basic needs that are inherent in human nature and those that are a product of the socialization of humans. This understanding will optimize the economic, social, and political decision-making process we must undertake in order to create a sustainable future.

While historically the purpose of development was to develop *things* (for example, to transform resources into commodities/products), this was first rejected and redefined in the 1970s, shifting the focus of development to satisfying the *needs* of humankind. This process could be said to have begun with Schumacher's 1973 publication *Small Is Beautiful*, which challenged the prevailing patterns of development and approach to global economics. Schumacher (1999, p. 139) rejected the idea that what "is best for the rich must be best for the poor" and redirected the conventional view of development toward human needs. "Development does not start with goods; it starts with people and their education, organization, and discipline. Without these three, all resources remain latent, untapped, potential" (ibid.).

A year later, the Cocoyoc Declaration built on the ideas of Schumacher and placed basic human needs at the center of development efforts, stating that "any process of growth that does not lead to their fulfillment – or, even worse, disrupts them – is a travesty of the idea of development."* The following year the Dag Hammarskjöld Foundation (1975) articulated a similar position on the objective of development in *What Now: Another Development*. It called for the "development of every man and woman – of the whole man and woman – and not just the growth of things, which are merely means" (ibid., p. 5). Further, the report emphasized the importance of satisfying the basic needs of the poor, as well as the universal "needs for expression, creativity, conviviality, and for deciding [. . . one's] own destiny" (ibid.). It continues: "Development is a whole; it is an integral, value-loaded, cultural process; it encompasses the natural environment, social relations, education, production, consumption and well-being" (ibid.).

In 1987, over a decade later, the World Commission on Environment and Development (WCED) published *Our Common Future*, which again placed "human needs" at the center of concerns for "sustainable" development.

> Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:
>
> - The concept of "needs," in particular the essential needs of the world's poor, to which overriding priority should be given; and
> - The idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.
>
> (WCED 1987, p. 43)

* The influence of Schumacher's work is clearly evident throughout the Cocoyoc Declaration. Schumacher's call for a "metaphysical reconstruction" (Schumacher 1999, p. xi) – the need to reconstruct the meaning of ideas such as development, economics, knowledge, wealth, employment, and technology – is present in the Cocoyoc Declaration's redefinition of development in terms of self-reliance. Like Schumacher, the declaration rejects economic development that maintains or increases the disparities between and within countries and argues for economic growth that benefits the poorest sections of each society. Further, the declaration also rejects what might be called the "developed-nation model" in favor of development that supports a nation–state's societal and cultural norms. In this sense, the declaration asks the international community to respect the diversity of each country and to accept that there is more than one type of development trajectory.

The WCED's conceptualization of sustainable development, which built on the development vision articulated in *What Now: Another Development*, made an influential case for "the need to integrate economic and ecological considerations in decision making" (WCED 1987, p. 62). The basic notion was that social and economic development must not undermine the natural environment on which they are based. Hence, sustainable development "requires views of human needs and well-being that incorporate such non-economic variables as education and health enjoyed for their own sake, clean air and water, and the protection of natural beauty" (ibid., p. 53).

In concert with both the Cocoyoc Declaration and *What Now: Another Development*, the WCED's *Our Common Future* spoke to the different needs of developed and less developed nations. For developing nations, the "principal development challenge is to meet the needs and aspirations of an expanding [. . .] population. The most basic of all needs is for a livelihood: that is, employment" (WCED 1987, p. 54). It follows that employment – "the opportunity to satisfy [. . .] aspirations for a better life" (ibid., p. 44) – will lead to the satisfaction of such basic human needs as food, clothing, and shelter. However, some observers expressed concern that the needs of people in less developed nations are much broader than employment and must "include the right to preserve their cultural identity, and their right not to be alienated from their own society, and their own community" (ibid., p. 31).

For developed nations, the focus was not on meeting basic human needs for food, clothing, and shelter per se, but instead on the ecological consequences of an overindulgent lifestyle.

> Living standards that go beyond the basic minimum are sustainable only if consumption standards everywhere have regard for long-term sustainability [. . .]. Perceived needs are socially and culturally determined, and sustainable development requires the promotion of values that encourage consumption standards that are within the bounds of the ecologically possible and to which all can reasonably aspire.
>
> (WCED 1987, p. 44)

Interestingly, both the Cocoyoc Declaration and *What Now: Another Development* expand the WCED's view of human needs (in relation to developed nations) to include the physiological and psychological consequences of overconsumption.

Clearly, understanding the fundamental needs of humans, in the context of both what is needed and what is not needed, is essential if we are to develop strategies to transition toward more sustainable forms of development. As a consequence of influential publications such as *Our Common Future*, the current discourse on sustainable development tends to center on trade-offs among economic development and environmental and social goals. Areas of contention frequently arise during such discussions because the *goals* of each nation, group, or individual – which are based on their *needs* – are often at odds with one another. In order to resolve these situations optimally, we must clarify the difference between basic needs inherent to human nature and those resulting from socialization.

A key argument of this book is that the satisfaction of essential needs should drive economic and (democratic) political systems. In the language of modern economics, a rational person will maximize his or her utility function when making a decision to buy a product or service to satisfy a need. Societal demand is therefore the canonical ensemble of everyone's individual utility function.* Similarly, in the political system, we satisfy our political needs by voting for the politician or political party that is most likely to support our lifestyle and beliefs. When the votes are aggregated, we believe that the candidate

* In a developed country, a consumer is a very sophisticated concept, but in a developing nation where no markets exist, people cannot be called consumers in an organizational sense.

or party whose views align more closely with the needs and wants of society should be elected.* Indeed, for many, free markets and democracy are intertwined.†

This demand-side notion of how needs drive economic and political systems, however, raises a number of concerns. First, if we make decisions on the basis of our individual needs, then it can be argued that a society is likely to address unsustainable activities only once the individual is negatively affected. Second, the assumption that individuals act solely in self-interest does not account for the very human behavior of caring for others.‡ Third, neoclassical economics argues that each person should act in his or her own interest and let the market allocate resources accordingly, but this assumes that each person is receiving perfect or good information, is able to make informed, rational decisions, and is not subject to manipulation and deception (Akerlof and Shiller 2016). It also assumes that the "invisible hand" of the market will generate outcomes that maximize social welfare.§

Many have argued that reliance on the market is inherently likely to result in overconsumption and environmental harm due to inadequate consumer information. Manno (2002) argues that the industrial capitalist system of incentives and disincentives is invariably directed toward increasing levels of consumption. The environmental problems associated with increasing consumption are further compounded by the fact that as commodity chains grow in length and become more complex and more international, the spatial and social distances between production and consumption are widened (Conca 2002; Princen 2002). The result of this *distancing effect* is that consumers lack the information and incentives to behave in a more sustainable manner even if they wish to do so.

These concerns are at the root of a growing perception in Western culture that our concept of the good life has been affected (or put out of balance) by the forces of the market economy (through advertising, as well as social competition for conspicuous consumption). The result of this imbalance is that an individual's behavior is being *externally regulated* – that is, it is aimed at obtaining the approval of others. For example, we buy a certain type of product or strive for a high income to ensure that we gain the approval of our friends or maintain our perceived status in society. Such behavior is not likely to result in our ability to satisfy our intrinsic needs for competence, autonomy, and connectedness.

* This statement assumes that there is sufficient diversity between the political candidates to present an individual with a real choice. It also assumes that a large enough proportion of a society will vote so that it is possible to gauge societal demand accurately.

† For critiques that challenge this notion, see Soros (1997), Ayres (2006), and Stiglitz (2016). Soros (1997, p. 45) argues "the untrammeled intensification of laissez-faire capitalism and the spread of market values into all areas of life is endangering our open and democratic society." His main concern lies with the assumption that individuals (or consumers) have "perfect knowledge" and that by acting in their own self-interest, they will promote the common (or greater) good. Because our understanding of the world is inherently imperfect, promoting laissez-faire capitalism at the expense of the values and institutions that underlie an open and democratic society is what Soros refers to as the "capitalist threat." His concern is that the free market is changing society's perception of what is right and wrong by, for example, focusing on financial success and overlooking how that success was achieved. Soros (1997, 1998) argues that a better approach would be to create an open society that accepts our fallibility – i.e., that we will never have perfect information – and enables different ideological perspectives to inform and be reconciled in the political and social arena. Thus, put simply, an open society is "a society open to improvement" (Soros 1998, p. 24).

‡ A growing movement around the "Caring Economy" attempts to include this notion in economic thought (Eisler and Speth 2016).

§ One criticism of a utility-oriented system is that it does not incorporate concern for others. People vote their interests in the marketplace, but people do not express (in the market) their valuation of other people, relationships, and global equity and security. The market exists to satisfy individual, not social, wants.

Supporting this, the neoclassical assumption that each person is receiving good information and is able to make informed, rational decisions does not appear to be the case for consumers aged 45 and over in the United States, who are finding it increasingly difficult to use their spending power effectively (AARP 2004).* In addition, today's youth have become the most targeted audience for advertising in history, primarily because of their future spending power.† It is well established that alcohol (Center on Alcohol Marketing and Youth 2002, 2005; Jones and Donovan 2001)‡ and tobacco (Cummings et al. 2002) companies have targeted products at youth with the intention of creating lifelong consumers. But beyond these arguably harmful products, encouraging youth to buy music, sports equipment, automobiles, electronics, and other products is also considered a major force for consumption. The "burgeoning youth marketing industry" not only is raising important ethical questions (Kasser and Linn 2004, p. 1), but is also reinforcing producer-created demand and the throughput economy. These two outcomes have the potential to lead to significant negative psychological and environmental impacts, respectively. One solution is the re-conceptualizing of advertising to provide (less intrusive) "information" on products and services rather than messages designed to encourage lifestyles geared to consumption (Victor 2008). Achieving such a shift in the approach of the advertising industry would be no simple feat.

Imperfect information is not the only threat to the existing framework for the meeting of human needs in a sustainable way. The industries that operate within the market economy provide an essential and often overlooked function: the provision of *employment*. Holding a well-paid and meaningful job not only enables an individual to purchase goods and services but also provides opportunities to enhance psychological well-being. However, growing trends of within-nation wage and income inequality in the United States and many other developed nations, combined with low income mobility and job loss, are undermining the ability of the poor to access important services, such as health care. Further, the changing nature of work – for example, the growing number of contingent workers – is reducing the potential value derived from employment. If these trends are left unchecked, they could lead to growing feelings of deprivation and a declining satisfaction with life among the workforce, as well as declining access to meaningful employment. Many attribute the 2016 election of Donald Trump to these types of trends (Winston 2017); although, fear among white Americans' of losing their dominant status may have played a more influential role (Mutz 2018).

Both regulation of advertising and the resolution of negative workforce trends bring up the role of government in meeting basic human needs. Relying on the market (and government solely to protect the market) to ensure that basic human needs are met is clearly not a viable option if sustainability is to be achieved – who would provide education and primary health care for the poor? Government has an essential role to play in

* A survey by the American Association of Retired Persons (AARP 2004) asked whether spending power is all that an individual requires to achieve "consumer sovereignty" i.e., the successful selection of a product or service. The survey concluded that consumers – aged 45 and over and who represent 52 percent of consumer spending – were finding it increasingly difficult to use their spending power effectively because of (1) "less time and more decisions"; (2) the "increasing complexity of products and services"; and (3) "low levels of financial literacy" (ibid., pp. 2–3). Hence, many were unable to exercise consumer sovereignty because they were not receiving good information and, therefore, could not make informed, rational decisions. To solve this problem, the AARP called on business and government to improve the quality of consumer information, to increase financial literacy, and to increase options for banking and credit in segmented markets that often suffer from predatory financial practices. However, over a decade later, many of these same challenges persist.

† Media Awareness Network, *Marketing and Consumerism – Overview*, http://mediasmarts.ca/marketing-consumerism/marketing-and-consumerism-overview (accessed October 12, 2017).

‡ Center on Alcohol Marketing and Youth, http://camy.org/ (accessed October 12, 2017).

ensuring that markets function for the benefit of society and intervening where they fall short. To enable an acceptable balance of responsibility to be achieved, there needs to be a willingness on the part of governments, society, and industry to engage in discussion and analysis of the connection between freedom, regulation, and control – and its relationship to overall societal good – if and when radical changes to our social and physical systems become necessary (Haland 1999). Further, reliance on social influence (or goodwill) to initiate change ignores evidence that unless the right environment and resources are made available, society will be asked to act beyond its capacity (Schmuck and Schultz 2002). In many ways, what is needed in order for human society to respond to the challenges of this century is a co-evolutionary approach to change, in which the values held by government, society, and industry evolve to support human needs and the objectives of sustainable development.

In order to create a more sustainable society, resolving the root causes of diverse issues such as consumerism, growing inequalities, and changing employment opportunities is extremely difficult. What is clear is that human needs and behavior are common to all these issues. As Pol (2002, p. x) argues, "The sustainability problem is a result of individual and collective human behaviour. It cannot be treated as an economic or technical problem, without considering the mechanics that intervene on the behavioral side of it."

Placing human needs at the center of sustainable development strategies is therefore a positive step forward. See Figure 1.1 for a representation of such an approach. Such strategies would mean that government, society (that is, communities and individuals), and industry would need to promote values that center on innate human needs. In the context of employment, this is already recognized in the use of the term "anthropocentric production" (Brödner 1990; Lehner 1992), which distinguishes people-centered employment from the use of human resources in the most profitable or efficient production schemes, to the detriment of workers. Equally important is the promotion of levels of consumption and manufacturing processes that do not exceed ecological limits. Ultimately, turning our focus to meeting human needs is likely to "make fewer demands on our environmental resources, but much greater demands on our moral resources" (Brown 1981, p. 359). A term such as "anthropocentric consumption" as an analogue to anthropocentric production sounds inappropriate because almost all consumption is intended for human consumption. "Sustainable consumption" is a better term.

Even with an engaged government and human needs at the center of sustainable development strategies, a single-purpose policy design approach is unlikely to address these multidimensional sustainable development problems adequately. Instead, it is likely that fundamental human needs, which are by definition satiable, can best be met through policies that seek to co-optimize (or even better, integrate) multiple concerns. For example, identifying ways to combine national competitiveness with employment opportunities – for example, through the creation of intelligent production systems or new product–services – is one approach that would not only strengthen the economy but also improve the quality and (potentially) the availability of well-paid employment. Accepting the complexity of sustainable development and focusing on the design of policies that bring together competitiveness, employment, and environmental protection,* while meeting human needs, further requires that we: measure our progress (Section 1.1.1), understand the relationships between consumption and well-being (Section 1.1.2), and understand the role of employment (Section 1.1.3) in this complex system.

* For example, enhancing purchasing power by increasing commercial activity may inadvertently create environmental problems. Thus, in this situation a physical standard of living needs to be co-optimized with environmental quality and employment.

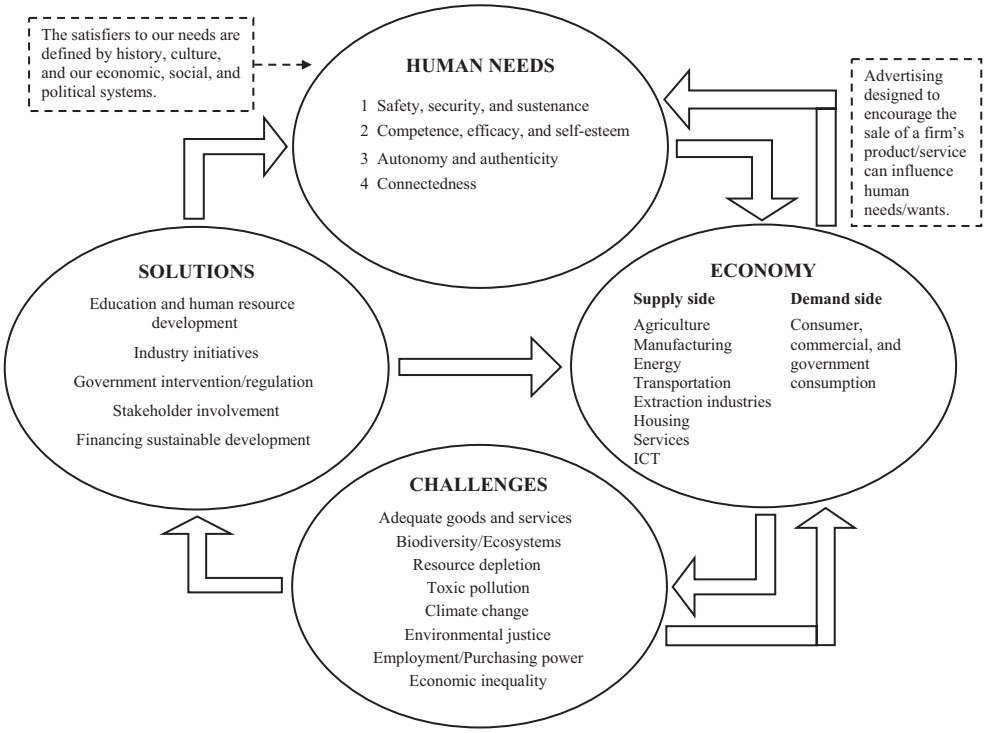

Figure 1.1 Drivers, challenges, and solutions for globalization within a context of human needs

1.1.1 The measurement of (human) development

What we choose to measure is both an expression of underlying societal values and a driver of the evolving structure and values of our society, and as such requires careful attention. As the use of information technology has expanded globally, there has been an increased emphasis on the use and availability of data and statistical indicators to inform decision-making, with mixed outcomes. Inadequate measurement can have wide consequences, ranging from a public lack of confidence in government to the missing of indicators signaling impending economic crisis (Stiglitz et al. 2009a; 2009b).

The first widely adopted measures, GNP (gross national product) and GDP (gross domestic product), were developed in the 1940s, together with the Systems of National Accounts (SNAs), to measure *total economic output* (Hodge 1997; Neumayer 2004; Vanoli 2004). GDP has since become the most widely used measure globally and, more recently, the most widely criticized measure as well, partly as a result of overuse and inappropriate use. Total economic output does not distinguish between "good" and "bad" forms of spending, take forgone opportunities into account, consider non-market goods and services, or account for unpaid work and leisure activities, and is therefore arguably not an accurate measure of economic welfare (Glasser and Craig 1994). It is also not a measurement of income or of well-being but has frequently been used as both.

Furthermore, Liagouras (2005) suggests that as developed nations transition to a service economy, these measures of quantity must give way to measures of quality and variety in order to capture real change. (See Section 3.3.1.2 in Chapter 3 for a more

detailed discussion.) Government services are also an increasingly large portion of economies, yet government output is very poorly captured by the GDP approach (Stiglitz, Sen, and Fitoussi 2009a, 2009b). Finally, our failure to charge for environmental degradation, including carbon emissions, cause market distortions, which result in false choices between the promotion of GDP and the protection of the environment. Despite its continued use and global importance, GDP is widely accepted to be a limited metric of progress.* See Table 1.1 for a more complete list of limitations and challenges.

Concerns about the consequences of GDP's limitations led to the formation of the Commission on the Measurement of Economic Performance and Social Progress (CMESPSP) in 2008, commonly referred to as the Stiglitz, Sen, and Fitoussi Commission. The commission's initial report in 2009 encouraged a shift from production-oriented measurement systems to a well-being–oriented measurement system (of current and future generations). The report concludes that in order to evaluate material well-being, one should look at income and consumption instead of production, consider income and consumption jointly with wealth, and consider the distribution of each across different groups. It further suggests a shift to focus on the household and to include non-market activities such as household production.† The measurement of material well-being is only one of the eight suggested dimensions of well-being to be assessed together with health, education, personal activities/work, political voice/governance, social connections/relationships, environment (past and future conditions), and insecurity (economic and physical). In assessment, both objective and subjective measures and the interdependence and possible adverse synergism between these eight dimensions are important (Stiglitz et al. 2009a; 2009b).

