#### WESS 2013 Background paper

Human Development in an environmentally constrained world in the post-2015 era.

John Toye (Oxford University)

### 1. Introduction

This paper discusses the changing paradigms of development. A paradigm is a world-view underlying the theories and methodologies of any scientific subject. A discussion of paradigms of development may appear to be abstruse and unrelated to the practical tasks of formulating development strategies and future international development goals. Yet paradigms perform certain functions of which policy makers should be aware.

No scientific endeavour in any field can prove everything that it would need to prove in order to ensure its own validity. Scientific theories and methodologies therefore must make use of axioms. Axioms are statements or propositions that are generally accepted as being self-evidently true, and not them selves in need of proof. Axiomatic propositions are drawn from the current paradigm.

It is important for policy makers to be aware that sometimes these taken-for granted starting points are actually false. Pre-Copernican astronomers believed that they did not have to prove that the planets revolved around the earth. Had they tried to prove it, they would have failed. Similarly, the earliest paradigm of development, Adam Smith's four stage conjectural history of socio-economic evolution based on the mode of subsistence, assumed that new and more complex types of society develop out of the previous one in a given sequence (Meek 1976). This may have been a reasonable assumption, but it is one on which more recent research in pre-history casts serious doubt (Diamond 2005).

Paradigms provide the shared assumptions within which debates on knowledge and action take place, but they may be misleading. When sufficient doubts accumulate around the current paradigm, a paradigm shift occurs.

This paper is motivated by dissatisfaction with the current 'human development' paradigm, which despite its success in putting normative aspects of development on a sounder intellectual footing, has a number of important limitations. One of these is its insistence that "the removal of substantial unfreedoms" is the primary

end and the principal means of development. Another is its failure to take seriously the link between the expansion of freedom and accumulating damage to the natural environment A third is its reliance on specific types of institutions to produce rational remedial policy outcomes, given that environmental damage has occurred. In section 2, these limitations are discussed and a broader concept of 'double-edged development' is elucidated.

Section 3 turns to the question of the changes in development strategy that may be necessary in an environmentally constrained world. Will economic growth be able to continue as a result of technological changes that enable the use of renewable forms of energy – the so-called green growth strategy? Or, will consumption growth in developed economies have to be restricted in a new model of a no-growth economy? In either case, what are the key political pressures that will inhibit changes of strategy?

Now that the Rio+20 Conference has called for the formulation of a set of Sustainable Development Goals, the question arises of the appropriate choice of goals and appropriate indicators of success. This turns out to be harder to answer than might at first be suspected. Section 4 reviews a range of indicators and argues that they do not, and perhaps cannot, address the fundamental issue of sustainability. Therefore an eclectic dashboard of indicators is the most plausible option for the international community.

The key conclusions of the paper are summarised in Section 5.

## 2. The 'human development' paradigm of development

### a. What are paradigms of development for?

Consideration of the current human development paradigm can illustrate the functions that a paradigm performs.

1. The current paradigm resolves unresolved problems inherent in its predecessor.

The predecessor of the current human development paradigm interpreted development as the acceleration of the growth of production of goods and services. It assumed that this had already occurred in a set of countries labelled 'developed', and that the challenge was to make it occur in the remainder, labelled 'developing'. Different strategies of development were debated within what was a purely economic interpretation of development. They included the appropriate type of government planning and intervention in the economy, the trade-off between income re-distribution and growth and whether priority should be accorded to particular economic sectors.

One major unresolved puzzle in this economic paradigm was that increased production and output does not necessarily translate into higher levels of welfare or well being of people. This is for reasons of mal-distribution of income and wealth, the occurrence of market failure, and the ignoring of household activity and leisure.

The paradigm of 'human development' conveyed an alternative vision of the forces shaping the quality of life, and contributing to the increase of well being. Replacing increases in production for final demand (and its other face, the income accruing to the factors of production), a new purpose of development was articulated in terms of human functioning and capability. This relegated output and income to the lower status of means rather than ends.

2. The current paradigm calls attention to new indicators of achievement.

The predecessor paradigm popularised increases in gross domestic product (GDP) as the main benchmark of successful development. So much of a by-word did this benchmark become that it is usually referred to simply as "growth", allowing the heterogeneous and sometimes arbitrary content of this "growth" to slip out of sight.

In the human development paradigm, "growth" has been displaced by a multidimensional composite array of indicators of advantage and deprivation, thus substituting dis-aggregation for aggregation. This substitution recognises that neither advantages nor deprivations befall people in complete packages. People with advantages in some areas often suffer deprivations in others.

As a more comprehensive and refined account of the quality of life, the human development paradigm is less susceptible to supporting a dichotomous view of the world. Countries cannot be split so readily into categories of developed and developing, once it is accepted that the benchmark of success is more variegated.

3. The current paradigm supports goals and strategic initiatives

'Human development' was the aspirational model that was embodied in the international community's agenda as the Millennium Development Goals for 2015. Although paradigms do not determine goals or strategies in any direct way, they provide a shared map of intellectual territory. As in every map, some features are highlighted, while others are omitted. This shared map then influences the ways in which goals and strategies are crafted.

# b. The human development paradigm: achievements

The human development paradigm and its attendant international agenda was put together under the leadership of Mahbub ul Haq and like-minded colleagues. Amartya Sen, Nobel Prize winning economist who turned philosopher, provided the intellectual rationale for it.

Rejecting both utility (psychic satisfaction) and access to commodities (goods and services) as sensible measures of human flourishing, Sen proposed a third measure of development. It was the "actual living that people manage to achieve, (or, going

beyond that, ... the freedom to achieve actual livings that one can have reason to value)". The purpose of development was to expand each person's range of choices – or their "capability set".

Sen's capability approach resolved many disputes that had arisen over the previous economic paradigm of development. It showed that income differences (whether between countries or individuals) should not be the only focus of policy concern, because income is a misleading indicator of wellbeing. It proposed that wellbeing must be assessed over a much more extensive spectrum of influences, of which economic activity and the resulting income is only one - albeit an important one. It argued that health, education, time allocation between employment, household work and leisure, political voice and personal security are vital influences, as well as income, in promoting human wellbeing.

