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Abstract

This paper explores environmental implications of the BRIC thesis that Brazil, Russia, India and China, along with the United States and Japan, will be the dominant economies by 2050 (O'Neill, 2001). The criteria for assessment are those common in economic analysis, the triple bottom line: profit, people, planet. The BRIC economies encompass over 25 percent of the world's land area, 40 percent of the world's population and a combined GDP (Purchasing Power Parity) of $US20 trillion dollars. What happens in these economies in the next 40 years will significantly impact on the rest of the world. This paper focuses on the implications of contemporary patterns of industrial growth, energy consumption, rising standards of living and the continued expansion of consumerism in the BRIC economies, and assesses them against the dual imperatives of the 21st century: achieving global environmental sustainability and delivering social justice for the people who constitute the "bottom billion".

Keywords: BRICS, environment, sustainability, social justice

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Beneficio Personas Planeta: Las Implicaciones Ambientales del Desarrollo en Brasil, Rusia, India y China (las Economías BRIC)

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Resumen

Este artículo explora las implicaciones ambientales de la tesis BRIC que Brasil, Rusia, India y China, junto con Estados Unidos y Japón, serán las economías dominantes para el año 2050 (O'Neill, 2001). Los criterios de evaluación son aquellos comunes en el análisis económico, la triple línea de base: beneficio, personas, planeta. Las economías BRIC abarcan más del 25 por ciento de la superficie terrestre, el 40 por ciento de la población mundial y un PIB combinado (Paridad del Poder Adquisitivo) de 20 billones de US dólares. Lo que suceda en estas economías en los próximos 40 años tendrá un impacto significativo en el resto del mundo. Este artículo se centra en las implicaciones de los patrones contemporáneos de crecimiento industrial, el consumo de energía, el aumento de los niveles de vida y la continua expansión del consumismo en las economías BRIC y los evalúa contra el doble imperativo del siglo 21: conseguir la sostenibilidad global del medio ambiente y lograr justicia social para las personas que constituyen los "the bottom billion".

Palabras clave: BRICS, medio ambiente, sostenibilitdad, justicia social

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The "BRIC" thesis was first proposed by O'Neill of Goldman Sachs in 2001. He predicted that by 2050 Brazil, Russia, India and China would have joined the largest world economies (O'Neill, 2001). The prediction was revised in subsequent years (Purushothaman & Wilson, 2003; O'Neill, 2007) and by 2009 the year when the BRIC economies were predicted to be as large as the G7 was brought forward to 2032 (O'Neill & Stupnytska, 2009). The term "BRIC" has since become part of the popular idiom. The importance of these nations as a group is internationally acknowledged in politics and economics and is reflected in reporting in the international financial media: *The Financial Times, Time Magazine, The Economist and The Wall Street Journal.*

It is important and necessary to explore the implications of the projected development in the BRIC countries in terms of rising standards of living and increasing consumption. The BRIC group, primarily the two countries India and China, make up a significant proportion of world population. O'Neill's BRIC prediction was based on a narrow, economically focused model that equates development with industrialization and is measured through growth rates and income levels. This focus reflects Goldman Sachs'–O'Neill's employer–position as a financial institution providing information to assist international investors. My intention is not to debate the BRIC thesis but to assess potential environmental implications of the rapid development of these economies in terms of three criteria: profit, people and planet. The conclusion explores the implications of reprioritisation: planet, people, profit. The "business-as-usual" approach of neo-liberal economics, which is fixated with growth, is evaluated against the costs and benefits to the planet and its population. What emerges is the necessity to change both methods of production and modes of consumption of the contemporary capitalist system. Instead of treating the environment as an invisible and infinite resource the real costs and benefits of development growth need to be incorporated into analysis. Rethinking profits and pricing to reflect the real sustainable costs of resources and production will play a key role in reducing levels of consumption. It is also necessary to change the types of the products consumed. Along with these changes is the need to address the major humanitarian issue

of our time the development of sustainable strategies to meet the basic needs of the world's poor, the "bottom billion" (Collier, 2007). In 2009 the number of people who lived on less than $1.25 per day was estimated as 1.4 billion (Stiglitz, 2009). Numbers have expanded significantly since the international economic crisis began in 2008.