The commission, however, separates the measurement of sustainability from well-being or economic performance. As they explain, if your car had a dial showing a number that was the sum of your current speed and the remaining fuel, it would be no help at all. "Both pieces of information are critical and need to be displayed in distinct, clearly visible areas of the dashboard" (Stiglitz et al. 2009a; 2009b). Their recommended "dashboard of indicators" separates environmental aspects of sustainability and includes clear indicators of tipping points (see Section 1.3.4). Measurement of sustainability follows clearly from the accurate measurement of current well-being, as whatever is necessary (human needs) for current well-being must not be depleted over time in order for future generations to have the same standard of well-being. If the stock is decreasing, then we must either reduce consumption or well-being, unless consumption can be retained by changing the relationship between consumption and stock through innovation (see Section 1.1.2).

The Stiglitz, Sen, and Fitoussi report has fueled both new and ongoing efforts to seek better metrics of well-being and to capture more accurately the forms of progress we collectively value. All such efforts must grapple with the complex challenges involved either by altering and amending the GDP/GNP and SNA system or by developing entirely new indexes. Any new approach must be able to explain contrasts such as Ponting's (2007, p. 338) observations that "in the 1990s the GDP per head in the United States was 40 percent higher than in Italy but life expectancy was lower by almost two years because of the poor [U.S.] Health System" and that "the life expectancy of African Americans is lower

* GDP's flaws are well captured by the example of commuting to work. A longer commute is lost time and a cost to the environment, but an increase in driving and traffic jams leads to an increase in oil consumption, so longer commutes are good for GDP. This is why we need to measure well-being instead – everyone knows that more traffic is worse, but GDP as a measure fails to capture this reality.

† Households produce food, cook, and provide childcare and "insurance" services, and when these unmeasured activities are monetized, they create a rise in economic activity that does not necessarily correlate to an improvement in living standards. The non-measurement of household production also affects women unequally, increasing gender inequality.

Table 1.1 Limitations of GDP as a measure of (human) development

GDP = C + I + G + (X – M) or consumption + investment + government expenditure + (exports – imports)

GDP is the total annual value of all goods and services produced within a nation's borders, whereas GNP is the total annual value of all goods and services produced by a nation's residents (or firms), wherever they are located. A third related measure, gross national income or GNI, adds income received from other countries such as dividends and interest payments less similar transfers to other countries.

LIMITATION	*WHY?*	*EXAMPLE*	*EFFECT*
Transfer payments are not included in calculations of government expenditure	Not considered "output producing" because "no direct production takes place in exchange for a transfer payment" (Heilbroner and Thurow 1998, p. 75).	In the U.S., this means that Social Security payments are not included in government expenditure.	Transfer payments increasingly augment the quality of life of the citizenry, yet excluding them from a measure of progress/development incentivizes a reduction in this kind of progress.
GDP does not capture wealth distribution	GDP is a straight total. When evaluated at the per capita level, GDP is simply divided by the population of a country.	Saudi Arabia and South Korea have similar GDPs per capita. However, Saudi Arabia has widely disparate personal incomes (fueled by oil reserve–based growth) while South Korea has significantly lower income disparity (driven by growth based on technological innovation).	A reduction in inequality is essential for human development, health, and economic growth (Stiglitz 2016), yet GDP neither measures nor values advances in inequality.
Environmental quality is not a product in the GDP equation	Neoclassical economics fails to account for environmental "externalities" – put differently, the environment (air, water, land, climate, etc.) is typically not considered as a limited resource.	Without appropriate environmental regulations or their enforcement, firms are able to emit pollution into the environment without needing to consider the costs of that pollution.	Without considering the environment, a product which destroys a drinking water supply of 10 million people is measured as equal to one that does not, creating an incentive for neglect of the environmental commons in the pursuit of measurable product.
GDP does not include "underground" economic activity	Hard to measure.	Profits from the illegal drug trade are not considered as part of GDP.	Underground economic transactions significantly affect the quality of life of the citizens of a country, both positively and negatively.
GDP does not capture non-monetary activities, including unpaid and volunteer work	Hard to measure and value not fully understood.	The value of time invested by family members in caring for children and/or the elderly.	Social capital is central to development and economic success (Putnam et al. 1993) and its neglect disadvantages those groups engaged in it, including women.

Many economic activities captured by GDP are not "real" economic development	There is no categorization of expenditures – all are lumped together.	An oil spill can increase GDP because the enormous cleanup costs are included in GDP metrics. Yet an oil spill diminishes well-being and GDP-enhancing activities such as fishing.	Costanza et al. (2009) point out that increased crime, sickness, war, pollution, fires, storms, and pestilence are all positive for GDP, yet are not progress or human development.
GDP fails to capture/measure/distinguish the quality of the goods sold	The quality of a good/service is not important when measuring GDP; the only metric that matters is the final price of a good/service.	To GDP, there is no difference between producing disposable pens and producing pens that will last a lifetime – in fact, the disposable pens create more continuing need for the product, increasing GDP.	This dynamic incentivizes a reduction in quality, increasing waste, inefficiency, and environmental impact and results in corporate strategies like "planned obsolescence."
GDP does not question whether the source of growth is sustainable	GDP does not consider whether an economic activity is enabled by, for example, renewable or nonrenewable resources. It is concerned only with measuring the scale of economic activity.	Russia's growth model in 2009 required a $70/barrel price to balance the budget.	Since growth in GDP is not adjusted to take unsustainable activities into account, it does not provide any information about whether a nation's development is sustainable or not.
GDP includes no measure of societal opportunity costs	GDP does not take into account the future value of a foregone option.	Costs associated with remediation of harm (i.e., natural disasters) divert funding from wealth-generating activities and investments.	Without considering societal opportunity costs, GDP provides no indication of whether current growth could actually be undermining future growth.
GDP does not capture the essence of product (and possibly process) innovation	GDP measures the price of the final good/service, which could decline as a result of a product or process innovation.	Pharmaceutical and technological innovations have increased the quality – and life – of goods dramatical, but are not counted any differently than the production of oil from a disappearing reserve.	A desire to simply grow GDP (via sales of a product/service) may incentivize firms to focus on cutting costs rather than innovation-led growth strategies. The latter is likely to be far more important from a sustainability perspective, providing that appropriate environmental and worker health and safety standards are in place to frame the "design space."

than the average in China and infant mortality rates in cities such as Washington, DC, Baltimore, and St. Louis is higher than in cities such as Bangkok and Cairo." See Table 1.2 for a list of some prominent approaches to measuring (human) development. Whether the new approaches provide utility is of some debate. One analysis found that despite different measurement approaches the Human Development Index (HDI) and Ecological Footprint (EF) correlated with GDP (Szigeti et al. 2013), raising questions as to whether the effort to substitute them has utility. The same analysis showed that the Happy Planet Index (HPI) and Environmental Performance Index (EPI) were independent of GDP, increasing their potential value as a substitute for GDP.

Each of the measurement approaches can be evaluated in detail as well as compared and contrasted with each other, and it is possible to find both supporting and discrediting arguments for each measure or index presented in Table 1.2.* Opponents of indexes argue that the subjective selection of indicators (from one or more domains of sustainable development) that are adjusted and aggregated into a single value makes the final output difficult to use in a meaningful way (Becker 1997). Further, combining indicators that measure both short and long-term concerns and processes hides difficult decisions associated with intergenerational equity (Hueting and Reijnders 2004).

The above concern was addressed in the OECD Better Life Index, which was a direct result of the Stiglitz, Sen, and Fitoussi Commission. The Better Life Index chose not to aggregate the components into a single index. However, a subsequent effort by Nikolopoulos (2014) did represent the different measures multidimensionally (Figure 1.2). Further development of this kind of multidimensional measurement and visualization is likely to improve our capacity to assess and design sustainable development.

The Sustainable Development Goals (SDGs) (UN 2015) also aimed to improve our capacity to assess and design a sustainable future (see Section 2.3 in Chapter 2). By articulating goals first, then creating indicators and measuring progress towards those goals, the approach focuses on assessing the multidimensional nature of human progress while motivating socio-political change. This approach was demonstrated with the Millennium Development Goals (MDGs), the predecessor of the SDGs. The SDGs consist of seventeen interconnected goals (see Table 2.4 in Chapter 2), including climate change, economic inequality, sustainable consumption, and peace and justice, all with targets to be met by 2030. The goals assume that what is desired is to advance a technologically optimistic and growth-oriented system and state clearly the need for a decoupling of growth from environmental damage. In Section 1.3.1, we question whether it is possible for a growth-oriented society to achieve sustainability, but regardless of feasibility, the success of the SDGs as measures and policy drivers will rely on their implementation.

While all approaches to measuring human progress have some form of shortcoming, they serve an essential role in guiding our economies and policy making, raising awareness

* As an example, using HDI 2010, the best place to live from a human development perspective would appear to be Norway, and the worst place would appear to be Zimbabwe. The HDI addresses the complexity of human development by including a suite of supplementary indicators covering areas such as infrastructure, energy usage, ecological footprint, subjective well-being and happiness, employment, empowerment, freedom, community safety, and financial flows. Furthermore, the IHDI adjusts the three dimensions of HDI for the extent of inequality experienced in a dimension – thus, a nation without inequality would have an HDI = IHDI. (The U.S. HDI rank falls by nine positions once adjusted for inequalities, reducing the income index by 24 percent.) Yet despite all this careful valuation, the HPI, which also considers many of the same indicators, places Costa Rica as the best place to live, with no industrialized nations, including Norway, in the top ten. Which should you move to, Norway or Costa Rica? That depends on, for example, how much you value the intergenerational sustainability of human development achievements. See Section 3.4.2 in Chapter 3 for a discussion of Costa Rica's approach to development.

Table 1.2 Alternatives to GDP as a measure of (human) development

NAME	*CONTEXT & USE*	*ADVANTAGES*	*DISADVANTAGES*
Approaches based on System of National Accounts:			
ISEW – Index of Sustainable Economic Welfare (Daly and Cobb 1994) GPI – Genuine Progress Indicator (Talberth et al. 2006; Venetoulis and Cobb 2004)	Both use the principle of weak sustainability and make adjustments to GDP/GNP accounting for unequal income distribution using the Gini coefficient and adding and subtracting elements to account for ecological and social benefits and costs.	Works with GDP but adds a measure of inequality and begins to consider other human development factors as well. Can be seen as valuable tools to broaden policy prescriptions beyond a reliance on economic growth (Clarke 2004; Hamilton 1999; Lawn 2003; Patterson and Jollands 2004).	Levett (1998, p. 297) argues that "as soon as we try to modify GDP to bring it closer to some conception of welfare [. . .] we are back to subjectivity in deciding which things need to be added to and subtracted from GDP." These types of measures also assume that the total stock of natural, human, and social capital remains constant over time.
GS – Genuine Savings, also referred to as Adjusted Net Savings (K. Hamilton 1994, 2000)	Developed in the World Bank's Environment Department and is an annual measurement of changes in national wealth, where "national wealth" is defined as the total amount of natural, human-made, and human capital (Bolt et al. 2002).	Neoclassical economists are more comfortable with the approach and the GS formula is relatively straightforward: *GS = net investment in produced capital – net depreciation in natural capital + investment in human capital*	Does not account for Social Capital and, like ISEW and GPI, uses the Hartwick–Solow weak sustainability principle.
SEEA – System of Integrated Environmental and Economic Accounting (UN et al. 2003)	Developed by the UN Statistical Commission with support from IMF, World Bank, EC, and OECD.	Provides a platform to combine economic and environmental data using consistent classifications and definitions. SEEA is based on the System of National Accounts (SNA) and theoretically can be used with either weak or strong sustainability principles.	Cannot account for social and institutional dimensions of sustainability (UNDESA 2007).

(*Continued*)

Table 1.2 (Continued)

NAME	*CONTEXT & USE*	*ADVANTAGES*	*DISADVANTAGES*
Approaches to measure the condition of the environment:			
LPI – Living Planet Index (WWF 2016)	Measures biodiversity by gathering data from 14,152 monitored populations of 3,706 vertebrate species (mammals, birds, fishes, amphibians, reptiles) from around the world to indicate the impact of human activity on habitats.	Provides a way to monitor the state of nature.	Does not account for social or economic factors and the distribution of locations represented by the data is currently uneven, which means that not all species groups and regions are covered.
EPI – Environmental Performance Index (Yale Center for Environmental Policy and Law et al. 2018)	The EPI ranks 180 countries on 24 performance indicators across ten issue categories covering environmental health and ecosystem vitality. This approach enables countries to compare their environmental performance and identify best practices. The metrics also provide countries with a way to identify environmental policies that could move them towards greater environmental sustainability.	The EPI offers an empirical approach to tracking environmental problems, which enables countries to identify and track problems, and develop and evaluate policy responses.	Does not account for social or economic factors and currently has data gaps relating to sustainable agriculture, water resources, waste management, and threats to biodiversity.
EF – Ecological Footprint (Wackernagel and Rees 1995a, 1997; Collins and Flynn 2015)	Translates human activity (*demand*) into corresponding ecological area (*supply*) – or the environmental carrying capacity – required to sustain that activity. The EF is typically based on six categories of productive surface areas: cropland, grazing land, fishing grounds, built-up land, forest area, and carbon demand on land.	EF provides a simple measure (in global hectares) that can be used to assess whether a city, region, or nation is living within its biocapacity (i.e., whether it has an ecological reserve or deficit). This information can then inform practices and policy designed to reduce the EF of a target region.	Does not consider interactions between system components and ignores processes that can dramatically affect carrying capacity (Becker 1997; Hueting and Reijnders 2004). EF also fails to reveal underlying causes of overshoot (van den Bergh and Verbruggen 1999) and does not consider the impacts of international and regional trade, making an implicit assumption that living within a nation's available biocapacity is the desired objective.

Novel approaches to measure human development:

HDI – Human Development Index (UNDP 1990) Sister indexes – Inequality adjusted HDI, Gender Development Index (GDI), Gender Inequality Index (GII), Multidimensional Poverty Index (MPI) (UNDP 2016)	Developed in 1975 by the UNDP, the HDI has three components in all of its iterations: (1) life expectancy at birth; (2) educational attainment; and (3) income (UNDP 1995, 2016). The latest improvements allow comparison over time, improved "sister indexes," and a shift to calculating the HDI using geometric mean rather than simple averages.	Serves as important complement to GDP/GNP by placing health and education alongside income for a more complete measure of development. As the UNDP (2016, p. 25) argues, "Economic growth and income are means to human development but not ends in themselves – because it is the richness of people's lives, not the richness of economies, that ultimately is valuable to people."	The HDI is not a comprehensive measure of human development and its focus on longer-term measures means it does not measure short-term improvements. However, when combined with its sister indexes, a more complete view of human development can be obtained.
HPI – Happy Planet Index	Combines four elements – well-being, life expectancy, inequality of outcomes, and ecological footprint – to provide a measure of the ecological efficiency of delivering human well-being (Jeffrey et al. 2016).	Rejects GDP/GNI and leverages EF to reveal the poor environmental performance of industrialized nations – exposing the unsustainable nature of the long and happy lives many have achieved.	The HPI does not take a nation's political situation or stability/fragility into account. Thus, an unstable/fragile developing country (with a small EF) could rank higher than a developed nation (with a large EF). Thus, while the HPI presents an interesting measure of environmental impact and well-being, translating the results in practice/policy can be challenging.

(*Continued*)

Table 1.2 (Continued)

NAME	*CONTEXT & USE*	*ADVANTAGES*	*DISADVANTAGES*
SEDA – Boston Consulting Group's Sustainable Economic Development Assessment (Beal et al. 2015)	SEDA is based on three elements – *economics* (including income, economic stability, and employment creation), *investments* (health, education, and infrastructure), and *sustainability* (focusing on social inclusion and the environment). SEDA uses 43 indicators across these three elements to develop a relative well-being score for 149 countries.	When combined with a country's per capita income, SEDA highlights how a country is translating – over time – its wealth into well-being for their citizens.	When compared to other indexes, there is less emphasis on environment, and metrics such as resource depletion are not included.
SA-GCI – Sustainability Adjusted Global Competitiveness Index (World Economic Forum 2014b)	SA-GCI was developed from the World Economic Forum's (2014b, p. 55) notion of sustainable competitiveness, defined as "the set of institutions, policies, and factors that make a nation productive over the longer term while ensuring social and environmental sustainability." SA-GCI is based on the Global Competitiveness Index, which is adjusted to take social and environmental sustainability factors into account. SA-GCI has been calculated for 113 economies.	SA-GCI provides a way to assess the connection between productivity and social and environmental sustainability. The index allows a nation to consider how to promote social and environmental sustainability in a way that does not undermine its competitiveness.	Since SA-GCI is an adjustment of the GCI, it does not weight competitiveness, social, and environmental pillars equally, so favors countries that score high in competitiveness.

OECD Better Life Index Tool (OECD 2017)	The Better Life Index is an online interactive tool with 11 dimensions (each based on four indicators) that covers 38 countries. It has no aggregate index.	The online tool allows users to interact with the data, which is disaggregated by gender. By adjusting the relative importance of each dimension, users can see how their preferences impact the performance of each country and how this may change by gender. The jobs dimension is based on four separate measures – the employment rate; personal earnings; the long-term unemployment rate; and job security – making it one of the more robust treatments of employment in these indexes.	The environment dimension is not assessed thoroughly, and primarily measures air pollution and water quality indicators. The tool does not provide one overall ranking of a country's performance, but instead aims to inform citizens so that they can become more engaged in the policy-making process related to their lives.
Social Progress Index (Porter et al. 2017; Stern et al. 2017)	The Social Progress Index is an aggregate index of social and environmental indicators that focuses on three dimensions of social progress – basic human needs, foundations of well-being, and opportunity. Under each dimension are a range of components that are each supported by indicators considered to matter for the lives of real people. The index uses free, publicly available data to preserve transparency. It covers 128 countries.	The index is thorough and innovative. It measures country performance on a wide range of indicators and can be used by governments to design policy and target investments to turn economic gains into social and environmental progress.	Does not include elements of equality, employment, and innovation.

(*Continued*)

Table 1.2 (Continued)

NAME	*CONTEXT & USE*	*ADVANTAGES*	*DISADVANTAGES*
FEEM SI – Fondazione Eni Enrico Mattei Sustainability Index	FEEM SI is calculated using a recursive–dynamic computable general equilibrium model. The model uses 23 indicators that are related to economic, social, and environmental dimensions. The weights for each indicator are derived from a survey of experts that reveals how the different components of sustainability relate to one another. This approach enables the index to capture the synergies or conflicts that accompany the multidimensional concept of sustainable development.	The modeling approach means that the index can be calculated for a nation in a specific year, in relation to specific policy scenarios. This *dynamic* feature of the index differentiates it from the more static indexes.	The modeling approach does not provide a single outcome, but rather a set of projections that can inform decision-makers. However, the reliance on experts to provide objective and unbiased weightings may raise concerns about the validity of the results.
SSI – Sustainable Society Index	SSI is based on 21 indicators that form seven categories across three economic, environmental, and social well-being dimensions. Since 2006, SSI has been calculated every two years for 154 countries, which reveals where nations are making progress towards sustainable development.	The three well-being dimensions provide a unique way to track economic, environmental, and social progress over time.	While SSI covers a wide range of indicators, it does not include measures of rights and (environmental) justice, peace and security, and competitiveness.

