

Reasonable goals for reducing poverty in Africa

Targets for the post-2015 MDGs and Agenda 2063

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Summary

The eradication of extreme poverty is a key component in the post-2015 Millennium Development Goals process and the African Union's Agenda 2063. This paper uses the International Futures forecasting system to explore this goal and finds that many African states are unlikely to make this target by 2030, even when modelling a package of aggressive poverty reduction interventions. In addition to country-level targets the authors also argue in favour of a goal that would see Africa as a whole reducing extreme poverty to below 15% by 2030, and below 4% by 2045.

IN 1990 THE INTERNATIONAL community agreed to halve the rate of extreme poverty by 2015. Although by 2010 700 million fewer people lived in conditions of extreme poverty, the United Nations (UN) estimated that 1,2 billion still lived below US\$1,25 in 2013 (2005 purchasing power parity, or PPP).¹

As part of the process leading up to the finalisation of the post-2015 Millennium Development Goals (MDGs), attention has now turned to defining suitable targets to be achieved by 2030, including a proposed goal of 'leaving no-one behind' and the eradication of (extreme) poverty.

Parallel to the post-2015 MDG process, in 2013 the African Union (AU) launched Agenda 2063 as a 'call for action to all segments of African society to work together to build a prosperous and united Africa'.² It reflects an ambitious effort by Africans to accept greater ownership and chart a new direction for the future that includes inclusive growth and the elimination of extreme poverty as key components.

This paper is an abridged version of an African Futures paper published in August 2014³ that set out realistic targets for eliminating extreme poverty by 2063. Whereas the earlier paper used the standard definition of extreme poverty as people living on an income (or better, consumption) below US\$1,25 in 2005 PPP, we have updated our forecast to use 2011 as the new currency reference year in line with the World Bank's *Purchasing power parities and the real size of world economies: a comprehensive report of the 2011 International Comparison Program (ICP)*, released

in October 2014.⁴ We use an updated line of US\$1,75 per day in 2011 PPP for extreme poverty and US\$1,00 for severe poverty. Where these have been included in the new ICP data, the estimates include recent gross domestic product (GDP) rebases, such as the one released for Nigeria in 2014.⁵

The impact of the change from US\$1,25 in 2005 PPP to US\$1,75 in 2011 PPP is substantial. Globally we estimate that approximately 892 million people (around 12% of the world's population) lived below US\$1,75 in 2013, compared to the figure of 1,2 billion mentioned earlier. The impact in Africa is smaller but still significant. We estimate that 388 million Africans lived under US\$1,75 in 2011 PPP (33% of the African population) in 2013 using our proposed new extreme poverty line.

The AU should consider additional country-level targets, to meet the specific needs of member countries

Revision of the current international poverty line of US\$1,25 a day in 2005 prices is unlikely to conclude until shortly before the UN General Assembly commits to new global targets in 2015 and some months after the expected adoption of detailed targets for Agenda 2063 at the AU summit in February 2015. Whether the World Bank will continue to use a poverty line that corresponds to an average of the national poverty lines of the 15 poorest developing countries (the basis on which it calculated the US\$1,25 line) also remains uncertain. In the absence of consensus on a new standard, the authors undertook a sensitivity analysis using the updated figure of US\$1,75 for extreme poverty, framed by US\$1,50 and US\$2,00, all in 2011 PPP. Our figure of US\$1,75 in 2011 PPP is roughly comparable with the previous figure of US\$1,25 in 2005 PPP, but the final line will depend upon the methodology adopted, and here there are a number of considerations to be taken into account, as set out in a recent publication by the World Bank.⁶ We also undertake a sensitivity analysis for chronic/severe poverty using an updated figure of US\$1,00 framed by US\$0,90 and US\$1,10 in 2011 PPP. Our figure of US\$1,00 in 2011 PPP is roughly comparable with the previous figure of US\$0,70 in 2005 PPP.

We use the International Futures (IFs) forecasting system (version 7,09) to analyse the prospects for poverty reduction in Africa until 2063. All results are presented using a 15-year moving average. After explaining our approach and discussing modelling results, we conclude that the 3% extreme poverty target by 2030 (now redefined as US\$1,75 in 2011 PPP) remains an unrealistic goal for many African states, and is

insensitive to the varying initial conditions in which African countries find themselves. Although 3% may be suitable as an aggressive goal at global level, it would leave many African states behind; and many of those states will, by then, bear the greatest burden of poverty globally.

We argue in favour of setting a goal that would see African states on average achieving a target of reducing extreme poverty to below 15% by 2030, and eliminating extreme poverty shortly after 2045 (using US\$1,75 at 2011 PPP).

By 2030, African countries are likely to remain at very different levels with regard to the extreme poverty rate. Because of these significant country-level differences, and the different policy measures that may be needed to reduce poverty effectively in different country contexts, we further recommend that the AU consider setting additional country-level targets, as warranted, to meet the specific needs of member countries. In addition, we advise that attention be paid to the issue of chronic poverty (now defined in our analysis as income below US\$1,00 in 2011 PPP compared to US\$0,70 in 2005 PPP used previously), since the majority of extremely poor Africans in sub-Saharan Africa find themselves significantly below even the US\$1,75 level.

Background and measurement

Estimates of poverty are fundamentally based on two pieces of information: the average level of income or (preferably) consumption in a country, and the distribution of the population around that mean. Survey estimates of income and consumption tend to yield lower estimates than do national accounts data. As a result, initial estimates of poverty may vary widely. IFs bases its estimates of poverty on survey data drawn from the PovcalNet data hosted by the World Bank, adjusting the model's national accounts-based estimates to match estimates produced by the survey methodologies. These estimates form the initialisation point for our poverty forecasts, which are driven by the model's forecasts of change in national accounts and distribution of income. Although the model currently initialises from 2010 data, we use the Agenda 2063 start date of 2013 for the forecasts in this analysis. As a result, all our values for 2013 are estimates drawn from the model (rooted in PovcalNet survey data) rather than taken directly from data.

Estimates of poverty are commonly expressed as the percentage of a population below a certain standard of living, updated to US\$1,75 per day in \$2011 PPP, and discussed in conjunction with two other possible measures for extreme poverty: US\$1,50 and US\$2,00 a day. This range was chosen to reflect the wide range of plausible poverty lines under discussion internationally. The US\$1,75 value is close to the value we obtained by

Table 1: Estimates of global severe and extreme poverty in 2013 under six possible poverty lines (15-year moving average)

	Severe poverty lines			Extreme poverty lines		
	US\$0,90 ppd*	US\$1,00 ppd	US\$1,10 ppd	US\$1,50 ppd	US\$1,75 ppd	US\$2,00 ppd
Millions	246	309	374	678	892	1 112
Per cent	3,4	4,2	5,1	9,2	12,1	15,1

* ppd = per person per day

Source: IFs version 7,09

estimating the share of GDP per day in 2011 dollars belonging to the lowest earning quintile of the population, and then dividing by the size of the population. We then averaged the value of the bottom 15 countries. By the same method we arrive at possible values of US\$0,90, US\$1,00, and US\$1,10 for estimates that allow a framing of a possible revised severe poverty line.⁷ Table 1 illustrates the variety of these estimates for global levels in 2013 in 2011 PPP, using a 15-year moving average.

These estimates are attractive because they allow cross-country comparisons of poverty. Using other general or nation-specific poverty lines may be more relevant for discussing poverty within countries because they can take into account local income levels.

The base case forecast for the percentage of people in Africa and the world at each of the three severe poverty lines is presented in Figure 1, and the base case forecast of the number of people in Africa and the world at the three extreme poverty lines is presented in Figure 2.

At a macroeconomic level there are two proximate drivers of poverty rate reduction: economic growth and reductions in inequality

Just as there is a large number of uncertainties and definitional issues surrounding poverty, similar challenges exist for discussions of inequality measures. One of the measures most frequently used is the Gini Index, which expresses the inequality of income distribution from 0 to 1, with 0 corresponding to complete equality and 1 corresponding to complete inequality. One strength of the Gini Index is that it can be used in lognormal representations of income as the standard deviation of the distribution, as it is used within IFs.