Emanating from this insight, a Human Development Index (HDI) was created in 1990. This combined GDP per capita with life expectancy and literacy, using equal weights. The HDI was criticised as rather crude and simplistic, but it attracted widespread interest and the gaps between countries' GDP and HDI scores became a matter of both scholarly and popular interest. More recently, Sabina Alkire and James Foster (2011) have constructed a multi-dimensional index of deprivations, incorporating ten indicators covering, health, education and the standard of living. This multi-dimension approach to well being informed the choice of an array of MDGs. Rather than putting all the focus on any single target, such as GDP per capita, twelve separate and distinct goals were chosen.

People were re-envisaged as active subjects and not passive objects of development. Human development was seen to require the exercise of agency by individuals, and that in turn requires people's 'empowerment'. Empowerment, it was argued, could be achieved by the removal of constraints on the exercise of individuals' agency. Development, it was asserted, was to be sought through the expansion of freedom.

A reconstructed norm of development was not the full extent of the change involved. In addition, a research programme was launched to establish an empirical case that progress along one dimension of freedom causes progress along other dimensions of freedom. The aim was to show policy makers that the capability approach leads to policies that reinforce each other, and are coherent in practice.

### c. The human development agenda: limitations

This new development paradigm, despite its evident scope, power and grandeur, remains a partial and incomplete one. While it is sophisticated in terms of articulating norms and values, its positive analysis of the development process is less than adequate for operational purposes. One particular weak spot is the analysis of how environmental constraints may bind on the pursuit of a better quality of life for all. While it is strong in elaborating a coherent account of human flourishing, it is weak in explaining how the choices of individuals are reconciled. It relies on an assumed form of rational politics to achieve this reconciliation. These inadequacies are reflected in the framing of the MDGs as global targets. For instance, only one of the MDGs concerned environmental issues, and that in a cursory manner.

Reason is given a central role in the human development paradigm because the functionings and capabilities that are to be expanded are those that "the individual has reason to value". The question "who decides which functionings and capabilities the individual has reason to value?" is therefore of crucial importance. Amartya Sen has rejected the attempt by Martha Naussbaum, a law professor at Chicago, to enumerate all the desirable capabilities. This makes it clear that he does not want moral experts to evaluate the reasonableness of individual desires.

If the individual decides on the reasonableness of his or her desires, do they act on some internal notion of what constitutes human flourishing for themselves and for others? Or do they simply value certain functionings and capabilities according to whatever reasoning capacity that they happen to possess?

If it is the former, this option seems to underestimate the full range of human behaviour and choices, which obviously includes much that is anti-social and destructive of self and exploitative of others. If it is the latter, it seems to put too heavy a burden on public discussion and decision-making procedures as the means of baffling those individuals who actually value capabilities that enable them to exploit and dominate others.

In the human development paradigm, the weighting to be given to individual advantages and deprivations relies on the existence of a collective or political sphere in which consensus is reached and public priorities are settled by reason. In this assumed forum, reason can prevail, by means of open public discussion and critical scrutiny. Specific institutions facilitate the discussion of public policy (freedom of association, a free media and a vibrant civil society) and rational decision-making (democratic political forums). Yet desirable institutions do not always deliver reasonable outcomes, particularly in relation to environmental damage. This proposition is explained further in Section 2.

Policy makers cannot always wait for institutions to arrive at reasonable outcomes before they act. For their operational purposes, they need to decide which human capabilities are the key ones so that they can be elevated into goals and be fitted with targets and indicators to focus national and international policy actions. The way out of this difficulty has been to declare the existence of a general consensus on which capabilities are key.

### d. Development as Freedom: counter examples

Sen summarised his position in the book *Development as Freedom* (1999). He argued that "the process of development . . . is not essentially different from the history of overcoming . . . unfreedoms". It is not exactly clear what is meant by the 'overcoming of unfreedoms', beyond obvious examples like the abolition of slavery and the granting of civil rights. However, a positive account of the development process as the history of the expansion of freedom seems to be inadequate for understanding the imperatives of the post 2015 era.

The normative re-definition of development needs to be supplemented by an explanation of how expanding freedom in a globalised world can *undermine* 

capabilities, as well as allow them to multiply. For sure, globalisation has brought about not just material progress, but also legal and moral progress. Yet it is no less important to emphasize that the very same forces that have generated these historic achievements are also able to undermine them.

In order to see this more clearly, one must widen the perspective to encompass both developing and developed countries in a truly global analysis. The convention of thinking about development only in relation to developing countries is now out-dated and should be abandoned.

#### (i) The current environmental crisis

Adverse climate change caused by human economic activity has undermined the idea that development is a wholly benign process of capability expansion. The evidence of global warming over the last two and a half centuries is inescapable. The global mean temperature is now 0.8 C above the level of 1750 when the Industrial Revolution began. That this results from the simultaneous massive expansion of peoples' economic activity is highly probable. The World Meteorological Organisation reports that the concentration of carbon dioxide in the atmosphere has reached a record 391 parts per million, which is 140 per cent higher than 1750 levels. These figures expose the previously hidden problem that the process of development has generated gas emissions that are raising the temperature of the planet with detrimental effects on its climate.

The idea that economic growth causes environmental damage is not wholly new. One of the pioneers of development theory, Albert Hirschman, wrote: "From the point of view of investment incentives, the capitalist system, especially as it existed in the nineteenth century, is hard to beat: there was a minimum of internalization of external diseconomies . . . it was the peculiar lack of internalisation in the private enterprise system – the way in which the institutions of that system 'hid' certain costs from the entrepreneurs – that was largely responsible for the dynamic economic changes that took place" (1958: 58-9). Now the consequences of that institutional "hiding" are plain to see – both the economic and social progress *and* the environmental consequences that could constrain its continuation.

#### (ii) The current financial and economic crisis

The current financial and economic crisis also illustrates the double-sided nature of freedom. The state of freedom in the run up to the sub-prime mortgage crisis of 2008-9 was extensive and expanding. Public discussion was never constrained, democratic decision-making was in full swing, and economic opportunities were unhampered. Restrictions on banking operations, such as the US's Glass-Steagall Act, were being abolished. Financial regulators were moving to adopt regimes of lighter supervision. Moreover, specific capabilities of the poorest people, in respect of their access to housing, were actually being expanded.

Nonetheless, sub-prime mortgage lending precipitated financial collapse, and a huge bail out of banks at the expense of the taxpayer. In order to reduce the consequent fiscal deficits, economic austerity regimes have been introduced,

involving drastic cuts in a wide range of public services. The extensive spread of economic austerity policies, affecting both developed and developing countries, is something that development conceived of as the expansion of freedom simply does not explain.

