This paper is intended to provide information and stimulate discussion at the Earth Dialogues being held in September 2013 at the United Nations in Geneva. It is not for publication or citation. The views expressed in this discussion paper do not necessarily reflect those of Green Cross International or any other organizing partner of this edition of the Earth Dialogues.
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The Earth Dialogues

“The Earth Dialogues were inspired by our belief in the need to generate new energy and impetus to drive the movement to place ethics and human values at the heart of the struggle to harmonize the globalization process with sustainable development. The Earth is in danger, and sustainable solutions must be rapidly found to reduce the world’s soaring poverty rates, address the growing gap between North and South, confront the grossly unequal access to education and medical treatment, and combat global insecurity.”

Mikhail Gorbachev and Maurice Strong, 2002

The Earth Dialogues are a series of public fora initiated by Mikhail Gorbachev and Maurice Strong, which aim to mobilize global public interest and action to promote three important objectives essential to the future of humanity: averting the ecological disasters which threaten our planet; fighting the plague of poverty; and acting to ensure truly sustainable development.

When the first Earth Dialogues was held in Lyon, France, in February 2002, the world was still reeling from the shock of the terrorist attacks of 11 September 2001. These were less than ideal circumstances in which to be planning the World Summit for Sustainable Development held in Johannesburg in August 2002, and the state of world development, environment and security were all a far cry from where the participants at the 1992 Rio Earth Summit – including Mikhail Gorbachev and Maurice Strong – had hoped they would be in the optimistic years immediately following the end of the Cold War.

One positive phenomenon which has occurred in the years since the Earth Summit is the rise in importance and engagement of civil society. This new force in local and international affairs was a major factor behind the creation of the Earth Dialogues, aimed at galvanizing world public opinion – the “second super power” – and inspiring positive action. The multitude of environment, human rights and development focused NGOs, armed with low-cost communication via email and the internet, the rise in North-South interaction and partnerships, and the emergence of trans-boundary threats and opportunities, have all contributed to a strong sense of global solidarity on the part of citizens all over the world. In recent times, civil society movements around the world empowered by the possibilities of social media have demonstrated the very real power of public opinion.

The Earth Dialogues seek to tap the energy, wisdom and creativity of all people committed to achieving sustainable development, be they scientists, students, farmers, artists or political leaders. The Earth Dialogues are open, interactive and solution orientated, bringing together people from different sectors of society and opposing sides of development debates to focus on promoting the fundamental human values which form the basis of human civilization all over the planet: compassion and respect for each other and the natural environment, tolerance and solidarity, and the pursuit of peace.

Since Lyon in 2002, Earth Dialogues have been held in the United States, Pakistan, Spain, Australia and Brazil. This edition of the Earth Dialogues will take place on September 3, 2013, in Geneva, Switzerland.
Chapter 1.

Confronting the Challenges of the 21st Century

Humanity is currently failing to act decisively to contain the risks of ecological, environmental and climate disaster. Despite overwhelming scientific evidence – and growing public concern – that our present development path is headed for calamity, governments are still not taking the challenge of achieving sustainable and equitable world development sufficiently seriously: short-term national and financial concerns are consistently given top priority. As a result, the scale of resource use is escalating and the crucial issues that will determine the future are not being effectively addressed through either national or international action.

Looking ahead, current trends indicate that the problems of today are minor in comparison to those we will face, not in the distant future, but as early as 2050, or 2030. Paradoxically, the more successfully and the longer we continue on the present path, which is what most current government policy is unashamedly focused on achieving, the more we create the conditions for disaster. This is true not only for climate change, but also for the related challenges of water stress, food production, ocean acidification, biodiversity decline, and widespread poverty and inequality. There is an increasingly urgent need to act on the structural, fundamental causes of the deteriorating situation, primarily the excessive consumption and waste of the richest quarter of humanity – whether living in developed or developing countries – and our unsustainable model of economic growth.

This requires transformational change. Sadly, so far we have mainly seen a lot of rhetoric and political grandstanding about change. There is also a huge weight of very powerful vested interests actively holding back this transformation. But there have also been positive developments that should not be discounted. Civil society awareness, engagement – and impatience – is rising across the world and across the generations. Progress on many key human development goals has advanced. More businesses are voluntarily adopting sustainable goals and practices. The impacts of climate change are being clearly felt and increasingly recognized, putting pressure on governments to act. Important incremental changes are occurring, but the transformational change that is needed calls for something that is currently lacking – courageous political leadership and concerted international action.

In pressing for this leadership and action, it is vital that we learn lessons from the past decades and examine both the achievements and shortfalls of earlier and ongoing attempts to achieve sustainable development. It is also vital that we be under no illusion about the intensity of the multiple threats that we face, or the scale of the challenge.

From Rio to Rio+20: One City, Two Worlds

It is 21 years since the 1992 Rio Earth Summit, and the world in which the concept of sustainable development is now coming of age is a very different one to that of its optimistic infancy in the years following the end of the Cold War, or its birth in the 1987 Brundtland Report. These changes were very apparent at the Rio+20 Earth Summit in 2012, but the ultimate goal remains the same: to transition to a sustainable, inclusive society that promotes human development in ways that do not destroy nature and jeopardize future generations.
The 1992 Earth Summit took place just six months after the dissolution of the Soviet Union, a moment of unprecedented faith in multilateralism and free-market capitalism. People looked ahead to a future of peaceful cooperation, a New World Order under which states would unite to solve problems and resolve conflicts; as the Time magazine cover of the week declared, leaders were “coming together to save the Earth”. 1992 was also the year that the Maastricht Treaty fortified the European Union, that the white population of South Africa voted to end apartheid, and that China ratified the Nuclear Non-Proliferation Treaty and began to accelerate market-orientated reforms. The economic supremacy of the US, Western Europe and Japan was, in marked contrast to 2012, unchallenged.

When over 100 heads of state arrived in Rio in June 1992 for the largest global summit the world had ever seen, the mood was ripe to celebrate this new era with a bold universal response to pressing global environmental problems. Nations signed up to the inspirational Rio Declaration on Environment and Development and the groundbreaking, 6000-page Agenda 21. The previously negotiated UN Convention on Biological Diversity, Principles of Forest Management and UN Framework Convention on Climate Change were opened for signature and states almost universally signed-up. It was also agreed in Rio that a UN Convention on Desertification should be negotiated, leading to its adoption in 1994 and entry into force in 1996.

The Earth Summit was heralded by most as a triumph of multilateralism. These Declarations and Conventions represented a breakthrough in international consensus and raised the bar for political commitment to levels that have rarely been equalled. They formally established the concept of sustainable development as comprising three pillars – social, economic and environmental – that must be dealt with together and enshrined such concepts as the precautionary principle. All signatories agreed that they had common but differentiated responsibilities to achieve sustainable development, i.e., that they must all strive towards that end, but those with greater capacities are obligated to do more. Such a universal acknowledgement was entirely absent at Rio+20.

Green Cross International also has its roots in the 1992 Earth Summit, during which Mikhail Gorbachev was invited to create and lead a Red Cross for the environment. The organization was formally created the following year in Kyoto, and has responded to the growing and emerging challenges of sustainable development and security – including water, climate change, energy and the legacy of weapons of mass destruction – around the world ever since. Green Cross is also a principal partner in the Earth Charter, which was initiated in Rio in 1992 and launched in 2000 following a global participatory consultation process. The Earth Summit was a turning point for the empowerment of civil society, helping it become the important global player and driver of public opinion that it is today.

Not that the first Earth Summit was entirely free of conflict or criticism. The biggest arguments concerned finance, consumption rates and population growth, and little progress was made on any of these key issues. The developed nations called for environmental sustainability, while less industrialized developing nations demanded a chance to allow their economies to catch up with the developed world. President H. W. Bush famously declared that “the American way of life is not up for negotiation”. Greenpeace announced that in Rio “words failed us”. But states were ambitious and – overall – accommodating, and binding agreements were achieved, if not subsequently fully implemented.
Rio+20 took place in the same city but in a totally different world. The twenty years in between have brought many changes: the rise of China and the transitional large economies of the South as major political and economic powers; the communications revolution; the emergence of climate change as the predominant global challenge; and the crisis of the global financial system considered inviolable back in 1992. While the scientific and moral case for sustainable development has been demonstrated many times over, the multilateral system needed to achieve it – now associated with the moribund Doha round of trade talks and the languishing climate change negotiations – is today weaker and more divided than twenty years ago.

Expectations and ambitions at Rio+20 were therefore lower, and yet the outcome was still a disappointment to many. The surprisingly short and commitment-averse final text of The Future We Want was literally ripped up by civil society representatives at the People’s Summit, and widely criticized and/or dismissed around the world. How could the document be considered credible when demographic and climate issues were accorded just a couple of paragraphs in a 286-paragraph declaration on sustainable development? The future relevance of multilateral development negotiations, and big global summits themselves, was – not for the first time – seriously called into question.

A year on, it is now possible to assess the Rio+20 Summit with greater perspective, and in the context of ongoing stakeholder consultations and high-level debates on the future of sustainable human development. This Earth Summit was, like its predecessor, the product of its time. While no binding agreements or Conventions were signed, and many Heads of State stayed away, there was a positive global reaffirmation of sustainable development as the responsible pathway for the future, and more than US$ 500 billion was committed by governments, businesses and organizations to over 700 voluntary initiatives, including the UN’s Sustainable Energy for All initiative. This reflects the trend to use such gatherings as opportunities to stimulate action and partnerships on the ground, but does not excuse the failure of states to agree to meaningful new binding commitments.

If the 1992 Rio Earth Summit was a symbol of political solidarity in the post Cold War world, the 2012 Rio+20 Earth Summit is a symbol of fragmentation in the current geopolitical landscape, and highlighted the intransience of powerful vested interests. The outcome document may have pointed us in some positive directions, but it is neither transformational nor visionary and the Summit demonstrated an alarming lack of either political leadership or sense of accountability on the part of governments. The UN, and all multilateral processes, are only ever as effective as the participating governments allow them to be: the responsibility for the shortcomings of Rio+20 ultimately rests not with the multilateral system or UN summits themselves, but with those governments determined to block progress.

UN Secretary General Ban Ki-moon in fact declared Rio+20, “an important victory of multilateralism after months of difficult negotiations, (where) we saw the further evolution of an undeniable global movement for change”, and “a remarkable testament to bottom-up, grassroots commitment”. Hopefully the ongoing process of agreeing to a set of strong global Sustainable Development Goals to succeed the Millennium Development Goals in 2015 will prove him right, but so far the world has not seen anything concrete to discount the warning issued by his predecessor Boutros Boutros-Ghali in Rio in 1992: that people could continue to get away with wasting the planet’s resources for a few more decades “but ultimately if we do nothing, then the storm will break on the heads of future generations. For them it will be too late.”

For the sake of these future generations – including those born since 1992 – we must take a close and honest look at the last twenty years on the road to sustainable development and make the necessary changes to allow the multilateral system to successfully meet the threats that are in some cases already exceeding the worst fears of delegates at the first Earth Summit. Only then will we be able to truly deliver the future we all want.
The Millennium Promise: Achievements, Shortfalls and Reinvigoration

In 2000, eight years after the Rio Earth Summit, the world came together in another historic moment of solidarity to sign up to the Millennium Declaration and Millennium Development Goals (MDGs). All 191 Member States of the UN pledged to put an end to extreme poverty and the unsustainable plundering of the Earth, and committed to eight specific, time-bound goals aimed at raising the world’s most vulnerable and excluded people out of extreme poverty, disease and ecological ruin. This was a truly visionary declaration, grounded on universal human values, and set the stage for the next fifteen years of international development.

The Millennium Declaration can be seen as a high-point in international relations; the culmination of a decade of cooperation where the post Cold War “Peace Dividend” was evident in – among many other things – significant reductions in global military spending (see Fig. 1), the signing of the Kyoto Protocol in 1997, and improving diplomatic and economic relations between the West and China. Even after the abrupt end of this period, on 11 September 2001, and throughout the following years of greater division both within and between states, remilitarization, the departure of the US and Australia from the Kyoto Protocol, and the rise of the anti-globalization movement, the MDGs remained an almost sacred point of consensus and commitment and were never abandoned.

Figure 1. Military Expenditure in Major Countries (US$ millions) [Stockholm International Peace Research Institute, SIPRI].
With less than 1,000 days remaining until the 2015 MDGs deadline, the race is now on to both assess the achievements and shortfalls of this unprecedented global endeavour, and negotiate the terms of the next phase of development. The closely related Rio+20 Summit provided an opportunity for the evaluation of these and other related goals, and while the achievements represent a tremendous reduction in human suffering and are largely a validation of the approach embodied in the MDGs, the massive shortfalls are a clear sign that we must redouble and refocus our efforts.