The first section explores the economic profiles of the BRIC countries, focusing on growth and profit, as key measures used in contemporary economics. Section two analyses "people", or what the economists call "human capital" and the sociologists call "humanity". Lastly the environmental implications of this ongoing growth and the goal of achieving social justice for the poor are explored.

Profit: the ecnonomic projections of the BRICS thesis

"A country must maintain and improve growth conditions in order to achieve its potential" (O'Neill, 2007, p. 17).

In the last two decades industrialization has accelerated in the emerging economies of the world, especially in Brazil, China and India. Because of similarities in potential growth and development in the next decades these countries, along with the already industrialized Russia, have been grouped under the acronym the "BRIC" economies (O'Neill, 2001; Purushothaman & Wilson, 2003; O'Neill, 2007; O'Neill & Stupnytska, 2009). The BRIC's share of world gross national product (GDP) has grown spectacularly quickly in the last decade, from 12.4 per cent in 1999 (Anderlini et al., 2009) to 28.5 per cent in 2011 (Table 1).

Table 1

BRICS GDP 2012 (trillions dollars)

	GDP (trillions dollars)
Brazil	2.43
Russia	1.95
India	1.95
China	12.38

Source: CIA, 2013, a, b, c, d

The most dramatic growth rates have been in India and China. India's economic growth averaged over seven per cent a year from 1997 to 2010 (CIA, 2010b). In recent years, after a dip in 2009 with the economic crisis, growth again started to expand in these countries. China's economy grew steadily at an average of nine per cent per year between 1975 and 2000 (Brown, 2006, p. 123). After 2000 growth rates were even higher, reaching 13 per cent in 2007. Rates slowed to 9.1 per cent in 2009, because of the contraction in export markets (CIA, 2010b), then there was a temporary growth spurt in both India and China in 2010, but in 2011 China's growth rate reverted to the 2009 level (CIA, 2012b), while India declined to slightly higher than 2009 (CIA, 2012c). In 2012 rates in all the BRICS dropped back again (CIA, 2013 a,b,c,d) (Table 2).

Table 2
BRICS percentage growth rates 2009-2012

	2009	2010	2011	2012
Brazil	0.3	7.5	2.7	1.3
Russia	-7.8	4.5	4.3	3.4
India	6.6	10.1	6.8	6.5
China	9.2	10.4	9.3	7.8

Source: CIA, 2011, a, b, c, d, and CIA, 2012, a, b, c, d

In 2010 O'Neill predicted that the total size of China's economy would overtake the United States (US) economy by 2027, though GDP per capita would remain much lower, along with income levels. There is an enormous potential increase in the environmental impact with the inevitable expansion in China's per capita income and the growth of middle classes.

The emerging economies of Brazil, India and China are in a phase of rapid development and are engaged in major infrastructure building programmes: cities, roads, airports and buildings (domestic, commercial

and industrial). Such extensive development stimulates high demand for raw materials along with energy, in particular oil and electricity. Currently most of China's electricity generation is produced by the coal-fired power stations that account for a large proportion of China's carbon emissions and pollution. In 2007 China overtook the US as the world's largest carbon emitter (Vidal & Adam, 2007). The way that China deals with its current land future emission levels will have major implications for global climate change, though it is equally necessary for the US to reduce its level of emissions. The US remains the world's second largest producer of carbon emissions and per capita emission levels are much higher. The historical accumulation of those emissions contributes the major share of contemporary high emission levels. China's continuing growth also increases pressure on both water and land. Industrialization and urbanization is increasing the carbon footprint and national ecological footprints in all the BRIC nations except Russia.

A preoccupation with growth as a measure of development has dominated neo-liberal economics since the 1980s and underpins the "business as usual" approach to climate change. However it is a crude form of assessment, which focuses on certain indicators and ignores the human and environment impact of current business practices and does not consider sustainability. During the current economic downturn in the West, though growth levels in the BRIC economies declined for a short time they remain high as they continue to be driven by ongoing infrastructure development and growing internal markets. The growth levels of the BRICs (except Russia) remain much higher than in the western industrialised countries (Table 2).

