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POWER PEOPLE PLANET

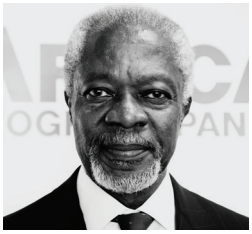
SEIZING AFRICA'S ENERGY AND CLIMATE OPPORTUNITIES

Africa Progress Report 2015

AFRICA PROGRESS PANEL

OVERVIEW 2015

ABOUT THE AFRICA PROGRESS PANEL



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The Africa Progress Panel (APP) consists of ten distinguished individuals from the private and public sector who advocate for equitable and sustainable development for Africa. Mr Kofi Annan, former Secretary-General of the United Nations and Nobel laureate, chairs the APP and is closely involved in its day-to-day work.

The life experiences of Panel members give them a formidable capability to access the worlds of politics, business, diplomacy and civil society at the highest levels in Africa and across the globe. As a result, the Panel functions in a unique policy space with the ability to influence diverse decision-makers.

The Panel builds coalitions to leverage and broker knowledge and to convene decision-makers to create change in Africa. The Panel has extensive networks of policy analysts and think tanks across Africa and the world. By bringing together the latest thinking from these knowledge and political networks, the APP contributes to generating evidence-based policies that can drive the transformation of the continent.

ABOUT THE AFRICA PROGRESS REPORT

The Africa Progress Report (APR) is the annual flagship publication of the Africa Progress Panel. The APR draws on the best research and analysis available on Africa and compiles it in a refreshing and balanced manner. The Panel makes policy recommendations for African political leaders and civil society who collectively have the primary responsibility for spurring Africa's progress. In light of the continent's dynamic links with the rest of the world, the APR also highlights critical steps that must be taken by leaders in the international public and private sector.

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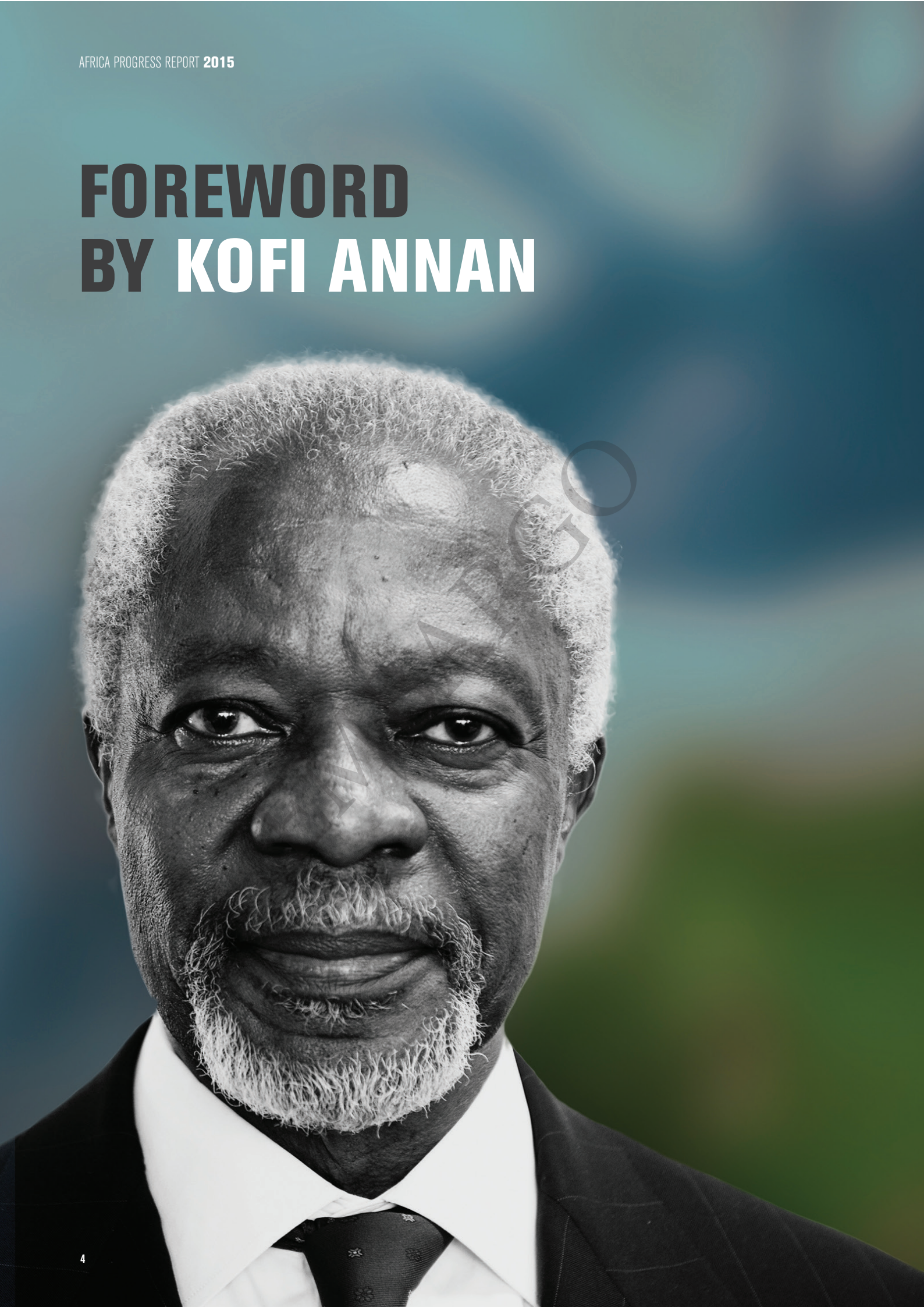
FOREWORD BY KOFI ANNAN



Can the world prevent catastrophic climate change while building the energy systems needed to sustain growth, create jobs and lift millions of people out of poverty? That question goes to the heart of the defining development challenges of the 21st century, and is the focus of this year's report.

It is a vital question for Africa. No region has done less to contribute to the climate crisis, but no region will pay a higher price for failure to tackle it. This year governments around the world will sign up for an ambitious new set of international development goals. These bold plans could turn to dust if world average temperatures are allowed to increase by more than 2°C. There is now a real and present danger that climate change will stall and then reverse the fragile gains made over the past two decades. Meanwhile, over half of Africa's population lacks access to basic electricity and clean cooking facilities – and the numbers are rising.

Climate change demands that we rethink the relationship between energy and development. The carbon-intensive energy systems that drive our economies have set us on a collision course with our planetary boundaries. We can avoid that collision. As a global community, we have the technology, finance and ingenuity to make the transition to a low-carbon future, but so far we lack the political leadership and practical policies needed to break the link between energy and emissions.

The central message of this report is: Africa is well placed to be part of that leadership. Some African countries are already leading the world in low-carbon, climate-resilient development. They are boosting economic growth, expanding opportunity and reducing poverty, particularly through agriculture. African nations do not have to lock into developing high-carbon old technologies; we can expand our power generation and achieve universal access to energy by leapfrogging into new technologies that are transforming energy systems across the world. Africa stands to gain from developing low-carbon energy, and the world stands to gain from Africa avoiding the high-carbon pathway followed by today's rich world and emerging markets.

Unlocking this "win-win" will not be easy. It will require decisive action on the part of Africa's leaders, not least in reforming inefficient, inequitable and often corrupt utilities that have failed to develop flexible energy systems to provide firms with a reliable power supply and people with access to electricity. Tackling Africa's interlocking climate and energy problems will also require strengthened international cooperation. The major summits planned for 2015 – on finance, the Sustainable Development Goals and climate – provide an opportunity to start the change.

Our report shows that Africa's energy challenge is substantial. Over 600 million people still do not have access to modern energy. It is shocking that Sub-Saharan Africa's electricity consumption is less than that of Spain and on current trends it will take until 2080 to for every African to have access to electricity.

Modern energy also means clean cooking facilities that don't pollute household air. An estimated 600,000 Africans die each year as a result of household air pollution, half of them children under the age of five. On current trends, universal access to non-polluting cooking will not happen until the middle of the 22nd century.

The December 2015 talks on a new global climate treaty are approaching fast. Africa is already experiencing earlier, more severe and more damaging impacts of climate change than other parts of the world. Left unchecked, it will reduce agricultural productivity, create conditions for mass hunger and reverse human development.

Africa's lack of energy means it has a tiny carbon footprint. African leaders have every reason to support international efforts to minimize greenhouse gas emissions. At the same time, they urgently need more power to boost and transform their economies and to increase energy access. Their challenge is to embrace a judicious, dynamic energy mix in which renewable sources will gradually replace fossil fuels.

