

From Millennium Development Goals to Sustainable Development Goals

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Lancet 2012; 379: 2206–11

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The Millennium Development Goals (MDGs) mark a historic and effective method of global mobilisation to achieve a set of important social priorities worldwide. They express widespread public concern about poverty, hunger, disease, unmet schooling, gender inequality, and environmental degradation. By packaging these priorities into an easily understandable set of eight goals, and by establishing measurable and timebound objectives, the MDGs help to promote global awareness, political accountability, improved metrics, social feedback, and public pressures. As described by Bill Gates, the MDGs have become a type of global report card for the fight against poverty for the 15 years from 2000 to 2015. As with most report cards, they generate incentives to improve performance, even if not quite enough incentives for both rich and poor countries to produce a global class of straight-A students.

Developing countries have made substantial progress towards achievement of the MDGs, although the progress is highly variable across goals, countries, and regions. Mainly because of startling economic growth in China, developing countries as a whole have cut the poverty rate by half between 1990 and 2010. Some countries will achieve all or most of the MDGs, whereas others will achieve very few. By 2015, most countries will have made meaningful progress towards most of the goals. Moreover, for more than a decade, the MDGs have remained a focus of global policy debates and national policy planning. They have become incorporated into the work of non-governmental organisations and civil society more generally, and are taught to students at all levels of education.

The probable shortfall in achievement of the MDGs is indeed serious, regrettable, and deeply painful for people with low income. The shortfall represents a set of operational failures that implicate many stakeholders, in both poor and rich countries. Promises of official development assistance by rich countries, for example, have not been kept.

Nonetheless, there is widespread feeling among policy makers and civil society that progress against poverty, hunger, and disease is notable; that the MDGs have played an important part in securing that progress; and that globally agreed goals to fight poverty should continue beyond 2015. In a world already undergoing dangerous climate change and other serious environmental ills, there is also widespread understanding that worldwide environmental objectives need a higher profile alongside the poverty-reduction objectives.

For these reasons, the world's governments seem poised to adopt a new round of global goals to follow the 15 year MDG period. UN Secretary-General Ban Ki-Moon's

high-level global sustainability panel, appointed in the lead-up to the Rio+20 summit in June, 2012, has issued a report recommending that the world adopt a set of Sustainable Development Goals (SDGs). This spring, Secretary-General Ban indicated that after the Rio+20 summit he plans to appoint a high-level panel to consider the details of post-2015 goals, with UK Prime Minister David Cameron, Indonesian President Susilo Bambang Yudhoyono, and Liberian President Ellen Johnson Sirleaf as co-chairs. One scenario is that the Rio+20 summit will endorse the idea of the SDGs, and world leaders will adopt them at a special session of the UN General Assembly to review the MDGs in September, 2013.

The SDGs are an important idea, and could help finally to move the world to a sustainable trajectory. The detailed content of the SDGs, if indeed they do emerge in upcoming diplomatic processes, is very much up for discussion and debate. Their content, I believe, should focus on two considerations: global priorities that need active worldwide public participation, political focus, and quantitative measurement; and lessons from the MDGs, especially the reasons for their successes, and corrections of some of their most important shortcomings. I have served Secretaries-General Kofi Annan and Ban Ki-Moon as Special Advisor on the MDGs, and look forward to contributing to the SDGs as well. The following suggestions, which I make solely in my personal capacity, include priorities for the SDGs and the best ways to build on the MDG successes and lessons.

Why SDGs?

The idea of the SDGs has quickly gained ground because of the growing urgency of sustainable development for the entire world. Although specific definitions vary, sustainable development embraces the so-called triple bottom line approach to human wellbeing. Almost all the world's societies acknowledge that they aim for a combination of economic development, environmental sustainability, and social inclusion, but the specific objectives differ globally, between and within societies. Certainly, as yet, no consensus regarding the tradeoffs and synergies across the economic, environmental, and social objectives has been agreed. Still, a shared focus on economic, environmental, and social goals is a hallmark of sustainable development and represents a broad consensus on which the world can build.

