NEW YORK UNIVERSITY

CENTER ON INTERNATIONAL COOPERATION

Resources, risk and resilience: scarcity and climate change in Ethiopia

Alex Evans

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The world faces old and new security challenges that are more complex than our multilateral and national institutions are currently capable of managing. International cooperation is ever more necessary in meeting these challenges. The NYU Center on International Cooperation (CIC) works to enhance international responses to conflict, insecurity, and scarcity through applied research and direct engagement with multilateral institutions and the wider policy community.

CIC's programs and research activities span the spectrum of conflict insecurity, and scarcity issues. This allows us to see critical inter-connections and highlight the coherence often necessary for effective response. We have a particular concentration on the UN and multilateral responses to conflict.

Table of Contents

Resources, risk and resilience: scarcity and climate change in Ethiopia

Alex Evans

Background

The Center on International Cooperation's Resource Scarcity and Climate Change program is designed to identify how multilateral institutions need to innovate and reform – at both international and field level – in order to manage the interlinked issues of resource scarcity and climate change.

As part of this program, CIC is conducting a series of case studies exploring how different countries are exposed to scarcity, how scarcity drivers interact with the broader political economy context, what are the country's key sources of both vulnerability and resilience, and how international partners can support them most effectively in dealing with these challenges. This case study on Ethiopia is the first in this series; further studies are already in train on scarcity issues in Pakistan and Nigeria.

Acknowledgements

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About the author

Alex Evans is a Senior Fellow at CIC, where he heads the Center's work on resource scarcity and climate change. His publications include ***Globalization and Scarcity: Multilateralism for a World with Limits*** (December 2010), and ***Making Rio 2012 Work: Setting the stage for global economic, social and ecological renewa***l (June 2011),and can be downloaded from http://www.globaldashboard.org/articles-and-publications.

He was seconded to the UN Secretary-General's office in 2011 to work on the UN High Level Panel on Global Sustainability, and is currently advising UNDP on the post-2015 international development agenda, and on its 2014-2018 Strategic Plan. His work at CIC has included partnerships with the World Bank, the US National Intelligence Council, the UK's Royal Institute of International Affairs, Oxfam and the Rockefeller Foundation. In 2011 he was named one of Devex's '40 under 40' international development leaders.

Prior to joining CIC in 2006, Alex was Special Adviser to the Rt. Hon. Hilary Benn MP, then UK Secretary of State for International Development. He currently lives in Addis Ababa.

Executive Summary

Ethiopia's resource scarcity context presents a daunting challenge, but also a significant opportunity. The country's current scarcity context includes:

- **Low agricultural yields and farm sizes:** Even if farm productivity were to increase by a factor of three, the average farm would still not produce enough food for a family of five. With 83% of Ethiopia's people directly dependent on agriculture for their livelihoods, the country has a major food security challenge; 7.5 million people depend on food safety nets.

- **Major exposure to drought:** Ethiopia has erratic rainfall, and acutely limited water storage capacity: the country has only 43m^3 of reservoir storage per person, compared to 750m^3 in South Africa and 6,150m^3 in North America. Levels of irrigation are also low: the World Bank estimates that only 5% of irrigable land in Ethiopia is actually irrigated.

- **Limited access to energy:** Ethiopia's total primary energy supply is less than 60% of the African average, and only just over a fifth of the global average. The country depends on waste and biomass for 90 of its energy needs – leading to consequences including deforestation, and soil degradation as a result of biomass not being returned to the soil.

- **High dependence on imported oil and food:** Ethiopia currently imports all of its liquid fuels and a significant proportion of its food. This creates major exposure to global commodity price volatility, with the attendant risk of balance of payments problems, inflation and outright supply interruptions.

In future, this scarcity context will be shaped by three key drivers of change, each of which presents major opportunities for Ethiopia – but also real risks that even if the government makes powerful progress on tackling current challenges, it may just be running to stand still.

- **Population growth** rates stand at 2.73% a year, well above the African average of 2.2% and global average of 1.2%. Ethiopia's population is projected to grow from 85 million today to 119 million by 2030 and 145 million by 2050, significantly increasing demand for land, water, energy, food and other resources.

- **Economic growth** has remained robust even throughout the global economic crisis; while the government's aim of 12% annual growth appears optimistic, the IMF still projects growth of 6-7% a year in the near term. If Ethiopia sustains such growth rates, this will be a further driver of significantly increased demand for resources.

- **Climate change** is already impacting Ethiopia; is projected to lead to temperature increases of 1.1-3.1°C by the 2060s; and could reduce GDP by 3-10% by 2025. In the process, it will make the scarcity challenge harder on every front: reducing crop yields, increasing land degradation, driving lower water availability, placing more pressure on food security, and creating major additional challenges for the energy sector.

Ethiopia's government appears well aware of the risks it faces, and has put in place a battery of **policies to address the country's scarcity challenge**. It has an ambitious agricultural program, allocates a high proportion of public spending to the sector, and is focusing on improving water management. It is pursuing a huge renewable energy program, especially through hydroelectric power, and aims for Ethiopia to reach middle income status by 2025 with no net increase in greenhouse gas emissions. It has built up one of Africa's largest social protection systems, the Productive Safety Net Program (PSNP), and is building up work on household asset building and climate adaptation. Across all of these areas, the government has shown itself willing to take innovative approaches to policy development and delivery.

At the same time, Ethiopia's ability to deal with scarcity suffers from important **vulnerabilities**. The government's ambitions could be undermined by its very real capacity constraints, especially at region, *woreda* and *kebele* level; where different policy areas intersect and introduce trade-offs; and also as a result of limitations in the quality of data underpinning policy decisions.

Meanwhile, the government's **policy portfolio on scarcity has important gaps**. The positive impacts of the PSNP could be undermined by attempts to 'graduate' beneficiaries from the program too quickly, while other policies on resilience are relatively undeveloped. The government's approach to agriculture could be undermined if non-farm GDP grows slower than the agriculture sector, and so leads to increasing price volatility and a lack of incentives for investment.

Above all, the government's ambitions for large commercial farms, hydroelectric power development and oil exploration depend on **stability in the country's periphery** – stability that could be undermined by these very policies, if implementation of them is carried out with insufficient care and damages the livelihoods of people who currently depend on access to natural resources in these areas.

Finally, the government's ambitions could also be impeded by a range of **exogenous risks**. The specter of drought always looms large over Ethiopia, and could at any time trigger major decreases in food security and GDP growth. Global commodity price volatility looks unlikely to recede any time soon, absent a game-changing restructuring of the global economy, and Ethiopia is likely to remain highly exposed to balance of payments problems, inflation and supply interruptions as a result. Continuing global economic headwinds could lead to marked declines in OECD aid flows, with significant impacts on a relatively aid-dependent country like Ethiopia. Over the longer term, Ethiopia remains heavily reliant on major emitters to make good on their rhetoric and reduce their emissions sufficiently to stabilize atmospheric greenhouse gas concentrations at a safe level.

Against this backdrop, how can Ethiopia and its international and multilateral partners best improve how they deal with the challenges of resource scarcity and climate change? Ten ideas for how Ethiopia and its partners can improve their performance:

1. **Understand the scarcity context.** First and most fundamentally, Ethiopia and its partners need to understand what they are dealing with. Just a handful of ministers, officials and donors have really internalized how much of a game changer climate change and resource scarcity are likely to be for Ethiopia: the Climate Resilient Green Economy program has yet to be really mainstreamed throughout government, for example, while among donors only the UK, Norway and UNDP have been seriously engaged in supporting the program.

2. **Invest in data**. High quality data is fundamental to effective policymaking, but Ethiopian government data – on agricultural yields, on fertility rates, on food insecurity and even on GDP growth – is often regarded skeptically by many donors. Donors could usefully make a determined push on helping Ethiopia to build up its statistical capacity, as well as working to pool other sources of data. This could potentially help to create a more collaborative, evidence-based approach, creating a sounder basis for decision-making on climate and scarcity issues.

3. **Build distributed capacity.** While many donors are already engaged in capacity building work, often with federal government ministries, real progress on issues like agricultural yields or access to reproductive health services will require a much more distributed approach. That means channeling more support to regional governments, which have very limited revenue raising powers (80% of all Ethiopian revenues are collected at federal level), as well as to *woredas* and *kebeles*; and ensuring that aid is distributed across regions more equitably.

4. **Expand current resilience approaches.** In Ethiopia, government and donors are increasingly focusing on areas like social protection, climate adaptation, livelihoods, and disaster risk reduction. But the degree of risk posed by the scarcity agenda implies a need to scale these areas of work up dramatically. They should do everything they can to expand and improve the PSNP (rather than scaling it back, as currently intended), and also to bring to scale the Household Asset Building Programme and the forthcoming CRGE Climate Resilience Strategy.

5. **Recognize scarcity as a political economy issue first and foremost.** Resource scarcity has many dimensions and cuts across numerous areas of work by international donors – from humanitarian assistance, social protection and livelihoods through to environment, climate, infrastructure, private sector, health and governance. Most of all, though, it is a political economy issue. Scarcity trends will create new winners and new losers – as will decisions on how to respond to scarcity, made by government and donors alike. Donors in particular need to recognize this, and to understand how scarcity issues relate not only to each other, but also to wider social, political and economic drivers of change in Ethiopia. Too many donors have in recent years seen 'governance' as an agenda primarily about relatively technical and apolitical areas such as institutional capacity building, public financial management or anti-corruption; scarcity will pressure them to change this view.

6. **Deepen the policy dialogue.** Human rights NGOs have a strong stake in pushing donors to take all-or-nothing positions on contentious issues like the government's large agriculture and hydroelectric projects in the country's pastoral periphery, backed by threats of suspension of aid. However, donors may find that they achieve more tangible progress on areas like transparency, participation, environmental impact assessment, and equitable access to natural resources if they present these considerations as factors that can accelerate and support the government's ambitions for inclusive growth – rather than as an externally imposed human rights agenda. At the same time, donors should also not shy away from policy dialogue about difficult issues – and nor should they allow strategic considerations pertaining to their security relationship with Ethiopia to blind them to longer-term considerations that will nonetheless fundamentally shape Ethiopia's future stability.

7. **Undertake a full independent study of large commercial farms and villagization**. At present, there is a great deal more rhetoric than data about the social, environmental and economic impacts of large commercial farms, villagization, resettlement, and related issues in Ethiopia's periphery. This is in turn contributing to ever more polarization of the debate, rather than bringing the government of Ethiopia, inhabitants of peripheral regions and other stakeholders together around a common vision. Donors could make a major contribution towards changing this dynamic if they were to persuade the government of the merits of a full, independent, transparent study of the development impacts of these issues, and then support such a study to be undertaken. As well as contributing towards a more inclusive and sustainable approach towards development plans in Ethiopia, this kind of proactive embracing of transparency would also put Ethiopia in a clear position of leadership internationally, setting an agenda that could have much further-reaching implications internationally.

8. **Donors should not walk away from controversial large projects.** Donors should also recognize that they can have much more influence over large projects if they are involved in financing or supporting them, than if they exclude themselves. For example, while there are major unresolved questions about the Ethiopian Grand Renaissance Dam, it is hard to see how the World Bank or the EBRD will be able to do much to address them if they are muttering from the sidelines rather than taking part in the projects as core partners. A similar point applies to large commercial farms. While private sector land investors such as Karuturi or Saudi Star are unlikely to be looking for financing or capacity support from multilateral institutions, donors could potentially achieve a great deal by participating in large land or agriculture projects that show what alternative, more inclusive and sustainable approaches to commercial

farming – such as contract farming – might look like rather than (again) wagging the finger or, as is perhaps more often the case, silently wringing their hands.

9. **Donors need to get the home front in order.** While it would be easy for many donors to assume that the bulk of their work to support Ethiopia in responding to resource scarcity and climate change needs to take place within the country, the reality is that it is often donor countries who are the principal *drivers* of the challenges that Ethiopia must confront. This is most obviously the case in the case of climate change, where the disparity between Ethiopia's per capita emissions and those of OECD governments is enormous; but it is also the case on access to food and oil as well. Despite strong growth in the size and affluence of the 'global middle class' in emerging economies, which in turns heightens demand for food, energy and other resources, it is in developed countries where demand is highest. This in turn drives tighter global supply and demand balances for key resources, given constraints to growth in supply – and leaves Ethiopia exposed to commodity price risk. Across the board, Ethiopia and other low income countries need the developed world to consume more sustainably.

10. **Build new international partnerships.** Finally, donor governments should recognize Ethiopia's capacity to be a key partner in pursuing progressive global agendas. As a government with a demonstrable record of commitment to both poverty reduction and environmental sustainability, and given the personal reputation and capability of its Prime Minister Meles Zenawi, Ethiopia has considerable capacity to set international agendas. This has been particularly clear in recent UNFCCC climate talks, where Meles has been a key figure in the Africa Group, and a significant player in the high ambition alliance of European Union and low income countries that appeared to be emerging at the 2011 Conference of the Parties in Durban. As the pressures of climate change and resource scarcity increase, leadership of this kind will be a commodity in much demand.

List of abbreviations

ADB	African Development Bank
ADLI	Agricultural Development-Led Industrialization'
ATA	Agricultural Transformation Agency
AU	African Union
CEO	Chief Executive Officer
CGIAR	Consultative Group on International Agricultural Research
CIC	Center on International Cooperation [NYU]
CPR	Contraceptive Prevalence Rate
CRGE	Climate Resilient Green Economy [government program]
DFID	Department for International Development [UK]
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
EPA	Environmental Protection Authority
EPRDF	Ethiopian People's Revolutionary Democratic Front
EWCA	Ethiopian Wildlife Conservation Authority
FAO	Food and Agriculture Organization [UN]
FEWS NET	Famine Early Warning Systems Network [US]
GDP	Gross Domestic Product
GNI	Gross National Income
GoE	Government of Ethiopia
GTP	Growth and Transformation Plan
Ha	Hectare
HABP	Household Asset Building Program
HDI	Human Development Index
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
Kcal	Kilocalorie
kWh	Kilowatt hour
LIC	Low Income Country
MDG	Millennium Development Goal
MIC	Middle Income Country
MoARD	Ministry of Agriculture and Rural Development [now demerged]
NAPA	National Adaptation Plan of Action
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization
OECD	Organization for Economic Cooperation and Development
PASDEP	Plan for Accelerated and Sustained Development [precursor to GTP]
PSNP	Productive Safety Net Program
R&D	Research and Development
SNNP	Southern Nations, Nationalities and Peoples [region of Ethiopia]
toe	Tonnes of oil equivalent
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Program
UNECA	United Nations Economic Commission for Africa
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
WTO	World Trade Organization

Introduction

Resource security is rising apace up the global agenda – and becoming a major issue in international development.

The combined food and fuel spike of 2007 and 2008 made policymakers sit up sharply all over the world – especially when, after an initial dip, prices for both commodities stayed high even during the toughest global recession since the 1930s, with oil over $100 and the Food and Agriculture Organization's food price index going on to breach its 2008 record.

Intensifying scrambles are underway around the world for energy, land and water rights, with 80 million hectares of land tied up in leasing deals since 2000, and growing competition for oil rights in regions from Africa to the Arctic, and from the Caspian to the South China Sea.

Growing resource scarcity pressures have also driven increasing impacts on international trade, with the World Trade Organization left impotent on the sidelines in 2008 as over 30 countries imposed food export bans or restrictions, and periodic waves of panic-buying among import-dependent countries, including during the early stages of the Arab Spring.

And concern has also been growing about the security impacts of all of this – from the unrest over food or fuel prices that 61 countries experienced during 2008, to fears about what might happen if strategic resource competition between states is allowed to grow unchecked.

Behind all of these factors lies a global convergence of changing demand and supply variables. Demand for resources is rising as population grows and as the global middle class gets larger and richer: estimates suggest that by 2030 the world may demand 50% more food, 45% more oil, and 30% more water than today.

But at the same time, concerns are emerging about whether supply growth will keep up. The amount of arable land available per capita has halved since 1960. 3 billion people already live in areas of high water stress. The yield gains of the Green Revolution in agriculture have been running out of steam in recent years. Global oil production has flat-lined since about 2004, with mature oil fields running down, and remaining oil concentrated in increasingly hard-to-reach places – raising the question of when global oil production will peak.

Increasingly this set of resource scarcity issues has come to be seen as a 'nexus', given the important linkages and feedback loops between different dimensions of scarcity. High oil prices, for example, tend to lead to high food prices, as costs increase for fertilizer, for on-farm energy use, for processing and transportation. They can also intensify competition for land, for instance as biofuels become more cost-effective as an alternative to fossil fuels. And they can mean higher water prices, because of the energy intensity of water pumps, desalination plants and purification systems.

Climate change, meanwhile, will make matters harder in every case. It is already reducing crop yields in low latitudes – where most developing countries are – and is projected to do so in all latitudes once global average warming exceeds 2° Celsius. It will change precipitation patterns and reduce water availability, particularly in the dry tropics. It will increase land degradation and desertification. And it will demand unprecedented shifts in both energy and food production systems, as they confront the need to reduce their own high greenhouse gas emissions.

This evolving resource scarcity agenda has already made itself felt at the global level. It has figured on G20 summit agendas; been adopted as a key analytical theme by analysts from McKinsey to the World Economic Forum; and been the subject of steadily increasing debate among multilateral agencies and international organizations.