## e. Double-edged development

The normative analysis of the human development paradigm must be complemented by a realistic positive analysis of the development process. From a positive perspective, development should be seen as a double-edged process, meaning that while it generates social benefits, it at the same time generates social costs. These costs are of various kinds. They may be economic costs, arising when new industries undermine the competitiveness of old industries, rendering their physical capital unprofitable – e.g. railways making canals redundant or jet aircraft forcing ocean liners to be scrapped. This was the meaning of Joseph Schumpeter's application of the term 'creative destruction' to the development process. Scientific enquiry since then has enlarged the understanding of the nature and scale of the destruction involved in development. The term would now also cover the negative externalities that the new industries create – including pollution and consequent global warming.

Since development occurs by many different processes of experiment and innovation, the combined consequences – the social benefits and costs accruing - cannot be fully knowable in advance. The unconstrained exercise of human agency generates contradictory forces, and they are constantly altering the circumstances in which people are taking action. Development can be dangerous because in a dynamic context accidents can and do happen and experiments can and do go wrong. It is hardly surprising that unintended consequences ensue.

Unintended damage to the environment has come in four major forms. One is the depletion of exhaustible resources, such as coal, oil and natural gas; another is the over-use of potentially renewable resources, such as forests and fish stocks; the third is destruction of natural habitats leading to the loss of bio-diversity; and the fourth is the production of wastes and pollutants that cannot be absorbed by natural processes. One particular pollutant, carbon dioxide, is already causing global warming and other types of climate change. There are feedback loops between these different types of damage. Climate change, for example, can damage habitats and trigger the loss of bio-diversity.

The goal of sustainability, or sustainable development, has come to the forefront of public consciousness because of the fear that, without some sort of braking mechanism on economic growth, the quality of life as defined by the human development paradigm will not be able to be maintained into the future. It represents the introduction of a new aspect of the quest for equity into the analysis of development, namely equity between generations. The human development paradigm emphasised equity between individuals in their capability sets. As far as groups were concerned, emphasis was placed on women and gender equality, and on the special needs of the disabled. Sustainable development foregrounds equity

between the old, whose activities can narrow the capability sets of the next generation, and the young who will be the losers thereby.

## 2. Is a new aspirational model technically and politically feasible?

## a. The prospects for 'green growth'

The Ecological Footprint (EF) measures how much of the regenerative capacity of the biosphere is used up by human activities related to consumption. Its basis is a calculation of the amount of biologically productive land plus the water area required to support a given population at its current level of consumption. A country's footprint represents its demand for land to produce food, fibre and timber, to absorb the waste that it generates and to provide space for its infrastructure or built up areas. On the supply side, bio-capacity is the productive capacity of the biosphere and its ability to provide a range of resources and services useful to humankind. It has been calculated that, since the 1980s, humanity's EF has been larger than the total carrying capacity of the planet. Since then the size of the gap between the EF and bio-capacity has been increasing.

One strategic response to this calculation has been to argue that economic growth can continue only if economies are re-structured around 'green technologies'. Examples of green re-structuring would be the phasing out of energy sources using exhaustible resources, and their replacement by renewable resources, such as wind, wave or solar power. Non-fossil fuels can also power air or road transport. Since about two-thirds of emissions derive from electricity generation and transport, green re-structuring might make it possible to ensure that emissions would never exceed 450 parts per million, and therefore that the global temperature would not rise by more than 2 degrees Celsius.

It is possible to use the technique of environmental economic accounting to calculate flows of economic output from which the consumption of natural capital has been subtracted. The environmentally adjusted net domestic product (or ea-NDP) is an aggregate that could, in principle, be allowed to grow. Growth of this so-called "green GDP" would imply that the additional product had more than compensated, in value terms, for the additional resource depletion and environmental degradation. The problem lies in the valuation, however. Valuing environmental degradation, unlike valuing resource depletion, is a highly speculative exercise, so the implied equivalences would always be doubtful.

Moreover, the UN's efforts since 1992 to spread a system of economic and environmental accounting (SEEA) does not direct address the issue of sustainability. What it does is to give a more realistic picture of whether genuine economic growth is occurring. What it does not do is to indicate whether the current level of 'green GDP' will be sustainable in the future.

Hopes for economic growth using green technologies are in some respects well founded. Exhaustible resources are priced by the market system, unlike most aspects of biodiversity and the emission of pollutants. It is reasonable to believe that, as stocks of exhaustible resources become more depleted, their market price will rise and that the price rise will create economic space for the entry into the market of nondepleting alternatives.

At present, new technologies, such as 'fracking' for shale gas, look likely to keep prices of fossil fuels low in the next decade. So that market incentives may be too weak to do the job unaided. In cases where polluting fossil fuels are plentiful, e.g. brown coal in Australia, market forces may need to be reinforced by government fiscal action, such as a carbon tax.

The other side of the coin is that renewable alternatives are often too costly for consumers of energy and transport products to afford. Renewables may therefore need time-limited government subsidies to achieve economies of scale, since they are infant industries that need temporary support to become established. However, if the government is fiscally constrained, renewables may never get the chance to emerge from infancy. Fiscal constraints are binding in many developed countries at present and, to that extent, the prospects for green re-structuring have worsened in the last few years.

In developing countries, the initial barriers to adopting a green growth strategy may be more formidable. If there are distortions in the energy market, the economic space for alternatives fuels will be artificially restricted. A minority of developing country governments (mainly oil producers) subsidize the consumption of fossil fuels. Egypt, Nigeria, Indonesia, Iran, and Morocco all have such subsidy schemes. They create an extra price hurdle that renewable energy sources have to surmount in order to become competitive.

The figures on fossil fuel consumption subsidies are sobering. In 2011, they amounted globally to \$523 billion, almost 30 per cent higher than in 2010. By contrast, in 2011 financial support for renewable energy was only \$88 billion. Attempts to eliminate fossil fuel subsidies are being made, but they frequently run into fierce political resistance.

In Southern Africa, too, several countries are pursuing development by means of policies that are sub-optimal from an environmental perspective. South Africa, for example, is responding to its electricity generation shortages by building new coal-fired power stations. Malawi is raising food production by subsidising inorganic fertilisers. Changing to a green growth agenda would involve making large new investments and moving away from their national comparative advantage in mineral resources and agro-ecological conditions respectively.

Once again, the existing sub-optimal policies have strong champions in political parties, unions and private sector corporations, which could form a powerful anticonversion coalition unless suitably compensated from the benefits accruing from reform (Resnick, Tarp and Thurlow, 2012).