The urgency of the triple bottom line arises from a new realisation brought to global awareness by earth science and the yearly changes around us. The world has entered a new era, indeed a new geological epoch, in which human activity has come to play a central and threatening part in

fundamental earth dynamics. Global economic growth per person, now led by the emerging economies, and a still-burgeoning population that reached 7 billion last year (and that is expected to reach 8 billion by 2024) are combining to put unprecedented stress on the earth's ecosystems. Following the lead of Nobel Laureate Paul Crutzen, one of the discoverers of the chemistry behind stratospheric ozone depletion, scientists have quickly adopted the new term *Anthropocene* to denote the human-driven age of the planet. A closely related notion is termed planetary boundaries—the idea that human activity is pushing crucial global ecosystem functions past a dangerous threshold, beyond which the earth might well encounter abrupt, highly non-linear, and potentially devastating outcomes for human wellbeing and life generally.

The present era is distinguished by the fact that these pressures are both global and local, and that they impinge simultaneously on several different crucial earth systems, including the carbon, nitrogen, and water cycles. Humanity faces not only one but many overlapping crises of environmental sustainability, including: climate change as the result of human-caused emissions of greenhouse gases; massive environmental pollution (eg, the poisoning of estuaries and other ecosystems as a result of heavy runoff of nitrogen-based and phosphorus-based fertilisers); the acidification of the oceans, caused mainly by the increased concentration of atmospheric carbon dioxide, which is the most important human-produced greenhouse gas; the massive loss of biodiversity caused by unsustainable demands on forests (eg, logging for timber or wood fuel; figure 1) and the continuing conversion of forests and remaining wilderness into farms and pastures; and the depletion of key fossil resources, including energy (oil, gas, coal) and groundwater.

In view of these dire and unprecedented challenges, the need for urgent, high-profile, and change-producing global goals should be obvious. The public is beginning to sense that the increasing frequency of extreme climate events is indicative of an underlying dangerous trend of long-term change. The detailed reports of the Intergovernmental Panel on Climate Change have enabled the world community to keep abreast of the latest scientific findings of anthropogenic interference in the climate system. Moreover, the growing burdens of high and volatile food prices are confronting billions of people daily.

Beyond the environmental threats, humanity faces other serious threats that are part of the sustainable development agenda. The human population continues to grow rapidly, by around 75–80 million people per year, and is on a trajectory to reach 9 billion by the middle of the 21st century, and even 10 billion by the end of the century. Even the medium forecast of the UN Population Division (which foresees a world population of 10·1 billion in 2100) could well turn out to be low, since it is predicated on a rather steep decline in fertility rates in low-income countries. These demographic trends have to be taken seriously, and households in

high-fertility settings should be empowered to adopt rapid and voluntary reductions of fertility to benefit themselves, their children, and the local and global economy and environment.

The combination of a rising world population and rapidly rising incomes per person in large emerging economies such as China and India suggests that the demand for food grains and feed grains will continue to increase, amplified by rising meat consumption in the emerging economies, against a backdrop of around 1 billion people who are already chronically hungry, mainly in Africa and south Asia. In the past two decades, many of the key yield-raising technologies of the green revolution have run their course; increases in productivity of food and feed grains have slowed worldwide. A substantial share of US maize production has been diverted into biofuel. Increased grain production is increasingly difficult, and threatens continued destruction of natural habitats, climate change, water stress, increased fertiliser pollution, decrease in biodiversity, and more. Social outcomes could be deeply destabilising, because sharp increases in food prices threaten to push hundreds of millions of people into chronic hunger.

Another set of challenges surrounds social inclusion—or, put more simply, fairness—in the world's economies. As the world has been stumbling through the intense period of globalisation since 1980, together with the advent of the digital age, inequalities in income have generally soared. Gaps in earnings between workers with higher education and those without have widened sharply. The wages of highly educated and well trained workers have grown substantially, whereas earnings of lower-skilled workers with fewer years of education have tended to decrease. The fragility of gainful employment for large parts of the world's labour force, in both rich and poor countries, has contributed to increased public unrest (figure 2) and even the toppling of governments in the past few turbulent years, with more unrest expected.