Africa has enormous potential for cleaner energy – natural gas and hydro, solar, wind and geothermal power - and should seek ways to move past the damaging energy systems that have brought the world to the brink of catastrophe.

The waste of scarce resources in Africa's energy systems remains stark and disturbing. Current highly centralized energy systems often benefit the rich and bypass the poor and are underpowered, inefficient and unequal. Energy-sector bottlenecks and power shortages cost the region 2-4 per cent of GDP annually, undermining sustainable economic growth, jobs and investment. They also reinforce poverty, especially for women and people in rural areas. It is indefensible that Africa's poorest people are paying among the world's highest prices for energy: a woman living in a village in northern Nigeria spends around 60 to 80 times per unit more for her energy than a resident of New York City or London. Changing this is a huge investment opportunity. Millions of energy-poor, disconnected Africans, who earn less than US$2.50 a day, already constitute a US$10-billion yearly energy market.

What would it take to expand power generation and finance energy for all? We estimate that investment of US$55 billion per year is needed until 2030 to meet demand and achieve universal access to electricity. One of the greatest barriers to the transformation of the power sector is the low level of tax collection and the failure of governments to build credible tax systems. Domestic taxes can cover almost half the financing gap in Sub-Saharan Africa. Redirecting US$21 billion spent on subsidies to wasteful utilities and kerosene to productive energy investment, social protection and targeted connectivity for the poor would show that governments are ready to do things differently. I urge African leaders to take that step.

Additional revenues can be mobilized by stemming the haemorrhage of finance lost through illicit financial transfers, narrowing opportunities for tax evasion and borrowing cautiously on bond markets. Aid must play a supportive, catalytic role. Global and African investment institutions already see the growth and revenue prospects of African infrastructure in a world where demand is slowing in developed countries.

Reforming energy utilities is also key. Long-term national interest must override short-term political gain, vested interests, corruption and political patronage. Energy-sector governance and financial transparency will help bring light in the darkness. Energy entrepreneurs can join the reformed utilities in investing revenues and energy funds in sustainable power that saves the planet and pays steady dividends. Some countries in the region are already at the front of the global trend of climate-resilient, low-carbon development, including Ethiopia, Ghana, Kenya, Nigeria and South Africa.

Better and more accessible energy can also power up Africa's agriculture. Governments should take advantage of "triple-win" adaptation opportunities that integrate social protection with climate-smart strategies to raise agricultural productivity and to develop rural infrastructure, including crop storage, agro-processing and transport, cutting poverty while strengthening international efforts to combat climate change.

Actions taken by African leaders are essential, and so are actions by the world.

The 2015 summits provide a platform for deepening international cooperation and providing a down-payment on measures with the potential to put Africa on a pathway towards an inclusive low-carbon energy future and the world on a pathway to avoid climate catastrophe. All countries stand to lose if we fail to achieve the international goal of restricting global warming to below 2°C above pre-industrial levels. Africa will lose the most.

Governments in the major emitting countries should place a stringent price on emissions of greenhouse gases by taxing them, instead of continuing effectively to subsidize them, for example by spending billions on subsidies for fossil-fuel exploration. The political power of multinational energy companies and other vested interest groups is still far too strong.

Unlocking Africa's energy potential and putting in place the foundations for a climate-resilient, low-carbon future will require ambitious, efficient and properly financed multilateral cooperation. As we show in this report, the current global climate finance architecture fails each of these credibility tests.

The window of opportunity for avoiding climate catastrophe is closing fast. The only promises that matter at the Paris climate summit are those that are kept. Africa's leaders must rise to the challenge. They are the voice of their citizens in the climate talks – and that voice must be heard. Social movements, business leaders, religious leaders of all faiths and the leaders of the world's cities can join governments and create an irresistible force for change to win the war against poverty and avert climate catastrophe.

Future generations will surely judge this generation of leaders not by principles they set out in communiqués but by what they actually do to eradicate poverty, build shared prosperity and protect our children and their children from climate disaster.

Let us act now and act together.

KOFI A. ANNAN
Chair of the Africa Progress Panel

OVERVIEW

"We can no longer tinker about the edges. We can no longer continue feeding our addiction to fossil fuels as if there were no tomorrow. For there will be no tomorrow. As a matter of urgency we must begin a global transition to a new safe energy economy. This requires fundamentally rethinking our economic systems, to put them on a sustainable and more equitable footing." **Desmond Tutu**, Human Rights activist and Nobel Prize winner

"Africa, too, has no choice other than join hands to adapt and mitigate the effects of climate change. However, Africa can make a choice on how it can adapt and mitigate and when it can do so in terms of timeframe and pace. For Africa, this is both a challenge and an opportunity. If Africa focuses on smart choices, it can win investments in the next few decades in climate resilient and low emission development pathways."
H.E. Jakaya Mrisho Kikwete, President of the United Republic of Tanzania

2015 is a watershed year for international development. In September, global leaders will gather at the United Nations in New York to adopt a new set of sustainable development goals. Before then, in July, governments meet in Addis Ababa, Ethiopia, to agree on the financing framework that underpins the goals. At the end of the year, the summit spotlight will shift to Paris and the crucial negotiations on a new climate change agreement. The stakes could hardly be higher. The risks that will come with failure are immense. Yet this is a moment of great opportunity for the world and for Africa.

Energy is the link connecting the global poverty agenda and climate change. The carbon-intensive energy systems now driving economic growth are locked into a collision course with the ecological systems that define our planetary boundaries. Averting that collision – while eradicating poverty, building more inclusive societies and meeting the energy needs of the world's poorest countries and people – is the defining international cooperation challenge of the 21st century **(See infographic: The energy leapfrog)**.

Nowhere are the threads connecting energy, climate and development more evident than in Africa. No region has made a smaller contribution to climate change. Yet Africa will pay the highest price for failure to avert a global climate catastrophe. Meanwhile, the region's energy systems are underpowered, inefficient and unequal. Energy deficits act as a brake on economic growth, job creation and poverty reduction, and they reinforce inequalities linked to wealth, gender and the rural-urban divide.

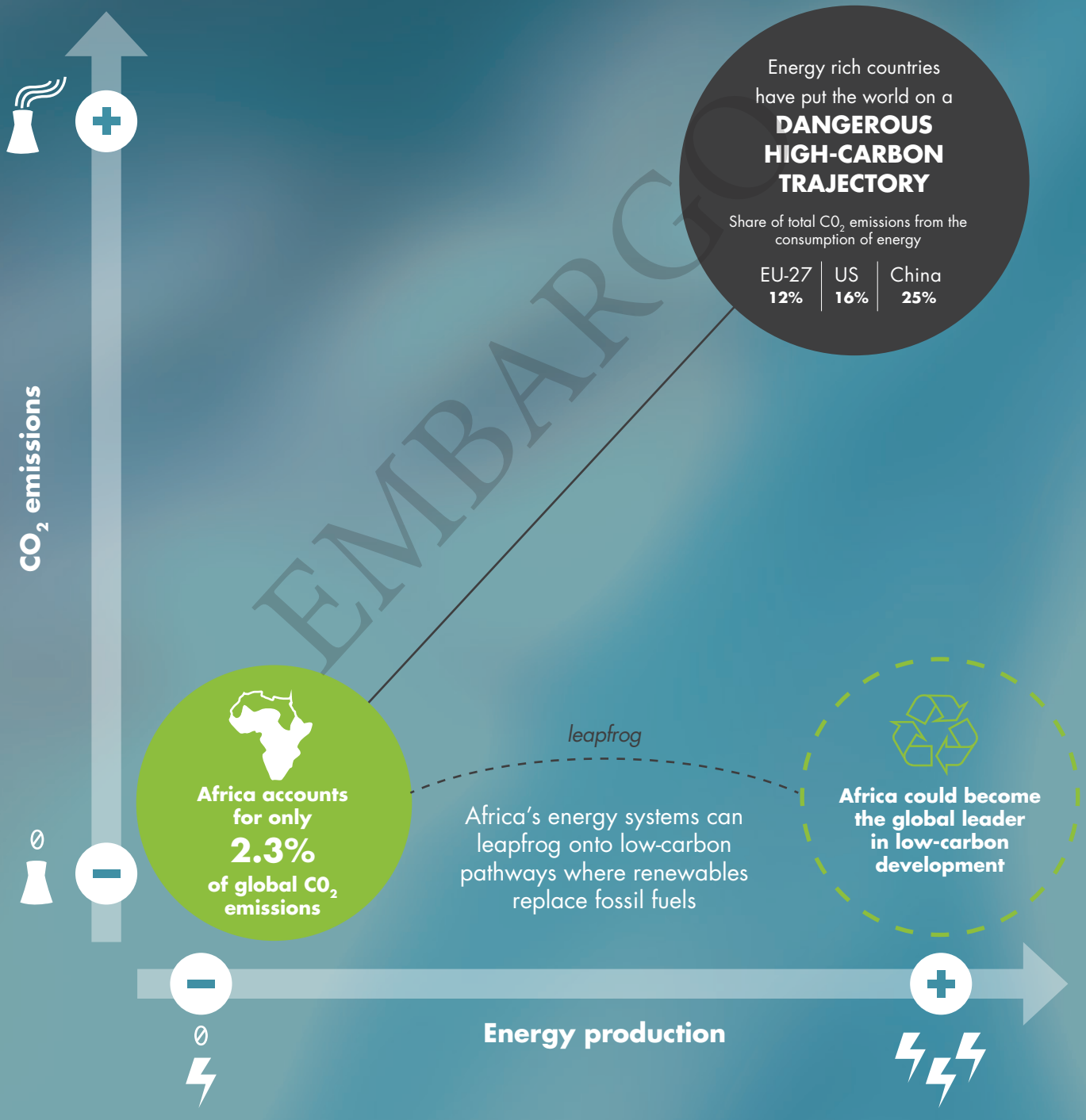
This year's *Africa Progress Report* explores the links between energy, poverty and climate change. We document the risks that would come with a business-as-usual approach. More important, we highlight the opportunities for African leaders both at home and on the world stage.

