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AFRICA DEFENSE FORUM

Security on a Personal Level

Africa Braces for Population Boom

When Food Is a Weapon

Increasing Energy, Preserving Peace

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ON THE COVER:
A Soldier serving in the
African Union Mission in
Somalia holds a boy's hand
while on patrol near the
town of Mahaday.

AMISOM/TOBIN JONES

I t's natural for security professionals to think of their duties in a traditional sense. They're trained to defend borders, protect the nation, and repel internal and external threats. But beginning in the early 1990s, a new term began to gain currency: human security.

In 1994, the United Nations codified this concept, saying security needs to include protection from disease, hunger, crime, social conflict, unemployment, political repression and environmental hazards. Security "has been related more to nation-states than to people," the U.N. wrote in its annual human development report. "Forgotten were the legitimate concerns of ordinary people."

This is an important time to try to understand human security and put it into action. Africa is experiencing unprecedented growth that could lead to a doubling of its population by 2050. The generation coming of age today is ambitious, creative, tech-savvy and promises to take the continent to new heights. However, if young people do not see employment opportunities or avenues to pursue their dreams, they could become frustrated. Recent trends show that disaffected young people become migrants or fall prey to recruitment by extremist groups.

There are other challenges. A changing climate and unpredictable weather patterns are amplifying natural disasters and decimating farmland. Herders are traveling farther afield in search of grazing land, which puts them at odds with farmers. Large migrations of people from rural areas to urban centers already are changing the landscape of the continent. Competition for access to energy, water and food promises to be a major factor in human security in coming years.

The role national militaries can play in addressing these human security challenges will vary by country. Some countries will ask their militaries to take part in national health initiatives, plant trees to fight climate change and work on infrastructure projects to improve access to water. Sometimes the military will be asked to play a leading role; other times it will support civil society efforts.

One thing is certain: Military strategists need to understand the ways human security can drive conflict so they are better able to respond when called upon. With a focus on the individual, none of the security challenges of the 21st century will be too big to overcome.

U.S. Africa Command Staff

A woman carries maize and an umbrella near Malawi's capital, Lilongwe. Climate change and food security are two related human security challenges facing Africa in coming years. REUTERS

Bank Wants to
Give Africa a High-Five

African Development Bank Group President **Akinwumi A. Adesina** *of Nigeria delivered the keynote speech at Africa 2016: Business for Egypt, Africa and World Conference, in Sharm el Sheikh, Egypt, on February 21, 2016. His remarks have been edited to fit this format.*

When I took over as the eighth elected president of the African Development Bank on September 1, 2015, I was elated at the greater possibilities that lie ahead for Africa and the role that the bank can play.

To further accelerate the development of Africa, the bank has raised the bar on its level of ambition. We call them the High-Fives for Africa: Light up and power Africa; Feed Africa; Industrialize Africa; Integrate Africa; and Improve the quality of life for Africans.

LIGHT UP AND POWER AFRICA: Over 645 million Africans do not have access to electricity — and 700 million go without access to clean cooking energy, with 600,000 dying each year from indoor pollution from reliance on biomass for cooking. The African Development Bank has developed the New Deal on Energy for Africa to accelerate universal access to electricity in Africa by 2025. The goal is to add 160 gigawatts of new generation capacity via the grid, deliver 130 million new grid connections and 75 million off-grid connections. The African Development Bank plans to invest $12 billion in the energy sector over the next five years, unlock Africa's huge and untapped renewable energy resources, and leverage $40 billion to $50 billion into the energy sector. The bank will also triple its climate finance to Africa to $5 billion per year by 2020 to support climate change adaptation and mitigation efforts.

FEED AFRICA: Africa must feed itself — and Africa must become a global powerhouse in food and agriculture. With 65 percent of all the arable land left in the world to feed 9 billion people by 2050, Africa will have to feed the world. The bank will accelerate support for massive agricultural transformation across Africa — while building resilience to climate change — to fully unlock the potential of agriculture, to lower food prices, increase foreign exchange earnings, strengthen macroeconomic and fiscal stability, revive rural areas, and in particular, create jobs for hundreds of millions of Africans.

INDUSTRIALIZE AFRICA: Africa currently accounts for just 1.9 percent of global manufacturing. There is an urgent need for Africa to rapidly industrialize and add value to everything that it produces, instead of exporting raw materials that make it susceptible to global price volatilities. The bank will support private sector and financial market development for the rapid industrialization of Africa.

INTEGRATE AFRICA: African trade currently represents only 2 percent of global trade, and intra-African trade is just about 12 percent of Africa's total, compared to 60 percent in Europe and 35 percent in Asia. This is not acceptable. Regional integration is critical for boosting economic growth in Africa. The bank will continue to invest heavily in high-quality regional infrastructure — especially rail, transnational highways, power interconnections, information and communications, and air and maritime transport. Easing travel across the continent will reduce the cost of doing business and boost private sector activity.

Employees work the control room of the Egbin power plant in Ikorodu, Nigeria, near Lagos. The African Development Bank is working to accelerate universal access to electricity in Africa by 2025. REUTERS

IMPROVE THE QUALITY OF LIFE FOR AFRICANS: The bank will accelerate investments in urban infrastructure, public health and nutrition, water and sanitation, education, vocational training, and skills development. The African Development Bank will soon be launching the Jobs for Africa's Youth Initiative, which will work across all African countries with the goal of reaching 50 million youths over 10 years and stimulating the creation of 25 million jobs. It is expected to add $30 billion to African economies. We will keep Africa's youth in Africa by expanding economic opportunities.

REUTERS

Eritrea Seeks UNESCO Status to Preserve *Architectural Gems*

REUTERS/*ADF* STAFF

Former colonial power Italy left Eritrea in 1941, but its architectural legacy lives on. Today, the capital, Asmara, is home to some of the world's best-preserved examples of early 20th century modernist architecture.

The Fiat Tagliero building has a futuristic design that includes two cantilevered wings jutting outward.

To make sure these buildings are enjoyed by future generations, the Eritrean government wants the city declared a UNESCO World Heritage Site.

"The city is very intact and maintains its original character," said Medhanie Teklemariam, coordinator for the Asmara Heritage Project, which has drawn up an inventory of about 4,300 buildings in Asmara's historic perimeter. The nomination dossier for World Heritage Site status was submitted to UNESCO in 2016, with a decision expected in 2017.

Italian architects nicknamed Asmara "La Piccola Roma" or "Little Rome." Elegant avenues are flanked by the art deco Cinema Impero, the Education Ministry that once housed the Italian Fascist Party headquarters, and the futurist Fiat Tagliero garage with gravity-defying concrete cantilevered wings, extending 15 meters outward without the support of pillars.

If approved, Asmara would benefit from technical assistance, helping it renovate and preserve the historic buildings, which include offices, government buildings and homes. World Heritage Site status also could draw visitors to an often-overlooked tourist destination. Eritrea has soaring mountains and a long Red Sea coast, but no international hotel chains.

The authorities also have carefully protected the architectural assets, adhering to 1938 building regulations. New planning regulations are being drawn up, but some rules, such as limiting buildings to 60 meters high, are likely to remain.

"If we are going to exceed above this height, I think we are going to destroy the skyline of Asmara," Medhanie said.

NIGER KEEPS HORSE RACING LEGACY ALIVE

AGENCE FRANCE-PRESSE

Niamey's dusty racing track is a far cry from Niger's equine glory days, when horses bred in the country enjoyed international fame. Although formal meets ended 30 years ago, hundreds of young Nigeriens gather on Saturdays to witness improvised races. Professional jockeys, trainers and bookmakers all jostle to make money and entertain the crowds.

The country hopes past glories can be revived with the construction of a new horse-racing complex.

On a given day, crowds of several hundred turn out to watch, and as many as 20 jockeys depend on their results to live. Those who place first or second get envelopes containing 20,000 to 40,000 Central African CFA francs ($35 to $70) depending on the value of bets placed.

Some jockeys work directly with breeders and receive monthly salaries of up to 300,000 CFA francs ($524), a significant amount in a country where most people live on less than $2 a day. "Rivalries are strong," admitted one rider known to fans as Papa Jockey. "We sometimes elbow each other."

Alio Daouda, a magistrate and breeder who is a member of Féniseq, the Nigerien horse-racing federation, is seeking investors to revive the country's horse-racing sector. "We have the space; we could build a hotel, a conference center," Daouda said. "All of the races could be organized; it could be institutionalized, and jobs could be created. But here, everything is deserted."

On one Saturday at the track, eight horses surged past, kicking up a cloud of dust as spectators cheered. The race was won by Noura Idi, recognizable in the distance by his lucky orange tasseled cap. He finished second in the first race of the day and won the last contest.

"I started with my father when I was young," Idi said. "As I was winning a lot of races in the countryside, I was made to come to Niamey."

Nigerien jockeys compete during a horse race in February 2016 in Niamey.
AFP/GETTY IMAGES

GHANA OPENS DOORS WITH VISAS UPON ARRIVAL

ADF STAFF

Ghana announced plans to issue visas upon arrival to nationals of all 54 African Union (AU) member states starting in July 2016. The move by President John Dramani Mahama is aimed at stimulating air travel, investment, tourism and trade.

The decision comes after the AU Executive Council adopted a resolution stipulating that member states try to set up systems that would allow visas upon arrival for travelers coming from other member states. The new process allows for stays of up to 30 days.

"We believe creating opportunity for the mobility of people on our continent is key to unlocking our economic potential," Mahama said. "Africa has a growing and dynamic middle class that is both entrepreneurial, forward looking and has purchasing power, and we intend to make it easier for them to enter our country."

AU Commission Chairwoman Nkosazana Dlamini-Zuma said Ghana is reaffirming Pan-Africanism and upholding its place in African continental integration, which is a key tenet of Agenda 2063 — The Africa We Want. Agenda 2063 is the AU's 50-year plan to accelerate development and technological progress.

"After Ghana, I am convinced that many other African countries will follow suit, in the interest of achieving an integrated, prosperous and peaceful Africa," Dlamini-Zuma said, according to citifmonline.com.

Before the new policy, citizens of only about 40 percent of African countries could enter Ghana without a visa or could obtain one upon arrival.

Mahama said that issuing visas upon arrival, as opposed to visa-free entry, "will enable the Ghana Immigration Service to make a determination as to whether to allow [travelers] entry or not into our country."

Travelers wait at the customs desk at Kotoka International Airport in Accra, Ghana. The nation's visa-on-arrival policy is aimed at stimulating air travel, investment, tourism and trade. C.C. CHAPMAN

AFRICA'S FIRST MUSIC DOWNLOAD SERVICE LAUNCHES IN SENEGAL

AGENCE FRANCE-PRESSE

Africa's first homegrown platform for legal music downloads has launched in Senegal with a mission to promote African artists, pay them properly and fight internet piracy.

Internationally famous musicians such as Youssou N'Dour and Baaba Maal are among almost 200 who have signed agreements with MusikBi, along with younger rappers, jazz artists, and Christian and Muslim vocalists.

The platform draws its name from the word for music in Wolof, the language widely spoken in Senegal, said project developer Moustapha Diop at the launch in Dakar in February 2016.

Songs cost between 300 and 500 West African CFA francs (50 to 85 cents), and users can download them using mobile phone credit in a region where few have bank cards.

"It is the first platform of its kind enabling music downloads by text or PayPal," said a statement released by Diop's company, Solid.

Solid noted that many African artists "cannot live comfortably by the proceeds from their work," adding that the platform offered a chance for "promotion and to allow them to make a living from their art."

Piracy and changing consumer habits have seen record sales drop across the continent. Illegal downloads tempt African consumers to look online for music while copyright enforcement remains weak.

A source within the Solid group told AFP that after mobile operators took their share, artists kept 60 percent of their income from the service, while MusikBi took the remaining 40 percent.

MusikBi does not offer a streaming service because local Internet speeds make it difficult to use the format, especially in a mobile-driven market.

Senegalese singer Baaba Maal performs in December 2015 in Dakar. AFP/GETTY IMAGES

INTRACTABLE AND INTERTWINED

6 MAJOR HUMAN SECURITY THREATS ARE CONNECTED TO EACH OTHER

ADF STAFF

Security threats are not always measured in guns, bullets and armed conflicts. Sometimes, the things that most threaten communities — and nations — are rooted in the environment or in the day-to-day interactions of people and the land around them.

Many human security threats are seemingly disparate and random. But a closer look indicates that most of them are interrelated. If one worsens or intensifies, it can exacerbate the effects of others. The results can be as wide-ranging and catastrophic as war or civil unrest.

When looking at climate change, food security, population growth, clean drinking water, energy security and wildlife poaching, the links become clear.

Climate change can lead to droughts. Prolonged dry spells can dry up fish-rich lakes and reduce crop yields. This can lead to a lack of food security in nations or entire regions as nutrition sources are reduced.

Concurrent with these developments are projections that Africa's population will double, and eventually quadruple, by the end of the century. When a region can no longer support a population, people often migrate, affecting food security in new areas.

As populations grow, so will the need for clean drinking water. Water demands, especially between farming and pastoralist communities, often lead to unrest and violence. With climate change, precipitation can decrease, endangering crops, food security and water availability.

Population growth also will increase the demand for electricity and energy security. Many African nations will strain to provide the infrastructure needed to generate and transmit reliable power to growing populations.

Finally, wildlife poaching may not appear to be connected to other human security issues, but climate change clearly increases the risk to endangered animals. Fluctuating precipitation levels can produce floods and droughts, forcing animals to venture out from preserves or their natural habitats in search of food or water. This can make them more vulnerable to poachers. The resulting slaughter, which at times approaches an industrial scale, is a drain on tourism.

1 CLEAN DRINKING WATER

Africa is the second-driest continent on Earth. As the population continues to grow and global temperatures rise, the availability of clean drinking water, as well as water for agriculture, will be a top concern.

There are many challenges. Only 15 percent of Africa's renewable water resources are groundwater, but nearly 75 percent of the population depends on this for drinking water, according to the United Nations Environment Programme's *Africa Water Atlas*. Many African aquifers, such as the Nubian Sandstone, are losing water faster than they can be recharged.

Many African countries struggle with providing improved water sources. In 2015, less than three-quarters of the populations in Equatorial Guinea, Eritrea, Mauritania, South Sudan and Sudan had access to an improved drinking water source, according to the World Bank. Such improved sources include piped water to homes, plots or yards; public taps and standpipes; tube wells and boreholes; protected dug wells; rainwater collection; and protected springs.

Africans, mostly women, spend **40 billion** hours a year gathering water in Sub-Saharan Africa.