Drivers of change in poverty

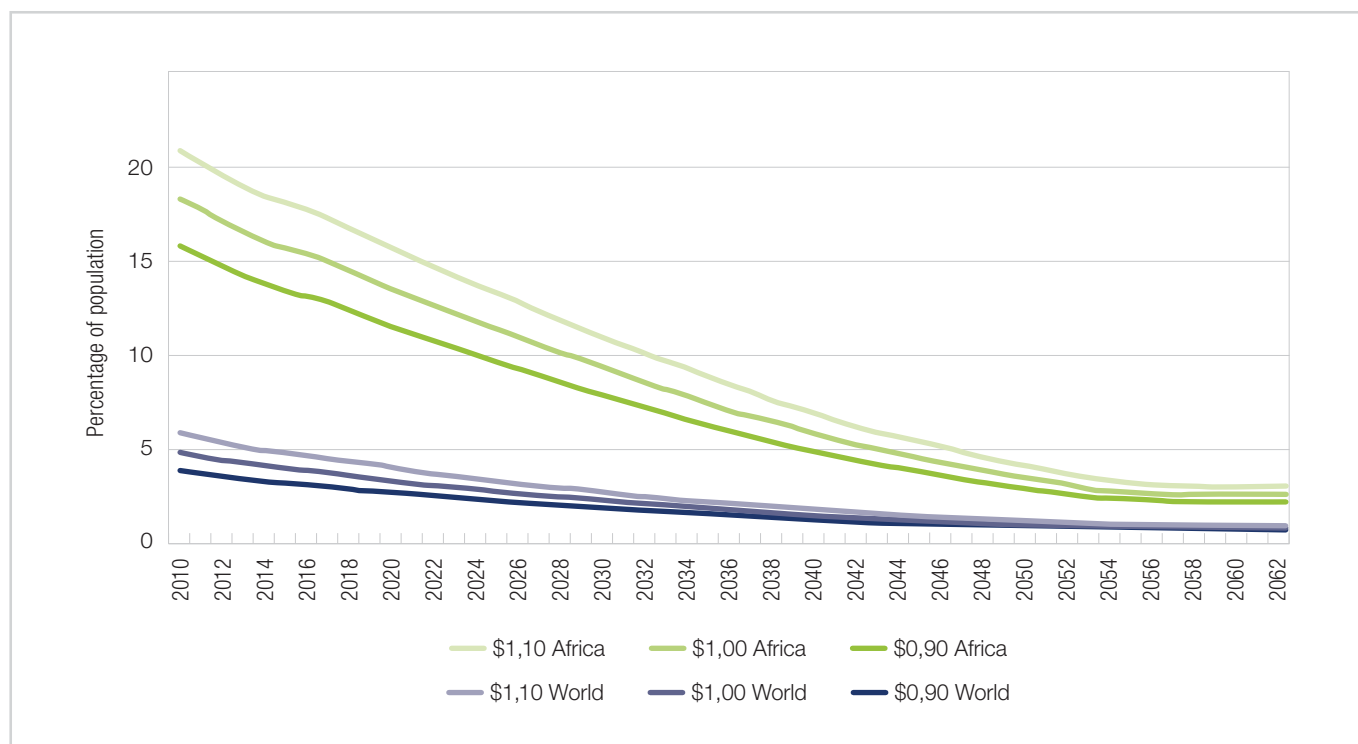
The drivers of poverty can be framed in a number of ways. At a macroeconomic level there are two proximate drivers of poverty rate reduction: economic growth and reductions in inequality. Economic growth, if relatively evenly distributed across a society, will tend to raise individual income, drawing people out of poverty.⁸ That is, distribution neutral economic growth will reduce the percentage of people living in poverty, although the absolute numbers may remain constant or even grow with population growth. Similarly, reductions in inequality over time can reduce poverty rates.⁹

Economic growth in Asia, and China in particular, has driven much of the remarkable reductions in poverty rates in recent decades. China has reduced its extreme



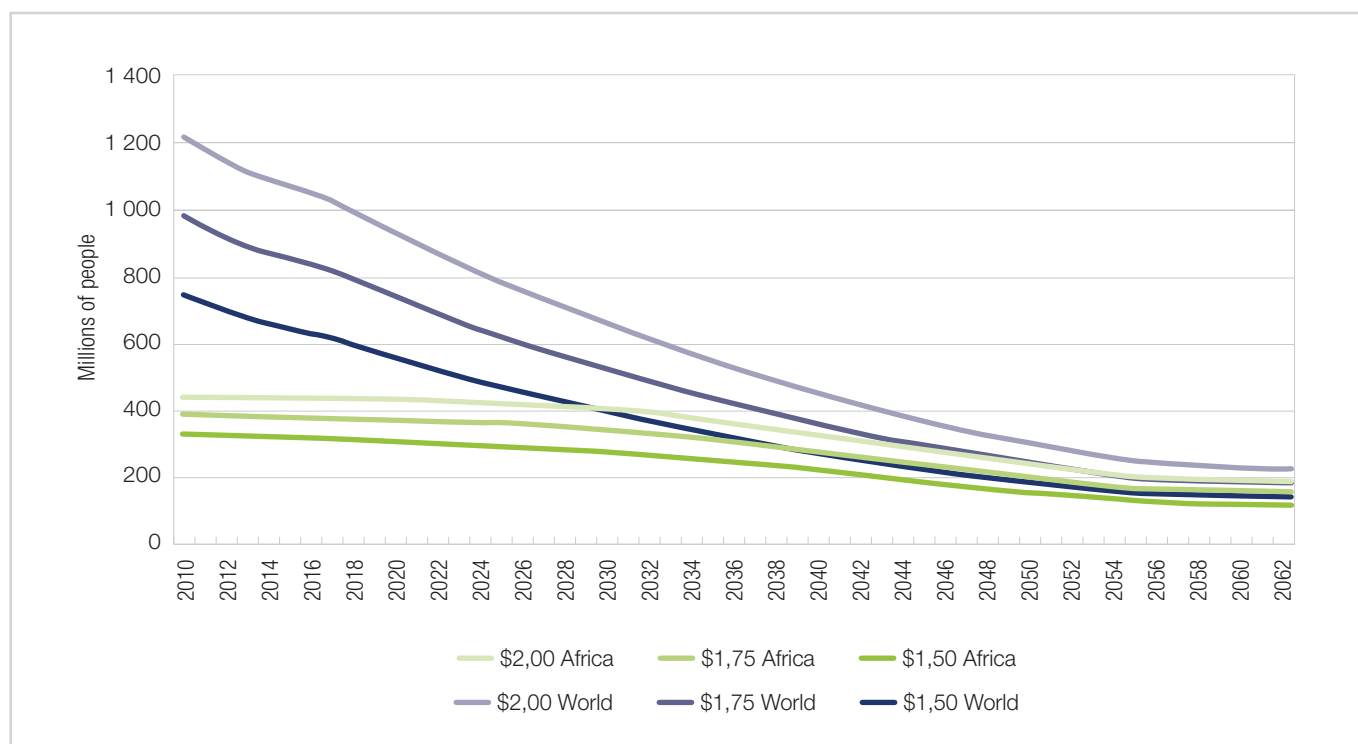
ECONOMIC GROWTH, IF RELATIVELY EVENLY DISTRIBUTED ACROSS A SOCIETY, WILL TEND TO RAISE INDIVIDUAL INCOME, DRAWING PEOPLE OUT OF POVERTY

Figure 1: Base case forecast of three severe poverty lines in the world and in Africa (15-year moving average using percentage of people)



Source: IFs version 7.09

Figure 2: Base case forecast of three extreme poverty lines in the world and in Africa (15-year moving average using millions of people)



Source: IFs version 7.09

poverty rate from over 60% in 1990 to less than 10% in 2010 (despite a substantial deterioration in income distribution). This translates to 566 million fewer people living in extreme poverty in 2010 than in 1990.¹⁰ Few other countries have come close to achieving a similar rate of progress on poverty, raising questions about the chances for Africa's 55 countries to achieve similar gains over sustained periods of time.