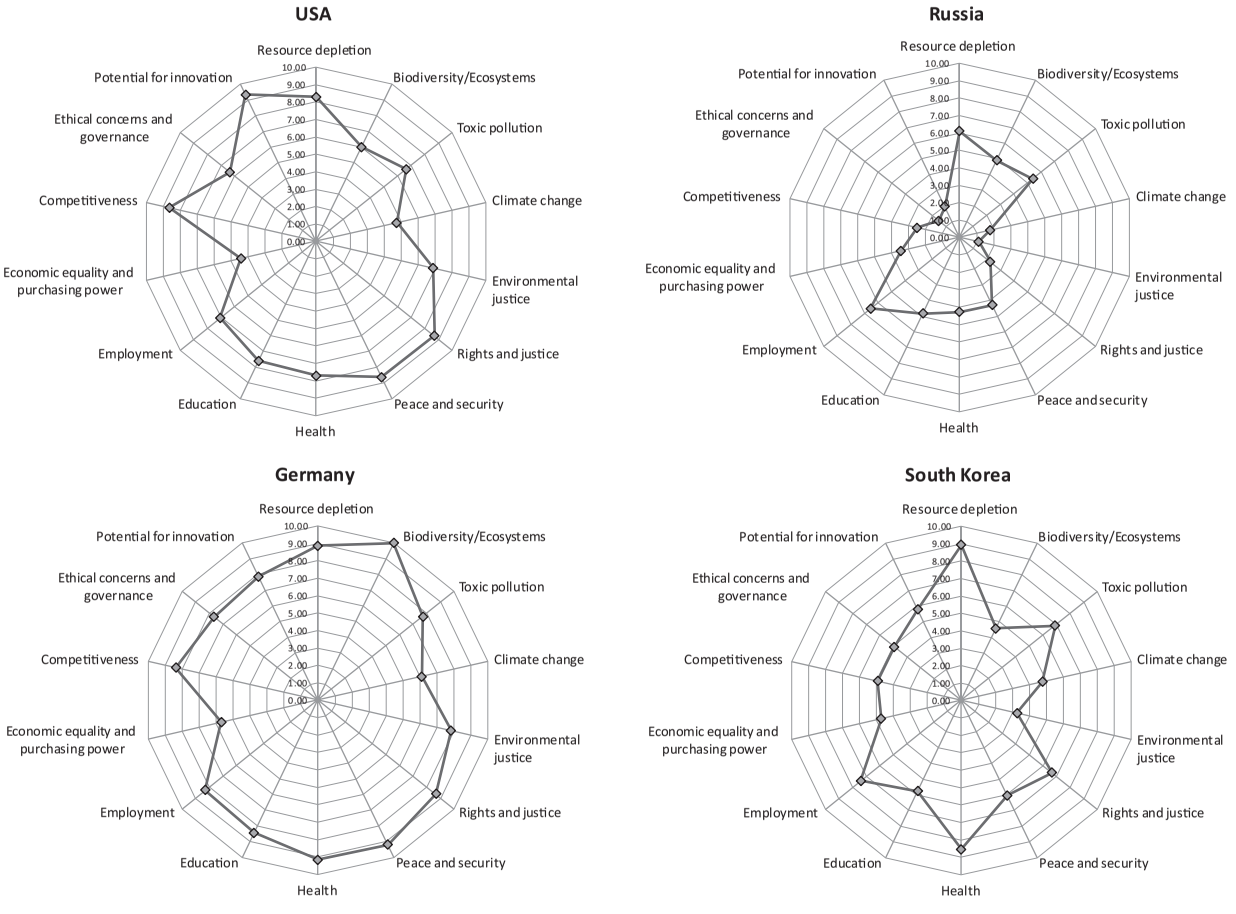

Figure 1.2 A multidimensional representation of sustainable development in four countries

Source: Adapted from Nikolopoulos (2014, pp. 71–19).

about unsustainable development patterns. Indexes, however, do not reveal the processes that are driving these unsustainable trends; therefore, it is clearly unwise to base decision-making solely on any numerical index regardless of its strengths or complexity. Having introduced several indexes of human development and other measures of progress and reviewed their utility, we now turn to the challenges raised by the predominant laissez-faire (market-oriented) approach to development and its effect on human well-being.

1.1.2 Consumption and well-being

As globalization proceeds, it could be argued that increasing knowledge of the lifestyles of others around the world is motivating material standards of living. Until we reached the era of global media, people did not feel deprived in relation to other nations. Now that the differences in consumption are conspicuously visible, poverty and its effect on culture become important issues – that is, people "feel" economically and materially poor. If we assume that the satisfaction of needs drives economic and political systems, one quickly realizes that if basic human needs become confused with materialistic wants on a global scale, the rapid expansion of the throughput society could lead to serious environmental consequences.

A throughput (or high-waste) society, by definition, depends on increasing rates of consumption (or throughput) (Daly 1996; Princen et al. 2002). To the extent to that we are losing jobs as a result of production efficiencies (or innovation), one way to create more jobs is to expand the economy and increase throughput. A critical question, therefore, is whether basic human needs drive our throughput society or whether this drive stems from a *conditioned* response.

In neoclassical economics, human needs/wants drive systems of exchange and markets. Although many economists might argue that consumer demand – derived from the purchasing habits of consumers – is an accurate representation of what people desire, they often forget to mention the $589 billion worldwide that corporations spend annually on advertising with the sole purpose of creating demand (eMarketer 2017). Hence, a concern is that the world of industrialization and commerce has made the distinction between basic human needs and wants unclear (Michaelis 2000). Indeed, one could argue, as Galbraith (1958) did, that if a want is to be urgent, it should be the result of a need that originates within the individual. This position was later supported by economist Nicholas Georgescu-Roegen (1971, p. 324; 1993), who argued that "only those goods and services an individual can enjoy personally influences his satisfaction." If a want is externally contrived, it cannot be an urgent (or basic) need. Hence, satisfying that want will occur only through behavior that is led by extrinsic motivation, which is not likely to result in the enhancement of an individual's well-being.* See Tatzel (2014) for an extensive treatment of consumption and well-being.

The inference from these remarks is that in promoting economic growth, companies entice people to buy their services or products. The primary way for the value or benefit of a product or service to be conveyed to the consumer is through advertising. M. R. Smith (1994, p. 13) describes how American advertising "became the instrument by which big business, in need of ever-expanding markets for its mass produced products, imprinted instrumental values – and with them, the ethos of mass consumption – on the populace." Hence, it can be argued that advertising leads to *producer-created demand* – that is, what we

* The idea that capitalist economies have been successful in achieving intermediate goals of increasing material wealth, but that this has been accomplished at the expense of underlying human values (and the environment), is becoming more widely accepted by economists (Ackerman et al. 1997). Indeed, the field of ecological economics is a good example of a branch of economics that is attempting to integrate human values into economic analysis (Krishnan, Harris, and Goodwin 1995).

need/want is conditioned by advertising. Galbraith (1967, p. 207) provides a succinct example of this idea:

> Were there but one manufacturer of automobiles in the United States, it would still be essential that it enter extensively on the management of its demand. Otherwise consumers, exercising the sovereignty that would be inconsistent with the company's planning, might resort to other forms of transportation and other ways of spending their income.

Further, Soros (1997, p. 52, emphasis added) argues that the notion of producer-created demand has established money as *the* measure that identifies a product or an individual's value:

> **Advertising, marketing, even packaging aim at shaping people's preferences rather than, as laissez-faire theory holds, merely responding to them**. Unsure of what they stand for, people increasingly rely on money as the criterion of value. What is more expensive is considered better. The value of a work of art can be judged by the price it fetches. People may believe that they deserve respect and admiration because they are rich. What used to be a medium of exchange has usurped the place of the fundamental values, revising the relationship postulated by economic theory.

Michaelis (2000) takes the concept of producer-created demand one step further by extrapolating it to other areas. In particular, she asks whether a government's failure to regulate advertising may inhibit our ability to satisfy our intrinsic need for autonomy.

> The market economy contains structural incentives for businesses to market conceptions of the good life that support sales of their own products. Many other circumstances, including social norms, work culture, and infrastructure constraints, provide strong pressures for individuals to adopt particular conceptions of the good life. Hence, by adopting a hands-off approach, governments may actually be failing to protect an important freedom.
>
> (Michaelis 2000, p. 26)

A major problem with the current form of advertising is that people start to live their lives believing that a high level of income and material wealth are essential to their happiness (Jacobson and Mazur 1995; Klein 1999).

Similarly, Sanne (2002) argues that a focus on the social and psychological factors of consumer behavior neglects to consider how producers and businesses create consumption to satisfy their own interests.* It also neglects the role of the state and how business has a tendency to co-opt or lobby government for market conditions that favor consumption. This latter issue creates what Sanne (2002, p. 282) calls "structural lock-in effects." These effects are the following (in order of impact):

- The pattern of work-and-spend promoted by naturalizing paid work as "full time" with continuous, lifelong occupation supported by a legal structure of social insurance, eligibility to social benefits, etc.;

* For an insightful discussion of the historical and theoretical foundations of the consumer society and consumerism, see Firat and Dholakia (1998); Krishnan et al. (1995); Miles (1998); Miles et al. (2002); and Stearns (2001).

- The making of a consumer culture where marketable goods are forwarded as the means to satisfy not only material needs but also needs of social stratification* and cultural identification;†
- The promotion of individual means of transport, in particular cars, which presuppose heavy investments in road infrastructure, a classical aim of much business lobbying;
- New communication infrastructures which force a technology shift on consumers (Sanne 2002, p. 282).

Sanne (2002) argues that governments and businesses tend to counter incentives to curb consumption with deference to consumer sovereignty. This position passes the responsibility to the consumer, whose purchasing behavior then becomes subject to moral inquiry. The basic argument is that firms would provide environmentally friendly products if consumers demanded them. Hence, we must first address the values that support present lifestyles by educating consumers about the effects of their behavior. The problem is that there is a fine line between education and persuasion or coercion; the latter is an infringement on an individual's freedom to choose (Akerlof and Shiller 2016). But one could argue that an individual's freedom to choose is affected by advertising targeted directly at our insecurities. A reliance on consumer sovereignty is further complicated by the fact that a growing number of consumers in America seem paralyzed by an inability to speak out against materialistic tendencies because this would go against our core belief that people should have the freedom to make their own decisions (Harwood Group 1995). Hence, people turn away from questioning their behavior and that of others, undermining any argument that society will act responsibly if it is provided with sufficient information about the problems associated with its consumption. Thus, one pathway to a sustainable future may be to counter the pattern of work-and-spend by establishing shorter working hours or building in work arrangements that anticipate more holidays and leisure time (Kenny 1999; Sanne 2002; Hayden and Shandra 2009; Hayden 2013).‡ The notion here is that

* The differentialist view of consumption is that of social stratification, i.e., the use of wealth to conspicuously consume, to display artifacts of taste or expense commensurate with one's position in society (Sanne 2002). See also Thorstein Veblen's (1994 [1902]) classic work *The Theory of the Leisure Class*, which introduced the phrase "conspicuous consumption."

† The culturalist view of consumption connects the individual to his/her own self-understanding (Sanne 2002). Consumption is seen as a reflection of the self; what you buy supports your understanding of who you are. Both differentialist and culturalist views are part of utilitarianism because in both cases the objective is to increase overall well-being.

‡ In 1998, France's ruling left-wing coalition introduced a law to reduce the legal workweek from thirty-nine to thirty-five hours for most employees, effective January 1, 2000. The objectives of the law were to create jobs, enhance competitiveness, and establish a better balance between work and personal life (Ministère de l'emploi, de la cohésion sociale et du logement 2002). The basic idea was that capping working hours would force employers to hire more workers to cover any loss in productivity. However, since the law was enacted, it has failed to deliver on its promises: unemployment remains high and productivity has declined. A study by Estevão and Sá (2006) concluded that the law also caused an overall decline in welfare. Their conclusion was based on subjective measures of satisfaction with work hours, an increase in the number of workers holding two jobs, and data indicating that workers tried to circumvent the law by transitioning from large to small firms with fewer than twenty people. These small firms were required to implement the thirty-five–hour week by January 1, 2002. There was also concern that the law would reduce working conditions by, for example, increasing the amount of staggered hours worked, with a corresponding increase in task splitting and hand-over procedures (Bulard 1999). Given concerns such as those mentioned here, the current French administration is reconsidering the regulations affecting the length of the workweek under French labor law. For a brief discussion of the global history and arguments for and against a shorter work week, see www.shorterworkweek.com/history&arguments.html. For a more extensive discussion, see Hayden (2013) and Coote and Franklin (2013).

with less income and fewer working hours, we will consume less and be able to enjoy more leisure time (see Ashford and Kallis 2015 for arguments for and against that notion). However, there are those who question whether more leisure time would lead to a better quality of life:

> The psychological underpinnings of capitalism have enabled the leisure time which technology affords us to be converted into yet another opportunity for the consumption of unnecessary goods. Inasmuch as capitalism has "freed" the worker from the worst excesses of the labor process, it has sought to occupy his free time with "compensatory needs" that bring neither happiness nor personal fulfillment.
>
> (M. Redclift 1984, p. 53)

The psychological and environmental problems associated with advertising and the throughput (or consumer) society have been well documented (Brown 1981; de Graaf et al. 2002; Diener and Suh 2000; Durning 1992, 1994; Goodwin et al. 1997; Kasser 2002; Layard 2005; Princen et al. 2002; J. C. Ryan and Durning 1997; Schlosser 2002; P. C. Stern et al. 1997). However, calls for public recognition of the potential problems with a market economy, such as the PBS series and subsequent book *Affluenza: The All-Consuming Epidemic* (De Graaf et al. 2002), have failed to drive significant change. One possible reason for this is that we are so entrenched in the current economic paradigm that we are unable to recognize that we are in some way addicted to consuming (Ehrenfeld 2004). Although the consumption of products and services clearly improves our quality of life, we should be aware that our perception of the good life has been and is being manipulated by market actors whose primary incentive is profit. Hence, the line between consumption that satisfies intrinsic, and extrinsic needs, is becoming blurred.

The causal connection between unsustainable consumption and the global environmental crisis is becoming increasingly clear. The outcome document of Rio+20 in 2012, *The Future We Want*, declares the promotion of Sustainable Consumption and Production (SCP) as one of three critical overarching and essential objectives. In 2014, the Sustainable Development Goals included SCP as the twelfth goal, spurring an effort to create indicators to measure efforts to address the goal (UNEP 2015). SCP is seen as an effort

> to "decouple" economic growth and environmental degradation by increasing the efficiency of resource use in the production, distribution and use of products, aiming to keep the energy, material and pollution intensity of all production and consumption functions within the carrying capacities of natural ecosystems.
>
> (Voigt 2015, p. 246)

At the same time, a group of activists, scholars, and others, increasingly concerned with the effects of material consumption on the global environment, have catalyzed around a vocal group known as SCORAI (Sustainable Consumption Research and Action Initiative),* resulting in new activities and writings focusing on sustainable consumption (Cohen 2005; Cohen et al. 2010; Vergragt 2017). Parallel to this, there is an emerging discussion of "sufficiency," of both materials goods and energy, as a societal norm (Schneidewind and Zahrnt 2014). These activities identify with the "degrowth" movement (see the discussion in Section 3.7 in Chapter 3) and take on a distinctive anti-capitalism posture (Ashford 2017). These "bottom up" approaches, without government intervention and support, might not be strong enough on their own to cause a major shift in unsustainable consumption (Vergragt 2017), but some commentators are more optimistic, seeing a

* SCORAI has international participation and conferences (www.scorai.org), which fuel this discussion.

positive trend in the buying patterns of millennials, who are attracted to living in the cities rather than the suburbs, and who are somewhat constrained both in their living spaces and by not having large disposable incomes (Brown and Vergragt 2016). That there is movement to address the consumption issue at both the intergovernmental level with the SDGs (Bengtsson et al. 2018), and at the grassroots level with SCORAI, is encouraging.

This section began by asking whether focusing on industrialization and commerce is likely to enhance overall human well-being. While it seems clear that relying solely on economic growth (and consumption) to advance human well-being is too simplistic, and that there is an emerging understanding of this at the grassroots level, it is also clear that government has an important, if not critical, role to play in shaping the institutional structure of the economy to better accommodate non-consumption solutions to human needs (Kenny 1999; Manno 2002; Michaelis 2000; Sanne 2002). Thus, there is a need to consider innovative public policies to ensure that noncommercial values – such as the benefits received from family and community life – form an integral part of modern society and that the unintended consequences of unsustainable consumption do not limit society's capacity to ensure human well-being.

1.1.3 Employment and well-being

The income and wage aspects of employment and the factors behind growing trends in inequality in the United States and other developed nations will be addressed in Section 5.2 in Chapter 5. However, income and wages are only part of the overall benefit or satisfaction derived from employment. Beyond the creation of purchasing power and economic status, meaningful employment can provide social contacts/inclusion, enhance self-esteem, and lead to a better quality of life (Eurofound 2016). Further, our occupations and professions inform "our conception of self" and play an important role in shaping human character (Bertram and Sharpe 2000, p. 44).

European studies of living and working conditions consistently point to the critical importance of income and employment in life satisfaction (Eurofound 2002, 2004, 2005a, 2010, 2016). These studies also stress that life satisfaction improves when high levels of employment coexist with high-quality jobs. A number of factors combine to influence the quality of jobs and employment. These include career and employment security, skills development, issues relating to work–life balance, and worker health and safety (see Figure 1.3). In addition, increasing attention is being paid to the influence of work intensity and duration of job quality (Eurofound 2016) as well as the connection between occupations and wage inequality (Eurofound 2017).

During the turbulent period of social unrest in the 1960s, more highly educated industrial workers began to reject the routinization of jobs and the lack of creativity they represented and to call for more humane working conditions (Ashford 1976; Ashford and Caldart 1996; HEW 1973).* At the center of their concerns lay the need for more autonomous and engaging work that enables the potential and capabilities of workers to flourish (Green 1980; Heckscher 1996; Walton 1985). Today, concerns about worker autonomy, working hours, the intensification of work, physical and psychological working conditions, employment equity, and the growth in contingent/temporary workers are important factors in the debate on life satisfaction. For example, a survey of workers in twenty-eight European countries, including the acceding and candidate countries as well as the current member states of the European Union, found that individuals with low levels of work autonomy are less satisfied with their lives than those with high levels of work autonomy (Eurofound 2005b).

* For critiques of the Department of Health, Education, and Welfare's (HEW) influential report *Work in America*, see Koo (1973) and Karsh (1974).

