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A vision for human well-being: transition to social sustainability

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The world is experiencing urgent and interconnected problems on many social as well as environmental fronts. Resource shortages, demographic realities, and planetary boundaries prevent us from growing our way out of these problems. A redirection towards sustainability and well-being may be the most viable option for further development. Sustainability must be defined to include meeting human physical, emotional and social needs. Equity considerations are primary in order to have the resources to reduce poverty and increase well-being in developing countries. Well-being is multidimensional and context-specific, and must be approached in a way that preserves cultural diversity and societal autonomy while meeting universal human needs. We must go beyond GDP, measuring the various objective and subjective components of well-being to monitor our progress.

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The world is experiencing urgent and interconnected problems on many social as well as environmental fronts

The confluence of food, energy, economic and security crises, compounded by increasing global population, climate change, and natural disasters, spell an impending global breaking point. Many of these crises are interconnected: a solution for one problem might exacerbate

another problem. For example, the demand for bio-fuels to counteract the rising cost of fossil fuels was a key factor in increasing food prices [1]. Similarly, the present policy of encouraging consumption to bolster economic growth results in increasing demand for natural resources, which in turn imposes more pressure on planetary boundaries [2].

As planetary boundaries are crossed, social tipping points may be reached as well. Rapid urbanization in many developing countries has put enormous strain on the infrastructure within cities as well as on the supporting ecological systems. Meanwhile, over three billion people now live on less than \$2.50 a day [3]. While the percentage of people in extreme poverty (less than \$1 per day) decreased from 40% to 21% between 1981 and 2001, absolute numbers actually increased from 2.4 billion to 2.7 billion [4^{**}]. Moreover, the statistical gains are driven by high levels of economic growth in China and India, but for many other parts of the world (e.g. Europe and Central Asia, Latin America and the Caribbean, and Sub-Saharan Africa), extreme poverty rates stagnated or even worsened over this period [4^{**}]. Some 1.6 billion people still live without electricity, while 1.1 billion have inadequate access to water and 2.6 billion lack basic sanitation [5].

Inequalities in socioeconomic status are increasing sharply within and between societies [4^{**},6,7]. Since 1960, income inequality has risen in 48 of 78 countries studied (and fallen in only 9) [8], while per capita income of the richest 20 countries has gone from 54 times to 121 times that of the poorest 20 countries [9]. The richest 10% of adults now account for 85% of the world's wealth while the bottom 50% of the world adult population own barely 1% of global wealth [10].

Demographic trends, including rapid population growth in some countries and aging populations in others, have led many households, communities and countries deeper into poverty [4^{**}]. Population growth diverts household resources from savings to consumption, and makes government investment in education more difficult. Both high fertility and aging populations produce steeper age dependency ratios, indicating a high proportion of young (or old) relative to those in the working-age group. Greater dependence in turn puts pressure on the earnings of the workforce, perpetuating poverty even among those who are employed. Internal and international migration forced by population increases are strongly linked to poverty as well: sending communities become poorer,

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as they lose their most economically active members, while migrants in receiving communities are likely to be poorly integrated and vulnerable to poverty [11–13]. On a global scale, population trends pose a huge challenge to sustainable development because there are no longer vast stores of fertile land and accessible natural resources to fuel such development.

Meanwhile, many are living with the threat or reality of violence. According to the Geneva Declaration in 2008, more than 740,000 people die each year as a result of conflict-related and homicidal violence [14]. In 2009, nearly 43.3 million people worldwide were forcibly displaced due to conflict and persecution (United Nations High Commissioner for Refugees, Statistical Online Population Database; URL: <http://data.worldbank.org/news/43mil-people-worldwide-displaced-in-2009>).

There is a growing privatization of security and violence, include the increasing availability of small arms to the public, the expansion of private security arrangements, and the increased involvement of mercenaries in armed conflict [15]. According to the United Nations Survey of Crime Trends, the number of reported criminal incidents increased from 2300 in 1980 to more than 3000 per 100,000 people in 2000 [16]. Homicide rates range from under 3 per 100,000 inhabitants in the EU to 25 per 100,000 inhabitants in Latin America and the Caribbean.

It is estimated that between 12 and 27 million people are trapped in forced labor or slavery today, with somewhere from 600,000 to 4 million people trafficked across borders each year [17–19]. International trade in human beings as a commodity is believed to generate up to USD 10 billion per year, an amount exceeded only by the proceeds of the illegal trade in drugs and arms [20,21]. Women and girls represent about 80% of all trafficked persons [22], ranking among the three top sources of income for organized crime [23,24]. UNICEF estimates that 1.2 million children are trafficked each year, usually for domestic labor or sexual exploitation [25].