But while many of the drivers of resource scarcity may be global, the impacts of scarcity are felt primarily on the ground – and in very different ways from country to country.

The Center on International Cooperation at New York University has in recent years undertaken considerable work on the resource scarcity agenda at global level,

including supporting the recent UN High-level Panel on Global Sustainability, working with a range of governments and international agencies to help with policy development, and publishing our own research, including on the 2012 Rio+20 sustainable development summit and the evolving agenda of Sustainable Development Goals as a possible successor the Millennium Development Goals after 2015.

This report, by contrast, is the first in a series of country-specific case studies looking at how resource scarcity issues are making themselves felt on the ground, how governments are responding, and what their international partners can to do help build resilience to the effects of scarcity. This study, on Ethiopia, will be followed by two more initial studies that are currently in progress, on resource scarcity in Pakistan and Nigeria.

The report begins with a detailed overview of Ethiopia's scarcity profile, covering both demand and supply drivers across areas including Ethiopia's economy; spatial and demographic trends; agriculture and food security; land, forestry, water and energy; and climate change, including both impacts and mitigation.

Part 2 of the report then puts resource scarcity issues into Ethiopia's broader political economy context. In particular, it audits what the government of Ethiopia is already doing to respond to its resource scarcity challenge, and identifies a range of gaps and vulnerabilities in the government's approach.

Finally, the conclusion of the report presents a summary of the findings of the first two parts of the report, before setting out a ten point agenda for how international partners can become more effective in supporting Ethiopia in dealing with this key 21st century challenge.

The report is primarily intended to help catalyze a fuller discussion at international level for resource scarcity considerations to figure more prominently in international development, both in country programs and in international policy agendas. At the same time, we also hope that it will make a contribution to debate between the donor community and government in Addis Ababa, and ultimately influence future development programs in the country as well.

Part 1: Ethiopia's context and scarcity profile

Economy

Overview

Ethiopia's economy performed poorly for much of the latter part of the twentieth century (with per capita GNI dropping by over 40% in the period 1983-2003). But in recent years, its economic performance has improved markedly. Purchasing power began to increase after 1992, and economic growth then accelerated upwards from 2003 onwards. The economy experienced double digit growth until 2008/2009, driving significant increases in per capita incomes. By 2008, the World Bank was able to report that:

> Ethiopia is experiencing an unprecedented spell of economic growth… The current boom is a combination of cyclical recovery and structural shifts in the economy towards a higher growth path. The Ethiopian economy returned to growth in the early 1990s after the overthrow of the Derg and the end of its repressive economic policies. This recovery was however interrupted by two major shocks: the war with Eritrea from May 1998 to June 2000 and a severe drought in 2002/03.
>
> Since then growth has resumed and with a stronger momentum than before. The cumulative impact of public investment in basic infrastructure, in particular roads, power, telecommunications, and water, as well as public spending in education and health, have clearly raised the overall productivity of the economy…
>
> Economic growth has been broad-based. In contrast to the public sector consumption led growth of the 1990s, rapid growth of private consumption has been the driving force behind the current expansion—accounting for 88 percent of growth during 2002/03-2006/07 period relative to 54 percent during 1997/98-2001/02 period.[1]

Following the global economic crisis in 2008, Ethiopia managed to sustain its robust growth even as most of the developed world experienced a sharp slowdown – and in fact even saw its economic prospects *improve* during the crisis, according to IMF projections. A Brookings Institution study compared GDP projections for the year 2013 in the IMF's October 2010 World Economic Outlook against similar IMF projections from two years earlier: it found that while 154 countries were projected in the 2010 Outlook to be poorer than had been expected two years earlier, Ethiopia was among the just 25 countries actually expected to be richer, even given the economic crisis.[2]

Despite this generally rosy picture, however, imbalances in the Ethiopian economy were exposed by the 2008 resource price spike and the global economic crisis.[3] Inflation reached 64% in July 2008 and foreign exchange reserves fell to only enough to cover one month of imports in October of the same year.[4] The price of goods consumed by the poor rose by 78% in urban areas and 85% in rural areas between 2008 and 2010.[5]

The government reacted with a package of policies that included cuts in public sector borrowing and the elimination of fuel subsidies, but which was also intended to be pro-poor in its implementation.[6] The government devalued the currency by 20% in 2010, in an attempt to boost exports and raise its external reserves; the IMF provided support through the Exogenous Shocks Facility from February 2009. Inflation subsequently fell dramatically, while reserves recovered more modestly.[7]

Since then, though, inflation has staged a resurgence, and continues to create significant problems for the country. The IMF's 2011 World Economic Outlook projected that inflation in consumer prices would rise from 2.8% in 2010 to 18.1% in 2011 and 31.2% in 2012, almost as high as in 2008.[8] Figures published by Ethiopia's Central Statistics Agency in March 2012 recorded an overall inflation level of 36.3%, driven in large part by rising food prices following a delay in the onset of rains, as well as by continuing high global oil prices.[9]

Ethiopia's exposure to inflation rates has been flagged by the IMF as a key threat to its economic growth

prospects. While the government's five year Growth and Transformation Plan for the period 2010 to 2015 sets out the aim of achieving 12% annual economic growth (with the underlying objective of Ethiopia becoming a middle income country by 2025), the IMF argued in October 2011 that growth of 6-7% was more realistic in view of inflation rates, loose monetary policy and heavy dependence on public sector financing.[10]

Among the economic vulnerabilities that contribute to Ethiopia's exposure to inflation are that:

- Ethiopia is heavily dependent on agriculture (which accounted for over 47% of GDP in 2009); and as its agriculture is predominantly rain-fed, the economy is unusually exposed to bad weather. The 2002/03 drought cut food production by a quarter.[11] The IMF identifies weather shocks as the major domestic threat to the Ethiopian government's economic program.[12]

- Fossil fuels account for 8.5% of energy use and have to be imported, with oil accounting for up to a quarter of Ethiopian imports in some years (see separate section on energy below). Rising oil prices place pressure on Ethiopia's foreign exchange reserves, and a sudden price spike has the potential to lead to a balance of payments crisis.[13]

- More broadly, Ethiopia's import dependence leaves it exposed to external shocks. According to DFID, "as a landlocked country with no mineral resources, Ethiopia is not only a food deficit country but also relies on imports to cover the bulk of its consumption, capital and energy requirements."[14] Ethiopia's trade deficit has increased significantly in the recent period of relative prosperity (see Figure 1).

In rural areas, almost all employment is in the agricultural sector. Through its Plan for Accelerated and Sustained Development to End Poverty (PASDEP), the Ethiopian government has focused on market-based agricultural development.[15] Productivity, however, remains low (see separate section on agriculture below). The government's industrial strategy has focused on improving institutional frameworks for business (with some success) and on building links between industry and agriculture.

In urban areas, the World Bank notes that the size and quality of the labor supply is increasing; returns on education are high, especially for women; but the labor market shows signs of being unable to absorb the expected future supply of more highly educated new entrants. "Despite overall growth in the economy," it notes, "the urban sector has not yet become a dynamic engine for growth, employment create and poverty reduction."[16]

Ethiopia's overall unemployment rate stood at 20.5% in 2009, according to the World Bank.[17] Urban economic activity rates are low at around 65%, compared to Kenya (85%) and Uganda (79%). In a worrying sign given Ethiopia's demographic profile (see below), participation rates for young men seem to be decreasing. [18]

In 2010, the government published a new five year plan entitled the Growth and Transformation Plan (GTP), which is notable for its high levels of ambition. The plan assumes that economic growth of 11-15% per year is maintained from 2010 to 2015, and aims for Ethiopia to become a middle income country by 2025.[19]

Progress on poverty reduction

Ethiopia remains one of the poorest countries in the world. In the 2011 UN Human Development Report, Ethiopia ranked 174th out of 187 countries on the overall Human Development Index (HDI).[20] Its 2010 GDP per capita was $358, according to World Bank data – the 7th lowest in the world among countries for which data was available.[21]

Yet despite this low starting point, Ethiopia's progress in reducing poverty during recent years has been impressive. In 2004-05, 38.7% of Ethiopians (about 30 million people) were poor; by 2009-10, the proportion had fallen to 32.3%, and the figure is projected to fall further to 31.0% once data are available for 2010-11.[22]

The country also ranks 11th in a list of countries who have most improved their HDI score in the period 1970-2010 (based on progress in the non-income components of the

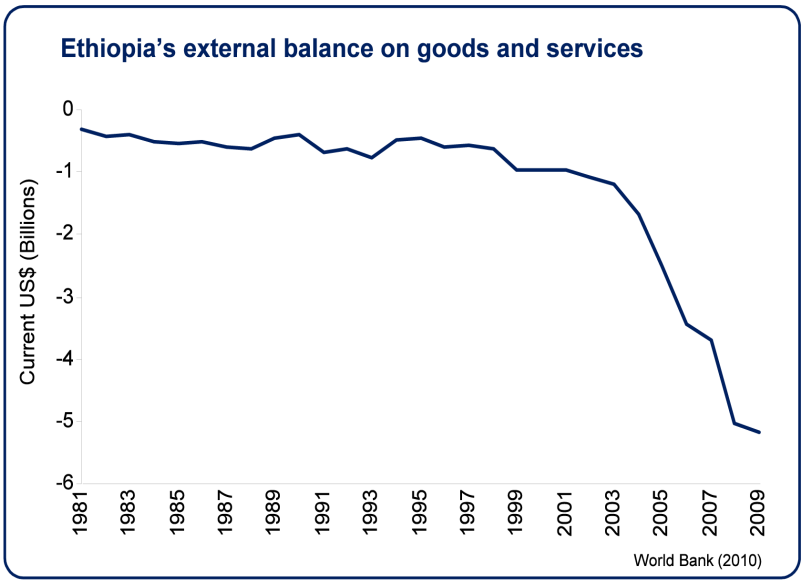

Figure 1

HDI, i.e. health and education). The 2011 UN Millennium Development Goals Report, meanwhile, listed Ethiopia as one of a handful of countries in which net primary school enrolment rates had increased by more than 25% from 1999 to 2009.[23] According to the 2007-2011 UN Development Assistance Framework,

> "Remarkable efforts have been made and significant results achieved towards universal education, gender equality and empowerment of women, reducing child mortality and improving maternal health, fighting HIV/AIDS, malaria and other diseases."[24]

According to IMF figures quoted in Ethiopia's MDG Needs Assessment, Ethiopia is second only to Mozambique in the proportion of government spending classified as "pro-poor expenditure", with nearly 60% of spending accounted for in this way.[25]

Demographic trends

Ethiopia is the second most populous country in Sub-Saharan Africa, after Nigeria, and has the 14th largest population in the world; according to the United Nations, its population has grown from 23 million in 1960 to 85 million today.[26]

Fertility rates in Ethiopia remain high by both African and world standards, averaging 5.4 births per woman nationally, and 6.0 in rural areas.[27] Life expectancy has also increased markedly in recent years, from 40 years at birth in 1950 to 55 years today, slightly above the average for Africa, but still well below the global average of 68.9 years. Infant mortality has more than halved over the last fifty years (see chart below), and is also now below average for Sub-Saharan Africa.

Today, overall population growth rates stand at 2.73%, as compared to an average in recent years of 2.2% for Africa, and 1.2% for the world. Ethiopia's population is projected under the medium variant of the latest UN projections to grow to 119 million by 2030 and 145 million by 2050; meeting the needs of this growing population (and taking steps to reduce population growth) is at the core of Ethiopia's scarcity challenge.[28]

This said, overall fertility is now declining. Population growth peaked in the early 1990s, when it reached an annual rate of 3.3%, and is expected to fall below 2% after 2025. The World Bank notes that recent years have seen "remarkable" falls in fertility in urban areas, especially in Addis Ababa where fertility has fallen to 1.4 births per woman.

The Bank also observes that "it is possible to make inroads at low cost, and there is demonstrated demand for

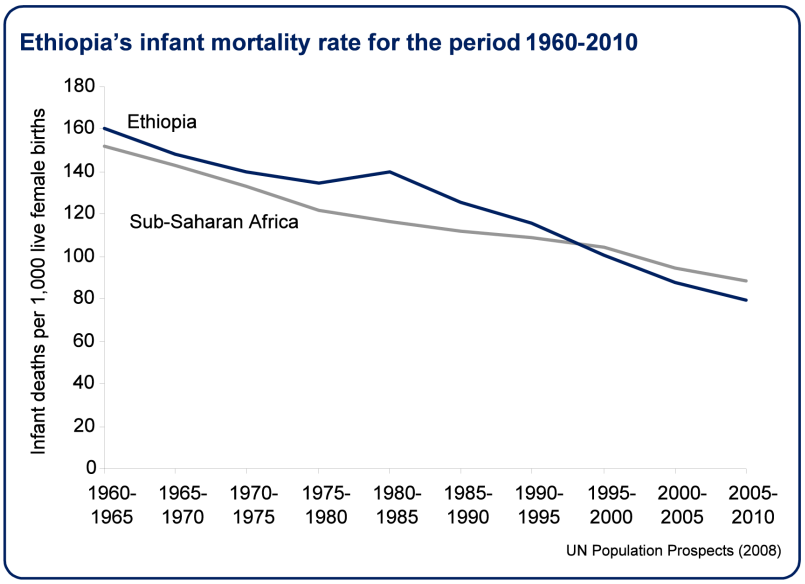

Figure 2

lower growth and smaller family sizes": Ethiopia's 2005 Demographic and Health Survey found that average desired family size was at least one child fewer than actual current family size, and that out of married women aged between 15 and 49, 77% would like to stop childbirth.[29]

As a result of changes in fertility and life expectancy, Ethiopia is in the early stages of a demographic transition which will accelerate rapidly over coming years. Today, half of Ethiopians are below the age 18, but with the population now finally starting to age, the median age is expected to be ten years higher by mid-century. In 2000, there were 90 children for every 100 adult Ethiopians; by 2050, there will be just 39.

Ethiopia's ability to respond to this dramatic change in its demographic profile will shape its future as a country. Ethiopia's working age population will double in size over the next twenty years, at the same time as its dependency ratio declines markedly – before climbing again as the population ages.

As Ethiopia's 'worker bulge' enters the workforce, the country has a one-off demographic opportunity of a lifetime – but also a major problem if it gets it wrong. If Ethiopia can educate and find productive employment for its young workforce, it will experience rapid economic growth, perhaps even seeing per capita incomes triple in a generation, as happened in a range of Asian economies such as South Korea in similar conditions. But if it fails to do so, unemployment and underemployment, especially among young men, could significantly increase its risk of social unrest and conflict.

Spatial trends

Ethiopia has a total land area of 110 million hectares, of which 72% is accounted for by shrublands, savanna and grasslands, 16% by cropland or a mixture of crops and natural vegetation, 5% by forests, and the remainder either sparse or barren vegetation, or wetlands and water bodies.[30] The country has been landlocked since the independence of Eritrea in the 1990s.

The map below shows Ethiopia's spatial distribution of population by region. Most of the population is located in the four regions of Oromia, Amhara, SNNP, and Tigray.[31] Population density is highest in SNNP and Tigray.[32] Of the major regions, Tigray is the poorest, with over 30% of its population in Ethiopia's lowest wealth quintile. The rural regions of Afar and Somali are even poorer.[33]

Ethiopia's population is notably rural in its composition, with more than 1 in every 7 rural Africans living in Ethiopia. However, the country is now becoming steadily more urban. In 1960, only 6.4% of the population lived in urban

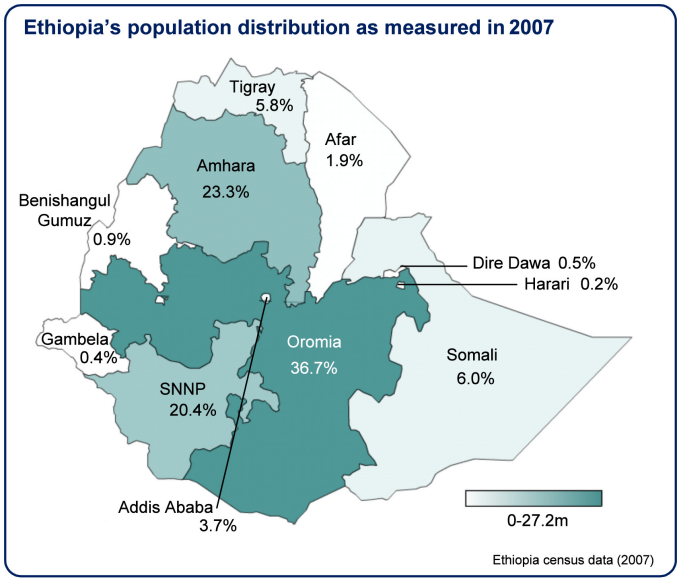

Figure 3

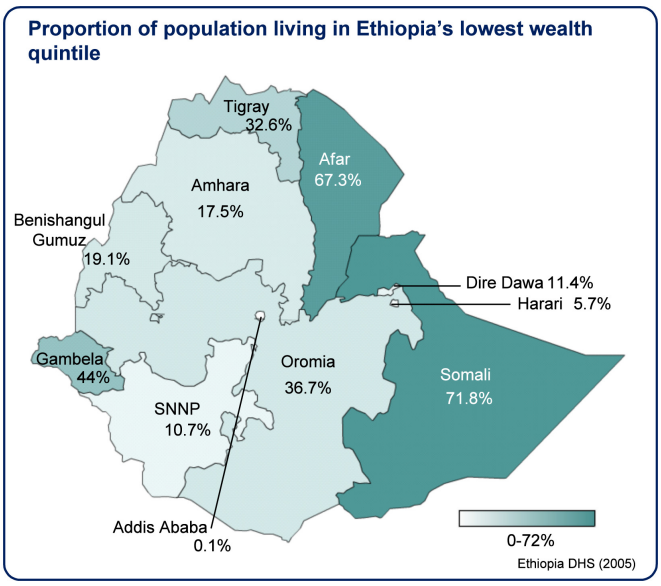

Figure 4

areas. This has now increased to 17.6%, but remains below half the African average. The population is projected to be one third urban by 2040, by which time Sub-Saharan Africa will be well over 50% urban.[34] Ethiopia's rural nature distinguishes it from the world's other large countries, and will continue to do so to mid-century. The contrast with Nigeria, the only African country more populous than Ethiopia, is especially marked, where 63.6% of people are projected to live in urban areas in 2030 and 75.4% in 2050.[35]

Ethiopia's restrictive land tenure system, discussed further below, is one reason for its relatively low rate of rural to urban migration. Other obstacles to migration to urban areas include a requirement that new migrants to urban areas wait for 6 months before registering their address, effectively excluding them from access to services during this period. Applications may also be restricted to those who own a dwelling or are renting from someone who has declared that they are renting out part of their property.[36]

Disparities between urban and rural areas are extremely pronounced. According to a 2005 household survey, over 90% of urban dwellers come from the richest wealth quintile, compared to 10% in rural areas. 30.7% of urban dwellers have no education, compared to 72.8% of country dwellers.[37]

Rural areas are also strikingly cut off from the outside world. In 2005, only a quarter of rural households had a radio, while the possession of television, mobile phones, and vehicles was almost unknown.[38] Limited transportation networks between urban and rural areas also make transportation costs high; while the government has invested heavily in transport infrastructure over the last 20 years, this investment has primarily gone to major arteries between cities, leaving many rural populations still distant from economic opportunities outside of agriculture.[39]

Ethiopia's low rate of urbanization also presents significant challenges for its agriculture sector, in that (according to a 2010 IFPRI study), "Ethiopia lacks a sufficiently large urban (non-farm) population to generate enough demand for its own agricultural products". This critical factor for Ethiopia's future is discussed in more detail in the section on agriculture below.