5%
9%
14%
72%

■ Women ■ Men ■ Girls ■ Boys

Source: World Bank

65% Electricity
63% Piped Water
30% Sewerage
54% Paved Roads
93% Cellphone Service
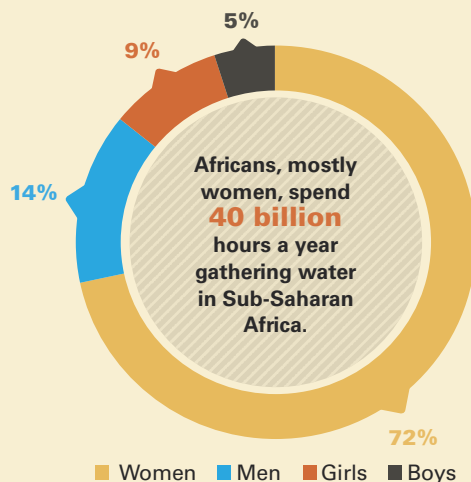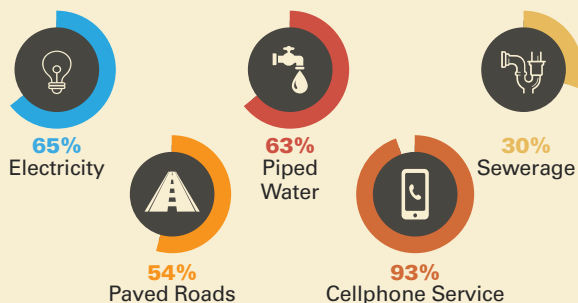
Sixty-three percent of Africans have access to piped water. About 93 percent have access to cellphone service, according to surveys conducted in 35 countries.
Source: Afrobarometer

2 CLIMATE CHANGE

Africa's vast, expansive landscape includes at least eight climate zones, including tropical rain forest, desert, subtropical, savannah, highland and marine. Rainfall can range from 5 centimeters a year in the desert to 4 meters in rain forests.

Weather patterns are changing across the continent. Droughts are becoming more common across the Sahel, and as temperatures climb, the Sahara expands southward. This desertification is most prevalent in areas where people have cleared trees and forests for farmland or to get wood for fires.

The severity of climate change's effect on African poverty levels will be determined in large part by political and economic policies regarding jobs, technology and development, according to a 2016 World Bank Group study.

PROJECTED WARMING IN SUB-SAHARAN AFRICA, WITHOUT CONCERTED ACTION

2030s 1.5°C

2040s 2°C

2060s 3°C

2080s 4°C

Source: World Bank

The Sahara is thought to be advancing south at a rate of **600** meters each year.

2005 **3,000 m** 2010 **6,000 m** 2015 **9,000 m** 2020
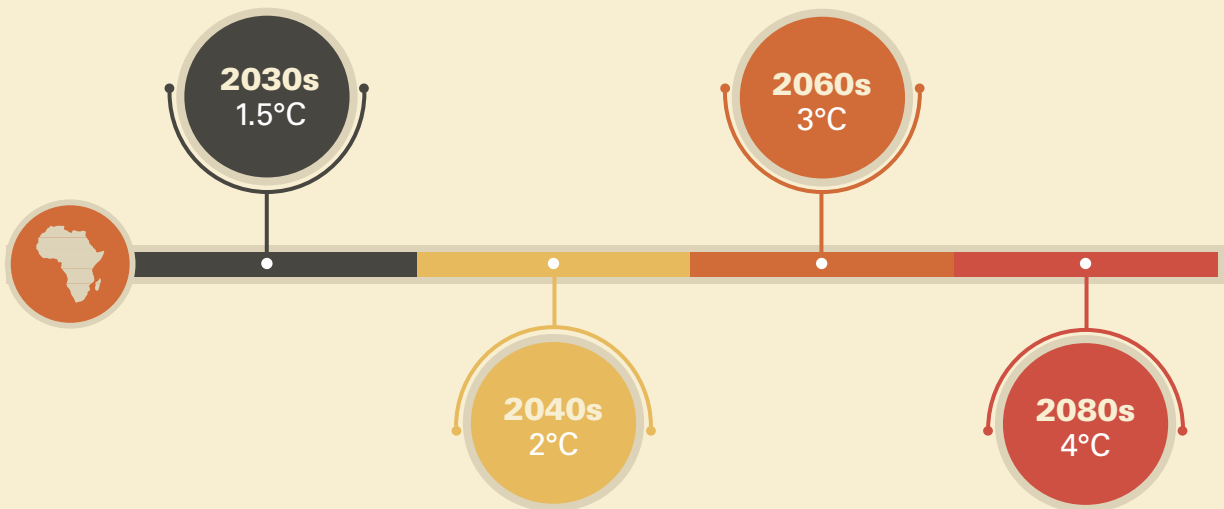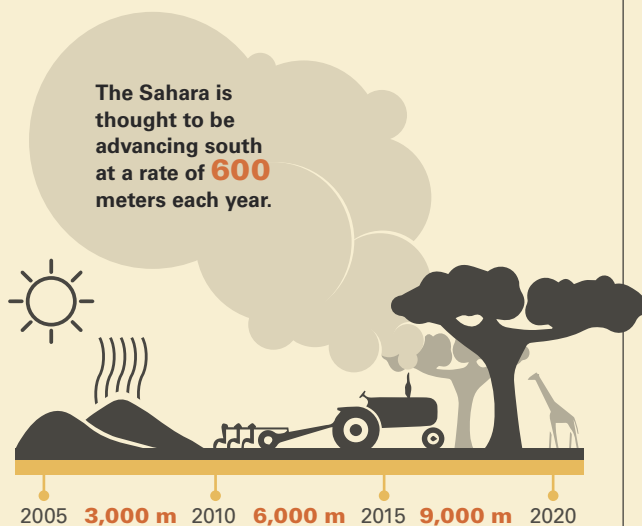
Source: www.our-africa.org

CROP YIELD CHANGES IN SUB-SAHARAN AFRICA AT +2°C

Reduction in crop production

WHEAT **10-17%**

MAIZE **5-22%**

SORGHUM **15-17%**
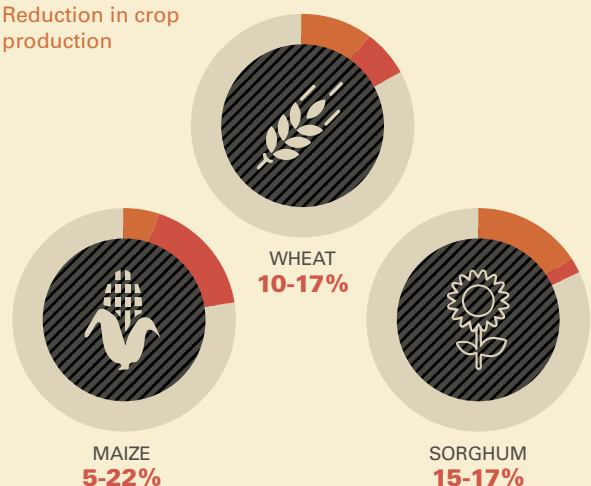
Source: World Bank

Food security can be affected by a host of human security issues. Climate change and weather variations, such as El Niño, can strain agricultural yields and throw regional food supplies and costs into a crisis.

Climate magnifies already-systemic hunger and poverty: 1 in 4 people in Sub-Saharan Africa is undernourished.

Africa also has its share of conflict. This unrest contributes to poverty and hunger. "Poverty rates are 20 percentage points higher in countries affected by repeated cycles of violence over the last three decades," according to a 2011 World Bank report. "People living in countries currently affected by violence are twice as likely to be undernourished and 50 percent more likely to be impoverished."

WORLD: 34 COUNTRIES

Syria
Iraq
Afghanistan
Nepal
Burma

Mauritania
Mali
Niger
Eritrea
Sudan
Yemen
Chad
Burkina Faso
Djibouti
Guinea
Central African Republic
South Sudan
Ethiopia
Sierra Leone
Cameroon
Rep. of the Congo
Somalia
Liberia
Dem. Rep. of the Congo
Uganda
Kenya
INDIAN OCEAN
Burundi
SOUTH ATLANTIC OCEAN
Malawi
Zimbabwe
Madagascar
Lesotho
Mozambique
Swaziland

● **Countries requiring external assistance for food**

Source: Food and Agriculture Organization of the United Nations

④ WILDLIFE POACHING

Elephants, rhinos and other exotic animals are falling to poachers at an alarming rate in Africa. Ivory and rhino horn bring huge sums of money in black-market sales, particularly in Asian countries such as China and Vietnam.

With this illegal trade comes the endangerment of some of Africa's most treasured animals, which bring in significant money through national tourism.

It's not just elephants and rhinos that are poached in Africa. Several varieties of birds, including ducks and parrots; butterflies; pangolins; monkeys and chimpanzees; and even sharks are targeted.

The losses are staggering. According to an August 2015 report in *National Geographic*, Zakouma National Park in Chad has lost nearly 90 percent of its elephants since 2002 — as many as 3,000 between 2005 and 2008. In 2012, Sudanese and Chadian poachers rode horses into Cameroon's Bouba N'Djida National Park, where they killed up to 650 elephants in four months.
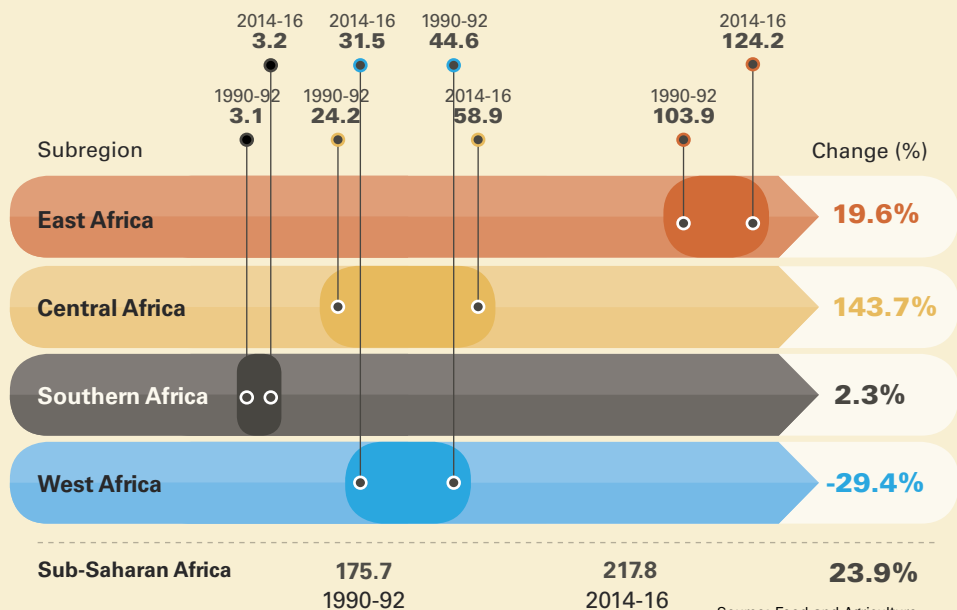
The World Wildlife Fund reports that poaching is the fifth-most lucrative of the world's illicit trades, bringing in up to $10 billion a year.

8,938%
Rhino poaching in South Africa increased from 13 in 2007 to 1,175 in 2015

Source: South African Department of Environmental Affairs

N. Korea

NORTH
PACIFIC
OCEAN

**NUMBER OF UNDERNOURISHED (MILLIONS),
1990-92 & 2014-16**

	2014-16	2014-16	1990-92		2014-16
	3.2	**31.5**	**44.6**		**124.2**
	1990-92	1990-92	2014-16		1990-92
	3.1	**24.2**	**58.9**		**103.9**

Subregion	Change (%)
East Africa	**19.6%**
Central Africa	**143.7%**
Southern Africa	**2.3%**
West Africa	**-29.4%**

Sub-Saharan Africa	175.7 1990-92	217.8 2014-16	23.9%

Source: Food and Agriculture
Organization of the United Nations

66 MILLION
**primary-school-age children
attend classes hungry across
the developing world.**

— Of those, —

23 MILLION
are in Africa.

Source: "Two Minutes to Learn About School Meals," World Food Programme, 2012

Recorded number of rhinos poached in South Africa

Number of rhinos poached

Year	Number
2007	13
2008	83
2009	122
2010	333
2011	448
2012	668
2013	1004
2014	1215
2015	1175
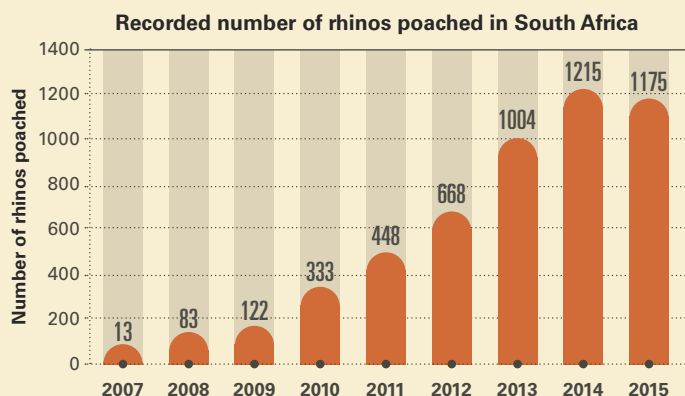
**On average,
a rhino was
killed every
7.2 hours in
South Africa
in 2014.**

Source: South African Department of Environmental Affairs

**Number of rhino
poaching arrests
in South Africa**

Year	Number
2010	165
2011	232
2012	267
2013	343
2014	386
2015	317

Share of population without access to electricity

- >75%
- 50% to 75%
- 25% to 49%
- <25%
- no data

Tunisia
Morocco
Algeria
Libya
Egypt
Mauritania
Mali
Niger
Chad
Sudan
Eritrea
The Gambia
Senegal
Djibouti
Guinea
Burkina Faso
Benin
Nigeria
Central African Republic
South Sudan
Ethiopia
Guinea-Bissau
Côte d'Ivoire
Ghana
Cameroon
Somalia
Sierra Leone
Togo
Equatorial Guinea
Kenya
Liberia
Gabon
Rep. of the Congo
Democratic Republic of the Congo
Uganda
Rwanda
Burundi
Tanzania
Angola
Malawi
Zambia
Mozambique
Zimbabwe
Namibia
Botswana
Madagascar
South Africa
Swaziland
Lesotho