Empirically, while growth is shown to help in poverty reduction, the strength of this relationship varies widely across countries.¹¹ Some of the significant differences in poverty reduction in countries like Botswana, which has had very high growth rates but relatively modest levels of poverty reduction, and Ghana, which has had much more modest growth but relatively more poverty reduction, are partly attributable to differences in initial income distribution.¹² An initial substantial poverty gap, when most of the poor are far below the poverty line rather than near it, will prevent economic growth from causing major reductions. Globally, sub-Saharan Africa has a poverty gap that is more than twice as large as that of South Asia, the region with the second highest gap.

In addition to macro-level analysis, microeconomic work provides another framework to consider the dynamics of poverty and the ways in which national policy choices can support people in poverty.¹³ In this framework, poverty is a condition that people may move into and out of multiple times during their life, and national or subnational policies may have significant impacts on these processes. Those who remain poor over long periods of time and who frequently transmit poverty between generations are termed 'chronically poor'.¹⁴

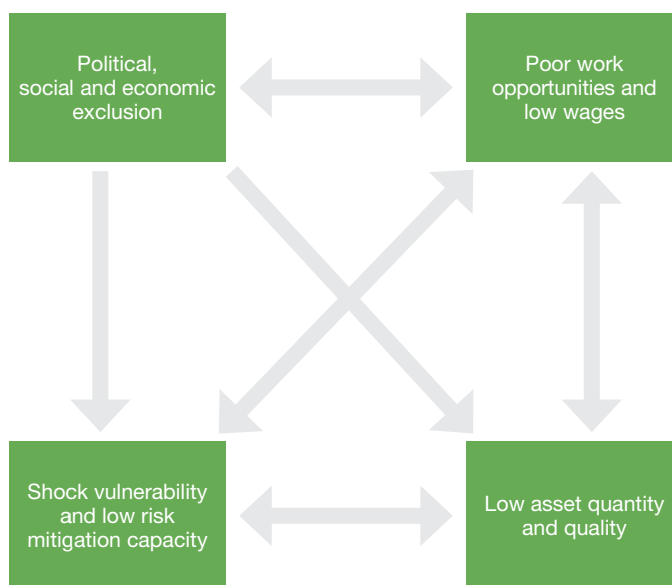
Particularly relevant to discussions of poverty trends in Africa is the fact that as many African states begin to accelerate growth, which can support permanent escapes from poverty for many people, those who are left behind will suffer increasingly from the kinds of dynamic, integrated challenges that the chronic poverty literature emphasises. The Chronic Poverty Research Center (CPRC) has produced significant work on the dynamics of poverty, focusing on those factors that condemn people to poverty and interventions that might allow them to escape this condition. Chronic poverty is an issue that exists across consumption levels, so even though the CPRC uses severe poverty (a consumption level of US\$0,70 per day in 2005 prices or US\$1,00 in 2011 prices) as a proxy for chronic poverty, it is really the conceptual attraction of a framework that emphasises national policy efforts to reduce poverty that drives our additional attention to chronic poverty in this contribution.

In its studies, the CPRC identifies five primary, frequently overlapping, chronic poverty traps: insecurity and poor health,

limited citizenship, spatial disadvantage, social discrimination and poor work opportunities.¹⁵ Three primary features distinguish the chronically poor from other groups of people in poverty: they typically have a small number of assets, low returns to these assets, and high vulnerability to external shocks.¹⁶

This high-vulnerability, low-resource state is in turn driven by the exclusion of the chronically poor from the political, social and economic systems that might allow them to begin to acquire assets and that makes them more vulnerable to shocks, and by their low starting asset/capability position, which leaves them few resources with which to respond to shocks. The occurrence of shocks can erode assets and wage income, and worsen exclusion from systems of social protection. Figure 3 provides a schematic representation of the approach to understanding chronic poverty developed by the CPRC that we have adopted for the purposes of this paper. A similar framework developed by the Overseas Development Institute argues for ensuring quality basic education, social assistance, and working to include the marginalised in the economy on equitable terms.¹⁷ Preventing impoverishment requires policymakers and practitioners to develop and stick to appropriate policy frameworks. A sustained escape from extreme poverty means that governments (and others) need to provide quality and market-relevant education, offer basic health care, promote insurance programmes to bolster resilience, and work to reduce conflict and mitigate environmental disaster risks.¹⁸

Figure 3: Simplified model of the interactions that drive and sustain chronic poverty¹⁹



Sources: Authors' synthesis based on Andrew Shepherd et al., *The geography of poverty, disasters and climate extremes in 2030*, London: Overseas Development Institute, 2013; Andrew Shepherd, *Tackling chronic poverty: the policy implications of research on chronic poverty and poverty dynamics*, London: Chronic Poverty Research Centre, 2011.

In order to tackle these overlapping challenges, the CPRC recommends four key interventions: provide social protection, drive inclusive economic growth, improve levels of human development and support progressive social change.²⁰ These interventions aim to address the dynamics that keep the chronically poor from escaping poverty. Social protection schemes serve to provide protection to the most vulnerable and to bolster resilience in the face of external shocks. Inclusive economic growth helps the chronically poor derive income from their asset base, while human development serves to improve the quality of human capital that forms the bulk of the poor's asset base. Finally, progressive social change seeks to eliminate the political, social and spatial barriers that prevent the poor from leveraging their assets for income.

In studying the interventions that work to reduce poverty, Ravallion discusses Brazil's success in driving poverty reduction on relatively low rates of economic growth by targeting the poorest with social transfer programmes that served not only to bolster incomes but also incentivise investments in social development that helped the poor to increase their asset base.²¹

The world has achieved tremendous declines in poverty over the past decade, but this progress has occurred unevenly

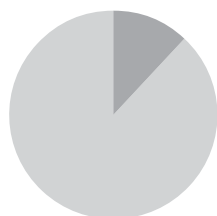
As countries begin to get wealthier, concern will naturally shift to those places that are not making progress. While this may mean focusing on countries that face greater challenges to poverty reduction (such as fragile states and countries that are more vulnerable to climate change-induced poverty shocks), it should also entail an increasing focus on the poorest of the poor within countries. These people suffer from the most pervasive and extensive types of exclusion, adverse inclusion and exploitation. They remain poor because the social compacts between governments and these sectors of society are not functioning. State action is the only way to reach these people, and reaching them is crucial to meeting not only income goals for severe and extreme poverty elimination but also broader health and development goals that were missed in the last round of the MDGs, as these people disproportionately represent the world's under-nourished, under-educated and excluded.²²

Current levels of poverty in Africa

The world has achieved tremendous declines in poverty over the past decade. This progress has occurred unevenly, with China and the rest of East Asia experiencing declines in excess of 2 percentage points a year.²³ India and the rest of South Asia have also made progress, with poverty rates declining at a rate of approximately 1 percentage point a year. Latin America and Africa have done least well in the last 20 years, with rates of absolute poverty declining quite slowly if at all (Figure 4). They have, on average, also experienced slower rates of economic growth.

The IFs base case estimate is that, in 2013, approximately 12% of the world's population, or 892 million people, still lived below the threshold for extreme poverty (using our updated level of US\$1,75 in 2011 PPP), of whom 388 million lived in Africa (i.e. 33% of Africa's population).

If we consider the line for severe poverty (US\$1,00 a day in 2011 PPP), approximately 197 million people live below this line in Africa, constituting just under half of those



12%

THE ESTIMATED PERCENTAGE
OF THE WORLD'S
POPULATION WHO LIVED
BELOW \$1,75 IN 2013

living in extreme poverty. This is significant because it implies that the extreme poverty gap in Africa is large (that is, many live far below US\$1,75), making it harder to reduce extreme poverty. Additionally, based on the CPRC's use of severe poverty as a proxy for chronic poverty, it means that a large proportion of the poor in Africa are likely to be chronically poor.