Energy

Liquid fuels

At present, Ethiopia has no significant proven oil reserves (though this may be about to change, as discussed below). As a result, Ethiopia is for now heavily dependent on imports of liquid fuels, which account for a sizeable proportion of the country's import needs as a whole.

This has put Ethiopia in a vulnerable position given the international context of oil price volatility in recent years, with global crude oil prices touching $147 a barrel in the summer of 2008, and at the time of writing standing at $118 for Brent crude. A 2007 study by the International Energy Agency found that in 13 non-oil producing countries in Africa, including Ethiopia, increases in the cost of oil over the previous three years came to more than the sum of aid and debt relief that they received over the same period.[40]

Oil prices have hence been a significant driver of Ethiopia's recent high inflation rates, as well as a challenge for Ethiopia's foreign exchange position. Improving export earnings as a way of managing this challenge is hence a key priority for the government in its 2010 Growth and Transformation Plan (GTP), as discussed later.

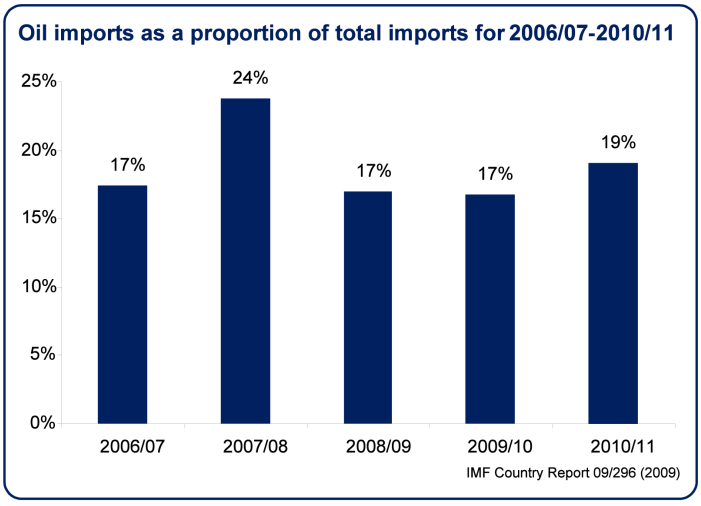

Figure 5

However, it is by no means inconceivable that Ethiopia could discover oil in the future. Eleven companies are currently prospecting for oil, under 19 agreements covering three quarters of the country.41 More recently, the UK oil company Tullow Oil has reported a major oil find in Kenya's Turkana County, which borders the Ethiopian regions of SNNP and Oromia.[42] While this is only Tullow's first well in the area, making detailed estimates of reserves difficult, the find could have major implications for Ethiopia, particularly given that the company is exploring on both sides of the border.

Renewable energy

While Ethiopia may lack significant mineral reserves, it does have plentiful capacity to generate electricity from hydropower, as well as other renewable sources.

According to the World Bank, "in the coming years, with its large potential for hydropower, Ethiopia is expected to become one of the largest producers and exporters of electricity in the region."[43] Ethiopia's potential for hydropower is estimated by the African Development Bank at 15,000-30,000 Megawatts, of which just 5% is currently exploited.[44] The Ethiopian Electric Power Company, which has a monopoly on electricity generation, transmission, and distribution, provides an even higher estimate of potential, at 45,000 Megawatts.[45]

However, while the government has said that it believes electricity could be a more important export than coffee by 2012, it is at present some distance from achieving this objective. In 2004-05, total hydropower generating capacity was 714 MW. While the government had a target of increasing capacity to 3,270 MW by the end of 2009-10, its own figures show that only 2,000 MW was actually achieved by that date (62% of the target).[46]

Undeterred, the government's 2010 Growth and Transformation Plan set a new target of 10,000 MW of hydroelectric power generating capacity by 2014-15, primarily in the Nile and Omo river basins. However, to achieve this it will have to overcome past problems of repeated delays, accusations of poor procurement practices and 'super tied' aid – as well as important social and environmental issues, discussed further below.[47]

If Ethiopia achieves its ambitions to become a major exporter of electricity, this will become a significant factor in its relations with its neighbors. Already, the government has strategic programs in place to construct power transmission grids to Sudan, Djibouti and Kenya, and a new regional grid, the East African Power Pool, is intended to be in place by 2016.[48]

At the same time, Ethiopia's huge ambitions for dam-building also have important implications for regional

politics, with plans for a 6,000 MW 'Grand Ethiopian Renaissance Dam' on the Blue Nile, 30 kilometers from the border with Sudan, proving especially contentious. While the project is a key priority for Ethiopia (to the extent that Ethiopia's civil servants were requested to donate a month's salary towards its costs), plans for its construction have caused alarm in Egypt, which depends on the Nile for all of its water needs.[49] This issue is returned to in later sections of the report.

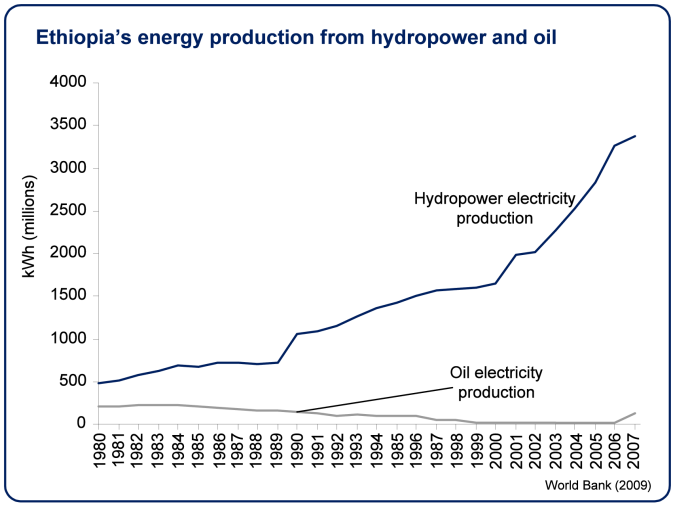

Figure 6

Ethiopia's dam construction plans have also been questioned on environmental grounds: no environmental and social impact assessment has yet been published on the Grand Ethiopian Renaissance Dam, for example, despite the fact that construction has been underway since 2011.

The electricity system's reliance on hydropower also makes it highly vulnerable to drought (see also later section on climate variability). Planned load shedding is used when reservoirs are depleted, and deep cuts were implemented in 2003, 2008, and 2010.[50] It is striking that planning for major new hydroelectric schemes, such as the Gibe III project, does not appear to take full account of vulnerability to current and future climate variability.[51]

Campaigners have also alleged that the Gibe III dam, which is already under construction, could displace hundreds of thousands of people.[52] The European Investment Bank and World Bank have refused to fund Gibe III, given irregularities in the procurement process and ongoing public controversy about the project. A senior Ethiopian Minister, Alemayehu Tegenu (now in charge of water and energy), has accused Western NGOs of not wanting Ethiopia to develop and stated that "criticizing countries like Ethiopia is their source of income."[53] These issues are discussed further in part 2 of the report.

As well as pursuing hydroelectric power development, the Ethiopian government is also investing in other forms of renewables, albeit on a smaller scale, notably wind and solar power, geothermal energy, and biofuels.

Access to energy

Despite its hydroelectric resources, Ethiopia suffers from marked energy poverty. Total primary energy supply was 0.39 toe/capita in 2008, less than 60% of the average for Africa and only slightly more than a fifth of the global average.[54] Biomass and waste account for over 90% of energy use.

Although only a small minority of rural households have access to electricity, 85.7% of urban households are connected to the electricity supply. Despite its potential as an electricity exporter, domestic consumption is extremely low at 45 kWh/capita in 2009, compared to averages of 578 and 2752 kWh/capita for Africa and the world respectively.[55] Even after those without any supply at all are excluded, those consumers who are connected to the grid consume only around 300 kWh/capita (enough to light a single 60 watt bulb for around 14 hours every day).[56]

Electricity shortages have been a pressing problem in recent years, despite increases in generating capacity. Robust data on demand is hard to source, but the Ethiopian Electricity Corporation reports that per capita consumption more than doubled between 2008-09 and 2009-10, and that it expects demand to continue to grow by 24% per year in future.[57] Diesel generators are widely used to make up the shortfall, through an emergency scheme that costs US$0.20 per kWh for electricity that sells at a quarter of that price.[58]

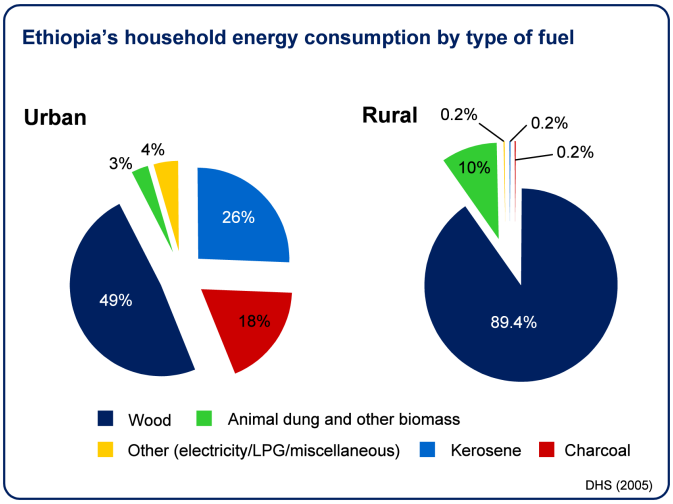

Figure 7

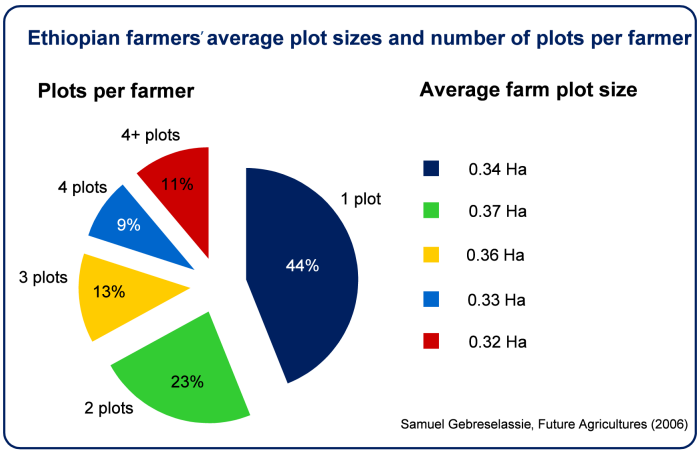

Figure 8

The private sector views access to electricity as a significant, but not leading, obstacle to doing business in Ethiopia. In 2006-07, informal businesses reported losing 2% of their business due to power cuts, service businesses 2%, and manufacturers 0.7%. Many formal businesses use generators to supplement their electricity supply, with 26% of manufacturers and 29% of service businesses owning or having access to one. These firms generate 8% of their own electricity.[59]

Fuel in Ethiopia has traditionally been subsidized. In 2007-08, fuel subsidies reached $230m and contributed significantly to the balance of payments crisis at the time. Since then, fuel subsidies have been eliminated, with prices set at slightly above the import price to allow the Oil Stabilisation Fund to repay its debts to the banking system.[60] This led to an immediate 50% increase in the price of kerosene, a 39% increase for diesel, 32% for fuel oil, and 6% for gasoline.[61]

Land and agriculture

At present, 83% of Ethiopia's population depends directly on agriculture for their livelihoods, with many more reliant on agriculture-related industries. Agriculture contributes around 45% of GDP – more than double the low income country average of 20% - and accounts for up to 90% percent of Ethiopia's total export earnings.[62]

35% of Ethiopia's land is agricultural, compared to an average of 44.5% for Sub-Saharan Africa. 14% of its land is arable and 1% permanent cropland. According to the FAO, the country can be divided into five main agricultural production zones:

- A highland mixed farming system – which supports 80% of the population on land at more than 1,500m above sea level, with heavy use of multiple cropping, high diversity of crops grown, small farms of decreasing size, and livestock an integral part of the system.
- A lowland mixed agricultural production system, where the main crops are drought resistant varieties of maize, sorghum, wheat and teff.
- A pastoral complex based on livestock, with camels a major source of food and means of transport, with many pastoralists having strong cross border identities.
- Shifting cultivation patterns and low population density in the south and west of the country.
- A growing, but still limited, role for commercial agriculture (see Figure 9). [63]

91% of rural households have agricultural land – an unusually high rate, even for Africa – and 11.3% of urban

households also have some agricultural land.[64] The amount of arable land per capita was 0.18 hectares in 2007, compared to 0.25 hectares for Sub-Saharan Africa. The average size of land holdings has been declining steadily in recent decades, falling by more than half since the 1960s, as population has grown and farms have been sub-divided. According to a 2005 survey, average plot size was around a third of a hectare, with 56% of smallholders farming multiple plots (see Figure 8).[65]

Agricultural yields and land degradation

If small, and declining, average farm size is one key element of Ethiopia's agricultural challenge, another is the fact that average yields per hectare are also low.

FAO data show that Ethiopia's 2009 cereal yields were 1,652 kilograms per hectare. Admittedly, this level is higher than in most neighbouring countries (Kenya's level is 1,204 kg/ha, Uganda's 1,539 kg/ha and Sudan's just 587 kg/ha), or the sub-Saharan African average of 1,301 kg/ha (although these data are likely to be derived from government figures – which as discussed below are open to question).

But even if the figure is accurate, it is also still too low to meet Ethiopia's needs: even if farm productivity were to increase by a factor of three, the average farm would still not produce enough food for a family of five.[66] As a result, 7.5 million Ethiopians currently rely on food transfers from Productive Safety Net Program, receiving direct transfers of food for 6-9 months of the year (the PSNP is discussed in more detail in part 2 of the report).[67]

Levels of land degradation are also high, with over 60% of the population living in areas that suffer from severe or very severe human-induced degradation (see chart below). Among the causes of this problem are clearance of woodlands and forests, unsustainable arable farming techniques, the use of dung and crop residues for fuel rather than as fertilizer, and overstocking of grazing lands.