**Principal achievements**

- The target of reducing the proportion of people living in extreme poverty (under US$ 1.25) by half (Target 1) was reached five years ahead of the 2015 deadline, as was the target of halving the proportion of people who lack sustainable access to safe drinking water (Target 10, though this achievement warrants further examination, as explained below).

- Progress in reducing child and maternal mortality has accelerated (though Targets 5 and 6 have not been met). Increased spending on vaccines, bed nets and nutrition has helped push child mortality rates in Sub-Saharan countries down by 41%, and children under five are now more likely to survive in almost every country.

- Conditions for more than 200 million people living in slums have been ameliorated – double the 2020 target (Target 11). The world is within sight of achieving universal primary school education (Target 3), and primary school enrolment of girls now matches that of boys (Target 4).

- In 2010 there were 21% fewer people newly infected by HIV than in 1997. In 2002, just 300,000 people were receiving HIV/AIDS medicine; today the number exceeds eight million. In Africa, since 2005, new HIV infections have decreased by one million, and 5.4 million more people now have access to anti-retroviral drugs. In the same period, the malaria mortality rate has dropped by 20% (Source: Summit in Sight – The G8 and Africa from Gleneagles to Lough Erne, ONE, 2013).

- The world’s poorest countries have benefited from over US$ 100 billion in debt relief.

- Though not an official MDG, the global rate of population increase is slowing – from +1.65% pa in the early 1990s to 1.2% pa in the early 2000s.

- The extent of protected land and ocean areas has increased by 42% since 1992; it is now 13% of land, 7% of coastal waters, and 1.4% of ocean.

- Expansion of the ozone hole has halted. Since the 1987 Montreal Protocol there has been a 98% reduction in emissions of ozone depleting substances, an unequivocal multilateral success story.
Principal shortfalls

- In 2015 almost one billion people – one-seventh of the world’s population – will still live in extreme poverty. Six hundred million people will still be using unimproved drinking water sources (though the target has been officially met). The sanitation target (Target 10) will not have been met. There are more hungry people today than there were in 1992. One billion people will live in chronic hunger in 2015, while another billion will not receive adequate nutrition (Target 2 not met). Maternal and child mortality will remain unacceptably high (Targets 5 and 6 not met). The goal of gender equality (Target 4) also remains unfulfilled, with wide reaching negative consequences. Overall, whether or not specific MDG targets are met, such continued levels of suffering are inconsistent with the vision for dignity, equity and peace of the Millennium Declaration and a clear sign that states are not prioritizing these issues.

- There are huge disparities in progress both within and between countries and regions, and severe inequalities among populations, especially between rural and urban areas. Achieving the global poverty reduction target was largely due to the success of China in lifting hundreds of millions of people out of extreme poverty. The targets related to MDG 1. “Eradicate extreme poverty and hunger” have not been met – by a long shot – in either Sub-Saharan Africa or South Asia where the overwhelming majority of people living in extreme poverty are found.

- None of the 50 states identified by the World Bank as burdened by fragility will achieve a single MDG by 2015. The most vulnerable people on Earth are yet to be reached.

- While the drinking water target has been met according to the UN criteria (based on number of pipelines) and statistics, in reality the existence of a pipe does not necessarily mean there is clean water reliably flowing out of it; and even if there is, it may be very far away, or priced at a rate which some people cannot afford. More worrying still, recent reports show that drinking water availability in Africa is declining, and UN Habitat warns that by 2030 more than half the population of huge urban centres will be slum dwellers with no access to safe water or sanitation.

- Nearly one in five people do not have access to modern energy services. Twice as many – three billion people – rely on wood, coal, charcoal or animal waste for cooking and heating. This is a major barrier to eradicating poverty.

- Goal 7. “Ensure environmental sustainability”, with the target to “reverse the loss of environmental resources”, has not been met: humanity is exploiting nature at increasingly unsustainable rates. Head of UNEP, Achim Steiner, warns that: “If trends continue ... governments will preside over unprecedented levels of damage and degradation. Earth systems are being pushed towards their biophysical limits.” Virtually every environmental indicator and resource has significantly deteriorated. For example: 300 million hectares of forest (size of Argentina) lost since 1990; the Living Planet Index measure of biodiversity down by 12%, or 30% in the tropics; 33% more fisheries are overexploited or depleted; between 1992 and 2005 our use of natural resources rose by 40%, or by 27% per capita, including an 80% rise in the use of construction materials such as concrete and steel (Source: Keeping Track of Our Changing Environment: From Rio to Rio+20, UNEP).
Climate change has not been addressed. Global carbon dioxide (CO2) emissions have risen by approximately 38% since 1992, with 80% of current emissions coming from just nineteen countries. The International Energy Agency (IEA) estimates that global emissions reached a record high of 31.6 billion metric tons in 2011, an increase of 3.2% over the previous year. Per capita emissions are falling in developed countries, by 18% since 1992, but rising (though still far lower) in developing countries by 29% since 1992. Since the first Rio Summit, average temperatures have risen by 0.4°C and atmospheric GHG concentrations have increased by 9%. Ocean acidity, a problem not widely considered a decade ago, is increasing: ocean pH dropped from 8.11 in 1992 to 8.06 in 2007, an unprecedented rate of change. The terrible impacts are already being felt. A 2012 report by the DARA group and the Climate Vulnerable Forum estimates that climate change and the carbon economy is already responsible for five million deaths every year, and robs over a trillion dollars a year from the global economy.

In January 2013, Nicholas Stern declared that his groundbreaking 2006 Review – which warned of a 75% chance that global temperatures would rise by between two and three degrees – did not go far enough. Speaking at the WEF in Davos he said: “Looking back, I underestimated the risks. The planet and the atmosphere seem to be absorbing less carbon than we expected, and emissions are rising pretty strongly. Some of the effects are coming through more quickly than we thought then…. I think I would have been a bit more blunt. I would have been much more strong about the risks of a four- or five-degree rise … This is potentially so dangerous that we have to act strongly. Do we want to play Russian roulette with two bullets or one? These risks for many people are existential.” (The Guardian, 26 January 2013)

Only five states have met their financing for development commitment (first made in 1972, reiterated in 2000) to devote 0.7% of their GNI to development assistance (See Fig. 2), and the overall total is on the downturn. OECD figures show that major donors’ official development assistance (ODA) fell by nearly 3% to US$ 133.5 billion in 2011 compared to 2010, the first drop since 1997 (when debt relief figures are not included). This was followed by a 4% fall in total ODA in 2012. In the same year, aid to the African continent fell by 9.9% to US$ 28.9 billion, following exceptional support to some countries in North Africa after the “Arab Spring” in 2011. Most worryingly, in 2012 bilateral net ODA to the group of Least Developed Countries (LDCs) also fell by 12.8% in real terms to about USD 26 billion. States, particularly in Europe, are currently under huge pressure to cut development spending as a result of the Eurozone turmoil and domestic austerity measures.

Goal 8. “Develop a global partnership for development” is hard to quantify. While progress has been made in debt relief, notably since the 2005 G8 Summit in Gleneagles, Target 12 – “Develop further an open, rule-based, predictable, non-discriminatory trading and financial system” – has certainly not been met, to the detriment of all countries. The G8’s failure to create a better trade environment for African countries, notably the continuing gridlock of the Doha round of trade negotiations, is one of the most clearly missed Gleneagles commitments. Inequality and lack of transparency in financial and trade systems remain huge problems everywhere. UNDP estimates that over US$ 1 trillion flows illicitly out of developing countries every year through tax evasion, trade mispricing, corruption and crime, in many cases involving parties from developed countries. This requires urgent action (and is fortunately a top focus of the G20 in 2013).

Widening gaps in wealth and opportunity have slowed progress on poverty reduction, child survival, nutrition and education. Rising inequality dampens the poverty-reducing effects of growth. Over the past two decades, Asia’s Gini coefficient – a measure of inequality – increased from 39 to 46. Had it remained constant, poverty levels would be 28% lower. By contrast, Brazil engaged in inclusive growth policies, and their (extremely high) level of inequality has fallen.
The MDGs have pushed the international development agenda forward and have shown what can be achieved through integrated, cooperative action, but it is important not to overstate their importance in the grand scheme of world affairs. While they have provided a valuable focus for the international community, and in particular ODA flows, they have not been a top government priority in developed countries, and remain unknown to a large portion of the public. They have never been a lead agenda item at a meeting of G8 Finance Ministers. The MDGs were also never sufficiently taken up by financial or corporate interests. The main achievements have been in the more technical, easily quantifiable, areas – such as providing mosquito nets, vaccines and water pipelines, with less headway being made where deeper, more complex, structural changes are needed – such as addressing hunger, climate change and trade barriers. It is these challenges that will determine the future liveability of the planet and sustainability of human activities, and that must be the focus of the next phase of sustainable development action.

![Figure 2. Net ODA in 2012 – as a percentage of GNI [OECD DAC Aid Statistics].](image)

**Lessons for the Future**

The sustainable development achievements of the past 20 years have been considerable in some fields and regions, but they have been uneven and vastly insufficient. In the meantime, the environmental situation has become ever more critical, an additional one and a half billion people have arrived at the dinner table, and major changes have taken place that have altered both our development trajectory and the actions needed to make it sustainable.

On 10 May 2013, the world quietly passed an alarming, if entirely predicted, milestone: readings taken at the Mauna Loa Observatory in Hawaii showed that the concentration of CO$_2$ in the atmosphere had passed 400 ppm. There is a broad scientific consensus that levels should be reduced to at most 350 ppm in order to preserve the kind of conditions under which humanity can survive and flourish. A few weeks later, the World Meteorological Organization (WMO) released a report showing that global warming accelerated in the four decades of 1971 to 2010 and that the decadal rate of increase between 1991-2000 and 2001-2010 was unprecedented (see Fig. 3).
The average land and ocean-surface temperature for 2001-2010 was estimated to be 14.47°C, or +0.47°C above the 1961-1990 global average and +0.21°C above the 1991-2000 global average. Greenland recorded the largest decadal temperature anomaly, at +1.71°C above the long-term average and with a temperature in 2010 of +3.2°C above average. Africa experienced warmer than normal conditions in every year of the decade. Melting ice and the thermal expansion of seawater caused global mean sea-levels to rise about 3 mm annually, nearly double the observed 20th century trend of 1.6 mm per year. These are just the latest figures confirming what has been long known, and becoming impossible to ignore. Climate change is not only a massive threat for the future; it is already happening and needs urgent action.

The economic, energy and climate change crises that are now upon us require difficult, transformational, systemic changes that the world has been resisting for far too long. They require strong political leadership and cooperation, civil society buy-in, and practical backing from the business, technological and science communities. Where any of these elements is lacking, transformation cannot be achieved. As former US President Harry Truman said: “In periods where there is no leadership, society stands still. Progress occurs when courageous, skillful leaders seize the opportunity to change things for the better.”

In Rio+20, political leadership was glaringly absent, while the proactive participation and support of business and civil society was higher than ever. In 1992, political vision and strong gestures of solidarity ruled the day, and resulted in inspirational outcome documents, but back at home the private sector and vast majority of civil society were unengaged. It is time to combine all of these forces to shape an inclusive, sustainable future.
In response to the lack of political commitment at Rio+20, Jeffrey Sachs, director of the Earth Institute at Columbia University, argued that, “a complicated, diverse world can address problems not through treaties, but by identifying the goals that then inspire decentralized actions”. Representatives from WWF said that, “Rio+20 has shown that ambition exists, action is being taken, change is happening; but rather than in the plenary halls of the conference, it is happening in the communities, the cities, and the companies who are committed to creating a sustainable world and are willing to act on that commitment now”. While positive decentralized action is important and welcome, such statements should not be used to let politicians off the hook.

One billion people engaged with Rio+20 via social and other media. This would have been unimaginable in 1992. But mass communication is – in most cases – not yet translating into real political pressure at the national level when it comes to sustainable development issues, particularly at the ballot box. Politicians leaving Rio+20 did not feel that they would be meaningfully punished for their failure come the next election day, especially in countries facing recession and austerity where citizens are understandably concerned about their jobs and everyday costs. Rather than helping the public to understand the real risks and high costs of inaction, many politicians are actively encouraging this view that sustainable development is not a priority issue in a period of financial hardship. This is short-termism and self-interest, not leadership.