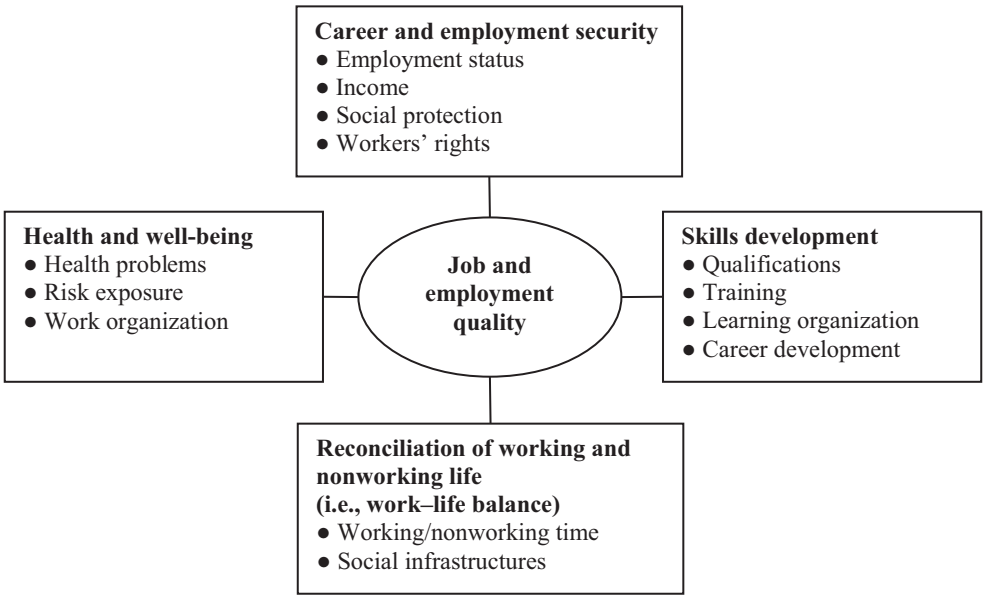

Figure 1.3 Factors that influence job and employment quality

In both Hochschild's *The Second Shift* (2012) and Schor's *The Overworked American* (2008), analysis of work patterns in America point to the negative impacts that the increase in daily working hours since the 1970s has had on many working families, especially on neglected children. Further, Boisard et al. (2003a) find that increased working time is clearly linked, by employees, to increasing health and safety risks. The perception of these employees is reinforced by the empirical evidence that links growing incidences of headaches, muscular pains, fatigue, anxiety, and insomnia to increasing daily working hours (ibid.).

Although policies designed to reduce daily hours worked might appear to be the logical way to enhance well-being – such as the French thirty-five–hour week – the European survey mentioned above (preliminarily) concluded that "reduced working time only has a minor impact on overall life satisfaction" (Eurofound 2005b, p. 54). This finding highlights the need to identify those factors that play a more significant role in enhancing the benefits of employment. The same European study found that long-term unemployment was the most significant factor affecting subjective quality of life, followed by adverse physical and psychological working conditions and low work autonomy. The number of hours worked and the intensification of work – that is, work carried out at a faster pace (see Boisard et al. 2003b) – were statistically significant but had a lower relative impact.* Studies of shorter work weeks must be reconciled with the salaries received by those workers that allow sufficient purchasing power of essential goods. In some cases, workers would gladly work less with or without the same take-home pay; in other cases, workers who are already hard-pressed to acquire necessities may balk at the prospect of a shorter week or even take on second jobs. Ashford and Kallis (2015) review the complexity of Europe

* Although these two last factors are found to be relatively less important, work intensity has been linked to stress (Dhondt 1997; Kompier and Levy 1994) and musculoskeletal disorders (Eurofound 2002), and the growing number of hours worked is commonly associated with the breakdown of family life (Hochschild 1997; Schor 1991).

adopting a shorter work week – see also Kallis et al. (2016), Hayden (2013), and Hayden and Shandra (2009).

It should be no surprise that long-term unemployment is the most important work-related factor affecting an individual's overall well-being. In addition to the obvious financial implications, extended periods of unemployment can damage self-esteem (Goldsmith et al. 1997), worsen symptoms of somatization, depression, and anxiety (Linn et al. 1985), and lead to social exclusion (Eurofound 2005a). More generally, people who have been unemployed for prolonged periods report lower levels of satisfaction with family life, social life, and health than those who have had continuous employment (Eurofound 2004). All these findings reinforce the view of many sociologists that work is an anchor point in life (between learning and retirement), and involuntary unemployment is detrimental to individual and family well-being. The negative impacts of unemployment also highlight the important benefits that meaningful employment can provide. In today's economic climate, these are particularly important observations.

Although the significance of unemployment points to the dilemma that a "bad" job is better than no access to a job over a prolonged period (Eurofound 2005a), adopting policies simply to create jobs with little concern for the value they provide workers seems unwise (Economist 2013). The idea of designing meaningful jobs that enrich lives is not new. For example, in *Design of Jobs*, L. E. Davis and Taylor (1972, p. 9) recognize that

> we are faced with a new and serious responsibility for appropriately developing jobs and organizations, and linking them to the larger society. The requirement now is to design jobs and roles in a context having few external referents and in which all must be designed: the jobs, roles, and the technological and social systems that will provide meaning for individuals and institutions in the larger society.

With the nature of work continually changing, primarily in response to global competition (Ackerman et al. 1998; Carr and Chen 2004; Dougherty 1998; ILO 2015), creating jobs that provide workers with value beyond income becomes increasingly challenging. In the continual drive for competitive advantage, firms can search for improved performance by enhancing the skills and ability of their internal workforce to respond to rapid change or search for ways to cut costs by reducing their commitment to the workforce in favor of contingent workers who can be hired as needed (Cappelli 1998). These two strategies for competitiveness lie at opposite ends of a continuum, where the former approach tends to reinforce job security and meaningful employment and the latter approach tends to undermine it.

The recent growth in the number of contingent workers (ILO 2015), and in the rate at which workers move between firms (reducing job tenure), creates a number of problems. First, temporary workers are unlikely to form bonds of friendship, trust, and commitment if they are employed for a short period of time (Bertram and Sharpe 2000). This situation not only undermines these key elements of human character (Sennett 1998), but also reduces opportunities for social inclusion. Second, the growing mobility of workers and the transferability of skills discourage firms from investing in training because they may not see a return on their investment. If a large proportion of firms adopted a poaching rather than a nurturing approach to the acquisition of worker skills, workers would become more responsible for their own training and career development (Cappelli 1998). This development might also raise distributive justice concerns, because firms (that is, executives and shareholders) would reap the benefits of the additional educational burden put on society as a whole (ibid.). Further, those workers who might not see the value of education and skill development would face increased social exclusion due to reduced ability for participation.

The strain that the changing nature of work has placed on employees and their families and friends has elevated the debate on work–life balance (Woolley 2006). For example, improving living and working conditions in Europe is the primary mission of the European Foundation for the Improvement of Living and Working Conditions (Eurofound).* Eurofound (2006b, p. 110) argues that employment "issues of flexitime and flexicurity should be systematically integrated with those of equal opportunity, and with those of good quality and affordable child and frail elderly care" and that "family-friendly employment policies might be defined as the basis for a new family policy, in which not only income, but time (time to care, to develop relationships) is conceptualized as a crucial resource" (ibid.).

In the United States, the concept of work–life balance has been adopted by many firms, keen to create a working environment more conducive to family life. For example, *Working Mother* magazine annually compiles a list of the top one hundred companies in America that offer the best work–life-balance programs.†

In summary, although paid employment provides an essential resource to help satisfy basic human needs for safety, security, and sustenance, employment (both paid and unpaid) is also a critical factor in the satisfaction of our human needs relating to competence, efficacy, and self-esteem; autonomy and authenticity; and connectedness. This section emphasizes the importance of thinking beyond policies that focus only on job creation to strategies that encourage the creation of *meaningful* jobs that ultimately enhance our general well-being and satisfaction with life. The growing interest in work–life balance in many firms and institutions across the world is encouraging, but the real challenge lies in developing jobs that enhance competitiveness without undermining the value employees derive from workforce participation (see Section 7.7 in Chapter 7 for a related discussion of values for sustainable employment).

Even if gainful and fulfilling employment is achieved, it may still not provide sufficient purchasing power for the employed. Expansion of capital ownership options for people through binary economics and other ownership vehicles may be necessary (see Section 3.6.1 in Chapter 3) to ensure that employment maximizes well-being. The provision of a universal basic income or UBI (see Section 3.7 in Chapter 3) is also increasingly being discussed (Van Parijs 1995, 2000; Colson, 2017) and small pilot programs have begun in 2017 in California, Canada, and elsewhere (Weller 2017). However, any approach that potentially reduces the number of people employed must not just provide an income sufficient to meet material needs, but must also consider how to replace the less-tangible benefits of employment to an individual's well-being.

1.2 Social justice, inequality, and the social contract between the governed and the government

> *The test of our progress is not whether we add more to the abundance of those who have much; it is whether we provide enough for those who have too little.*
>
> – Franklin Delano Roosevelt, Second Inaugural Address, January 20, 1937

An important conclusion drawn previously is that government should act as a trustee to ensure that basic human needs are met in an equitable and just manner. However,

* For more information, see the website for the European Foundation for the Improvement of Living and Working Conditions (Eurofound), www.eurofound.europa.eu/ (accessed October 16, 2017).

† See Working Mother Media (2017), *Working Mothers 100 Best Companies*, www.workingmother.com/best-companies-for-women (accessed October 16, 2017).

governments cannot provide the whole answer; competitive markets will also continue to play a vital role in meeting human needs. The challenge is to find a tolerable balance between government regulation and economic (and other forms of) freedom.*

Historically, economists have rejected the notion that the government should interfere with the market and argued that we should let people express their utility in the marketplace. However, as discussed in the previous section, consumers are finding it increasingly difficult to use their spending power effectively, let alone sustainably. Hence, it appears that there are two predominant views:

1 There are basic needs, and that is why we need *markets*; and
2 There are basic needs, and that is why we need *government*.

The focus of this section will be on the problems of equity within a country or region, equity between developed and developing nations, and intergenerational equity. The critical questions addressed here are what is fair within society and what role government should play. If the state is to play a role in needs satisfaction, we should have some understanding of the relative roles of the governed and the government. In this regard, we begin this section with a look at the *social contract*.

1.2.1 The social contract and the theory of justice

> *Man is born free; and everywhere he is in chains. One thinks himself the master of others, and still remains a greater slave than they.*
>
> – Jean-Jacques Rousseau 1762

The modern notion of the social contract can be traced back to the political and moral theories of Thomas Hobbes (1985 [1651]), John Locke (1988 [1690]), Jean-Jacques Rousseau (1968 [1762]), and Immanuel Kant (1989 [1785]), but the present-day interpretation rests most heavily on the work of John Rawls (1971).

The basic premise of the social contract is that an individual, in accepting that the pursuit of self-interest is ultimately self-defeating, relinquishes certain freedoms and rights to a system of collectively enforced social arrangements in exchange for peace and security (Friend 2004). Hence, he or she agrees to follow the "general will" of society and be held accountable if his or her "individual will" motivates behavior that breaks the social contract – that is, the law of the land (Rousseau 1968 [1762]). Whatever freedoms an individual loses in the transition from the state of nature† to the civil state are more than

* A reliance on markets is not likely to be sufficient, because if there is *producer-created demand*, then businesses influence both the supply and the demand side of the economy. Although such influence may not result in monopoly prices, it has the potential to reduce our ability to fulfill our basic human needs. Hence, government has a role to play in ensuring that a full range of products and services is provided for society.

† The "state of nature" refers to a hypothetical state of living that occurred before the establishment of society and the introduction of any form of government or social arrangements. Hence, in the state of nature, there are no restraints on how one can behave. The manner in which one defines the state of nature has implications for how the social contract is subsequently envisioned. For example, Hobbes's (1985 [1651]) political philosophy was based on the idea that men in a state of nature (i.e., in a state without civil government) are in a state of constant war, which any rational and self-motivated individual would want to end. Hence, the solution is to establish a social contract to ensure peace and order and to enable individuals to live in a civil society, which suits their own interest. Hobbes's hypothetical view of

compensated for by belonging to a civil society that ensures safety, liberties, and property rights. Hence, the social contract tries to balance individual freedom with being a member of a civil society that limits freedoms for the greater good.

During the nineteenth century, interest in the social contract declined as the utilitarian movement took hold (Rawls 1971). Utilitarianism argues that all moral judgments should aim to achieve the greatest good for the greatest number (Bentham 1970 [1781]; Mill 2002 [1863]). Hence, the objective of social institutions and human actions under a utilitarian framework is to develop and enforce laws that maximize the well-being and happiness of society. But utilitarianism suffers from two major problems (Brock 1973). First, the theory raises moral conflicts, particularly in regard to justice. For example, although reducing taxes might maximize the happiness (or material well-being) of society, it might also have the effect of reducing the availability of basic health or educational services for the disadvantaged. The aggregative character of utilitarianism means that it is not concerned about the pattern of distribution of welfare,* and therefore it provides no justification for inequality in its distribution (Cohen 1993). Further,

> it would not only be morally right to sacrifice the interests of individuals or minority groups if this would serve to maximize common utility, but those who are sacrificed would even have a moral duty of benevolence to let this happen.
>
> (Wetlesen 1999, p. 42)

Second, utilitarianism fails to support the more liberal nature of Western societies that emphasize liberty and individual rights. For example, slavery was a useful institution in the United States for promoting the success of agricultural advance, but it was ultimately rejected on moral and socio-political grounds. Similar arguments apply to the elimination of child labor in industrialization.

In an effort to address the shortcomings of utilitarianism, as well as those of intuitionism (that is, systems of philosophy that consider intuition the fundamental process of our knowledge), John Rawls published his seminal work in 1971, *A Theory of Justice*, which renewed the notion of the social contract by arguing that political and moral positions can be determined by using impartiality.

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the state of nature was extreme in that he envisioned a world in which man would constantly fear for his life. Locke (1988 [1690]) built on Hobbes's notion of the social contract but constructed his theories on a different view of the state of nature. Locke (1988 [1690]) argued that without government to enforce social arrangements and laws, man is not free to do anything he pleases because he is constrained by a sense of morality. In this regard, the "state of Nature is pre-political, but it is not pre-moral. [. . .] It is therefore both the view of human nature, and the nature of morality itself, which account for the differences between Hobbes' and Locke's views of the social contract" (C. Friend [2004], "The Social Contract," *The Internet Encyclopedia of Philosophy*, www.iep.utm.edu/soc-cont/ [accessed October 16, 2017]).

* The Brundtland report, *Our Common Future*, interprets "welfare" as the "satisfaction of human needs and aspirations" (WCED 1987, p. 43). This interpretation rests on fundamental human needs for "primary goods," such as food, shelter, clothing, and employment, and the legitimate expectations for a better life. Wetlesen (1999) argues that we can reasonably interpret the Brundtland Commission's view of welfare in an *objective* and a *subjective* sense. The former is concerned with conditions and standards of living, and the latter with the perceived quality of life that an individual is able to achieve. The Brundtland report is also concerned about the equitable distribution of welfare. "The essential needs of vast numbers of people in developing countries – for food, clothing, shelter, jobs – are not being met, and beyond their basic needs these people have legitimate aspirations for an improved quality of life. A world in which poverty and inequality are endemic will always be prone to ecological and other crises. Sustainable development requires meeting the basic needs of all and extending to all the opportunity to satisfy their aspirations for a better life" (WCED 1987, pp. 43–44).

The traditional social contract (envisioned in its various forms by Hobbes, Locke, Rousseau, and Kant) revolved around the agreement of people in a state of nature to form a society and government that they will be obligated to obey (Brock 1973). In this regard, the social contract is "primarily a theory of political obligation" (ibid., p. 488). In contrast, Rawls developed a version of the contract in which the relevant agreement revolves around moral principles, the principles of justice (ibid.). These principles can be considered a set of game rules that must be followed in designing new social arrangements, such as policies and programs. Central to Rawls's theory is the hypothetical situation, the "original position," in which an individual's knowledge is constrained by a "veil of ignorance." Behind the veil of ignorance,

> no one knows his place in society, his class position or social status; nor does he know his fortune in the distribution of natural assets and abilities, his intelligence and strength, and the like. Nor, again, does anyone know his conception of the good, the particulars of his rational plan of life, or even the special features of his psychology such as his aversion to risk or liability to optimism or pessimism. [. . .] The parties do not know the particular circumstances of their own society, [. . .] its economic or political situation, or the level of civilization and culture it has been able to achieve.
>
> (Rawls 1971, p. 137)

Rawls argues that decisions made for society should be made as if the participants do not know in advance what their lot in life will be.

In essence, Rawls's original position is an abstract version of the state of nature. It follows that from the original position people are able to identify what they must do individually and collectively (through social institutions) to realize the nature of justice. The simplicity of the veil of ignorance is its strength. By denying contracting parties the knowledge of their own characteristics or circumstances, they are forced to adopt the moral point of view and are unable to develop principles or policies that favor themselves. Rawls also states that contracting parties are assumed to be "rational and mutually disinterested" (Rawls 1971, p. 13): "rational" in the sense that the contracting party makes the most effective decision to reach a given end, and "mutually disinterested" in the sense that each person does not take "an interest in one another's interests" (ibid.). Thus, the "rational" choice is to develop principles and strategies for a just society from initial conditions that are inherently fair. Justice, therefore, proceeds out of fairness, giving rise to Rawls's formulation of "justice as fairness" (ibid., p. 17). Further, as Brock (1973, p. 489) notes, in Rawls's theory there is no historical agreement, which means that contracting parties are able to adopt "the standpoint of someone in the original position, and so the moral point of view, at any time." In theory, an individual in the original position is likely to adopt the same principles for justice as any other person, thereby establishing a robust set of principles and arrangements to regulate a just society.

A problem identified by Rawls when he is considering the design of the social institutions that form the basic structure of society is that individuals are born into the world with a wide range of circumstances and characteristics. Although it is not possible to alter many of the human characteristics that form our personalities and physical ability, Rawls argues that it is possible to adjust the social institutions to favor those who are disadvantaged. Hence, Rawls develops two principles of justice that he argues contracting parties would select in the original position – behind the veil of ignorance – to establish a just society:

> *First Principle*: Each person is to have an equal right to the most extensive total system of equal basic liberties compatible with a similar system of liberty for all.
>
> *Second Principle*: Social and economic inequalities are to be arranged so that they are both

a) to the greatest benefit of the least advantaged, consistent with the just savings principle
b) attached to offices and positions open to all under conditions of fair equality of opportunities.

(Rawls 1971, p. 302)

The first principle determines the distribution of civil liberties. It states that **each member of a society is to receive as much liberty (or personal freedom) as possible, as long as every other member of society receives the same**. The principle "implies that one person's good can never be considered a good if it constitutes an obstacle to someone else's pursuit of *their* good, even if that someone else comes a generation or two later" (Voorthuis and Gijbels 2010, p. 376). **The second principle states that social and economic inequalities are justified only if the most disadvantaged members of society are made relatively better off under new arrangements**. As Friend (2004, Section 3a) notes, "only if a rising tide truly does carry all boats upward, can economic inequalities be allowed for in a just society."

Rawls (1971) developed the second principle (known as the *difference principle*) using the *maximin rule* – that is, the best outcome is one that minimizes the maximum loss. He argued that since people do not know their position in society when they are behind the veil of ignorance, they will select the difference principle because it will be to their benefit if it is possible that they end up in the most disadvantaged section of society.

In the latter part of principle 2(a), Rawls introduces the notion of "just savings," which is the first comprehensive treatment of intergenerational equity (or justice). The basic idea is that when individuals are in the original position, behind the veil of ignorance, they do not know which generation or in what stage of socioeconomic development they might live and must, therefore, select "savings" principles that do not favor earlier generations over later ones.* In *A Theory of Justice*, Rawls's formulation of the just savings principle was based on a "motivational assumption" that contracting parties would want to save for their successors, regardless of whether their ancestors saved for them.† This formulation runs counter to the notion of "mutually disinterested" contracting parties and has been criticized as being sexist and arbitrary (Barry 1978; Okin 1989).

In *Political Liberalism*, Rawls (1993) revised his notion of the just savings principle to address these inconsistencies. His revised assumption is that *generations* are mutually disinterested. Therefore, contracting parties in the original position, behind the veil of ignorance, should

> agree to a savings principle subject to the further condition that they must want all previous generations to have followed it. Thus, the correct principle is that which the members of any generation (and so all generations) would adopt as the one their generation is to follow and as the principle they would want preceding generations to

* In the words of Rawls (1971, p. 287): "The parties do not know to which generation they belong or, what comes to the same thing, the stage of civilization of their society. They have no way of telling whether it is poor or relatively wealthy, largely agricultural or already industrialized, and so on. The veil of ignorance is complete in these respects. Thus, the persons in the original position are to ask themselves how much they would be willing to save at each stage on the assumption that all other generations are to save at the same rates. That is, they are to consider their willingness to save at any given phase of civilization with the understanding that the rates they propose are to regulate the whole span of accumulation. In effect, then, they must choose a just savings principle that assigns an appropriate rate of accumulation to each level of advance."