Mental illness may be considered a primary indicator of diminished well-being [26]. (The topic of physical health is the subject of another paper in this series, and thus is not discussed here.) The World Health Organization (WHO) World Mental Health Survey shows a large variation in the prevalence of mental diseases worldwide, affecting from 6% to 27% of individuals in countries surveyed [27]. The highest prevalence of anxiety, mood and impulse-control disorders are to be found in the United States [27]. Depression-related disorders are the third largest cause of combined death and disability in the world now, and are projected to become the primary cause by 2030 [26]. A meta-analysis of data provided by the Minnesota Multiphasic Personality Inventory (MMPI) found a steady decline in the mental health of American college students between 1938 and 2007, and of

high-school students between 1951 and 2002 [28]. Worldwide, suicide accounts for over million deaths — a majority of intentionally caused deaths — each year [4**].

Economic globalization and the proliferation of commercial media and advertising has led to a spread of consumerist values encouraging excessive use of energy and material resources [4**,29]. The wealthiest 20% of the world's population account for 86% of total private consumption expenditures, and the poorest 20% account for only 1.3% [30]. If everyone in the world adopted a Western mode of consumption, five or six more planets would be necessary for resources and waste disposal [29]. Ironically, studies show that consumerist values are one causal factor in the high prevalence of unhappiness and mental illnesses such as depression, anxiety, narcissism, substance abuse, insecurity, poor interpersonal relationships, low or contingent sense of self-esteem, and for the tendency to ignore emotionally satisfying behaviors such as social engagement and affiliation [31,32**,33].

The compounded social, economic and political circumstances reflect what may well be characterized as social breakdown. Economic changes throughout the world have forced young working adults away from family and local community in search of jobs, resulting in the loss of community social structure and relationships, value systems, and cultural practices [34]. New material aspirations spread by the globalized economy and visual images of Western lifestyles have replaced traditional values and social relationships. Poverty and unemployment has forced many into precarious situations where they fall prey to traffickers or slave-like working conditions, often outside their home country. A variety of social ills, including crime, domestic violence, prostitution, and the spread of HIV-AIDS, are linked to these phenomena [35,36].

Meanwhile, the environment on which individuals and communities are dependent for sustenance is increasingly degraded. Water, air and soil pollution, hazardous wastes, and loss of biodiversity, fertile farmland, clean water supplies, and natural areas all contribute to a reduced quality of life and worsened future prospects. Climate change threatens to reduce water supplies and agricultural production still further, while increasing frequency of severe storms, droughts and floods adds more risk to daily life.

It will not be possible to 'grow our way out' of these problems. Even as the overall economy grows, worsening inequality leads to greater numbers of people who are less well-off, either in relative or absolute terms. Researchers have found that well-being and life satisfaction is subjectively experienced as a shrinking gap between aspirations and actual achievements [37]; thus growth may contribute to perceptions of reduced well-being if it

increases aspirations without satisfying them. Furthermore, economic growth does not necessarily translate into expenditures that increase the well-being of members of a society [38]. Instead of spending on public health, education, infrastructure and other essential components of good lives and functioning communities, such wealth may simply be used to increase the luxuries available to a few. As resources (clean water, timber, farmland, oil reserves, and others) become less abundant, continued growth in their utilization is no longer an option. Finally, the negative impacts to the biosphere of ever-increasing production, consumption, and waste disposal, including greenhouse gases, generate significant risks to human-kind as well as to biodiversity and the environment.

For all these reasons, we need a smarter approach to development and well-being: one that addresses the underlying issues and root causes of inadequate human well-being, and solves these problems within the context of environmental limits. This will require a new focus, fundamental societal transitions, and new metrics to monitor our progress.

In order to move towards sustainability, we must address social as well as environmental issues

What is social sustainability? While environmental sustainability examines living within the limits of the natural world, likewise, social sustainability emphasizes living in ways that can be sustained because they are healthy and satisfying for people and communities. This requires providing for material, social and emotional needs, avoiding behaviors that result in poor health, emotional distress and conflict, and ensuring that we do not destroy the social structures (such as families and communities), cultural values, knowledge systems and human diversity that contribute to a vibrant and thriving human community. In other words, social sustainability means meeting the needs for human well-being. In order to implement the various innovations that will transform societies in the direction of environmental sustainability, it is necessary to have well-functioning societies — from a social, political and economic standpoint — that can meet the new challenges successfully.

The cause-and-effect links between human well-being and the environment goes both ways — see [Figure 1](#). Key components of human well-being are dependent on well-functioning ecosystems and the biosphere. For example, well-being requires clean water, fertile soil, ample food, and adequate resources for construction and energy. Well-being is also dependent on ecosystem services such as pollination of crops, flood control, water filtration and climate regulation, as well as being enhanced by the peace of mind and sense of meaning and identity that comes with having access to natural areas, outdoor recreation, play spaces for children, wildlife and natural beauty.