In volume terms, more significant Asian countries with large populations, India and China, are also pursuing environmentally sub-optimal paths of development. The short run costs to them of switching to a green growth strategy would be very large. It is clear that such a major strategic move would require substantial financial support, as well as technical assistance, from the international community. How much support and the criteria for its allocation are still unsettled questions of international diplomacy.

### b. Proposals for a steady-state economy

An alternative proposal to 'green growth' is for already developed economies to move towards a steady state. The rationale for this is one of equity between countries and their populations. Any further growth in developed countries, it could be argued, serves only to reduce the amount of ecological space available to other countries, where economic growth is still needed to alleviate poverty of large parts of their populations.

At present, economic growth in developed countries is slow in the aftermath of the 2008 financial crisis and is forecast to continue to be quite weak in 2013. If the recession comes to an end and growth shows signs of returning to pre-crisis rates, maintaining a steady-state economy would require the application of some braking mechanism to restrain the animal spirits driving reviving growth.

It is fair to say that the advocates of a no-growth economy (e.g. Jackson 2009) have been stronger in their criticisms of GDP growth and their arguments for why a nogrowth economy is desirable than they have been in explaining how such an economy could be brought into being.

A steady-state economy would require something of a cultural revolution. In many developed economies the values of individualism, hedonism and conspicuous consumption are strongly entrenched at present. These values are celebrated and encouraged by an advertising industry that absorbs 2-3 per cent of the national income. A change to celebrating the values of love, community, spirituality and creativity would be required to motivate satisfaction with a constant level of consumption in a steady-state economy.

Research into subjective well being does, however, provide some support for the feasibility of this change of popular motivation. Traditionally, economists have argued that inspection of people's choices was sufficient to derive information about their well being, and that these choices conformed to a standard set of assumptions. More recently, research by psychologists and others, focused on what people value and how they behave in real life, has shown that subjective data on people's experienced well- being deviates in important ways from the standard economic assumptions.

Over the last thirty odd years since data on subjective well being has been collected, real income per head in most OECD countries has at least doubled, but there has been little significant increase in the reports of subjective well being (Layard 2005). This is perhaps surprising given that the rich in each country report greater life satisfaction than the poor, but it is consistent with the often-reviled theory of the diminishing marginal utility of income. In fact, it seems that when real income per head reaches about \$ 20,000 a year there is a threshold beyond which further increases in income no longer produce increases in people's reports of their subjective well being. This

suggests that countries at an income level already beyond this threshold could move to a no-growth economy without thereby contributing to a loss of citizen well being.

That there is a spectrum of objective influences on well being (as asserted in the human development paradigm) is borne out in the data on subjective well being. However, it puts a slightly different emphasis on the key influences in addition to income. Personal relationships with family and friends have a stronger influence, as do personal freedom and personal values, than in the human development paradigm's presumed consensus. Nonetheless, the importance of health and work is confirmed in both sources. Unemployment, for example, has a depressing effect on well being in excess of that caused by the resulting loss of income. The importance of employment might seem to be a difficulty in the steady state economy, but it is not necessarily so.

Finally, the prominence of family relationships and community and friends among the drivers of subjective well being suggests that there is some scope for the cultural change that a steady-state economy would require. People's own assessments of what contributes to their satisfaction seems to differ quite markedly from the hedonistic consumer image projected by the advertisers. This gives some ground for optimism that an evolution towards public attitudes favourable to a steady state economy is taking place spontaneously in advance of the attitudes of politicians and the business community.

#### c. Difficulties of a more profound reorientation.

Fritz Schumacher concluded that the goal of sustainable development required a profound reorientation, not just of conventional economics, but also of science and technology. In his view, the trajectory of the forces of production must be switched away from the drive to invent machines and projects on an ever larger (and ever more polluting) scale towards methods of production that are small scale, accessible to all and supportive of the creativity of labour (Schumacher, 1973: 68).

Schumacher also advocated full employment, not just in order to maximise production, but because he believed that work was a good activity in its own right, rather than a form of disutility. (This insight is borne out by the results of subjective well being research.) The reduction in scale of industrial units would humanise work and bring creative work within the economic reach of all. This was how he reconciled an environmentally friendly economy with the demand for employment (Schumacher, 1979).

It is hard to see how this profound reorientation could be brought about rapidly without the introduction of an extensive set of government regulations and controls. Since populations normally continue to grow if left to reproduce naturally, a method would be needed to hold population size constant. This would entail fashioning government incentives to keep the natural increase to zero and controls on immigration in order to balance it with emigration.

Caps would have to be placed on the use of exhaustible and potentially renewable resources in danger of over-exploitation, along the same lines as existing fishing quotas. A cap on resource use, to be effective, has to be accompanied by a rationing

system to allocate the available resources to competing uses. Profit taxes would probably have to be used as the policy instrument to deter firms from exceeding their ecological allowances.

Workplaces with more than a maximum number of employees would have to be banned. Yet, if sufficient employment did not materialise in the no-growth economy, the government would be expected to act as employer of last resort by providing public works.

A steady state economy would have to address the problem that its industries would be vulnerable to competition from countries where firms were allowed to grow without limit and so benefit from economies of scale as well as cheaper labour. Such competition would arise inevitably in those countries where economic growth is allowed to continue in order to alleviate poverty. Blunting the effect of this competition would require an array of protective tariffs. If capital flight were to accelerate as a result, capital controls would have to be imposed.

This sketch of the controls that might well be required to make a rapid transition to a no-growth economy suggests that it is not a model that would be easy to introduce on a unilateral basis.

### d. Is a new model politically feasible?

It has been argued in the previous section of this paper that, in order to achieve the aggregation of individual choices, the human development paradigm relies on the existence of a collective or political sphere in which consensus is reached and public priorities are settled by reason. In this assumed forum, reason can prevail, by means of open public discussion and critical scrutiny. Specific institutions facilitate the rational discussion of public policy (freedom of association, a free media and a vibrant civil society) and rational decision-making (democratic political forums). That the presence of such institutions is sufficient to ensure the adoption of rational policies by consensus is taken for granted. If this were a valid assumption, whatever the economic problems, there would be no political infeasibility in countries moving to a new model of a steady-state economy - in the face of environmental constraints. All that would be involved would be the passage of time required for public discussion and decision making to take place.