Energy policy is at the heart of the opportunity. For too long, Africa's leaders have been content to oversee highly centralized energy systems designed to benefit the rich and bypass the poor. Power utilities have been centres of political patronage and corruption.

THE ENERGY LEAPFROG

African countries need energy strategies that drive growth, and reduce energy poverty, while transitioning to a low-carbon economy

With the region experiencing some of the earliest, most severe and damaging climate impacts, African leaders have every reason to support international efforts to limit greenhouse gas emissions



The time has come to revamp Africa's creaking energy infrastructure, while riding the wave of low-carbon innovation that is transforming energy systems around the world. Africa cannot afford to stand on the sidelines of the renewable energy revolution. It can play its part in this revolution and tackle the challenges of transitioning away from fossil fuels.

Low-carbon technologies can be rapidly deployed to expand power generation and to extend the reach of energy systems. With the right policies in place, low-carbon development can correct one of the world's greatest market failures. Millions of Africa's poorest people are paying among the world's highest prices for energy because of the cost barriers separating them from affordable, efficient and accessible renewable technologies. Removing that barrier would unlock market opportunities and unleash a productive power to reduce poverty and build inclusive societies that dwarfs what could be achieved through aid.

The message of this report is that Africa can lead the world on climate-resilient, low-carbon development. Some countries in the region are already doing so, and others should follow. Many of the policies needed to build more resilient societies that can cope with climate change are long overdue. Raising agricultural productivity, conserving land and forestry resources, and planning more sustainable cities would reduce vulnerability and drive down poverty. In each of these areas there would be significant global benefits for climate change through reduced greenhouse gas emissions. This is a triple-win scenario for economic growth, poverty reduction and climate.

In this report we emphasize Africa's leadership role.

This is not to downplay the critical importance of international cooperation. Keeping global warming below the 2°C threshold above pre-industrial levels demands collective action to address a shared threat. Similarly, unlocking Africa's energy potential and putting in place the foundations for a climate-resilient, low-carbon future will require ambitious, efficient and properly financed multilateral cooperation. As we show in this report, the current architecture fails each of these credibility tests.

Based on extensive consultations with African energy planners, climate negotiators, researchers and governments, this report sets out the Africa Progress Panel's perspective on the energy and climate challenges. It also provides an agenda for change and a call to action directed not just to Africa's leaders, but to the wider international community.

More power with equity - Africa's energy challenge

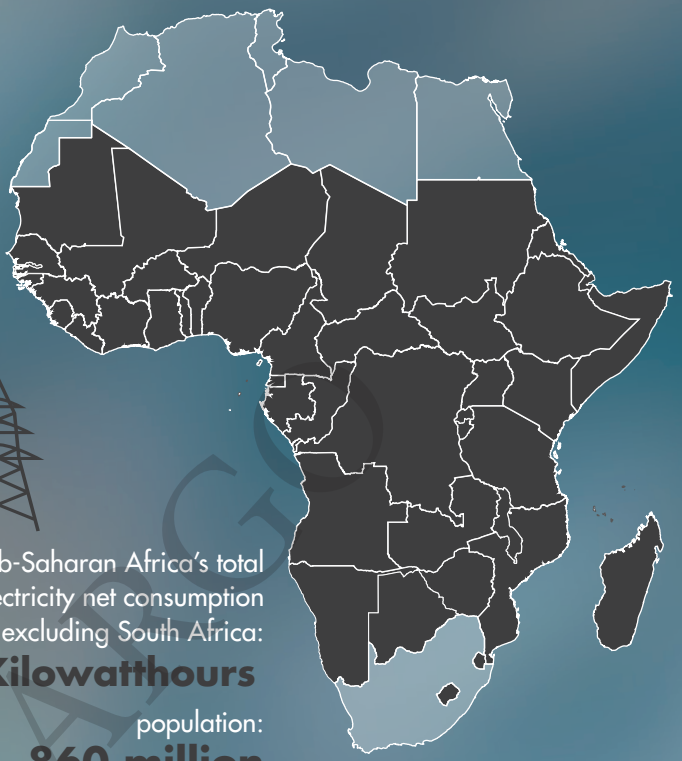
Universal access to energy systems that provide a reliable and adequate supply of power to homes, firms and service providers is a condition for sustained human development. Africa's energy systems are not fit for the purpose of supporting shared prosperity.

Despite 15 years of sustained economic growth, power shortages, restricted access to electricity and dependence on biomass for fuel are undermining efforts to reduce poverty. The energy gap between Africa and the rest of the world is widening **(See infographic: Worlds apart).**

WORLDS APART

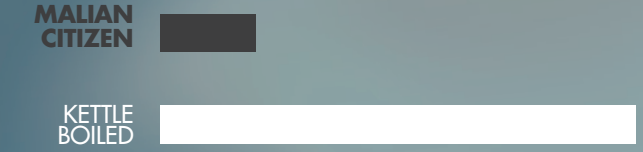
Viewed from Africa, energy use patterns in rich countries represent another universe

Spain's total electricity net consumption:
243 Billion Kilowatthours
population:
47 million

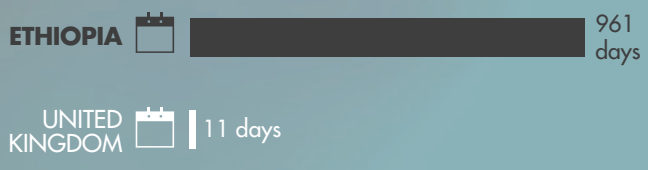


Sub-Saharan Africa's total electricity net consumption excluding South Africa:
139 Billion Kilowatthours
population:
860 million

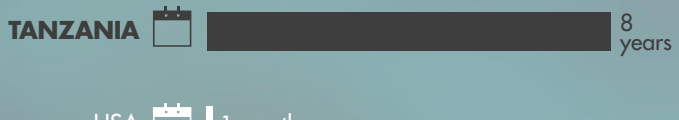
A kettle boiled twice a day by a family in Britain uses five times as much electricity as a Malian uses per year



An Ethiopian takes 87 times longer to consume 150kWh than someone in the United Kingdom



A Tanzanian takes 8 years to consume as much electricity as an American consumes in one month



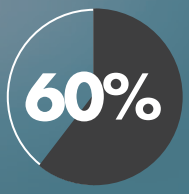
A freezer in the United States consumes 10 times more electricity than a Liberian, in one year

Range of time

AFRICA'S ENERGY GAP: THE COSTS OF THE DIVIDE

621 MILLION

Africans do not have access to electricity



of SSA's energy is consumed by South Africa

89 BILLION

US dollars of petroleum exported by Nigeria in 2013

93 MILLION

Nigerians lack access to electricity

4/5

OF THE POPULATION (727 MILLION) rely on solid biomass, mainly fuelwood and charcoal, for cooking

600,000

AFRICANS ARE KILLED EVERY YEAR by air pollution caused by the use of solid biomass for cooking

In 9 African countries, more than

OF PRIMARY SCHOOLS HAVE NO ELECTRICITY

In Africa, the poorest households spend

MORE PER UNIT OF ENERGY THAN THE WEALTHIEST HOUSEHOLDS with a connection to the grid

On current trends, it will take Africa until

2080

TO ACHIEVE UNIVERSAL ACCESS TO ELECTRICITY

Fifteen years ago, per capita energy use in Sub-Saharan Africa was 30 per cent of the level in South Asia, now it is just 24 per cent and still falling.