Conversely, maintaining a healthy environment and making the transition to environmental sustainability requires human societies that function well. Healthy, happy individuals with a strong sense of place, identity and hope for the future are more likely to make protection of their environment a priority [39]. Good governance and empowerment of local communities are essential to enable legal and political protection of the environment [40–44]. Economic resources are necessary in order to implement best environmental practices, to motivate environmental protection, and to avoid the desperate struggle for existence that often destroys all available natural resources. History has shown that social, economic and political breakdown generally lead to environmental abuses, thus perpetuating an ever-less-sustainable way of life [45,46].

In fact, the primary social and economic change required to move towards environmental sustainability — altering priorities, especially in the developed world, away from ever-increasing material consumption and towards more rewarding human relationships — may also be the change that will do most to increase human well-being [26,32**].

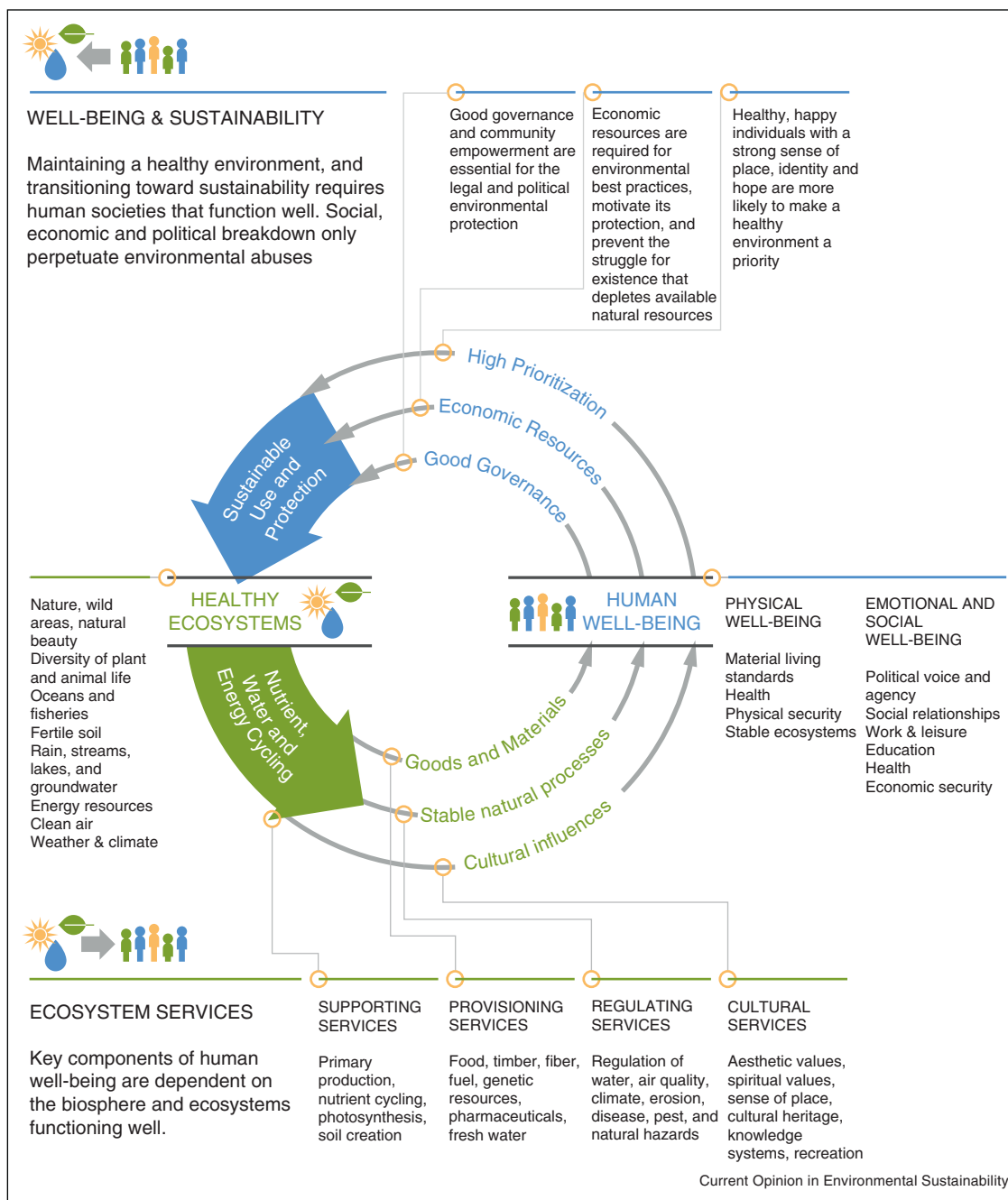
Green Economy?