† Stanford Encyclopedia of Philosophy, "Intergenerational Justice, Rawls's Just Savings Principle," http://plato.stanford.edu/entries/justice-intergenerational/#RawJusSavPri (accessed October 16, 2017).

> have followed (and later generations to follow), no matter how far back (or forward) in time.
>
> (ibid., p. 274)

In this formulation, the principle of just savings is considered as binding for all previous and future generations. A problem, however, with Rawls's restatement is that he does not consider the implications of an increasing number of people in the future,* or that the current generation has a larger population than the previous generation – a fact that will clearly change how much society should save (Barry 1999; Casal and Williams 1995; P. Dasgupta 1994; Heyd 1992). Nevertheless, Rawls's ideas provide a useful starting point for discussions about intergenerational equity.

The two principles of justice are to be considered in a specific order. The first principle must be considered before the second principle because "liberty can only be restricted for the sake of liberty, not for other social and economic advantages" (Brock 1973, p. 490).† This ranking implies that society would rank the determination of civil liberties above that of economic advantage. Also, within the second principle, equality of opportunity (2b) is to be considered before the difference principle (2a), using the same rationale.

Before we progress further, it is worth mentioning that there are those who question these basic principles of justice. For example, Brock (1973) argues that people in the original position are likely to tolerate minor sacrifices in liberty for substantial economic gain, especially in situations of severe economic underdevelopment. Further, the difference principle assumes that all risk taking in the original position is irrational: "It allows no possible gain in one's life prospects, should one turn out to be among the better off members of society" (ibid., p. 491). This latter point reflects a common criticism of Rawls's decision to use a maximin rule (Harsanyi 1975). Rawls (1974) counters such arguments by stating that the original position masks the probabilities of outcomes, making alternative decision rules too risky. In addition, the difference principle acknowledges the fact that any good circumstances into which a person is born are "unearned and undeserved" (Brock 1973, p. 491). The benefits that are derived from these circumstances should therefore benefit all of society. Thus, whether a person is for or against Rawls's theory of justice will depend, to a certain extent, on that person's perceived position in society.

Rawls argues that his notion of justice as fairness begins with the adoption of the principles of a just society, which will guide all subsequent actions, including the reform of institutions.

> Having chosen a conception of justice, we can suppose that [. . . the contracting parties] are to choose a constitution and a legislature to enact laws, and so on, all in accordance with the principles of justice initially agreed upon. [. . .] Moreover, assuming that the original position does determine a set of principles (that is, that a particular conception of justice would be chosen), it will then be true that whenever social institutions satisfy these principles those engaged in them can say to one another that they are cooperating on terms to which they would agree if they were free and equal persons whose relations with respect to one another were fair.
>
> (Rawls 1971, p. 13)

* In contrast, in Northern industrialized societies there are implications of decreasing populations that cannot provide sufficient amenities for those retiring.

† It is possible to envisage a situation where liberty is constrained to protect liberty – i.e., "restrictions to individual freedoms are justified when the unfettered exercise of these freedoms conflicts with other freedoms" (Beatley 1994, p. 156). For example, the speed at which vehicles are allowed to drive is constrained to protect broader public freedoms such as individual safety.

Rawls argues that **the challenge raised by the difference principle is how to choose a social system (that is, a basic structure of government) that will ensure *distributive justice* in a capitalist market economy**. From the premise that the basic structure of government and its actions are regulated by a constitution protecting the liberties of equal citizenship, Rawls outlines four branches of government (Rawls 1971, pp. 274–284). The first is the *allocation branch*, required to keep markets competitive, prevent the formation of unreasonable market power, and correct for externalities. The second is the *stabilization branch*, needed to bring about strong effective demand (through the deployment of finance) and to maintain full employment and choice of occupation (that is, those who desire work can find it). The third is the *transfer branch*, essential to the formation and maintenance of a social minimum. By considering basic human needs, this branch determines the level of guaranteed minimum income that maximizes the long-term expectations of the least advantaged. Finally, there is the *distribution branch*, needed to enforce inheritance and gift taxes, in addition to general income or expenditure taxes. It follows that the allocation and stabilization branches are required to maintain an efficient economy; the transfer branch is designed to ensure that basic human needs are identified and met; and the distribution branch is needed to prevent the concentration of economic power.

As stated in the introduction to Section 9.7.2.1 in Chapter 9, we argue that **government has an important role as a trustee to ensure that basic human needs are met in an equitable and just manner**. The preceding discussion of the social contract and Rawls's theory of justice indicates how government could be structured to enable it to achieve this goal. But establishing a philosophy of government that ensures that basic human needs are met is a complex task.

Basic human needs can be categorized under the headings of *sustenance*, *competence*, *autonomy*, and *connectedness* (Kasser 2002). However, this formulation does not provide government with a clear directive on what actions are required to satisfy our basic needs. In this regard, Max-Neef et al.'s (1989) theory of human needs and satisfiers is of value in that it identifies the *qualities*, *things*, *actions*, and *settings* that are associated with fundamental needs such as protection, participation, and freedom. Further, because *satisfiers* are ultimately defined by society – an essential characteristic of the social contract – an interesting experiment would be for a representative group of contracting parties to complete Max-Neef et al.'s (1989) matrix of needs and satisfiers while behind the veil of ignorance. In theory, this action would develop the satisfiers of human needs that are culturally defined and impartial.

Once the basic human needs of a society are agreed on, the role of government (in a Rawlsian sense) is to develop laws, policies, and programs to assist those members of society who are unable to satisfy their basic needs. Opponents to the formation of such a welfare state argue that the only way to meet the needs of the disadvantaged is through economic regulation and taxation, which results in a loss of civil liberties (Nozick 1974).* Hence, civil liberty and social welfare stand in constant tension with each other.†

* In 1974 the late Robert Nozick – a professor of philosophy at Harvard and a colleague of John Rawls – published *Anarchy, State, and Utopia* in opposition to the *nonminimal welfare* state proposed in *A Theory of Justice*. Nozick (1974, p. ix) defined the minimal state as follows: "Our main conclusions about the state are that a minimal state, limited to the narrow functions of protection against force, theft, fraud, enforcement of contracts, and so on, is justified; that any more extensive state will violate persons' rights not to be forced to do certain things, and is unjustified; and that the minimal state is inspiring as well as right. Two noteworthy implications are that the state may not use its coercive apparatus for the purpose of getting some citizens to aid others, or in order to prohibit activities to people for their own good or protection." Interestingly, although Nozick's and Rawls's philosophies of government were opposed, they both agreed that individual rights are more important than utilitarian considerations and that government should be neutral in respect to people's right to choose and pursue their own vision of a good life (Sandel 1996).

† "The extent to which the needs theory dominates the philosophy of government [. . .] can be measured by the levels of taxation and regulation of economic activity. Government takes money out of the hands

One might question, however, whether a laissez-faire market is able to operate free from government intervention and supply the products and services that society needs. (See the discussion of Stiglitz in his *Rewriting the Rules* 2015 in Chapters 3 and 13.) In particular, Brulle (2000, p. 37) expresses concern that government is not able to operationalize the social contract, arguing "there is little public policy about policy."

Brulle (2000) describes how since the Great Depression, the U.S. government has become an active participant in economic activity, primarily to stabilize the economic system and to compensate for the adverse effects of capital accumulation. This involvement in the economy means that the government assumes a level of responsibility to ensure the legitimacy of the market. Because economic growth is based on investment and consumption, the government plays an important role in furthering these two drivers of economic development. Brulle (2000, pp. 34–35) argues that the

> inability of the market to maintain itself creates a politically maintained private market in which socialized production and private appropriation of production exist in a system legitimized by formal democratic rules. This creates a conflict between the normative justifications for collective decisions. Market outcomes are legitimized as the outcomes of democratic will formation. This leads to a series of contradictions and crises in Western society.

Brulle's (2000) major concern is that the public sphere – "an arena in which the common good was debated and a democratic consensus was reached" (p. 37) – has been undermined by the insulation of government action from public input. This situation has had the effect of exposing the public sphere to "the manipulative deployment of media power to procure mass loyalty, consumer demand, and compliance with systemic imperatives" (Habermas 1992, p. 452, quoted in Brulle 2000, p. 37). In such an environment, it is difficult to envision how society can be an effective part of the decision-making process. Thus, the social contract between the governed and the government is undermined, thwarting efforts to establish a social order that enables "the communicative generation of legitimate power" (ibid.).*

Having outlined the notion of the social contract in this section, in Section 9.7.2.1 in Chapter 9 we attempt to operationalize the social contract by crafting a decision-making philosophy that can be applied within a trade-off analysis framework. Put differently, we have developed a *revised* Rawlsian decision-making philosophy to advance sustainable development. Our revision is the creation of a third principle of justice – the *environmental principle* – that seeks to connect the social and natural realms in a decision-making philosophy focus on sustainable development.

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of individuals and spends it on what it considers are the needs priorities of the people. The more an individual is taxed, the greater the loss of his freedom to determine his own priorities and to satisfy his individual needs. In short, through taxation and regulation, government decides how a person should spend his money. Rather than leave a person's resources to himself and permit him to make his own arrangements for the satisfaction of his needs, the government expropriates his wealth and in return seeks to provide him the necessities of life as determined by government. [. . .] It is clear that a needs based theory of human rights can be pursued only at the expense of the gradual loss of freedom and a gradual movement towards totalitarianism" (M. Cooray [1985], "Human Rights in Australia," *The Basic Human Rights and the Needs Based Human Rights*, www.ourcivilisation.com/cooray/rights/chap5.htm [accessed February 1, 2018]).

* For the implications on the nature of jobs, see London (2013).

1.2.2 Equality of what?

The manner in which equality is defined and evaluated is directly linked to the types of inequalities one is trying to right. This section takes a brief look at the various ways in which equality is considered and how these considerations relate to the broader picture of sustainable development.

The major philosophies of government (or social arrangements), some of which are discussed in the previous section, all support the notion of equality in terms of a "focal variable" such as income, wealth, happiness, opportunities, rights, or needs fulfillment (Sen 1992, p. 2). The basic premise of these theories is that each individual should have *equality of opportunities* in regard to the variable(s) selected (see Rawls's second principle of justice). For example, everyone should have an equal opportunity to gain employment or to have an education. In a world in which everyone's circumstances and abilities are the same, focusing on equality of opportunity would suffice. But this is not the world in which we live, and adopting such a posture in decision-making often results in unequal treatment of the disadvantaged.

In the book *Inequality Reexamined*, Nobel Prize–winning economist Amartya Sen (1992) raises the question "equality of what?" and links it directly to the consideration of human diversity. In particular, he argues that social arrangements (for example, government policies and laws) should be assessed in relation to a person's capability to achieve functionings.

Sen's (1992) idea of *functionings* is Aristotelian in origin.* He defines functionings as the various things that a person has "reason to value," from being well nourished or avoiding escapable morbidity to more complex realizations, such as having self-respect or being a valued member of a community (ibid., p. 5). Alkire (2003, p. 5) describes Sen's idea of functionings as

> an umbrella term for the resources and activities and attitudes people spontaneously recognize to be important – such as poise, knowledge, a warm friendship, an educated mind, a good job. What is centrally important varies in different places, which is why there is no rigid and inflexible set of specific capabilities – the priorities will have to be set and reset again and again in different ways.

It follows that an individual's achieved *functionings* are those that the individual has successfully pursued and realized. However, Sen (1992) argues that focusing on achieved functionings (or focal variables) alone is not sufficient. The inherent diversity of external circumstances and psychological and physiological makeup among individuals means that the characteristics of inequality tend to diverge within the variable under analysis. In other words, differences in the circumstances and abilities of people mean that *equality of opportunity* will not lead to *equal* wealth or happiness, for example. In addition,

> equality in terms of one variable may not coincide with equality in the scale of another. Equal opportunities can lead to very unequal incomes. Equal incomes can go with significant differences in wealth. Equal wealth can coexist with very unequal happiness. Equal happiness can go with widely divergent fulfillment of needs. Equal fulfillment of needs can be associated with very different freedoms of choice. And so on.
>
> (ibid., p. 2)

* Aristotle believed that the attainment of the good life or happiness was the result of self-realizationism – i.e., the ability to realize one's potentialities, character, or personality. To Aristotle, the person who has the greatest potentialities and is able to actualize this potential has the brightest prospect of happiness. Conversely, the person whose potential remains unfulfilled will ultimately be frustrated and unhappy.

Hence, Sen's core argument is that "the basic heterogeneity of human beings" and "the multiplicity of variables in terms of which equality can be judged" are two factors that complicate the idea of equality (ibid., p. 1). This means that a focus on individual functionings (or focal variables) does not necessarily incorporate an individual's *freedom** to achieve. Hence, Sen introduces the concept of *capability* to describe an individual's freedom to achieve "valuable" functionings.

> It represents the various combinations of functionings (beings and doings) that the person can achieve. Capability is, thus, a set of vectors of functionings, reflecting the person's freedom to lead one type of life or another [. . .] to choose from possible livings.
>
> (ibid., p. 40)†

Sen's focus on functionings and on the *capability* to achieve functionings differs from the traditional views of equality that tend to focus on variables such as income, wealth, or happiness (1992, p. 7). Instead of measuring equality using such focal variables, Sen argues that a "more adequate way of considering 'real' equality of opportunities must be through equality of capabilities (or through the elimination of unambiguous inequalities in capabilities, since capability comparisons are typically incomplete)" (ibid.).

A major difference between Sen's capabilities-based assessment of equality and Rawls's theory of "justice as fairness" lies in their assessment of the holdings of "primary goods" – that is, goods that are considered essential for the survival and self-respect of individuals (Rawls 1971).

Rawls's theory is that in the original position – behind the veil of ignorance – most people will be able to agree on a set of primary goods that are considered important regardless of an individual's circumstances. Rawls argues that social primary goods are "things that every rational man is presumed to want," such as "rights and liberties, powers and

* The freedom Sen (1992, p. 31) refers to is "the real *opportunity* that we have to accomplish what we value." Sen (1999, p. 36) also described development as the "process of expanding real freedoms." Sen views the expansion of freedom as both "(1) the *primary end* and (2) the *principal means* of development" (ibid.). The former is referred to as the "constitutive role" and the latter as the "instrumental role." The "constitutive role" refers to the basic premise that freedom must be regarded as a primary objective of the development process. The "instrumental role" refers to the various ways in which freedom can act as an "instrument" of development. Sen identifies five types of instrumental freedoms that tend to enhance the capability of an individual to live more freely (ibid., pp. 38–40): (1) *political freedoms* (the opportunities that individuals have to be a part of democratic processes); (2) *economic facilities* (the opportunities that individuals have to "utilize economic resources for the purposes of consumption, or production, or exchange"); (3) *social opportunities* (the access that individuals have to facilities such as basic education and health care, which are essential if a person is to have an effective role in economic and political activities); (4) *transparency guarantees* ("the freedom to deal with one another under guarantees of disclosure and lucidity"); and (5) *protective security* (the need to provide a social safety net to assist those individuals who face abject misery and possibly even starvation and death).

† Although Sen does not formally list capabilities, this has not prevented others from doing so. The most comprehensive attempt is presented by Nussbaum (2000), who developed a set of "central human functional capabilities." The major headings of Nussbaum's list of capabilities include the following: life; bodily health; bodily integrity; senses, imagination, thought; emotions; practical reason; affiliation; other species; and control over one's environment (ibid., pp. 78–80). Under each heading, Nussbaum defines the "combined" capabilities that a person should be able to achieve. For example, the capabilities for bodily health are defined as "being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter" (ibid., p. 78).

opportunities, income and wealth, [and] [. . .] self-respect" (Rawls 1971, p. 62).* Hence, Rawls's general conception is that "all social primary goods [. . .] are to be distributed equally unless an unequal distribution of any or all of these goods is to the advantage of the least favored" (ibid., p. 303). The focus of Rawls's formulation is "equality of opportunity," which is captured within the difference principle (see Section 1.2.1).

Sen identified a fundamental problem with Rawls's formulation of the difference principle:

> Two persons holding the same bundle of primary goods can have very different freedoms to pursue their respective conceptions of the [greater] good (whether or not these conceptions coincide). To judge equality – or for that matter efficiency – in the space of primary goods amounts to giving priority to the means of freedom over any assessment of the extents of freedom, and this can be a drawback in many contexts.
> (Sen 1992, pp. 8–9)

Thus, Sen argues that equality in the holdings of primary goods or resources ignores the fact that disadvantaged members of society may not have the capability or freedom to convert these goods/resources into the things that they value. Therefore, if a government were to use primary goods as a measure of well-being for purposes of justice, there is a concern that disadvantaged members of society might suffer from unjust (or unequal) treatment. To put it another way, these people are likely to have an unfair share of opportunity. Thus, Sen's capability-based assessment of equality forms the foundation for affirmative action, for empowering the powerless, and for positive discrimination (Bidwai 1998).

Sen's theories of capabilities and functionings and Rawls's theory of "justice as fairness" have had a significant impact on how governments have shaped social arrangements to establish equitable and just societies.† Sen's theories have also provided a strong conceptual foundation for the UN's work on human development (Fukuda-Parr 2002, 2003). In particular, his ideas shaped the UN *Human Development Reports* (HDRs) and the Human Development Index (HDI), including its extensions. More recently the Stiglitz, Sen, and Fitoussi Commission (2009), discussed in Section 1.1.1, has integrated Sen's ethics into the measurement of human progress and this has led directly to the creation of the OECD Better Life Index as well as influencing the Sustainable Development Goals.

The essence of Sen's conception of equality is that "a person's capability to achieve does indeed stand for the opportunity to pursue his or her objectives" (Sen 1992, p. 7). From this premise, the UN defined human development as the "process of enlarging people's choices" (UNDP 1995, p. 11) and sought the removal of obstacles – "such as illiteracy, ill health, lack of access to resources, or lack of civil and political freedoms" (Fukuda-Parr 2003, p. 303) – that prevent an individual from achieving his or her valued objectives in life. Thus, the intention of the UN HDI was to shift international attention to the expansion of basic human capabilities, especially the capability to (1) have a healthy life, (2) acquire knowledge, and (3) reach a decent standard of living.‡ Because the purpose of the HDRs is the "global evaluation of development," these three indexes

* Rawls (1971, p. 62) states that other primary goods, such as health and vigor or intelligence and imagination, are "natural" primary goods. Although natural primary goods can be influenced by social arrangements, they are not directly under their control.

† Incidentally, it was Sen (1993, p. 43) who once said "it is significant that no democratic country with a relatively free press has ever experienced a major famine." That is, there are no famines in democracies.

‡ Although the HDI's focus is on "evaluating" human development, Sen (2003) argues that the human development perspective also contains an "agency perspective" that is often overlooked. When one has identified where improvement to human lives can be made through the HDI, it is necessary to turn to the agency perspective to develop policy and political strategies to realize the necessary changes.

were selected for their universal value since they form the basis on which many choices in life depend (Fukuda-Parr 2002, p. 6). The notion of investing in health and education in particular maps closely with *physical health* and *learning*, two essential attributes an individual requires to attain a high level of well-being.