Sub-Saharan Africa is desperately short of electricity. The region's grid has a power generation capacity of just 90 gigawatts (GW) and half of it is located in one country, South Africa. Electricity consumption in Spain exceeds that of the whole of Sub-Saharan Africa.

Excluding South Africa, consumption averages around 162 kilowatt-hours (kWh) per capita per year. This compares to a global average of 7,000 kWh.

It would take the average Tanzanian around eight years to consume as much electricity as an American uses in one month.

Average figures mask the extent of Africa's energy deficit **(See infographic: Africa's energy gap - The costs of the divide).** Two in every three people – around 621 million in total – have no access to electricity. In Nigeria, an oil-exporting superpower, 93 million people lack electricity. Angola has five times the average income level of Bangladesh but Bangladesh has far higher levels of access to electricity (55 per cent versus 35 per cent).

Access to clean, non-polluting cooking facilities is even more restricted. Almost four in five rely for cooking on solid biomass, mainly fuelwood and charcoal. As a result, 600,000 people in the region die each year of household air pollution. Almost half are children under 5.

The international community has set the goal of achieving universal access to modern energy by 2030. Sub-Saharan Africa is not on track to achieve that target. It is the only region in which the absolute number of people without access to modern energy is set to rise, by 45 million for electricity and 184 million for clean cooking stoves.

On current trends, it will take Africa until 2080 to achieve universal access to electricity. Universal access to clean cooking facilities would occur around 100 years later, sometime after the middle of the 22nd century.

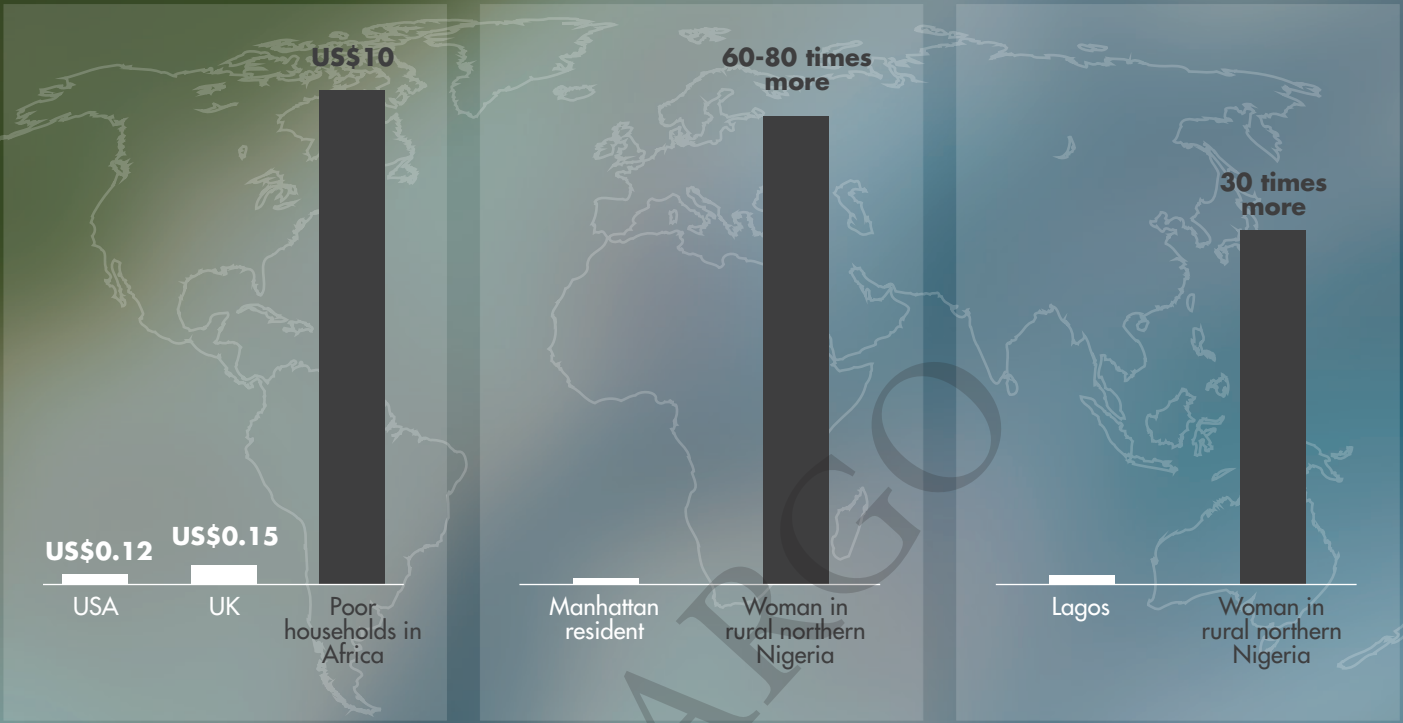
The social, economic and human costs of Africa's energy crisis are insufficiently recognized. Energy-sector bottlenecks and power shortages cost the region 2-4 per cent of GDP annually, undermining job creation and investment. Companies in Tanzania and Ghana are losing 15 per cent of the value of sales as a result of power outages. Most of Africa's school children attend classes without access to electricity. In Burkina Faso, Cameroon, Malawi and Niger, over 80 per cent of primary schools lack access to electricity.

Governance of power utilities is at the heart of Africa's energy crisis. Governments often view utilities primarily as sites of political patronage and vehicles for corruption, providing affordable energy can be a distant secondary concern.

AFRICA'S BILLION DOLLAR ENERGY MARKET

Reducing prices, increasing access, empowering households

Africa's poorest people are paying among the world's highest prices for energy per kWh



US$10 billion

The amount spent on energy by Africans living on less than US$2.50 a day

The size of the energy market points to significant opportunities for investment and household savings

Reducing energy costs

by investing in modern energy could

CREATE INVESTMENT OPPORTUNITIES

INCREASE HOUSEHOLD SAVINGS

REDUCE POVERTY

Far too much public finance is wasted on inefficient and inequitable energy subsidies. Governments spend US$21 billion a year covering utility losses and subsidising oil-based products, diverting resources from more productive energy investments.

Africa's poorest households are the unwitting victims of one of the world's starkest market failures. We estimate that the 138 million households comprising people living on less than US$2.50 a day are spending US$10 billion annually on energy-related products, such as charcoal, candles, kerosene and firewood. Translated into equivalent cost terms, these households spend around US$10/kWh on lighting, which is about 20 times the amount spent by high-income households with a connection to the grid for their lighting. The average cost for electricity per kWh in the United States is US$0.12 and in the United Kingdom is US$0.15 **(See infographic: Africa's billion dollar energy market)**.

The size of the market points to significant opportunities for investment and household savings. Halving costs would save US$5 billion for people living below US$2.50, or US$36 per household. Plausible price reductions of 80 per cent would raise these figures to US$8 billion overall and US$58 per household. Such savings could release income for investment in productive activities, health and education. We estimate that the monetary saving from cost reductions would be sufficient to reduce poverty by 16-26 million people.

What would it take to expand power generation and finance energy for all?

Current energy-sector investment levels are just US$8 billion, or 0.4 per cent of gross domestic product (GDP). This is inadequate. We estimate the investment financing gap for meeting demand and achieving universal access to electricity is around US$55 billion, or 3.4 per cent of Africa's GDP in 2013 **(See infographic: Plugging the gaps).**

While this financing gap figure is large, it has to be placed in context. Energy financing is an investment with the potential to generate high social and economic returns by increasing productivity, job creation and economic growth.

Almost half of the gap could be covered by increasing Sub-Saharan Africa's tax-to-GDP ratio by 1 per cent of GDP. Additional revenues could be mobilized by halting the wasteful subsidies now transferred to loss-making utilities, stemming the finance lost as a result of illicit financial transfers, and cautious recourse to bond markets.

Aid can play a supportive, catalytic role. African governments themselves should mobilize around US$10 billion to expand on-grid and off-grid energy access. The international community should match this effort through US$10 billion in aid and concessional finance aimed at supporting investments that deliver energy access to populations that are being left behind.