In order to meet the challenges of transitioning to social and environmental sustainability, some have suggested that we develop a ‘Green Economy.’ This will not necessarily support well-being: it depends on how ‘Green Economy’ is defined. It has been variously defined as a shift to Green technology & materials [47,48], incorporating new economic accounting and incentives [49–51], moving from carbon-intensive technologies to labor-intensive work [48,52], degrowth in developed countries and a changed emphasis from goods to services [53,54**,55], or ‘improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities’ [56].

To the extent that Green Economy simply represents a green technology version of business as usual, it will not be adequate to create the social transformations necessary to ensure well-being and sustainability. In a true Green Economy, all relevant stakeholders such as government, civil society and business must also address the underlying socioeconomic drivers of change, understand the planetary boundaries, and embrace the key instrumental freedoms that must be provided for all individuals. Individuals might be seen as self-organizing systems interacting with other self-organizing systems including other individuals and species all driven by their own interests and preservation. These fundamental system interests, or basic orientors, have emerged in response to general environmental properties and are therefore identical across self-organizing systems: existence, effectiveness, freedom of action, security, adaptability, coexistence [57].

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Figure 1



Links between well-being and the environment. The cause-and-effect relationships between human well-being and a healthy environment go both directions.

The new approach must therefore acknowledge these basic orientors, and not just incorporate technological change within a standard neoliberal market system. In order to monitor progress towards sustainability and increased well-being, governments working closely with scientists must also develop new metrics that go beyond income and material wealth.

What about the contradiction between the growth needed for development, and the limitations of the environment? The old paradigm tells us that we must have growth in order to increase well-being, which in turn conflicts with protection of the environment. The evidence and arguments articulated in the paragraphs above suggest that well-being (not consumerism), sustainability (not

growth), and environment are mutually reinforcing. Thus reduced growth does not necessarily represent the prioritization of the environment over human well-being. Reduced or negative growth must be carefully defined to contribute to a growth in well-being at the same time that it advocates a strategic reduction in consumption by only those who can afford to do so. This would require close cooperation among governments, civil society and businesses, working together with the common goal of improving the well-being of individuals (see section on comprehensive well-being, below) and societies throughout the world. It will definitely require compromises by most parties to the negotiations, but with the understanding that there are benefits for all in the long run.

Equity is an essential part of the transition to sustainability

Socioeconomic inequality is not just an ethical issue: research shows that it also is a factor in many of the problems of the world. A positive association between lower socioeconomic status and higher mortality has been well documented in contemporary populations [58–67]. Inequality may promote conflict within and between ethnic groups, classes and societies [4**,68–74], and drive international immigration [75–77]. It appears to raise prevalence of poor health, mental illness, crime, violence, and other societal ills [4**,58,78**,79]. Inequality reduces cultural diversity through the disempowerment of local minority communities [80]. It may inhibit economic growth in developing countries [81], reduce sustainability [82–85], promote corruption [86], and play a role in destabilizing economies [87].

Inequality is at the root of unsustainable behaviors, enabling overconsumption by making it socially acceptable for some to have far more than others, and providing incentives for overconsumption by tying consumption to social status [78**]. Since available resources are not increasing, the only way to have sustainable development among the have-nots is to ensure a more equitable global distribution of wealth and resources. There is no consensus among social scientists as to how to reach this goal. Potential measures include: (i) progressive taxation; (ii) redistribution of land and wealth; (iii) reduction of unnecessary consumption in the developed world through consumption taxes on non-essentials; (iv) a public relations program highlighting the social and individual benefits of delinking materialism with social status and instead promoting sustainable behavior with social status; and (v) the return of control over economic and natural resources to local nations and communities in the developing world through nationalizing resources and industries.

Finally, inequality erodes trust and blocks cooperative solutions to urgent social, economic and political problems [83,88–90]. It is not possible to successfully negotiate the

kinds of collaborative agreements and arrangements needed to solve the problems of the world unless the various societies perceive that they all share common interests, and that it is in their interest to form these collaborations. This is especially true if people are asked to sacrifice for the sake of sustainability — they will not be willing to do this if they feel that others will not make an equivalent sacrifice. This phenomenon has already been witnessed as delegates to global multilateral negotiations have failed to reach agreements, or have even walked out, due to the different perspectives and agendas of the haves and the have-nots [91]. In short, the dimension of equality must be addressed before humankind can successfully negotiate and implement the essential changes needed for a transformation to sustainability.

Well-being is multidimensional and context-specific, not ‘one-size-fits-all’

There is no disagreement that improving human well-being is a worthy objective. The dilemma arises when we have to define what we mean by well-being.