While the continental picture may seem bleak compared to the progress being made elsewhere, some countries have already met the World Bank poverty target for 2015. These include all the North African countries as well as Mauritius and the Seychelles.²⁴ In general, however, countries in sub-Saharan Africa have not fared as well. This is not always because of a lack of growth. Some countries (such as the extreme case of Equatorial Guinea but also a country such as Botswana) have experienced very rapid rates of growth, but have been unable to efficiently translate this growth into poverty reduction. Cameroon, Egypt, Ghana, Kenya, Mali, Mauritania, Senegal, Swaziland, Tunisia and Uganda have all been relatively efficient in transmitting income growth into poverty reduction.²⁵

The 10 countries with the largest populations of extremely poor are Nigeria, the Democratic Republic of the Congo (DRC), Tanzania, Ethiopia, Madagascar, Kenya, Uganda, Mozambique, Malawi and Burundi. All but Burundi have

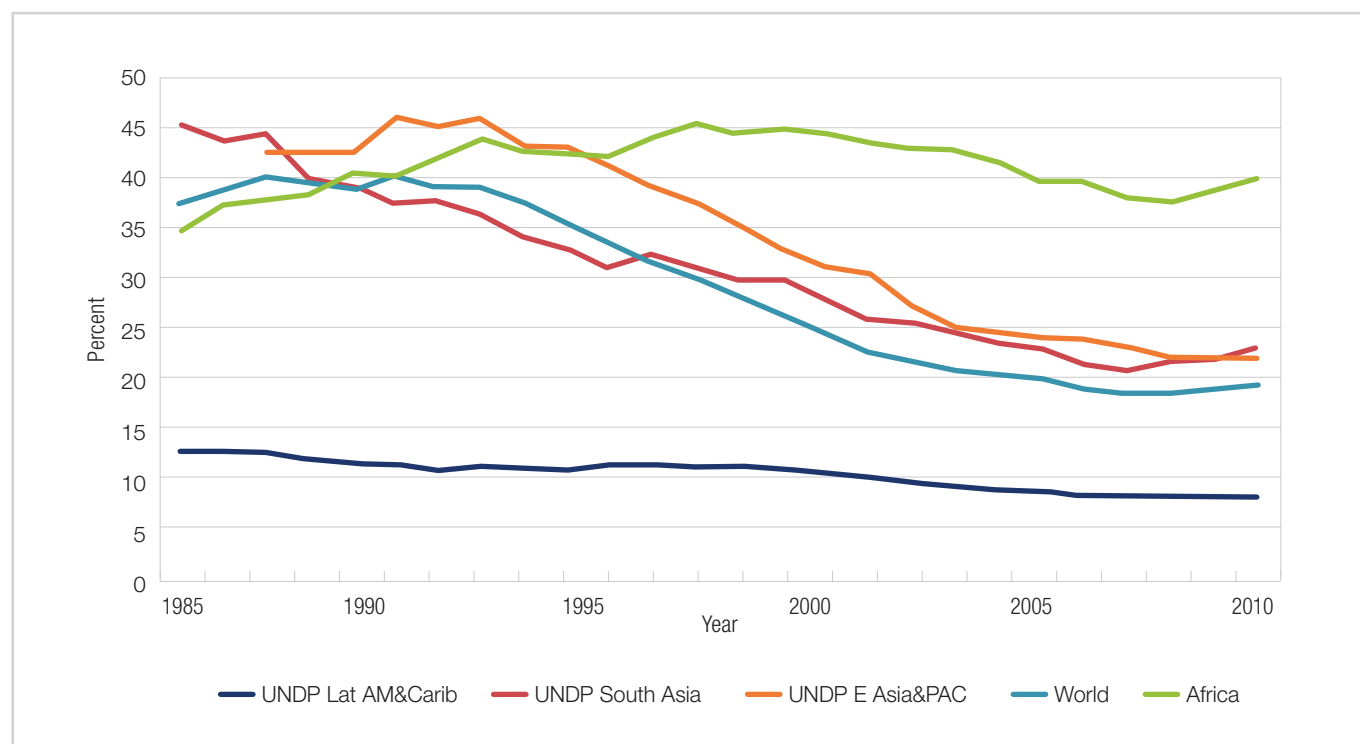
populations of greater than 10 million living in extreme poverty; a total of 272 million in these 10 countries alone.

African countries vary widely with regard to the extent and depth of extreme poverty. The percentage of the population living in extreme poverty ranges from zero to 80%. Poverty gaps across the continent are generally high, although they vary widely as well.²⁶ Some countries, such as the DRC and Madagascar, have high levels of extreme poverty and large poverty gaps in spite of relatively low levels of income inequality, simply because average levels of income are very low. In others, such as Zambia and the Central African Republic, persistently high levels of income inequality have contributed to large poverty gaps.

How much progress against poverty is likely?

In order to assess the likelihood of countries making the World Bank's target, we first consider the IFs base case forecast, which is best understood as a reasonable dynamic approximation of current patterns and trends (see Annex).²⁷ Using IFs, it is possible not only to estimate the extent of global poverty but also to forecast changes in poverty going forward. The model generates a compound annual growth rate of GDP of 6,1% between 2013 and 2063 for African countries and a growth rate for household consumption of 5,9% (both fairly aggressive figures).

Figure 4: Percentage of population in extreme poverty (<US\$1,25 a day in 2005 PPP, 15-year moving average)



Source: IFs version 7,09

Eleven African nations in our base case forecast are likely to meet the World Bank target of less than 3% people living below US\$1,75 a day by 2030 without additional support or policy interventions.²⁸ Of these, only one has not already done so. A number of other countries are likely to get close to meeting the target, with less than 10% of their populations living below US\$1,75 a day by 2030.²⁹ Overall, however, 22% of the African population, or 349 million people, may still live under the US\$1,75 a day line by 2030. These figures would be 285 million/18% or 410 million/26% using US\$1,50 or US\$2,00.

Although many countries make progress in reducing poverty in percentage terms (and the rate for the continent could fall to 12% by 2045), in many instances this still translates to increases in the absolute number of people living in poverty over the intermediate horizon of 2030 and 2045. These are countries that will still have high population growth rates due to high total fertility rates. In most cases, population growth will decline substantially by 2063 and the remainder of African states will begin to make progress in reducing the absolute numbers of people living in poverty as well as the percentage of the population in poverty.

By 2063, if current trends continue, most countries in Africa should have made significant progress on poverty alleviation. At a continental level, the forecast poverty rate for extreme poverty is expected to have declined considerably, but still hovers around 6% of the population. This means that over 140 million Africans may remain in extreme poverty. A smaller proportion, less than 2% of the population (54 million people), is likely to remain in severe poverty (see Figures 2 and 3 for numbers). Our forecast suggests that as most people in most countries make progress against severe and extreme poverty, the remaining sufferers will be increasingly concentrated in a handful of countries. By 2030, 67% of the burden of extreme poverty on the continent is likely to be concentrated in just 10 countries. By 2063, this concentration has increased to 81%.

How could we eliminate poverty?

Building on the analysis presented earlier, we use a micro-dynamic, chronic poverty-centred approach to poverty reduction to frame our interventions. This approach is in line with literature on relationships between growth, inequality and redistributive policy through its emphasis on investments in health, education, infrastructure and agriculture for poverty reduction.³⁰

The first pillar of chronic poverty reduction in the CPRC's framework is social assistance. In its most recent work, it calls for social assistance, social insurance and social protection

packages targeting a number of different sources of vulnerability. Social assistance – in the form of conditional and unconditional cash transfers, and income supplements in cash or in kind – has been shown to help create conditions that support people in moving out of poverty.³¹ Social insurance can be used to help those who are vulnerable to adapt to shocks without suffering the kinds of losses that drive people to or keep them in poverty. Many countries already have programmes like these, but they are often fragmented and do not typically form part of a broader package of social protection schemes.