Of course, the increased inequality caused by differences in educational attainment adds to longstanding inequalities in other dimensions. The goal of gender equality between men and women and boys and girls (MDG 3) has not yet



Figure 1: Illegal logging near Anapu, Pará, Brazil



Figure 2: Greek workers demonstrating against job losses

been met worldwide, even though some progress has been made on girls' school enrolment and women's participation in politics and business. Minority groups (ethnic, religious, racial) continue to endure hardships in all countries. Longstanding discrimination against indigenous populations is stark and in many places intensifying as a scramble for jobs, water, and arable land increases. Youth also find themselves aggrieved. They have arrived on the planet at a time of remarkable technological advancement, notably in digital, material, and health technologies, but seemingly also at a time when technological advance is threatening the access of many people to good jobs rather than enhancing it.

The triple bottom line plus good governance

The MDGs were targets mainly for poor countries, to which rich countries were to add their solidarity and assistance through finances and technology. The SDGs will, necessarily, have a different feel about them. Sustainable development is eluding the entire planet. The SDGs should therefore pose goals and challenges for all countries—not what the rich should do for the poor, but what all countries together should do for the global wellbeing of this generation and those to come. Middle-income emerging economies, such as Brazil, China, India, and others, will be crucial leaders of the SDGs, and will have their own internal challenges of balancing growth and environmental sustainability; vulnerabilities to adverse trends such as climate change; and rising geopolitical roles, regionally and globally.

I would propose organisation of the SDGs into the three broad categories of economic development, environmental sustainability, and social inclusion, with the proviso that success in any of these three categories (or subcategories within them) will almost surely depend on success of all three. The SDGs might have three bottom lines, but achievement of any of them is likely to need concerted global efforts to achieve all of them. Moreover, the three bottom lines will depend on a fourth condition: good governance at all levels, local, national, regional, and global.

The economic dimension should build on the MDGs, which have helped to advance the world's agenda in the fight against poverty, hunger, and disease. Between 2015 and 2030, the world should aim not merely to achieve the MDGs where they have not been met, but to carry on with the task initiated at the very start of the UN itself (and represented in the Universal Declaration of Human Rights): to secure the basic material needs—and human rights—of everybody on the planet. To declare that by 2030, all extreme deprivation—hunger, extreme income poverty, and avoidable disease and deaths—can be eliminated is both realistic and profound. All individuals should be able to access safe water (figure 3) and sanitation, electricity, connection to information and communication technology (figure 4), and primary health care, and be protected from natural hazards. Many places will remain poor, but no place should be destitute, unable to meet these basic needs.

A key challenge is to adopt a meaningful standard of basic needs worldwide. I would propose the following goal.

SDG 1: by 2030, if not earlier, all the world's people will have access to safe and sustainable water and sanitation, adequate nutrition, primary health services, and basic infrastructure, including electricity, roads, and connectivity to the global information network.

This target might seem optimistic, but it is well within reach. Technological advances and economic growth are making it possible. One of the notable facts about poverty nowadays is that well over half of the 1 billion people with a low income are living in middle-income countries, which means that they are living in societies with the financial and technological means to address their remaining poverty (as Brazil and China have effectively and notably done in recent years). Although hundreds of millions of impoverished people still live in the least developed countries, they are a dwindling proportion of the world's poorest people, such that small financial and technological transfers from high-income and middle-income countries can alleviate their plight.

The second pillar is environmental sustainability, usefully conceptualised by the global planetary boundaries.