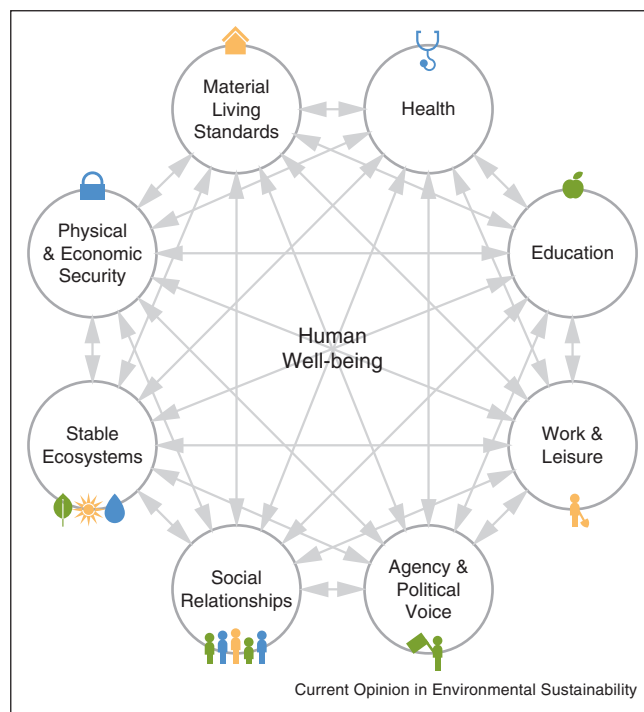
Objective well-being (OWB)

Objective measures such as the Gross Domestic Product (GDP) per capita and the Human Development Index (HDI) provide metrics that can be compared across individuals and used to evaluate progress over time. The most common measure used by governments, business, and society at large to measure as a direct measure of well-being is GDP per capita. However, even if we assume GDP per capita is a good proxy for well-being, it is an average measure and therefore ignores the asymmetrical distribution of wealth in a country. Moreover, the marginal return to well-being on each extra unit of material wealth gained falls after a certain limit. Recent studies show that monetary wealth provides improvement of well-being, up to a level of US \$10000 PPP (Purchasing Power Parity) [92], after which many other factors enter into the equation.

What is well-being, then, if not material wealth? Most academics, practitioners and policymakers will agree that the basic constituents of objective well-being include food, housing, clean water, health, education, and personal security. Sen was one of the most influential pioneers in developing the concept of well-being as it relates to development [93–95,96**]. He concluded that well-being is highly subjective and person-specific, and thus policies should focus on making well-being *possible* by providing the freedoms and capabilities that allow each person to achieve what will contribute to his or her own well-being. Different theories have emerged that shed light on various aspects of well-being, including the basic human values approach, the intermediate needs approach, the universal psychological needs approach, the axiological categories approach, the domains of subjective well-being approach, and the central human capabilities

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Figure 2



Well-being as a multidimensional concept. There are many components to well-being, both objective (e.g. material wealth and physical health) and subjective (such as quality of social relationships or feelings of happiness).

approach [96^{••}]. The development community takes a broad perspective, including factors such as literacy and mortality (e.g. the HDI). As Clark states, from an original focus on income and utility, there is now widespread agreement that well-being is a multi-dimensional concept (see Figure 2) that embraces all aspects of human life [96^{••}].

Subjective well-being (SWB)

Subjective measures such as a happiness index offer insight into the social and emotional state of individuals in varying circumstances, but are difficult to interpret and compare across individuals. Recently, there has been resurgence of using a happiness index for evaluating well-being [97]. Peiro notes that it is important to distinguish between happiness (the emotional or affective component) and satisfaction (the cognitive component) in quantifying subjective well-being [98]. Research on happiness has found that happiness is not always closely associated with income or other objective indicators of well-being such as physical health [99,100]. The role of social and emotional constituents such as self-esteem, identity, equity, and social relations has also been shown to affect the happiness and health of individuals. Dolan summarizes these findings, which include physical and

mental health; exercise; marriage or stable intimate relationship; employment or lack thereof; good personal relationships and time spent socializing; involvement in religious activities; social trust in most other people; degree of democracy; and safety of the area in which one lives [100]. Other elements of human well-being have been identified as healthy ecosystems [38]; security [38,96^{••}], and ‘a caring society that will assist individuals who suffer from catastrophic illnesses or indigent old age’ [38].

Equality in social relations also matters to people. Graham and Felton’s study of Latin American countries finds that inequality matters more to well-being than do absolute income gains, for those at the bottom of the distribution [101]. The unemployed are less unhappy in districts with high overall unemployment rates, which appear to reduce social stigma. In Germany, inequality aversion appeared to negatively affect life satisfaction, an impact which government taxation and redistribution did not alleviate [102]. Ballas found that unemployment in Great Britain was less painful when others around were also unemployed [103]. Hagarty reviewed data from eight countries, finding a strong correlation between reduced income inequality and subjective well-being (self-reported happiness), apparently due to social comparisons in which happiness is decreased when others around you seem to be doing better than yourself [104].