However, certain forms of pathological (i.e. non-rational) politics can and do exist even when the ideal institutions of the human development paradigm are present and operative. Perhaps the most vivid illustration of the political pathology that can derail attempts to rectify problems of pollution is Henrik Ibsen's drama, *An Enemy of the People* (1882). It is set in a seaside town that is being developed as a spa resort through investing in the construction of medicinal baths. The medical officer of the baths discovers that the spa water is contaminated, and this is confirmed by tests at a nearby university. Initially, the editor of the local paper is willing to publish an article by the doctor announcing the test results, but is dissuaded when the town's mayor argues that the baths would then have to be closed, leading to loss of income and employment in the town, a hefty bill for repairs and an opportunity for another aspiring spa town to gain a competitive advantage. The doctor's article is rejected, and when he calls a public meeting to protest this, he is branded as an enemy of the people.

From this outline, some of the political factors that make it so hard to arrive at rational solutions to pollution problems can be extracted.

(1) Contamination results from a negative externality (in the play, effluent from the town's up-stream tanneries) that is not charged back to the industrialist owners. The reason for this is that the owners are wealthy residents who have been elected to the town Council.

(2) The damage from the contamination falls on visitors to the town, a dispersed and unorganised group, who will suffer from additional ill-health, while the benefits of ignoring the contamination (continued employment, no extra taxes for realigning the water supply) accrue to the townspeople who are both electors to the Council and advertisers in and patrons of the local newspaper.

(3) The existence of representative government and an uncensored media do not produce a rational policy, when, instead of checking and balancing each other, they voluntarily collude under the pressure of popular opinion.

How do these three factors relate to the politics of carbon emissions and global climate change?

(1) Not all carbon emissions are the direct result of industrial activities. These account for a mere 14 per cent of carbon emissions in the US, according to the US Environmental Protection Agency. Much higher percentages derive from electricity generation (40%) and transport (31%), which are essential inputs to the production of goods and services. The electricity generation companies that rely on fossil fuels were quick to channel money through the American Petroleum Institute during the 2010 elections to defeat members of Congress inclined to act on climate change and replace them with Tea Party climate change deniers.

Money plays a central role in American politics, not only through corporate contributions to candidates and campaign funds, but also through 'independent' expenditures in support of political causes. The latter has been made much easier by the Supreme Court decision in the case of Citizens United v. the Federal Election Commission in 2010. The API has created a media campaign called 'Vote Energy" that emphasises the importance of energy provision with no mention of associated climate change risks. In the 2012 US presidential debates, both candidates sought to portray themselves as ultra-friendly to increased coal, oil and natural gas extraction with hardly a mention of consequent global climate change.

Putting the matter more generally, all democracies are open to powerful lobbying by vested economic interests. Successful lobbying against taxation and regulation increases profits and thereby the resources that can be deployed in the next lobbying campaign. This strong feedback loop makes the prospect of new laws to curb the influence of money in politics highly uncertain. Meanwhile, wealth and income inequalities continue to increase.

(2) The benefits of carbon emissions accrue to the emitting countries. In 2010, 33bn metric tons of carbon were emitted into the atmosphere, about two-thirds of it by the top ten emitting countries. These were China (24.5%), the USA (16.4%), India (6.3%), Russia (5.1%), Japan (3.3%), Germany (2.1%), Iran (1.8%), South Korea (1.5%), Canada (1.5%) and Saudi Arabia (1.5%). None of these countries featured in the Maplecroft 2012 list of the top ten countries at extreme risk from climate change. These were Haiti, Bangladesh, Sierra Leone, Zimbabwe, Madagascar, Cambodia, Mozambique, the DR Congo, Malawi and the Philippines – all developing countries that emit very low levels of carbon.

According to the World Bank's *World Development Report* for 2010, although all developing countries are vulnerable to the effects of climate change, the nature of the vulnerability differs by region.

- Sub-Saharan Africa's primary exposure is to the impact of more severe droughts and floods on its agricultural output and its bio-mass energy supplies, which accounts for 80 per cent of its total energy.
- East Asia and the Pacific has several hundred million people living on the coast or on low-lying islands that would be threatened with storms and flooding and relying for their livelihoods on marine resources that would be degraded.
- In Latin America and the Caribbean the disappearance of the Andean glaciers will redistribute water supplies in several countries and disrupt the output of hydroelectric plants, which supply more the half of many countries' energy output.
- In the Middle East and North Africa, the existing water scarcity will be aggravated to the point where it will curb population growth and agricultural and other economic activity, particularly by reducing agricultural yields.
- South Asia's long and densely populated coastline is vulnerable to rising sea level. This brings salt water intrusion to agricultural plains and inundation to much of the Maldives and of to 18 per cent of Bangladesh's land area. South Asia will also be affected by the melting of the Himalayan glaciers, which will relocate water supplies and disrupt hydroelectric power.

It is not that the top emitters, China and the USA, will be entirely free of the consequences of climate change, such as rising sea level and more extreme weather events. The coastal regions of China will certainly be at risk from rising sea level, and the USA is about 25<sup>th</sup> in terms of direct risk from extreme weather events. Nevertheless, it is fair to say that there is a huge mismatch between the beneficiaries and the victims of carbon emission. The result is that it is very difficult to convince the voters in the emitting countries of the need to sacrifice their standard of living in order to cut their country's carbon emissions.

(3) The treatment of the climate change issue in the Western media has been diverse. One section has adopted a uniformly hostile approach to the subject, publicising the views of climate change deniers and doubts surrounding the scientific research. However, most of the media coverage does not follow a single line, but publishes a range of fact and opinion. Extreme weather events like the Japanese tsunami and hurricanes Katrina and Sandy become major news stories when they strike and are well reported at that time. At the same time, newspapers often campaign vociferously for a resumption or acceleration of economic growth, in line with the aspirations of national politicians and business people, apparently missing the connection between growth and climate change. There is not much evidence of voluntary collusion between the media and government in free societies, but the media suffers from confusion and schizophrenia on the climate change issue.

On the positive side, despite the media, awareness of the climate change issue is increasing. The people of the United States ranked among the lowest in the world in a 2009 World Opinion Poll survey asking how high a priority their government should make addressing climate change. Since then there has been some increase in Americans' acceptance of the reality of global warming, rising from 57 per cent in January 2010 to 70 per cent by September 2012, according to the Yale Project on Climate Change Communication. There are now 58 per cent who say that they are "somewhat" or "very" worried about it.

While there will be little enthusiasm, and much outright hostility, among powerful actors on the political scene either for a no-growth economy or the means required to bring it about, there are signs of the gradual spread of a more favourable attitude among the general public to attempts to harmonise economic activity with the reduction of environmental damage.