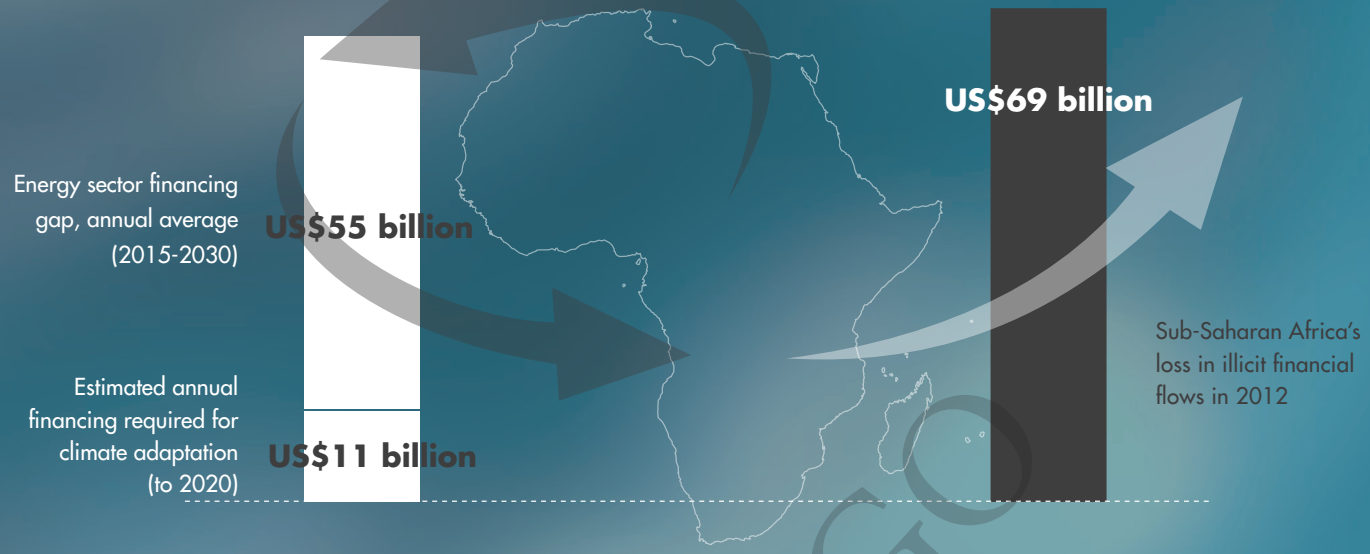
Opportunity Africa

Africa's energy deficits stand in stark contrast to the region's potential.

Africa has abundant reserves of fossil fuels and an even greater abundance of renewable energy assets. Rising demand for energy makes it imperative for

PLUGGING THE GAPS

Illicit outflows are higher than the financing gap for both energy access and climate adaptation



CUT ILLICIT FINANCIAL FLOWS
and narrow the opportunities for tax evasion

policymakers to develop Africa's resources for Africa's needs, with less emphasis placed on the "three e" model of exploration, extraction and export.

Urbanization, population growth and economic growth are driving an increase in energy demand. Modelling by the International Energy Agency (IEA) suggests that electricity generation will need to increase by 4 per cent a year to 2040. The Africa Progress Panel regards this scenario as unambitious. Africa's per capita energy consumption would be one-third of the level in Thailand today. It would leave millions of Africans quite literally in the dark, with over 500 million people lacking access to electricity in 2040, a decade after the target date for universal access to energy. Such an outcome would be indefensible.

African governments need to set a higher level of ambition. Policies should aim at a 10-fold increase in power generation and universal access to energy by 2030. Countries such as Brazil, Thailand and Vietnam have demonstrated that, with sustained political leadership, these outcomes are attainable.

Renewable energy has a critical role to play. As highlighted by the Global Commission on Economy and Climate, headed by former Mexican president Felipe Calderón, the idea that countries face a choice between green energy and growth is increasingly anachronistic. Prices for renewable technologies, especially solar and wind-power, are falling at an extraordinary rate to the point at which they are competitive with fossil fuels.

From an African perspective, renewable technologies have two distinctive advantages: speed and decentralization. They can be deployed far more rapidly than coal-fired power plants and they can operate both on-grid and off-grid. In considering investment decisions today, Africa's governments should take every opportunity to lay the foundations for a low-carbon future, while recognizing that the transition away from existing high carbon infrastructure will take some time.

Africa's energy transformation

After decades of neglect, a powerful current of energy reform is sweeping across Africa.

Governments increasingly recognize that underpowered and unequal energy systems are a barrier to developing dynamic economies and more inclusive societies. While there is a long way to go and the record is mixed, the potential for a breakthrough in energy is increasingly evident **(See infographic: Opportunities)**.

Part of that potential is reflected in what some countries are already achieving. Since 2000, net electricity generation has increased by 4 per cent a year or more in 33 countries. Looking forward, the Africa Progress Panel has reviewed the energy plans of some 30 countries and most aim well beyond doubling capacity by 2020.

Financing for energy development is on the increase. African governments are investing more, albeit from a low base. Many are supplementing energy investments by turning to sovereign bond markets.

Domestic and foreign private investment is rising, reflecting a move towards liberalization. Nigeria has one of the world's largest and most ambitious energy-privatization plans.

Some 130 independent power providers (IPPs) are now operating across Sub-Saharan Africa. A new generation of private equity investors is also emerging. There were around 27 private equity investments in energy and natural resources, with an aggregate value of US$1.2 billion between 2010 and 2013.

International development finance has played a significant role in unlocking private investment. President Barack Obama's Power Africa initiative, which promises US$7 billion over five years, has acted as a focal point for a range of US agencies and the private sector. Energy cooperation between the European Union and Africa is deepening. The game-changer, though, is the emergence of China as a source of integrated project finance for large-scale energy projects.

Encouraging as these developments are, they fall short of a breakthrough. African governments are mobilizing insufficient resources through domestic revenues. Moreover, while recourse to bond markets offers some benefits, countries are incurring significant foreign-currency risks. International development finance is constrained by excessive fragmentation, high transaction costs and poor coordination. Looking ahead, the challenge is to scale up domestic resource mobilization and to secure access to long-term financing from pension funds and other institutional investors.

OPPORTUNITIES

A powerful current is sweeping across Africa's energy systems

The untapped potential of Africa's primary energy resources (excluding South Africa) is estimated to be

260 times the current grid-based capacity

1. URBANISATION

2. POPULATION GROWTH

3. ECONOMIC GROWTH

4. ELECTRIFICATION

are driving an increase in **energy demand**

Burkina Faso, Ethiopia, Ghana, Kenya, Mauritania and South Africa **are at the forefront of renewable energy innovations**

The renewable advantage: speed and decentralisation

Africa can ride the wave of new technologies and innovation to enter a new era of power generation

Africa has a late-comer advantage

adopt, adapt and innovate

Governments are setting a higher bar for ambition – and some are delivering

Rwanda expanded electricity access by **160 percent** between 2008 and 2011

Ethiopia is set to achieve **zero net emission status by 2027.** No developed country has matched this level of ambition

Africa can lead the world on climate-resilient, low-carbon development - a triple-win for

1. CLIMATE

2. POVERTY REDUCTION

3. ECONOMIC GROWTH

Prices for renewable technologies are falling and are now competitive with fossil fuels

Africa's governments can lay the foundations for a low-carbon future. In some countries, fossil fuels – including coal – will continue to figure in the energy mix

International development finance can unlock significant private investment to spur a renewables revolution

Regional cooperation is deepening:

Only **5 per cent** of electricity is traded across African borders so the potential is huge

The AU is backing a **US$22 billion** project to develop a pan-African electricity highway by 2020

In West Africa, the AfDB is supporting a project that will increase access to low-cost electricity for **24 million people**

Sustained regulatory reform is critical for investment. Unbundling power generation, transmission and distribution is one step towards creating more efficient and stable energy markets. Independent regulation is another. But private investors require an energy buyer such as a utility or dedicated power-purchasing agency and it is hard to build a convincing business case when the main buyer is a highly-indebted, corrupt and inefficient utility.

Renewable energy – riding the wave of global innovation

Renewable energy is at the forefront of the changes sweeping Africa.

Hydropower continues to dominate the investment landscape. Countries as diverse as Ethiopia, Ghana, Kenya, Nigeria and South Africa are developing very large power-generation plants that use renewable energy. But the renewables revolution is also being driven from below, as innovative companies respond to household demand for lighting and power **(See infographic: Renewable energy in Africa)**. On one estimate, 5 per cent of households in Sub-Saharan Africa now use some form of solar lighting, compared with 1 per cent in 2009.

New business models are emerging. One example comes from Kenya. M-KOPA has brought together solar and mobile technology to bring affordable solar technologies to off-grid villages. Customers pay a small deposit for a solar home system that would usually retail for US$200, including a solar panel, three ceiling lights, a radio and charging outlets for mobile phones. The balance is repaid in small instalments on a pay-as-you-use basis through M-PESA, a widely available mobile-payment platform that is used by a third of the population.

Some governments are partnering with the private sector to extend the reach of electricity. The Ignite Power project in Rwanda brings together several private companies, the government and philanthropic agencies. The project aims to install off-grid technology through a pre-paid system that can power four lights, radios and televisions, and charge cell phones.