Comprehensive well-being (CWB)

How do ordinary people explain well-being and happiness, if asked? Clark presents the results of two surveys of people in a rural South African village and urban township [105]. The people interviewed indicated a concern with (1) the practical side of survival and development in poor countries — that is to say the need for education to improve practical skills, the need for a safe working environment, job security, reasonable working hours and effective legal protection, emotional and economic support from family and kin, as well as hygienic living conditions and physical security; (2) the psychology of human well-being, that is, mental functioning, pleasure, joy, avoiding stress and frustration, self-confidence and status; and (3) some of the ‘better things’ in life such as recreation, time for sleep and rest, leisure, and being with family and friends.

The elements which contribute to comprehensive well-being, shown in Box 1, are universal in concept but context-specific in implementation. The natural environment, as can be seen in Figure 1, provides many of the important elements of well-being, both physical and emotional as well as social. Cultural values and personal circumstances also affect what leads to happiness. Thus the elements of well-being will vary from person to person, place to place, and culture to culture. This highlights the importance of Sen’s essential freedoms and

Box 1 Elements of comprehensive well-being. Human needs that must be met include the physical as well as the emotional or social. Both are necessary to well-being.

Physical well-being

- nutritious food
- clean water
- adequate shelter
- health (protection from disease, provision of elements needed for good health, health care & birth control)
- security (protection from inflicted physical harm, crime, conflict, and disasters)
- material goods needed for decent life
- energy source (solar, wind, water, animal, fuel)
- work or means of earning a living
- exercise, relaxation and rest

Emotional and social well-being

- strong families
- strong community and social interactions
- social equality with others (non-discrimination)
- ability to trust others
- identity, autonomy, and self-determination
- freedom to move about and choose job, home, and social relationships
- political voice and empowerment
- education, knowledge
- fulfillment and creative outlet
- time and space for recreation
- connection with nature and beauty
- belief system and sense of meaning
- hope for the future

capabilities [93–95,96**], which allow individuals and communities to put into place the elements of well-being in ways which work for their lives and environments.

The *Wellbeing in Developing Countries* research group at the University of Bath launched an in-depth study of the constituents of well-being in the developing world, conducting extensive interviews and analyses in Peru, Ethiopia, Bangladesh and Thailand in the first decade of the new millennium [106–109]. The research group found that the components of well-being generally fall into three categories: material concerns (income, wealth, jobs, physical health, and environmental quality), relational concerns (family and friends, support networks, laws and politics, identity, inequalities), and subjective concerns (values and beliefs, self-concept, religion, hopes, fears, level of satisfaction with life). They concluded that well-being must be thought of not as provided to or

obtained by individuals, but as socially constructed and constituted within the political and cultural context [110].

Several circumstances create major challenges to the transition to socially sustainable societies in which comprehensive well-being is a priority.

Challenge 1: urbanization creates special opportunities and challenges

Urbanization presents unique opportunities as well as challenges for human well-being. On the one hand, urbanization is often associated with industrialization and economic growth, and thus has the potential to enhance human well-being. For example, recent study shows that there is a positive feedback loop between landscape urbanization and economic growth in China [111]. In fact, the level of urbanization shows high correlation with nations income level [112]. One of the main drivers of urbanization is the aspiration for a better life that cities represent, including access to better education, more job opportunities, and higher income. Yet rapid urbanization, especially in developing countries, can put enormous strain on the infrastructure within cities as well as the social and ecological systems. With more than half of world's population living in cities, the urban environment has become an increasingly significant factor in the health and well-being of population. [113,114]. In rapidly urbanizing Asia, cities are often where the most acute health issues occur, due to a poor level of service infrastructure, air, and water pollution caused by industrial activity, and consumption and lifestyle related issues [115]. The health impact of urban activities reaches beyond urban boundary. Untreated urban residential and industrial sewage pollutes irrigation water, which enters food system and causes serious health issues in Asian countries [116]. How cities are planned and built affects the well-being of its people, too. Sprawling cities tend to have more overweight people than do compact, walkable cities [117,118]. The presence of nature in cities fulfills the need of humans to have contact with nature, and provides other benefits from pollution removal to expedited recovery from illness [119]. Despite the challenges, it is important to recognize that cities do have the potential to move towards sustainability pathways — especially given good urban governance and other innovative practices [120,121].

Challenge 2: globalization spreads material consumption as a primary goal

Globalization has the potential to greatly increase the well-being of humanity by opening up the knowledge, opportunities, and problem-solving capabilities of the entire world to all its nations and citizens. However, to experience globalization's benefits, we need to be well aware of its risks and address them head-on. Technological advances and the rapid movement of goods and funds make the world a much more integrated system, where perturbations in one corner have significant impacts on other parts of the world. The imposition of the neoliberal

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socioeconomic model and global competitive pressures around the world has tended to restrict policy choices. Social development objectives are perceived to be in conflict with the country's international competitiveness; thus the prioritization of foreign direct investment and export expansion policies in many developing countries have led to a 'race to the bottom' as regards labor protection, anti-poverty programs and welfare subsidies [4**]. These trends have led to worsening conditions of poverty and inequality [4**]. The intrusion of commercialized and industrial culture, privatization, and neoliberal policies threaten local cultures, traditional social arrangements based on solidarity, and older agricultural practices that are potentially sustainable [4**,122]. Finally, accelerated economic competition increases antagonisms between societies and reduces the potential for constructive international cooperation. Much of this momentum comes from a common belief that the global economic growth engine and economic liberalization are the pancea for all of the problems humanity faces.