Political leaders are lagging far behind the realities of a fast changing, interconnected and complex world. With few exceptions, they are failing to respond effectively to challenges and are being held hostage by disproportionately powerful vested interests. Instead they need to examine the hard evidence, consider the alternatives, and act in the genuine best interest of citizens – including future generations.

Where civil society movements have held politicians effectively to account, real change on specific issues has been possible remarkably quickly. This can be seen in the popular pressure placed on governments to make affordable ARV drugs available to HIV patients in developing countries, and the Make Poverty History and Drop the Debt campaigns that influenced the G8 in the mid 2000s. There is still too much apathy and disinterest, not to mention denial, when it comes to the more complex, structural challenges. Society needs to step up its activism, in sufficiently large numbers, so that their leaders are impelled to act.

Transformational change to the extent that is needed to address climate change and the transition to a low-carbon society needs visionary political leadership and strong multilateral cooperation. Without this – and the corresponding policies, incentives and regulations – it is very hard to overcome the inertia and vested interests that continue to prevent the grand scale implementation of the policies we already know to be effective. While the leadership from the top remains missing, change will remain uneven, insufficient and unpredictable. And we will be headed towards a highly inequitable, +4°C world, or worse.

Avoiding the Implementation Gap

A major problem has been the failure of governments to adequately implement their commitments from Rio (and other Summits and Conventions). Two important pieces of the jigsaw puzzle that have been missing since 1992 are, first, the lack of domestic legislation to underpin the Rio principles and conventions; and, second, the lack of credible and independent international scrutiny to monitor delivery.
The international community also largely failed to convert the original Rio agenda into a language able to convince the most powerful departments in government: the treasuries and finance ministries. The business case for sustainable development is now gaining ground, and has an army of powerful corporate supporters, but it is not yet the dominant paradigm; this position remains securely filled by economic growth as measured by GDP. This makes it too easy for politicians to continue to imply that we cannot afford to pursue sustainable development during these difficult economic times. The core question we face is how to get sustainability taken seriously by the economic forces that actually drive development.

**Next Steps: From Rio+20 to 2015**

One of the highlights of Rio+20 was the agreement to negotiate a set of Sustainable Development Goals (SDGs) to follow-on from the MDGs in 2015. This decision is further evidence that sustainable development is being moved from the sidelines to be formally installed as the paramount development concept, at least in theory. To rise to this challenge, the international community needs to agree on a reinvigorated and transformational global agenda, backed with financing from multiple public and private sources. Progress so far indicates that this is already beginning. If achieved, the SDGs could provide the missing ingredient that was lacking in Rio+20 – the road map for a sustainable future.

Many big businesses, development banks and governments showed at Rio+20 that they are ready to invest large sums and make major changes in favour of sustainable development. A group of development banks announced a US$ 175 billion initiative to promote public transportation and bicycle lanes over road and highway construction in the world’s largest cities. Microsoft announced that it would roll out an internal carbon fee on its operations in more than 100 countries as part of its plan to go carbon-neutral by 2013. Over US$ 500 billion was pledged to various voluntary initiatives, while no firm commitment was made to binding multilateral commitments like the Climate Fund. This is a symptom of the lack of political leadership and fragmentation of the multilateral system that should be addressed by the SDGs. Voluntary measures and self-regulation are not enough.

The pattern is similar in the multilateral climate change negotiations. The 2010 Cancún agreements (COP 16) include voluntary pledges made by 76 developed and developing countries to control their emissions, and different initiatives by individual or coalitions of governments and businesses are occurring everywhere. But a legally binding agreement on emissions reductions has yet to be reached. At the 2012 Doha climate change talks (COP 18), Parties to the UNFCCC agreed to a timetable for a global agreement which will include all countries to be adopted by 2015, and implemented by 2020.

The simplistic “developed”/“developing” dichotomy has long been obsolete in the face of the emerging large economies in the “developing” world, the growing middle class in the “South”, and the reality of huge income disparity across and within nations. UNDP’s 2011 Human Development Report argued that the urgent global challenges of sustainability and equity must be addressed together, and by all nations. Including all countries in future agreements is the ideal goal for both the climate change agreement and the SDGs. While the MDGs focused on changes to be made in developing countries, and supported by developed countries, future goals must be universal.
The SDGs should therefore build up on the success of the MDG-framework but apply to the whole world. The notion that OECD states are already “developed” and do not need to change is completely at odds with the transformations that addressing challenges related to climate change, energy, financial systems, consumption and inequality will require all countries. The new SDG narrative should call for profound action in countries that were once self-described as “developed” as much as in much poorer countries. In the same way, the new climate change treaty should require appropriate levels of emissions control in all countries.

With the SDGs, the damaging and confusing split between the human development and environmental agendas should be consigned to the past. This will be helped by the Rio+20 confirmation that UNEP will now receive a more secure budget, a broader membership and stronger powers, able to lead more scientific research and help ensure that the environment is integral to development policy.

While the 2000 Millennium Declaration was based on human rights and justice, by the time the MDGs were fully formulated in 2001 these concepts had been all but removed in favour of what many considered to be a set of goals that were too monetary and growth focused – or, “development by the dollar”. There is pressure from certain financial institutions, businesses and world leaders to ensure that the primary focus of the post-2015 development agenda remains on economic growth. From the South there is more support for human rights, governance, culture, transparency and gender equality. The challenges we face are too complex to be addressed by simplistic “bean-counter” targets. They are also too urgent to delay until absolutely everybody is on board; those ready and willing must be able to lead the way in spite of opposition.

The challenge of drafting and agreeing to a new set of universal SDGs by 2015 is immense, and there is no room for over-cautious, short-sighted or self-serving positions. In January 2013, a 30-member Open Working Group (OWG) of the General Assembly was created and tasked with preparing a proposal on the SDGs based on wide consultations. The MDGs focused on eradicating poverty, but neglected the environment, and did not sufficiently engage the financial and business sector. The fight against poverty must be continued and reinvigorated within a sustainable and equitable framework. That would truly indicate the emergence of a New World Order everyone can be proud of.
Chapter 2.

Realizing Opportunities in a World in Transition

The root of the crises we are facing is not the climate, or water stress, or peak oil – it is us:  the way we produce and consume goods; the way we fuel our lifestyles; the way we value natural resources and functions; and the way we promote and measure economic and development progress. More specifically, it is the more privileged among us, those who have the luxury of choice regarding how we live and the power to influence economic and political processes. According to global trends, by 2030 humanity will require two planets to sustain its population, with an increasing proportion of natural resources serving the interests of the very richest segment of society to the detriment of the poorest.

The current global economic system is obsolete – fundamentally unfit for the purpose of nurturing sustainable, equitable human development on a planet with a growing population and finite natural resources. Our present path of GDP/consumption driven growth is a failed strategy, leading to environmental and climate disaster, overexploitation of resources, inequality and exclusion, and more recently to economic vulnerability and instability. We could do much better by seizing the myriad opportunities arising out of the pressing need to shift towards more sustainable economic development, and breaking the tight grip of financial and commercial interests on our political systems and the media.

Under the current dominant system, economic growth and human development is based on a linear model of resource consumption – a relentless, fossil fuel-powered drive to “take-make-dispose of material”. This model cannot simply be painted green, made more efficient or be better regulated: it needs to be transformed. We need a revolution in the way we use and value natural resources.

This transition will require radical changes, coordinated new policy and financial frameworks, and ambitious multilateral cooperation that includes all sectors of modern society. For decades, centuries even, humanity has striven to change the world, now it is time to change ourselves.

Where Has Consumption Based Economic Development Taken Us? Where is it Leading?

The 1992 UNDP Human Development Report (HDR) declared that, “The world has a unique opportunity in the current decade to use global markets for the benefit of all nations and all people.” Open markets and deregulated global capital were meant to release a wave of economic prosperity, above all in the poorest countries. But finance-led globalization has not lived up to these expectations: Although the achievement of lifting hundreds of millions of people out of extreme poverty since 1992 must never be forgotten, the environment has been ruinously overlooked, debt-riven global growth is now trending downward, and recurrent crises have undermined livelihoods while the wealth of those at the very top has soared. Today the world is indeed in transition, but it remains to be seen whether it will move in the right direction.

A small cluster of big emerging economies have achieved sustained and rapid growth, but a billion people still subsist below the extreme poverty line, and a billion more struggle to live just above it. There has been progress in many areas and amazing innovation, but it is no longer credible to claim that deregulated markets, complete with financial engineering, will deliver inclusive economic growth – especially as millions of people in OECD countries are now also seeing their living standards steadily recede. The picture is immeasurably bleaker when we consider the environment, currently barely factored into measures of “growth”.
In 2005, the UN Millennium Ecosystem Assessment found that two-thirds of the world’s ecosystem services are already degraded due to human activity. The World Bank reports that, by 2030, water demand will outstrip supply by 40%. The loss of these ecosystems and poor management of essential natural resources jeopardizes our ability to provide for a growing world population today, and is an inexcusable violation of the rights of future generations.

The degree to which the current pathway of human civilization is unsustainable was conveyed in the strongest terms by Imperative to Act, a statement released by all eighteen Blue Planet Prize laureates – including Gro Harlem Brundtland, Amory Lovins and Nicholas Stern – in 2012:

“The human ability to do has vastly outstripped the ability to understand. As a result civilization is faced with a perfect storm of problems, driven by overpopulation, overconsumption by the rich, the use of environmentally malign technologies and gross inequalities. … These biophysical problems are interacting tightly with human governance systems, institutions and civil societies that are now inadequate to deal with them. … The rapidly deteriorating biophysical situation is more than bad enough, but it is barely recognized by a global society infected by the irrational belief that physical economies can grow forever and disregarding the facts that the rich in developed and developing countries get richer and the poor are left behind. And the perpetual growth myth is enthusiastically embraced by politicians and economists as an excuse to avoid tough decisions facing humanity.”

The Climate Time Bomb

Nothing makes the urgency to make these tough decisions, and the corresponding changes, more immediate than the growing impact and threat of climate change. The IEA’s 2012 World Energy Outlook documents a worrying “resurgence in oil and gas supply”, especially in the US, and forecasts that global primary demand for energy will increase by one-third between 2010 and 2035, with 90% of the projected growth in demand coming from non-OECD countries, including 30% from China. The business-as-usual “Current Policies Scenario” paints a very grim picture – emissions reaching 44Gt by 2035 and average temperatures rising by a catastrophic 5-6°C by 2100. Even in the scenario in which new clean energy policies are implemented, IEA predicts a rise in energy-related emissions from 31Gt in 2011 to 37Gt in 2035, and an average global temperature increase of 3.6°C by the end of the century. This is not the remote future; it is the situation that will be faced by the grandchildren of today’s political and business leaders if they fail to act now.

The startling magnitude of the challenge of climate change is increasingly apparent, and yet the world continues to increase its GHG emissions – by an average of 2.7% per year over the past decade – and has failed to reach a fair multilateral agreement of how to address it. To stabilize CO₂ concentrations even at 450 ppm by 2050 (which most experts consider to be still disastrously high), global emissions will have to decline by about 60% from current levels. Since poorer countries need to expand economic activity to escape grinding poverty, industrial countries’ greenhouse gas emissions must decline by about 80% by 2050.

The longer we wait to start shrinking emissions, the faster they will have to be cut to stay under budget. If we delay the global emissions peak until 2025, we will have to drop off a cliff afterwards to have any chance to avoid over 2°C of average warming. We will find ourselves in an extreme crisis situation, forced to choose between rapidly diminishing – if any – options: acting today still presents us with opportunities to shape the future course of our development. But the waiting continues.
In the meantime, the wheels of the economy keep turning. As long as carbon emissions are not appropriately taxed or priced, and governments everywhere undermine any confidence in their genuine interest in addressing the problem by prospecting far and wide for fossil fuels, the situation will worsen. Despite the mounting evidence calling for the exact reverse, in 2010, fossil fuel subsidies reached an all-time high of US$ 409 billion, compared with just US$ 66 billion for renewable energy. In June 2013, US President Obama finally gave a strong indication that his administration will confront climate change, and will bypass a deadlocked Congress to install new rules curbing emissions from power plants. It was a historic and very welcome announcement, but it still does not go nearly far or fast enough, and faces strong opposition.