The expansion of consumption in India and China is seen to be crucial to ongoing economic growth. There is little assessment as to whether in the long-term growth is possible or environmentally sustainable. Raising the standards of living of the poor and equitable distribution of consumption in most countries is reliant on "trickle-down" mechanisms rather than on comprehensive state-planned social programmes or policies. Equity and sustainability, discussed in the next sections, rarely feature in growth predictions.

People

The consumption of products links people, the economy and the environment. Demographic data relating to poverty, human development and levels of inequality are useful as starting points assessing standards of living and social equity. The reduction in poverty, and improvements in human development indicators have been accompanied by growing inequality along with an increase in consumerism.

The economic development of the BRIC economies has already improved their standards of living. Since 1949 China has achieved the greatest victory over poverty in history. Incomes have risen 400 per cent since 1980 (Brown, 2006, p. 165). Rising standards of living have been accompanied by increasing consumption. In the last decade, as the BRIC economies expanded, new jobs and business opportunities helped raise income levels. Excessive consumption has been adopted by the more affluent in emerging economies, while it has become embedded in industrialized societies. Large numbers of people no longer live in poverty, though poverty levels have gone up since the international economic downturn. In recent years the total number of people living in poverty in the BRIC economies was 600 million (Table 3).

Table 3
BRICS percentage poverty levels

		Poverty (millions)
Brazil	2009	21.4
Russia	2010	13.1
India	2010	29.8
China	2011	13.4

Source: CIA, 2012, a, b, c, d

The numbers living in poverty in India has grown from 270 million (25 per cent) in 2007 (CIA, 2010c), to 359 million in 2010 (CIA, 2012c). In Brazil poverty levels remain high, though some progress has been made in Brazil since the mid 1990s. The Bolsa Familia social welfare programme is raising standards of living through financial and medical support for the poor. Russia was the only BRIC country where poverty increased in the decade after 1989. These levels declined over the last decade, reaching 18.6 million - 13.1 per cent - in 2010 (CIA 2012b), which means they are nearly down to the poverty levels at the end of the Soviet era in 1989.

Data from the United Nations Human Development Index, which assesses levels of poverty, education and healthcare and assigns them a value, shows that standards of living have improved in all of the BRICS from 1980 to 2011 (Table 4).

Table 4
BRICS Human Development Index 1980 and 2011

	1980	2011
Brazil	0.549	0.718
Russia	0.691	0.755
India	0.344	0.547
China	0.404	0.687

Source: UNDP, 2012

The expansion of Western business and finance into emerging economies in recent decades, including the BRIC economies, has benefited many people but has also stimulated growing inequalities within those societies (Stiglitz, 2006). Levels of inequality have increased in all of BRICS since their economies have liberalized, those levels are reflected in their rating in the GINI index[1] which measures the level of inequality in a country.

Despite the global downturn consumption continues to expand–at a slower pace–in the BRIC countries. This ongoing expansion has major global environmental implications because their total population accounts for 41 per cent of world population (Appendix 1). The continuing rising standards of living, especially in India and China has major impact on the global environment. There is a big gap between reducing poverty and raising people above the poverty threshold and the excessive consumption of the West. Most people lifted out of absolute (and near) poverty do not have a consumption lifestyle remotely approximating that in industrialized societies. China still had relatively low average per capita income in 2010 ($3567) compared to the US ($41,733), but as that figure is an average it does not reflect the significant numbers of people with high incomes in China, and the numbers still living in poverty. China still has enormous potential for expansion. In both India and China governments are encouraging the expansion of the domestic auto industry as a key economic focus. There are significant environmental implications if there is a massive increase in vehicles in China and India. These two markets were seen to be instrumental in bringing the international automobile industry out of the red in 2010 with sales of over 20 million vehicles according to Dave McCurdy, Head of the International Organisation of Motor Vehicle Manufacturers (Menon, 2010). The rising standards of living of the middle and consuming classes, and those aspiring to join them, have significant potential environmental impacts which are explored in the next section.