To provide a context for the preceding discussion, Table 1.3 compares and contrasts the human development approach with the neoliberal (utilitarian) alternative and its precursor, the basic-needs approach (first espoused by Paul Streeten [1982] and Frances Stewart [1985]).* Table 1.3 also presents an idealized framework from which public policy formulation can be considered. For example, by looking at the "evaluative" and "agency" aspects of a set of policies, it should be possible to determine whether the government supports a *human development* approach (that is, its policies are just and fair and consider human capabilities) or a *neoliberal* approach (that is, its policies are utilitarian in nature) to the process of development. It is interesting to note that none of the approaches contain an explicit concern for the environment, on which human activity and development depend.† It is clear that if we are to transition toward sustainable development, the need to protect the environment must be added to the need to ensure that we live in an equitable and just society that recognizes human capabilities (see the related discussion in Section 9.7.2.1 in Chapter 9).

Sen's work has also had an important influence on the formulation of the concept of sustainable development, which he defines as "development that promotes the capabilities of present people without compromising capabilities of future generations" (Sen 2000, p. 5). Sen believes that the Brundtland (need-centered) view of development is "illuminating" but "incomplete" (ibid., p. 2). He argues that individuals must be seen as "agents who can think and act, not just as patients who have needs that require catering" (ibid.). His basic premise is that by treating people as agents, they will – given the opportunity – be able to "think, assess, evaluate, resolve, inspire, agitate, and through these means, reshape the world" (ibid., p. 1). Hence, Sen advocates a capability-centered approach to sustainable development. The objective of Sen's ideas is to "integrate the idea of sustainability with the perspective of freedom, so that we see human beings not merely as creatures who have needs but primarily as people whose freedoms really matter" (ibid., p. 6). (See Section 9.7.2.1 in Chapter 9 for a discussion of how Rawls's theory of justice could advance individual freedom and sustainable development.) Sen's contribution to our understanding of equality and his notion of development as "a momentous engagement with freedom's possibilities" (Sen 1999, p. 298) provided one of the few credible challenges to the neoliberal (or utilitarian) orthodoxy that guided development efforts since the 1980s (Saha 2002). If neoliberalism is "dead," as Stiglitz declared in 2016, then it is in part thanks to Sen's contributions.‡

As mentioned earlier, one of Sen's major contributions to sustainable development is his influence on the UN's conceptualization of human development that formed the basis for the HDRs and the HDI. Fukuda-Parr (2002), the director of the HDRs from

* It is worth noting that Sen's theories on capabilities and functionings grew from the basic-needs approach to international development (Alkire 2005). Sen's main reason for rethinking the basic-needs approach was to introduce a greater role for individual freedom. His concern was that the basic-needs approach tended to focus on commodities, as opposed to human beings and their functionings. See Section 1.1 for a discussion of human needs and sustainability.

† However, they do implicitly incorporate employment and purchasing power. This highlights the two different strands of sustainability scholarship, one focusing on the environment and the other on economic empowerment.

‡ While there are still many proponents of neoliberalism, the combination of low growth and rising inequality since the 2008 financial crisis has given an increasing relevance to the arguments against neoliberalism.

Table 1.3 Comparison of key features of the human development approach with the neoliberal alternative and the basic-needs antecedent

	Human development[a]	*Neoliberalism*	*Basic needs*
Philosophical underpinnings			
Normative assumptions	Explicit	Implicit	Not fully specified
Concept of well-being	Functionings and capabilities	Utility	Meeting basic needs
Evaluative aspect			
Leading criterion for evaluating development progress	Human capabilities; equality of outcomes; fairness and justice in institutional arrangements	Economic well-being; economic growth; efficiency	Poverty reduction in terms of income; access to basic social services
Measurement tools favored	Human outcomes, deprivational and distributional measures	Economic activity and conditions, averages and aggregate measures	Access to material means; deprivational measures
Agency aspect			
People in development as ends and/or means	Ends and means: beneficiaries and agents	Means: human resources for economic activity	Ends: beneficiaries
Mobilizing agency	Individual action and collective action	Individual action	Concern with political will and political base
Development strategy			
Key operational goals	Expanding people's choices (social, economic, and political)	Economic growth	Expanding basic social services
Policy concerns			
Distribution of benefits and costs	Emphasis on equality and human rights of all individuals	Concern with poverty	Concern with poverty
Links between development and human rights and freedoms	Human rights and freedoms have intrinsic value and are development objectives; current research on their instrumental role through links to economic and social progress	No explicit connection; current search for link between political and civil freedoms and economic growth	No explicit connection

Source: Adapted from Fukuda-Parr (2002, 2003).

a This perspective is specifically and especially concerned with distributional equity. Neoliberalism and basic needs are not. For example, a neoliberal approach might focus on raising people above a poverty level, but it will still tolerate enormous levels of disparity.

1995 to 2006, argued that it is possible to describe the UN's general human development agenda using five core elements. Fukuda-Parr called these five elements the "New York Consensus"* because they are reflected in many of the UN agreements. It is interesting to note the similarities between Sen's ideas on human development and the ideas presented in the New York Consensus. The five elements of the UN's general human development agenda (or the New York Consensus) are as follows:

- Priority to "social development" with the goals of expansion of education and health opportunities;
- Economic growth that generates resources for human development in its many dimensions;
- Political and social reforms for democratic governance that secure human rights so that people can live in freedom and dignity, expanding [. . . collective] agency, participation and autonomy;
- Equity in above three elements with a concern with all individuals. Special attention to the downtrodden and the poor whose interests are often neglected in public policy;
- Policy and institutional reforms at the global level that create a more conducive economic environment for poor countries to have access to global markets, technology, information.

(Fukuda-Parr 2002, p. 10)

The preceding list presents a robust agenda (or paradigm) for *human* development, but human development is only a part – although an extremely vital part – of the broader notion of sustainable development. If we take a holistic look at all the UN agreements, it is possible to identify several elements that, if added to the New York Consensus, would transform it into a consensus of sustainable development. It is possible to describe the international community's notion of sustainable development as consisting of five critical components: (1) peace and security, (2) economic development, (3) social development, (4) national governance that ensures peace and development, and (5) environmental protection (Dernbach 1998, 2004). A comparison of these five components with the five elements listed previously reveals that national governance that ensures peace and security, environmental protection, and employment (an important objective of economic and social development) are not explicitly mentioned in Fukuda-Parr's New York Consensus. Hence, if we are to integrate human development with the broader notion of sustainable development, the following elements need to be added:

- The creation of secure, satisfying, and safe employment with adequate purchasing power;
- Environmental protection at local, regional, national, and global levels constitutes an integral part of the social and economic development process and is not to be considered in isolation from it;
- Extending equity considerations to future generations; and
- National governance that ensures peace and security.

The first additional element, employment, is key to this book's conception of sustainable development and is discussed in Section 1.1.3 and throughout Chapter 5. The remaining

* The New York Consensus stands in stark contrast to the Washington Consensus, which promotes market-liberalizing policies and a reduction in big government (ul Haque 2004). "Washington Consensus policies are sometimes referred to as 'neo-liberal,' based on 'market fundamentalism,' a resuscitation of the laissez-faire policies that were popular in some circles in the nineteenth century" (Stiglitz 2002, p. 74).

three additional elements might be called the "Rio elements" because they stem from the 1992 Rio Declaration on Environment and Development. The most significant challenge posed by these new elements lies not in the need to protect the environment or to provide peace and security (although achieving these objectives has proved far from easy), but in the idea of intergenerational equity. Put simply, we are unable to allocate resources equitably in the present, let alone across generations. Hence, we do not have a *near future* that is properly allocated.

The ability of governments to develop equitable social arrangements that also transition societies toward more sustainable forms of development will depend on how they, and society, view the purpose of development – either to establish a fair and just society (Rawlsianism) or to maximize the well-being of society in the neoclassical sense (utilitarianism). Regardless of the approach, there is consensus that change is needed, as inequality is rising and the perception of well-being is decreasing (Friedman and Hertz 2015).

1.2.3 Rising inequality

Though economic inequality is a hallmark of human civilization, the size of the gap between the haves and have-nots and what it is they "have" has varied throughout recorded history. How the gap is measured reflects underlying societal ethics, and in recent years has become increasingly sophisticated. The most common measure, the Gini coefficient, is a "relative" measure of inequality – capturing the relative proportion of an individual's slice of cake, regardless of the size of the cake. In contrast, "absolute" measures consider that adding a fixed amount to each individual's slice of cake would not affect inequality, whereas "centrist" measures attempt to account for the effect of both equi-proportional income increase and fixed or equal increases (Atkinson 2015; Subramanian 2014; Kolm 1975). Along with how we measure, there is also the question of what we measure: inequality of income, of wealth, of consumption, or of opportunity? Finally, with the advent of globalization* came the idea of measuring not only within country inequality (intranational) and between country inequality (international), but also global interpersonal inequality (Milanovic 2005; Atkinson and Brandolini 2010).

After WWII, inequality in the U.S. and EU shrank, but since the early 1980s† it has been increasing in both economic venues regardless of which inequality measure is used. Thomas Piketty's (2014) *Capital in the 21st Century*, which builds on the work of Atkinson and others, has sparked a growing interest in such inequality trends, the data behind them, and the ethical and societal questions they raise.

While many social and physical goods can be distributed unequally, it is the distribution of capital ownership, capital income, and labor income both within and between countries that has ignited global concern. This concern has fueled grassroots movements and political shifts – including the Occupy Movement and the rise of Bernie Sanders in the U.S. and Diem25 in Europe – and put Piketty's 700-page economics text on the *New York Times* bestseller list. It is not without reason that Piketty claims "Trump's victory is primarily due to the explosion in economic and geographic inequality in the US over several decades and the inability of successive governments to deal with this" (Piketty 2016).

* In 1999, the UNDP called for policies to specifically address rising inequality caused by economic globalization.

† While inequality is also on the rise in other developed and developing countries across the world, and the U.S. is not considered to have the highest levels of inequality as captured by the Gini Coefficient (South Africa does), the dramatic increase of inequality in the U.S. and the EU has been driving the debate.

Piketty's data – a century of income data and two centuries of wealth data created in collaboration with Atkinson and Saez – does not support the neoclassical assumption that inequality naturally decreases as nations develop. Instead, it reveals that capitalism concentrates wealth at the top, because over time the rate of return on capital is greater than the rate of economic growth.* Furthermore, he shows that labor income or wage inequality is likely higher (in 2014) than at any time in the past, anywhere in the world. Finally, the complex relationship between the inequalities of capital ownership and income and labor income leads Piketty to conclude that income inequality is determined by a society's institutions and policies. While these factors surely play a dominate role, the role of innovation and digital technology in displacing jobs and creating a winner-takes-all economy must also be considered (Brynjolfsson and McAfee 2014).

We believe it is also optimistic that, as Milanovic (2002) argues, between country inequality has been steadily decreasing as a direct consequence of globalization, driving a steady decline in global (interpersonal) inequality. More recent analysis suggests that the global inequality decline only holds true using relative measures, but that with both absolute and centrist measures, global inequality has increased steadily (Niño-Zarazua et al. 2016).

The growing inequality trends are now raising serious questions about our economic systems and their underlying ethical frameworks. They are also raising concerns about social instability. For example, the 2014 report of the World Economic Forum's Global Risks ranked global income disparity as the risk most likely to manifest itself over the next ten years (World Economic Forum 2014a).

Outside of the growing academic literature and debate around inequality, the communication of information has also brought information on the lifestyles of others to every corner of the globe, increasing the awareness of the vast differences in wealth that exist. Inequality looks set to be a defining characteristic and challenge of the coming decade and beyond.

Intranational and international inequality represent both a social and moral problem, especially for those people and nations who do not have access to, and are deprived of, essential goods and services. Trade, as presently constructed, exacerbates inequality, as well as local and global environmental damage. So does the present financial system, which rewards wealth and income disproportionally and has created a quasi-permanent underclass of people and nations. Furthermore, inequality exacerbates environmental damage, and vice versa (Laurent 2013).

While there is much debate over the possible causes of rising inequality, there is a growing consensus that inequality is not the inevitable by-product of growth, but instead inhibits its growth (Stiglitz 2016). Rising inequality has been associated with trends in developed countries for capital return to exceed economic growth (Piketty 2014), the poor design of legal and social structures (Stiglitz 2016), and unemployment since the Great Recession (Eurofound 2017) (see Section 3.5.2 in Chapter 3). To address such trends will require the restructuring of laws, regulations, and institutions in order to decrease inequality (see the discussion in Chapter 13). Emmanuel Saez (2016), Director of the Center for Equitable Growth at the University of California at Berkley, has argued that the two countries with the greatest income inequality are the U.S. and the UK, and, in his view, this occurred as a result of their involvement in the financialization of the economy that led to the economic meltdown in 2008 (see Section 3.3.1 in Chapter 3). His recommendation is that these countries need to respond to the deficiencies in policies of corporate taxation and financial regulation, which began to be dismantled in the 1970s. In particular, capital and

* See Chapter 5 for a discussion on inequality and growth, including the view that reducing inequality could drive economic growth (Stiglitz 2016).

labor income and wealth need to be taxed appropriately (see the related discussion in Chapter 13).

David Autor, who has written extensively on U.S. wage inequality and the negative effect of the rise of China on the American worker, believes that inequalities in education drive current U.S. inequality, and that "the best policies we have involve investing in our citizenry [. . . and include] investments [in] preschool, good primary and secondary schools, [and] adequate nutrition and health care" (Autor 2014a, 2014b). These recommendations tie inequality directly to opportunity and Sen's notion of capabilities. Given that ever-expanding consumption is not ecologically sustainable and is not directly correlated with well-being (see Section 1.1.2), and employment is correlated with well-being (see Section 1.1.3), a focus on increasing equality of opportunity rather than equality of income, wealth, or consumption may best address the decreased sense of well-being resulting from rising inequality, without putting at risk the well-being of future generations.

1.3 Living beyond our ecological means: the technology debate

Ethical decision-making relies not just on measurement of human progress and ethical frameworks but also on the question of the flexibility of ecological limits with respect to human activity and economic growth. This debate has continued since Thomas Malthus's 1798 predictions of agricultural land constraining human population, through Ehrlich's (1968) treatment of population growth, Meadows et al.'s 1972 book *Limits to Growth*, and Diamond's 2004 book *Collapse*, and remains an increasingly urgent question today. Unfortunately, global ecological collapse is not an unimaginable scenario. The consequences of increased ecological damage as a result of economic growth has led to four optimistic scenarios:

- That ecological impacts of growth (from population growth *or* increases in per capita consumption) can be countered through the substitution of available existing technologies (see Solow's notion of substitutability in Section 1.3.1);
- That increasing levels of wealth will be accompanied by environmental improvement as the perceived value of the environment increases with rising affluence (see the environmental Kuznets curve hypothesis in Section 1.3.2);
- That new technology can and will emerge to address even the most difficult environmental problems (see the discussion of technological optimism in Section 1.3.3); and
- That both social and technological responses will arise in time to prevent irreversible ecological damage (see the discussion of tipping points in Section 1.3.4).

The remaining alternative is that we pass an environmental tipping point beyond which no solution can be found to be adequate because of its late realization and response and that this results in ecosystem (and human population) collapse. Therefore, each of these scenarios is essential to evaluate and informs the scope and rate of change needed to avoid undesirable outcomes.

1.3.1 Growth, technology, and substitution versus a steady-state economy

The dominant neoclassical economic paradigm assumes the existence of utility functions, which constitute the foundation of production and consumption functions. These functions act as simplified abstractions of economic decisions. In the consumption production framework, every material product in the system is produced by other products made within the system, plus exogenous capital and labor (R. Ayres and Warr 2009). A particularly interesting observation made by R. Ayres and Warr (2009), but also by Georgescu-Roegen (1971; 1993), is that this model of the economy displays a characteristic neglect of

energy and material flows. In addition, there is an obvious need to relate changes in the economy and technology to environmental impacts.

One of the earliest, most intuitive approaches to understanding environmental problems came from the "I = PAT" formula (Ehrlich and Holdren 1971):

> Impact (environmental) = Population × Affluence (GDP per capita) × Technology (environmental impact per dollar of GDP)

Since its publication, a number of revisions have been suggested. For example, Holdren et al. (1995) adjusted the formula to disaggregate affluence from resource use and to separate measures of the "stress" that technology imposes on the environment from measures of actual damage, which depend on stress and "susceptibility." The measurement of susceptibility is predominantly a function of cumulative damage from previous environmental stress. Thus, the revised formula is:

> Damage (environmental) = Population × Economic activity per person (affluence) × Resource use per economic activity (resources) × Stress on the environmental per resource use (technology) × Damage per stress (susceptibility).

It is important to acknowledge that formulas such as these are a simple representation of a highly complex system. They are informative and can help stimulate discussions about the causes of environmental degradation, but to argue whether they are "right" is unwise (Holdren et al. 1995). What they indicate is that the magnitudes of all the factors need to be considered, because these factors have multiplicative effects on environmental damage. However, we should also recognize the limitations of these formulas. They do not take into account the interdependencies or nonlinearity that might exist between the factors, there is no explicit consideration of societal factors and how they can influence each variable, and they do not consider how each of the variables can change over time, which is especially critical for technological change (ibid.).

Given the political difficulty inherent in developing measures to curtail population growth or limit/reduce affluence and the associated levels of consumption, it seems that the easiest way to achieve a less environmentally destructive society is to focus on technological innovation. Indeed, the "technological fix" has become a major or integral aspect of many theories put forward on how society can live within its ecological means.

Two interesting (somewhat academic) developments in economics that treat technology differently are the ideas of *substitutability* (Solow 1993) and the *steady-state economy* (Czech and Daly 2004; Daly 1991, 1996, 2008),* which is part of the much broader view of ecological/green/natural/sustainability economics (R. U. Ayres 2008; Costanza 1991; Lawson 2006; Ruth 2006; Söderbaum 2008).†

* See the Center for the Advancement of the Steady State Economy, www.steadystate.org/sitemap/ (accessed October 16, 2017).

† In general, the emerging field of *ecological* (or *sustainability*) *economics*, which combines both the economy and technology with ecology, provides a holistic perspective of sustainable development (R. U. Ayres 2008; Costanza 1991; Söderbaum 2008). It studies the relationships between ecosystems and economic systems, encompassing both biological and cultural change. The human economy is seen as part of a larger whole. Its domain is the entire web of interactions between economic and ecological sectors. Ecological economics defines sustainability in terms of natural capital – the ability of natural systems to provide goods and services, including clean air and water and climatic stability. Ecological economists propose that the vital role of natural capital (e.g., mineral deposits, aquifers, and stratospheric ozone) should be made explicit in commodity production (Daly 1994b). Thus, consumption should not deplete natural capital at a faster rate than it can be replaced by human capital. Daly's notion of the steady-state economy views natural ecosystems as being finite and, therefore, focuses on the scale of human activity (i.e., the economy) that can

Solow's (1993) approach to sustainability is rooted in the idea that technology can create high degrees of substitutability between one resource and another and, implicitly, that natural and human-made capital are in some sense "fungible." This is what R. U. Ayres (2007) describes as the "weak" sustainability position, which essentially argues that all kinds of natural capital can be substituted by human-made capital.* If resources are fungible, society has no obligation to save a resource for future generations as long as an alternative resource is made available. Solow (1993, p. 182) argues that "what we are obligated to leave behind is a generalized capacity to create well-being, not any particular thing or any particular resource." It follows that resources should be assessed as if they were savings and investments (that is, we have a choice between current consumption and providing for the future through the investment of nonrenewable resource rents).†

In contrast, Daly (1991) holds what R. U. Ayres (2007) calls a "strong" sustainability position, which entails that many of the most fundamental services provided by nature cannot be replaced by services produced by humans or human-made capital. Daly (1991) provides what is probably the best-developed vision of an economy that functions within ecological limits. Arguing from the first principle of thermodynamics, Daly describes a steady-state economy (SSE) as one in which births replace deaths and production replaces depreciation. **The objective of the SSE is to keep the throughput of raw materials (low entropy) and waste (high entropy) at levels within the regenerative and assimilative capacity of the ecosystem**. Whereas neoclassical economics views the growth economy as a continual expansion of production and consumption (Figure 1.4), the SSE considers these cycles to be in equilibrium with the ecosystem (Figure 1.5).‡

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be supported. Living (and producing) within ecological limits is the major focus of ecological economics. *Green economics* (Lawson 2006) and *natural economics* (Ruth 2006) build on ecological economics but focus more explicitly on informing/shaping political views and policy for sustainable economic development.