Climate change is no longer only a future threat, it is already here and causing immense suffering and loss. A 2012 study by the DARA group and the Climate Vulnerability Forum concluded that climate change and the carbon-intensive economy are leading global causes of death today, responsible for five million deaths each year – 400,000 due to hunger and communicable diseases aggravated by climate change and 4.5 million carbon economy deaths, due mainly to air pollution. Failure to act on climate change already costs the world economy 1.6% of global GDP amounting to US$ 1.2 trillion in forgone prosperity a year, while rapidly escalating temperatures and carbon-related pollution will double costs to 3.2% of world GDP by 2030 – rising to 11% of GDP for Least Developed Countries.

A World Divided

The financial crisis of the past five years is being used by some governments as an excuse to turn away from sustainable development, and in particular climate change, commitments in favour of a renewed quest for economic growth, while placating citizens with piecemeal gestures to regulate unruly financial markets. Instead the crisis should be a wake-up call that the old system needs to be replaced. Trust in the banking and financial sector is at an all time low. The bailouts alone cost us around US$ 13 trillion – a hundred times more than it would cost to provide sustainable energy for all according to the UN. The World Bank estimates that 53 million more people were trapped in extreme poverty in 2011 because of the crisis, and that an additional 200,000 to 400,000 babies died in 2012 due to economic downturns.

Even before the crisis it was clear that inclusive sustainable development would not be delivered by unregulated, speculative global markets and boom-and-bust cycles. The “rising tide” of growing global GDP was not “lifting all boats”. In India, for example, the net worth of the country’s billionaires has climbed from 1% to 12% of GDP in the last fifteen years, while poverty levels and child mortality rates remain stubbornly high. Despite its remarkable growth, India is still home to 40% of the world’s “multidimensional poor” according to a newly developed index now used by UNDP alongside the Human Development Index. India’s ongoing poverty crisis is highlighted in the 2013 book An Uncertain Glory by Amartya Sen and Jean Drèze, which describes the development reality in the country as “pockets of California amid Sub-Saharan Africa”. They stress that India’s policies are leading to “unaimed opulence”, shopping malls instead of sanitation systems, and creating a paradox where millions of people have a mobile phone but no toilet. By contrast, despite being much poorer, neighbouring Bangladesh has focused investment in health and education and is now performing better than India on many key development indicators.

Today, 9.5% of the bottom billion poor people live in developed, upper middle-income countries, where the gaps in income are becoming more glaring. In the US, the share of national income going to the top 1% has doubled since 1980 to reach 20%. When inequality is taken into account, the US plummets thirteen ranks in the UNDP Human Development Index for 2013.
Globally, the richest 1% have increased their incomes by 60% in the last 20 years, and are estimated to use 10,000 times more carbon to fuel their lifestyles than the average US citizen (Oxfam, The Cost of Inequality, 2013; and Global Inequality: Beyond the Bottom Billion, UNICEF Working Paper, 2011). The Global Wealth Pyramid (see Fig. 4) created by Credit Suisse calculates that 67% of the world’s population (around three billion people) at the base of the pyramid hold just 3.3% of total wealth. At the top of the pyramid, the richest 0.5% of the population holds 38.5% of the wealth. The Tax Justice Network estimates that as much as US$ 21 trillion is being held in tax havens; an economic black hole equivalent to the size of the US and Japanese economies combined. The World Bank, the IMF, UNDP and other institutions are all in agreement that growing income inequality is hindering poverty reduction and is socially divisive and environmentally destructive.

Figure 4. The global wealth pyramid [Credit Suisse, 2011].

Global corporations and supply chains also wield far greater influence over the environment and society than 20 years ago. The two most profitable companies, energy giants Exxon and Gazprom, together earned profits in excess of US$ 90 billion in 2011; three times the total amount promised at the Copenhagen climate talks to the global climate adaptation fund for developing countries (funds yet to materialize). While many large corporations are at the vanguard of innovation – not least in renewable energy and efficiency – and have vastly improved their social and environmental standards, these trends are neither universal nor backed with strong regulation and monitoring in many regions. In its 2013 world report, Human Rights Watch lamented the “failed approach to corporate responsibility”.

The combination of all of these factors leaves the world in a precarious position in 2013. UNDP warns that the number of people living in extreme poverty could increase by up to three billion by 2050 unless urgent, coordinated global action is taken to tackle environmental challenges. The 2013 HDR states that, “Environmental inaction, especially regarding climate change, has the potential to halt or even reverse human development progress. ... A clean and safe environment should be seen as a right, not a privilege.” Until natural resources and services are accorded their appropriate value in our society and economies, humanity will remain on an unsustainable pathway and this right will be further eroded.
Looking Beyond GDP

Money is not everything; and even if it were, GDP is not a very good tool for actually measuring how much of it people have at their disposal. It does not account for inequality, and it does not distinguish between “good” and “bad” output. War, natural disasters, health scares, even rising divorce rates can all contribute to a nation’s GDP. So can immense wealth accumulated by a tiny minority. GDP also does not reflect the impact of environmental externalities, estimated in a 2011 study by the UN Principles of Responsible Investment and UNEP to be of an order of magnitude of US$ 6.6 trillion globally, or about 11% of the value of the world economy.

As Sen. Robert Kennedy already knew in 1968, GDP “measures everything, except that which makes life worthwhile”. Yet it has been elevated from a simple measure of the total value of the goods and services produced in a country into something it was not designed to be – a gage of collective well-being. Growth in GDP is conventionally cited as the leading indicator of how well a nation is progressing or recovering, but it is completely insufficient as a true measure of human happiness, freedom, fulfilment, or sustainability. The accounting system does not put an appropriate value on many of the resources and factors – ecosystems, culture, relationships, human rights, open public spaces, clean air – that we actually value and depend on most, and therefore the importance of maintaining them is not reflected in the market.

Governments – not to mention the media and economic analysts – need to look beyond this overly simplistic and distorting indicator, not only when considering environmental and social issues, but when making crucial economic decisions. Fortunately, there are strong signs that some governments are moving – very slowly – in that direction. At Rio+20, nations agreed to think about ways to place a higher value on nature, consider alternative measures of wealth to GDP that account more for environmental and social factors, and take steps to assess and pay for environmental services, such as carbon sequestration and habitat protection. There are also calls to require rating agencies to count natural resource use in assessing sovereign and corporate credit worthiness.

These changes would encourage a shift away from the current slavish devotion to GDP growth, and lead to governments making choices, in particular regarding monetary and fiscal policies, aimed at enhancing a nation’s true prosperity – as a combination of social, cultural, environmental and economic wellbeing. Alternative methods for measuring this wellbeing abound. From the already well established UNDP Human Development Index that combines GDP with life expectancy and education (there are consultations underway to translate this into Sustainable Development Index for the future); to the New Economics Foundation’s Happy Planet Index that uses global data on life expectancy, experienced well-being and ecological footprint to rank countries; to Bhutan’s championing of its Gross National Happiness – and many more under development by institutions such as OECD, the European Commission and various governments – proposing systems to measure happiness is becoming a serious business.

However, a glance at any newspaper is enough to show that, while these new ways of measuring wellbeing are receiving increased attention, the reign of GDP is far from over. Politicians who speak about the sustainable economy or measuring wealth beyond GDP are still routinely accused of distracting from “what the people really need” – that is, to getting the economy growing again. Equally, many businesses do not appear to have the capacity to think beyond their own bottom line to the wider impacts of their activities. There remains a lot of work to be done convincing governments, businesses and citizens that enhancing genuine wellbeing and sustainability should be the end goal, and that this is not necessarily achieved by simply increasing GDP.
The Search for New Development Models

The current model of economic growth is not fit for the future. Since industrialization, economic growth has increasingly depended on the linear, one-way process of taking resources, combining them, buying/selling them, using them and throwing away whatever is left. To continue along this track requires a bottomless pool of new resources and a continued stream of environmental services – including clean water and air, fertile soil, a stable climate, forests and raw materials like metals and fossil fuel. Globally, we are already using up these resources at a rate 50% faster than we can replace them, and ecosystems services are being depleted across the world. In 2012 Earth Overshoot Day was 27 September. The last quarter of each year is taken on credit from future generations.

Modern capitalism is founded on the assumed insatiability of human needs and the corresponding expectation of a relentless growth in consumer spending. In the early stages of this process, it can lead to dramatic improvements in living standards – as witnessed in the emerging economies today. But keeping the process going in perpetuity not only depletes natural resources and creates enormous amounts of waste, but also encourages the growing availability of credit to encourage us to keep buying things we cannot afford and do not need, and the accumulation of toxic debt. The 2008 financial and sovereign debt crisis in the West was not simply the result of rogue traders or irresponsible bankers; it was the inevitable outcome arising out of 30 years of market fundamentalism, liberalism and deregulation. The system became entirely removed from any reality based on actual natural or human resources, but nature and people still suffered under it.

Over the 20th century, the world increased its fossil fuel use by a factor of twelve, whilst extracting 34 times more material resources. Today in the EU, each person consumes sixteen tonnes of materials annually, of which six tonnes are wasted, with half going to landfill. Globally, some 65 billion tonnes of raw materials entered the economic system in 2010, and this figure is expected to grow to about 82 billion tonnes by 2020 (Ellen McArthur Foundation, Towards a Circular Economy).

Exploding growth in the developing world has created a vast new middle class, which could reach five billion people by 2030, of whom 66% will live in Asia. That is a lot of new consumers. How will they live, eat, shop, and travel? Will they emulate the worst habits of the developed world, or lead the way as better stewards of the planet? Currently there is no more sign that the rising middle class in transitional countries such as China will abstain from consumerism than there is that people in countries such as the US will give it up. But the critical physical boundaries of the natural world simply will not be able to accommodate billions more western-style consumers. The accommodation will have to be made through behaviour and value changes made by everyone.

One thing is certain: The inevitable increase in demand cannot possibly be met unless there is nothing short of a revolution in the way we use natural resources. We need to decouple economic growth, and advancing human development, from the use of energy and materials. The tough realization that must be faced – in practice, not just in rhetoric – is that we cannot continue with fossil fuel-driven, consumption based, indiscriminate economic growth.

Increased efficiency alone will not be enough, and merely employing euphemisms like “green economy” or shared “sustainable growth” will not help. If a system is fundamentally flawed, making it more efficient or accountable will not resolve the problem. We need a more circular economy; one that emulates the cyclical nature of ecosystems themselves.

In searching for new models for economic development, two important issues must be distinguished and addressed. First, how to produce more in order to meet increasing demand while making less of an impact on resources (often referred to simply as “decoupling”). Second – even more fundamental – how to limit the increase in overall demand.
The challenge is immense as currently we are in a completely contradictory situation where the more successful we are at promoting growth on the existing model, the greater and quicker will be the environmental and social disaster. We need a total reversal of fortunes. Fortunately, many good and workable ideas are already in the pipeline, and beginning to be operationalized. The opportunities for innovation and creativity are enormous.

One emerging solution focuses on the creation of a circular economy. Today’s business models are based on maximizing the volume of sales of different products. In a circular economy model, sales of products would be largely replaced by leases, combined with exceptional service. Since responsibility for the material used in a product remains with the manufacturing company, strong incentives are created to fully exploit the material for as long as possible to earn maximum return on what already has been produced. This results in vastly decreased consumption of both raw materials and energy, and therefore less CO₂ emissions and waste. Meanwhile, profitability is able to rise: a win-win proposition. Some large corporations are already embracing the circular approach: Rolls Royce has replaced sales of jet engines to some airlines with leases; Michelin rents car tires for heavy vehicles and is responsible for their being maintained, upgraded and recycled as waste product; and Xerox offers copying services instead of selling photocopiers.

Another key component of a circular economy is the maximizing of recycling, reusing and reconditioning – rates of which remain senselessly low. According to a report released in 2011 by the UNEP, recycling rates of metals are far lower than their potential for reuse. Less than one-third of some 60 metals studied have an end-of-life recycling rate above 50% and 34 elements are below 1% recycling, yet many of them are crucial to clean technologies such as batteries for hybrid cars and the magnets in wind turbines. For example, CO₂ emissions are reduced by more than 90% when aluminium scrap is used instead of bauxite, but only one-third of aluminium demand is supplied by secondary production. The primary production of tin requires 99% more energy than secondary production, but the recycling rate is less than 15%. Putting valuable, reusable metals into landfills is a terrible waste. In addition, an estimated 50 million tonnes of electrical waste is generated each year and no more than 15-20% is being recycled. The rest ends up in landfills or incinerators. This e-waste is hazardous but also a potential source of valuable and scarce rare Earth materials vital for manufacturing smart phones and tablets.