Planet

This section explores the environmental implications of the "business as usual" approach to economic growth. Changing patterns of consumption and rising standards of living for the vast numbers of people in BRIC economies, mainly in India and China, have major implications for the environment and the global population competing for the diminishing resources of the planet. The very poor have the least resources to improve their standards of living.

Another common assessment tool in the West–cost-benefit analysis–is used to evaluate the neo-liberal "growth" model. Though the benefits of

economic growth are obvious in the rising standards of living in emerging economies, the major weakness of growth models is the omission of the environmental impacts of growth and the unevenness of the spread of benefits. The major "threat" to ongoing growth is the indisputable fact that the resources of the planet are finite. Current levels of consumption cannot be sustained at the rate they are currently depleting resources. Future growth in "emerging" or newly "emerged" economies would increase that burden. The environmental effects of growth are a second significant omission, including pollution, species extinction and, most importantly, climate change.

One way of measuring the environmental impact of each nation is to look at their national environmental footprint. The Global Footprint Network provides two useful tools: the national ecological footprint assesses the per capita land required to provide for the current population, while the national bio-capacity figures assess the resources a nation has to draw on. The latest data available is for 2007. Countries with negative capacities are dependent on imports from other countries. Brazil and Russia have significant natural resources and their per capita ecological footprints are quite low; 2.4 hectares for Brazil and 4.4 hectares for Russia, while their national ecological reserves are 4.9 and 1.9 hectares respectively. The population "giants" have much lower per capita footprints, 0.8 hectare for India and 1.8 hectares for China, but this advantage is neutralised by the size of their populations. Their national ecological reserves are -0.4 of a hectare for India and -1 hectare for China, still small but decreasing rapidly. In comparison the US has the highest level of consumption with a per capita footprint of eight hectares and a negative ecological reserve of -4.1 hectares (Global Footprint Network, 2012), (figures for 2007).

Population increase, rising standards of living and changing patterns of consumption in the BRIC economies will have a major impact on future resource uses. It is important not to forget that the populations of the BRIC countries are currently not the world's major consumers on a per capita basis. There is a major disjunction in the contemporary global context between the relatively small percentage of people who consume resources at a far higher level than is required to fulfil their basic needs - most of whom live in Western industrialized countries - and the majority of the world's population who consume much less.

Furthermore there are over a billion people who live in poverty lacking the means to meet their basic needs. The size of the middle classes is still a relatively small percentage of the total population in the BRICS, however one defines the term. Various criteria have been put forward to define "the middle classes", even from Goldman Sachs. Jim O'Neill (2008) classifies the middle classes as having an annual income over $3,000 (adjusted for Purchasing Power Parity, PPP), while Wilson and Dragusanu defined the "middle class" as the group earning $6,000–$30,000 PPP (Dragusanu & Wilson, 2008). The size of the middle classes in the BRICS is still a relatively small percentage of total population, even when looking only at India and China. The middle class populations in these two countries were estimated to total 200 million in 2007, 55 million in India, five per cent of the population (Beinhocker et al., 2007), and 195 million in China, 15 per cent (Doctoroff, 2008). Numbers probably have not increased significantly since that time due to the international economic downturn. The balance of people yet to reach the middle classes in those countries is 2.2 billion - out of the combined population of 2.4 billion. In 2050 the total population of the BRICS is expected to be 6.41 billion (Appendix 1), and the size of the middle classes will expand significantly. O'Neill in 2007 predicted that the increase in the size of the middle classes in the BRICS in the next 10 years would be 400 per cent, which may vary from the other estimates, but that figure would mean the middle classes would grow by 780 million in India and China based on 2007 figures.

As standards of living rise, general consumption patterns change, including "moving up the food chain" (Brown, 2006, p. 176). Along with increasing food consumption, the types of food consumed become more resource intensive. People eat more meat and dairy products. There was a massive expansion in world food production after the 1950s, but it was the result of changes that are unlikely to be replicated in the future: expansion into new territories, increased productivity through mechanization, fertilisers and irrigation. A significant rise in the world population (from 2.5 billion in 1950 to 7 billion in 2012) has increased the demand for food. Increased meat intake always seems to accompany rising levels of income, and world meat consumption is rising twice as fast as population growth (Brown, 2006, p. 176). China already consumes the largest quantities of meat on the planet, and as