Many acknowledge that the global economic system needs management and intervention in times of trouble and perturbations. Similarly, many now see the environment as an interconnected system which requires integrated management and interventions [123,124]. However, imposing one social, economic, and governance model on the world takes away our ability to choose from different models, can destroy local economies, and tends to introduce global competition and a 'race to bottom' for workers. Local culture may be replaced with a commercialized culture of mass media and advertising, promoting excessive consumerism which in turn feeds resource depletion, environmental degradation, and growing socioeconomic inequality. Globalization thus not only promises great benefits but also poses a direct challenge to increased well-being.

Challenge 3: economic markets do not facilitate sustainability or equity

Markets by themselves are not structured or developed to address environmental and social issues. Instead they generate ever-increasing levels of wealth inequality and generally fail to cover externalities such as environmental costs of production and waste disposal. The market was designed to address scarcity problems in the most efficient manner when certain conditions are fulfilled: full information, zero transaction costs and free entry and exit — many of which are in fact impossible to achieve. In the case of equity, the market was never designed to address fair distribution of benefits. Political and governance failures, of course, must share in the blame [125]. Furthermore, vested economic and political interests often do not want change.

Mechanisms such as government regulation could be implemented to ensure the market does not generate

harmful environmental and social impacts. Markets might be used to guide production and consumption behavior through the pricing mechanism, but with strong government regulations and support from relevant civil societies to ensure harmful impacts to the poor are mitigated. For example, the use of taxes and payments for ecosystem services could internalize the environmental externalities of economic activities [126,127], but in addition redistribution payment schemes to transfer the receipts from taxes to the poor should also be designed in parallel. There is no doubt that addressing inequity and other social impacts requires a strong role by government in the provision of a number of key instrumental freedoms, including social opportunities, economic facilities, transparency guarantees, protective security, deliberative participation and ecological surety. If market regulation is not sufficient to generate a transition towards social and environmental sustainability, then fundamental changes to the economic system will be needed. This will require close cooperation between Central Banks, the International financial institutions such as the World Bank, and the International Monetary Fund.

Challenge 4: cultural inertia slows the transition towards sustainability

Major transformations are needed in order to move societies in the direction of social and environmental sustainability. But communities and societies are inherently conservative, and do not change unless something pushes them [128–132]. As described for the challenges above, there are forces of momentum and inertia that keep society moving on its present trajectory despite the fact that many see disaster looming. While there is no shortcut to sustainability, there are several important routes by which societies can undergo significant shifts in direction, as shown in Box 2.

Box 2 Mechanisms of societal transition. Societies generally undergo major change only in the presence of one or more of these common drivers.

- exposure to new ideas (worldviews, beliefs, religion, values, information, understandings)
- exposure to new ways of learning (television, internet, film, books, arts, education, advertising)
- external control by others (political, military, economic, cultural)
- migration (emigrants learn from their new social environment, societies learn from incoming immigrants)
- socioeconomic shifts (new modes of subsistence, new economic systems, urbanization, globalization)
- environmental changes (absolute constraints on our activities, including depletion of resources, loss of biodiversity and ecosystem services, altered ecological functioning, pollution, and changing climate)

In order to influence the process in the right direction, we need to find leverage points whose influence can ripple through the entire system. The most powerful and influential such leverage points include the economic system (we can generate desired incentives for relevant behavior with an economic system that does not drive growth, overconsumption, and inequality), new ideas (we need a paradigm shift in knowledge and values, away from growth, competitiveness and personal gain, and towards shared wealth, well-being and happiness), strong political will and commitment, and the empowerment of people to influence outcomes (increased social, economic and political empowerment generate hopefulness and more effective public action).

In short, we need to avoid a one-model-fits-all approach to well-being. Instead, we must develop measures and incentives in a participatory, bottom-up manner, reflecting the diversity of cultures, environments and circumstances, and the multidimensionality of the concept of well-being itself.

We need a systematic effort to monitor progress towards well-being and understand its drivers

We have been measuring societal success on the basis of a production indicator for more than half a century (if not from the industrial revolution more than two centuries ago). Given the variety of factors that determine the state of people's life, production (income) does not provide an adequate basis for the measuring of well-being, [133]. Moreover, when measuring solely the economic dimension, the link between economic output and well-being became even poorer above certain levels of income [134]. Today, there is a wide consensus in the literature that we should go beyond GDP to measure well-being in a more comprehensive way [135**].