A sure sign of effective development is the percentage of people who have access to electricity. Africa has tremendous potential in this area, but much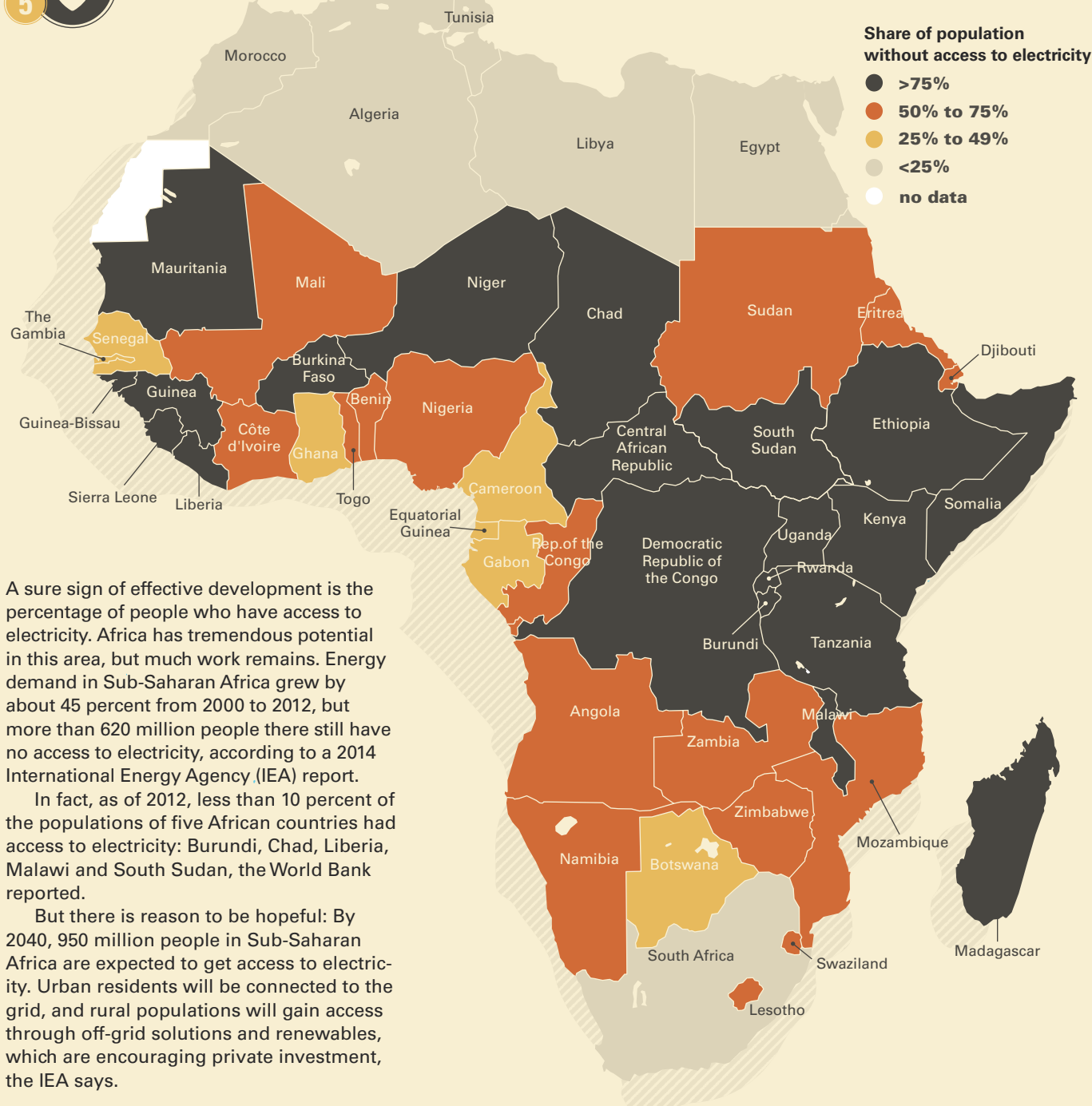 work remains. Energy demand in Sub-Saharan Africa grew by about 45 percent from 2000 to 2012, but more than 620 million people there still have no access to electricity, according to a 2014 International Energy Agency (IEA) report.

In fact, as of 2012, less than 10 percent of the populations of five African countries had access to electricity: Burundi, Chad, Liberia, Malawi and South Sudan, the World Bank reported.

But there is reason to be hopeful: By 2040, 950 million people in Sub-Saharan Africa are expected to get access to electricity. Urban residents will be connected to the grid, and rural populations will gain access through off-grid solutions and renewables, which are encouraging private investment, the IEA says.

Source: "Africa Energy Outlook: A Focus on Energy Prospects in Sub-Saharan Africa," a 2014 report by the International Energy Agency

Regional breakdown of access to electricity	North Africa	West Africa	East Africa	Central Africa	Southern Africa
Electricity					
People with access 2010	166,054,957	150,342,020	61,393,964	21,136,671	62,841,129
People with access 2000	130,761,458	100,412,009	32,596,933	12,458,735	43,099,971
2010 regional access rate (%)	97.6	43.6	19.7	34.0	44.2
2000 regional access rate (%)	90.8	38.3	13.9	25.4	36.9

Source: Africa-EU Energy Partnership

These statistics are based on data from 35 countries.

About 4 in 10 rural residents have access to electricity, compared to 9 in 10 urban residents. In rural parts of Sierra Leone and Guinea, the proportion is less than 1 in 20.
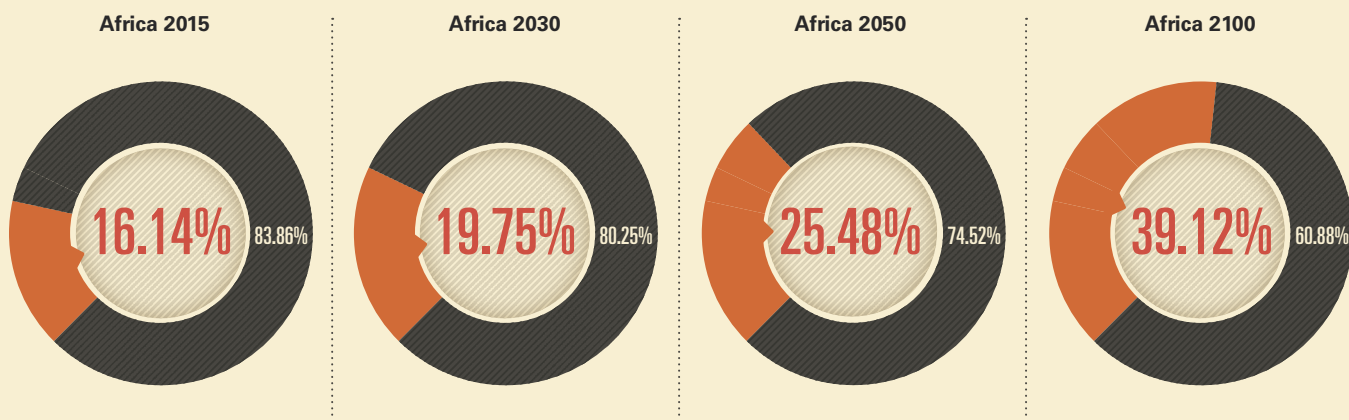
Source: Afrobarometer

POPULATION

Africa is the world's second-most populous continent, behind Asia. But it is poised to grow at an amazing rate between now and the end of the century.

The populations of 28 African countries — more than half the countries on the continent — are expected to more than double between 2015 and 2050, according to the United Nations' "World Population Prospects, 2015 Revision." By 2100, 10 African countries are expected to see their populations increase by at least five times: Angola, Burundi, the Democratic Republic of the Congo, Malawi, Mali, Niger, Somalia, Tanzania, Uganda and Zambia.
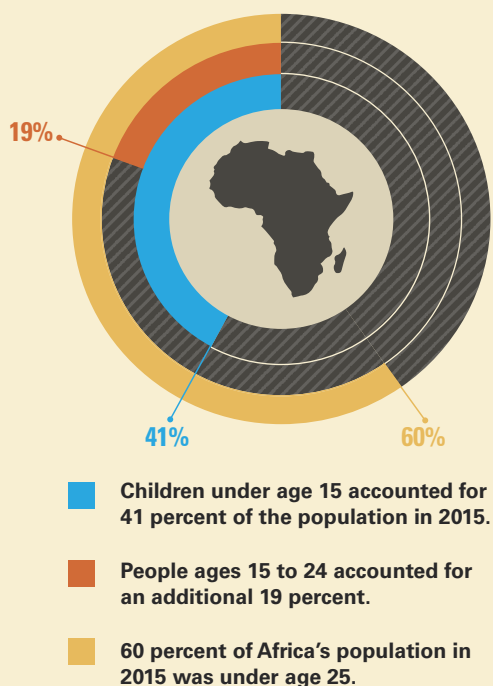
Population changes are likely to be at the center of various human security challenges. Migrations will occur in areas of conflict and where climate change is most severe. More dense populations can intensify the spread of disease and strain water resources. Finally, if population growth is not matched by economic growth, unemployed young people can become frustrated. This leaves them more vulnerable to recruitment by extremist groups or could push them to risk their lives as migrants. ❑

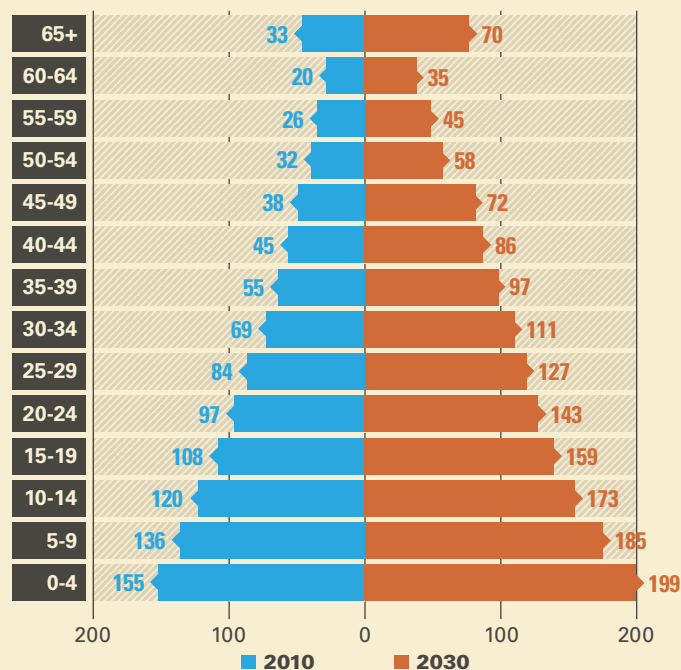## AFRICA'S SHARE OF THE WORLD'S POPULATION WILL GROW SUBSTANTIALLY AS 2100 APPROACHES.

Africa 2015	Africa 2030	Africa 2050	Africa 2100
16.14% / 83.86%	19.75% / 80.25%	25.48% / 74.52%	39.12% / 60.88%

Source: "World Population Prospects: The 2015 Revision," United Nations

19%

41%

60%

■ Children under age 15 accounted for 41 percent of the population in 2015.

■ People ages 15 to 24 accounted for an additional 19 percent.

■ 60 percent of Africa's population in 2015 was under age 25.

Source: "World Population Prospects, 2015 Revision," United Nations

AFRICA POPULATION BY AGE GROUP 2010 AND 2030
(IN MILLIONS)

Age Group	2010	2030
65+	33	70
60-64	20	35
55-59	26	45
50-54	32	58
45-49	38	72
40-44	45	86
35-39	55	97
30-34	69	111
25-29	84	127
20-24	97	143
15-19	108	159
10-14	120	173
5-9	136	185
0-4	155	199

■ 2010   ■ 2030

Source: African Development Bank Group

Q & A

PUTTING PEOPLE FIRST

*A conversation with **Kenya Army Lt. Gen. Njuki Mwaniki** on human security*

Retired Lt. Gen. Njuki Mwaniki is a former commander of the Kenya Army. During nearly 40 years in the Kenya Defence Forces, he held posts including general officer commanding of the Kenya Army's Eastern Command, chief of Army staff and commandant of the National Defence College. From 2001 to 2003, he was chairman of the Joint Military Commission for the Lusaka Ceasefire Agreement, which helped broker an end to the war in the Democratic Republic of the Congo. He is a native of Kenya's Central Region near Mount Kenya and is married with three children. This interview has been edited to fit this format.

ADF: How do you define human security?

MWANIKI: Essentially, security is about creating the conditions that allow human beings individually or as a group to pursue their cherished goals without unjustified constraints. It is these individuals and groups who surrender their sovereignty to the state, and you can say this social contract is a constitution.

They expect the state to secure them from political, social, economic, environmental and military threats. I would agree with [London School of Economics Professor] Barry Buzan, who said that security requires the absence of threats to these five areas. This allows human beings to pursue their goals. But I think you need to consider that human beings created the state about 3 1/2 centuries ago with the Peace of Westphalia [the treaties that ended Europe's Thirty Years War in 1648]. This is the core of the idea of the state, and it was created to bring peace in Europe. The African state is hardly half a century old and unlike the Westphalian state, the African state was created to subjugate African colonies. Unfortunately, that structure has changed very little.

But the human being takes precedent, and, therefore, human security is older than the state. It is as old as the creation of man himself. So this is security from a very broad perspective — a perspective that looks at the freedoms of the human being.

ADF: You spent time as commandant of the National Defence College in Kenya. Do you believe military education institutions need to place a greater emphasis on training officers about human security?

MWANIKI: Ideally, the main effort of military training should be focused on securing the state from external military threats. But the threats in almost all the African countries are threats related to social, political and economic issues. You're looking at bad governance. You're looking at poor infrastructure. You're looking at a porous border. You're looking at weak institutions, rampant corruption, poverty. You're looking at negative ethnicity, lack of social cohesion, youth unemployment, natural disasters.

The African state is weak. The fundamental weakness is in the construction of the African state. The foundation is fragile; its building blocks are from colonialism and from an imperial legacy. It consisted of control of the state and the system by the colonizer. Now, the problem is that once our forefathers took over, they inherited this foundation and perfected it. Look at Robert Mugabe and all these guys. They have perfected subjugation. They lord over their nations more than the colonizers. Therefore, Africa has many weak states from both a structural and institutional perspective.

So the actual fundamental threat comes from state weakness, the need for state building, a crisis of citizenship. Therefore, the threat to the African state is not from an external source. Uganda and Kenya are not going to go to war. There's not going to be war between Zimbabwe and South Africa. The problem of repression and state collapse are internal.

ADF: Where does the military come in?

MWANIKI: These threats have got nothing to do with the military. If a problem is socio-political, the main instrument to address that question must be political. If the conflict is arising out of poor governance, the only way you can correct that is through the political process. If it is a social issue, the main efforts should be social. If it is economic, the main effort should be economic. The military just supports.

Now, because of the violence, in order to bring the violence down you must bring in a security force. But that force is not military; it is paramilitary. The military has no jurisdiction to deal with internal problems. The people with that jurisdiction and that mandate are the police. When you talk of the issues of terrorism, the issues of porous borders, the issues of crime — these are issues that can be dealt with by forces which are paramilitary. Actually, in the French system they have a paramilitary force known as the gendarmerie. A gendarme is a Soldier who is employed in police duty. A couple of years ago I asked a French Soldier about the gendarmes, and he told me, more or less, they are like the police who have been equipped to the level of a paramilitary force. Normally, for internal security issues, you need a force structure that is based on the threat. In Africa, you need a bigger police force that will tackle

internal security problems and a very small Army that will tackle the military problems.

Let's remember, a military force is very expensive to build and sustain. To create a Soldier is 12 times more expensive than to create a policeman. Because, once you have a Soldier, first of all you must give him a spiritual leader, a chaplain to take care of his morals. You must give him a chef for food security. You must give a tailor, a cobbler, a doctor, a weapon, a tank, artillery — you must give him other Soldiers. You must give him a pension, retirement benefits and all that. But a policeman doesn't even have barracks.

So, if you do a strategic security review, you'll find that actually you don't need such a large military, you don't need a brigade in any of the countries. We need to teach our young Soldiers to understand how to create systems that give our people the building blocks of survival, dignity and livelihood. The military should understand these issues, but they should always remember that they are supporting the civil effort.

***ADF*: Are you concerned about the prospect of climate change and conflict over limited resources? How does this impact human security?**

MWANIKI: The issue of the environment is very critical. I was looking at the statistics in the whole of Africa. In the area of the Sahel and in the north of Africa, environmental degradation is causing migration. People are migrating in search of pastures for animals. In terms of drought, about 11 million people in the Sahel are facing malnutrition. In terms of food, we have a food deficit in many Sub-Saharan

countries. You have got the issue of erratic rains, you have got the reduction in the production of cereals. So, yes, the issue of the environment is quite critical, and there is a great need for environmental sustainability, ensuring that sustainable environmental management is put in place.