The MacArthur Foundation report Towards a Circular Economy was presented in early 2012 and backed by a group of leading multinationals, including B&Q, British Telecom, Cisco and Renault. It states that:

“A circular economy is an industrial system that is restorative by intention and design. In a circular economy, products are designed for ease of reuse, disassembly and refurbishment – or recycling – with the understanding that it is the reuse of vast amounts of material reclaimed from end-of-life products, rather than the extraction of new resources, that is the foundation of economic growth. Moreover, the circular economy shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse, and aims for the elimination of waste through the superior design of materials, products, systems, and, within this, business models.”

That such a fundamental shift in perspective away from the industrial system we have today is supported by a group of multinational companies, and attracted attention at the 2013 World Economic Forum in Davos, is a sign that these concepts are gaining traction. While there is still significant private sector resistance to change, many more forward-looking businesses are accepting that indefinite material growth on a planet with finite and often fragile natural resources cannot be sustainable, and that by embracing sustainability they can both reduce risk and exploit opportunities for new markets.

For example, in recent years, General Electric has earned large profits from its “Ecomagination” energy-efficient products. Siemens is also focusing on the rapid expansion of markets for sustainable products, energy efficiency, and greener buildings. The rapid growth of the renewable energy sector worldwide has been driven in part by big technology companies, including Google, Microsoft and Apple, investing in clean alternatives to power their own operations.
Complementary to the rise in interest in the circular economy is the rise of “collaborative consumption” initiatives, particularly in urban areas. Businesses such as Zipcar, City bikes, Freecycle, AirBnB and Ebay are creating communities of people sharing resources, avoiding waste and saving money. They are examples of positive behaviour change precipitated by self-interest as well as a desire to be more environmentally and socially responsible.

Another business concept that is gaining attention is companies pledging to become “net positive”, meaning that their positive impacts on the environment and society should outweigh the negative ones. Early (partial) espousers of this initiative include Coca-Cola, which aims to be net positive on water for its bottling process, and BT, which aims to be net positive on carbon emissions. So far, no large company is able to claim to be net positive over its entire operation, but it is a start.

The next question is: How can these isolated initiatives be massively scaled up to propel society in the direction of a more resource and energy efficient, inclusive economy?

**New Policy Frameworks and Incentives**

Forty years after the publication of Limits of Growth by the Club of Rome created such controversy by committing the heresy of questioning perpetual increases in production and consumption in a finite planet, many of the predictions in this seminal text are becoming manifest. This realization is causing some people and companies to wake up and demand, or enact, change, but not fast enough or at a large enough scale to offer hope of a real solution. Action must be coordinated and worldwide – something that can only be achieved by governments.

World leaders have signalled at Rio+20 and elsewhere that a sustainable future is a priority for the international community; governments now need to take proactive steps to create the policy framework and conditions for sustainable business and development models to flourish. So far, government claims to prioritize sustainability have been largely rhetorical and have failed to set out clear, practical action plans. Counteracting the formidable economic forces that still benefit from current production systems (i.e., increasing revenue by selling more stuff) will take coordinated, proactive policy action on many fronts. Creating the right incentives and conditions will in turn motivate (or obligate) businesses to do what they do best – innovate and create new markets.

Rapid price increases experienced for many commodities and energy in recent years are already encouraging businesses to develop more efficient processes, but price signals will not be enough to stimulate a wide-spread transition to a more sustainable economy. This transition will create a great deal of temporary dislocation, and there will inevitably be some losers in the process. Policies will therefore not only have to give clear incentives, but also be able to manage the resulting change, as well as considerable resistance and opposition.

Proponents of new development and business models have put forward several policy instruments that could be used, including: agreeing on ambitious, binding, targets for resource efficiency to encourage the maximum reuse and recycling of materials; promoting innovation by giving priority to sustainable design and closed material loops; and reforming tax, for example, by lowering taxes on labour and raising them on the use of virgin materials.
Other steps to consider that could help maximize our chances to shift towards a sustainable, equitable and “happier” world by triggering the necessary transition, include:

- **Reorienting markets by valuing natural and social capital.**

  Our economies are based on incorrectly measuring and valuing a wide range of goods and services essential to maintaining a safe, secure and sustainable planet. This systematic inadequate valuation (both under and over) is at the root of many major problems, such as the degradation of ecosystems, depletion of biodiversity and the destabilization of the social fabric of families and communities. Natural and social capital must be properly valued in economic terms in order for the economy to be “real” and to be built on real values. This will result in energy price increases, as the social and environmental cost of carbon and water use is taken into account, but this will accelerate integrated solutions to climate and energy challenges. The most vulnerable in society can be protected from the impacts of these changes.

- **Creating an alliance of sustainability winners.**

  Create an alliance of the speedy ones, of the “game winners”; there is no need to wait for everybody (including traditional energy suppliers) to wake up to this call. The “carbon justice” approach can propel low carbon technologies to the South. An alliance of champions on effective climate policy from Europe, Asia and leading “developing countries” (90% of the world’s population) can help provide the revolutionary shift needed to recalibrate our economy, protect our environment and achieve sustainable development. The “early birds” will be the best placed to seize the opportunities of transition and develop strong markets and new jobs in innovative industries.

- **Governments acting as custodians of the public interest.**

  A prosperous and stable society requires a proper balance between, on the one hand, the role of the market to stimulate innovation and the effective use of resources and, on the other, the role of government as the custodian of the common interest. Governments should provide a clear and predictable framework of law, supervision and regulation within which the markets can operate to achieve a balance between private rights and benefits and the prosperity of the community. Strong regulatory mechanisms that can safeguard common public interests are urgently needed.

  Achieving this level of global, systemic change – and overcoming the seemingly immovable implementation gap that is blocking progress – will require political leadership of the first order and a revitalized multilateral governance architecture adequate to meeting these interconnected challenges and reflective of the 21st century.
Chapter 3.

Revitalizing Multilateral Cooperation and Action

The current convergence of global challenges – climate change, finance, water stress, decarbonization and dematerialization of the economy, meeting the needs of the growing middle class and urban populations, and reaching the “bottom billion” extreme poor (to name just a few) – demands the reconstitution of the existing global governance architecture and presents an historic opportunity to advance inclusive forms of governance to revitalize sustainable human development and civic engagement.

Today’s challenges are systemic, intertwined and complex, but we have never had greater global capacity, understanding, material abundance or opportunities to resolve them. This includes scientific knowledge, communications, technology, resources, productive and innovative potential, and the remarkable ability to feed everyone on Earth. We also have a growing number of successful examples of legislation, initiatives, and best practices at multiple scales on which to build. We need to match this extraordinary wealth of capacity with the appropriate, empowered institutions and laws to agree, finance and implement the changes we already know need to be made.

A strong global consensus between the majority of governments, civil society, business, religious and spiritual leaders and scientists could break down the barriers constructed by vested interests and move us forward. This must be done now, before the situation deteriorates further; before resource and climate problems begin to provoke regional or even global conflicts; before we miss the window to shape the course of the necessary transformation rather than have it forced upon us.

The foundation of this renewed multilateral governance should be our shared human values, within a framework where different cultures, beliefs and priorities are respected and absorbed to build the basis for strong concerted action. Securing a sustainable future for humanity depends on our understanding that the universal and equitable distribution of social and environmental capacity, opportunity and security is essential for promoting peace, prosperity and well being both now and in the future.

Transforming our economies and societies will require visionary and firm leadership – by governments and others in positions of influence in communities and corporations, and commitment on the part of us all.

Bringing the Multilateral System up to Date

The multilateral system as it stands today is an anachronism harking back to the post WWII/Cold War era. As such it lacks credibility in the 21st century, and struggles to effectively respond to the problems of the modern age. More representative global institutions are needed to tackle shared global challenges and to make sure all voices are heard.

The last two decades have seen a shift from a unipolar to multipolar world. For the first time in 150 years, in 2012 the combined output of the developing world’s three largest economies – Brazil, China and India – was equal to that of the traditional industrial powers of the North – Canada, France, Germany, Italy, Japan, the UK and the US. While many remain very poor, altogether developing countries now hold two-thirds of the world’s US$ 10.2 trillion in foreign exchange reserves, and in 2010 had 47% share of the world’s merchandise trade, according to UNDP (up from 25% in 1980, and by 2013 certainly now above 50%). Developing regions have also been strengthening links with each other: between 1980 and 2011, the South–South share of the world merchandise trade rose from 8.1% to 26.7%. This epoch-defining “Rise of the South” represents a dramatic rebalancing of global economic power which is not yet reflected in multilateral processes, especially the Bretton Woods institutions.
China, the world’s second largest economy with the most foreign exchange reserves, has a meagre 3.3% share in the World Bank, less than France’s 4.3%. The UK and France each have a permanent seat on the Security Council, but Africa, South America and South Asia are not represented at all despite years of negotiations. Africa is chronically under-represented in almost all international bodies, even in the relatively more inclusive G20. If global institutions are not seen as legitimate and fair, governments will not fully engage, often forming bilateral preferential agreements to suit their own priorities instead, which can further degrade the official multilateral system.

WTO Director-General Pascal Lamy, in a speech made in Berlin in June 2012, warned that “new economic and political trends have emerged, the rules governing multilateral cooperation have not kept pace with these changes. In fact, we are to a large extent living on the global rules created in the 90s, the last period of active global governance.... Multilateralism is at a crossroads. Either it advances in the spirit of shared values and enhanced cooperation, or we will face a retreat from multilateralism, at our own peril. Without global cooperation on finance, security, trade, the environment and poverty reduction, the risks of division, strife and war will remain dangerously real. Waiting for better times will simply not suffice.” It is clearly high time for a new era of active global governance to begin.

As usual, we are witnessing a long political lag time in making the necessary, deep changes, especially as the US and Europe are distracted with their own intractable economic crises and reluctant to agree to anything seen as eroding their traditional power and privileges. The emerging and developing countries are losing trust in, and patience with, the system. In the meantime, bottlenecks are developing – most importantly on the issues of new global trade and carbon emission regimes – and the divide between the “North” and the “South” is manifesting in almost every development debate. This is indeed a crossroads, and one at which we cannot remain stalled at for much longer without serious consequences.

**Inclusive, Transparent Global Governance**

The good news is that the global community actively engaged in development cooperation has expanded and diversified; this should be harnessed as a great strength. Despite the financial crisis, the traditional donor OECD official development assistance has steadily grown (until the slight dip in 2011), and other sources of support and finance have multiplied. The emerging economies are very active in South-South cooperation; city and other local authorities are increasingly engaged at the international level, while the contribution of major philanthropic foundations, NGOs, and the private sector is enormous. There is also a global groundswell of active citizens groups and networks. The “international community” cannot be confined to state actors, but must seek new pathways to mobilize all of these factions towards common goals.

The “new multilateralism” must constitute more than just the same old system with more power grudgingly transferred to major emergent economies. There are calls for a genuine “people’s multilateralism” or “inclusive multilateralism” based on justice and democratic values – not only power and money. Under such a system, the size of a country’s GDP would not be the only basis on which their importance is measured. Africa, for example, with a billion people and over 50 countries, would be given greater recognition due to its key role in achieving sustainable human development, and its vulnerability to the threats of climate change caused overwhelmingly by the emissions of richer regions. As we are possibly moving into a period of intensifying competition and tensions, ensuring that global institutions are robust, representative and respected has never been more important.
Excluding civil society and other non-state actors from the negotiation table is no longer tenable, and is leading to a “them and us” animosity between those inside the main political segments of global summits, and those outside that is unproductive and a perfect excuse for the wider public to tune out altogether. Within the reformed architecture of multilateralism, civil society participation must be greatly enhanced to encourage more actionable leadership locally, where the problems are. Civil society, whose influence in the global arena has been transformed by the forces and logic of globalization and mass instant communications, is integral to the future vision of a revitalized multilateralism; it encompasses a wealth of experience, networks and understanding of the real human impact of the current crises.

A more participatory system also invites critical, but productive, debate and innovative thinking, and makes governments more accountable to their citizens. Civil society campaigns have already had major influence on the global agenda on debt, human rights, health and climate change, and networks are taking full advantage of new media and communications technologies. Some civil society groups face questions about their own legitimacy and accountability that need to be resolved, but a more inclusive system will encourage NGOs to adopt more propositional and not only oppositional stances. This will never happen as long the main political agreements at international conferences are reached in mysterious, closed-door sessions.

The business sector has also changed immeasurably in recent decades. Multinationals have expanded in their number, size and reach and today wield growing influence over the environment and society through global operations and supply chains. They too represent a huge pool of capacity to contribute to the search for global solutions, and many (though certainly not most) are already actively and very positively involved on the world stage. This process needs to be formalized, with firm commitments on the part of business to social and environmental standards throughout their operations, and greater transparency and regulation regarding their role in sustainable development initiatives.