Despite such compelling examples, progress remains far too slow. While poor households stand to save over time from adopting new technologies, the initial costs of solar panels are too high for many.

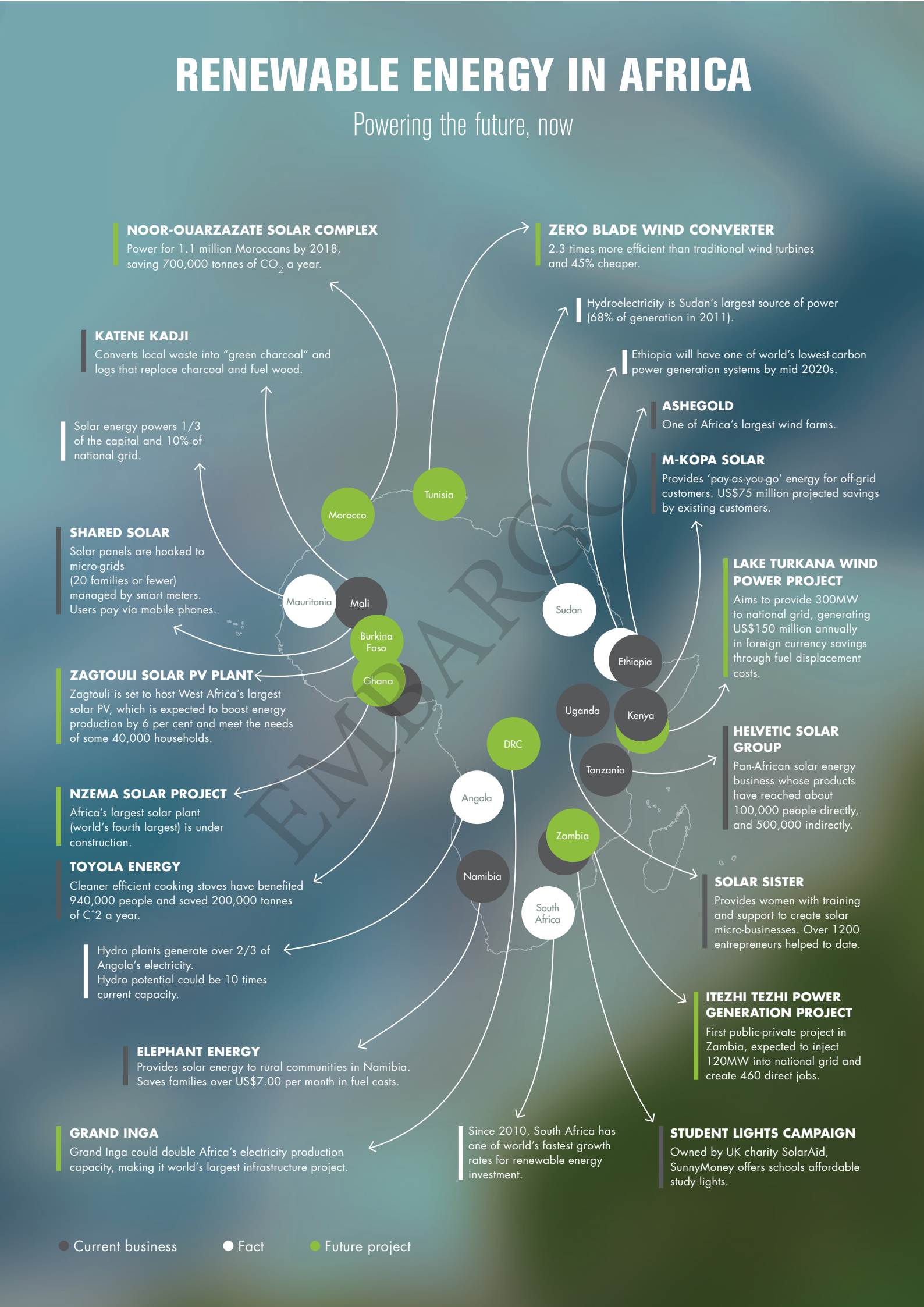
This is a classic market failure. Consumers, investors and the wider economy are losing out because of the absence of institutional mechanisms to link supply and demand. However, the market failure can be corrected through a combination of public policy action, business innovation and international cooperation.

Climate change – an opportunity for transformation

The risks associated with climate change in Africa are well established. High levels of background poverty, dependence on rainfall, weak infrastructure and limited provision of safety nets combine to make climate risk a major source of vulnerability, even without global warming. Climate justice demands international cooperation and basic human solidarity to contain these risks.

RENEWABLE ENERGY IN AFRICA

Powering the future, now



Viewed from a different perspective, climate change provides African governments with an added incentive to put in place policies that are long overdue and to demonstrate leadership on the international stage. Countries such as Ethiopia, Kenya and Rwanda have already developed climate-resilient development strategies aimed at reducing poverty, raising productivity and cutting greenhouse gas emissions.

From an African perspective two priorities stand out for the Paris climate summit in December 2015. The first is an ambitious deal that delivers on the commitment to keep global warming within the 2°C threshold. Second, the climate agreement must address the financing and capacity-building challenges that Africa faces in responding to the climate challenge.

Africa will be hit hard by climate change

Climate change will have local impacts in Africa but their timing and severity will be determined by global emissions.

The most severe and immediate effects will be felt by the rural poor. If global average temperatures are allowed to increase by 4°C, large areas used for cropping sorghum, millet and maize would become unviable. In some areas drought could become more protracted and severe. In other cases, productivity levels will be affected by unpredictable rainfall, increased temperature and flooding.

The Fifth Assessment of the Intergovernmental Panel on Climate Change (IPCC) identifies Africa as the region at greatest risk from global warming. Regional heating will exceed the global average. While climate modelling does not provide cast-iron predictions, it does point to high levels of risk in many areas. Rising sea levels could threaten coastal cities such as Accra, Dar es Salaam and Lagos. Hydropower systems could be compromised by reduced rainfall and increased evaporation. New health threats could emerge. In each of these areas, the poor will bear the brunt.

Seizing the opportunity – land use and transformative adaptation

The severity and immediacy of the risks posed by climate change have deflected attention from opportunities to build more climate-resilient approaches to development.

These approaches offer "triple-win" benefits: boosting agricultural productivity, reducing poverty and strengthening international efforts to combat climate change.

Land use should be a focal point for strategies aimed at unlocking these benefits. Much of African agriculture is locked in a vicious circle of low productivity, poverty and environmental degradation. Around 2 million hectares of forest were lost annually between 2000 and 2010.

Changes in agriculture, forestry and land-use patterns are responsible for emissions equivalent to 10 - 12 gigatonnes (Gt) of carbon dioxide (CO_2), around one-quarter of the global total. Africa accounts for around 20 per cent of these emissions. While the region may account for a small share of overall greenhouse gas emissions, the region's emissions from agriculture, forestry and land-use changes are growing at 1-2 per cent a year. Such changes account for about half of Africa's emissions – and the share is rising.

Reversing the vicious circle of low productivity, environmental degradation and climate change has the potential to unlock far-reaching benefits. One of the most striking examples comes from Niger, where smallholder farmers have transformed the productivity and sustainability of agriculture across 5 million hectares of land.

As shown in last year's *Africa Progress Report*, African governments could also do far more to reduce vulnerability and raise productivity through wider measures. Investment in rural infrastructure, social protection and developing new seeds, allied with greater financial inclusion and the promotion of regional trade, could do far more to enhance climate resilience than the current proliferation of small-scale adaptation projects.