These problems are in turn driven by underlying challenges including population pressure, periodic drought, patterns of land ownership, lack of rural infrastructure, and reliance on biomass for energy needs.[68]

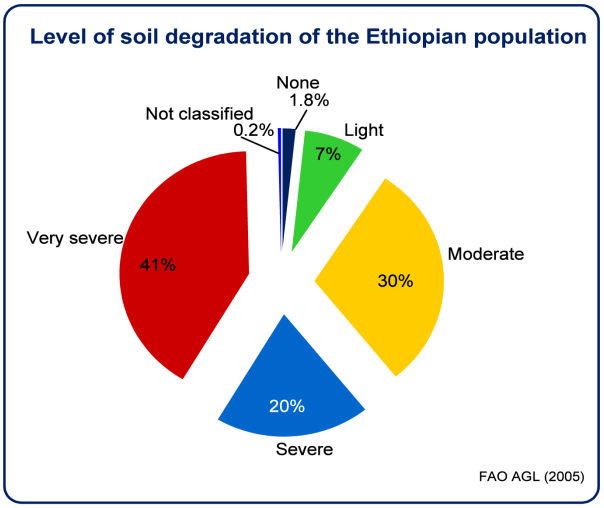

Figure 9

Research on the economic impact of land degradation is patchy, with one review of the literature concluding that costs are "on the order of a few percent of agricultural GDP per year."[69] According to the World Bank, land degradation in Ethiopia may be a sufficiently serious problem to offset improvements in productivity from the better use of technology.[70]

The government places strong emphasis on improving agriculture – considerably more than many other Sub-Saharan African nations, if the proportion of public spending allocated to agriculture is taken as a metric – and has built its ambitions on an approach of more than fifteen years' standing that it terms 'Agricultural Development-Led Industrialization' (ADLI). ADLI underpinned the government's last five year plan (the 'PASDEP' or Plan for Accelerated and Sustained Development to End Poverty), and is similarly central to its 2010 Growth and Transformation Plan (GTP).[71]

At the heart of the ADLI approach is the government's desire for agriculture to be Ethiopia's main source of growth (an ambition restated in the GTP for the five years to 2015), above all through improvements in the country's smallholder farming sector.[72] Increased production and productivity, so the theory goes, will lead to more marketed surplus, more demand for non-agricultural commodities, and a release of labor for urban and non-agricultural development.[73]

The government's own figures on ADLI's record to date suggest that over the ten years to 2009, 44% more land was cultivated with cereals, with 40% higher yields; and that over the five years prior to 2009, total cereal production was growing at 12% per year, with yields per hectare rising at 6% a year.[74]

However, the sheer degree of achievement that these figures suggest has led some analysts to question their accuracy - particularly given that there is little evidence of a take-off in combined use of seeds, fertilizer and extension services, nor of greatly improved weather conditions, either of which could explain the improved output over this period. As a University of Oxford study put it,

> "Ethiopian yields have grown faster than recorded elsewhere, even compared to the green revolution in India, China or Vietnam. If the data are correct, this is the fastest green revolution in history, and its mechanisms should be analyzed. If any of the data, such as the area expansion data, are not correct, then this has huge implications for policy, as it would suggest that food production is considerably lower than reported."[75]

A leaked diplomatic telegram from the US Embassy in Addis Ababa takes a similar view, observing in a comment that "All GoE [Government of Ethiopia] figures regarding agricultural production are suspect."[76]

However, the government now appears to be addressing some of the gaps and omissions critiqued by outside analysts during the period of the PASDEP. One criticism made of the PASDEP by the Oxford study, for example, was that the government focused too much on fertilizer and not enough on improved seed varieties (and indeed the history of the green revolution in Asia does show that it was the *combination* of improved seeds, fertilizer use and irrigation that caused yields to lift off so dramatically).[77]

The Growth and Transformation Plan appears to address this issue, and sets out plans for a more than six fold increase in the supply of improved seed varieties, as compared to a doubling in the supply of fertilizer.[78] However, while the improved focus on seeds and fertilizer is welcome, other pieces of the puzzle – such as access to finance, farmers' cooperatives, and transforming the agriculture system to become more demand-driven – are also important, and at present receive less emphasis.

More broadly, the government has launched a new Agricultural Transformation Agency (ATA) as the result of an intensive two year process funded by the Bill and Melinda Gates Foundation, which brings together Ethiopian staff with secondees from international consultancies in a capacity building exercise widely seen as highly successful. The government is also working to improve rural infrastructure and access to credit (albeit from a low base), and taking limited steps to reform Ethiopia's land tenure system.

Looking to the future, however, the outlook for Ethiopian yields – one of the most important variables for the country's future, especially in view of projected population growth between now and 2050 – remains open to question. Four key uncertainties will be especially important.

- First, what kinds of **innovations and scientific advances** become available – particularly, perhaps, in the area of improved seed varieties. While the government has increased its focus on seed varieties, gains from improved or hybrid seeds to date have been mainly limited to wheat or corn rather than other crops, including indigenous African staple crops (of which teff is the most important in Ethiopia). This in turn largely reflects both dramatic falls in publicly funded agricultural research and development (R&D) budgets – the budget for the Consultative Group on International Agricultural Research (CGIAR) fell by around 50% over the 15 years to 2008, for example – and the fact that private biotechnology companies have prioritized research in crops where potential returns on investment are highest, which tend to be crops grown in developed economies.[79] Even if these priorities were amended tomorrow, progress would still be hampered by the long lead times associated with agricultural R&D. It cannot therefore be assumed as a given that the new seed varieties needed for Ethiopian yields to take off will necessarily be available.

- Second, the pace of **land reform and rural to urban migration** in Ethiopia. While there is in fact some evidence to counter the standard narrative that Ethiopia's ultra-small farms are highly inefficient[80], projected population growth suggests that Ethiopia's cities will have no option but to absorb many of its additional people. At present, however, government policy presents a major obstacle in the way of migration to urban areas. All land in Ethiopia has been owned by the state since land reforms carried out by the Derg regime in 1975, a principle maintained after the Ethiopian People's Revolutionary Democratic Front (EPRDF) came to power in 1991. However, as an IFPRI study notes, "government policy has effectively slowed rural-urban migration through regulations prohibiting sale of land, loss of land rights for those who leave rural areas, and registration requirements for new migrants".[81] Recent policies have made it easier to transfer land rights within families, and have also opened up long term land rental markets, but permanent transfers to non-family members are still believed to be rare.[82]

- Third, and on a related note, **urban demand for agricultural produce**. While Ethiopia does need to increase how much food it produces, a number of studies argue that it also needs to boost demand for food from urban areas, by encouraging growth in sectors other than agriculture.[83] This represents a challenge to the conventional wisdom that developing countries should prioritize agricultural growth first and foremost, but the fact that Ethiopia is landlocked – and that international trade hence comes with high transaction costs in both directions – means that "a delicate balance has to be found between sufficiently high food prices for farmers, but not too high to stifle growth and transformation".[84] In order to keep food prices below the high prices of imported produce, Ethiopia's agriculture does indeed have to become more productive. But at the same time, the fact that exports command low prices too – again due to the high transaction costs that come with being landlocked - means that higher production could simply lead to strongly depressed prices during bumper years, and undermine incentives for investing in more productive and sustainable agriculture, *unless* demand grows in line with food production. This in turn requires urban growth, and a broader economic strategy than one just focused on making agriculture more productive.

- Finally, there is perhaps the largest variable of all: the **impact of climate change**. The main risk to Ethiopian agriculture is already its dependence on unreliable patterns of rainfall. Irrigation is very rare, with less than half a percent of land currently irrigated.[85] Drought has regularly caused sudden losses of agricultural GDP, with the sector shrinking by 10.5% in 2003, by 12.6% in 1984, and by 20.6% in 1985 (see chart below for an indication of how vulnerable Ethiopia's agriculture sector is to droughts). According to the World Bank, "in the event of a rainfall shock, given that output from crops accounts for 30 percent of GDP, a 10 percent decline in crop production following a drought could reduce 3 percentage points from the GDP growth rate."[86] Looking to the future, a World Bank-led study on the economics of adaptation to climate change notes that, "under future climates many regions of Ethiopia will face decreases in agricultural production [and] this suggests that agricultural production as an engine of growth is vulnerable to climate change and climate variability".[87] The issue of climate variability is discussed more fully below.

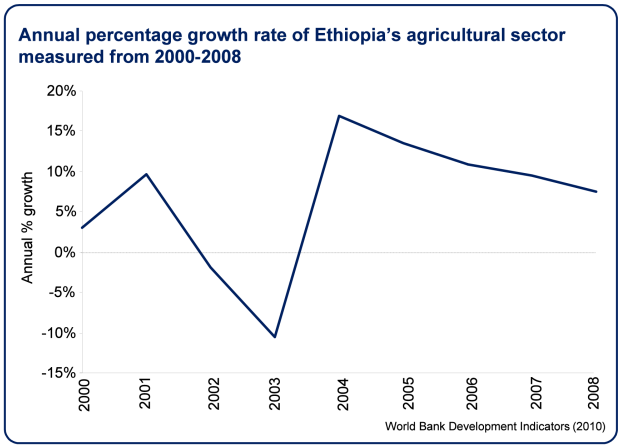

Figure 10

Farm commercialization and large scale land projects

Recent years have seen growing attention focused on large-scale commercial farms in Ethiopia. The government's Growth and Transformation Plan cites "intensified commercialization and support for development of large-scale commercial agriculture" as two key planks of the GTP's agricultural development strategy, and says that as well as encouraging high-value horticulture in the country's highlands and areas close to cities, "more effort will be made to improve and increase the role of the private sector in the agriculture sector, in lowland areas [i.e. primarily pastoral areas] where land for large scale commercial farming is in demand".[88]

Prior to the GTP, the government of Ethiopia's figures suggested that large-scale farms covered 910,000 hectares of land – just five per cent of Ethiopia's total cultivated land of 18.2 million hectares. By December 2009, however, a leaked US State Department cable was noting that "[the Ministry of Agriculture and Rural Development] has served notice that the pace of deals is about to rapidly accelerate" and that "it appears that historical patterns of agricultural production in Ethiopia are about to change dramatically".[89] Not long afterwards, the 2010 Growth and Transformation Plan set a new target that by 2014-15 the government would "transfer nearly 3.3 million hectares of land to commercial farming investors".[90]

Accurate data on whether actual land leases are keeping pace with this dramatic planned expansion in large scale farms is difficult to find. A 2010 analysis produced by the World Bank traced 406 projects, covering 1.2m hectares, and with a median project size of 700 hectares, but the Bank also stressed that its data were not necessarily complete.[91] More recently, a 2012 analysis produced by GRAIN , a non-profit organization, itemized 1.04m hectares of land leased to foreign investors since 2006, not counting projects that were subsequently cancelled or that were for non-food crops (including biofuels) – but again, the fact that land has been leased does not necessarily mean that development of it has actually commenced.[92] A third analysis, prepared by the Forum for Social Studies in Ethiopia and published in 2011, argued that the government "has already transferred about 3.5 million hectares of land to investors and is now taking measures to transfer a similar amount in the next five years".[93]

Among the largest of the projects identified in the GRAIN report were:

- 311,000 ha of land leased to the Indian company Karuturi Global for maize and palm cultivation, for a rate of US $1.2 per hectare per year;
- 140,000 ha of land leased to the Saudi Arabian firm Saudi Star in the province of Gambela, with the company reportedly in talks to lease a further 290,000 ha. The company has signaled its aim of producing 1 million tonnes of rice a year, generating US $1 billion in export revenues. The same company is also pursuing a 100,000 ha jatropha plantation in Benishangul-Gumuz, and an 85,000 ha rubber plantation in SNNP.
- Two other projects of over 100,000 ha each, both leased to Indian companies – one for sugar cane production, and the other for crops including cotton, maize, rice, potatoes, pulses and wheat.

Many aid donors and external experts have broadly welcomed the principle of a strong push for large scale farm investment, but there are also considerable concerns at the consequences of the policy in practice.

One of the most important such concerns regards the effect of such leases on existing populations in affected areas. While the regions in which such investments are concentrated (Benishangul-Gumuz, Gambela, SNNP, Somali, and Afar) are thinly populated compared to other parts of Ethiopia, many donors in Ethiopia argue privately that in reality there is no completely unused land in the country.[94] If land in these areas is fenced off, or if water is diverted to meet massive projected irrigation needs, this could have a major negative impact on livestock populations and, by extension, make pastoralist livelihoods untenable and risk triggering displacement. The political economy implications of this risk are discussed in more detail in part 2 of the report.

More broadly, there are also concerns about the governance standards underpinning such deals. Among the concerns raised in this area are a lack of capacity to negotiate such deals both within the Ministry of Agriculture and within regional governments; a lack of environmental impact assessments; and get-out clauses for some investors (e.g. Saudi exports of rice appeared not to be affected by Ethiopia's temporary export ban on cereals).[95] According to the World Bank, "many project proposals, even in regions with more advanced governance, only vaguely indicate intended land uses and lack key information, such as the value of the investment and the type of production."[96]

Significantly, the Ethiopian government recently suspended allocation of land leases by the Ministry of Agriculture, pending a review of both existing leases, and the government's own capacity to administer such deals. This issue is discussed more fully in part two of the report.

Forests

In 2000, Ethiopia had 3.65 million hectares of land classified as forest by the FAO; the World Bank calculates the total slightly higher, at 4.1 million hectares in 2008.[97] The country's forest cover is heavily concentrated in three regions: Oromia (which accounted for 60% of the 2000 total of forest), SNNP (20%) and Gambela (13%).[98] 2005 data showed the national total of forest cover at 3.34 million hectares – a decline of 8.5% in just five years – with Oromia recording an 8% decline, SNNP a 14% fall, and Gambela a 6% decline.[99] In practice, all of these figures are questioned by experts working on the ground, and need to be treated with considerable caution.

The government set out ambitious plans for reforestation in both the previous PASDEP five year plan and the current Growth and Transformation Plan. Under the PASDEP, the government planned to cover approximately 4.7 million hectares of degraded areas with forest, which would have increased the forested area of the country from 3.6% to 9% of its land. The GTP subsequently set out targets for an increase in forest coverage from 13 to 18.23 million hectares over the five years covered by the plan (note the much higher starting figure than that imputed by the World Bank or FAO), as well as major increases in the amount of land developed under community based water shade development programs and the area of land covered with multi-purpose trees.

Food

Ethiopia ranks 80th out of 84 countries on the 2010 Global Hunger Index, very slightly below the most serious rating ('extremely alarming'), with 41% of the population classified as undernourished (see chart below).[100] Children are particularly hard hit by food security problems in the country: 35% of children are moderately underweight and 14% severely underweight, while some 51% of children suffer from "moderate stunting" and 28% from severe stunting.[101]

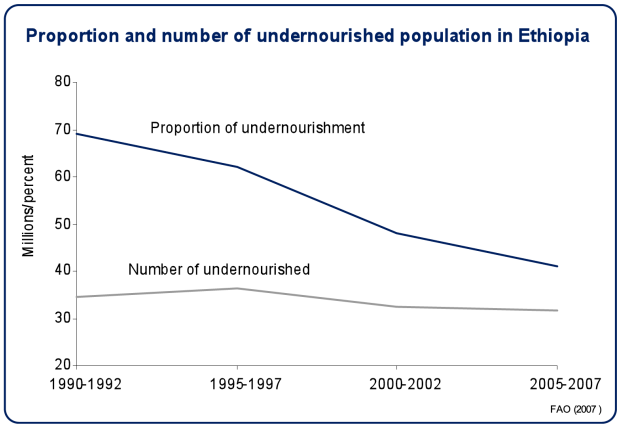

Figure 11

Ethiopia's per capita food supply has been below average for Africa since the 1960s, and declined significantly from then until the mid-1970s (see chart above). There were further declines after 1980, and it was not until 1993 that Ethiopia's food supply began to grow steadily, with 1961 levels only exceeded in 2001. However, its rating has improved significantly over the past twenty years, showing the greatest absolute improvement of any country on the Global Hunger Index.[102]

According to the Famine Early Warning Systems Network (FEWSNET), the key population groups at risk of food insecurity in Ethiopia are as follows (see also Figure 13):

- The pastoral population of the Afar and Somali regions, who face the greatest risk at times of drought;

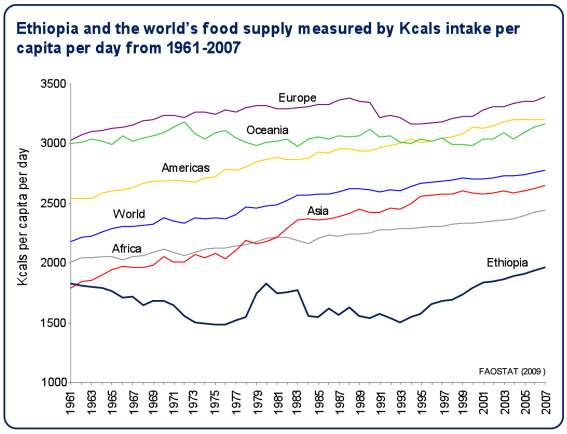

Figure 12

- A significant proportion of people in the crop dependent highlands who are chronically food insecure; and
- The population that lives besides Ethiopia's major rivers.[103]

Analysis undertaken jointly by the government of Ethiopia and its humanitarian partners in January 2012 found that about 3.2 million people would require food assistance during the first half of 2012, with the highest needs in the Somali and Oromia regions, where 34% of each population was estimated to be in need.[104]

Food Insecurity in Ethiopia

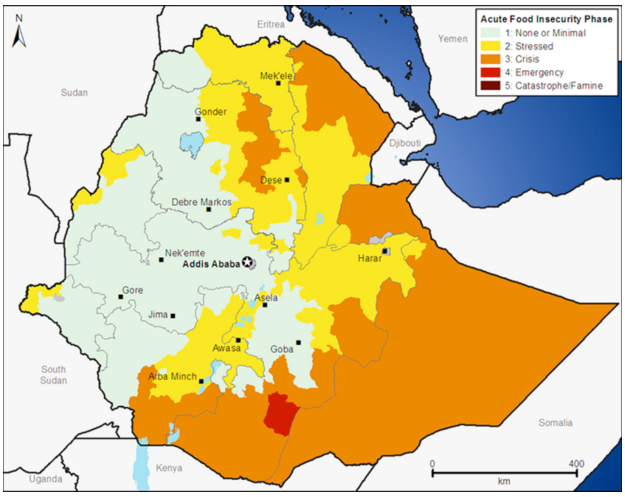

Figure 13 **Source: USAID**

Food insecurity has a number of key underlying drivers, including drought, rapid population growth and environmental degradation, weak governance and infrastructure, asset depletion, and conflict in pastoral areas.