SDG 2: from 2015 to 2030, all nations will adopt economic strategies that increasingly build on sustainable best-practice technologies, appropriate market incentives, and individual responsibility. The world will move together towards low-carbon energy systems, sustainable food systems, sustainable urban areas (including resilience in the face of growing hazards), and stabilisation of the world's population through the voluntary fertility choices of families supported by health services and education. Countries will adopt a pace of change during these 15 years, individually and with global cooperation, that will enable humanity to avoid the most dangerous planetary thresholds. The world community will help low-income countries to bear the additional costs that they might entail in adoption of sustainable systems for energy, agriculture, and other sectors.

I have put the emphasis on the main drivers of human-induced global environmental change: energy use, food production, urbanisation with its attendant pollution and potential hazards, and population increase. Food production, for example, is a major driver not only of greenhouse gas emissions, but also of the loss of biodiversity and increasing stress on fresh water supplies. If humanity can address these drivers of change in a respectful, civilised, balanced, and evidence-based manner, through appropriate economic institutions, these challenges will be large but achievable. If these issues continue to be ignored, they will eventually become calamitous. In my view, none of the environmental dangers constitutes a fundamental obstacle to close the technology and income gaps between high-income and low-income countries. In other words, with improved technologies and behavioural choices, both development and nature can coexist. SDG 2, as stated above, begs many questions, especially as to who will help low-income countries to accomplish what the high-income countries have not yet even accepted.

The third broad SDG is social inclusion, the commitment to future economic and technological progress under conditions of fairness and equitable access to public services, and with the government counteracting social discrimination on the basis of gender, ethnic origin, religion, and race.

SDG 3: every country will promote the wellbeing and capabilities of all their citizens, enabling all citizens to reach their potential, irrespective of class, gender, ethnic origin, religion, or race. Every country will monitor the wellbeing of its citizenry with improved measurements and reporting of life satisfaction. Special attention will be given to early childhood, youth, and elderly people, addressing the vulnerabilities and needs of each age cohort.

A particular focus should be on early childhood development (ages 0–6 years), the period of crucial brain development, formation of cognitive skills, and vital health outcomes, all of which have important lifetime implications. Special care should also be taken for children (aged 6–14 years) and youth (aged 15–24 years), especially girls, to ensure that all young people can complete secondary education and make an effective transition from school to skills to the labour market. In a world where 12% of the population, and 22% of that of more developed regions, will be older than 65 years by 2030, new targeted programmes and social protections will be needed for elderly people in many countries.

Traditional measures of economic performance—namely, gross domestic product and household income—capture only a small part of what determines human wellbeing. Human happiness, life satisfaction, and the freedom from suffering depend on many things in addition to meeting of material needs, including social trust, honest government, empowerment in the workplace, mental health services, and a high level of civic



Figure 3: Pupils in India drinking rainwater from an underground store

participation. Many countries are adopting new metrics to measure these determinants of wellbeing and to measure their ultimate bottom line: life satisfaction of the population. Bhutan has inspired the world with its measure of gross national happiness. During the 15 years of the SDGs, all governments should agree to introduce new multidimensional measures of citizen wellbeing and the distribution of wellbeing in the population.

Governance for sustainable development

A fourth basic determinant of the world's ability to achieve SDGs 1–3 will be the quality of governance at all levels, from local to global, and in the private sector as well as government. At every level, government and official agencies should be responsive to the citizenry. Companies need to recognise and act on their responsibility to a wide range of stakeholders. Together, the world's governments should cooperate to finance and provide essential public goods and protect the interests of future generations from the short-sighted despoliation caused by the present generation. I would therefore suggest the following SDG.

SDG 4: governments at all levels will cooperate to promote sustainable development worldwide. This target includes a commitment to the rule of law, human rights, transparency, participation, inclusion, and sound economic institutions that support the private, public, and civil-society sectors in a productive and balanced manner. Power is held in trust to the people, not as a privilege of the state.

Governments represent not only today's generation, but also those to come. They will introduce political institutions to ensure that the rights of future generations are respected. Societies will promote the notion of subsidiarity—ie, that governance should be as close to the people as functionally possible, giving individuals and families maximum freedom of action. Governments will share information, exchange ideas, encourage meetings and brainstorming, and work in good faith across cultures. They will also shape a new sustainable and decent approach towards human migration,

recognising the growing economic and environmental pressures on people to leave their homelands, and protecting the rights of migrants to resettle their families and meet their basic needs.