The dangerous gap between international policy commitments and actions

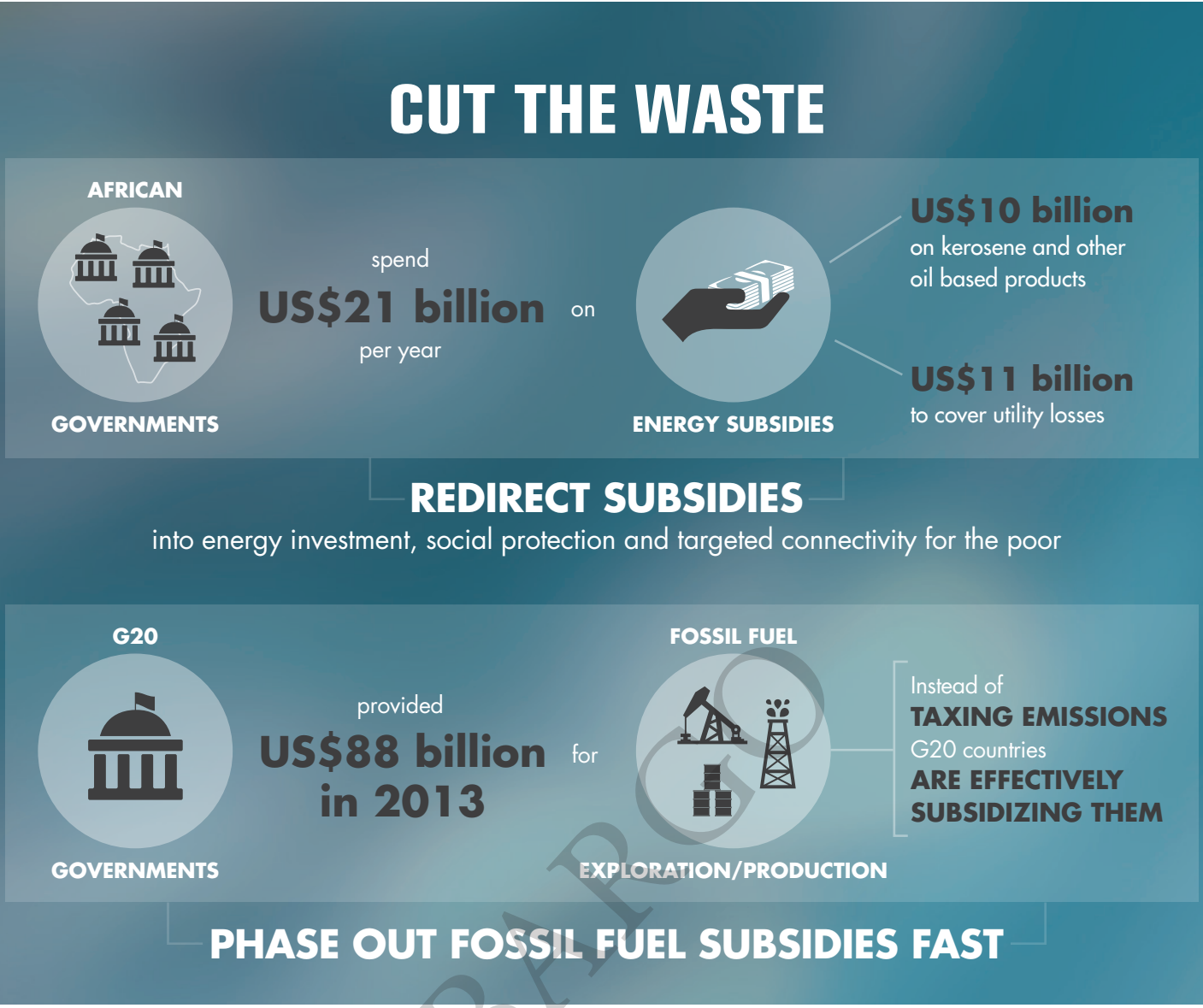
The Paris climate summit provides an opportunity to negotiate an agreement that will deliver on the commitment to keep the 21st century's global average temperature increase within 2°C.

There have been some encouraging signs. Over the past year the world's largest emitters, which are China, the European Union and the United States, have all pledged more decisive action to cut emissions. Governments have also agreed to table their proposed actions – or Intended Nationally Determined Contributions (INDCs) – before the summit.

On a less positive note, the pledges that have been made leave the world far from a viable trajectory for meeting the 2°C commitment. The most credible scientific evidence estimates that the world is on a pathway that will lead to 4°C warming over the course of the 21st century. Such an outcome would have catastrophic consequences for Sub-Saharan Africa. Averting that outcome should be at the heart of every African government's climate diplomacy.

Despite the known threats, far too many countries are failing to take decisive action. Several countries including Australia and Canada appear to have withdrawn entirely from constructive international engagement on climate. Others have adopted contradictory policy stances. The US$88 billion spent by G20 countries on subsidies for the discovery and exploitation of new fossil fuels is one example **(See infographic: Cut the waste)**. To avoid catastrophic climate change, two-thirds of existing reserves have to be left in the ground, begging the question of why taxpayers' money is being used to discover new reserves of "unburnable" hydrocarbons.

Governments in the major emitting countries should be placing a stringent price on emissions of greenhouse gases geared towards a credible carbon budget. Instead of taxing emissions for the global public good, they are effectively subsidising them. While many factors are at play, the political power of multinational energy companies and other vested interest groups weighs far too heavily in the decision-making processes of many governments.



Securing a better deal for Africa

The INDCs provide African governments with a vehicle to set out their ambition for the transition to a growth-oriented, climate-resilient, low-carbon development model.

Building on existing energy and land-use strategies, the submissions could go beyond outlining what countries are doing now to identify what could be done through deeper international cooperation on financing, technology and capacity development.

Africa's governments should also use the 2015 financing and climate summits to press for wider reforms. Climate finance is a starting point. On one estimate, there are now 50 climate funds in operation under a fragmented patchwork of mechanisms with a total financing pool of around US$25 billion.

Sub-Saharan Africa has not been well served by this elaborate international climate financing architecture. Over the three financial years 2010–2012, just US$3.7 billion was provided in "fast-start" finance. Not all of this represents new and additional aid, some may have been diverted from other projects.

Detailed analysis of financial transfers points to two structural weaknesses in the climate-finance architecture: chronic under-financing and fragmentation. Both weaknesses are apparent in the financing offered for adaptation measures. Detailed costing exercises carried out by the United Nations Environment Programme (UNEP)

put annual adaptation financing requirements at around US$11 billion through to 2020. Average annual aid financing amounts to around 5 per cent at this amount.

When it comes to international climate finance for efforts to mitigate climate change by reducing emissions, Sub-Saharan Africa is picking up the small change. Nigeria and South Africa are the only countries to have received support from the Clean Technology Fund. A larger group of low-income countries in Sub-Saharan Africa have received pledges of support to develop solar, wind and geothermal power. However, as of February 2015, only Ethiopia, Kenya and Mali had received financing.

Recommendations

The Africa Progress Panel's recommendations identify a range of practical measures for expanding power generation, accelerating progress towards universal access to energy, and supporting low-carbon development. They also set out an agenda for the Paris climate summit, linking international action to African strategies for climate-resilient development.

Many of the specific proposals are directed to African governments. In the absence of ambitious African leadership, opportunities for an energy transformation will be wasted. By the same token, without strengthened international cooperation the opportunities available will be only partially exploited. The 2015 summits provide a platform for deepening international cooperation, setting a course that avoids climate disaster and delivering a down-payment on measures with the potential to put Africa on a pathway towards future powered by inclusive low-carbon energy.

Core recommendations for African governments:

Raise the ambition of Africa's energy strategies. Governments should aim at a 10-fold increase in power generation by 2040, while laying the foundations for a low-carbon transition. Public spending on energy should be raised to 3-4 per cent of gross domestic product (GDP), supported by measures aimed at raising the tax-to-GDP ratio and avoiding excessive reliance on bond markets. Given the US$55 billion per annum gap in energy financing, governments should prioritize the development of balanced public-private partnerships and create the conditions for expanded private investment. Governments should look beyond national borders to accelerate the development of regional grids.

Seize the low carbon opportunity. Governments should strengthen the market for low-carbon energy through predictable off-take arrangements, utility purchase arrangements, feed-in tariffs and auctions. Recognising that the initial capital costs of renewable energy investment can be prohibitive, governments and regulators should seek to reduce risks and support the development of the market through appropriately subsidized loans.

Leave no one behind. Africa's energy systems combine inequity with inefficiency. They provide subsidized electricity for the wealthy, unreliable power supplies for firms and

very little for the poor. National strategies should act on the commitment to achieve universal access to energy by 2030, which means providing access for an additional 645 million people through connections to the grid or decentralized mini-grid or off-grid provision. Every government should map the populations that lack access and identify the most effective routes for delivery. Better and more accessible energy can also power up Africa's agriculture. Governments should work with the private sector to develop the innovative business models needed to deliver affordable energy to the US$10 billion market of people who live on incomes of less than US$2.50 a day.

Cut the pro-rich subsidies. National strategies should include a roadmap and schedule for phasing out the US$21 billion in energy subsidies geared towards the rich. Subsidizing connections for the poor is more efficient and equitable than subsidizing energy consumption by the rich and subsidizing kerosene is of limited value as a tool for achieving universal access.

Deepen reform of energy governance. Governments across the region need to step up the pace of reform. Unbundling power generation, transmission and distribution is a starting point. But effective governance also requires the creation of robust, independent regulatory bodies empowered to hold utilities to account. Utilities themselves should be required to publish the terms of all off-take arrangements and emergency power-purchase agreements and they should prohibit tendering through offshore listed companies. While encouraging legislation has been introduced, the record on implementation is patchy. Establishing predictable off-take agreements is critical for attracting high-quality, long-term investment.