An increasing proportion of the world's grain harvest is used for meat production, which is both energy and water intensive. Producing one calorie of meat requires 17 calories of feed, while an estimated 25,000 litres of water are needed to produce 0.2 kilograms of meat. In developing countries it takes only 550 litres of water to produce a loaf of bread (UN Commission on Sustainable Development, 2004). Although some query the accuracy of these figures for water use (Simon Fairlie, 2010), there is little dispute that current methods of meat production are resource intensive. Meat production is a wasteful use of scarce food and water resources, which diverts food from the poor. Growth in meat consumption in the BRICS will contribute to future global food scarcity, especially grain consumption. The poor are the hardest hit by scarcity and rising grain prices. The first stage of poverty reduction involves increasing food consumption and eliminating malnutrition, and the easiest and cheapest way to do this is by raising grain consumption of the poor. Feeding the world population is a major challenge, definitely achievable with current resource levels but not the way we currently eat. As the global demand for energy increases there is increasing pressure on world food, as the biofuel industry competes for agricultural products it adds to the global scarcity of food.

Rising standards of living are accompanied by an increase in energy consumption. As countries move up the value chain individuals consume more oil and electricity, both of which increase global carbon emissions and accelerate climate change. One of the most obvious symbols of middle class status is car ownership. In India and China levels of car ownership are rising. Wilson and Dragusanu (2008) have linked income levels with car ownership. When incomes reach $9,000 (adjusted for PPP), car ownership levels increase dramatically. Even small increases in car ownership percentages in the large BRIC countries will have major ecological impacts. These ideas are explored further in a case study of predictions for China's future growth in production and consumption.

Case study: China

Ailun Yang (2010), the climate campaign manager of Greenpeace China, stated bluntly in a public lecture in New Zealand that "the planet

does not have enough resources for the Chinese population to have a middle class western lifestyle". With a middle class estimated at approximately 195 million (Doctoroff, 2008), by 2005 China had overtaken the US as the world's leading consumer of basic commodities: grain, meat, coal, steel and consumer goods (cell phones, televisions, and refrigerators) (Brown, 2006, p. 9). China's oil consumption is still far lower than the US, but its use of coal for energy generation has made it a world leader in carbon emissions. The Chinese economy is still in the intense development phase as development spreads westward into the interior. There are massive building programmes: infrastructure, cities and industries, all of which have high energy and resource demands that will change in the next decades as the economy evolves. Alongside this are projections of rising standards of living for greater numbers of the Chinese population as prosperity increases for the interior population. Lester Brown predicted that if China's economy continued to grow at eight per cent, and the middle classes also kept growing, China's consumption levels in 2031 would be equivalent to two thirds of the world consumption today if consumption levels reached current per capita consumption levels in the United States (2006). Levels of car ownership are key indicators of rising standards of living and private car and motorcycle ownership in China has increased 20 fold since 2000 (Watts, 2011). Ownership numbers reached 83 million in 2011, which is still only 6.25 per cent of the total population (Watts, 2011). With the recent global financial crisis foreign car manufacturers are now looking to China for their future growth. The fact that car sales are seen to be a key driver in the Chinese economy and the largest future market for foreign car manufacturers is a major cause for concern. Increasing car ownership levels will have a significant impact on future carbon emissions, pollution and the encroachment on land for freeways and parking. There are enormous environmental implications for China and for global climate change.

The bottom billion

The first steps to achieving human justice and environmental sustainability involve defining the issues, clarifying the goals, establishing strategies and estimating the costs of the solution. Meeting

the basic needs of the bottom billion has been estimated by Lester Brown at $77 billion. This figure includes the cost of social needs: universal primary education, eradication of adult illiteracy, school lunch programmes for the 44 poorest countries, assistance to pre-school children and pregnant women in those countries, reproductive health and family planning, universal basic healthcare and closing the condom gap. The cost of restoring the planet was estimated at $110 billion (Brown, 2009, p. 263). The necessary tasks include protecting topsoil, restoring rangelands and fisheries, protecting biodiversity, stabilising water tables and planting trees to prevent flooding, conserve the soil and to sequester carbon. Putting these figures into perspective: the global military expenditure in 2008 was nearly eight times more at $1,464 billion (Brown, 2009, p. 264). The world's politicians are more preoccupied with competition, death and destruction than environmental restoration and social justice.