Our military was involved in reforestation. The Kenyan Army has planted over 10 million trees; each regiment, each battalion, has got a forest. We have got a program that is called "the Environmental Soldier." It's part of civil-military relations. Most of our Soldiers have planted about 1,000 trees each. They count and they report. It's something I always look forward to, going to the forest with the troops Friday afternoon or Saturday; there's nothing wrong with that. You're leaving something behind for posterity.

Kenya Army Lt. Gen. Njuki Mwaniki

***ADF*: What role do you think the military should play in protecting natural resources, including drinking water? What role do you think they should have in food security?**
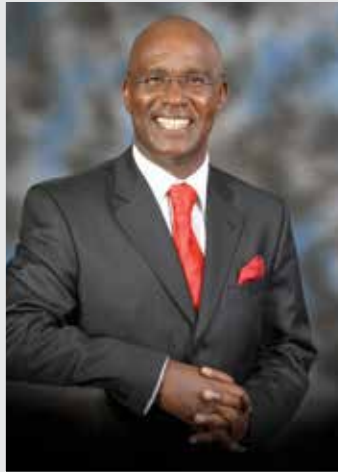
MWANIKI: The key to overcoming food and water deficits lies in government intervention to promote the use of modern methods of farming and to increase resilience among farmers. Active engagement through support to off-season food and crop production, soil and water conservation, rehabilitation projects, locust control, and monitoring and mobilization of resources are some of the measures that are underway. While the population affected by drought and famine has reduced significantly, and this is a positive gain, the growing population has also led to massive deforestation to meet food and settlement demands. Deforestation also leads to human and animal conflict.

"THE KEY TO OVERCOMING IT, IN MY OPINION, IS TO PROVIDE A CONDUCIVE BUSINESS CLIMATE FOR THE PRIVATE COMPANIES TO THRIVE AND PROVIDE JOBS."

The military will support this intervention in water drilling, construction of dams and infrastructure, particularly in borderlands and insecurity-prone areas. In Kenya, when I was the commander of the Army, I spent more money in buying water drilling equipment, in buying bulldozers, than on heavy weapons. I think we did almost 100 dams, we did over 500 kilometers of infrastructure in security-poor areas, near our border with Sudan and our border with Uganda. But that emphasis is wrong; it is not correct. The Ministry of Water and Irrigation, the Ministry of Agriculture — those are the core ministries that should do that. That is not the work of the military. The military should be concentrated on doing military business, and where there is proper governance, the water needs will be taken care of.

***ADF*: When people look at the demographic trends in Africa, they point to what they call a youth bulge. Africa is the youngest continent in the world, with 200 million people ages 15 to 24. What is unknown is whether this will be a demographic dividend or a disaster. How do you view Africa's demographics from a security perspective?**

MWANIKI: From a social perspective, in Africa we call this the warrior age. Because at that age we used to protect our own societies. Actually, when you look at the demographic spread, if you look at the Sahel, the Horn of Africa, Southern Africa, the population from 0 to 13 years is about 42 to 44 percent, depending on how you look at it. From ages 14 to 24 is about 20 percent, almost 250 million in total. And it is increasing.

When 22 percent of the labor force is unemployed and, if you look at it along the education strata, an average of 67 percent of the unemployed have attained primary education while 12 percent have attained secondary education. From this you can say that mass unemployment is denying Africa the opportunity to put its growing population to a productive use. It also denies the economy the demographic dividend from the young population. So, it is a threat to national security and a driver of social unrest and implosion.

The key to overcoming it, in my opinion, is to provide a conducive business climate for the private companies to thrive and provide jobs. So you go back to good governance. Governance becomes critical. We must funnel more resources toward developing human capital to boost productivity. Human productivity is a long-term driver, and its key ingredient is quality education that is aligned to the markets.

When you look at human security, you have to remember something. The difference between a man and a lizard is that a man has got a brain that can generate an idea. He can generate an idea to create a telephone so that I can talk to you now. Every single human being is unique, and that's why I said security is about creating the conditions that allow human beings to pursue their cherished goals.

A child in the Sahel and a child in Kenya must be given the opportunity to exploit that God-given right. The first right is to secure the freedom to express the idea. Having done that, the second is food security, because a hungry man cannot pursue his goals. Then, after food security, health security. Once you are finished with the human being, then you can go to the environment that provides the food, the health and everything else. That is why human security now takes precedent in our countries. ❑

ADF ILLUSTRATION

Africa Braces for
POPULATION
BOOM

The continent's growth is 'nearly unprecedented in human history.' It will require planning and skilled leaders. *ADF* STAFF

Habib Bourguiba was decades ahead of his time. In 1957, he became the first president of Tunisia. Over the course of his administration, he changed the social fabric of the country, particularly in the area of women's rights.

In a mostly Muslim country, Bourguiba gave women full citizenship, which included the right to remove their veils and the right to vote. He created a national health care system. He banned polygamy, gave women the right to divorce, and made sure that girls and boys got a primary school education.

Incredibly for that time, he legalized birth control and abortions for women with large families. Robert Engelman of the Worldwatch Institute, writing for *Scientific American* magazine in February 2016, said that by the mid-1960s, mobile family-planning clinics throughout Tunisia were offering birth control pills.

Bourguiba was removed from power in 1987, but he left behind a unique plan for his country to deal with one of the biggest changes in the world in the 21st century: Africa's population boom. Today, Tunisia has what demographers call a balanced age structure. That means the population is relatively evenly distributed among the young, middle-aged and old.

Tunisia, however, is an anomaly on the African continent, which has the youngest population on the planet. Numerous projections, including those by the United Nations, say that Africa's population, currently at 1 billion, will double by midcentury and reach 4 billion by 2100. Other studies project even faster growth. Social scientists say that Africa's growth

People on motorbikes pack the streets of Kampala, Uganda. *ADF* STAFF

will have a tremendous effect on the rest of the world. *The Washington Post* has described the growth as "nearly unprecedented in human history."

IMPROVE INFRASTRUCTURE, CREATE JOBS

The BBC asked Obadiah Mailafia, a former deputy governor of the Central Bank of Nigeria, how Africa needs to plan for its population boom.

If you go to many of our cities these days, they're much more crowded than ever. So huge challenges are deriving from the population increase, and it is quite palpable. You could see it not only in heavy traffic, but also pressure on social services, the water, electricity, schools and the rest of it.

In some of our biggest airports, there is now pressure on space for parking of private jets. And yet the streets are booming with poor people, people hustling in the streets because they have no opportunities and no hope for the future.

My worry is the fact that we are not making arrangements to cater for this rising population. There's no country in the world that I know of that has over 70 million people that does not also have a flourishing rail network. The roads are cluttered up with heavy trucks. And also expanding social services like health, education and the rest of it — all those things need to be in place, together with better planning for population and for families.

We must create jobs, we must expound opportunities for young people to get them engaged and busy, otherwise we might find that the sort of thing that happened in the Arab Spring could happen in Nigeria.

The figures speak for themselves: According to the United Nations, Africans make up 16 percent of the world's population. By 2100, if current rates continue, Africans will make up 39 percent of the world's people.

A key statistic is the total fertility rate — the number of children a woman is likely to have in her lifetime. The total fertility rate for Africa is 4.7 children per woman, compared with 2.5 children globally. In Niger, one of Africa's poorest countries, the average woman will bear more than seven children during her life. By midcentury, Niger's population is projected to nearly quadruple.

This growth is not a new thing. The continent's population has nearly tripled since 1980. By midcentury, the continent is projected to add 80 people per minute. Nigeria, the world's seventh-most-populous country, is expected to add more people to the world by 2050 than any other country.

These statistics are a dramatic change from earlier projections. As recently as 2004, the U.N. expected Africa to grow only to 2.2 billion people by 2100. Demographers had looked at the falling birthrates in Asia and Latin America and projected that the same changes would take place in Africa. That has not been the case.

Even before Africa's population began to mushroom, the continent's leaders had taken notice. Kenya began working on population control policies in 1967; Ghana followed two years later. By 2003, 77 percent of Africa's Sub-Saharan nations had announced policy initiatives to slow down their countries' growth.

VIRTUOUS CIRCLE

Other parts of the world have used national family planning programs to trigger a virtuous circle. Contraception has led to declines in fertility rates. The declining rates have allowed for more resources, such as education opportunities, to be used per capita. With more education, women and girls have helped economies grow and improved their social status.

A failure to address population growth leads to crowded schools, congested roads and rocketing housing costs.

There are many reasons why Africa's projected growth rate is so big. Perhaps foremost is its overall health. The United Nations said life expectancy in Africa rose by six years, to 59, in the 2000s. By the year 2100, Africa's average life expectancy could hit age 78.

In the past decade, the U.N. said, the rate of African children dying under the age of 5 went from 142 per 1,000 to 99 per 1,000. It is still twice the global rate, however.

The main reasons for Africa's population boom remain societal. In

> ## "When the birthrate goes down, suddenly government institutions are looking good."
>
> ### – DR. RICHARD CINCOTTA, A DEMOGRAPHER

many parts of the continent, large numbers of children are needed in families to work the land, which is often poorly suited for farming. The men in many African countries regard large numbers of children as a status symbol, as well as proof of their virility. Access to contraceptives is limited in many areas.

There also is the matter of Africans not wanting to be told what to do by the rest of the world. In an October 30, 2015, interview with the Catholic News Agency, Ugandan priest Herman-Joseph Kalungi said the push for contraception is "a question of some Western forces imposing some customs, imposing some ways of living that are contrary to our culture."

"Instead of helping us to grow more food, instead of helping us to establish maybe factories or to be able to get medicines, they will suggest you have less children so you don't have the problem of hunger," Kalungi said.

The biggest single reason for the population boom is that many African women do not control their own destinies. They are at the mercy of their husbands, their own lack of education and opportunities, or poor leadership within their countries.

SECURITY CONCERNS

In a 2011 report titled "The demographic nightmare: Population boom and security challenges in Africa," Nigerian political scientist Azeez Olaniyan warned of the security consequences of Africa's rapid population growth without a corresponding increase in infrastructure and job opportunities.

"These include a youth bulge, rural-urban migration, land pressures, environmental issues and a depletion of natural resources," he wrote. He added that "when a mass of youths are jobless or underemployed, their propensity for taking up arms in exchange for small amounts of money, as well as the likelihood of their being drawn into criminal gangs, is very high."

"In other words, unemployment, a product of unrestrained population growth, fuels conflict and crime." This becomes particularly acute, he said, in any country with many years of military rule.

Engelman said many African leaders fear the security implications of a future that is "crowded, confrontational and urban."

A United Nations study warns of the dangers of Africa's labor force outgrowing the number of jobs available, creating "a menacing problem for society."

"Rapid population growth rates also have ramifications for political and social conflicts among different ethnic, religious, linguistic and social groups," the U.N. study said. Population growth will be a "major contributing factor" in violence and aggression among young people and could "form a disruptive and potentially explosive political force."

AFRICA'S CITIES

It is impossible to discuss Africa's population boom without considering its cities, particularly its megacities. The Democratic Republic of the Congo's capital, Kinshasa, is expected to grow to 20 million people by 2030, while Lagos, Nigeria, will hit 24 million; that's the current population of Shanghai, China, one of the largest

POPULATION GROWTH FORECASTS IN BILLIONS

WORLD ⬤ AFRICA ⬤

	2015	2050	2100
WORLD	7.3	9.7	11.2
AFRICA	1.2	2.5	4.4

Source: U.N. Population Division forecasts

POLITICAL WILL NEEDED

John Wilmoth, director of the Population Division of the United Nations, gave his thoughts on Africa's growth to the BBC in September 2015.

There's been a substantial reduction in the death rate in Africa, like in other parts of the world, and this is good news in many ways — children survive in much greater numbers to adulthood, and adults survive to old age.

However, what's preventing that kind of movement in a similar direction to what's happening in the rest of the world is our continued levels of high fertility. You always have three things together: You have high fertility, rapid growth and young populations.

Currently in Africa we estimate that 41 percent of the population is under the age of 15. This is a very high fraction. Another 19 percent are between ages 15 and 24. So if you add those two together, you've got three-fifths of the population that is under the age of 25.

We really need political will at the highest levels paying attention to this issue because it really will affect the ability of those countries to raise the standard of living for their populations, and it will have long-term implications for the well-being of that part and the rest of the world as well.
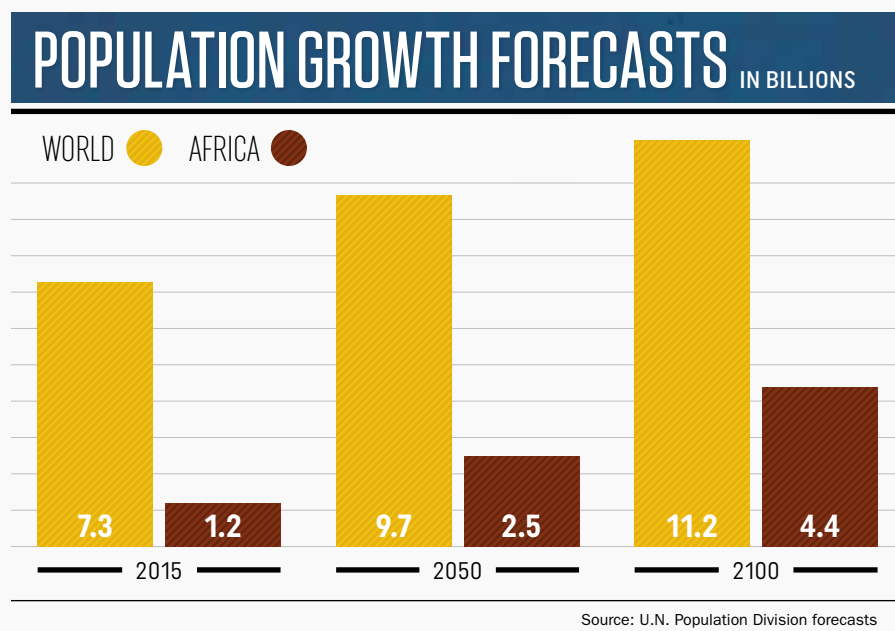
EXTREME POVERTY IS THE PROBLEM

Hans Rosling, professor of international health at the Karolinska Institute in Sweden, told the BBC that population growth by itself is not the issue.

What is difficult for the surrounding world is to realize that Africa will become a much more important part of the world. And I see that because so many big investment banks invite me to come and lecture because they see, "Wow! There's economic growth in Africa. Wow! Companies in Africa are profitable today." They see customers.

The reason the population is growing in Africa is the same reason that [saw] population growth first in Europe, then in the Americas, then in Asia. It's when the population goes from a phase where you have many children born and many who are dying. Then the death rate goes down, and [some time later] the birthrate follows.

Addis Ababa has 1.6 children per woman, which is less than London. So when you hear an average of Africa of 4.5 children per woman, that is composed by the most modern part of Africa with two children per woman [or less] and the still worst-off, in very extreme poverty, with six to seven.

I can see government after government in Africa getting it. Presently we see Ethiopia, Rwanda, Ghana doing the right things, and others are coming fast.

If you continue to have extreme poverty areas where women are giving birth to six children and the population doubles in one generation, then you will have problems. But it's not the population growth that is the problem — it's the extreme poverty that is the underlying reason.

cities in the world.