In 2005, the government introduced a National Food Security Program, with the aim of helping five million chronically food insecure people attain food security and significantly improving the food security of up to ten million additional food insecure people within five years.

The program now has three main components:

- The Productive Safety Net Program (PSNP), which aimed to reach 5 million people or 1 million households through a program of public works in return for food or cash transfers, and direct support for households unable to offer labor;
- The Household Asset Building Program (HABP), intended to complement the PSNP by building longer term resilience; and
- The Complementary Community Investment Program (CCIP), which supports labour-intensive public works, primarily in pastoral areas.[105]

Donors have to date been most interested in supporting the PSNP component, which was extended to 8 million recipients in 2006. Recent attention has focused on the government's desire to 'graduate' significant numbers of beneficiaries from the program. The coverage, targeting and effectiveness of Ethiopia's social protection policies are discussed in more detail in part 2 of the report.

Food imports and food prices

During recent years, Ethiopia has seen rising levels of food imports (see chart below). Exports have also increased sharply and, since 2000, Ethiopia has seen a significant increase in the size of its agricultural surplus. However, exports are dominated by coffee, while the main import is wheat, which makes a significant contribution to the Ethiopian diet. This leaves Ethiopia with security of supply

challenges and significant vulnerability to any increase in wheat prices.[106]

Cereals (mostly wheat) account for 3.7% of Ethiopia's total per capita food supply in 2007; vegetable oils for 1.3%; and sugar for 0.59% (see imports and exports chart, below). While these represent relatively low levels of import dependency, Ethiopia's low per capita food supply means that a sudden interruption in the supply of these commodities would take the country's food supply back to levels seen in 2002-03, with the distributional effects likely to cause intensified levels of hunger.

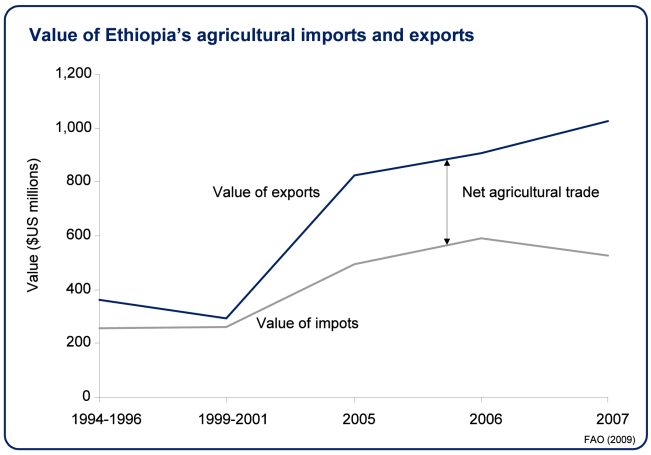

Figure 14

Food prices have been a significant driver of recent high inflation rates in Ethiopia, and rose by 41% from January 2010 to January 2012.[107] Ethiopia was also severely impacted by the earlier 2008 food price spike, when the government took a range of measures to attempt to respond to food price inflation including reducing taxes on foodgrains, increasing supply by using grain stocks, imposing price controls on some foodstuffs, and implementing an export ban on grains and flour.

Ethiopia's uneven rural infrastructure also means that some regions are more affected by food inflation than others, with highest inflation rates concentrated in the regions of Benishangul-Gumuz (where current food inflation stands at 93%), Gambela (59%) and SNNP (51%).[108] However, it is important to note that the areas in which food price inflation is highest are not the same as those with the highest rates of food insecurity (as can be seen from the map earlier in this section).

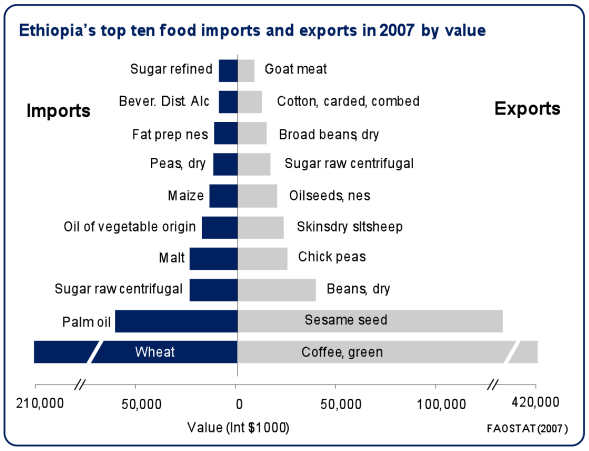

Figure 15

Water

In overall terms, Ethiopia is far from being the most water stressed country in the world. World Bank data show that in 2009, Ethiopia had 1,502 cubic meters of 'renewable internal freshwater resources' (a combination of internal river flows and groundwater from rainfall) available per person – as compared, for example, to 1,306m^3 in Germany, 1,086m^3 in Denmark, 714m^3 in Bangladesh, 322m^3 in Pakistan, 100m^3 in Israel and just 22m^3 in Egypt.[109] The country has 12 major river basins and 12 large lakes, and total annual surface runoff is estimated at 122 billion m^3.[110]

Where Ethiopia is much more vulnerable, however, is in the extent of *variability* in its water availability. According to FAO,

> "Rainfall in Ethiopia is highly erratic, and most rains fall intensively, often as convective storms, with very high rainfall intensity and extreme spatial and temporal variability. The result is that there is a very high risk of annual droughts and intra-seasonal dry spells."[111]

The World Bank adds that,

> "…unmitigated hydrological variability currently costs the economy more than one third of its growth potential. The very structure of the Ethiopian economy with its heavy reliance on rainfed subsistence agriculture makes it particularly

vulnerable to hydrological variability. Its current extremely low levels of hydraulic infrastructure and limited water resources management capacity undermine attempts to manage variability. These circumstances leave Ethiopia's economic performance virtually hostage to its hydrology."[112]

Ethiopia's reliance on hydrological variability is further underlined by the extent to which GDP is correlated with rainfall variability (see Figure 16).

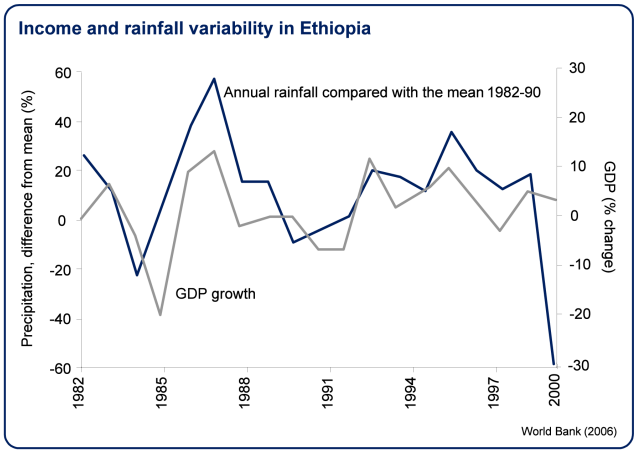

Figure 16

FAO divides the country up into three agro-climatic zones:

- *No significant growing period*: eastern, northeastern, southeastern, southern and northern lowlands.
- *Single growing period and one rainy season* (February/March – October/November): the western half of the country, with the rainy season becoming progressively shorter further south.
- *Double growing period and two rainy seasons* (the *Belg* rains peaking in February, and *Meher* rains peaking in September) – the eastern half of the country, and the lowlands of the south and southeast.

55% of Ethiopia's total land area has a growing period of less than 120 days, leaving farmers highly vulnerable to drought.[113] Ethiopia suffered seven major droughts between 1980 and 2008, of which five led to famines.

Droughts are the most important cause of shocks for Ethiopian households, with over half of those surveyed in 15 villages having experienced drought between 1999 and 2004. These episodes tend to have long-lasting impacts: Ethiopia's 2002 drought – regarded by the government and by international relief agencies as a well-managed drought, with few reported deaths as a result of famine – led to 20% lower consumption in affected areas even several years later.[114]

Water storage and irrigation

Given the immense challenges that hydrological variability poses for Ethiopia, water storage capacity – which can smooth and schedule water delivery – is of critical importance. At present, the World Bank estimates that artificial reservoir storage in Ethiopia is only around 43m^3 per capita, as compared to 750m^3 in South Africa and 6,150m^3 in North America.[115]

This pressing requirement for better water storage capacity forms part of the rationale for the government's ambitious program of dam-building, which while primarily focused on hydroelectric power, also includes irrigation and water storage as other objectives. However, as the World Bank also notes, for Ethiopia to achieve similar levels of water storage to South Africa, it would have to invest around US $35 billion – more than Ethiopia's current annual GDP.[116] As a result, the Bank notes, "strategies focused purely on water management and infrastructure responses are not affordable", and Ethiopia will instead need to look more broadly at ways of managing hydrological variability and at decreasing the vulnerability of the economy to shocks.

Irrigation is also a key requirement for Ethiopia, given its vulnerability to droughts and projected future climate variability. Under the 5 year PASDEP plan from 2005 to 2010, more than 127,000 hectares of land were irrigated, mostly at small and medium scale, according to official government figures set out in the Growth and Transformation Plan.[117] The World Bank notes that current levels of irrigation in Ethiopia represent less than 5% of the potential 3.7 million hectares of irrigable land in the country.[118] The government plans to develop an additional 786,000 hectares of irrigated land by 2014/15.[119]

However, FAO warns that while sufficient water resources are available to allow for greatly scaled up irrigation, constraints include "the lack of institutional capacity, private sector involvement and markets, as well as food insecurity which affects the dilemma of cost recovery [as farmers] target food security first, instead of [growing] cash crops." In addition, irrigation has the potential to cause major impacts on pastoralist livelihoods and natural resource access, as noted earlier.[120] A further challenge is the tension between competing demands for water for irrigation and for power generation, discussed further in the next chapter.

Regional water resources

None of Ethiopia's water comes from outside its borders, but Ethiopia is a crucial source of water for other countries such as Sudan and Egypt.[121] In total, 97 km^3/year of surface water leaves the country, but 80% of this is not governed by international treaties.[122] The Nile Waters Agreements of 1929 and 1959 assigned Sudan and Egypt the right to use Nile waters, but did not allocate any rights to Ethiopia, despite 86% of Nile waters originating in the country.[123] More recently, the Nile Basin Initiative was launched in 1999 and brings together Ethiopia, Egypt and eight other countries with an interest in the Nile "to achieve sustainable socio-economic development through the equitable utilization of, and benefit from, the common Nile Basin water resources."[124]

As noted earlier, Ethiopia has now embarked on an ambitious dam-building program, concentrated on the Nile and the Omo rivers. While Kenya has not expressed concerns over the latter (which flows into Lake Turkana, shared between Ethiopia and Kenya), Ethiopia's plans for damming the Nile have proved much more contentious, with serious tensions emerging between East African countries (Ethiopia, Kenya, Uganda, Rwanda, Tanzania and Burundi) who are likely to benefit from the hydroelectric power generated on one hand, and Egypt and Sudan on the other.

Five of these upstream states (Ethiopia, Kenya, Uganda, Rwanda and Tanzania) signed a new Cooperative Framework Agreement in May 2010, with Burundi adding its signature in May 2011, signaling their intention to renegotiate national water entitlements to the Nile and agreeing that they would not regard Egypt as enjoying a veto over any proposed agreement. This elicited fierce protests from Egypt and Sudan, with the former indicating that it regarded its historic rights to Nile waters as a national security issue and that "Egypt will not join or sign any agreement that affects its share". [125]

Since then, the war of words between Egypt and Ethiopia has escalated, with Ethiopian Prime Minister Meles Zenawi accusing Egypt of pressuring western donors not to fund the Grand Renaissance Dam project and of backing rebel groups in Ethiopia. Ethiopia's water minister has also gone on record as saying that Ethiopia did not inform Egypt in advance of its plans to build the dam, commenting that instead "they found out from the media".[126] Regional political considerations on shared water resources are discussed further in part 2 of the report.

Access to clean water and sanitation

According to government figures set out in the GTP, the period of 2005-2010 saw access to potable water increase from 35% to 66% of people in rural areas, and from 80% to 91% in urban areas. The GTP sets out targets to increase these levels to 98% and 100% respectively by 2014/15.[127]

Climate change

Impacts

Ethiopia is already experiencing changes in its climate. Mean annual temperature increased by 1.3° Celsius between 1960 and 2006, an average rate of 0.28°C per decade.[128] Unusually hot weather has also been on the increase, with a 20% increase in the number of 'hot' days from 1960 to 2003, and a 37.5% increase in the number of 'hot' nights over the same period.[129]

At the time of the IPCC Fourth Assessment Report's publication in 2007, few regional or sub-regional climate scenarios were available for Africa. The IPCC's overall assessment offered little specificity about projected climate impacts for the continent, limiting its headline

conclusions largely to observing that all of Africa was likely to warm over the century ahead (with warming "very likely to be larger than the global, annual mean warming throughout the continent and in all regions"), and that "there is likely to be an increase in mean rainfall in East Africa".[130]

Since then, however, considerably more data has become available. A UNDP-supported report on climate change projections specific to Ethiopia, undertaken by the University of Oxford, projected that mean annual temperature in the country would increase by 1.1 to 3.1°C by the 2060s, and 1.5 to 5.1°C by the 2090s.[131] The study also found that projections from different climate models were "broadly consistent in indicating increases in average rainfall in Ethiopia, primarily through increases in rainfall during the shorter of southern Ethiopia's two rainy seasons (in October, November and December)", with more mixed projections for the rest of the country; and that more rain would fall in 'heavy' events.

More recently, the World Bank-sponsored Economics of Adaptation to Climate Change project has produced a detailed assessment of climate change in Ethiopia.[132] The study modeled two Ethiopia-specific scenarios entitled Ethiopia Dry and Ethiopia Wet, reflecting different possible futures, both involving significant increases in rainfall variability, but with contrasting shifts in annual mean rainfall:

- The Dry scenario shows *reductions* in average rainfall between 2040 and 2055 of 10-25% in Ethiopia's central highlands, 0-10% in the south, and over 25% in the north; while
- The Wet scenario shows *increases* in average rainfall of 10-25% in the south and central highlands, and more than 25% in most of the rest of the country.

The analysis focused on three key "channels of climatic vulnerability" in the Ethiopian economy: agriculture (which as discussed earlier is highly exposed to drought in particular); roads, which are often hit by major floods, causing major infrastructure damage and supply chain disruption; and dams, which are also exposed to precipitation swings and which as noted earlier are essential for both hydropower and irrigation.

Based on this approach, the study calculated that:

- By *2015*, GDP would be 2% lower than the base case in the Wet scenario, and around 6% lower in the Dry scenario;
- By *2025*, declines in GDP would increase to around 3% in the Wet scenario and almost 10% in the Dry scenario; and
- By *2045*, the Dry scenario would see GDP over 10% lower than in the base case, whilst damages in the Wet scenario would have increased to almost 8% below base.

However, as can be seen from the studies cited above, there is considerable uncertainty about the shape of future climate change impacts on Ethiopia, a factor that greatly amplifies the challenge faced by policymakers as they seek to plan for the future and invest in greater resilience.

In 2007, Ethiopia's National Adaptation Program of Action (NAPA) identified 11 high priority adaptation activities, including a drought / crop insurance program, enhancing early warning systems for both drought and floods, small scale irrigation and water harvesting systems, better management of both rangelands in pastoral areas and wetlands, community-based carbon sequestration, work to contain the spread of malaria, and a range of capacity building and research work.[133] Work is currently underway, led by Ethiopia's Environmental Protection Authority, to develop a Climate Resilience strategy as part of its overall Climate Resilient Green Economy program.

Emissions

The World Bank estimates that Ethiopia's carbon dioxide emissions per capita stood at 0.1 metric ton of CO_2 per capita in 2007-11, as compared for instance to 17.9t/CO2 in the United States, 9.6t in Germany, 5.3t in China and 1.5t in India.[134]

In reality, Ethiopia's total per capita emissions are somewhat higher than this level, as the World Bank figure is based only on CO_2 emissions from fossil fuel combustion and cement manufacture – and not, therefore, greenhouse gas emissions from agriculture and forestry, which account for some 85% of Ethiopia's total emissions.[135] Once these emissions are factored in, total per capita emissions come to 1.8 tons of carbon dioxide equivalent (CO_2e) per capita, according to the Ethiopian government's own figures – still among the lowest in the world.[136]

Given high rates of both economic and population growth in Ethiopia, and the government's ambitions of becoming a middle income country by 2025, Ethiopia's emissions would be expected to rise rapidly under conventional development trajectories. The government itself estimates that a business as usual path would see Ethiopia's total CO_2e emissions rise from 150 Mt today to 400 Mt by 2030, an increase of more than 150%, with per capita emissions rising to 3 t/CO_2e by the same date.