The problem of responsibility

The Western economic industrial model, the "fossil fuel, car-centred and disposable economy", won't work for the BRIC economies (Brown, 2009), nor will it meet the needs of the "bottom billion". There are not enough resources on the planet for the poor to reach the consumption levels of Western industrialized countries. This same model also cannot continue to work for developed industrialized economies. Chinese politicians are quick to point out that historically industrialized nations have had the major impact on the environment, and they continue to do so. According to the Living Planet Report (2010), in 2007 (the most recent year for which data are available), humanity has already used the equivalent of 1.5 planets to support its activity (2010). While ongoing development in the BRIC economies is very important to the future of the planet, it is the industrialized countries that must control their carbon emissions and consumption as soon as possible. In recent years dramatic climatic events in industrialized nations have stimulated renewed international awareness about climate change. Over the decades various intergovernmental attempts to develop action plans have been paralysed by politics: the World Commission on Environment and Development which released Our Common Future in 1987; the UN Conference on

Environment and Development (1992) which adopted "Agenda 21, a blueprint for sustainable development"; the 1997 Kyoto Protocols which strengthened the mandate of the 1992 Climate Change Convention pledging industrialized countries reduce their C02 emissions by 6–8 per cent by 2008–2012 (Worldwatch, Environmental Milestones, 2004); and the UN Climate Change Conference in Copenhagen in 2009. The follow-up conference in Durban in 2011 seems to have made progress in achieving international agreement but there is still a long way to go and time is running out.

The Intergovernmental Panel on Climate Change (IPCC) has identified and substantially proved that the main causes of human-induced climate change have resulted from the historical expansion of industrialization since the 19th century. The expansion of industrialization in the last three decades, which accompanied the accelerated globalization of capitalism, has intensified the effects on the environment and climate change. The sheer cumulative size of the BRICS in terms of their land masses and populations means that the potential impact on the planet of ongoing growth and a "business as usual" economic development model, combined with the effects of the industrialized nations, cannot be sustained with the available resources on the planet. There are not enough resources for the populations of the BRIC economies to achieve the current standard of living of industrialized countries. Nor are there the resources for the populations of industrialized countries to continue to live their current resource-intensive lifestyles. Part of the development trajectory of the BRIC economies is to sell goods, both industrial and primary products, to the industrialized nations. The ongoing high levels of consumption of the Western economies, who make up approximately one seventh of world population, contribute the major share of carbon emissions and resource consumption responsible for today's climate change. Much of the future development of the BRIC economies will focus on expanding internal markets. Both options are ultimately unsustainable under current patterns of production and consumption.

Climate change awareness in Western democracies is hampered by the efforts of vested interests - the oil and car lobbies - who play a key role in promoting their own interests in the media. The findings of thousands of scientists represented in the IPCC reports since 1990 have

been repeatedly undermined in mainstream media. The "denial industry" is extremely well funded (Oreskes & Conway, 2010).

Conclusion: planet, people, profit

For both rich and poor nations environmental sustainability and climate change will be the key issues of the 21st century. There are also human rights issues involving equality of access to the resources of the planet. It is necessary to prioritize the planet to keep it habitable for world population. Meeting the needs of the planet means changing the profit and growth business model to a sustainable development model which includes prioritising the needs of the world's poor.

Planet: ecological justice is an issue of survival of any semblance of life as we know it. The impacts of ecological change are also unjust. Climate change impacts far more on the poor than the wealthy, though in many ways climate change is egalitarian: the wealthy can't escape air pollution in major cities, climate events and acid rain, poor drinking water, traffic congestion and the effects of waste and pollution.

People: social justice is a moral, ethical and human rights issue. One of the United Nations Millennium Goals, signed by 189 countries, was to abolish poverty by 2015. Removal of inequalities in global consumption means raising the standards of living of the poor along with reducing the current consumption patterns in "developed societies" in a sustainable manner.