To simulate the development of more comprehensive social support programmes we model this package of interventions by increasing government expenditure on welfare and pension transfers, while increasing government revenue and external financial assistance to support scale-up and streamlining processes to simplify the structure and number of social assistance programmes at work in many of these countries. Interventions involving foreign assistance are taken from the work with the World Bank and echo its commitment to funding. Increases in social assistance are targeted so that African nations achieve a similar rate of social welfare spending as the average in Latin America and Southeast Asia.

The second pillar of the CPRC framework is pro-poor economic growth. This pillar promotes pursuing economic diversification; a focus on those sectors that have the potential to support the poor, including through development of small- and medium-sized enterprises; efforts to develop underserved regions; and increasing the poor's access to improved agricultural inputs, including technology.

We model this pillar using a combination of agricultural improvements first developed for an earlier publication on a green revolution in Africa and designed to increase not only agricultural yields but also domestic demand for food through programmes such as cash transfers.³² We also include improvements to infrastructure, especially rural roads, water and sanitation, information and communications technology and electricity. In addition, there are increases in government regulatory quality to address inefficiencies that keep poor people from participating effectively in markets. Finally, this set of interventions models increases in security through decreases in the risk of conflict, which could be generated by increasing the effectiveness and scope of domestic or AU peacekeeping forces and investments in conflict prevention.³³

The third pillar involves focusing human development on the hardest to reach. This pillar looks at the provision of education through secondary schools, with a focus on improving quality and access. It also emphasises the need to provide universal primary healthcare.

To model these, we include improvements in spending on education, intake, survival and transition to simulate a system that is more efficient at getting students into the educational system, keeping them enrolled and training secondary school graduates. To some extent the improvements in survival serve as a proxy for improvements in educational quality. Our health interventions emphasise the reduction of diseases that can be easily treated by a functioning healthcare system and which have a disproportionate impact on the poor, especially malaria, respiratory infections, diarrheal diseases and other communicable diseases, as well as decreases in fertility that could be gained from the effective provision of universal healthcare. Because of malaria's disproportionate impact on mortality and productivity in sub-Saharan Africa, we emphasise the role that its eradication could play in supporting human development on the continent.

The final pillar of the CPRC framework is progressive social change. This requires addressing the inequalities that keep people in poverty even when others are making progress. These barriers can be spatial, gender, caste, religion or ethnicity related, among many others, but have a significant impact on trajectories of poverty reduction. This intervention focuses on creating an understanding among policymakers that the chronically poor are constrained by structural factors rather than individual characteristics and taking steps to address those factors. We mainly focus on gender inequality within our modelling package, improving gender empowerment and reducing time to gender parity in education.

A summary of the intervention clusters within IFs is presented in Table 2. The technical detail on the interventions done within IFs is provided in a separate annex.

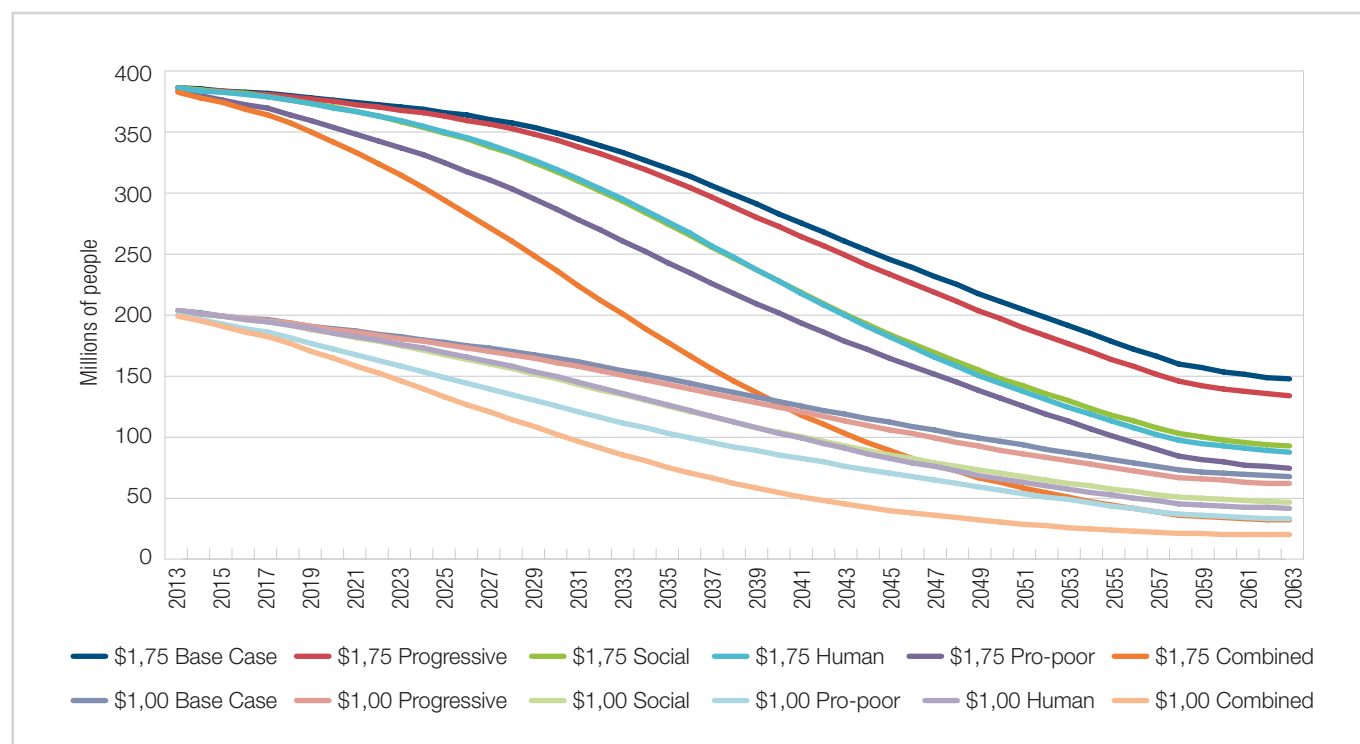
Impact of efforts to reduce poverty

Overall findings are presented in graphical form in Figure 5 (in millions of people) and summarised in Table 3. The data includes the base case forecast, the impact of each of the four intervention clusters and the combined impact of all four clusters on the percentage of the population living in poverty. Table 4 summarises the intervention impact on the number of people living in poverty out to 2063 compared to the base case.

Table 2: Summary of intervention clusters³⁴

Intervention cluster	Description	Components used in IFs
Social assistance	Non-contributory (i.e. does not depend on ability to pay) social protection that is designed to prevent destitution or the intergenerational transmission of poverty	<ul style="list-style-type: none"> • Increase in government spending on welfare • Funding support from international agencies for scale-up • Increases in government revenue • Increases in government effectiveness to tax and redistribute and modest declines in corruption
Pro-poor economic growth	Economic growth designed to support incorporation of the poor on good terms and to provide benefits across sectors of society	<ul style="list-style-type: none"> • Investments in infrastructure • Investments in agriculture • Stimulation of agricultural demand • Improvements in government regulatory quality • Decreases in conflict
Human development for the hard-to-reach	Provision of high-quality education that is linked to labour market needs and universal healthcare that is free at the point of delivery	<ul style="list-style-type: none"> • Improvements in education and education expenditure • Provision of universal healthcare, especially targeting communicable disease
Progressive social change	Changes to the social institutions that permit discrimination and unequal power relationships	<ul style="list-style-type: none"> • Improvements in gender empowerment • Decreased time to achieve gender parity in education • Improvement in female labour force participation

Figure 5: Millions of people in Africa living below US\$1,75 and US\$1,00 in the base case and for each intervention cluster