In the 50 years from 1960 to 2010, the population of Africa's big cities increased from 53 million to 401 million. Africa now has 50 cities with more than a million people. By 2025, there will be 23 more.

Dr. Richard Cincotta, a demographer who has studied Africa extensively, told *ADF* that a lack of job opportunities in rural areas will continue to drive the growth of cities. "There's nothing for young people to do in the country, so they migrate to the city," he said.

Africa's future echoes that of China. Like China, Africa is rapidly urbanizing. Many, if not most, of the new arrivals to Africa's cities come from failed farms. These newcomers, mostly young people, Engelman said, settle into slums, "scratching out what shelter and livelihoods they can."

David Anthony of UNICEF said African leaders can make all the difference by planning for urban growth.

"We want to see African leaders make the correct and right investments in children that are needed to build a skilled, dynamic African labor force that's productive and can grow, and can add value to the economy," he told National Public Radio. "The worst thing would be if this transition was just allowed to happen, because what you're going to

see is an unparalleled growth of the slum population."

THE NEED FOR ELECTRICITY

Olaniyan's report emphasizes the need for infrastructural renewal to keep up with Africa's population growth. Specifically, he said, Africa needs more electricity.

"Few African states generate an adequate supply of electricity," Olaniyan wrote. "The improvement of electricity supply throughout the continent would remove the majority of inhabitants from the vicious circle of poverty, thus eliminating a major cause of conflict."

One specific benefit of improved electricity access throughout the continent would be that fewer young people would feel compelled to move to the cities. A lack of electricity also has stifled commerce in vast expanses of the continent. Even in developed areas and cities, merchants and manufacturers complain that they have to shut down their businesses regularly because of a lack of reliable power sources.

Economists have warned that the countries in Africa without adequate power will have stagnant economies, which in turn will discourage new investment. Power in the coming years will be the key driver of growth.

Improving Africa's access to

POPULATION PROJECTIONS 2015-2100

- AFRICA
- LATIN AMERICA/CARIBBEAN
- ASIA
- NORTH AMERICA
- EUROPE
- OCEANIA
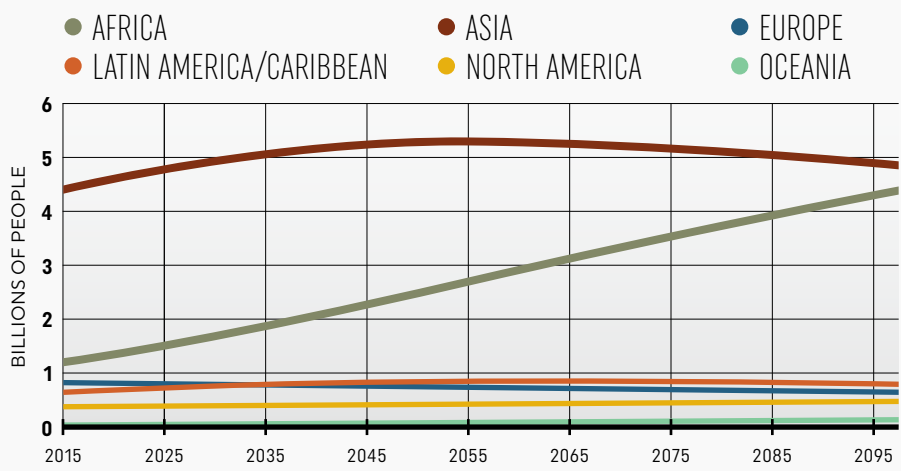
Source: U.N. Population Division, "World Population Prospects, the 2015 Revision"

Pedestrians shop at streetside stalls in Lagos, Nigeria.
THE ASSOCIATED PRESS

People line up at a food distribution site in Monrovia, Liberia.
AFP/GETTY IMAGES

Nigerians wait to register to vote in Lagos in April 2015.
THE ASSOCIATED PRESS

electricity is not an overwhelming task. Many parts of the continent have the potential for vast hydroelectric resources. Some authorities believe that the Congo basin alone has the capacity to supply most, if not all, of Africa's electrical needs.

PROMOTING POPULATION CONTROL

Controlling the booming population numbers remains the primary means of improving the quality of life on the continent. Other parts of the world, most notably India and China, have addressed the problem in their own ways.

In 1978, China initiated a "one child" policy, officially restricting the number of children married couples could have. Chinese officials enforced the policy with fines and taxes. Chinese farmers, who need sons to work their farms, were particularly affected. The policy led to allegations of families killing infant daughters, forced abortions and mandatory sterilizations. The policy ended in 2016.

India recognized the need for family planning as early as 1949 and started a nationwide birth control program in 1952. It later included family health and nutrition. India updated its birth control programs in 1966, 1977 and 1994. Some aspects of India's programs, including a 1970s forced sterilization stipulation for men with two children, failed.

Although Indian women are aware of the need for contraceptives, such supplies are often unavailable. The current birth control plan, introduced in 1994, calls for universal access to contraceptives, a minimum marriage age of 18, training for people who assist with births, and a broader education for more of India's youth. The India plan is considered a model for other parts of the world to follow, including Africa.

China has proved that heavy-handed enforcement of birth control is not the answer. Culturally, Africa's 54 countries require, as Olaniyan put it, "sustained persuasion, enlightenment and education" to make birth control goals attainable.

Cincotta told *ADF* that one of the keys to sustainable growth on the continent is strong leadership, particularly leaders who "feel strongly about women participating in society."

When government leaders insist on women's rights, Cincotta said, it triggers a chain reaction. Women receive a good basic education, they move into the workplace, fertility rates go down, and government services improve because there are fewer people to serve. Incomes go up, education continues to improve and the crime rate goes down.

In their 2013 study "African Demography," researchers Jean-Pierre Guengant and John May said that any country aspiring to prosperity must first reduce its birthrate. Doing so, they said, produces a "demographic dividend." ❑

THE Water *Cycle*

WATER FLOWS THROUGH A FULL RANGE OF AFRICAN **HUMAN SECURITY** CHALLENGES

ADF STAFF

Lake Chad, which sits near the geographic center of Africa, can be seen as a symbol of the continent's extraordinary water challenges. The lake, whose waters for centuries lapped at the shores of what is now Cameroon, Chad, Niger and Nigeria, is a mere shadow of its former self.

Between 1963 and 2001, the lake's total area shrank from 25,000 square kilometers to 1,350 square kilometers. Overgrazing, excessive use, changes in climate patterns and unsustainable irrigation projects in surrounding countries combined to cause the decline.

A woman collects water from a stream in northern Ethiopia. As of 2008, Ethiopia and Somalia were the only two countries in Africa where less than 40 percent of the population used improved drinking water sources.
REUTERS

Residents of Bhobhoyi, South Africa, which has been badly affected by drought, wait in line at a free water collection point in November 2015. AFP/GETTY IMAGES

t he livelihoods of nearby populations, estimated as high as 30 million across the four countries, are inextricably tied to Lake Chad. With its decline has come a downturn in the fortunes of these residents. For example, farmers and livestock herders increasingly divert the water for their use at the expense of fishermen who depend on catches in the lake, according to the Global Water Partnership.

"As income sources were lost, basin residents were forced to move to inhospitable surrounding environments, disrupting local governance and social institutions, and creating opportunity for illicit networks as well as large concentrations of traumatized and marginalized youth," wrote Africa expert Devon Knudsen for the website African Arguments. Those conditions make the region ripe for the flourishing of another threat: Boko Haram.

People fill jerry cans at a water selling point in the Makoko fishing community in Lagos, Nigeria. Poor communities often pay a premium for clean water. Dirty water kills tens of thousands of people in Nigeria each year.
REUTERS

The Lake Chad region alone provides an example of how a host of factors converge around water to breed insecurity: A once-vibrant lake is affected by regional climate changes; people increase their use of the lake's water to bolster lagging livestock and crops, further draining the resources; concurrent food insecurity and health problems lead to poverty, migration and deforestation; and all of these things make populations more vulnerable to violence and recruitment by a regional extremist organization such as Boko Haram.

THE BURDEN OF ACCESSING WATER

Water problems exist all over the continent, and they manifest themselves in different ways in rural and urban areas. Governance, infrastructure and weather also play large roles in the availability and provision of water.

The stress of obtaining sufficient water can be a huge burden, especially for rural families. For example, a family in Nabitenga, Burkina Faso, uses about 400 liters of water a day during the dry season for bathing, cooking, drinking and taking care of livestock, according to the London-based nongovernmental organization WaterAid.

For many rural residents, obtaining that much water involves family members — almost always women and girls — walking for hours to fetch it from a remote well, lake or river. They carry the water home themselves; a jerry can weighs more than 18 kilograms.
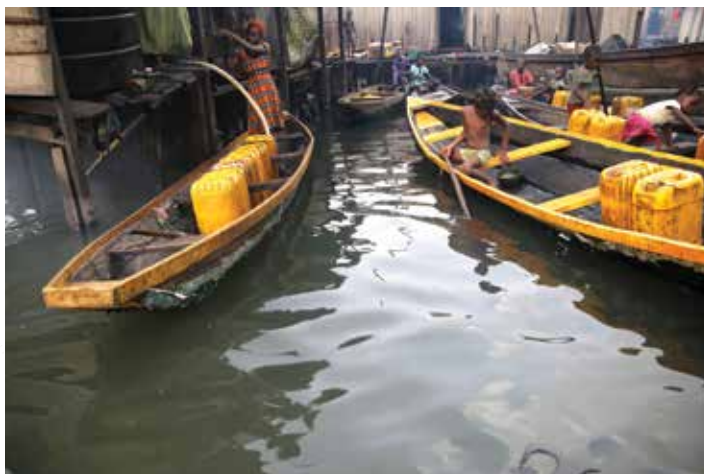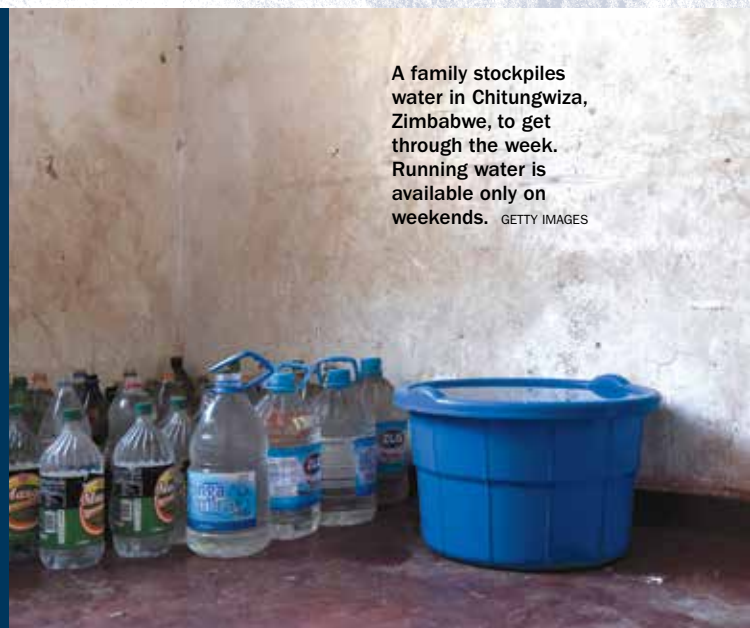
In 2010, at least 25 percent of the population in more than a dozen African countries walked more than 30 minutes round trip to get water, according to UN-Water.

To put it in perspective, Lifewater says that people spend 40 billion hours a year gathering water in Sub-Saharan Africa alone. That means that Sub-Saharan Africans, together, spend nearly 4.6 million years gathering water every year.

"Just think what could be achieved with the hours released if the long daily trek to the well or river for water was not needed?" wrote Anna Swaithes, SABMiller's head of water and food security policy, for World Economic Forum. "Or if communities were freed from the need to move in search of water during dry seasons?"

The costs and effort associated with running infrastructure to far-flung rural areas is obvious, but costs are a concern even in urban areas. In urban slums, infrastructure is typically absent, so residents often must obtain water from community taps. People living in Kenyan slums can expect to pay five to 10 times more for water than people living in high-income areas, according to *Africa Water Atlas.*

A family stockpiles water in Chitungwiza, Zimbabwe, to get through the week. Running water is available only on weekends. GETTY IMAGES

People evacuated from Niger's islands of Lake Chad fill jerry cans with drinking water in Bosso, Niger, in May 2015. AFP/GETTY IMAGES

Côte d'Ivoire, a country of 23 million people, has had some success in working with private interests to provide water service to its citizens. In 1987, the government entered an arrangement with the Société des Eaux de Côte d'lvoire (SODECI). The private company produces 209 million cubic meters of water from more than 500 boreholes and 70 treatment stations; provides drinking water to nearly 800,000 customers in more than 700 cities and towns; and provides sanitation service to nearly 400,000 people in Côte d'Ivoire.

The government sets policy, and SODECI manages water services under contract with the government's Water Directorate. A surtax on water bills subsidizes household connections, and a rising block tariff based on consumption provides a cross-subsidy from large to small consumers, according to the Water Sanitation Program, a World Bank Group entity. Finally, SODECI licenses resellers in informal settlements, which allows it to influence cost and quality in areas where it is not otherwise allowed to operate.

As a result, 93.1 percent of Côte d'Ivoire's urban population has access to an improved drinking water source, as does 68.8 percent of its rural residents, according to *The World Factbook.*

CLEAN WATER IMPROVES HEALTH

Despite costs, providing access to clean water can help nations avoid the outbreak and spread of disease. The connection between disease and lack of access to clean water in Africa is clear and reinforced yearly all over the continent during rainy seasons. According to The Water Project, 783 million people do not have access to clean water, and 37 percent of those live in Sub-Saharan Africa. In Nigeria alone, WaterAid estimates that dirty water killed 73,000 people in 2014 — nearly seven times as many people who died in the West African Ebola outbreak.

Prominent water-borne diseases such as cholera and diarrhea kill thousands of people across the continent every year. Guinea-Bissau saw 14,303 cases of diagnosed cholera during the wet season in 2005, and 252 eventually died, according to *Africa Water Atlas.* The World Health Organization estimates that 0.75 cases of diarrhea occur per person worldwide each year. But Sub-Saharan Africa's rate is the highest in the world at 1.29 cases per person per year.

Malaria, Guinea worm disease, river blindness and Lassa fever all can be connected to poor water and sanitation resources. Schistosomiasis, which is also known as bilharzia, is spread by freshwater snails and is present across the majority of the continent.

As of 2008, 31 countries in Africa had less than 75 percent of their populations using improved drinking water sources. In two countries the total was less than 40 percent; Ethiopia had 38 percent, and Somalia had 30 percent. In Somalia, one of the primary reasons for the lack of clean water was civil unrest.

WATER OFTEN CENTRAL TO CONFLICT

Water is scarce in many parts of Africa, so it's no surprise that it would be at the center of conflicts. Clashes typically arise in two contexts: in the competing interests of farmers and herders, and from violent extremist groups that target and damage water sources to control populations and territory. These types of violence pose the most immediate impact to human security and national security forces.

Somalia-based extremist group al-Shabaab has waged what has been called "water terrorism" by cutting off water sources to government-controlled cities, Knudsen wrote for African Arguments.