The kind of multi-actor development partnerships that were the principal tangible outcome of Rio+20 – such as the UN’s Sustainable Energy for All initiative, or the Green Growth Action Alliance (G2A2) formed between leading companies and public finance institutions at the 2012 G20 Summit in Mexico – are an increasingly important model, especially while reaching official multilateral agreements on substantive issues is such a difficult and slow process. They are a way to generate action and investment during this period of multilateral stagnation, but without binding global agreements and strong legislative frameworks to back them up, progress can only ever be fragmented and unpredictable. Such initiatives are excellent vehicles for driving innovation and implementation – and show that states, big business and civil society can work effectively together – but, no matter how many are formed, they cannot take the place of genuine, participatory global governance when it comes to tackling issues such as climate change, deforestation, food and water security.

The strengthening of UNEP in 2012 is a positive step, making it better equipped to meet these 21st century challenges and close the gap – and time lag – between science and policy on environmental issues. One test of the upgraded UNEP will be their success in operationalizing a major decade-long initiative to decouple economic growth from the unsustainable use of natural resources and pollution generation – the 10 Year Framework of Programmes for Sustainable Consumption and Production Patterns. A better-funded, empowered UNEP can be a key player in promoting multilateral sustainable development cooperation.
Breaking Through the Bottlenecks

The Doha Round of trade talks and the UNFCCC climate negotiations have become bywords for multilateral stultification. The bar of expectations is now set so low in these processes that states merely agreeing to talk about the same issues again next year, rather just walking out altogether, is regarded as a major success. Considering the enormity of the challenges, and the fact that millions of people are suffering today as a direct result of these issues, this is hardly inspiring. Even activists are losing interest in these processes, turning their attention to the local and national levels where there is more chance of achieving results.

The Doha Round, after twelve years of tough negotiations, remains at an impasse, to all appearances indefinitely. When it was launched back in 2001, governments acknowledged the need for international trade rules to better reflect the fast-changing pace of trade; in 2013 the structural imbalances in the global trade regime remain and are joined by new problems and political dynamics. The Least Developed Countries are confronted by constant barriers to expanding their trade, and the progress made in gaining duty-free and quota-free market access in developed countries has slowed. In addition, there is now the need to address the trade restrictive measures introduced since the onset of the global economic crisis, which have affected nearly 3% of world trade. Climate change is at the root of much of the debate, with subsidies for renewable energy currently one of the most contentious issues at the WTO. The positions between “developed” and “developing” states are no closer to agreement on such key issues today than they were a decade ago.

In December 2012, the Doha climate change conference also failed to deliver a viable agreement on climate change mitigation, though delegates did continue to agree to agree to one by 2015, which is more than many observers expected. The multilateral system is down, but not quite out. As with the trade talks, a major fault line of the climate dispute is the issue of burden sharing between developed and developing economies. The issue is incredibly complex and embroiled in domestic political battles, and inter-state posturing and competition on all sides. In today’s increasingly multi-polar geopolitics, it has so far proved impossible to reach and effectively implement international agreements on climate change mitigation.

Even the national pledges made in the run-up to the 2009 Copenhagen climate talks, which were intended to limit global warming to +2°C, have already been shown to be insufficient to meet their target. Recent World Bank and IEA scenario projections based on existing government policies and declared intentions predict that an increase of more than +3.5°C is probable by the end of the century. But frightening figures seem to have little impact on negotiators, as years slip by without a plan and the chances of emissions peaking by 2030 recede.

There is too much caution, self-preservation and managerialism and a severe deficit in leadership. This must change, and fast. The OECD countries need to recognize that, just as they led the way to industrialization and modernization, they must lead the way in decarbonisation. Token gestures are not enough; they need to show in their national legislation, tax policies and regulatory frameworks that they are committed to new economic models for sustainable development.
Emerging economies need to recognize that with increased power comes increased responsibility, and (which many already do) that they have the opportunity to be at the vanguard of change and leapfrog over the mistakes of the West. The map of global carbon emissions looks nothing like it did when the Kyoto Protocol was signed in 1997. China, India, Brazil and Indonesia are now all among the top ten GHG emitters (by total emissions); China is now neck-and-neck with the EU on per capita emissions. How these countries respond to sustainability challenges will determine everyone’s future. The IEA reports that even if OECD countries were to bring their emissions down to zero, the world would still be likely to miss the 2°C target. The balance of states’ common but differentiated responsibilities needs to be realigned to reflect the current reality on the ground. In such a rapidly changing world, international cooperation and a fair and binding global climate deal is vital.

But, the potential consequences of climate change are too devastating – and hard to reverse – to allow for a Doha Round like impasse to take hold while we wait for everyone to come to the table (see Chapters 1 and 2 of this paper for more details on these risks). The clock is ticking fast if states are to reach a global agreement by 2015; the terms should already be close to final by the COP meeting in December 2014, and significant progress clearly apparent in 2013. If this does not materialize there is no possibility to delay further: the largest possible and most participatory coalition of those willing to take action – made up of states, city and regional authorities, international organizations, civil society actors and networks of all kinds, business and financial institutions – must be urgently formed to rapidly drive change forward.

Within this coalition, a strong multilateral agreement, and corresponding national level legislation and implementation, can begin to provide the stable and predictable pricing and investment environment needed for economies to make the fundamental shifts so urgently needed. This is one of the clear recommendations of the international Climate Change Task Force of leading scientists, practitioners and experts from around the world that is coordinated by Green Cross International. The benefits of acting as early as possible will also be huge, for those who seize them, (new jobs, industries, investments, improved air quality, better relations with civil society, etc.) by moving towards more sustainable energy systems and economies. Those left behind may be very quickly tempted to share in these opportunities and come on board.

In the past few decades the most successful multilateral efforts have been those clearly targeted at single issues (such as the Montreal Protocol, the Convention on the International Trade in Endangered Species - CITES and the Anti-Personnel Mine Ban Convention); these highly focused interventions are generally easier to enforce and monitor, but we need to find ways to extend this level of success to more complex, interrelated issues like climate change. The world now has the low-carbon transition tools – emission regulation, carbon pricing, support for efficiency investment, coal-to-gas switching, and competitive or near-competitive renewable power technologies – to get its carbon emissions under control. Transformation will need a policy framework that creates a playing field in which innovation and resource efficiency are rewarded. It will also require significant behaviour and lifestyle changes in the North and among the richer people in the South. Early action on climate change is already leading the way in helping to decouple growth from the use of carbon. We just need to get on with it, and scale it up, together.

The New Realities in Global Financing for Development

Twenty years ago financing international development was much less complicated. The poor mostly lived in poor countries, in mainly rural communities; ODA was the main channel of support; and debt was something poor countries owed to rich countries, while the rich countries – with a few set backs – enjoyed an unprecedented economic boom. That situation has changed entirely, and financial institutions and processes need to catch up.
Three years after the G8 gallantly agreed in 2005 to drop US$ 40 billion of debt owed by the heavily indebted poor countries to the World Bank, it was revealed that they had themselves been living vastly beyond their means, and many had to turn to the IMF for help. The banking crisis of 2008 annihilated much of the world’s faith in its financial institutions. The unprecedented accumulation of financial reserves and sovereign wealth funds in the big emerging economies of the South stood in stark contrast, and has led to South-South trade, investment and development support taking on immense importance.

These shifts, alongside growing income inequality, also means that today the majority of poor people no longer live in low-income countries, but in middle income countries (see Fig. 5), and a far higher portion of them are urban dwellers. In these countries, aid represents a declining proportion of budgets and overall income. In states such as Nigeria and Zambia, revenues from internationally traded commodities far exceed aid flows.

Figure 5. World hunger map [WFP, 2011].

Remittances from the world’s at least 214 million migrant workers are also rising globally, tripling in the last decade to exceed US$ 530 billion. For many developing countries, the money migrants send home is worth far more than the aid they receive. For some – including Bangladesh, Guatemala, Mexico and Senegal – remittances are larger than aid and foreign direct investment combined. According to the World Bank, if remittances were a single economy, it would be the 22nd largest in the world – bigger than that of Argentina. This is not pocket money, but a real growing force in global finance (see Fig. 6), and steps – like reducing the exorbitant fees migrants are forced to pay to money transfer companies – should be taken to make it more effective.
ODA remains vital, and OECD states should honour their 0.7% commitment, but it is no longer the dominant force that it once was. Some states are therefore talking about shifting from “aid effectiveness” to “development effectiveness”, looking at ways to make the whole package of financing – foreign direct investments, trade, technological transfer and all movements of labour and capital – more sustainable and productive, and reflective of real human values beyond the mere accumulation of wealth. Policy and governance are key, including donor countries’ own domestic policies, fiscal reform, the behaviour of their companies around the world, the removal of trade barriers, and the cracking down on tax evasion and tax havens that rob the global economy.

Providing incentives to make international production networks more sustainable will provide opportunities to speed up the development process by allowing countries to leapfrog to more sophisticated production modes. In short, the goal should be to actually achieve the long-standing MDG to prioritize “the development of an open, rules-based, predictable, non-discriminatory trading and financial system”; this requires strong international cooperation and reformed multilateral institutions. In keeping with this “put your own house in order” strategy, for the UK’s 2013 G8 presidency the focus is on changing tax, trade and transparency policies inside the UK and other G8 countries to have a positive impact on development.

Developed, emerging and developing countries need to collaborate to ensure that financial and other resources are channelled towards sustainable goals, both at home and internationally, and work to eliminate loss and waste. This includes the immense opportunity losses that are mounting with each year we tarry in truly addressing climate change. By failing to put a price on and reduce carbon emissions, and by continuing to rely on fossil fuels, we are damaging the economy. The 2006 Stern Review on the Economics of Climate Change estimated that: “if we don’t act, 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.”
By contrast, the EU estimates that reaching the 2°C target will cost at most 2.5% of global GDP in 2050 (reducing annual growth by a maximum 0.05% per year) if policies are designed in a cost-effective way. These costs are further reduced when co-benefits (such as reduction in air pollution health problems and improved energy security) are included (The 2°C Target, EU Climate Change Expert Group, 2008). Lore recently, the May 2013 report Working towards sustainable development: Opportunities for decent work and social inclusion in a green economy published by the ILO estimates that the transition to a green economy could create 15 to 60 million additional jobs globally over the next two decades, while lifting millions out of poverty. Unfortunately, this kind of economic analysis is too often swept aside in the charged political debate on climate change and other threats to sustainability; instead such findings need to be highlighted and made common public knowledge.

Perverse incentives must be eliminated, and this means both direct fossil fuel subsidies and the over US$ 1 trillion spent on other subsidies that encourage carbon intensive business. Public money could be put to much better use by leading the way through good practice. Public procurement, which currently amounts to US$ 4-5 trillion a year, would be a powerful tool for stimulating investment in green businesses and technology if it were directed towards massive investment in green infrastructure.

Moving the US$ 250 trillion financial sector in the right direction would also make a huge impact; positive changes could include: requiring rating agencies to include natural resource use in assessing sovereign and corporate credit worthiness, ensuring fund managers acting for institutional investors price carbon at an agreed appropriate level, and a well-designed global financial transactions tax for both equities and derivatives transactions. The EU is actively pursuing a financial transaction tax that should become active within its borders and for its citizens within the next two years.

All of these measures combined could contribute to a game changing situation in a relatively short time, and are on the agendas of a growing number of states and institutions. Multilateral cooperation over financing needs to be brought up to date with contemporary reality to take advantage of the full range of actors and resources now available and to make sure that support is channelled towards sustainable development goals in both the North and the South.

Knowledge is Power

Widely supported, well-crafted, tested solutions are available, ready to scale-up and roll out. But they are still meeting a wall of resistance from vested interests who do not want change. The last few years have revealed the extent of these vested interests, and the well-funded and coordinated methods they employ to derail sustainable policy, and to confuse and mislead citizens.

Civil society engagement and full participation is essential, and the role of the media – including social media – has never been more important. People need to be aware of the facts and the implications of different policy options. Fortunately, the science and technology sectors are now more closely involved in national and international decision making, and making good use of modern communications to inform citizens about the threats and opportunities related to our use of natural resources. The links between science and policy are closer, but there is still room for improvement as politicians continue to lag far behind science on many important issues – not least carbon emissions.
Literacy rates are improving – though in some countries not fast enough, especially for women – but a free press eludes many states and the situation is getting worse in certain cases (see Fig. 7). A fully functioning, inclusive multilateral system benefits from a transparent society, within which a free press is an indispensable component. Too often the media is sterilized by financial and commercial interests; broadcasters and editors need to be held to a higher standard and fulfil their public service mandate. Large media empires wield enormous political and economic power and are disproportionately able to shape public opinion to suit their interests. In too many countries, journalists and activists who report on corruption and abuse related to natural resources exploitation have even been harassed and even killed. The role of the Internet and social media in breaking through these monopolies and restrictions to further the cause of freedom of information and opinion is central, but not without its own set of problems.