Taking into account the multiple constituents of well-being (see Figure 2), it is difficult to know how to measure genuine societal progress. While moving away from GDP is accepted, the challenge became how to select the right set of yardsticks to understand changes in the various dimensions of well-being, as needed; see Stiglitz *et al.*, 2009 for a review of measures of societal progress [135**]. Nowadays, it seems to be that the economic dimension leads a large part of our decisions and determines how we spend our time, assuming that the more economic resources we have, the happier we are; but this may be simply an illusion [99]. The importance (weight) that each nation assigns to the distinct dimensions of measuring well-being should reflect how we define our ends, our cultural and political priorities, and the current stage of socioeconomic development.

In addition, the unavoidable interconnections between societies lead us to reflect on possible trade-offs in well-being in time and space. Improvements in one person's

well-being can cause deterioration in the well-being of others. Today's choices about lifestyle and consumption could affect another generation's well-being in the future. Improved material conditions on one side of the world may cause a decrease in well-being on the other side of the planet. Some export-oriented firms in the South, for example mining activities, provide wealth and materials for Northern economies, yet negatively impact water resources and health in local communities. It may be important, therefore, to use national laws and international treaties to address ethics and global responsibilities when shaping well-being policies, so as to achieve both geographical and temporal breadth in well-being.

Finally, social, environmental and economic sustainability criteria together with equity principles should be included in a comprehensive well-being policy, since these are important pillars for sustaining human well-being over time. Thus, we need systematic efforts to keep understanding the cause-and-effect relationships between various well-being components, and to continuously adjust our well-being metrics to better reflect a genuine societal progress.

We need a global focus on growth in well-being instead of consumption

Scholarly research and thinking on well-being and its connection to the environment, sustainability, growth, and sustainable development can be summarized as follows. Moving towards social as well as environmental sustainability will require a focus on well-being and meeting human needs. To do this, we will need more research to better understand the key drivers of well-being: what do humans really need in order to live well, both physically and emotionally, and to feel satisfied with their lives? What kind of societal drivers are shaping and influencing them?

To escape the dilemma of environment versus development, we must prioritize and monitor growth of human well-being rather than growth in material consumption, while acknowledging that communities currently in poverty will need additional consumption in order to do well. Well-being 'audits' could be required for all development projects, to ensure the appropriate goals are being met for the community. World Bank, International Monetary Fund and World Trade Organization policies and practices will need to be adjusted to promote widespread increases in human well-being, broadly defined, rather than economic growth for certain interests and sectors.

To provide the resources necessary for sustainable development of the communities most in need, we must ensure a more equitable global distribution of resources and empowerment. This will require the 'haves' to give up some of their material wealth, but not their well-being. In the developed world, shifting the economic focus from

throw-away goods, consumption, and individualism to services, recycling, and social relationships would be one way to reduce unneeded consumption and free up resources while maintaining (or improving) life satisfaction. Business plans and government policies would need to be directed at steady-state rather than perpetual growth economic models.

There are a host of conflicting recommendations for achieving a transition to a more socially and environmentally sustainable society that prioritizes well-being and relationships instead of consumption and economic growth. These recommendations include media campaigns encouraging reduced consumerism and other behavioral change; increased regulations and taxes on unsustainable activities (with measures taken to ensure the burden of any new taxes does not fall on the poor); taxes to internalize the negative social and environmental impacts of goods and services; multilateral negotiations to more equitably allocate the burdens and benefits of wealth, production, and pollution between nations; national trust funds — funded by taxation on unsustainable economic activity — that can be used to fund the provision of instrumental freedoms such as food, housing, education and health care for all who need it; nationalizing resources and industries; and the radical restructuring of economic systems.

Unlike the natural sciences, where there is general agreement, for example, on the urgent need to reduce carbon emissions, the social sciences research community has not reached a consensus on these recommendations. However, social sciences research does make clear the need to replace the consumer culture with something more supportive of human social and emotional needs, diminish inequalities within and between societies, and develop economic and political policies and institutions that serve human well-being in all its dimensions.

Implementing all of the above will require a significant paradigm shift, away from conventional growth, competitiveness and personal gain, and towards shared wealth, well-being and happiness. Chambers argues that ‘the biggest challenge for development. . . is to find more ways in which those with more wealth and power will not just accept having less, but will welcome it as a means to well-being, to a better quality of life’ [136]. In return for these changes, communities and societies may experience better social relationships and less conflict within and between societies. The material demands placed on the environment can be reduced to a sustainable level. A commitment to addressing human well-being in an equitable way will make possible the kinds of joint decision-making and collaborations needed to solve the world’s problems. Best of all, once success and happiness are no longer defined solely in terms of material wealth, human happiness and well-being can continue to grow

without exceeding sustainability limits and planetary boundaries.

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