Source: IFs version 7,09

Table 3: Percentage of the population in Africa in poverty (15-year moving average) in the base case and each intervention cluster

	US\$1,00 a day				US\$1,75 a day			
	2013	2030	2045	2063	2013	2030	2045	2063
Base case	17	10	5	2	33	22	12	6
Social	17	9	4	1	33	20	9	3
Pro-poor	16	7	3	1	33	18	8	3
Human	17	9	3	1	33	20	9	3
Progressive	17	10	5	2	33	21	11	5
Combined	16	6	1	0	33	15	4	1

Source: IFs version 7,09

Table 4: Number of people in poverty in millions (15-year moving average) in the base case and the intervention clusters

	US\$1,00 a day				US\$1,75 a day			
	2013	2030	2045	2063	2013	2030	2045	2063
Base case	197	156	101	54	388	349	241	138
Social	196	138	73	32	388	316	176	81
Pro-poor	193	115	57	18	385	284	156	61
Human	196	140	70	27	387	318	174	75
Progressive	197	152	94	48	388	343	228	124
Combined	192	91	25	4	384	231	77	17

Source: IFs version 7,09

Table 5: Reductions in millions of people in poverty due to different intervention clusters (15-year moving average) relative to the base case

	US\$1,00 a day			US\$1,75 a day		
	2030	2045	2063	2030	2045	2063
Base case	–	–	–	–	–	–
Social	18	28	22	33	64	57
Pro-poor	41	43	36	65	85	76
Human	16	31	27	31	67	63
Progressive	3	6	6	6	13	14
Combined	65	75	50	118	164	121

Source: IFs version 7,09

The combined interventions have a significant impact on both severe and extreme poverty in Africa at a continental level. In our combined interventions we see the percentage of the population in severe poverty declining by 4 percentage points over the base case in 2030, while extreme poverty declines by 7 percentage points. This translates to 65 million fewer people living in severe poverty and 118 million fewer living in extreme poverty on the continent by 2030 (Table 4). However, despite the improvements in poverty levels, these figures still represent 6% and 15% of the total population (Table 3). This suggests that even with a concerted effort to reduce poverty, Africa is unlikely to achieve the 2030 target for reductions in extreme poverty to below 3%. In fact, only three additional countries make the World Bank goal.³⁵ It is not until 2045 in our combined scenario that we see extreme poverty approaching the level suggested as a target.

In terms of inequality and economic growth, this intervention framework provides benefits to both, speeding the decline in inequality on the continent relative to our base case out to mid-century. While in our base case domestic Gini falls from 0,44 to 0,43 by 2063, our combined intervention results in Gini falling to 0,40 by 2063. In terms of economic growth, this approach leads to early benefits over the base case, but following 2035 we see a decline in the growth rate, until by 2063 this intervention package performs no better than the base case. The average annual GDP growth rate in our combined scenario is 7,3% out to 2063 and 7,0% for household consumption. This suggests that our interventions do have significant impacts on the economic growth prospects for the continent, boosting growth by about 1,2 percentage points a year relative to the base case. They also suggest that even though our forecasts on poverty reduction may appear extremely conservative, the impact of

our assumptions actually leads to quite aggressive forecasts for economic growth going forward.

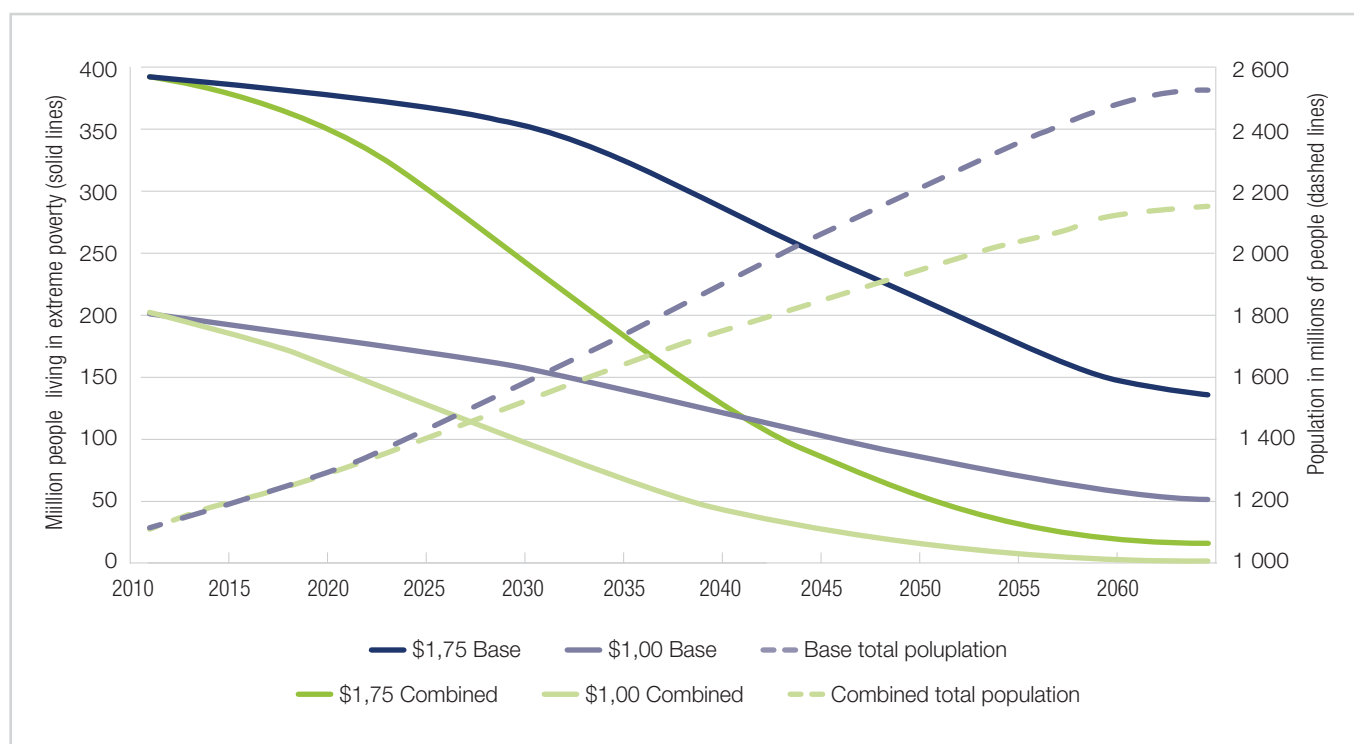
The greatest poverty reduction by 2030 comes from pro-poor economic growth, reflecting the rapid impact of efforts to improve agricultural production and domestic demand. The benefits of human development do not really begin to affect the severely poor until 2063, but begin accruing earlier for the extremely poor. Social assistance has an increasing effect across our time frame. This may be related to the upfront costs of setting up and administering a functioning national social assistance system and a taxation system to fund it. Our scenario for progressive social change is relatively pessimistic about the possibilities this has for bringing large numbers of people out of poverty using these interventions alone. This may be partly attributed to the fact that we were only really able to represent one aspect of discrimination (gender) in our scenario analysis.

Population growth is quite sensitive to the types of interventions that we have modelled in this paper, particularly investments in education for women. Figure 6 compares the base case population forecast with the population forecast under the combined intervention scenario, as well as the base case and combined intervention forecasts for extreme and severe poverty. Should African governments invest in the policies set out in this paper, Africa could have 239 million fewer people by 2045 and 376 million fewer people by 2063, compared to the base case forecast.