When droughts and famines strike, groups such as al-Shabaab can step in and provide relief, exploiting communities in the absence of government action. "Some of

Al Shabaab's most effective 'hearts and minds' activities have provided water services supporting farmers and pastoralists," Knudsen wrote. "Al Shabaab has also been a major obstacle in allowing humanitarian aid from reaching those affected most by famine."

Similar tactics have played out in the Middle East at the hands of ISIS, which is a growing threat in Africa, particularly in Libya. In fact, using water as a weapon dates back at least as far as World War I, when the Belgian town of Nieuwpoort opened the gates of the Yser River and flooded Flanders to halt the advance of the German Army.

ISIS has used similar tactics in Iraq and Syria. As recently as March 2016, Deutsche Welle reported, ISIS controlled six of eight large dams on the Tigris and Euphrates rivers and was attacking another.

"On one hand, IS is damming the river to retain water and dry up certain regions, thereby cutting off the water supply to villages and communities," Tobias von Lossow, of Berlin's Institute for International and Security Affairs, told Deutsche Welle. "On the other hand, it has also flooded areas to drive away their inhabitants and to destroy their livelihoods."

ISIS also has used another water tactic: contamination. In December 2014, ISIS poured crude oil in the water south of Tikrit, Iraq, making it unsafe to drink, von Lossow said.

Water also is at the center of smaller-scale violent clashes all over the continent. In the village of Itunundu in Tanzania's southern highlands, farmers and herders had long been at odds over water used to irrigate crops and feed animals. "Pawaga division is considered one of the bread basket areas of Tanzania where people grow maize, rice and vegetables in the valleys whereas others keep animals in the highlands," IPS news agency reported in March 2016. "Despite a clear demarcation of the areas that are controlled by farmers and those controlled by herders, there have been frequent clashes."

Now, representatives from the groups are finding peace at the negotiating table with the help of the Tanzania Natural Resource Forum, a civil society group. Farmers and pastoralists meet often to talk about solutions to their problems. "Farmers and herders need to know that there are people who benefit from their conflicts and do not wish to see the conflicts resolved," Godfrey Massay, the group's land-based investment coordinator, told IPS. He said recurring fights are a symptom of externally driven factors involving bigger agricultural and conservation interests.

"This is the first and the only platform that brings together farmers and pastoralists to discuss issues that affect them openly without fear or favor," Massay said. Within six months of its start, the number of violent clashes dropped.

Donald Mshauri, Iringa district land officer, told IPS: "This shows that no matter how deep the conflict is, it can be resolved by just talking." ❑

Turkana herdsmen carry rifles near Baragoy, Kenya, in January 2016. Herdsmen and farmers often find themselves at odds over land and water.
REUTERS

A High Point for Food Security in Senegal

ADF STAFF

Assi Ndiaye pushes her fingers into a box of dirt, planting a small lettuce sprout on an urban rooftop in Dakar, Senegal. Ndiaye is one of about 4,000 people, mostly women, participating in a successful project to improve food security in this nation of about 14 million.

In a country where more than 20 percent of residents are undernourished, these 1-square-meter rooftop boxes offer families an opportunity to produce up to 30 kilograms of vegetables per year, according to the Food and Agriculture Organization of the United Nations (FAO). One such box could produce either 200 tomatoes a year, 36 heads of lettuce every two months, 10 cabbages every three months or 100 onions every four months.

" 'Micro-gardening' is the intensive cultivation of a wide range of vegetables, roots and tubers, and herbs in small spaces," the FAO said. "While urban residents have long grown vegetables in backyard plots, modern micro-gardening makes use of containers such as plastic-lined wooden crates, custom-built tables and even old car tyres. It integrates horticulture production techniques with environmentally friendly technologies suited to cities, such as rainwater harvesting and household waste management. Micro-gardens allow low-income families to meet their needs for vitamins, minerals and plant protein by providing direct access to fresh, nutritious vegetables every day.

They also offer a source of extra income from the sale of small surpluses."

The micro-gardens are easily managed by children, the elderly and disabled people. The gardens use little water — about 1,000 liters a year — and most can be supplied by channeling rainwater into storage containers at no cost after an investment in harvesting equipment. This is a significant advantage in areas where water is scarce.

> One such box could produce either 200 tomatoes a year, 36 heads of lettuce every two months, 10 cabbages every three months or 100 onions every four months.

The FAO says popular micro-garden crops include tomatoes, lettuce, cucumbers for salads and mint for tea. Coriander, chives, green onions and leaf celery can be grown as condiments for stuffing fish. The program, which began in Senegal in 2001, won UN-Habitat's Dubai Award for Best Practice to Improve the Living Environment in 2008. The $30,000 prize helped expand the program.

Assi Ndiaye plants a micro-garden on a Dakar, Senegal, rooftop in January 2016. The low-cost gardens can help avoid the cost of buying food in local markets. AFP/GETTY IMAGES
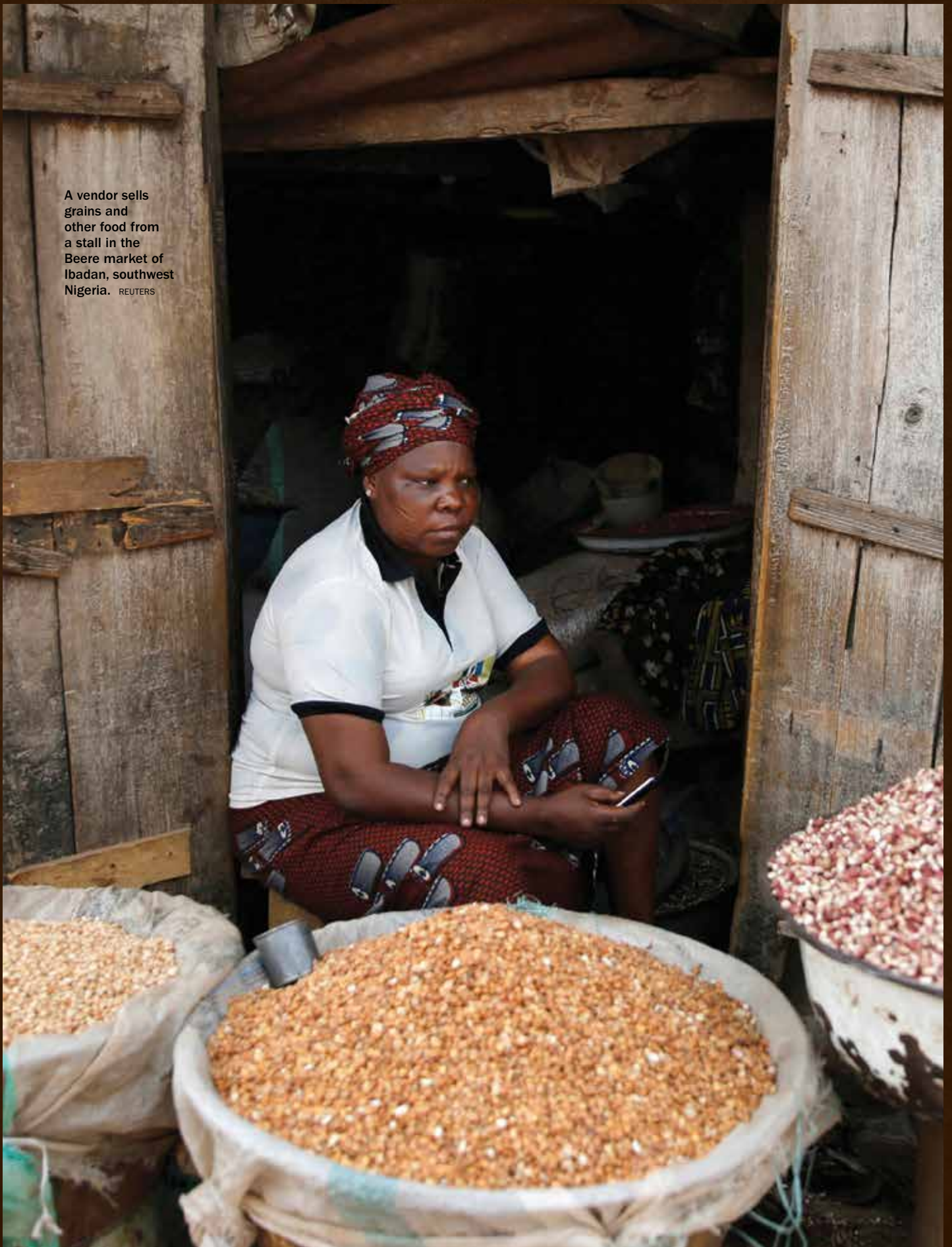
When
FOOD
IS A
WEAPON

Attacks by insurgent groups demonstrate the links between conflict and food security.

ADF STAFF

Malawian farmers tend a field of maize near the capital, Lilongwe, during a nationwide food shortage in February 2016. REUTERS

A vendor sells grains and other food from a stall in the Beere market of Ibadan, southwest Nigeria. REUTERS

The human toll of Boko Haram's long insurgency against the people of northern Nigeria is well-documented: Thousands have been killed, millions displaced and fear has rippled across the region.

But in addition to the lives they destroyed, the extremist group has had another target: the agricultural sector. Boko Haram's attacks on farmers and their land have been relentless. The group's presence has cleared out much of the northeastern part of the country and transformed what once was known as Nigeria's breadbasket into a food-insecure region. They've also targeted farms directly, burning crops, killing livestock and destroying infrastructure.

Boko Haram offers a case study in the ways that conflict and food security are linked. Understanding this link is vital for security professionals looking for ways to protect civilians from the secondary effects of war such as famine, disease and displacement. These effects, which fall under the category of "human security," are historically much deadlier than the conflicts themselves.

"I WAS THE BREADWINNER. NOW I HAVE BECOME A BEGGAR."

~ **Mohamed Ali**, *a farmer from Adamawa, Nigeria*

Ernest Ogbozor, a native of Kaduna in northeast Nigeria, is a former Red Cross worker who is now a Ph.D. candidate at George Mason University's School for Conflict Analysis and Resolution. Since 2010 he has interviewed farmers in Cameroon, Chad and Nigeria to determine the impact Boko Haram has had on their livelihoods.

He found that in order to control the population, the extremist group deliberately targets the food supply in nefarious acts he calls "asset stripping."

"If they cannot kill you, they take out your livelihood means. They burn everything," he told *ADF*. "It means that even if you are alive, you won't have anything to live on."

About 80 percent of the people who live in rural Nigeria are farmers. Their primary crops are sorghum, millet, groundnuts, beans and rice. In 2013, when Boko Haram took over most of Borno State in northeast

Nigeria, many farmers fled, and the extremist group began systematically burning crops and destroying infrastructure. As of early 2016, Boko Haram had destroyed 1,630 water sources used for irrigation including motorized boreholes, hand pumps and solar-powered pumps, according to the World Bank. Farmers who stayed behind were forced to pay Boko Haram taxes ranging from 1 million to 3 million naira ($6,000 to $18,000) in exchange for safety.

"They wanted to make an impact, to show that they are in charge," Ogbozor said of the terror group.

The impact on the area's food supply was devastating and wide-ranging. IRIN found that as farmers missed multiple planting and harvesting seasons, food became scarce, and the price of staples such as beans and onions rose by 70 percent. Additionally, because Boko Haram uses fertilizer as a component of bombs, the government restricted access to the product, adding another hardship for farmers, Ogbozor said.

The commercial activity of buying and selling food ground to a halt. The Baga Fish Market in Maiduguri, an economic engine that served the region, was attacked 20 times between 2009 and 2015, forcing nearly all vendors to flee. A cattle market in Adamawa, which drew herders from surrounding countries, was shut down after a suicide bomb attack in 2015. Another large cattle market in Maiduguri was shut by the Nigerian military for fear that Boko Haram was profiting from sales there.

Boko Haram also attacked pastoralists. The group stole or killed 470,000 head of livestock in Borno State, according to the Nigerian newspaper *Daily Trust*. The depletion of cattle herds caused the price of meat to nearly triple in some areas, Reuters reported.

When interviewing farmers in the largest camps of internally displaced people in Borno State, Yobe State and in Adamawa State, Ogbozor was struck that people accustomed to being self-sufficient had become dependent. Tailors and cobblers could start businesses in the camps, he said, but farmers without access to land were forced to sit idle.

"A lot of them are dependent on handouts, on emergency relief," Ogbozor said. "Some of them lost family members, and they're just trying to cope. Some don't know what the future will be if they return."

The attacks have taken a toll, not just on the farmers' livelihoods, but also on their sense of self-worth.

"We cannot afford to buy food from the market, and we [now must] depend on the kindness of strangers to survive," Mohamed Ali, a farmer from Adamawa, told IRIN. "I was the breadwinner. Now I have become a beggar."

A Fulani woman milks a cow near the city of Kano in northern Nigeria. REUTERS

Farmers plow a field in Kaduna State in northern Nigeria. REUTERS

CONFLICT LEADS TO FOOD INSECURITY

When farmers are forced off their land and the road networks and supply chains that move food to consumers are disrupted, people suffer. A study by the International Food Policy Research Institute (IFPRI) examined 14 countries prone to violence and found a median drop in food production of 12.3 percent during times of conflict.

Furthermore, conflict triggers large-scale migrations and transforms self-sufficient families into refugees. When northern Mali fell to extremists and separatists in 2012, it forced an estimated 400,000 Malians, many of whom had been farmers or herders, to flee their homes. This not only disrupted food production in northern Mali — grain prices rose by 80 percent to 100 percent there in 2012 — but it placed a major strain on host communities in Burkina Faso, Mauritania, Niger and Senegal. Aid agencies historically have met the food needs of refugees and the impact is not all negative for host communities, but the influx of people disrupts the economy and can result in a xenophobic backlash.

"Most refugees are hosted in neighboring countries that do not necessarily face better economic conditions and often have pre-existing food insecurity," scholars wrote in a paper published by IFPRI titled "Refugees, Food Security, and Resilience in Host Communities." "This may place a further burden on hosting populations and may erode their resilience to withstand shocks and achieve food security over time."

Conflict can drive food insecurity in other ways. Young male laborers are essential to farm work but also are the first ones to be conscripted into national militaries during times of war or to be targeted by homegrown insurgents. This weakening of the labor pool further aggravates food insecurity.

"The people most likely to participate in armed conflict — young men from rural areas with limited education and economic prospects — are likely to seek work in the agricultural sector," Henk-Jan Brinkman and Cullen Hendrix wrote in a 2011 report for the World Food Programme. "As that work dries up, fighting looks more attractive."

FOOD INSECURITY CAUSES CONFLICT

Just as violence can cause food shortages, food shortages can lead to violence. In 2008, the price of grains including rice, wheat and corn rose sharply across global markets. The wealthy barely noticed the price increase, but it marked a breaking point for many people living in poverty who took to the streets to voice their resentment. People protested and rioted in 48 countries, including Mozambique, where rioters clashed with police, and Haiti, where officials ousted the prime minister after a week of demonstrations.

Food prices are rarely the only grievance, but they can spark the fire of popular resentment. One of the largest demonstrations in modern African history was the three-day bread riot in Egypt in 1977, which led to the deaths of more than 800 people. "Spiking food prices may provide an incentive for people to give voice to underlying grievances on other conditions that affect their food security — for example, jobs, incomes, or government policies," wrote Emmy Simmons in a report for the Woodrow Wilson Center. "Where there has been a failure of governance, such as in Somalia, recurrent food scarcity and famine become part of a vicious cycle of instability, with food insecurity both resulting from and contributing to repeated rounds of armed conflict."