Sustainability requires the leadership and responsibility of the private sector alongside the public sector and civil society. The private sector is the main productive sector of the world economy, and the holder of much of the advanced technologies and management systems that will be crucial for success of the SDGs. Private-sector companies should support the SDGs in practical and measurable ways, in their policies, production processes, and engagement with stakeholders. They should refrain from lobbying and political activities that might endanger the SDGs.

Official development assistance will have a continuing role for low-income countries during 2015–30, but the role of aid will decline as today's low-income countries reach middle-income status as the result of economic growth. Private philanthropy and volunteering will be encouraged. All but the poorest countries will share in the financing of global public goods, in relation to their respective economic capacities and according to the principle of common but differentiated responsibilities. Official financing for the public goods of sustainable development will be based on secure, predictable, and agreed formulas to end the non-fulfilment of financial pledges. Governments will join together to implement international strategies and institutions to ensure the effective and rapid diffusion of technologies that support sustainable development.

Some lessons learned from the MDGs

The SDGs can benefit from both the successes and the shortfalls of the MDGs. The successes are notable. Unlike many UN goals, the MDGs are still very much with us almost 12 years after their adoption. This commitment is rare. I believe that three strengths of the MDGs can explain the longevity of public support and awareness. First, the MDGs were reasonably easy to state—eight simple goals that fitted well on one poster! By contrast, Agenda 21, adopted at the UN conference in

Rio de Janeiro in 1992, runs to 351 pages. These eight goals were what stuck in the public's mind, not the 18 targets and 48 indicators. Simplicity has worked effectively in this case from the point of view of public awareness, mobilisation, advocacy, and continuity.

Second, the MDGs were not a legally binding set of commitments, but rather a set of moral and practical commitments. Little time was lost negotiating the exact words of the MDGs. Legally binding commitments are almost universally regarded as the gold standard of international diplomacy, but the number of years that are often invested in reaching legally binding treaties on sustainable development are unlikely to counter-balance the heavy transaction costs and delays. Even when legally binding agreements are reached (as in the case of the Kyoto Protocol), they are often ignored in practice because of the absence of effective enforcement mechanisms.

Third, the MDGs could be pursued through practical and specific measures adopted by governments, business, and civil societies worldwide. I do not want to overstate the case—many of the MDGs will not be met in many countries—yet much progress has been achieved, and the practical nature of the MDGs has played a powerful part in that success.

As Special Advisor for the MDGs, I have always emphasised very specific and actionable measures as the keys to success. The UN Millennium Project, which I was honoured to lead, subtitled its report *A practical plan to achieve the MDGs*.¹ The studies in that project described many practical technologies—from antimalaria bednets to high-yield seeds—that taken together could provide the basis for achievement of the MDGs.

The MDGs have also had their share of weaknesses, and these should be recognised to improve the performance of the SDGs that will follow. I will mention four domains in which the SDGs should improve upon the organisation of the MDG effort. First, the 15-year MDG period had no intermediate milestones. The 15 years of the SDGs should include intermediate objectives and milestones with clear dates. 15 years is a good stretch for serious policy making, but intermediate stages along the way would ensure closer feedback between policies and outcomes.

Second, the lifeblood of the MDGs and the SDGs should be data that are accurate, timely, and available to managers, policy makers, and the public. One of the biggest drawbacks of the MDGs is that the data are often years out of date. Accurate published information from the past 12 months is still not available for most low-income countries. This timelag was inevitable when data were obtained by hand in household surveys, but in the age of the mobile phone, wireless broadband, and remote sensing, data collection should be vastly quicker. Governments should consciously invest in a real-time reporting system for the SDGs to produce reliable data with no more than a yearly, if not quarterly,



Figure 4: Nurse in a rural hospital in Nyamata, Rwanda

timelag. This investment would vastly strengthen programmes in several ways: advocacy, feedback, and real-time management.