## 3. The post-2015 Agenda

## a. Rio +20 Outcome document

The Rio +20 Summit called for the formulation of a set of Sustainable Development Goals (SDGs) which "should be coherent with and integrated into the United Nations development agenda beyond 2015, thus contributing to the achievement of sustainable development and serving as a driver for implementation and mainstreaming of sustainable development in the United Nations system as a whole" (paragraph 246).

The criteria specified for selecting goals was that they "should be action-oriented, concise and easy to communicate, limited in number, aspirational, global in nature and universally applicable to all countries" (paragraph 247). This is not quite the same thing as specifying that they should be capable of being expressed in a series of coherent, quantitative and time-based global goals, but this is implied by the criteria of action orientation and ease of communication.

# b. Lessons from the MDGs

In the formulation of a post-2015 framework for sustainable development, it is essential to learn lessons from the Millennium Development Goals (MDGs) that will expire in 2015. The current MDG framework was set up despite a good deal of scepticism. Critics complained that the goals chosen were incoherent, consisting partly of genuine outcome goals like the reduction in poverty, of input goals like enrolling more children in primary school, of process goals – "ensure environmental sustainability" and of simple expressions of various international concerns.

It was also true that, as global goals, they did not have an underpinning set of national targets. Everybody, and at the same time nobody, was responsible for ensuring that they were met. Some by now have been met and some have not. Where a serious

goal like poverty reduction has been achieved, it has been driven by the efforts of one populous, fast growing economy – China. (This is one more illustration of the double-edged nature of development: China's levels of poverty fell as China's greenhouse gas emissions soared.)

For all that, the MDGs have been a success at the political level. They have provided a basis for mobilising political activity and public opinion around development issues. This has supported increases in official development assistance (ODA), and probably helped to direct more of it to sub-Saharan Africa. They have done so by creating the impression of a connection between the receipt of aid and progress along dimensions that the aid-giving taxpayers view as desirable.

On the other hand, there is not much evidence that the existence of the MDGs has had any impact in shaping national policies in developing countries. Charles Kenny and Andy Sumner (2011) found little improvement in developing countries CPIA scores during the early 2000s and were unable to make any connections between policies on the ground and countries' 'ownership' of the MDGs

One could argue that the easiest agreement for the international community to make would be to set up the post-2015 SDGs along very similar lines to the preceding MDGs. Clare Melamed (2012) takes this approach. The World Economic Forum in a report entitled *Getting to Zero: Finishing the Job the MDGs Started* has also proposed taking this route. Their report proposes eight goal areas – poverty, hunger, health, education, gender equality, infrastructure, environment and global partnership and good governance. Each goal area has a dashboard of indicators. For example, the environment goal is to be supported with six indicators – for air quality, chemical and toxic exposures, waste management, bio-diversity and "target from the UNFCCC process on greenhouse gas emissions". As I suggest in section e, the final indicator faces some political difficulty.

Nevertheless, the political relevance of this continuation framework in the post-2015 era should be examined critically. The MDGs were developed as a grand bargain between donors and recipients of development assistance. Effectively, they involved an exchange of the appearance of results in developing countries in return for aid from developed countries. Because there were no accompanying commitments by developing countries, they were really an elaborate piece of political theatre.

There are at least three reasons why a near repeat of this 'bargain' is unlikely to remain relevant for the next one or two decades.

1.First, the division of the world into two blocks of countries labelled 'developed' and 'developing', the former sending aid to the latter, looks outmoded in an increasingly multi-polar world. It sits uneasily with the new demand for targets "universally applicable to all countries".

2. Second, official aid is no longer the main source of development finance. Whereas in 1990 aid made up 60 per cent of development finance, by 2008 aid's share was only 20 per cent. Remittances, flows from private foundations and foreign direct investment have all expanded their share. This trend is likely to continue.

3. Third, as more of the world's poor people live in countries in the middle-income category, will poverty reduction continue to be a goal that will enthuse people and mobilise their support? It seems rather unlikely, and setting poverty reduction goals

for rich and poor countries alike would be something of a tortuous exercise. Universally applicable targets are more appropriate to the provision of global public goods, and public financial flows that are specifically linked to their provision.

## c. The concept of sustainable development and goal formulation

If the continuation of a goals framework with a poverty reduction focus does not seem adequate, could it be expanded by means of adding goals focused on sustainable development and public goods provision?

To approach this question, the concept of sustainability has to be examined. It has a number of important aspects.

1. Sustainability is future-oriented. The issue is whether a current state of affairs can be maintained (or improved on) in the future. No one, however, has advance knowledge of the future, so the question of what *is* sustainable will always be subject to uncertainty. In particular, two kinds of uncertainty surround questions of sustainable development. One of these is how current eco-environmental trends will play out in the future, e.g., will the polar ice caps completely melt, and over what time scale? The other is how the most probable eco-environmental scenario will affect people's well being, e.g. how will the melting of the polar ice caps affect adversely particular populations in particular locations? Answers to these key questions can never be known with scientific exactness.

2. Sustainability is in part a normative issue. Gauging sustainability depends on a normative judgement about what is to be sustained. Is it one factor that affects the quality of life, such as the environment, or is it all the various factors that affect it? The human development paradigm has argued successfully that well being is multi-dimensional. This implies that the sustainability of development should also be multi-dimensional. The objective should be not just to sustain the current level of natural capital into the future. Since other forms of capital – physical, human and social – also influence the quality of life, they too should be sustainable. Indeed, the terminology of the Rio +20 Declaration makes it clear that 'sustainable development' is not confined to sustainable natural resources. It is concerned with ensuring the maintenance (or expansion) of all the influences that promote the quality of life, including the natural environment

3. When sustainability is multi-dimensional, the question arises of how the different dimensions are to be treated vis-à-vis one another. There are two contrasting answers to this question. The first is to allow compensation for deficiencies in one dimension by good performance in other dimensions. This is referred to as 'weak sustainability'. The other approach, known as 'strong sustainability' is to insist on the separate maintenance of levels of quantity and quality in each of the dimensions. The concepts of weak and strong sustainability can apply at different levels. To insist on sustaining resources, bio-diversity and the atmosphere would be strong sustainability at the environmental level. To sustain the environment at the expense of declining physical, human and social capital would be weak sustainability at the level of well being.