Similarly, when access to land for cultivation or livestock grazing is limited, conflict ensues. Across the Sahel region, sporadic rainfall and an encroaching desert are

forcing nomadic pastoralists to move farther and farther afield in search of grazing land. This movement puts them into direct conflict with farmers who till the land.

This competition for scarce resources has led to violent clashes among ethnic Fulani herders and farmers in Nigeria, Bambara farmers and Peul herders in Mali, and the farming Pokomo people and cattle herding Orma people in Kenya. According to SBM intelligence, there have been 371 clashes between herdsmen and farming communities in Nigeria alone since 2011. The attacks between the heavily armed groups cost the country about $14 billion annually, the group found.

FOOD AS A WEAPON OF WAR

One of the most effective and reprehensible ways to control civilians is by interrupting their food supply. Throughout history, governments, militaries and rebel groups have used food as a way to reward loyal peasants and punish those who rebel. Researcher Alex de Waal studied efforts by Sudanese Janjaweed militants to control Darfuri populations in the early 2000s by destroying farms and livestock. He called it "counterinsurgency on the cheap," adding that "famine and scorched earth [became] their weapons of choice."

In the mid-1990s, researcher Ellen Messer coined the term "food wars" to describe this tactic. In her studies she found that militants were using this type of food control in 18 African countries at that time.

"Adversaries starve opponents into submission by seizing or destroying food stocks, livestock, or other assets in rural areas and by cutting off sources of food or livelihood, including destruction of markets," Mosser wrote. "Land and water resources are mined or contaminated, to force people to leave and to discourage their return."

WHAT CAN BE DONE?

Several strategies and tools have proved effective at improving food security and decreasing violence in countries prone to conflict and food shortages.

- **Early warning networks:** Such systems compile information about food prices, food availability and agricultural conditions from a wide variety of sources so that government agencies can anticipate food shortages and price shocks.

- **Price interventions:** Many countries subsidize some staple goods to prevent large price fluctuations for farmers and consumers. However, careful economic policy is required. Poorly applied subsidies can distort markets in harmful ways or become financially unsustainable in the long term, leading to greater conflict once they're removed.

- **Build resilience:** Strategies for resilience include diversifying and rotating crops, modernizing cultivation practices, adding ancillary farming businesses, and organizing co-ops to help farmers prepare for lean years.

- **Shared management:** Pilot projects in Ethiopia, where interethnic and intercommunal violence over land resources was common, have shown success. These projects demonstrated that when communities that had been adversaries partner to manage land and make shared decisions about natural resources, there is less violence.

- **Protecting farmers:** Experience in numerous countries shows that farmers are among the most vulnerable members of society to attacks by insurgent groups. An understanding of the important role farmers and herders play in bolstering human security should cause militaries to place a higher priority on protecting them. ❏

An overloaded truck travels through the Assaga refugee camp in Diffa, Niger, in May 2016, close to the Nigeria border. More than 240,000 people were displaced by Boko Haram in southeast Niger, placing a strain on food supplies.
AGENCE FRANCE-PRESSE

DEGREES of DANGER

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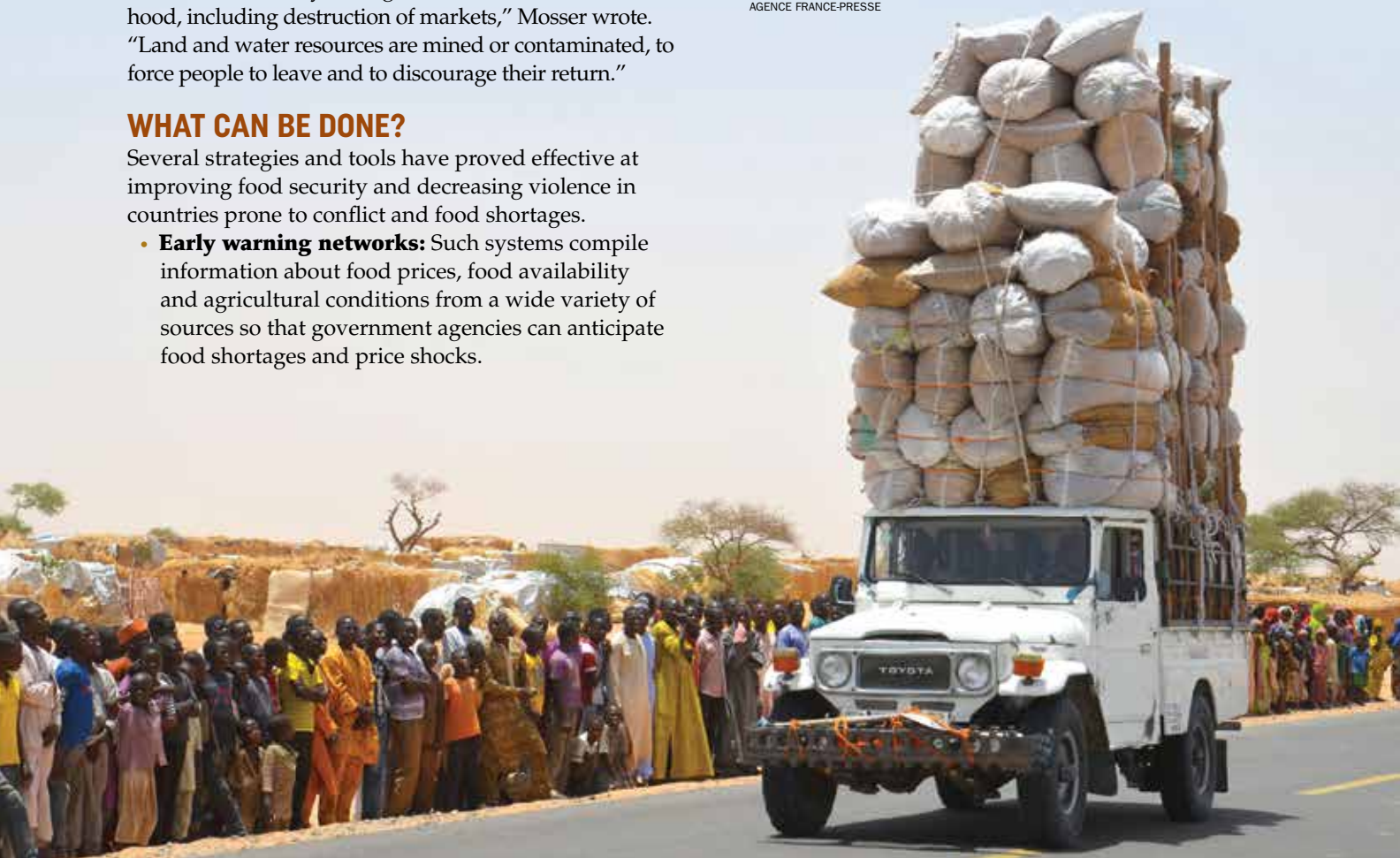
CLIMATE CHANGE CAN COMBINE WITH OTHER FACTORS TO AFFECT HUMAN SECURITY

ADF STAFF

The profound and dangerous effects of climate change in Africa are nowhere more evident than in the ongoing conflict in Darfur. The raging war in the western region of Sudan often is oversimplified as a long-standing ethnic dispute between nomadic Arab herders and black African farmers.

Author Harald Welzer promotes a more complicated explanation, one that is "closely bound up with ecological problems."

In his 2008 book, *Climate Wars: Why People Will Be Killed in the 21st Century,* Welzer detailed a diverse and intricate pattern of events that can be traced back to at least 1984, when an extensive drought and famine hit the region.

To cope with the drought, "the sedentary farmers tried to protect their meagre harvests by blocking access to their fields by 'Arabs' whose pastureland had dried up," Welzer wrote. "As a result, the nomads were unable to use their traditional *marahil,* or herding routes and feeding places. … Here we see quite clearly that climate-induced changes were the starting point for the conflict."

As usual, climate-related events either caused or were exacerbated by other conditions. The drought in Western Sudan caused tens of thousands of people to migrate because of a lack of food. Concurrent population growth heightened the overuse of land and resources. Welzer cited a 2007 United Nations Environment Programme study that said excessive population growth and environmental stressors combined to frame the violence between "Africans" and "Arabs."

"So, conflicts that have ecological causes are perceived as ethnic conflicts, including by the protagonists themselves," Welzer wrote. "The social decline is triggered by ecological collapse, but this is not seen by most of the actors."

It is for this reason that Darfur has been called the first climate war. According to some scholars, climate will mix with other drivers such as poverty, economics and bad governance to drive conflict in Africa for years to come unless something is done.

A drought in February 2016 dried out the catchment area of the Umzingwani dam in Matabeleland, Zimbabwe, and caused food shortages for more than a quarter of the population.
AFP/GETTY IMAGES

A family walks with its goats and sheep in search of water during the El Niño-related drought in Somalia's semiautonomous Somaliland region in April 2016. REUTERS

A Sudanese refugee rides a donkey across a dry riverbed in eastern Chad. Hundreds of thousands have fled conflict in Darfur, which has been called the first climate war. REUTERS | Members of the South African Municipal Workers' Union protest water-related issues in Johannesburg in November 2015. Climate problems can lead to unrest and sometimes violence. AFP/GETTY IMAGES

TEMPERATURE AS A DRIVER OF CONFLICT

In recent years, new studies have shown that climate change may be influencing human behavior — in a violent way.

In a 2009 paper, "Warming increases the risk of civil war in Africa," scholars Marshall Burke, Edward Miguel, Shanker Satyanath, John A. Dykema and David B. Lobell found "strong historical linkages between civil war and temperature in Africa."

When looking at climate model predictions of temperature trends, the researchers found that the "historical response to temperature suggests a roughly 54% increase in armed conflict incidence by 2030, or an additional 393,000 battle deaths if future wars are as deadly as recent wars."

They call on African governments and foreign donors to reform policies to deal with temperature increases.

The study's numbers are stark and dramatic, but they don't necessarily tell the entire story, according to the University of Colorado's John O'Loughlin. The relationship between climate and conflict is much more complicated, he says.

Several years after the 2009 paper, O'Loughlin, a professor of geography, led a team of researchers that examined more than 78,000 armed conflicts between 1980 and 2012 in the Sahel region, which stretches 3,000 miles from the Atlantic to the Indian Ocean. Although researchers found that higher temperatures in the Sahel increase conflict risk over time, several other factors typically were more influential than climate.

O'Loughlin's study, and separate research by Ngonidzashe Munemo, a political science professor at Williams College who is originally from Zimbabwe,

indicate that climate change is one of several variables that combine to produce insecurity among populations. These variables can include the quality of governance, racial and ethnic relations, and socio-economic conditions, among other things. Climate alone is unlikely to produce conflict, they say, but it can tip the balance toward unrest.

"If a government has relatively little resources to distribute and favors its own group, or its own region, and it basically discriminates against or ignores other areas that essentially are not part of their political group, then it does raise the risk of conflict," O'Loughlin said. So what is happening in the Sahel is a kind of "multiplier effect of higher temperatures combined with these other factors that we know are strongly related to the risk of violence."

GETTING AHEAD OF CLIMATE EVENTS

There is an old saying that "everybody talks about the weather, but nobody does anything about it." Humankind has struggled with the unpredictability and ferociousness of singular weather events and long-term shifts in climate for thousands of years.

Violence is just one potential result from climate change in Africa. The phenomenon also has the power to increase poverty. A 2015 World Bank report says climate change will push more than 100 million into poverty between now and 2030. Asia and Sub-Saharan Africa could be the hardest-hit regions.

However, as global climate change slowly edges average temperatures higher, other, more cyclical, climate patterns will continue to place a strain on many African nations. This was especially evident in East Africa and Southern Africa as El Niño held the region in the grip of severe drought and food insecurity.

El Niño, a regular event characterized by unusually high temperatures in the Equatorial Pacific, can bring drought to some regions and seemingly unceasing rain to others. The 2015 iteration was the worst in 35 years, and it has been wreaking havoc in Africa for months.

The United Nations World Food Programme (WFP) said in February 2016 that El Niño could affect up to 49 million people in Southern Africa, where 14 million already faced hunger. The region was seeing its lowest rainfall since 1981.

In East Africa, nearly 20 million people faced critical food insecurity in March 2016, according to the United Nations. In Ethiopia alone, 2.2 million children under 5, nursing mothers and pregnant women would need treatment for moderate acute malnutrition in 2016, WFP said. That's more than twice the number from 2015.

Drought — regardless of whether it's caused by El Niño — and resulting famines require swift, decisive action to avoid humanitarian disasters. Munemo, of Williams College, said two Southern African countries have approached the problem in contrasting ways.

Zimbabwe, he said, typically has an ad-hoc approach when responding to climate crises. A presidential declaration is needed to mobilize the effort to mitigate hunger or other stressors. When the crisis is over, the response ends. When the next crisis occurs, officials must reinvent the wheel with regard to funding and forming a ministerial-level team to respond.

In neighboring Botswana, known for good governance and a lack of corruption, responsibilities have been built into the government's ministerial framework and are always at the ready. The responses are actually part of government officials' jobs.

"So if you are a drought-affected household in Zimbabwe and a drought-affected household in Botswana, in Zimbabwe you don't know until that moment when the government says, 'OK, we now recognize there's a

drought, and we're going to do X' — you don't know," Munemo told *ADF*. "In Botswana, you do know. You know that there is a standing commitment that in the event of a drought the government will respond. And second, you also know what they will do. So what Botswana did was to not just write the commitment that we will respond to drought, but here's what the government will do. … So it removes that uncertainty."

Botswana's established procedures ease already-difficult logistical tasks, and they make aid harder to manipulate for the advantage of one group or region. Government interventions in Botswana include subsidies and partial forgiveness of loans to farmers, feeding programs for malnourished children, construction of barriers to prevent wildfires, and emergency water supply projects.

If the military has any role at all in responding to climate-related disasters, it might be best suited to help governments overcome the logistical challenges of securing and delivering food and other supplies to affected populations. In most African countries, the military is one of the few institutions with the experience and equipment to move things from place to place. Military and police forces also may be necessary to secure supplies in areas of unrest.

Even then, Munemo said, the military's historical role in a country and how it is viewed by civilians must be considered. Having a partisan military involved in a response might be counterproductive. Government and military officials also must be mindful of the optics presented by having the military at the forefront of relief efforts.

In short, climate change is more of a human development issue than a military issue, O'Loughlin said. Good government and strong institutions can help nations mitigate the security threats posed when climate mixes with other stressors such as poverty, economics, geography and cultural differences.

A Zimbabwean man roasts maize for sale in Harare in March 2016. The Southern African nation was grappling with its worst drought in more than two decades. REUTERS | Boxes of therapeutic food, used to treat cases of acute malnutrition, are stacked in the UNICEF warehouse in Addis Ababa, Ethiopia, in April 2016. Ethiopia's drought is its worst in 30 years. REUTERS

AFRICA FILLS CLIMATE INFORMATION GAPS

One area where Africa has been weak, O'Loughlin said, is with regard to climatological networks across the continent. Africa has the worst continental land-based climate and weather network in the world. Detailed information is necessary to spot trends and changes in climate to establish appropriate responses and early warnings for crises. African officials have been working in recent years to collect and share information in hopes of building resilience to severe weather and to adapt to climate change.