Third, the private sector should be crucially engaged from the very start. Neither the MDGs nor the SDGs will be achieved without the leadership of private companies, large and small. Multinational companies bring unique strengths: a worldwide reach, cutting-edge technologies, and massive capacity to reach large-scale solutions, which are all essential to success. Yes, many large companies are also lobbyists for policies antagonistic to sustainable development, so engagement with business has to be done cautiously, but it should also be active, forward-looking, and intensive.

Fourth, and finally, the success of the SDGs will need societies worldwide to invest adequately in their success. Sustainable development is the only viable path for humanity, but it will not be achieved unless a small part of consumption spending is turned into investments for long-term survival. The investments for sustainable development (eg, transition to low-carbon energy systems) will not be heavy, certainly not compared with the massive costs if no investment is made. I have previously estimated that meeting the major goals of poverty reduction, biodiversity conservation, climate change mitigation, and primary health for all would need perhaps 2–3% of global income.² That small amount, if properly invested, would be transformative.

The MDGs relied on voluntary financing mechanisms, notably the foreign aid outlays voted by each parliament. Experience has shown that free riding on financial assistance is the norm, not the exception. Only a handful of countries have abided by their promises to give 0·7% of their gross domestic product as official development assistance. Even specific, timebound pledges (such as the pledge at the G8 Gleneagles summit in 2005 to double official development assistance to Africa) were not met.

The SDGs should be more focused and realistic with regard to financing than were the MDGs. Rather than relying on so-called aid voluntarism, in which countries announce their individual aid promises (and then fail to honour them in most cases), countries should agree to transparent and specific standards of financing, such as quotas and assessments (eg, International Monetary Fund quotas and UN dues) related to national incomes, and levies on national greenhouse gas emissions (eg, a few dollars per ton of carbon dioxide emitted per year). The sums are small, manageable, and essential for success.

Technology, the private sector, and critical pathways to sustainable development

When it comes to elimination of extreme poverty, the main strategy is to expand the reach of crucial technologies (including medicines, diagnostics, electrification, high-yield seeds, and internet) from high-income and

middle-income economies to low-income economies. Meeting the SDGs will be different. The world will need new technologies and new ways to organise human activity to combine improving living standards and ecological imperatives. Technological and social change will be paramount, in both rich and poor countries alike.

For this reason, the SDGs need the identification of new critical pathways to sustainability. Moving to a low-carbon energy system, for example, will need an intricate global interplay of research and development, public investments in infrastructure (such as high-voltage direct current transmission grids for long-distance power transmission), private investments in renewable power generation, and new strategies for regulation and urban design. The task is phenomenally complex. Market-based strategies (such as carbon taxation) can help to simplify the policy challenge by steering private decisions in the right direction, but politics, planning, and complex decision making by many stakeholders will be unavoidable.

The SDGs will therefore need the unprecedented mobilisation of global knowledge operating across many sectors and regions. Governments, international institutions, private business, academia, and civil society will need to work together to identify the critical pathways to success, in ways that combine technical expertise and democratic representation. Global problem-solving networks for sustainable development—in energy, food, urbanisation, climate resilience, and other sectors—will therefore become crucial new institutions in the years ahead.

New social media and information technology have given the world an unprecedented opportunity for inclusive, global-scale problem solving around the main sustainable development challenges. Scientists, technologists, civil society activists and others are increasingly turning to online networks for collaboration, crowdsourcing, group problem solving, and open-source solutions such as for software and applications. The pathways to sustainable development will not be identified through a top-down approach, but through a highly energised era of networked problem solving that engages the world's universities, businesses, non-governmental organisations, governments, and especially young people, who should become the experts and leaders of a new and profoundly challenging era.

Conflicts of interest

The author declares that he has no conflicts of interest.

Acknowledgments

I thank Guido Schmidt-Traub, Shiv Someshwar, Erin Trowbridge, Joanna Rubinstein, Lauren Barredo, and Claire Bulger.

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