* Neoclassical economics views *technological innovation* and *reproducible human-made capital* as providing "substitutes" for natural capital (Hartwick 1977, 1978a, 1978b; Solow 1974). Under these assumptions of *weak sustainability*, consumption can be sustained, environmental externalities can be overcome, and resource scarcity problems can be solved. Neoclassical economists argue that as prices increase because of scarcity, investment in technological innovation creates substitutes to replace the scarce resources. The idea that technological innovation will free society from concerns of resource scarcity, enabling economies to become less reliant on natural resources, has been rejected by some. R. U. Ayres (1978) presented a convincing case that the laws of thermodynamics place limits on the ability of human-made resources to replace or substitute natural capital. The basic argument is that human-made capital is built and maintained using natural capital. Thus, both forms of capital are complementary and cannot be substituted for one another. It follows that the maintenance of natural capital stock is *essential* for the economic process. A reduction in the availability of natural capital will reduce the productivity of human-made capital, which depends on ecosystem goods and services. The same argument is also made by Georgescu-Roegen (1993). Similarly, R. U. Ayres (1997) argues that the neoclassical view of externalities as exceptional occurrences in a larger economic context is incorrect. He considers environmental externalities pervasive because the real economy depends on extracting, processing, and converting materials (and energy), which create waste residuals that can have negative environmental and economic consequences. Because these consequences are not priced in the real economy, the environment is treated as a free good and medium for disposal.

† Solow (1993) describes resource rents as the investment of the pure return on a nonrenewable resource. For example, in using up a natural resource such as oil in the North Sea oil field, the revenues that are intrinsic to the oil itself should be invested in new technologies that will eventually replace oil. Hence, investing the "rent" from the nonrenewable resource is seen as an effective way to continue the current levels of consumption while providing for future generations.

‡ See Rees (1995a) for a useful review of the expansionist (neoclassical economic) and steady-state (ecological economic) views of development.

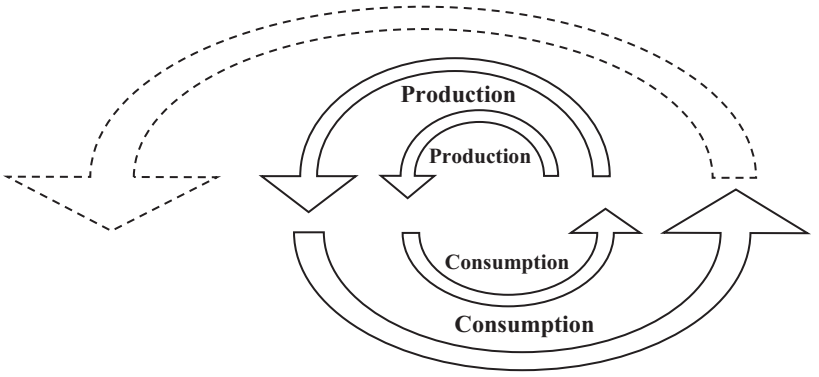

Figure 1.4 Neoclassical economics view of growing cycles of production and consumption
Source: Adapted from Daly (1991, p. 181).

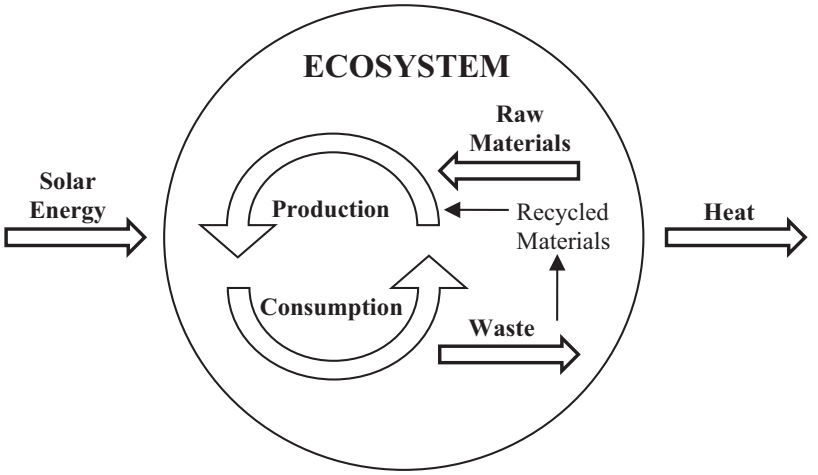

Figure 1.5 Steady-state economics view of production and consumption cycles in equilibrium with the ecosystem
Source: Adapted from Daly (1991, p. 181).

Within the SSE, technology, knowledge, the distribution of income, and the allocation of resources are fluid.* Because a fixed amount of resources will yield constant flows of goods and services (all else being equal), technological progress is one way in which more (or more highly valued) goods and services can be produced (Czech 2003; Czech and Daly 2004). However, given the laws of thermodynamics, there are limits to what is technologically feasible. Thus, there is a theoretical maximum size (an ecological carrying capacity) at which a steady-state economy may exist. This constraint implies that

* In general, ecological economists, especially those who focus on steady-state economics, are concerned with the size of the economy relative to the ecosystem. The efficient allocation of resources is a concern, but it is not the primary focus, as in neoclassical economics.

high-quality, long-lasting, and repairable goods are preferable to low-quality, short-lived, and disposable goods.*

To help describe the SSE, Daly (1991) compares it to a steady-state library, where the addition of a new book would mean the removal of an old book. Thus, although the quantitative physical scale remains constant, the library would continue to improve in a qualitative sense. In this regard, Daly's view of the necessary technological fixes for environmental degradation is more conservative than Solow's. Rather than continuing business as usual and investing in future alternatives, Daly's focus is to develop new science/technology that reduces the environmental burden to rates within ecosystem limits and also extends human lives. Daly's and Solow's viewpoints are quite different and represent contrasting views of the role that technology plays in development.

R. U. Ayres (2007) offers a critique of proponents of both strong and weak sustainability. In his view, although the mathematics of Solow's argument are "impeccable," the underlying assumptions, or what Ayres calls "the physics," are not. R. U. Ayres (2007, p. 116) believes that proponents of strong sustainability are right to point out the relevance of entropy law, the second law of thermodynamics, and the impossibility of perpetual-motion machines; however, they are wrong to assert that human civilization is totally dependent on a finite stock of high-quality (low entropy) resources stored in the earth's crust. As R. U. Ayres (ibid.) points out,

> the fact that much of our industrial base currently utilizes fossil fuels and high quality metal ores is merely due to the ready availability of these resources at low cost. It does not follow from the entropy law that there are not substitutes.

Nonetheless, R. U. Ayres (2007, p. 126) concludes,

> I have to reiterate that, while there is plenty of room for substitution and some possibility of major breakthroughs (e.g., in manufacturing room temperature superconductors or carbon nanotubes) the pessimists – those who espouse the notion of "strong sustainability" appear to be closer to the truth than the optimists who believe in more or less unlimited substitution possibilities.

In general, in this time of growing ecological and economic crisis, it becomes increasingly apparent that questions of ecology cannot be separated from questions of economics, and that building a truly sustainable future will necessarily involve new theories, new paradigms, and new policies. Ecological and steady-state economics provide the first step in thinking about the economy and the environment in different terms.

The financial crisis that began in 2008 is connected to the issue of ecological limits to growth. In tandem with the significant economic and financial disturbances, the ecological situation is particularly problematic and is a direct consequence of the workings of our industrial systems. Kallis et al. (2009) put forward an alternative framework for studying the financial crisis of 2008. According to their analysis, the economy must be analyzed at three levels (from top to bottom):

- The financial level;
- The real economy; and
- The "real–real" economy.

* Although one could argue that an effective recycling process reduces the need to extend the lifespan of goods, this argument is weakened by the fact that (1) recycling processes use energy that reduce the available stock of terrestrial resources (assuming that the recycling process is not powered by solar energy), and (2) most recycling involves the degradation of material, which means that it is suitable only for poorer-quality goods. The latter point is often referred to as "downcycling."

Kallis et al. (2009, p. 16) note:

> At the top there is the financial level that can grow by loans made to the private sector or to the state, sometimes without any assurance of repayment as in the present crisis. The financial system borrows against the future, on the expectation that indefinite economic growth will give the means to repay the interests and the debts. Then there is what the economists describe as the real economy, the GDP at constant prices. When it grows, it indeed allows for paying back [. . .] some or all the debt, when it does not grow enough, debts are defaulted. Increasing the debts forces the economy to grow, up to some limits. Then, down below underneath the economists' real economy, there is what the ecological economists call the "real–real" economy, the flows of energy and materials whose growth depends partly on economic factors (types of markets, prices) and in part from physical and biological limits. The "real–real" economy also includes land and capacity of humans to do work.

The ecological approach to the present crisis states that the level of finance grew too large and too fast for the real economy to adapt. The financial system also increased debts too much, in the absence of coherent regulation, and this expansion of credit lines was mistaken for real wealth (Kallis et al. 2009). At the same time, the economy is not a closed system but operates within certain ecological limits and biophysical constraints, which condition the rate at which real wealth can increase. This analysis resembles that of Polanyi (1944), who placed markets within social systems rather than regarding them as independent "value-neutral" entities.

In general, energy resources appear to be of increasingly pivotal importance around the world. As Klare (2001, p. 13) notes, ever since the end of the Cold War, political analysts of different persuasions have attempted to identify the "defining principle of the new international environment." Although there have been many competing theories about this new defining paradigm, such as Samuel Huntington's "clash of civilizations," Robert Kaplan's return to Malthusian dynamics, and Tom Friedman's "flat world," Klare is correct to note that "the fervent pursuit of resource plenty in total disregard of any civilizational loyalties" appears to have much more significant explanatory power with regard to contemporary international dynamics (ibid.).

1.3.2 The environment and affluence: the environmental Kuznets curve

A somewhat academic idea – but one that seems to persist in many development/policy dialogues* – that focuses on the relationship between economic growth and environmental impact is the environmental Kuznets curve (EKC). The EKC hypothesis postulates

* For example, the WTO promotes an environmental Kuznets curve approach to development in its discussion of how trade liberalization and stable and predictable trade conditions support the environment. "An important element of the WTO's contribution to sustainable development and protection of the environment comes in the form of furthering trade opening in goods and services to promote economic development, and by providing stable and predictable conditions that enhance the possibility of innovation. This promotes the efficient allocation of resources, economic growth and increased income levels that in turn provide additional possibilities for protecting the environment." WTO, "An Introduction to Trade and Environment in the WTO," www.wto.org/english/tratop_e/envir_e/envt_intro_e.htm (accessed October 17, 2017). The WTO's statement implies that negative environmental impacts that result from economic growth can be addressed once income levels increase, which is clearly the opposite of a precautionary approach to development.

that the relationship between a specific environmental pollutant (such as sulfur dioxide) and per capita income follows an inverted-U shape (Figure 1.6). This relationship implies that as a nation's GDP per capita increases, environmental degradation will first increase up to a turning point that varies by pollutant (Barbier 1997a; Yandle, Bhattarai, et al. 2004), after which it will begin to fall. See Box 1.1 for a summary of key points related to the EKC.

The EKC hypothesis effectively challenged the idea that the process of industrialization and economic development "inevitably hurts the environment" (IBRD 1992, p. 38). For example, Beckerman (1992, p. 482) claimed that

> there is clear evidence that, although economic growth usually leads to environmental deterioration in the early stages of the process, in the end the best – and probably the only – way to attain a decent environment in most countries is to become rich.

Bartlett (1994, p. 18) even suggested "existing environmental regulation, by reducing economic growth, may actually be reducing environmental quality." The clear focus of these "income deterministic" arguments was that economic growth is the best way to alleviate poverty and (eventually) address environmental degradation.

In a critique of the environmental Kuznets curve that is traditionally focused on a few specific pollutants as measures of total environmental pressure, Spangenberg (2001) finds no indication that an environmental Kuznets curve can be found for the total resource throughput in several advanced countries. The vast majority of man-made emissions of suspended particulate matter, SO_2, and CO_2 all originate from the use of fossil fuels for which environmental laws eventually limit emissions through end-of-pipe abatement technologies. The modernization of pollution sources more generally requires substitution and more fundamental technological change than end-of-pipe traditional pollution control.

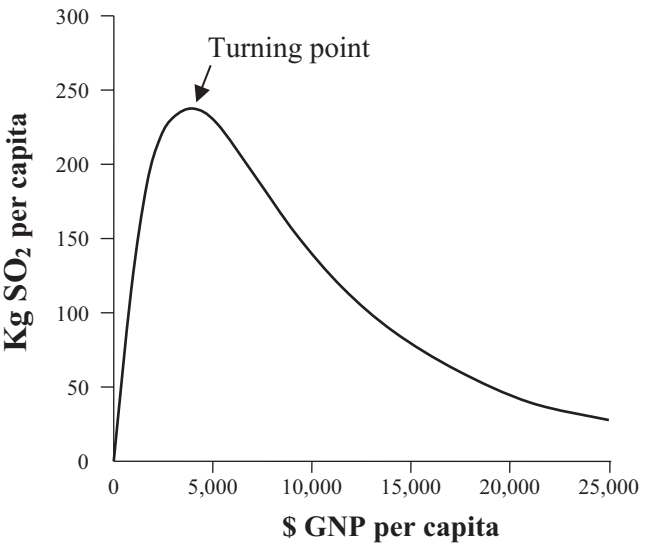

Figure 1.6 Environmental Kuznets curve for sulfur dioxide emissions

Source: Adapted from Panayotou (1997), from Stern et al. (1996, p. 1152).

Box 1.1 Key points relating to the environmental Kuznets curve (EKC)

The EKC hypothesis

The EKC hypothesis states that the relationship between a specific environmental pollutant – such as sulfur dioxide (SO_2) – and per capita income follows an inverted-U shape. This relationship implies that environmental degradation will first increase with rising income per capita up to a turning point, after which it will start to fall with higher levels of income. If one accepts the EKC hypothesis, the solution to global environmental degradation would appear to be rapid economic growth.

Points of concern

- The EKC does not seem to hold for CO_2 or for toxics associated with increasing industrialization and especially increasing consumption.
- The EKC may not even hold for regular pollutants like SO_2.
- The adoption of pollution-prevention and cleaner technology reflecting sustainable practices may explain Kuznets-type behavior, but such behavior depends on the constant application of these sustainable practices that are promoted by regulation, not laissez-faire policies.
- Late developers and those that decide to adopt cleaner technology late may seem to provide evidence for Kuznets-type behavior, but this action highlights a cultural shift in the importance of protecting a community's livelihood and not an income effect.
- The adoption of more efficient technology that initially reduces environmental degradation, resource usage, and overall costs might eventually lead to higher levels of environmental impact through the Jevons paradox or rebound effect – that is, the lower cost of using a more efficient technology increases its demand and (potentially) offsets the original efficiency gains.
- Even if per capita production of pollution declines, population increases could swamp any environmental gains.

Otherwise, increased wealth associated with economic growth increases the production of other kinds of pollution that can only be offset by technology modernization and improvements in resource productivity that lead to an absolute reduction in resource consumption. Commenting that "wealth is not green," Spangenberg (2001) argues that the emphasis of ecological economics must be that resource productivity needs to improve well beyond the economic growth rate for there to be a future positive effect of growth on pollution reduction.

The validity and implications of the EKC hypothesis have been the subject of much critical debate (K. Arrow et al. 1995; Barbier 1997a; Cavlovic et al. 2000; de Bruyn et al. 1998; Dinda 2004; D. I. Stern 1998, 2003, 2004; D. I. Stern et al. 1996; Unruh and Moomaw 1998). Although the empirical support for the EKC relationship and its very existence have been disputed (Harbaugh et al. 2002; P. Lawn 2006; Perman and Stern 2003), a more general criticism is that EKCs have been shown to exist only for local air pollutants and not for long-lived measures such as carbon dioxide (CO_2),

municipal waste, and persistent toxic chemicals (M. A. Cole et al. 1997; S. Dasgupta et al. 2002; Hettige et al. 1992; Holtz-Eakin and Selden 1995; Rothman 1998). These mainly consumption-based measures are shown to increase monotonically with per capita income.

Other criticisms are that the EKC hypothesis is not directly concerned with the total impact of economic growth on the environment and whether this may (in some cases) be irreversible; that the earth's stock of resources may not be able to support indefinite economic growth (K. Arrow et al. 1995; Rothman 1998); and that the focus on economic growth ignores the more important issue of human well-being (Daly and Cobb 1994; Max-Neef 1995).

Even if one accepts that an EKC relationship may exist for specific pollutants such as local air pollutants, the vast majority of the world's population lies on the upward slope of EKC curves, which means that considerable environmental damage is likely to occur before any environmental improvement becomes visible (Ekins 1997). Similarly, any environmental improvements gained through production efficiencies can be overwhelmed by growing levels of consumption in both developed and developing economies. The deterministic nature of the EKC hypothesis raises the question whether developing nations can learn from developed nations and adopt initiatives to "tunnel through" or "flatten" the inverted-U relationship (S. Dasgupta et al. 2002; Munasinghe 1999; Panayotou 1997). These initiatives include the establishment and enforcement of sophisticated and anticipative environmental regulation and the adoption of cleaner technologies that allow developing nations to leapfrog over older, dirty technologies.* In general, the idea that developing nations could "escape the pattern of the EKC" is becoming more widely supported and finds some support in the literature (M. A. Cole and Neumayer 2005, p. 316). However, for greenhouse gas emissions, the evidence is clearly the other way (Ansuategi and Escapa 2002; Huang et al. 2008).

In conclusion, one can argue that (1) technological change is critical to enabling society to live within ecological limits, and (2) governments have a vital role in creating an innovative regulatory environment that protects critical ecological systems and spurs the necessary technological change.

1.3.3 Technological optimism

During the emergence of sustainable development, the environmental discourse was strongest between the technological optimists† on one side and the self-proclaimed Malthusians on the other, who could foresee no technological solution to the pending problems of pollution and scarcity (Krier and Gillette 1985). Although the technological optimists were concerned about the environment, they believed that human scientific and technological ingenuity would be able to extend any limits faced by society.

As discussed in Chapter 3, the growth of new (and successful) technology tends to follow an S-curve. Therefore, if we consider the entire field of technological advance, it

* Interestingly, the decision of developing nations to adopt cleaner technologies may not be due to an income effect but rather to a cultural shift in the importance of protecting a community's livelihood.

† Krier and Gillette (1985, p. 406) describe technological optimism as "a term of art, an article of faith, and a theory of politics." They argue that technological optimism obtained its precise meaning as a result of the limits-to-growth model, which assumed that factors such as population, industrial production, and pollution would continue to grow exponentially. Thus, it follows that the position of a technological optimist is "that *exponential technological* growth will allow us to expand resources ahead of exponentially increasing demands. This is the precise meaning of technological optimism as a term of art" (ibid., p. 407). There is also the implicit assumption that technological innovation will not cause any further pollution or social problems.