Adopt new models of planned urbanization. As the world's most rapidly urbanizing region, Africa has opportunities to develop more compact, less polluted cities, alongside safer and more efficient public transport systems. Economies of scale and rising urban incomes have the potential to expand opportunities for providing renewable energy and achieving universal access to basic services. Linking African cities to the growing range of global city networks, including the "C40" group of cities, could unlock new opportunities for knowledge exchange, capacity building and financing. Governments, multilateral agencies and aid donors should work together to strengthen the creditworthiness of cities, while developing innovative partnerships for clean energy.

Develop and act upon an African strategy for the Paris climate summit. The African Common Positions developed by the African Group of Negotiators (AGN) and endorsed by the African Ministerial Conference on the Environment (AMCEN) provide the basis for a strong set of demands that African countries can take to Paris. However, governments have often failed to act upon their collective commitments. Given the power asymmetry in the climate negotiations, this is not in the best interests of Africa's citizens. With one voice, Africa's governments should:

- Reject greenhouse-gas reduction commitments from rich countries and emerging markets that are not aligned with the 2°C commitment.
- Demand that rich countries set a course for zero net emissions by 2050, going further than envisaged in the current proposals of the European Union and the United States.
- Urge Australia, Canada and Japan to adopt a more credible and constructive stance on their climate offers.

- Request that China raises the level of ambition by bringing forward the proposed date for peak emissions.
- Demand increased support for climate-resilient development and transformative adaptation, along with a fundamental overhaul of the current multilateral adaptation finance system.

Engage fully in negotiations on the Intended Nationally Determined Contributions (INDCs). Many African governments have been reluctant to engage in the INDC process in the light of Africa's limited contribution to greenhouse gas emissions. However, the INDCs provide an opportunity to set out policies that could promote growth and reduce poverty in Africa, while limiting global greenhouse gas emissions. The INDCs could be used to identify opportunities for international cooperation, linked to additional financing. To cite some examples:

- Eliminate within five years of gas flaring, which is a potent source of global warming and a waste of Africa's energy resources.
- Identify opportunities for combating soil erosion, conserving land, avoiding deforestation and restoring degraded forests and land.
- Highlight current actions aimed at reducing greenhouse gas emissions and the costs of reducing future emissions by scaling up renewable energy.

Proposals for action by the international community:

Create a "global connectivity fund" under the auspices of the Sustainable Energy for All (SE4All) partnership. The SE4ALL remit includes supporting universal access to energy and increasing the share of renewables in the energy mix but it lacks a bridge to financing mechanisms. Universal access costs are estimated at US$20 billion annually to 2030. These costs could be co-financed by African governments and the wider international community in the form of concessional development finance, supplemented by aid. The SE4All governance framework would be reformed to require governments to submit comprehensive national action plans setting out strategies for universal access, with an understanding that credible plans will secure an appropriate mix of financing for their implementation. SE4All financing would help support innovative business models delivering affordable off-grid energy through risk and credit guarantees, subsidized loans and electricity-purchase agreements.

Unlock private finance. Development finance could play a more catalytic role through increased risk-guarantee provisions and strengthened coordination between international financial institutions, development finance agencies and bilateral donors. The World Bank and African Development Bank (AfDB) should lead an international effort to unbundle risk, structure guarantees and align Africa's risk premium with market realities. The exercise should aim also at reducing the transaction costs associated with financing energy projects. Risk instruments such as the World Bank's Multilateral Investment Guarantee Agency (MIGA) and foreign-currency risk mechanisms should be scaled up.

Strengthen the role of AfDB and World Bank financing. Development finance agencies, the World Bank and donors should commit US$10 billion to the capitalization of the Africa '50' Fund of AfDB, which has the potential to leverage up to US$100 billion in

private finance. More African governments should be drawing on the World Bank's non-concessional borrowing windows, taking advantage of low interest rates to finance energy infrastructure.

Overhaul the climate finance architecture: Africa is poorly served by the current climate-finance architecture. The separate multilateral agencies offering facilities to support adaptation should be merged into a single Transformative Adaptation Facility, perhaps under the auspices of the Green Climate Fund. Facilities for mitigation finance and support mechanisms for low-carbon development – notably the Clean Technology Fund and the Scaling Up Renewable Energy in Low Income Countries Programme – should be structured to be more responsive to Africa's mitigation potential and the opportunities to back low-carbon development. The broader concern is that the increasingly fragmented global financing architecture is doing little to provide strategic direction in leveraging private investment.

Demonstrate serious intent at the Addis Ababa Financing for Development Summit in July 2015: The summit provides an opportunity to make a down-payment on strengthened international cooperation and build a bridge to the Paris climate summit:

- Aid donors should commit to the longstanding target of devoting 0.7 per cent of gross national income (GNI) to aid.
- Rich countries should set a clear timetable for delivering by 2020 the outstanding US$70 billion per annum in climate finance, which they committed to in Copenhagen, with greater transparency on financial commitments, the identification of new sources of finance and delivery mechanisms.
- A US$15 billion annual commitment to climate-resilient development in Africa, including financing for a transformative adaptation.
- Increase by US$10 billion the development finance available to Sub-Saharan Africa for mitigation through the Clean Technology Fund, Green Climate Fund and other mechanisms.
- Increase the capitalization of the Green Climate Fund to US$20 billion, subject to stringent performance requirements.

Phase out fossil fuel subsidies: The three 2015 summits should aim at a comprehensive phase-out of all fossil fuel subsidies by 2025, with appropriate support for low-income countries. Eliminating subsidies for fossil-fuel exploration and production – especially coal – should be a priority. Developed countries should withdraw by 2018 all tax concessions, royalty relief and fiscal transfers, and all state aid to fossil-fuel industries by 2020. The G20 countries should set a timetable for acting on their commitment to phase out fossil-fuel subsidies, with early action on coal.

Raise the level of ambition at the Paris climate summit: Developed countries should establish carbon budgets aimed at zero net emissions by 2050, with clear interim benchmarks to 2030. The European Union and the United States should revise their initial INDC offers in line with this commitment. Countries should move towards early implementation of credible carbon pricing and taxation systems, linked to carbon budgets.

Redouble efforts to combat tax evasion: In 2012, Africa lost US$69 billion from illicit financial flows. G8 and G20 countries must act on past commitments to strengthen tax-disclosure requirements, prevent the creation of shell companies and counteract money laundering. Implementation of the G20/OECD's planned actions on base erosion and profit shifting should be accelerated; and the international community should support African efforts to strengthen tax and customs administration and reduce illicit financial outflows, especially via trade misinvoicing. Other priority actions to mitigate illicit financial flows include public registries of beneficial ownership of companies and, with the assistance of the IMF, agreeing on how to define, measure and track such flows, especially trade misinvoicing.

For private investors and multinational companies:

Demand an ambitious Paris climate agreement: The business community should work with cities, municipal and regional authorities, civil-society organizations and governments to demand an ambitious Paris climate agreement, backed by carbon pricing and taxation. All companies should establish and publish a "shadow price" for carbon in their company accounts.

Accelerate the exit from carbon through divestment: Institutional investors should urgently review their portfolios with a view to progressively eliminating carbon-intensive assets, starting with equity stakes in coal. Regulatory authorities, investors and stock exchanges should require companies and institutional investors to fully disclose the carbon exposure of their assets. The World Business Council on Sustainable Development should review and report upon the misleading claims made by multinational mining companies with respect to the benefits of coal for reducing poverty.

Engage with governments to identify the conditions for increasing investment in energy-sector infrastructure and lead the development of new low-carbon energy partnerships.

Drive innovation for greater access: Energy investors should develop innovative business models aimed at lowering market-entry costs for electricity and the costs of efficient cooking-stoves. Working with governments, banks and aid donors, they should seek to broaden and deepen emerging mechanisms, such as pay-as-you-go financing, mobile payments, extended repayment periods and low-interest credit, to serve the "bottom of the pyramid" market. Given the limited ability of poor households to meet maintenance costs, governments should link public support to the provision of post-installation servicing.

Stop the secrecy: Foreign investors and African companies should provide full disclosure of their beneficial ownership structures and report transparently on energy-related contracts, including electricity off-take arrangements. Multinational corporations must also recognise that the tax and transparency revolution continues to move ahead at a rapid pace. New G20/OECD reporting standards for multinational companies will require companies to report on their activities more transparently. Companies that keep up with the pace of change are more likely to be able to influence the changes.

The Africa Progress Panel promotes Africa's development by tracking progress, drawing attention to opportunities and catalyzing action.

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