Conclusions

In our work, we found that microeconomic interventions that draw deeply on the work of the CPRC and echo many of the policy prescriptions offered in recent literature, including by the Africa Progress Panel, succeed in driving gains against poverty

Figure 6: Population and poverty forecasts – base case compared to combined intervention (15-year moving average)



Source: IFs version 7.09

in many places on the continent. The modelling done in this paper suggests that many countries in Africa could converge on extreme poverty rates of 15% or less by the middle of the century. They do not, however, allow for achieving a 3% poverty rate by 2030, even continentally.³⁶ These interventions included modelling the effect of an economic growth plan that specifically targets the inclusion of underserved groups and regions through investments in agriculture and infrastructure. Over the medium to long term, investments in human development and social assistance, including in quality primary and secondary education, universal healthcare and an effectively managed social assistance programme, can also support poverty reduction in a number of additional countries. Although these efforts seem broadly applicable across different circumstances, not all countries respond equally well to them.

We argue in favour of setting a goal that would see African states collectively achieving a target of reducing extreme poverty (income below US\$1,75 in 2011 PPP) to below 15% by 2030, and reducing extreme poverty to below 4% by 2045. Because of the significant differences in current poverty levels and other initial conditions, between drivers of poverty in different African states, and therefore in the wide variety

of policy measures that will be needed to effectively reduce poverty in different contexts, we further recommend that the AU consider setting individual country-level targets, as appropriate. In particular, we advocate paying increased attention to the issue of chronic poverty, which requires national political will in order to address the overlapping structural challenges that keep the chronically poor trapped in poverty for long periods of time. We argue for a greater focus on inequality and structural transformation of African economies.

As national leaders and the policy community continue discussions on the appropriate targets for the next round of development goals out to 2030 (for the next round of MDGs) and 2063 (in the case of Agenda 2063), it is clear that the significant component of the remaining burden of extreme poverty is now located in sub-Saharan Africa and that the region's portion of the global burden will grow over time.

That said, there is much room for African policymakers to develop policies that have the potential to significantly increase the rate at which poverty declines. The details of these policies must be country specific, but thinking about poverty reduction in an integrated, scenario-based way has the potential to help policymakers better frame their thinking going forward.

Annex: About IFs and interventions

International Futures (IFs) is large-scale, long-term, highly integrated modelling software housed at the Frederick S. Pardee Center for International Futures at the Josef Korbel School of International Studies at the University of Denver. The model forecasts hundreds of variables for 186 countries to the year 2100 using more than 2 700 historical series and sophisticated algorithms based on insights found in academic literature and the project's own statistical analysis.

The IFs software consists of 11 main modules: population, economics, energy, agriculture, infrastructure, health, education, socio-political, international political, technology and the environment. Each module is tightly connected with the other modules, creating dynamic relationships among variables across the entire system.

The interventions included in each policy

1. Social assistance

Parameter	Degree of change	Timeframe
govhtrnwelm	100% increase in government transfers to unskilled households	20 years
xwbloanr	Growth rate in World Bank lending doubles	10 years
ximfcreditr	Growth rate in IMF lending doubles	10 years
govrevm	20% increase in government revenues	5 years
goveffectsetar	+1 standard error above expected level of government revenues	–
govcorruptm	66% increase in government transparency (declines in corruption perceptions)	15 years

2. Pro-poor economic growth

Parameter	Degree of change	Timeframe
govriskm	20% decline in risk of violent conflict	15 years
sfintlwaradd	-1 decline in risk of internal war	15 years
sanitnoconsetar	-1 standard error below expected level of sanitation connectivity	–
watsafenoconsetar	-1 standard error below expected level of water connectivity	–
ylm	76% increase in yields	21 years
ylmax	Set at country level	–
tgrld	0.00902 target for growth in cultivated land	–
agdemm	40% increase in crop demand, 20% increase in meat demand	15 years
aginvm	20% increase in investment in agriculture	15 years
ictbroadmobilsetar	+1 standard error above expected level of broadband connectivity	–
ictmobilsetar	+1 standard error above expected level of mobile connections	–
infraelecaccsetar	+1 standard error above expected level of electricity connections	–
infraroadraisetar	+1 standard error above expected level of rural road access	–
govregqualsetar	+1 standard error above expected level of government regulatory quality	–

3. Progressive social change

Parameter	Degree of change	Timeframe
edprigndreqintn	Years to gender parity in primary education intake	10 years
edprigndreqsur	Years to gender parity in primary education survival	10 years
edseclowrgndreqtran	Years to gender parity in lower secondary transition	13 years
edseclowrgndreqsurv	Years to gender parity in lower secondary survival	13 years
edsecupprgndreqtran	Years to gender parity in upper secondary transition	20 years
edsecupprgndreqsurv	Years to gender parity in upper secondary survival	20 years
gemm	20% increase in level of gender empowerment	5 years
labshrfemm	50% increase in female participation in the labour force	45 years

4. Human development for the hard to reach

Parameter	Degree of change	Timeframe
edpriintngr	2,2 growth rate in primary education intake	–
edprisurgr	1,2 growth rate in primary education survival	–
edseclowrtrngr	1 growth rate in lower secondary transition	–
edseclowrsurvgr	0,8 growth rate in lower secondary survival	–
edsecupprtrngr	0,5 growth rate in upper secondary transition	–
edsecupprsurvgr	0,3 growth rate in upper secondary survival	–
edexppconv	Years to expenditure per student on primary schooling convergence with function	20 years
edexpslconv	Years to expenditure per student on lower secondary schooling convergence with function	20 years
edexpsuconv	Years to expenditure per student on upper secondary schooling convergence with function	20 years
edbudgon	Off – no additional priority for education spending	–
hlmodelsw	On	–
hltechshift	1,5 increase in the rate of technological progress against disease (helps low income states converge faster)	–
tfrm	45% decline in total fertility rate	45 years
hivtadvr	0,6% rate of technical advance in control of HIV	–
aidsdrtadvr	1% rate of technical advance in control of AIDS	–
hlmortm	Malaria eradication (95% eradicated by 2065)	60 years
hlmortm	40% decline in diarrheal disease	55 years
hlmortm	40% decline in respiratory infections	55 years
hlmortm	40% decline in other infectious diseases	55 years
hlwatsansw	On	–
hlmInsw	On	–
hlobsw	On	–
hsmimpsw	On	–
hlvehsw	On	–
hlmortmodsw	On	–
malnm	50% decline in malnutrition	40 years
hltrpvm	50% decline in traffic deaths	25 years
hlsolfuelsw	On	–
ensolfuelsetar	50% decline in use of solid fuels	–