Figure 7. Freedom of the press [Reporters sans frontières, 2013].

Building a New Peace Dividend

Multilateralism requires a collaborative, not confrontational, approach to diplomacy and burden sharing. Revitalising a strong multilateral system and breaking through the bottlenecks holding back solutions to some of the most serious problems will provide a huge boost to global security.

Alongside the other potential sources of additional support for sustainable development, it would be remiss not to consider the enormous amounts of wealth and resources that are expended on wars and conflicts, and general military expenditure worldwide. Two decades after the end of the Cold War, over 20,000 nuclear weapons still exist, with thousands on high alert and each much deadlier than those that devastated Hiroshima and Nagasaki in 1945. All five recognized nuclear weapon states appear determined to retain their nuclear arsenals indefinitely, while India and Pakistan continue to expand their capacities. Almost US$ 105 billion was spent on nuclear weapons in 2011, up from US$ 91 billion in 2010. Shifting such monies away from weapons towards sustainable development would have profound impacts on the lives of the world’s poorest people, and would promote security and stability around the world.
It is therefore hugely encouraging that a new UN process for multilateral nuclear disarmament – the UN Open
Ended Working Group on Taking Forward Multilateral Nuclear Disarmament Negotiations (OEWG) – has recently opened in
Geneva, following seventeen years of inaction in the Conference on Disarmament. It is important that states support this
initiative, and so far the signs are positive: the Parliamentary Assembly for the Organization of Security and Cooperation
in Europe (OSCE) has already adopted text supporting it – backed by all parliamentary delegations including those of
France, Russia, the UK and the US. Adding to this, in September 2013, a UN High Level Meeting on Nuclear Disarmament
is to be held at the UN in New York. This will be the first such High Level UN meeting on nuclear disarmament.

Governments around the world are also carrying out risk analyses into environmental related threats, in
particular climate change, natural resource conflicts, etc. A 2010 report from the US Joint Forces Command flags food
and energy security and climate change as areas of concern. With particular reference to peak oil, the report warns that
the “implications for future conflict are ominous, if energy supplies cannot keep up with demand and should states see
the need to militarily secure dwindling energy resources”. Social stability is at risk in many countries due to economic
failure, and climate change officially recognized as a “non-traditional threat” to security by the US National Intelligence
Council, the UK and China (among others). This concern is warranted, but it must be taken as a reason to step up
collaborative action to proactively address these issues, and prevent conflicts – not to increase military budgets to
prepare for them.

World military expenditure in 2012 totalled US$ 1.76 trillion, according to the Stockholm International Peace
Research Institute (SIPRI) 2013 Yearbook, representing 2.5% of global GDP, or US$ 249 for each person in the world. The
total is about 0.4% lower in real terms than in 2011, and is the first fall since 1998. This is significant as it marks the end
of a run of continuous increase in military spending between 1998 and 2010, including an annual average increase of
4.5% between 2001 and 2009 (which followed a very brief period of reductions immediately after the end of the Cold
War, before which the arms race had seen exponential rises for decades). Military spending by the US declined by 5.6%
in 2012. Following the 1% fall in 2011, this is a clear manifestation of an adjustment of US military spending to a “post-
war” setting. However, at US$ 685.3 billion, US spending in 2012 was still 69% higher in real terms than in 2001 when
the “war on terrorism” era began. The US’s military spending accounted for 41% of the world total in 2011, followed by
China with 8.2%, Russia with 4.1% and the UK and France each with 3.6%. These rankings are now expected to shift
significantly, reflecting spending decreases in Western Europe and sharp increases in the East, particularly Russia.

While further cuts in the US and Europe predicted in the coming few years are more the result of economic
necessity than the quest for peace, hopefully these 2012 figures will mark the beginning of a new era of military
expense reductions, a renewed focus on cooperation and diplomacy, and joint solutions. We may then start to see the
accumulation of a new “peace dividend” that could be diverted to the cause of a peaceful and sustainable future that
allows us to manage, govern and share natural capital within the Earth’s ecological limits.
Chapter 4.

Building a Peaceful and Sustainable World: Scanning the Horizon for Future Threats

Forewarned is Forearmed

In recent years a theory has been developing and gaining recognition that declares the influence of human activity on the Earth’s atmosphere, biogeochemical cycles and biodiversity to be so significant that it constitutes the basis of a new geological epoch: the Anthropocene. Humanity has the collective power to determine the future not only of our own civilization, but also of the entire planet. This is an immense responsibility, and one to which the kind of leadership being exercised by most current governments – which frequently displays more denial and bickering than vision – is not living up.

Distracted by their immediate goals, financial woes and election platforms, today’s leaders are failing to see the wood for the trees even regarding current, well-documented global problems; forecasting and preparing for the uncertain, but potentially catastrophic, risks that are just beginning to emerge is totally inadequate. Our consumption patterns and technological developments can have abrupt, hard to reverse, devastating unintended consequences, as we have already learned the hard way regarding the use of CFCs and massive CO2 emission rises. To protect societies from future risks, it is important to consider both slowly accumulating dangers, and high-impact-low-probability events that could have sudden, catastrophic outcomes. The latter category includes both natural disasters and “Pandora’s Box” situations involving advanced technologies.

Scientists and analysts from a wide variety of disciplines need to be encouraged (i.e., given more dedicated funding and support) to scan the horizon for emerging and potential threats, and inform governments – and the general public – about the best available remedial policy responses. Some potential crises can be averted or minimized through effective risk-assessment followed by appropriate monitoring and control; it is therefore part of our duty as custodians of the planet to be on the alert for future threats and to take steps to make our communities more resilient. Building a peaceful and sustainable future means taking a long-term view, and necessitates the management of risk under conditions of uncertainty.

Global risk experts at the World Economic Forum (WEF) in Davos in January 2013 concluded (on the basis of the annual risk report involving over 1000 experts) that the interplay between the top five risks – widening income gap between rich and poor, high government deficits, climate change, water shortages, and ageing populations – could pose a dangerous cocktail for global economic and social stability in the coming decades. Dealing with these challenges as they are currently perceived must be the top international priority, but we also need to look further ahead. What are the threats that today’s children may face when they are in charge of world affairs? What is just over the horizon? Are there realistic looming “existential threats” that scientists and policy makers should be concerned about today? This chapter considers just some of the possibilities.

Climate Change Related Risks

The focus today is on taking action to restrict global warming to 2°C, but – presuming we cut carbon emissions sufficiently and rapidly enough to achieve this goal (which is far from certain today) – what if this is not enough to prevent run-away climate change? What if some of the most dangerous consequences of climate change are already “locked-in” and happen anyway, especially as warming will be greater in the poles and in the tropics? This possibility makes it vital that – as well as urgently pursuing severe emission cuts – scientific forecasting of key factors such as polar ice melt, ocean temperatures and shifting weather patterns continues to advance and inform policy. Adaptation and prevention measures need to take into account the worst case scenarios. Issues which have been flagged as top areas of concern for the future include:
Disease.

Climate-sensitive diseases are likely to spread with warming, which will be of particular impact on poorer tropical regions. These include Rift Valley Fever, which affects both people and livestock; cholera, associated with floods; meningitis, associated with prolonged warming; and malaria, which warming has already spread to previously unexposed areas such as the highlands of Kenya, Rwanda and Tanzania. Warming will also exacerbate water stress, with all the associated health and social problems. Healthcare policies such as vaccination and public information schemes need to stay a step ahead.

Non-native species and “invasional meltdown”.

The ranges of both marine and terrestrial species are already shifting as a result of climate change – with impacts on fishing and agriculture. Even greater temperature changes may incur major invasions of damaging species – for example, non-native algae, and “invasional meltdown” events that accelerate biodiversity change and facilitate future invasions. This threat also extends to the human interventions that could be used to control it, which could include massive increases in pesticide and herbicide use.

Extreme weather events.

There is expected to be a continued increase in extreme events, as a result of both changes to the mean climatic conditions and increases in variance, but our understanding of the links between climate change and these events, and our ability to forecast them, is in its infancy. The impact on ecosystems of changes in the patterns of storms, floods, frost, fires, etc., are also liable to have major, but currently unknown, impacts on many aspects of biodiversity. What is certain is that these events will cause increasing economic and human losses across the world, so preparation and prevention – including financial support for poorer communities – are essential. The estimated economic cost of the 2011 Thailand floods was US$ 15-20 billion; the Horn of Africa droughts in 2011 claimed tens of thousands of lives and threatened the livelihoods of 9.5 million people; Hurricane Sandy in 2012 cost New York and New Jersey more than US$ 70 billion. Major disasters can also be socially and politically disruptive.

Figure 8. Economic losses related to selected natural catastrophes in 2011 [WEF, 2013].
• Geo-engineering to mitigate climate change.

Geo-engineering – the large-scale manipulation of the Earth’s environment – is attracting increasing attention (and research funding) as a potential climate change solution – especially as governments persistently fail to reach a political global emissions agreement. Proposals include: injecting sulphur dioxide into the stratosphere to reflect sunlight; positioning trillions of lenses in space to deflect the sun’s energy; the construction of a giant orbiting mirror; augmenting the primary production of the ocean using iron fertilization; laying reflective plastic over the oceans or deserts; and spraying water on ice sheets to stabilize the fresh to salt water ratio. Altering the planet’s environment in such ways would almost certainly impact biodiversity and Earth systems – though exactly how remains uncertain. Possible consequences include acid rain due to increasing sulphur dioxide, and boosting oceanic primary production could affect dissolved oxygen levels.

Geo-engineering is more an illusion than a viable solution, not least because the proposed interventions do not address the globally critical issue of ocean acidification. In addition, any such schemes could only be implemented with extreme caution and total global agreement; they can in no way be considered “easy” alternatives to a strict global emissions reduction regime. The risk is that, if emissions reduction is seen in the coming decades to be inadequate, risky geo-engineering projects could be undertaken without sufficient knowledge, or without full international agreement, leading to potentially terrible consequences and even conflicts.

**Science and Technology Related Risks**

• Antibiotic resistance.

This is considered the ticking health time bomb, and has been looming on the horizon for years without dedicated international steps being taken to address it. Antibiotic use is rising – including in agriculture – and resistance is steadily growing, but the pipeline of new drugs which can replace those becoming obsolete is drying up. No new classes of antibiotics have been developed since 1987. WHO estimates that for tuberculosis alone, multi-drug resistance already accounts for more than 150,000 deaths every year. There appears to be no market for developing new antibiotics in the private “Big Pharma” sector. Without coordinated government action (e.g., to restrict unnecessary antibiotics use, and encourage development of new drugs), antimicrobial resistance could cause medicine to lose a century of progress in fighting infection, with the result that even minor infections would be regularly fatal. Another extremely dangerous health risk is the ever-present threat of a new virulent epidemic disease: experts consider this to be inevitable – the question is when and how it will occur and whether we can contain it.

• Nanotechnologies.

These are a revolutionary new variety of technologies involving particles at the atomic or molecular scale, already used in many applications, and expected to bring massive further benefits to medicine, electronics and the environment in the next decades. However, due to their minute size and surface characteristics, nanoparticles have extraordinary activity, behaviour and – potentially – biological properties that make it difficult to predict their impact – including potentially serious effects on both human health and the environment. If, as many predict, the use of these technologies becomes widespread new methods to thoroughly assess and prevent risk need to be developed. Calls for tighter regulation of nanotechnology are mounting alongside the growing debate about health and safety risks. It is also vital that the public interest is the foremost concern when considering any risks and benefits, and that policy is not dominated by commercial and financial interests – as is too often the case today.
Artificial intelligence.