### d. Weaknesses of the EF and other measures of sustainable development

The EF, like the GDP increase, generates a single headline figure. From that point of view, it satisfies the demand for a goal that is concise and easy to communicate. The percentage by which human activity exceeds the planet's bio-capacity has a clarity and simplicity that has helped it to penetrate the public's consciousness. On the other hand, it has weaknesses as a measure of sustainable development.

- (i) Of the four categories of environmental damage mentioned earlier, the EF ignores the threat to sustainability caused by resource depletion.
- (ii) The remaining three categories are aggregated to one common measurement, namely the global hectare. This unit has the average productivity of the 11 billion bio-productive hectares on the planet. This assumes that the many different forms of natural capital are substitutable and that they are additive in terms of land area – neither of which is plausible.
- (iii)In any case, it is not at all obvious that the EF would make a sensible national target. Imposing national cap on the use of environmental resources, to bring this into line with its national bio-capacity, implies the renunciation of the advantages of international trade between countries with greater and lesser bio-capacity.

In fact, the EF measure is driven by only one of the three forms of environmental damage that it covers. The land used to provide food, fibre and timber and to provide space for urban infrastructure cannot, by definition, exceed the land available, so any measured excess of bio-capacity usage over bio-capacity must arise from excessive usage of available capacity to absorb pollutants. In that case, it would be more economical to replace the EF with a measure like the Carbon Footprint, which is focused on the key pollutant of concern, carbon dioxide.

Perhaps the most important weakness of the EF approach is that it is focused solely on the sustainability of natural capital. Although the sustainability of natural capital is very important, it is not the only issue that arises in ensuring sustainable development.

Sustainability is about the capacity of countries to carry forward sufficient stocks of different kinds to generate future flows of services that are no smaller than those currently enjoyed. Attempts to measure this capacity at the national level by indicators of adjusted net savings or changes in extended concepts of wealth have had the perverse result of showing the developed countries, which have much larger consumption of exhaustible resources and emission of pollutants, as being on a sustainable path, and developing countries, which supply the resources, as being on an unsustainable path.

In summary, neither the EF nor adjusted measures of national savings or wealth provide a reliable guide to overconsumption or underinvestment at the national level, as argued in the Sarkhozy Commission's report (Stiglitz, Sen and Fitoussi 2010: 97-136). There is no measure that can be aggregated across all nations to construct a global goal for sustainable development.

## e. The Global Carbon Footprint as an Indicator for an Environmental Goal?

Is there then any way of using the political advantages (focusing on and mobilising around sustainable development) of a goals framework, while moving on to issues that will be more salient than further reductions in poverty in the next couple of decades?

Climate change is an issue that, according to the best scientific advice, is genuinely urgent. It is also an issue that in some measure affects all countries (though, as already said, it hits developing countries hardest). It is also one that no individual country can resolve on its own, so it is a relevant issue for collective action.

There are indications that the public sense of urgency is building. The growing recognition of climate change as a problem in the USA has already been mentioned. This should be reinforced by recent scientific work that has been able to link some extreme weather events to carbon emissions, while discounting the link for others. The ability to discriminate in this way should improve the credibility of the underlying science. Estimates in the *Climate Vulnerability Monitor* that carbon emissions are already costing the world 2 per cent of its gross national income are likely to undermine the position of those who prefer to 'wait and see'.

Given that the EF measure is driven by carbon emissions, it would be both feasible and simpler to include a desired value of the Global Carbon Footprint among the indicators of an environmental SDG. The main difficulty here is that any such value is linked to a related target rise in global temperature, because the two are correlated. However, the rise in global temperature that the international community is prepared to tolerate is subject to considerable disagreement in the continuing international negotiations on climate change in the UNFCCC.

The developing countries, through the G77, have adopted strong negotiating positions in the UNFCCC discussions. They maintain the following stances.

- (1) The responsibility for causing global warming lies with the developed countries. Developing countries will resist any absolute targets for reducing carbon emissions, because such targets would lock in historic inequities and infringe their right to develop.
- (2) The burden of reducing carbon emissions must rest with the countries that have benefited from emitting carbon, not with those who may benefit by emitting carbon in the future.
- (3) There should be no target for the global rise in temperature, because that would imply that once the industrial countries had announced their carbon reduction pledges the residual reduction would have to be made up by the developing countries.
- (4) The industrial countries should make finance and technology available to developing countries for adaptation to and mitigation of climate change effects, but such transfers should not be made on condition of meeting particular mitigation targets.

These stances were maintained throughout the Copenhagen climate change conference.

However, unofficially, the desired maximum rise in global temperature became a matter of contention among developing countries themselves. While some are prepared to agree to a maximum rise of 2 degrees Celsius, the Association of Small

Island States declared its preference for a limitation of warming to 1.5 degrees Celsius.

Since Copenhagen, the US has sought a new regime for climate change negotiations that would replace the previous UN negotiating process. The G77 is reaffirming the integrity of the UN negotiating process, in opposition to US attempts to move to a new negotiating regime involving a much smaller (26 or 29) number of countries deemed to be "representative" of the world. The alternative of negotiating only with allegedly representative developing countries would lack legitimacy, according to the G77, because differences in developing countries' vulnerability and resilience in the face of global warming are considerable.

The recently concluded COP 18 meeting in Doha did renew the Kyoto Protocol until 2020, but the commitments of the remaining signatories now cover only 15 per cent of global gas emissions. The goal of a maximum global temperature increase of 2 degrees Celsius was affirmed, but International Energy Authority projections suggest that it is rapidly becoming irrelevant due to falling fossil fuel energy prices and a continuing strong demand for energy. Some experts claim that by 2035, a likely end point for the post-2015 SDGs, the global temperature will have risen to 3.6 degrees Celsius unless some more ambitious international emission limitation agreement is reached very soon.

## The Power of Ideas

Since Keynes's famous peroration at the end of *The General Theory*, the question of the power of ideas versus the power of vested interests has been debated endlessly. My own view aligns with that of Keynes, provided that due attention is paid to the qualifications that he made. What he wrote was that the power of vested interests is exaggerated "compared with *gradual encroachment* of ideas. *Not, indeed, immediately, but after a certain interval*... But, *soon or late,* it is ideas, not vested interests, which are dangerous for good or evil." (Keynes 1973 (1936): 383-4, with emphasis added). Ultimately, ideas trump interests, and that is why paradigms are so important, but there is no exact timetable for their triumph. Throughout this paper, I have tried to point out where new ideas are at work in subterranean fashion, even while existing vested interests remain as yet unshaken.