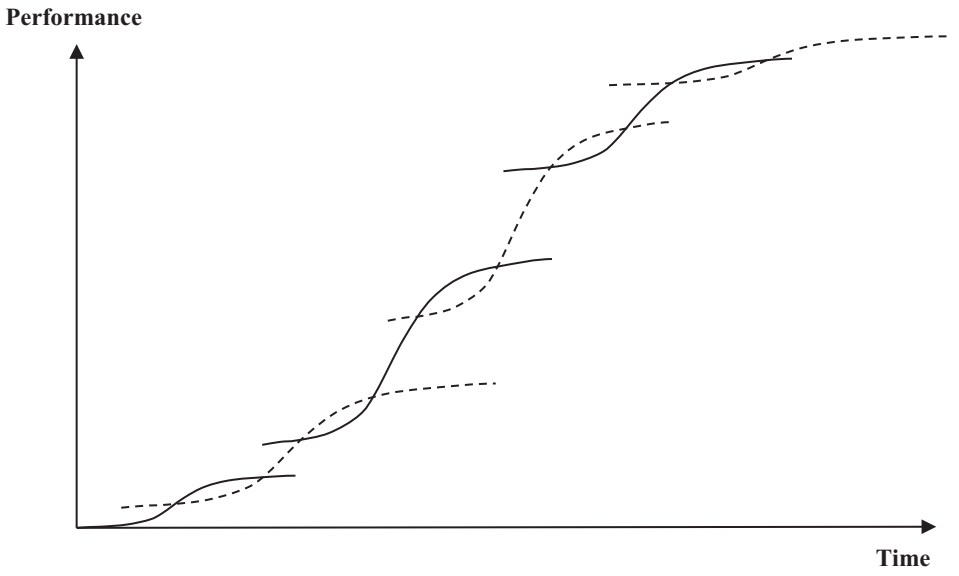

Figure 1.7 The accumulation of S-Curves for a technology set

follows that it will be composed of a series of such curves. The question is, however, what shape will this series of S-curves follow? Technological optimists responded to this question by arguing that technological innovation will continue to advance at a significantly higher exponential rate, thereby establishing a world of utopia as opposed to disaster (Boyd 1972; Kaysen 1972; Starr and Rudman 1973). Others, however, were not as convinced (K. J. Arrow 1969). Indeed, as Krier and Gillette (1985) argue, if the S-curve holds for a single technology, why should it not be true for a set of technologies (Figure 1.7)? And if it holds for a set, should it not also be true for the entire field of technology? Thus, if we are experiencing rapid growth in technological performance, it might simply be due to the fact that we are in the center of a series of S-curves that together also form an S-curve (Figure 1.7).

The problem with this type of debate, as recognized by Krier and Gillette (1985), is that the assertions made are most likely not provable. Although it is possible to assess individual technologies, it is extremely difficult to assess (in any rigorous manner) whether technology as a whole is progressing at a faster or slower rate than before and whether this means that we are reaching a plateau in performance (however "performance" is defined).

With the publication of *Our Common Future* (WCED 1987), it was clear to many that technological optimism had prevailed (Moser 1999). The WCED had chosen science and technological innovation – two mainstays of economic growth in industrial (expansionist) societies – as central pillars of the notion of sustainable development.* As Dryzek

* A retrospective analysis of *Our Common Future* concluded that the economic and environmental objectives put forward by the Brundtland Commission "cannot be achieved simultaneously" (Duchin and Lange 1994, p. 8). To address this problem, Duchin and Lange (1994) put forward two paths of action. First, much broader technological and social changes are needed than those espoused in *Our Common Future* if sustainable development is to be brought within reach. Second, "development economics" (which includes factors such as international lending and advisory practices) need to focus on specific

(1997, p. 136) notes, the concept of sustainable development would surely have been lost "unless it could be demonstrated that environmental conservation were obviously good for business profitability and economic growth everywhere, not just that these competing values can be reconciled."

As a result of the decision to focus more heavily on science and technology – as opposed to market reforms and/or government policy to guide development – there has been a strong (European and Japanese) research interest in what has been termed "factor X" (Reijnders 1998). The idea of factor X is similar to that of dematerialization, eco-efficiency, and enhanced natural resource productivity, but whereas these measures of environmental impact tend to be more open-ended, the factor X debate attempts to put an exact number on the level of efficiency to be achieved (ibid., p. 14). This willingness to quantify implies that (1) the environmental problem is in fact quantifiable, and (2) that technological improvements are required beyond what current technology is able to achieve.* The current set of factor X values ranges from 4 to 50 (Factor 10 Club 1995, 1997; Jansen and Vergragt 1992; Reijnders 1996; von Weizsäcker et al. 2010; von Weizsäcker et al. 1997); however, there is no overall agreement on the environmental impact to which factor X relates (Reijnders 1998). This fact, combined with differences in the perceived severity of the environmental threat, explains the wide range of factor X values.

It is helpful to connect the factor X debate to the I = PAT formula because they are closely interlinked. The factor X approach is clearly a technologically optimistic view of development. But technology is only one factor that affects the environment. It is quite plausible that the environmental benefits achieved by technological innovation will be countered by growth in population and/or affluence leading to greater total consumption of materials and energy (Herman et al. 1989; Reijnders 1998; W. Sachs 1993).† In addition, there is also the problem that although technological improvements increase the efficiency with which resources are used, the total consumption of these resources might increase rather than decrease. This phenomenon is known as the *rebound effect* (Berkhout et al. 2000) or the *Jevons paradox* (Clark and Foster 2001; Jevons 1965 [1865]). William Stanley Jevons was a nineteenth-century economist who observed that efficiency gains in the use of coal did not necessarily lead to a reduction in

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situations and move away from the conviction that there is only one development path – that of liberalized markets that situate all factors of production in the most privately profitable location for their exploitation. Duchin and Lange (1994) argue that a failure to consider national circumstances is likely to affect traditional social relationships in a way that (indirectly) leads to the rise of "both religious fundamentalism and urban misery in the developing world" (ibid., p. 9).

* It is important to recognize that although the notion of a factor X economy recognizes the inherent unsustainability of prevailing human activities, its proponents' conceptualization of development remains firmly grounded in the "growth ethic and technological fix paradigm" (Rees 1995a, p. 355). An alternative view of development is based on the idea of a steady-state economy (SSE), whereby economic (human) activity remains within fixed ecological limits.

† Here we should recognize that whereas the connection between population growth and ecological decline is widely understood, the same cannot be said for increasing levels of affluence and consumption and their associated impacts on the environment. Indeed, consumption "is almost universally seen as good, [. . . and] increasing it is the primary goal of national economic policy" (Durning 1994, p. 41). Although the environmental and psychological problems associated with consumption are well documented (de Graaf et al. 2002; Durning 1992, 1994; Goodwin et al. 1997; Kasser 2002; Princen et al. 2002; J. C. Ryan and Durning 1997; Schlosser 2002; P. C. Stern et al. 1997), they have yet to gain traction in mainstream political and economic decision-making. For an insightful debate on the effects of economic growth and consumption on the environment, see Sagoff's (1997) article in the *Atlantic Monthly* and its rebuttal by Ehrlich et al. (1997).

its overall use.* More recently, it has been observed that increases in the fuel efficiency of vehicles have been accompanied by an increase in vehicle-miles traveled and by an increase in sales of larger vehicles (Goldberg 1998). Therefore, the implementation of factor X (or highly efficient) technology needs to be part of a more comprehensive process of environmental improvement or *ecological modernization* (Ashford et al. 1985; Kemp 1995; York et al. 2003).

When one is considering factor X targets, it is possible to focus on individual products/technologies or the economy as a whole. Although factor X advocates support the notion of setting informed and modifiable targets, it is recognized that the pace of rapid technological change and the presence of the Jevons paradox complicate the management of such a schema (Reijnders 1998). In this regard, *movement in a more sustainable direction* might provide an alternative. However, the problem here is what instrument will be used to encourage such movement. Examples of types of mechanisms that can be used to encourage the adoption of factor X technology are demonstration projects (for social learning), government-driven technology forcing (using legislation), financial incentives, ecotaxation,† and market mechanisms (such as tradable emissions permits) (ibid.). The role of government in stimulating technological change is discussed in Chapter 8.

1.3.4 The reformulation of sustainable development in terms of tipping points

A "tipping point" can be described as the point beyond which it becomes extremely difficult (if not impossible) to reverse a negative trend. An alternative way to think about tipping points is to consider the idea of "overshoot" – that is, to inadvertently go beyond a system's limits, creating a situation that is nearly impossible to reverse (Meadows et al. 1972, 2004).

The current discourse on sustainable development is becoming dominated by concerns about global climate change (see Box 1.2). Within the climate-change debate, several possible tipping points have emerged. These include the sudden disintegration of the Greenland and Antarctic ice sheets (Alley et al. 2005; Feldmann and Levermann 2015), the collapse of coral reefs due to "coral bleaching" caused by rising sea temperatures (Knowlton 2001; Hughes et al. 2017), and the shutting down of the Atlantic thermohaline circulation that conveys warm surface water to northern Europe and returns cold, deep-ocean water south (Vellinga and Wood 2004; Meyer 2017). Although these potential system collapses are of great concern, there are other environmental tipping points not far

* Jevons (2001 [1865]) observed that the consumption of coal in England increased significantly when the efficiency of the steam engine was improved by James Watt. Watt's innovations, the condenser and the expansive mode of working, reduced the amount of coal needed to fuel the steam engine's furnace, making the engine a cost-effective power source that was soon adopted by industry. As the number of industries using steam engines grew, so too did the amount of coal required to fuel these engines, thereby increasing the overall usage of coal.

† See Daly (1994a) and Rees (1995b) for a discussion of how taxing the *bads* (such as resource extraction/depletion or pollution) and not the *goods* (such as labor and income) provides a good example of considering both the environment and employment in one macroeconomic framework. The basic idea is to shift the tax burden away from the goods and onto the bads in a revenue-neutral manner. In addition to promoting a more sustainable form of industrialization, ecotaxation would also reduce the price of labor, making it more attractive to retain existing workers or employ more workers. See also Green Innovations Inc., *Ecotaxation*, www.green-innovations.asn.au/ecotax.htm (accessed October 17, 2017).

on the horizon that deserve equal attention. Examples of these other modes of collapse include the following:

- Limits on the ability of conventional antibiotics and pesticides (through antibiotic and pesticide resistance) to prevent virulent disease and pestilence, leading to a rapid decline in population and food crops;
- Damage to reproductive health (through endocrine disruption) to the extent that all species (including humans) no longer reproduce or reproduce with reproductive anomalies, such as sterility and hermaphroditism (Colborn et al. 1996; Cordier 2008; Saey 2008);
- The widespread decline of human health due to increasing levels of toxic chemical exposures that cause cancer, autoimmune diseases, neurological harm such as autism, attention-deficit/hyperactivity disorder, and general toxic-induced loss of tolerance (Ashford and Miller 1998; Sasco 2008); and
- Significant growth in the incidence of human disease and deaths in regions experiencing rapid population growth, worsening levels of malnutrition, and environmental degradation (D. H. Meadows et al. 2004; Pimentel et al. 2007).

Box 1.2 Concern with global climate change

In recent years, starting with the Kyoto Protocol in 1997, through negotiations in Copenhagen, and ultimately culminating in the Paris Agreement known as COP21, there has been a dramatic increase in the international visibility and international activities related to the climate problem. The release of Al Gore's documentary, *An Inconvenient Truth*, followed by his award of the 2007 Nobel Peace Prize – together with the International Panel on Climate Change "for their efforts to build up and disseminate greater knowledge about man-made climate change"[a] – did much to raise global concern on the issue. Equally important was the publication of the *Stern Review on the Economics of Climate Change* (known as the "Stern Review") by the UK Treasury on October 30, 2006 (Stern 2007). While the review was not the first economic analysis on climate change (Cline 1992; Mendelsohn et al. 1998; Nordhaus and Boyer 2000), its status as an official government document significantly raised its importance and made it one of the most widely known and debated studies of its kind.

The Stern Review focused on the impact of global climate change on the world economy. More specifically, it argued that if governments fail to take action today,

> the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year, now and forever. If a wider range of risks and impacts is taken into account, the estimates of damage could rise to 20% of GDP or more.
>
> (Stern 2007, p. vi)

The study equated the potential future impacts of inaction to social and economic systems as "on a scale similar to those associated with the great wars and the economic depression of the first half of the 20th century" (ibid, p. vi). The study concluded by arguing that these impacts could be significantly reduced if 1 percent of

global GDP is invested each year in mitigation activities. Such activities include the pricing of carbon (via taxes, carbon trading, and/or regulation), mechanisms to support innovation for low-carbon technologies, and actions to remove perverse incentives or barriers to energy efficiency gains.

The enthusiastic response by many politicians and environmental groups to the Stern Review was tempered somewhat by heavy criticism of the study from several well-known economists (Dasgupta 2006; Nordhaus 2006; Tol 2006; Tol and Yohe 2006; Yohe 2006; Mendelsohn 2006–2007; Yohe and Tol 2007). Others, while critical of the study's basic assumptions and analysis, gave more positive commentaries (Arrow 2007; Neumayer 2007; Weitzman 2007). The concerns with the study tended to center around several key issues. First, the review relied upon existing data sources and did not develop any new estimates on the impacts or costs of climate change. Thus, it was surprising to some that the review developed numbers that lay far outside the range of estimates found in previously published literature (Tol and Yohe 2006; Mendelsohn 2006–2007).

Second, a dual critique of the science and economic aspects of the Stern Review concluded that the study "greatly understates the extent of uncertainty, for there are strict limits to what can be said with assurance about the evolution of complex systems that are not well understood" (Carter et al. 2007, p. 168). These authors were also greatly concerned with the treatment of sources and evidence that they perceived as "persistently selective and biased" (ibid., p. 224). Their general opinion of the Stern Review is that it is a "a vehicle for speculative alarmism" (ibid., p. 224).

A final criticism worth mentioning, which is perhaps the most controversial issue, was the Stern Review's selection of a low discount rate. The study selected a rate that was 0.1 percent above the global rate of growth of consumption. Since the rate of consumption is assumed to increase at 1.3 percent per year, the chosen discount rate was 1.4 percent. This value falls below the conventional range used by many economists when considering measures to mitigate climate change (Weitzman 2001). It is also lower than the discount rates used by HM Treasury, which decline from 3.5 percent (for years 0 to 30) to 1 percent (after 300 years) (HM Treasury 2003). The Stern Review argued that selecting a higher discount rate would be unethical since it would reduce the importance given to the welfare of future generations who are likely to bear the brunt of climate change. A higher discount rate would also reduce the pressure for immediate and aggressive action to reduce greenhouse gas emissions. As Mendelsohn (2006–2007, p. 43) comments, "the low discount rate implies far future events are important in the near term."

Analyses since the publication of the Stern Report only strengthened its message (IPCC 2014). The concern with global climate change has only become stronger over time, now dwarfing other environmental concerns with the risk that other critical environmental concerns might be excluded or marginalized – or even exacerbated – from sustainable development strategies.

a Source: www.nobelprize.org/nobel_prizes/peace/laureates/2007/press.html (accessed October 17, 2017)

Supporting or driving these modes of collapse are the processes of rapid technological change and economic globalization. These are increasing the ease with which diseases can be transmitted between populations. The significant growth in travel and trade between

regions has also exposed previously healthy populations to new health risk factors (Yach and Bettcher 1998a, 1998b; Drager and Sunderland 2016). Indigenous societies that are becoming interconnected with the global economy are now exposed to modern diets, additive products, pharmaceuticals, and toxic products that significantly increase cancer risks (Sasco 2008). In this context, the historic debate between economic development and environmental degradation (questioning the logic of the environmental Kuznets curve – see Section 1.3.2) must be expanded to include the impacts of economic development on human health. This new dimension is different from the impacts of environmental degradation on human health, which could be considered as a negative side effect of industrialization. The concern is that the products and services associated with the current form of industrialization are themselves directly causing harm.

A final mode of possible collapse relates to social systems, such as the global financial system, the ability of the nation–state to provide gainful employment, and the crisis created by migration accelerated by both economic and political factors. Although these tipping points are influenced by external environmental factors, the modes of failure are firmly embedded within social networks. Another example of a "social tipping point" could be increasing social tensions that lead to persistent regional/global conflicts due to increasing shortages of resources such as fresh water or oil (Myers 1993). Some see the Syrian War and resulting migrant crisis as a relevant example of this kind of driver, with its combination of water shortage with war and mass migration.

With this discussion of tipping points and drivers of collapse, it must also be mentioned that these same disruptive forces could drive our complex global system towards transformative systemic change. The Next System Project is, for example, bringing key thinkers together to design, model, and disseminate new sustainable political–economic possibilities for the twenty-first century in an effort to avoid collapse through transformation (Alperovitz et al. 2015).

1.4 Rationalizing the competing pressures on sustainability

This chapter has attempted to outline our concern for a global future. Since the focus of sustainable development is to meet human needs without compromising the ability of future generations to meet their own needs, we began by taking an anthropocentric look at development. We explored the notion of human needs and how they drive economic and democratic political systems, and how employment and income are essential to human well-being (via both the purchasing of basic goods and services, and other beneficial aspects of working). The growing trends of income inequality were then considered within the context of social justice and social contract theory, which help frame the role of government (as trustee of the people and the environment) in advancing a development agenda that ensures basic human needs are met. Since economic activity/growth is currently the underlying mechanism for enabling people to meet their needs, our focus then expanded to consider the impact of this mechanism on the natural environment. More specifically, we considered a series of approaches or theories that have been advanced to keep economic activity within ecosystem limits. For each approach, technology and innovation were considered to have a central role in advancing change.

A key question we raise throughout this work – which underlies our concern for the global future – is what impact will technology- and innovation-driven approaches to sustainable development have on meaningful and well-paid employment in the future? Further, if incomes from labor and/or capital ownership can be increased and people are able to purchase basic goods and services, will the technological/efficiency advances realized be sufficient to outpace a rebound effect – i.e., where the sheer scale of purchasing outpaces any reduction in environmental impacts (Brown 2016). Further, changes in what industrial or industrializing nations choose to produce – or incentivize the production

of – in order to meet human needs requires more thorough consideration, which we take up later in this work.

Poverty and inequality can be reduced by income transfers, by providing a guaranteed basic income, or by creating a larger base of ownership of productive physical capital and/or energy through binary economics or community-based ownership, but an egalitarian, environmentally sustainable society requires something much more. What is needed is a cultural transformation in which basic demands are altered, as the current conception of the good life neither matches what we know of basic human needs and well-being, nor is it feasible for our planet to meet these needs for everyone. This does not mean that meeting human needs and well-being and a sustainable future are mutually exclusive. On the contrary, there is increasing evidence that some drivers of human happiness are frequently experiential and of no environmental impact (Gilovich et al. 2015).

Despite the potential for law and economic instruments to be used to redistribute wealth and income, internalize environmental, employment, and societal externalities, and otherwise create a sustainable future, those who have the power to act often do not see it in their immediate interest to act, even if their longer-term interests would be better served. To overcome this barrier to action, it may be necessary for crises, such as financial collapse, environmental and public health catastrophes, and social disintegration to increase the urgency for action. Alternatively, we must hope for far-sighted and progressive leadership of institutions and organizations – public and private – that have long gained from, and gamed, the present system. The world instead could be on the road to a splintering of winner and loser populations within and among nation–states, although voiced resistance to this trend is rising. We hope this book will help chart new pathways towards sustainable development and be a valued resource for those who are also concerned for a sustainable global future.

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