Profit: The market needs to tell the ecological truth or there will not be a market. The market overlooks the environment in its economic calculations. With its fixation on growth rates the market ignores the ecological costs of resources and the subsidies and trade barriers that protect wealthy economies. "Free trade" in the contemporary neo-liberal model does not mean "Fair trade", equality of access to markets, prices paid for products are based on workers being paid a living wage or the costs of sustainably producing the component raw materials. The winners in the next century will be those who embrace these realities and starting planning for a sustainable future.

Some of the key contradictions we face in the contemporary era are the support for higher standards of living in "emerging economies" and

the desire to end "world poverty" by those people in the "developed countries", who also do not want to lower their standards of living. In human justice terms it is the "bottom billion" who "deserve" the most and who are least likely to have their basic needs met. They also suffer the most when the planet is at risk and in natural disasters.

Notes

[1] GINI index measures the extent to which the distribution of income or consumption expenditure among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality (World Bank, 2013).

References

Anderlini, J. G., Gorst, I., Leahy, J., & Wheatley, J. (2009). Quartet defined by differences, *Financial Times*, p. 8.

Beinhocker, E. D., Farrell, D., & Zainulbhai, A. S. (2007). Tracking the growth of India's middle class. *McKinsey Quarterly.* Retrieved from https://www.mckinseyquarterly.com/Tracking_the_growth_of_Indias_middle_class_2032

Brown, L. R. (2006). *Plan B 2.0: Rescuing a planet under stress and a civilization in trouble*. New York: W.W. Norton & Company.

Brown, L. R. (2009). *Plan B: 4: Mobilizing to save civilization*. New York: W.W. Norton & Company.

CIA. (2010a). *World Factbook Brazil.* Retrieved December 16, 2010, from https://www.cia.gov/library/publications/the-world-factbook/geos/br

CIA. (2010b). *World Factbook China.* Retrieved December 16, 2010, from https://www.cia.gov/library/publications/the-world-factbook/geos/ch

CIA. (2010c). *World Factbook India.* Retrieved December 16, 2010, from https://www.cia.gov/library/publications/the-world-factbook/geos/in

CIA. (2010d). *World Factbook Russia.* Retrieved December 16, 2010, from https://www.cia.gov/library/publications/the-world-factbook/geos/rs

CIA. (2012a). *World Factbook Brazil.* Retrieved October 5, 2012, from https://www.cia.gov/library/publications/the-world-factbook/geos/br

CIA. (2012b). *World Factbook China.* Retrieved October 5, 2012, from https://www.cia.gov/library/publications/the-world-factbook/geos/ch.html

CIA. (2012c). *World Factbook India.* Retrieved October 5, 2012, from https://www.cia.gov/library/publications/the-world-factbook/geos/in

CIA. (2012d). *World Factbook Russia*. Retrieved October 5, 2012, from https://www.cia.gov/library/publications/the-world-factbook/geos/r

CIA. (2013a). *World Factbook Brazil*. Retrieved May 12, 2013, from https://www.cia.gov/library/publications/the-world-factbook/geos/br.html

CIA. (2013b). *World Factbook China.* Retrieved May 12, 2013, from https://w https://www.cia.gov/library/publications/the-world-factbook/geos/ch.html

CIA. (2013c). *World Factbook India.* Retrieved May 12, 2013, from https://www.cia.gov/library/publications/the-world-factbook/geos/in.html

CIA. (2013d). *World Factbook Russia*. Retrieved May 12, 2013, from https://www.cia.gov/library/publications/the-world-factbook/geos/rs.html

Collier, P. (2007). *The Bottom Billion: Why the poorest countries are failing and what can be done*. Oxford: Oxford University Press.

Doctoroff, T. (2008). Chinese consumers, brands and the MNC learning curve. *Market Leader*, 41.