Notwithstanding ongoing global debates about 'climate equity' – with many developing countries arguing vociferously for the principle of being allowed to increase their CO_2 emissions, given their lower per capita emissions, minimal historical responsibility for climate change, their need to develop and grow their economies, and developed countries' responsibility to 'take the lead' in reducing global emissions – Ethiopia is unusual among low income countries in that it has instead set out highly ambitious plans for mitigating its emissions and moving to a green economy model.

The government argues that such an approach is in its own interests, given that a conventional development path would lead to over-exploitation of natural resources, that dependence on imported fossil fuels is already creating acute pressure on foreign exchange reserves, and that such a development path would carry with it the risk of lock-in of outdated technologies. The government has therefore set out plans for its future growth to be wholly carbon neutral – and hence to hold national emissions at 150Mt CO_2e, rather than allowing them to rise to 400 Mt CO_2e by 2030 as per the business as usual trajectory.[137]

The government's strategy for achieving this goal is based on four key elements:

- Improving crop and livestock production practices;
- Protecting and re-establishing forests;
- Expanding electricity generation from renewable sources (hydroelectric, wind, geothermal); and
- Leapfrogging to modern and energy-efficient technologies in transport, industrial sectors, and buildings.[138]

However, if oil exploration finds significant oil reserves in Ethiopia – a scenario that now looks possible, given recent finds just over the border in Kenya, as discussed earlier – then all bets will be off. While it is possible that Ethiopia's government could still hold fast to its ambitions of being a low carbon, green economy, it would also face enormous temptation to use its new oil finds not only to generate export earnings, but also to improve access to energy (e.g. through adding oil to its power generation fuel mix, or introducing gasoline subsidies that would then incentivize consumers to use more).

Conclusion

This survey of resource scarcity issues in Ethiopia has set out a summary of key dynamics on both the demand and the supply side of the country's resource scarcity needs. The next part of the paper presents an analysis of these dynamics in Ethiopia's broader political economy context – exploring how scarcity interacts with governance, economy, social change and other macro-trends, what kinds of risks and opportunities emerge, and how Ethiopia's international partners can work most effectively on these issues.

Part 2: Scarcity in Ethiopia's political economy context

Introduction

The first part of this report set out an overview of scarcity issues in Ethiopia, looking at both the supply and the demand side of the equation. But what do the findings of this survey imply for Ethiopia's real world political economy context – for its ambitious plans for growth and poverty reduction, for its governance and institutions, and for what Ethiopia's international partners need to be thinking about and doing in order to provide the most effective possible support?

This part of the report begins with a brief summary of some of the key themes and conclusions that stand out from the scarcity review set out in the last part of the paper. Three broad sets of observations can be made: one on the challenges that resource scarcity poses for Ethiopia today, a second set on how these challenges may evolve in the future, and a third on what action the government is planning to take in response to these challenges.

The discussion then moves on to a critical analysis of gaps and vulnerabilities in the government's current approach, together with an initial discussion of how international partners can address these gaps through their support to Ethiopia.

Ethiopia's current scarcity context

As the first part of the report set out, even before future trends like climate change are taken into account, Ethiopia has a major challenge with resource scarcity.

Agriculture and food security are right at the heart of this challenge. While actors from the Ethiopian government and the World Bank through to the Gates Foundation and civil society groups recognize that progress in smallholder agriculture has to be a key part of the solution, yields in the sector remain low. Meanwhile, population growth to date has led to notably small farm sizes, with Ethiopia's land tenure rules compounding the challenge. Land degradation and deforestation are major problems; the sector is heavily exposed to drought; and given the heavily rural composition of Ethiopian society and high dependence on smallholder farming, all of these challenges feed directly through to problems of food insecurity.

Outside of the highlands where the majority of Ethiopia's people live, and especially in the thinly populated, largely pastoral periphery that runs from Benishangul-Gumuz and Gambella in the west, through SNNP and southern Oromia in the south, to Somali region and Afar in the east, agriculture and land holding follow very different patterns – but here too, the core themes of limited productivity, vulnerability to drought and food insecurity remain present.

Ethiopia's exposure to drought is in turn driven not only by the unreliability of rainfall patterns in the Horn of Africa, but also in the country's lack of hydrological infrastructure, including acutely limited water storage capacity, and agriculture that is overwhelmingly rain-fed rather than irrigated.

Meanwhile, Ethiopia's still highly limited access to energy adds another degree of challenge to its scarcity dynamic. Poor access to electricity is not only a problem in itself – reducing productivity and holding back progress on poverty reduction – but also creates ripple effects in other dimensions of scarcity. Forests are cut back to provide firewood as an alternative energy source, thus undermining the ecosystem services that they would otherwise provide (for instance in water management and protection from erosion). Dung that is needed to maintain soil fertility is used as fuel for cooking instead. Diesel generators used as a fallback during electricity outages increase Ethiopia's demand for liquid fuels from abroad.

All of these scarcity challenges in turn drive knock-on economic and social consequences. Inflation is clearly among the most obvious and pressing of these. While Ethiopia's inflation rate eased in 2010, following good harvests and the effect of a global downturn on commodity price pressures, it is now back at over 36% - clearly illustrating the ongoing hazard presented by both weather variability and reliance on imported

goods (especially liquid fuels, but also food). Pressure on Ethiopia's foreign exchange position has increased too, which in turn contributes to periodic shortages of diesel and other imported goods.

In the social context, meanwhile, the volatility of crop yields, rainfall, prices for food and fuel and other basic essentials presents a constant threat that can at any time overwhelm the often minimal coping mechanisms and sources of resilience that are in place. Environmental shocks have long been recognized as one of the primary reasons why poor people become poor, or why escape from poverty is so difficult; there is no shortage of concrete examples of this in Ethiopia.

Overall, then, even if Ethiopia's current context were held static – with no further evolution of any of the challenges just noted – the need to tackle the scarcity nexus of agriculture, land, food, water and energy would clearly represent a key task for Ethiopia's government and international partners, all the more so given the extent to which Ethiopia is poor, rural and reliant on natural resources and ecosystem services for its basic needs.

Ethiopia's future scarcity context

In reality, of course, Ethiopia's scarcity context is anything but static. Looking to the future, Ethiopia's scarcity context is likely to evolve in particular as a result of three key trends that will interact with the drivers already noted above.

First, **population growth**. As already noted, life expectancy in Ethiopia is increasing. While fertility rates have fallen fast in cities, they appear to have done so much less quickly in rural areas (although poor data availability makes it hard to be precise). As a result, Ethiopia's population is still rising. The country has 83 million inhabitants today, according to the latest UN data. Under the medium variant of the UN's projections, this will rise to 119 million by 2030, and 145 million by 2050.[139]

Second, **economic growth**. Ethiopia's GDP growth rates have moderated a little since their highs in the middle of the last decade (having declined from 12.6% in 2005 and 11.2% in 2008 to 8.0% in 2010; the IMF forecasts 6-7% growth in the near term), and they are currently below the target rate of 12% set out in the Growth and Transformation Plan (needed for Ethiopia to achieve its aim of middle income status by 2025).[140] But 8% growth still represents a powerful engine of economic expansion – an economy growing at such a rate will double in size over a decade – and remains substantially higher than 2010 global GDP growth of 4.9%.[141]

These two kinds of growth both point towards increasing demand for resources. With population set to rise by 43% by 2030 and 75% by 2050, and with economic growth continuing at over 8% a year even amid powerful global economic headwinds (though drought could savage growth rates at any time), Ethiopian demand for goods of all kinds can be expected to increase – and in particular for land, water, forestry, and other natural assets, as well as for food and energy.

This means that, unless the supply of resources can be increased in line with demand – or unless technological innovation or increased efficiency can plug the gap – then competition for access to natural resources can be expected to increase too. This phenomenon has been extensively document at the global level; similar dynamics apply in many individual countries, too, including Ethiopia.

In the context of land, for example, competition can be expected to grow between different land uses such as grazing land, cropland, biofuels, forest conservation, carbon sequestration, urbanization and other land uses – as well as between different groups of people whose livelihoods may also depend on competing uses for land. Competition for water is also likely to grow, again between both different sectors (agriculture, households, industry), and different communities.

Meanwhile, rising demand for food and energy has the potential to lead to intensified inflationary impacts and potentially to political unrest as well – a phenomenon seen in 61 different countries during the 2008 food and fuel price spike – unless both production and access to food and energy are increased in line with demand.[142]

On top of population and economic growth, a third key driver of change in Ethiopia's scarcity context is **climate change**. While most studies suggest that the most important climate change impacts on Ethiopia will not unfold until the second half of the century, it remains the case that Ethiopia's climate is already changing. As this trend evolves and accelerates, it is likely to emerge as a threat multiplier across the board, making every aspect of Ethiopia's scarcity challenge harder to manage. Climate change can be expected to intensify land degradation; increase rainfall variability and place increased stress on water resources; expose food production to new risks and reduce overall food security in the country; and create major problems for hydroelectric power generation, roads and other critical national infrastructure.

It is important to be clear that these three key drivers of change in Ethiopia's scarcity context create opportunities as well as risks.

Demographic change in the country is reducing dependency ratios, for example, and in the process creating conditions in which a major economic take-off could potentially happen. Some Asian economies saw their per capita incomes triple in a generation amid similar conditions. Continued strong economic growth could see Ethiopia achieve its ambition of becoming a middle income country, and accelerate its already impressive progress on reducing poverty. Even on climate change, where silver linings are harder to discern, Ethiopia has used the issue as a platform for leadership in global policy debates, and for showing not only why, but also *how* low income countries can become leaders in low carbon development.

But it is equally important to recognise that these drivers of change imply as much risk as opportunity. Together, the three trends mean that even if the Ethiopian government manages to make powerful strides on responding to its current challenges, it could find that it is just running to stand still. Rising agricultural yields per hectare could be outpaced by rates of population growth; investments in enhancing agricultural productivity could be offset by impacts of climate change.

Overall, the period from now to 2030 is likely to prove decisive for Ethiopia's future, as it is in this two decade window of opportunity that the country's future course – on managing scarcity, and more broadly – will in large part be set. Can Ethiopia's government and people put themselves on course for genuinely sustainable and inclusive growth? Or will the pace, scale and intensity of the headwinds they face prove overwhelming?

Existing policy responses to scarcity in Ethiopia

To answer these questions, start by considering some of the policies that the Ethiopian government already has in place to respond to its scarcity challenges. On the basis of stated policy, most notably in the 2010 Growth and Transformation Plan (GTP), the government of Ethiopia would appear to be well ahead of many other low income countries in recognising and acting on scarcity issues, in addition to its strong focus on poverty reduction more broadly.

The government manifestly regards agriculture as being among its very foremost priorities, to start with, and has matched its rhetoric with action. While all African Union member states committed in the 2003 Maputo Declaration to increase agricultural investment to at least 10% of their national budgets by 2008, a 2007 AU/NEPAD survey found that 50% of them were spending less than 5% of public sector resources on agriculture. Ethiopia, on the other hand, was already comfortably past the 10% line, one of a handful of African countries to have done so.[143]

The government also appears to be taking a more full-spectrum approach to agriculture than was the case under the previous 5 year plan, the PASDEP. Where the PASDEP was criticised for focusing too much on fertiliser to the exclusion of other enabling conditions for a take-off in yields, the GTP places much more emphasis not only on the green revolution 'cluster' of improved seed varieties and irrigation as well as fertiliser, but also extension services and on soil restoration, reforestation and agricultural sustainability – albeit that areas including access to credit, farmers' cooperatives, and the need to make the agriculture system more demand-driven still

need more attention. Given the proportion of Ethiopia's people who work on the land, these measures would, if successful, also be expected to improve food security in Ethiopia's rural areas, by allowing small farmers to become net food sellers rather than net food buyers.

In additional, the government is clearly serious about promoting large scale commercial farms – an approach that many donors, NGOs and foundations all agree is basically necessary, even if there are key questions about how this strategy is undertaken in practice (see below). While much of the produce from these farms appears to be geared towards export markets (in keeping with the government's priority on foreign exchange earnings), the government maintains that large commercial farms will also contribute to the nation's production of food for the domestic market.

Ethiopian government policy also shows considerable awareness of the need to improve water management. The GTP promised to take an integrated approach to water management and recognises the need for "fair and equitable utilisation of water resources", set out ambitious targets for irrigation, river basin management and information gathering, and set a new target of 100% access to potable water in urban areas by 2014-15 and 98% in rural areas.

In the energy context, the government's headline target of becoming a middle income country by 2025 while at the same time achieving zero growth in emissions from current levels signals has attracted considerable attention internationally. As discussed earlier, the government's plans for large hydroelectric power developments form the centerpiece of this approach, but these are also matched by policies on other renewables (notably wind and geothermal) and upgrading of transmission and distribution power grids.

This scaling up of renewable energy is intended not only to improve access to energy, but also to displace fossil fuels from the electricity fuel mix, and to meet energy needs that are currently met through natural gas (e.g. propane for cooking) or liquid fuels (e.g. diesel generators). Further emissions reductions against the business as usual trajectory are planned through energy efficiency in the built environment. Demand for liquid fuels, meanwhile, is intended to be further reduced by biofuels, investment in rail, and urban mass transit systems in Addis Ababa.

Overall, then, Ethiopia's portfolio of policies on agriculture, water and energy suggests that the government does recognise the need for future economic growth to be sustainable. The GTP also places considerable emphasis on easing population growth rates through improving access to family planning services, and sets a target to increase Ethiopia's contraceptive prevalence rate (CPR) from 32% in 2009-10 to 66% in 2014-15.

Two other themes should also be mentioned in summarising Ethiopia's current portfolio of policies relevant to scarcity: resilience, and institutional innovation.

Resilience

Ethiopia's government and people alike have long experience of coping with shocks and stresses of different kinds. Drought is clearly the most important of these, but price shocks and agricultural pests or diseases are also significant. Climate change can be expected to intensify the frequency and severity of such shocks in the future, as can tighter supply / demand balances for key resources at both national and international level.

Against this backdrop, Ethiopia's government already has in place a range of policies designed to reduce vulnerability and increase resilience. In the economic context, as discussed earlier, the 2008 food and fuel spike clearly prompted the government to think seriously about its vulnerability to exogenous commodity price shocks. Like many other governments around the world, the Ethiopian government initially reacted by establishing subsidies to try to soften the impact of the spike on consumers, imposing price controls on some basic goods, and implementing an export ban on selected cereals.

However, these kinds of measures come with their own problems, as was widely noted at the time of the price spike. Economy-wide subsidies can quickly become unaffordable while also driving inflation, and take a

scattergun approach rather than targeting help on the poorest consumers. Price controls and export restrictions, meanwhile, create unintended consequences such as reducing incentives for producers to increase output.

Where the Ethiopian government differs from many other low (and some middle) income countries is that it has shifted quickly towards a longer-term, more sustainable approach to managing the risk of price shocks. The government reduced fossil fuel subsidies rapidly after the 2008 spike (although it also re-imposed price controls on 18 goods designated as "basic" in early 2011).[144] It has also set out its intention to aim for a degree of import substitution (an approach still often regarded with suspicion by many orthodox economists, but that arguably makes sense in an import-dependent, landlocked country if it makes sense anywhere), and to improve its balance of payments position through expanding export sectors.

At the same time, Ethiopia's government has also put a range of policies in place to build resilience on the ground. One key aspect of this relates to Ethiopia's social protection policies, primarily the Productive Safety Net Program (PSNP), which reached 7.1 million households in 2009-10 according to government figures, and operates in rural areas in around one third of the country.[145]

Ethiopia's PSNP is interesting and unusual in that, while social assistance programs have seen a major take-off around the world over recent years, their scale-up has largely taken place in emerging economies such as Mexico, Brazil, India and China, whereas uptake has been much more limited in low income countries (LICs). Such programs as have been piloted in LICs have tended to be small-scale, and have often been donor-driven rather than country-owned.

In Ethiopia, by contrast, the PSNP goes well beyond what could be called a 'pilot' program. It is strongly nationally owned and driven, rather than being pushed by the donor community. It also represents a marked step forward from the situation prior to 2005, in that the PSNP is based on multi-year, predictable investments rather than on responding to food insecurity through emergency appeals. The PSNP is also interesting in that it includes a public works program that itself builds resilience, through soil and water conservation, social infrastructure, and roads (as well as a direct support component for labor-poor households).[146]

The Household Asset Building Program (HABP) is by contrast smaller scale and at an earlier stage of development, but has the potential to evolve into a key policy in its own right.

Finally, the government is also scaling up a major program of work on climate resilience. As noted above, the government has already compiled a National Adaptation Plan of Action (NAPA) for submission to the UNFCCC climate process. Perhaps more significantly, the government is currently working on a Climate Resilience strategy to accompany its existing detailed Green Economy strategy, with the two strategies together making up Ethiopia's ambitious and integrated 'Climate Resilient Green Economy' policy (of which more below).

Institutional innovation

Another key theme in current Ethiopian policies on scarcity is the extent to which the government is willing to try out new organisational models and approaches to machinery of government as a way of streamlining and improving policymaking, including on areas relevant to scarcity.

As already mentioned in part 1 of the paper, for example, the agriculture sector has seen the creation of a new Agricultural Transformation Agency, charged with addressing "systemic bottlenecks in the agriculture sector by supporting and enhancing the capability of the Ministry of Agriculture". The ATA's CEO was hired direct from the Gates Foundation, which has also provided funding for the agency and played a key role in shaping its mandate. Is team comprises a mixture of Ethiopian officials and international secondees (many of them drawn from McKinsey and other strategy consultancies).