Numbers are a device for dramatizing ideas, but they can succeed and fail at the same time. They can succeed in grabbing public attention and dominating headlines, while they can fail to communicate properly the ideas that they are taken to represent. When the strictly economic paradigm of development was dominant and GDP numbers were the headline figures, those numbers did not measure the concept of gross domestic product accurately.

When the human development paradigm was articulated, Mahbub ul Haq insisted that the Human Development Index should feature in the new *Human Development Report* although it was an arbitrary statistical construction. Amartya Sen advised against the inclusion of the Index when the *HDR* was first being launched, but he took a more pragmatic view later, agreeing that the Index served as a useful weapon to combat the centrality GDP as an indicator of development. "We need a measure of the same level of vulgarity as GNP – just one number- but a measure that is not as

blind to social aspects of human lives as GNP is", Mahbub ul Haq is said to have told Sen. Ironically, the despised and inadequate GDP measure was incorporated into the HDI as one of its three components, so its life was actually prolonged.

It is clear that the choice of a dramatizing number is essentially a political calculation of how to balance visibility against statistical imperfection. To highlight environmental concerns, the least misleading indicator is probably the Carbon Footprint. Carbon emission values are available for a wide range of goods and services and modified input-output methods can be used for calculating the carbon footprint of an entire economy. National carbon footprints can be made the basis of a global carbon emissions target. However, carbon emission is only one of a number of distinct environmental concerns, and the carbon footprint does not relate to the sustainability of physical, human or social capital stocks. A dashboard of other indicators therefore seems to be unavoidable.

### 5. Summary and Conclusions

- 1. While the human development paradigm represented an advance on the original view that the objective of development was to accelerate the growth of nations' gross domestic product, that paradigm's achievements were confined to the re-ordering of norms and values. For operational purposes, it was less useful because of lack of clarity on how individuals' choice of functionings is to be aggregated and the assumption that certain types of political institutions will guarantee rational policy outcomes. The claim that the expansion of freedom is both the end and means of development has obscured the issue of environmental damage that is caused by the process of development itself.
- 2. Growing awareness of the link between human activity and environmental damage since 1750, and the fact that the financial crisis of 2008 was facilitated by financial liberalisation, require development to be re-thought as a double-edged phenomenon in which the expansion of freedom generates both social benefits and social costs.
- 3. Market forces can act as signals and incentives to switch from burning fossil fuels to renewable energy sources for electricity generation and transport, but especially in the context of low fossil fuel energy prices, they will need to be reinforced by fiscal means taxation of fossil fuel use and government subsidies for renewables.
- 4. A minority of developing country governments currently subsidise the consumption of fossil fuels. Such subsidies are a barrier to renewables entering the energy market and they should be phased out as a matter of urgency. Apart from that, moving to a green growth strategy would impose heavy short-term investment costs on many developing countries, with which they would need help from the international community and much of the detail of such financial assistance remains to be agreed.
- 5. Plans for how a steady-state economy would function are not well defined, but research into the drivers of subjective well being gives some ground for optimism that an evolution of public attitudes in favour of a steady state is taking place spontaneously, in advance of the attitudes of politicians and of the business community. A unilateral attempt to move an economy in that

direction would, however, have to involve a heavy web of internal restrictions and cross-border controls to insulate the economy from external competition.

- 6. Three features of Western political systems are unhelpful when electorates have to be persuaded to take measures to limit environmental damage. One is the powerful influence that can be exercised by wealthy vested interests. The second is the fact that the victims of environmental damage have little leverage over political outcomes, compared with the beneficiaries of the status quo. The third is media treatment of anthropogenic climate change as a subject for debate, rather than the finding of scientific research.
- 7. Some commentators have responded to the Rio +20 call for post-2015 Sustainable Development Goals by proposing a continuation of the current, mainly anti-poverty goals. This is unlikely to be acceptable, given the need for goals that are universally applicable, rather than being part of a donorrecipient aid bargain.
- 8. It would be desirable to include an environmental target and supporting dashboard of indicators related to the slowing of environmental damage. The difficulty is, as the Sarkhozy Commission confirmed, there are no straightforward indicators of sustainable development. The Ecological Footprint, 'green' national accounting and measures of extended wealth all have serious weaknesses as indicators of sustainability.
- 9. The Carbon Footprint, focused on carbon emissions, is the most promising candidate as an environmental indicator in the area of global warming. However, it is logically linked to the rise in average global temperature, which is the subject of unresolved disagreement in the continuing UNFCCC negotiations.

#### References

Sabina Alkire and James Foster, 2011, "Counting and Multi-dimesional Poverty", *Journal of Public Economics*.

Jared Diamond, *Guns, Germs and Steel: A Short History of Everybody for the Last 13,000 Years*, London, Vintage Books.

Albert Hirschman, 1958, *The Strategy of Economic Development*, New Haven, Yale University Press

Tim Jackson, 2009, Prosperity without Growth, Abingdon, Earthscan.

Charles Kenny and Andy Sumner, 2011, "More Money or More Development: What have the MDGs Achieved?", Washington DC, CGD)

John Maymard Keynes, 1973 (1936), *The General Theory of Employment, Interest and Money* in *The Collected Writings of John Maynard Keynes*, Vol. VII, London, Macmillan for the Royal Economic Society.

Richard Layard, 2005, *Happiness: Lessons form a New Science*, London, Penguin Books.

Ronald Meek, 1976, *Social Science and the Ignoble Savage*, Cambridge, Cambridge University Press.

Clare Melamed, 2012, *Post-2015: The Road Ahead*, London, Overseas Development Institute.

Danielle Resnick, Finn Tarp and James Thurlow, 2012, "The Political Economy of Green Growth", Helsinki, UNU-WIDER.

Fritz Schumacher, 1973, Small is Beautiful, London, Blond and Briggs Ltd.

Fritz Schumacher, 1979, Good Work, London, Jonathan Cape.

Joseph Schumpeter, 1934 (1912), *The Theory of Economic Development*, Cambridge, Mass., Harvard University Press.

Amartya Sen, 1999, Development as Freedom, Oxford, Oxford University Press.

Joseph Stiglitz, Amartya Sen and Jean-Paul Fitoussi, 2010, *Mis-measuring Our Lives: Why GDP does not add up*, New York and London, The New Press.

World Bank, 2010, World Development Report, Washington DC, The World Bank.

World Economic Forum, 2012, Getting to Zero: Finishing the Job the MDGs Started