Dragusanu, R., & Wilson, D. (2008). The expanding middle class: the exploding world middle class and falling global inequality. Goldman Sachs: Global Economics, Paper 170. Retrieved July 7,

from https:///360.gs.com
Global Footprint Network. (2008). Retrieved January 12, 2009, from www.footprintnetwork.org/en/index.php/GFN
Global Footprint Network. (2010). Retrieved December 17, 2010, from www.footprintnetwork.org/en/index.php/GFN
Herskovitz, J. (2013). Leaders of the BRICS group of powerful emerging economies meet on Tuesday and Wednesday in the South African city of Durban. *Reuters.* Retrieved March 6, from http://in.reuters.com/article/2013/03/26/brics-summit-factbox-idINDEE92P09120130326
Living Planet Report. (2010). Retrieved October 13, from www.footprintnetwork.org/en/index.php/GFN/page/2010_living_planet_report
Menon, J. (2010) The Automotive Horizon, *Suleka.com Magazine.* Retrieved October 27, from http://automotivehorizon.sulekha.com/china-india-global-growth-drivers-for-automotive_10_2010_postedby_jayashankar-menon
Monbiot, G. (2010). I was wrong about veganism. Let them eat meat but farm it properly. *The Guardian.* Retrieved September 6, from www.monbiot.com
Nierenberg, D. (2005). Happier Meals: Rethinking the Global Meat Industry, *Worldwatch*, Paper 171.
O'Neill, J. (2001). The World Needs Better Economic BRICS. *Goldman Sachs*. Retrieved from www.gs.com
O'Neill, J. (Ed.). (2007). The BRICS and Beyond. *Goldman Sachs*. Retrieved November, from www2.goldmansachs.com/ideas/brics/BRICS-and-Beyond.html
O'Neil, J. (2008). *Welcome to the BRICS*. Online video. Retrieved from https://360.gs.com
O'Neill, J., & Stupnytska, A. (2009). The long-term outlook for the BRICs and the N-11 post-crisis, Goldman Sachs Global Economics, Commodities and Strategy Research, *Global Economics,* Paper 192. Retrieved December 4, from https://360.gs.com
Purushothaman, R., & Wilson, D. (2003). Dreaming with BRICS: the path to 2050. Goldman Sachs: Global Economics, Paper 99. Retrieved from www.gs.com

Oreskes, N., & Conway, E. M. (2010). *Merchants of Doubt: How a handful of scientists obscured the truth on issues from tobacco smoke to global warming.* Bloomsbury: London.

Stiglitz, J. E. (2006). *Making Globalization Work.* London: Allen Lane.

Stiglitz, J. E. (2009). Wall Street's toxic message, *Truthout.* Retrieved from www.globalpolicy.org/social-and-economic-policy/the-world-economic-crisis/47930

United Nations Development Programme. (2012). *Human Development Indicators 2011*. Retrieved October 8, 2012, from http://hdr.undp.org/en/

United States Census Bureau. (2012) *International Programmes*. Retrieved October 5, 2012, from http://www.census.gov/population/international/data/idb/worldpopinfo.php

Vidal, J., & Adam, D. (2007). China overtakes US as world's biggest CO2 emitter. Retrieved June 19, from www.guardian.co.uk/environment/2007/jun/19/china.usnews/print

Warc.com. (2010). *China set for prolonged spending boom.* Retrieved September 10, 2010, from, www.warc.com/News/TopNews.asp?ID=27123

Watts, J. (2011). China's love affair with the car shuns green vehicles. *The Guardian.* Retrieved October 7, 2012, from www.guardian.co.uk

World Bank (2013). *GINI Index.* Retrieved from http://data.worldbank.org/indicator/SI.POV.GINI.

Worldwatch Institute. (2004). *Environmental Milestones.* Retrieved December 11, 2010, from www.worldwatch.org/node/3944

Yang, A. (2010). *China's contribution to solving global climate challenges.* Victoria University of Wellington, Policy Studies: Seminar Series.

Zhang, Y. (2011). Shadow over rural China. China Dialogue. *China Dialogue.* Retrieved February 10, from http://www.chinadialogue.net/article/show/single/en/4098-The-shadow-over-rural-China

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Appendix

Appendix 1

BRICS population 2003, 2012, 2050 (millions)

	2003	2012	2050
Brazil	182	199	232
Russia	144	142	130
India	1000	1205	1656
China	1280	1343	3321
Total	2606	2889	5339

Source: United States Census Bureau, 2012