The ATA has also led to changes in Ethiopia's machinery of government, and reports to a ministerial council drawn from across government (and including selected regional governments), chaired by the Prime Minister and with the ATA's CEO as head of its secretariat.

Another example of institutional innovation centers on the government's Climate Resilient Green Economy program, also mentioned earlier. While the CRGE strategy has been led by the government's Environment Protection Authority, the underlying idea is for CRGE to be a motor for a whole-of-government approach to climate mitigation and adaptation, with mainstreaming of both priorities through all relevant sectoral development plans.

Accordingly, the CRGE strategy is owned by a Ministerial Steering Committee, chaired by Ato Newai Gebre-ab, the powerful chief economic adviser to the Prime Minister. Like the ATA, the CRGE approach draws on a mixture of both high-calibre Ethiopian officials and international secondees and advisers (including donors, primarily the UK, Norway and UNDP and think tanks, primarily the Global Green Growth Institute).

A third example of institutional innovation is the creation of a special unit within the federal Ministry of Agriculture charged with expediting administration of large commercial farm leases. This innovation represents an implicit challenge to Ethiopia's regional governments, who would previously have had full oversight of land leases, but now only control leases of smaller acreages.

What all three of these examples have in common is a clear recognition on the part of Ethiopia's federal government of the problem of bureaucratic bottlenecks and/or capacity limits in government; an openness to taking radical approaches to learning and upgrading capacity, including international secondees; and a willingness to centralise decision-making (at federal level or around the Prime Minister's office) when this is deemed necessary.

Overall, Ethiopia's government has a broad and apparently comprehensive portfolio of policies that address scarcity issues, ranging from agriculture, water and energy through to climate resilience, low carbon growth, green economy, and institutional innovations to underpin all of the above.

However, as the next section discusses, there are also risks, gaps and vulnerabilities in the government's strategy that need to be addressed.

Potential risks, gaps and vulnerabilities in the government's strategy

Ethiopia's level of ambition and leadership on areas of policy relevant to resource scarcity – and its track record in recent years on both growth and poverty reduction – mark it out as unusual among its peers, both in Sub-Saharan Africa and among low income countries more generally.

But despite this positive backdrop, there are also risks. Despite its high ambition, the government faces major capacity constraints. Despite the breadth of its policy portfolio on resource scarcity, there are important gaps in its approach. And however great the progress that Ethiopia makes, it will still have considerable exposure to exogenous risks of various kinds. This section discusses each of these three sets of risks in turn.

Capacity constraints

The top echelons of Ethiopia's federal government are often staffed by extremely competent individuals, most notably the Prime Minister himself (former British Prime Minister Gordon Brown is said to have referred to Meles Zenawi as the most intelligent head of government he worked with). However, it is also the case that policymaking and delivery capacity are much more limited both at more junior levels of the federal government, and at the sub-national levels of region, *woreda* and *kebele*.

While the kinds of institutional innovation discussed above can certainly accelerate and upgrade policy development (and appear already to be doing just that in the case of the ATA and CRGE policy architectures), there is a limit to how much can be achieved by small teams at federal level, however talented their staff and however strategic their approach. Ultimately, on-the-ground delivery relies on a more distributed approach – and capacity building at these levels will be a much more challenging and long-lasting task.

A second aspect of the government's challenge on capacity is on how to take account of the linkages and trade-offs between different aspects of scarcity. While innovations like the ATA or CRGE focus on taking a systemic approach,

each of them also focuses on one primary objective – in the ATA's case, improving agricultural productivity; in the case of the CRGE strategy, improving Ethiopia's climate resilience and environmental sustainability. In reality, though, the government's various priorities will often overlap and sometimes compete, creating both a need for integrated analysis and decision-making, and a risk of unintended consequences and displacement of problems when this is absent.

A third key capacity issue for the government relates to the quality of its data. As the first part of the paper set out, government data is often called into question on a range of fronts. Many if not most donors privately doubt the government's figures on agricultural yields. Accurate numbers on fertility rates are hard to come by. The government's numbers on food security are widely questioned. Even the government's stated rate of economic growth differs from the IMF's estimate by two or three percentage points.

These shortfalls in data – and the government's strong antipathy towards independent auditing of its data – directly impact the capacity of both the government and its international partners to address scarcity risks comprehensively. Instead, key actors within and outside government lack a shared awareness of the problems they are facing, and are unable to evaluate comprehensively which policies are working and which are not.

Together, these capacity limitations mean that even where the government has ambitious targets in place and funding available for pursuing them – as, for example, in the case of its policies on agricultural yields and access to family planning – delivery could still lag far behind, leaving major vulnerabilities to scarcity inadequately addressed.

Gaps and vulnerabilities in government policy

A second key set of potential vulnerabilities in the government's approach relates to gaps and problems in its policy portfolio, where three areas stand out. These are:

- Policies on **resilience**, including both social protection and climate adaptation;
- Policies relevant to promoting **growth in non-farm GDP**, including those linked to rural to urban migration; and
- Policies relevant to **projects in Ethiopia's periphery**, including large commercial farms, hydroelectric power development, and oil and gas exploration.

On **resilience**, as noted earlier, the government already has policies in place on both social protection (including the Productive Safety Net Program and Household Asset Building Program) and climate adaptation (where a National Adaptation Plan of Action is already in place, and a Climate Resilience strategy is under development as part of the CRGE program). While these policies are welcome in themselves, they also have a number of vulnerabilities.

In the social protection context, one of these vulnerabilities centers on the rate at which the government aspires to 'graduate' beneficiaries from PSNP coverage. In 2009-10, as noted earlier, Ethiopian government figures showed that some 7.1 million households participate in food safety net programs.[147] But by 2014-15, the government intends to reduce this figure to 1.3 million households – a reduction of 82% over just five years.[148] It is extremely difficult to see how such a breathtaking improvement in food security could be achieved so quickly, particularly against the backdrop of recent and current weather variability. As a result, the target for PSNP graduation has created concerns among donors and other external partners that families who currently depend on PSNP support may have their safety net removed long before they are resilient enough to manage without it.

While the Household Asset Building Program could in theory help to build up that longer term resilience, the fact that it is at such a nascent stage compared to the PSNP poses questions about whether that will happen in practice. At the same time, while the HABP's focus on providing credit as a means towards building up access to assets – such as tools, seeds, technology and so on – is useful, it only addresses one aspect of resilience. But

resilience also depends on other key factors besides access to assets. For example, the Africa Climate Change Resilience Alliance also singles out the significance of:

- *Institutions and entitlements* (in particular as ways of guaranteeing rights and access to key resources and assets);
- *Knowledge and information* (such as seasonal weather forecasts or agricultural extension services in the farming context);
- *Innovation* (which in turn relates to whether systems – be they governance systems, ecosystems, communities and so on – are able to adapt and change themselves); and
- *Flexibility and foresight* (often a challenging area to focus on when governments or individuals are struggling to cope with the present, but nevertheless a key component of what makes actors resilient to shocks and stresses).[149]

While Ethiopia's National Adaptation Plan of Action has some useful elements, it is not a road map to real mainstreaming of resilience. Instead, like many NAPAs, it reads more like a list of projects designed primarily to lever funds for adaptation from climate finance windows such as the UNFCCC Adaptation Fund. While this is not in itself a bad thing, it also leaves a key gap in Ethiopia's wider resilience strategy. The extent to which the government's forthcoming Climate Resilience strategy manages to address these wider aspects of resilience is therefore a critical question in framing Ethiopia's preparedness to deal with climate change, price spikes and other scarcity-induced shocks and stresses in the future.

A second area where there are gaps in the government's current approach is in its policies to promote **growth in non-farm GDP**. This is an important part of how the government manages scarcity risks for two reasons.

Firstly, as discussed in part 1 of the paper, Ethiopia's landlocked status means that non-farm GDP growth is needed as a driver for increasing demand for agricultural products. Without this, the combination of increasing agricultural production and high transaction costs on exports risks leading to price volatility, rather than to a sustained take-off in yields underpinned by increasing capital investment. Secondly, non-farm growth is needed simply to spread Ethiopia's eggs across different baskets, rather than (as now) having so much of the economy reliant on a single sector that is highly prone to drought and climate variability.

Part of the solution to increasing non-farm growth lies with diversification of income in rural areas. Achieving this is one of the intended outcomes of the PSNP and HABP (and hence another argument for scaling up the latter and avoiding over-hasty graduation of beneficiaries from the former), but much remains to be done: a World Bank analysis, for example, notes that the HABP's focus on providing credit fails to promote broader livelihood opportunities, with the menu of activities promoted by the government strongly focused on agriculture.[150]

Beyond promoting non-farm employment in rural areas, growth in non-farm GDP is also likely to involve more urbanization than has currently taken place, especially given that Ethiopia's spatial distribution is so much more rural than the Sub-Saharan African average. As noted earlier, there is much that the government could do to create enabling conditions for this to happen, including improving security of land use rights, and reforming registration requirements for recent migrants to urban areas.

Critically, however, the government will need to make sure that sustainable urbanization takes place in tandem with improvements in agricultural productivity, and at compatible rates. As urbanization takes place, it is likely to bring rising standards of living, in the process helping to reduce pressure on land in heavily populated rural areas. But at the same time, demand for food and energy will increase, making it all the more important that production is increasing at the same time. The government will also need to manage the probability that inequality will rise as urbanization takes place, as well as the fact that fast-growing urban centers are likely to be vulnerable to shocks.

Finally, the government will need to improve the context for private sector enterprise across the board. While the service sector accounted for the largest share of GDP growth in 2009-10, this was relatively narrowly based (primarily due to hotels and restaurants, financial intermediation, public services and real estate).[151] To broaden this out and build sustainable private sector growth, according to a joint report by the ADB, UNDP, OECD and UNECA, the government will need to address a number of key challenges, including a poor business environment, a poorly performing judicial system that fails to address property rights and weak corporate governance, a relatively undeveloped financial system, and a challenging macroeconomic environment.[152]

A third set of lacunae in the government's policy portfolio on scarcity-relevant areas relates to **the politics of projects in Ethiopia's periphery**. As noted earlier, this zone of the country can be understood as a 'horseshoe' that runs from Benishangul-Gumuz and Gambela in the west, through SNNP and southern Oromia in the south, to Somali region and Afar in the east. As well as being thinly populated compared to Ethiopia's highland center, these regions share the feature that they are where the majority of large commercial farm expansion, dam projects and hydroelectric power development, and oil and gas exploration are taking place.

As has already been noted, most foreign aid donors, foundations and civil society groups appear to accept that these forms of development are an important and necessary step forward for Ethiopia. All three forms of projects have the potential to improve access to food and / or energy. All three can improve Ethiopia's export earnings (a key requirement for building resilience to another scarcity-driven risk – import dependence and exposure to exogenous price shocks). And all three can contribute to broad-based growth and development – including, in the case of large hydroelectric projects, Ethiopia's aim of zero growth in emissions from now to 2025. In this sense, most of Ethiopia's international partners see questions about these kinds of development project in Ethiopia's periphery as primarily questions about *how*, not whether, such projects are taken forward.

This said, there is no shortage of questions about the 'how' of these projects. Among the issues for which large land projects in Ethiopia have been criticised are the following:

- First, some critics have argued that the **government has charged too little for land leases**. One major study undertaken by Ethiopia's Forum for Social Studies found that minimum rents in most regions were around 15-30 birr (USD $0.86-1.72) per hectare per year, an amount argued in the same study to be "ridiculously low by any standards".[153] Investments that export more than 50% of their produce also qualify for income tax exemption for five years or more.[154]

- The government has also been accused of exercising **poor oversight of implementation of land leases**. Many investors are reported to have held land idle after acquiring rights to use it, while others are reported to be using it for purposes other than those cited on the lease application. While monitoring and oversight of leases is the responsibility of regional governments, critics argue that "it is quite obvious that these have neither the institutional nor technical capacity to carry them out effectively".[155]

- On a similar note, large land deals have been criticised for **poor environmental standards**. From 2002 onwards, Ethiopia's Environmental Protection Authority was charged with approving the environmental impact assessments (EIAs) undertaken by investors; the rules specified that projects could not proceed without this clearance. From 2009, however, this function was transferred to the Ministry of Agriculture and Rural Development, despite the fact that the Ministry appeared to lack the capacity needed to evaluate EIAs. Similarly, the Ethiopian Wildlife Conservation Authority (EWCA) has not been consulted about projects in the middle of national parks, despite being in charge of policy on these protected areas.[156]

Most of all, though, large land deals have been questioned on the basis of the fundamental political economy question of who benefits from such projects. To be clear,

these questions are not about suggestions of corruption or patronage in the allocation of land leases (as they have been in many other countries). Instead, these are primarily questions about competing visions for development, with different winners and losers in each.

For the government, the advantage of land leases appears to be partly about food security and agricultural modernization, but in particular about export earnings (unsurprisingly, given the problems of import dependence and price volatility noted earlier in the report). While the government argues that large land projects will result in improved domestic food security, it is also the case that tax and financial incentives are more attractive for projects that export their products than for those that do not. There are also cases of foreign investors being given exemptions from the government's export ban while this was in effect.[157] The Ethiopian study cited earlier hence concludes that "the shift towards large-scale agriculture is ... driven by the priority for exports and foreign earnings, and ignores the need for domestic food security".[158]

On the other hand, the most important critique of land deals in Ethiopia has been that they fail to benefit people living in the areas where such leases are being introduced – and often work strongly to their disadvantage. Among the various dimensions of this critique are that Ethiopia's lane tenure system, under which all land is publicly owned, allows for arbitrary expropriation of land that the government may deem to be "spare" even if customary users have enjoyed access to it (or to natural resources that come with access to it, such as water) for many years; and that compensation paid to previous users of land has often been unfair and inadequate, while standards of transparency and participation have frequently been minimal.

While direct evictions from land to make way for new investors appear relatively uncommon, what *is* happening on a widespread scale is resettlements in pastoral areas under the government's commune development or "villagization" program, which targets 500,000 households in the country's periphery.[159] The government does not dispute that this program is underway, but it adamantly denies that the program is to clear land, instead arguing that it is designed to improve food security and access to services such as education, clean water and healthcare.[160]

Critics of the government's approach, on the other hand, argue that resettlements *are* linked to land clearances, and also allege that such resettlements have used intimidation or violence. The Ethiopian Forum for Social Studies report quoted earlier concludes that "the state has used its hegemonic authority over the land to dispossess smallholders and their communities without consulting them [and] without their consent ... the loss of property does not only bring economic and social deprivation but also a sense of insecurity and the loss of voice".[161] The government's approach has also been strongly criticised by advocacy NGOs such as Human Rights Watch and the Oakland Institute (to its intense and manifest irritation).

While the lack of open data makes it difficult to verify what happened in specific instances, what does appear clear is the government has very firm ideas about the direction that future agricultural development should take, and that these ideas are at times strongly in tension with the perceived self-interest of people current occupying or using land earmarked for such projects. The Forum for Social Studies report quoted above summarises the impact of the government's policy as follows, and is worth quoting at length:

> "The state is now redefining the agrarian structure of the country as well as the future course of agricultural production in a manner that will increasingly marginalize the rural population ... since, by law, the state has juridical ownership of the land and in contrast peasant farmers and pastoralists have the right of use only, it is the state which in effect has been responsible for land grabbing: it has used its statutory right of ownership to alienate land from those who have customary rights and rights of longstanding usage, and transferring it, without consultation or consent, to investors from outside the communities concerned as well as from outside the country itself. The commercialization of land has served as a political advantage to the state since it enhances its power vis-a-vis rural communities, and

leads to the greater concentration of authority in the hands of public agents and local administrators."

As Ethiopia's program of large dam construction accelerates, it too has the potential to drive more intense debate about centralisation of decision-making power and who benefits from developments. Issues of resettlement and natural resource access are already present here as well: the Gibe III dam on the Omo river valley has been heavily criticised by NGOs, and similar issues will arise as development plans on the Nile unfold as well.[162] In many cases (including Gibe III), dam projects and land lease projects are connected, given the role of the former in providing irrigation for the latter.

While debate between the government and its critics about the accuracy of NGO campaigns is likely to continue, the Ethiopian government arguably also has a stake in quietly taking account of the substance of its detractors' arguments, for four key reasons that are all based on the government's own self-interest.

First, because **strategies that are not economically sound risk undermining achievement of the government's own objectives**. Without a clear, long-term, top level land and water use planning process that looks across all sectors, the government's development plans risk impeding the continued growth of a number of critically important sectors. For example, dryland livestock production makes a vital economic contribution to Ethiopia, but risks being undermined if the sector's needs are not properly integrated with those of large scale commercial farms, for example through livestock mobility corridors.

Similarly, the fact that water demand for irrigation and water demand for power generation is overseen by two different ministries that often fail to coordinate also presents clear risks. Projected climate change impacts are already likely to lead to significant unmet demand for water for irrigation.[163] Once the government's highly ambitious plans for expanding both irrigation *and* hydroelectric power generation are taken into account, it becomes clear that an integrated water strategy, covering the work of *all* government ministries, is badly needed; at the moment, however, it is conspicuous by its absence.