This is no longer science fiction; leading scientists are genuinely concerned about the possibility of artificial “life-forms” becoming a new variety of invasive species beyond human control. The danger could stem from either deliberate or malicious release into the environment of manmade synthetic life forms, for example, pathogens. Or there is the more easily sensationalized “killer robots” scenario whereby we lose control over robots developed using biomimetics for military or industrial purposes. Not long ago, people would not have believed that a computer could beat a Grandmaster at chess; these technologies are advancing rapidly, beyond most people’s understanding, and the risks must be taken seriously. The critical point might come when computers can write their own programs and become autonomous. The NGO Human Rights Watch released a report in November 2012 calling on governments to pre-emptively ban fully autonomous weapons that would be able to select and fire on targets without human intervention. Artificial intelligence regularly appears on lists of top threats for the future, including those of the newly created Centre for the Study of Existential Risk at Cambridge University and a major 2008 study by the UK Government Horizon Scanning Centre.

Natural Resources Related Risks

Disaster in the ocean.

That we are imperilling the ocean environment – vital to the entire Earth System – is already well known; what are unknown are the consequences that this will have in the future. The three most worrying trends – ocean warming, ocean acidification and sea-level rise – are all related to our carbon emissions and, along with overfishing and pollution, exacerbate each other to create multiple marine threats. Ocean pH is predicted to decrease by 0.3-0.5 pH units by 2100, changes that are 100 times faster than any seen in the last 100,000 years. While the predicted pH change is almost certain, the potentially calamitous ecological and biodiversity effects are harder to evaluate. Coral reefs are considered likely to be the first major ecosystem completely destroyed by human activity. Warming seas will make tropical storms more intense, and lead to shifts in the ranges of many important marine species (both already observed). More extreme high-water coastal disasters, and loss of habitable land and ecosystems through sea-level rise are also threats that necessitate preparation by vulnerable communities, even though the extent and time frame in which they may occur is uncertain.

Dramatic changes in freshwater.

The World Bank already predicts that, by 2030, water demand will outstrip water supply by 40%, and that more than five billion people – 67% of the world population – may still be without access to adequate sanitation. These statistics foretell immense suffering. Climatic and societal change could have even more dramatic consequences for water resources and the ecology of freshwater environments. While future freshwater flows are uncertain, it is considered likely that we will see reduced summer and increased winter river flows, as well as an increase in the frequency and magnitude of flooding in all seasons, as well as changes in the supply of contaminants, nutrients and organic matter to estuaries. These will impact water quality and also produce significant and hard to predict ecosystem changes in rivers, wetlands, lakes, estuaries and coastal waters.
Groundwater depletion is a particular concern. A significant share of the world’s food depends on this groundwater, and an estimated 1.7 billion people – nearly one-quarter of the world – live in areas where groundwater and its dependent ecosystems are under stress. A 2012 study (Tom Gleeson et al., Nature, August 2012) calculated that humanity’s global groundwater footprint – the area required to sustain groundwater use and ecosystem services – is about 3.5 times the actual area of the aquifers tapped for water supplies. Groundwater is most overexploited in some of the world’s most important food producing areas in the US, India and China. Pumping from aquifers in the Upper Ganges basin of India and Pakistan produces the largest footprint by far, spanning 54 times the area of the aquifer itself. Also under huge pressure are the aquifers of Saudi Arabia, Iran, western Mexico, and the US High Plains (see Fig. 9). Cities such as Delhi, Beijing and Mexico City are depleting their groundwater supplies at an alarming rate. Saudi Arabia, which has already substantially depleted its own aquifers, is starting to look elsewhere, with Saudi companies buying land in Ethiopia and other countries to help ensure food security.

Figure 9. Groundwater footprints of aquifers important for food production [“Water balance of global aquifers revealed by groundwater footprint”, Tom Gleeson et al., Nature, August 2012]. At the bottom are the footprints (in grey) of six aquifers. The bigger the relative footprint size, the more severe the depletion.

Groundwater is a particularly critical resource in India where it provides over 65% of irrigation and 85% of drinking water supplies. Alarmingly, on current trends it is estimated that 60% of India’s groundwater sources will be in a critical state within the next 20 years. In the most seriously affected north-western states, satellite measurements indicate an average decline of 33 cm per year from 2002 to 2008, while cases of annual water table drops of more than 4 metres are common throughout the country.

Water stress can be a cause of great tension and even conflict, an issue of which Green Cross International has extensive experience in several countries. Intensifying competition over water resources between and within countries can lead to violence, political instability, migration and other major problems that must be considered in risk analyses.
Increasing demand for food, biofuel and biomass.

The intensification of agriculture is not a new factor; it has been one of the major conservation challenges for decades. But, climate change, water stress, political instability, growing populations, urbanization, increased wealth (especially in emerging economies), and novel crops (e.g., for pharmaceuticals, plastics or biofuel) could result in acute food security issues and a steep change in the demands on agricultural production. Governments are under pressure to meet their renewable energy targets and, as things currently stand, for many this will include more bioethanol from wheat and sugar beet, biodiesel from oilseed rape and other novel crops. Direct negative effects could include the introduction of non-native, potentially invasive, species, intense competition between food and fuel crops, deforestation, increased use of herbicides and pesticides for biomass monocultures, and increased irrigation demands.

Figure 10. Global biofuel production [BP Statistical Review of World Energy, 2011].

Collapse of pollinator populations.

UNEP’s 2011 report on Global Bee Colony Disorders and other Threats to Insect Pollinators, points at air pollution, the use of memory-damaging insecticides, climate change and declines in flowering plant species among the factors behind the emerging decline of bee colonies across many parts of the globe. Scientists are warning that without profound changes to the way we manage resources, declines in the pollinators needed to feed a growing global population are likely to continue. Pollination from insects is a multi-trillion dollar a year environmental service that humanity depends on for its very survival, but which is not currently either adequately valued, or effectively protected. Bees are also early warning indicators of wider biodiversity impacts; measures to boost pollinators could not only improve food security but also the fate of other plants and animals. UNEP Executive Director Achim Steiner said in the 2011 report:

“The way humanity manages or mismanages its nature-based assets, including pollinators, will in part define our collective future in the 21st century. The fact is that of the 100 crop species that provide 90% of the world’s food, over 70 are pollinated by bees. … Human beings have fabricated the illusion that in the 21st century they have the technological prowess to be independent of nature. Bees underline the reality that we are more, not less dependent on nature’s services in a world of close to seven billion people.”
Social and Political Risks

- Growing inequality and dissatisfaction.

Severe income disparity was identified as the top risk by experts at the WEF in both 2012 and 2013 (see figures 11 – 13 at the end of this chapter), and it is fuelling anger at the political and financial sectors across the world, particularly in the West since the financial crisis. Dissatisfaction generally is on the rise in many places as people demand more of a voice and influence over policy, with youth among the most active protesters – especially where there are limited employment opportunities for educated young people. Even in relatively stable regions such as Europe, social polarization and anger against governments, banks and the media is already cause for great concern.

The communications revolution, particularly the unprecedented spread of social media platforms, is playing a major part by opening up new opportunities for grassroots activism and shining a light on government accountability. The “Arab Spring” and the Occupy movement are the best-known recent examples, but transformative communications technologies are being used in numerous campaigns related to key health, human rights and environmental issues. Improved communication and civic engagement are overwhelmingly positive trends, but can also be destabilizing, vulnerable to hijack by extremists, and provoke unintended consequences. The challenge is not to deter activism; it is for governments and other influential sectors – religion, big business, etc. – to be more transparent, accountable and responsive. Societies in which all citizens have opportunities for genuine participation in the decisions and policies that affect their lives are less likely to reach tipping points.

- Systemic financial failure.

Total financial collapse was averted in 2007-2009 thanks to massive public bailouts, and the continued buoyancy of emerging economies, but the extent and abruptness of the crisis makes it clear that this cannot not be ruled out in the future unless major structural and regulatory changes (far exceeding those that have been put in motion in the US and the EU to date) are made. Nearly 200 years ago, Thomas Jefferson warned that “banking institutions are more dangerous to our liberties than standing armies”; with markets and sectors so interrelated around the world, millions could be left vulnerable to total ruin and potentially violent conflict if regulatory frameworks once again fail to keep pace with financial innovation and manipulations.

- Global conflict.

This possibility can never be discounted; and as long as tens of thousands of nuclear weapons remain active, the risk that one will be used one day, whether in error or by terrorists or rogue states, remains very real. Competition over essential resources – fuel, water, rare Earth metals – is considered the most likely cause of major conflicts in the future, with the race for the resources being uncovered as polar ice melts identified as a potential trigger for serious conflict between major world powers. Multilateral dispute resolution mechanisms need to be equipped to deal peacefully with such disagreements in the future, and nuclear disarmament should be accelerated.

The “Unknown Unknown” Risks

Some threats are even harder to assess, predict or prevent – the truly unknown factor being the probability, timing and location of the event – but as science and technology advance we may learn more and gain greater ability to forecast and even take steps to reduce the impact of events such as:
- Geomagnetic solar storms.

Experts monitoring the sun spots and the solar cycle have warned of major solar storms which could damage electric power grids, communications and navigation systems, water supplies, and satellites, with obviously calamitous consequences.

- Asteroid collisions.

In February 2013, Earth had a reported “near miss” with a 45-metre wide asteroid passing 27,700 kilometres from our planet (that is only one tenth of the distance between Earth and the moon); in 1908 an asteroid collision devastated thousands of square kilometres of land in Siberia: a similar event in a populated area, or creating a tidal wave, would be catastrophic. The 2013 asteroid was spotted a year in advance, but there is currently no system in place that would have been able to deflect it had it been on course for collision. Scientists estimate that – with political and financial support – such a system would take about 20 years to install.

- Earthquakes.

A massive earthquake in a densely populated, economically and strategically important region is a very real, ever-present threat. Despite decades of studies, so far we are not able to predict earthquakes reliably enough or over a short enough time scale to allow the evacuation of threatened areas. Such a breakthrough would be a turning point for humanity with the potential to save millions of lives and reduce the risk of future incidents like the 2011 Fukushima Daiichi nuclear disaster.

In a world where thousands of people still die every day for lack of clean water, and the urgent challenge to address climate change permeates every sector of our economy, it is difficult to focus on more distant, uncertain risk factors. Some of the above listed threats – e.g., groundwater stress, antibiotics resistance, and pollinator collapse – are already clearly sign-posted and demand pre-emptive action today. Others are harder to grasp, but potentially even more deadly if left unattended. Around the world, university departments, government bodies and special think tanks and panels are analyzing potential emerging existential threats to human civilization, and proactive steps are beginning to be taken to protect ourselves in the event of disaster (e.g., the creation of the Svalbard Global Seed Vault).

Humanity has a lot to lose, international risk assessment and monitoring systems based on the latest knowledge of ecological, technological and planetary processes should be strengthened; in many respects, how long the Anthropocene lasts and how peaceful and pleasant it is for its inhabitants is ultimately up to us.
Figure 11. Failure of climate change adaptation [WEF, 2013].
Figure 12. Global Risks in Terms of Likelihood and Impact [WEF, 2013].
Figure 13. Global Risks Map [WEF, 2013].
Scientific Committee

- Chair: Alexander Likhotal, President of Green Cross International
- William Becker: Head of the US Presidential Climate Action Project and architect of the Future We Want project
- Fiona Curtin: International Policy Expert
- Ashok Khosla: President of IUCN & former Co-President of Club of Rome
- Sir David King: UK Climate Scientist
- Martin Lees: Rector Emeritus UN University for Peace & Former Assistant Secretary General for Science and Technology UN, Club of Rome member
- Mohan Munasinghe: Former IPCC Vice-Chairman, Chairman of the Munasinghe Institute of Development (MIND), Colombo
- Rajendra Pachauri: Chair of IPCC, Founder of TERI
- Roberto Peccei: Former Vice Chancellor for Research at the University of California LA, member of the Visiting Committee for the Department of Physics at MIT
- Ernst von Weizsaker: Co-President of Club of Rome, German Scientist, Member of the World Future Council, Dean of the Bren School of Environmental Science & Management at the University of California
- Anders Wijkman: Co-President of the Club of Rome, Former member of the European Parliament, Vice-Chairman of the Tällberg Foundation

Organizational Committee

- Chair: Adam Koniuszewski, COO of Green Cross International
- Pierre Muller, Vice-President of Green Cross International
- Karolyna Skrybant: Special Advisor to the Chairman of Green Cross International
- Paul Garwood: Communications Director, Green Cross International
- Cynthia Capitaine: Head of Administration, Green Cross International
About Green Cross International

“Green Cross International, founded in 1993 by Nobel Peace Prize laureate Mikhail Gorbachev, is an independent non-profit and non-governmental organization working to address the inter-connected global challenges of security, poverty and environmental degradation through a combination of advocacy and on-the-ground projects. GCI is headquartered in Geneva and is present in over 30 countries. GCI provides the platform and institutional support for the Earth Dialogues.”

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