Notes

- 1 The UN value is slightly higher than the point estimate of 1.1 billion generated by the International Futures system, www.un.org/millenniumgoals/pdf/Goal_1_fs.pdf.
- 2 African Union (AU), About Agenda 2063, <http://agenda2063.au.int/en/about>, accessed 15 March 2014.
- 3 S Turner, J Cilliers and B Hughes, *Reducing poverty in Africa: realistic targets for the post-2015 MDGs and Agenda 2063*, African Futures Paper 10, 26 August 2014, www.issafrica.org/futures/papers/reducing-poverty-in-africa-realistic-targets-for-the-post-2015-mdgs-and-agenda-2063.
- 4 Available at <http://siteresources.worldbank.org/ICPEXT/Resources/2011-ICP-Global-Report.pdf>.
- 5 The Center for Global Development and the Brookings Institute were both among the first to publish revised estimates of global poverty in light of the revised PPP estimates from the ICP; the former used US\$1.45 and the latter US\$1.75 at 2010 PPP.
- 6 See, for example, World Bank, A measured approach to ending poverty and boosting shared prosperity – concepts, data, and the twin goals, Policy Research Report, Washington DC: World Bank, 2015.
- 7 In addition to this approach and to replicating the Brookings use of US\$1.75, our figure of US\$1.75 also results from multiplying US\$1.25 by the ratio of 2010 household consumption levels in 2011 and 2005 dollars at PPP in the 15 poorest countries globally. This is a great simplification of the methodology used to move from US\$1 to US\$1.25 that was developed in Martin Ravallion, Shaohua Chen and Prem Sangraula, Dollar a day revisited, World Bank Policy Research Working Paper 4620, Washington DC, 2008. Our approach actually generates US\$1.71 for extreme poverty and US\$0.98 for chronic poverty, but we rounded to US\$1.75 and US\$1.00, respectively.
- 8 Augustin Kwasi Fosu, Growth, inequality, and poverty reduction in developing countries: recent global evidence, WIDER Working Paper, New Directions in Development Economics, Helsinki: UNU-WIDER, 2011; International Monetary Fund (IMF), Fiscal policy and income inequality, IMF Policy Paper, Washington DC: IMF, 2014; Jonathan D Ostry, Andrew Berg and Charalambos G Tsangarides, Redistribution, inequality, and growth, IMF Staff Discussion Note, Washington DC: IMF, February 2014.
- 9 Peter Edward and Andy Sumner, The future of global poverty in a multi-speed world – new estimates of scale and location, 2010–2030, Center for Global Development, Working Paper 327, June 2013.
- 10 Martin Ravallion and Shaohua Chen, China's (uneven) progress against poverty, *Journal of Development Economics*, 82:1, 2007, 1–32.
- 11 Channing Arndt et al., Poverty reduction and economic structure: comparative path analysis for Mozambique and Vietnam, *Review of Income and Wealth*, 58:4, 2012, 742–763.
- 12 Augustin Kwasi Fosu, *Growth, inequality, and poverty reduction in developing countries: recent global evidence*, WIDER Working Paper, New Directions in Development Economics, Helsinki: UNU-WIDER, 2011; Augustin Kwasi Fosu, Inequality and the impact of growth on poverty: comparative evidence for sub-Saharan Africa, *Journal of Development Studies*, 45:5, 2009, 726–745.
- 13 See David Hulme and Andrew Shepherd, Conceptualizing chronic poverty, *World Development*, 31:3, 2003, 403–23.
- 14 Andrew Shepherd, *Tackling chronic poverty: the policy implications of research on chronic poverty and poverty dynamics*, Chronic Poverty Research Centre, 2011.
- 15 Ibid.
- 16 Bob Baulch (ed.), *Why poverty persists: poverty dynamics in Asia and Africa*, Cheltenham: Edward Elgar, 2011, 12.
- 17 Andrew Shepherd et al., *The Road to zero extreme poverty: the Chronic Poverty Report 2014–2015*, The Chronic Poverty Report 2015–2015, London: Overseas Development Institute, 2014.
- 18 Ibid.
- 19 Authors' synthesis based on Andrew Shepherd et al., *The geography of poverty, disasters and climate extremes in 2030*, London: Overseas Development Institute, 2013; Andrew Shepherd, *tackling chronic poverty: the policy implications of research on chronic poverty and poverty dynamics*, Chronic Poverty Research Centre, 2011.
- 20 Andrew Shepherd, *Tackling chronic poverty: the policy implications of research on chronic poverty and poverty dynamics*, Chronic Poverty Research Centre, 2011.
- 21 Martin Ravallion, *A comparative perspective on poverty reduction in Brazil, China and India*, World Bank Policy Research Working Paper, Washington DC: World Bank, 2009.
- 22 Andrew Shepherd, *Tackling chronic poverty: the policy implications of research on chronic poverty and poverty dynamics*, Chronic Poverty Research Centre, 2011.
- 23 Martin Ravallion, *Benchmarking global poverty reduction*, World Bank Policy Research Working Paper, Washington DC: World Bank, 2012, <https://23.21.67.251/handle/10986/12095>.
- 24 Estimates for Sudan are extremely aggressive. This is due to a large upward revision in Sudanese GDP per capita at purchasing power parity to 3,608 in 2011 dollars in the most recent ICP revision.
- 25 Augustin Kwasi Fosu, *Growth, inequality, and poverty reduction in developing countries: recent global evidence*, WIDER Working Paper, New Directions in Development Economics, Helsinki: UNU-WIDER, 2011.
- 26 Barry B Hughes et al., *Reducing global poverty: potential patterns of human progress*, Vol. 1, Paradigm Publishers, 2011. The index value is from 0.1 to 52.8, which indicates the average shortfall of the poor below the poverty line expressed as a fraction of the poverty line.
- 27 Ibid.
- 28 Sudan, Ghana, Tunisia, Seychelles, Mauritius, Gabon, Morocco, Algeria, Egypt, Equatorial Guinea and Libya.
- 29 Sierra Leone, Mauritania, South Africa, Ethiopia, Djibouti, Côte d'Ivoire, Zimbabwe, Cape Verde and Cameroon.
- 30 The literature on these topics is vast. For a review of the role of redistributive policies on growth see Jonathan D Ostry, Andrew Berg and Charalambos G Tsangarides, *Redistribution, inequality, and growth*, IMF Staff Discussion Note, Washington DC: IMF, February 2014. For a review of the role of conditional cash transfers see Naila Kabeer, Caio Piza and Linnet Taylor, *What are the economic impacts of conditional cash transfer programmes: a systematic review of the evidence*, Technical Report, London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London, 2012, <https://23.21.67.251/handle/10986/12095>. A good review of the role social assistance played in Brazil's poverty reduction efforts comes from Martin Ravallion, *A comparative perspective on poverty reduction in Brazil, China and India*, World Bank Policy Research Working Paper, Washington DC: World Bank, 2009. On infrastructure investment's role in poverty reduction, see Shenggen Fan, Linxiu Zhang and Xiaobo Zhang, *Growth, inequality, and poverty in rural China: the role of public investments*, Washington DC: International Food Policy Research Institute, 2002. In terms of reviewing the role of agriculture in poverty reduction, see Martin Ravallion, Shaohua Chen and Prem Sangraula, New evidence on the urbanization of global poverty, *Population and Development Review*, 33, 2007, 667–702; S Wiggins, Can the smallholder model deliver poverty reduction and food security for a rapidly growing population in Africa, Expert Meeting on How to Feed the World in 2050, Rome, 12–13 October 2009, www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/16-Wiggins-Africa-Smallholders.pdf; and World Bank, *World Development Report 2008*, Washington DC: World Bank, 2008.
- 31 While literature from the CPRC is strongly supportive of this, other research has also found evidence for this relationship. See Dale Huntington, The impact of conditional cash transfers on health outcomes and the use of health services in low- and middle-income countries: RHL commentary, The WHO Reproductive Health Library, Geneva: World Health Organization (WHO), 2010, http://apps.who.int/rhl/effective_practice_and_organizing_care/CD008137_huntingtond_com/en/; Sarah Bairdab et al., Conditional, unconditional and everything in between: a systematic review of the effects of cash transfer programmes on schooling outcomes, *Journal of Development Effectiveness*, 6:1, 2014, 1–43; Department for International Development (DFID), DFID Cash Transfers Literature Review, United Kingdom: DFID, 2011.
- 32 Jonathan Moyer and Eric Firmhaber, *Cultivating the future*, African Futures Policy Brief 4, Pretoria: Institute for Security Studies African Futures Project, 2012.
- 33 See Jakkie Cilliers and Julia Schunemann, The future of intrastate conflict in Africa: more violence or greater peace?, ISS Paper 246, 2013, www.issafrica.org/iss-today/the-future-of-intra-state-conflict-in-africa
- 34 Andrew Shepherd, Lucy Scott, Chiara Mariotti, et al., *The Road to zero extreme poverty: the Chronic Poverty Report 2014–2015*, The Chronic Poverty Report 2015–2015, London: Overseas Development Institute, 2014, 156–157.
- 35 This is Gabon.
- 36 Kevin Watkins et al., *Grain fish money financing Africa's green and blue revolutions*, African Progress Panel, 2014.

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About the African Futures Project

The African Futures Project is a collaboration between the Institute for Security Studies (ISS) and the Frederick S. Pardee Center for International Futures at the Josef Korbel School of International Studies, University of Denver. The African Futures Project uses the International Futures (IFs) model to produce forward-looking, policy-relevant analysis based on exploration of possible trajectories for human development, economic growth and socio-political change in Africa under varying policy environments over the next four decades.

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