Second, because of the **potential for such development projects to drive instability, violence or insurgencies**. Development projects or resettlements imposed from above with minimal transparency or participation have considerable potential to make particular communities feel "politically irrelevant", and to exacerbate a range of risk factors for violent conflict.[164] A 2006 study of the Somali region, for example, noted that a move away from pastoralism had introduced a new driver of conflict, as communal access to land gives way to growing use of enclosures.[165] While it is hard to imagine degrees of unrest or violence in peripheral areas that would pose an existential challenge to the Ethiopian state, increasing instability in peripheral areas could have the effect of reducing the productivity and/or increasing the costs of large land or hydroelectric projects – and hence undermining the government's own development strategies.

If oil is found in the south of the country, following recent discoveries just over the border in Kenya, then this could create additional instability over resettlements or questions about who benefits from oil finds. Oil exploration has already proven contentious in other areas of the country: in Somali region, the Ogaden National Liberation Front, which is fighting for independence for ethnic Somalis, attacked a Chinese exploration rig in 2007, killing nine Chinese oil workers and 65 Ethiopians.[166] It has continued to warn oil companies to leave the area and killed a British geologist working for Petronas in April 2010.[167]

Third, the controversy (and potentially unrest) associated with large projects has the potential to **cause investors to pull out**. The World Bank and EBRD have already declined to fund the Gibe III dam project, causing the government to forfeit two potentially major sources of funds and expertise. Nor is it hard to envision circumstances in which an NGO-led international campaign could successfully exert pressure on major land investors, such as India's Karuturi, that could cause them to pull out of investments in Ethiopia.

This outcome would also be a serious setback for the government – for reasons of capacity as much as financing. As noted earlier in the report, the government

faces important constraints in its ability to manage large hydroelectric developments, for example in tendering and project management processes, as well as access to technology. International financial institutions like the World Bank and the EBRD have considerable expertise to offer in exactly these kinds of areas – but Ethiopia cannot tap this know-how unless these institutions are part of the project in the first place.

Fourth, in the case of large hydro projects, Ethiopia's development plans could **damage its current reputation as a force for stability in the region**. While a majority of Nile Basin countries support Ethiopia's right to renegotiate historic treaties on riparian rights to the Nile, the fact that Ethiopian ministers can cheerfully admit that Egyptian policymakers found out about plans for the Grand Renaissance Dam "from the media" has considerable potential to alarm Ethiopian partners, including the US with its major security relationship with Ethiopia.[168]

Significantly, it does now appear that the government of Ethiopia has embarked on an at least partial rethink of some of its development plans in pastoral areas. The Ministry of Agriculture announced in early 2012 that it had suspended land allocations to take time for assessment of both its internal structures, and of specific allocations that have already been made.[169] The government has also indicated that it will reduce the time span of leases and increase rents per hectare.[170]

Exogenous risk factors

A third and final set of vulnerabilities in the Ethiopian government's approach to managing scarcity centers on exogenous risks.

Among these risks, the most important in the near to medium term is almost certainly the risk of **drought** – a risk that, given Ethiopia's history, needs to be considered as a when rather than an if. While Ethiopia has taken important steps to increase its resilience to this risk, past experience suggests that a severe drought will exert a significant downward influence on GDP growth, as well as driving significantly increased food insecurity. Both of these consequences, and other indirect effects, could substantially slow achievement of the government's Growth and Transformation Plan objectives.

A second key exogenous risk is the possibility of **commodity price inflation and volatility**, given Ethiopia's import dependence. As earlier sections have discussed, Ethiopia is landlocked and has a relatively meagre resource endowment, other than its hydropower potential. It is therefore heavily exposed to volatility in global resource markets – especially those for liquid fuels and food. On a business-as-usual trajectory, economic and population growth will increase this exposure, as demand for liquid fuel and food increases from current very low levels.

A third key exogenous risk is that of marked **reductions in aid finance**. Ethiopia has comparatively high levels of aid dependence compared to many of its neighbours – development assistance accounted for 12% of Ethiopian GNI in 2009, as compared to 11.5% in Uganda, 6.1% in Kenya, and 4.6% in Sudan. These aid levels have driven a dramatic scaling up of service provision in the country in recent years. If, as seems possible, OECD aid levels were to decline significantly over the next few years, then the question of how Ethiopia would fare would be critically important. If aid flows to Ethiopia fell substantially, the government could well find itself having to cut long-term investment spending on areas like agriculture, climate adaptation or infrastructure, and divert spending towards shorter term priorities such as basic services.

Over the longer term, probably the greatest exogenous risk to Ethiopia is that presented by **climate change**. As climate impacts have already been discussed earlier in the paper, they are not covered further here – but it bears noting that Ethiopia will be heavily exposed if global climate mitigation efforts bog down in inadequate voluntary action or mutual recrimination between rival blocs of major emitters.

Conclusion

Summary

Ethiopia's resource scarcity context presents a daunting challenge, but also a significant opportunity.

As the summary at the beginning of part 2 set out, Ethiopia's current scarcity context includes low agricultural yields and average farm sizes, land degradation and deforestation, and chronic problems with food security. It encompasses major exposure to drought, as a result of both unreliable water availability and limited water storage capacity, as well as minimal irrigation. It combines limited to access to energy with high dependence on biomass. And the country has considerable dependence on imported oil and food, creating major exposure to global commodity price volatility, with the attendant risk of balance of payments problems, inflation and the potential for outright supply interruptions.

In future, this scarcity context will be shaped by three key drivers of change: population growth, economic growth and climate change. While all present major opportunities for Ethiopia, all also imply considerable risk. The first two imply significantly increased demand for resources of all kinds, while climate change will make the scarcity challenge harder on every front. Together, they imply that even if the government makes powerful progress on tackling current challenges, it may be just running to stand still.

However, Ethiopia's government appears well aware of the risks it faces, and has put in place a battery of policies to address the country's scarcity challenge. It has an ambitious agricultural program, allocates a high proportion of public spending to the sector, is taking a broad approach to improving yields, and is also focusing on improving water management. It is pursuing a huge renewable energy program, primarily in large hydroelectric power, as well as a broader green economy strategy that aims to see Ethiopia become a middle income country by 2025 with no net increase in greenhouse gas emissions. It has built up one of Africa's largest social protection systems, the Productive Safety Net Program (PSNP), and is building up work on other areas of resilience including household asset building and climate adaptation. Across all of these areas, the government has shown itself willing to take innovative approaches to policy development and delivery.

But for all these assets, Ethiopia's policy portfolio on scarcity also has important vulnerabilities. Its high ambitions could be held back or undermined by the government's very real capacity constraints, especially at the delivery front line of region, *woreda* and *kebele*; where different policy areas intersect and pose trade-offs; and as a result of limitations in the quality of data underpinning policy decisions.

At the same time, the government's policy portfolio on scarcity also has important gaps. The positive impacts of the PSNP could be undermined by attempts to 'graduate' beneficiaries from the program too quickly, while other policies on resilience remain for now relatively undeveloped. The government's approach to agriculture could be undermined if non-farm GDP does not grow as fast as the agriculture sector, and so leads to increasing price volatility and a lack of incentives for investment.

Above all, the government's ambitions for large commercial farms, hydroelectric power development and oil exploration depend on stability in the country's pastoral periphery – stability that could be undermined by these very policies, if implementation of them is carried out with insufficient care and damages the livelihoods of people who currently depend on access to natural resources in these areas.

Finally, the government's ambitions could also be impeded by a range of exogenous risks. The specter of drought always looms large over Ethiopia, and could at any time trigger major decreases in food security and GDP growth. Global commodity price volatility looks unlikely to recede any time soon, absent a game-changing restructuring of the global economy, and Ethiopia is likely to remain highly exposed to balance of payments problems, inflation and supply interruptions as a result. Continuing global economic headwinds could also lead to marked declines in OECD aid flows, with significant impacts on a relatively aid-dependent country like Ethiopia. And over the longer term, Ethiopia remains heavily reliant on major emitters to

make good on their rhetoric and reduce their emissions sufficiently to stabilize greenhouse gas concentrations in the air at a safe level.

Ten ways Ethiopia and its partners can improve their performance on scarcity

Against this backdrop, how can Ethiopia and its international and multilateral partners best improve how they deal with the challenges of resource scarcity and climate change? This is a tough and wide-ranging question – and part of the objective of this paper is to catalyze fuller discussion about exactly this question. But as food for this conversation, and by way of conclusion to this paper, here are ten ideas for how Ethiopia and its partners can work more effectively on scarcity issues.

1. **Understand the scarcity context.** The first and most fundamental requirement is for both Ethiopia and its partners to understand what they are dealing with. Of course, numerous ministries, government agencies and donors are already working on one or more aspects of the scarcity challenge in Ethiopia – whether through agricultural development, the PSNP, the health sector (a critical focus for reducing population growth rates) or institutional capacity building.

   But it is also the case that only a handful of ministers, government officials and donors have really internalized how much of a game changer climate change and resource scarcity is likely to be for Ethiopia. The Climate Resilient Green Economy program has yet to be really mainstreamed throughout government, for example, while among donors only the UK, Norway and UNDP have been seriously engaged in supporting the program. Recognising the absolute centrality of climate and resource scarcity to Ethiopia's development outlook must hence be the first priority for government and donors alike.

2. **Invest in data and statistical capacity building.** High quality data is fundamental to effective policymaking, but as noted in earlier parts of the paper, Ethiopian government data – for example on agricultural yields, on fertility rates, on food insecurity and even on GDP growth – is often regarded skeptically by many donors. This problem runs counter to the broader trend in international development, towards open, transparent and easily auditable data. There is also anecdotal evidence that the Prime Minister himself has on occasion expressed private frustration to one or two closely trusted donors about the difficulty of finding out where progress on key sectors actually stands.

   Yet the problem is not limited to government data. On the contrary, there is also a more generalized problem about the quality and availability of data in Ethiopia, as in much of the rest of Africa. Donors could usefully make a determined push on helping Ethiopia to build up its statistical capacity, as well as working to pool other sources of data. This could potentially help to create a more collaborative, evidence-based approach, creating a sounder basis for decision-making on climate and scarcity issues.

3. **Build distributed capacity.** Many donors are already engaged in capacity building work, often with federal government ministries. But to make real progress on tackling issues like agricultural yields or access to reproductive health services, they need to take a more distributed approach. That means channeling more support channeled to regional governments, which have very limited revenue raising powers (80% of all Ethiopian revenues are collected at federal level), as well as to *woredas* and *kebeles*. Donors also need to work to ensure that aid is distributed across regions more equitably (at present, Tigray and Amhara receive a disproportionate share of regionally earmarked aid). This shift has started to happen, but needs to be accelerated.

4. **Expand current resilience approaches.** 'Resilience' has become a fashionable term in international development in recent years, and may be at risk of becoming a catch-all synonym for development itself[171] – an outcome that would reduce clar-

ity on the real changes that a focus on resilience can imply to in-country development programs. Part of the point of the resilience agenda is that it emphasizes a range of themes – social protection, climate adaptation, livelihoods, disaster risk reduction, a more political and less technical approach to governance – that were badly covered in the Millennium Development Goals, and until recently in many donors' programming.

In Ethiopia, both government and donors are increasingly focusing on these areas, but the degree of risk posed by the scarcity agenda implies a need to scale these areas of work up dramatically. In particular, they should do everything they can to expand and improve the PSNP (rather than scaling it back, as currently intended), and also to bring to scale the Household Asset Building Programme and the forthcoming CRGE Climate Resilience Strategy.

5. **Recognise scarcity as a political economy issue first and foremost.** Resource scarcity has many dimensions and cuts across numerous areas of work – from emergency relief, social protection and livelihoods through to environment, climate, infrastructure, private sector, health and governance. Most of all, though, it is a political economy issue. Scarcity issues will create new winners and new losers – as will the decisions taken by government and donors alike on how to respond to scarcity.

   Donors in particular need to recognize this, and to understand how scarcity issues relate not only to each other, but also to wider social, political and economic drivers of change in Ethiopia. Too many donors have in recent years seen 'governance' as an agenda primarily about relatively technical and apolitical areas such as institutional capacity building, public financial management or anti-corruption. Scarcity is one of the drivers of change that will increasingly challenge this approach in years to come.

6. **Deepen the policy dialogue.** Following the 2005 elections, a significant proportion of the bilateral and multilateral donor community to suspend budget support to Ethiopia after the 2005 elections. While donors were facing serious pressure to address human rights concerns after the elections, their decision to suspend aid had the consequence of destroying much of the trust that had existed between government and donors. Afterwards, many donors found themselves shut out of policy dialogues with the Ethiopian government to which they would previously have enjoyed access. Many donors would argue privately that the damage has still not been fully repaired, despite the subsequent restoration by most donors of general (or at least sector) budget support.

   To rebuild and maximize their influence, donors need to find ways of engaging that go with the grain of what the government is trying to achieve, and resist the temptation to indulge in finger wagging – particularly as they seek to address issues arising in the context of large agriculture and hydroelectric projects in the country's periphery. While campaigning NGOs have a strong stake in pushing donors to take all-or-nothing stands backed by threats of suspension of aid, donors may find that they achieve more tangible progress on areas like transparency, participation, environmental impact assessment, and equitable access to natural resources if they present these considerations as factors that can accelerate and support the government's ambitions for inclusive growth, rather than as an externally imposed human rights agenda.

   At the same time, conversely, donors should not conclude on the basis of past experience that their best option is to shy away from policy dialogue about difficult issues – and nor should they allow strategic considerations pertaining to their security relationship with Ethiopia to blind them to longer-term considerations that will nonetheless fundamentally shape Ethiopia's future stability.

7. **Undertake a full independent study of large commercial farms and villagization**. At present, there is a great deal more rhetoric than data about the social, environmental and economic impacts of large commercial farms, villagization, resettlement, and related issues in Ethiopia's periphery. This is in turn contributing to ever greater polarization of the debate, rather than bringing the government of Ethiopia, inhabitants of peripheral regions, donors, and other stakeholders together around a common vision.

   Donors could make a major contribution towards changing this dynamic if they were to persuade the government of the merits of a full, independent, transparent study of the development impacts of these issues, and then support such a study to be undertaken. As well as contributing towards a more inclusive and sustainable approach towards development plans in Ethiopia, this kind of proactive embracing of transparency would also put Ethiopia in a clear position of leadership internationally, setting an agenda that could have much further-reaching implications internationally.

8. **Donors should not walk away from controversial large projects.** On a related note, donors should recognize that they can have much more influence over large projects if they are involved in financing or supporting them than if they exclude themselves. For example, while there are as noted earlier major unresolved questions about the Ethiopian Grand Renaissance Dam, it is hard to see how the World Bank or the EBRD will be able to do much to correct these if they are muttering from the sidelines rather than taking part in the projects as partners.

   A similar point applies to large commercial farms. While private sector investors such as Karuturi or Saudi Star are unlikely to be looking for financing or capacity support from multilateral institutions, donors could potentially achieve a great deal by taking part in projects that show what alternative, more inclusive and sustainable approaches to commercial farming might look like rather than (again) wagging the finger or (as is perhaps more often the case) silently wringing their hands.

   At global scale, for example, the emerging debate on 'landgrabs' has increasingly highlighted alternative approaches that can meet the same objectives on productivity and capital investment, but with much more equitable sharing of benefits.172 Contract farming is one such approach; others include closer partnerships with the private sector to enhance investment in inputs, technologies and training for smallholder production. Donors could usefully get much more involved in these areas, building on important partnership work already been undertaken by a range of international companies and civil society partners.

9. **Donors need to get the home front in order.** While it would be easy for many donors to assume that the bulk of their work to support Ethiopia in responding to resource scarcity and climate change needs to take place within the country, nothing could be further from the truth – for the reality is that it is donor countries who are the principal *drivers* of the challenges that Ethiopia must confront.

   This is most obviously the case in the case of climate change, where as noted in part 1 the disparity between Ethiopia's per capita emissions and those of OECD governments is enormous. But it is also the case on access to food and oil as well. Despite strong growth in the size and affluence of the 'global middle class' in emerging economies, which in turns heightens demand for food, energy and other resources, it is in developed countries where demand is highest. This in turn drives tighter global supply / demand balances for key resources, given constraints to growth in supply – and leaves Ethiopia exposed to commodity price risk.

   Overall, donors need to recognize and act on the fact that a coherent approach to international development means recognizing the global impacts of domestic policy decisions, rather than just assuming that their global duties can be

discharged through writing a check. This is true not only of the need to reduce emissions and move to more sustainable (and equitable) consumption models, but more broadly also of trade, migration, research and development, tax havens and numerous other policy areas.

10. **Build new international partnerships.** Finally, donor governments should recognize Ethiopia's capacity to be a key partner in pursuing progressive global agendas. As a government with a demonstrable record of serious commitment to both poverty reduction and environmental sustainability, and given the personal reputation and capability of its Prime Minister, Ethiopia has considerable capacity to set international agendas.

    This has been particularly clear in recent UNFCCC climate talks, where Meles has been a key figure in the Africa Group, and also a significant player in the new high ambition alliance of European Union and low income countries that appeared to be emerging at the 2011 Conference of the Parties in Durban. Ethiopia could potentially become just as significant an international actor on the resource scarcity agenda more broadly, helping to catalyse more low income countries to move towards green economy approaches while also applying moral suasion to richer countries to follow its lead. As the pressures of climate change and resource scarcity increase, leadership of this kind will be a commodity in much demand.

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