The African Ministerial Conference on Meteorology (AMCOMET) was established in 2010 to provide leadership and policy guidance on weather information. African ministers convene every two years to discuss weather-related matters and how they relate to development. The World Meteorological Organization, working with the African Union Commission, is its secretariat. AMCOMET promotes political cooperation among member states, and the sharing of information to minimize the effects of climate change and extreme weather.

According to AMCOMET, weather and climate cause 90 percent of all disasters worldwide, claiming lives and stifling development. Between 1980 and 2010, nearly 10,000 disasters killed 2.5 million people and led to $1.3 trillion in economic losses.

Those losses can be reduced if populations and governments have timely access to reliable climate and weather information. For example, such information could be of particular benefit to farmers and pastoral communities seeking where, when and what to plant.

AMCOMET has approved the Integrated African Strategy on Meteorology to put weather and climate services at the center of national and regional development. The strategy focuses on five pillars, including increasing political support for and recognition of meteorological services; enhancing weather and climate services for development; and supporting services for climate change adaptation and mitigation.

Climate change has the potential to mix with existing human security stressors to tip the scales toward violence. But even as global temperatures increase, there is reason to be hopeful.

"The takeaway message is it's not gloom and doom, a kind of unmitigated disaster that's looming because of climate change," O'Loughlin told *ADF*. "There's a lot that can be done to head it off. And frankly, the best thing that could be done is to improve the nature of governance in Africa and to support democratic and fair regimes that don't essentially discriminate against their own populations." ❑

Poaching Threatens
AFRICA'S WILDLIFE
TREASU

Wildlife rangers supported by the conservation group Honeyguide Foundation patrol for poachers in Tanzania.

RES

Stopping the slaughter requires a commitment from communities.

In April 2016, Kenyan officials built 11 massive piles of confiscated ivory and rhino horn in Nairobi National Park and set them on fire. The piles represented 6,500 slain elephants and 450 rhinos.

The 105 tons of ivory and 1.35 tons of rhino horn were worth an estimated $150 million, *National Geographic* writer Rachel Nuwer reported.

And it was only a fraction — about 5 percent — of the ivory and horns stockpiled by African governments. Animal poaching is big business.

Africa has about 400,000 remaining elephants, with 1 in 5 slaughtered in the past decade for its tusks, according to March 2016 statistics. In 2015, 1,338 rhinos were killed for their horns. The rhino population now stands at fewer than 26,000.

The sheer size of the continent, and the vast stretches of land the creatures need to graze, makes anti-poaching patrols daunting and expensive. Experts say that the only way to prevent poaching is to get more than just traditional government forces involved.

Government officials are divided on the policy of burning ivory and rhino horns. They note that the ivory and horns are worth millions and that selling the confiscated material could, in theory, lessen demand and reduce poaching.

"There's a passing of judgment from some that we're doing the wrong thing, because Kenya is a poor country, and we could use the $150-million-odd dollars that they claim the ivory is worth to develop our nation," Kenyan President Uhuru Kenyatta told *National Geographic* at the time of the burning. "But I would rather wait for the judgment of future generations, who I am sure will appreciate the decision we have taken today."

This is not the first time Africa has faced the wholesale slaughter of its elephants. In the 1970s, demand for ivory soared worldwide. The next two decades saw Africa's elephant population reduced by half. In 1989, the Convention on International Trade in Endangered Species of Wild Fauna and Flora banned all international ivory sales. But in 1999 and 2008, four African countries permitted limited ivory sales in Asia. Instead of satisfying demand for the ivory, the limited sales had the reverse effect: Demand and prices soared, and poaching increased dramatically.

"If you don't get the community buy-in, these villages that are around the national parks, around the game preserves, you're really fighting an uphill battle."

— Conservation consultant Jeremy Swanson

Kenya and other countries now believe that the only way to stop poaching is to shame the market into rejecting ivory and rhino horn. They contend that the world should regard ivory and rhino horn as nothing more than parts of animal carcasses.

NEW METHODS ARE NEEDED

One thing is clear: The poachers will not be stopped using wildlife patrols alone. New ideas, new players and new intelligence are needed. Nongovernmental organizations (NGOs), particularly conservation groups including Honeyguide Foundation, the Friedkin Conservation Fund and Conservation International, are getting involved.

In Tanzania alone, the list of key stakeholders in preventing poaching includes the Tanzanian National Parks Association, the Tanzania People's Defence Force, the Tanzania Police Force, Interpol, international NGOs, local NGOs and community conservation groups.

These groups also have recognized the need to work together regionally. In 2013, the Southern African Development Community developed a plan to stop poaching:

- Improve communication among law enforcement at local, national, regional and international levels.
- Improve capacities of law enforcement, customs and immigration agencies to detect and stop illegal wildlife trade.
- Increase dialogue among local stakeholders.
- Establish a regional monitoring center to look for signs of poaching and related commerce.

Jeremy Swanson, a conservation and development consultant based in Tanzania, has worked regularly in East Africa for nearly 15 years. Swanson told *ADF* the poachers have to be treated as more than just some villagers out to make some quick money.

"They have money available," he said. "Big money. They are highly militarized groups, and they are heavily armed. They shot down a helicopter on one anti-poaching patrol."

The extent of the danger in tracking poachers can be seen in an April 23, 2016, attack in the Democratic Republic of the Congo's Garamba National Park. Elephant poachers killed three rangers and wounded two other people.

"Rangers put their lives on the line each and every day, and are under real siege in Garamba, protecting elephants from heavily incentivized and militarized poaching gangs," Peter Fearnhead, chief executive of conservation group African Parks, told Voice of America.

Wildlife rangers use highly trained dogs to track poachers in Tanzania.

Wildlife rangers survey a plain in Tanzania as they patrol for poachers.

These days, rangers tracking poachers have a new tool: highly trained dogs. The Big Life Foundation began using dogs to track poachers in 2011, with help from Canine Specialist Services International, a facility based in northern Tanzania. Alsatians, a type of German shepherd, are now used because of their stamina and resistance to heat. They have become so useful that many branches of the Tanzanian government have asked to use the dogs.

"Apart from their incredible tracking abilities, dogs are wonderful to work with because they don't have any political agenda — they can't be compromised," said Damien Bell, director of Big Life Tanzania, the conservation organization that manages the Big Life Tracker Dog Unit. "Our dogs have tracked elephant poachers for up to eight hours at a time or more, through extreme conditions — heat, rain, wetlands, mountains — and still turned up results."

LOCAL INVOLVEMENT

Swanson said local buy-in is critical in finding poachers.

"We're seeing some positive signs, both in Kenya and Tanzania," he said. "We've seen significant decreases in elephant poaching and some key arrests made over the past year. We're seeing a pretty rapid increase in sentencing, even for some higher-level, midlevel kind of traffickers."

Historically, the prosecution of poachers has been a problem. Often, after poachers are in custody, they are released on cash bonds, often in the tens of thousands of dollars. Later, the charges may be dropped because of "lost files."

The files may be genuinely lost because of bureaucratic bungling. Or, as *National Geographic* reported in December 2015, they may be "backroom loopholes," deliberately disappearing due to government corruption. NGO WildlifeDirect reports that in Kenya, only 10 percent of the poachers arrested are actually

A private plane patrols for poachers in Tanzania.

Not All Poachers ARE ALIKE

ADF STAFF

Financial gains are not always the motive for poaching. Some have been described as "bow-and-arrow poachers" with no real ties to the big money that poaching can generate. A Botswana Defence Force study divides poachers into three basic groups:

SUBSISTENCE POACHERS

are those who kill animals for consumption, also known as "killing for the pot." Subsistence poachers do not generally pose a serious threat to loss of wildlife. However, such poachers have been known to work with the other two types, making them more dangerous than they might initially appear.

TROPHY POACHERS

kill animals for sport. They do not kill in significant numbers, but their ability to legally shoot big game in some cases sends a mixed message and is embarrassing to countries where they hunt.

$$$

COMMERCIAL POACHERS

indiscriminately kill purely for profit. They are well-organized and often depend on subsistence poachers for the location of their prey, as well as the location of the guardians of the prey. They are nothing less than criminal gangs.

BLACK RHINOCEROS
population down **97.6 percent** since 1960

MOUNTAIN GORILLA
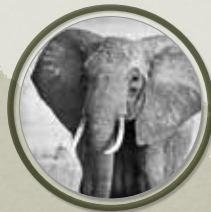fewer than **900 remain**

AFRICAN ELEPHANT
up to **35,000 killed** in 2015

LION
85 percent of historic range lost

GREVY'S ZEBRA
about **2,000 remain**

$$$ *Animals are killed for a single body part — tusks, horn, pelts — that can be sold for huge amounts of money.*

Rhino horn is said to help with hangovers, impotence, cancer and fevers. It has no effect on any ailments. It sells for $32,000 per pound, compared with gold, which sells for about $22,000 per pound.

Ivory is used in jewelry, trinkets, utensils and religious carvings. About 70 percent of illegal ivory goes to China, where it sells for $1,000 per pound.

Zebras are hunted for their skins and occasionally used for meat or medicine.

Because of habitat losses, many lions now live close to farms and villages, and are killed to stop them from preying on livestock. Africa's lion population is thought to be about 23,000, down from 600,000 in 1900.

Most poaching is done by organized crime syndicates that use modern technology and weapons to kill large numbers of animals in a single expedition, or even a single night. Poachers use automatic rifles, grenade launchers, night-vision goggles, GPS systems and low-flying helicopters.

Poachers steal infant gorillas, selling them for up to $40,000.

Source: African Wildlife Foundation

Wildlife rangers have a vast expanse of territory to patrol in search of poachers.

prosecuted. About one-fourth of the cases are dismissed by magistrates or withdrawn by the prosecution due to a lack of evidence.

Tanzanian President John Pombe Magufuli, elected in late 2015, wondered how the ivory was getting out of the country in the first place. He noted that tusks were being confiscated in China and Europe after successfully getting out of the port of Dar es Salaam.

Aside from the usual government forces, Swanson said, "some people have not seen what communities can do to stop the poachers." The role, he said, can be a "very, very big one and an important one, especially when it comes to intelligence."

There's a lot at stake. African nations are aware of the incredible amount of tourism money at risk if the animals become scarce.

"Everyone in a community, including women, youth and the elderly, has a role to play to ensure long-term sustainability of their communities and wildlife close to protected areas," Helen Clark of the United Nations told *The Guardian* of London in 2014. "Community-based initiatives must be supported to generate income for rural people and help diversify incomes through tourism and other service sectors."

These initiatives, said Swanson, are not optional.

"If you don't get the community buy-in, these villages that are around the national parks, around the game preserves, you're really fighting an uphill battle," he said. That buy-in has to include the gathering of local intelligence. Rewards programs have become a critical part of that information gathering.

"A major part of the success of some of these smaller organizations are the incentives," Swanson said. "There are incentives for data collection; we all need data. There are incentives for confiscation of weapons, confiscation of ivory and other trophies, arrests that lead to prosecution. It's a major, major part of how to get local teams mobilized.

"I've been in situations where we go into a place with local scouts, and several of the scouts have been suspected of actual poaching," Swanson said. "You have an issue where they weren't receiving adequate salaries or completely neglected for months at a time, and they didn't have any kind of actual incentive to do their jobs. A group I was working with for a while was able to get in there, weed out some of the bad characters, and even reform some of the guys there who might have been involved and provide them incentives. We've been able to make poaching negligible in some areas."

In a study published in 2014 in Conservation Letters, an online scientific journal, authors Dan Challender and Douglas MacMillan said law enforcement and regulations will not be enough to stop poachers.

"In the immediate future, we should incentivize and build capacity within local communities to conserve wildlife," they wrote. "Current enforcement methods are proving unsuccessful and more needs to be done to bring local communities, which live in … proximity to the species, on board by rewarding them for conserving wildlife." ❑

PUTTING **POWER** INTO PEACE

Competition for energy resources often leads to violence. Africa hopes it can meet growing demands while reducing conflict.

A man watches over a slow-burning woodpile covered in turf used to produce charcoal in the eastern Democratic Republic of the Congo's North Kivu province. AFP/GETTY IMAGES

ADF STAFF

By 2030, the global demand for energy is forecast to increase by 44 percent. Much of this new demand will come from emerging markets, including Sub-Saharan Africa. Millions of new air conditioners, smartphones, refrigerators and other items will push the continent's electrical grid to its limits. Additionally, a growing manufacturing sector and increased automobile traffic will drive demand for coal, oil and natural gas.

Although science has made major strides in diversifying energy sources and moving away from a complete reliance on hydrocarbons, the world's energy supply remains finite. Renewable sources make up less than 1 percent of the world's energy and are not expected to rise above 5 percent by 2030. Meeting the growing demand will be difficult.

Historically, competition over limited resources such as energy has led to violence. Sudan and South Sudan warred over oil rights, militias in the Niger Delta fight for a share of oil extraction profits, and the terror group ISIS strategically occupies oil fields to finance its agenda. Given this, it is incumbent upon security professionals to understand the ways these conflicts can ignite between individuals, communities and nations. This understanding could lead to innovative strategies on how to stop them.

THE CHARCOAL INDUSTRY

In much of the developing world, light does not come from flipping a switch, and heat does not come from a gas line. According to the World Bank, only 24 percent of the population of Sub-Saharan Africa has access to electricity. Worldwide, an estimated 2.5 billion people rely on biomass such as charcoal, wood, straw and manure for cooking and heating. Although this is mostly done by collecting wood and cutting down small trees, it can be broadened to an industrial scale, causing conflict and environmental degradation.

Nowhere is this more apparent than in the eastern Democratic Republic of the Congo (DRC). In this violence-plagued region, most people collect dry wood to meet their household needs or buy bundles of charcoal from small-scale vendors. Much of this wood comes from Virunga National Park, a lush rain forest that is home to some of the world's last surviving mountain gorillas and is listed as a UNESCO World Heritage site. Three million people live within a day's walk of the park, and most rely on charcoal for cooking and heating, according to a 2008 study by the International Institute for Sustainable Development (IISD).

Armed groups also profit from the trade. Numerous militias including the Forces démocratiques pour la libération du Rwanda (FDLR), a band of Hutu extremists whose members took part in the 1994 genocide in neighboring Rwanda, control the charcoal trade in a large sector of the park. Selling fuel, known locally as *makala*, has become a $30 million-per-year industry in the region, and the FDLR uses it to finance its activities.

By 2009, the situation had reached a breaking point with park rangers killed almost weekly, precious forest land going up in smoke, and militia groups engaged in deadly turf battles. The FDLR emerged as the most powerful force. It ran the operation like a mafia syndicate and controlled a network of loggers, charcoal burners and transporters. "The FDLR consider the

forest as belonging to them. ... They have subdivided it into tracts of about 5 kilometers, which three or four FDLR combatants monitor [day and night] when [the FDLR] are not fighting," said Salomon, a trader who spoke to IRIN in 2009. The charcoal trade in Virunga implicated not just militias, but powerful businessmen, corrupt public officials and Soldiers as well. Institutional weakness allowed it to thrive, and the constant flow of refugees who were made homeless by conflict provided a growing customer base, according to a report by the IISD.

The situation has improved slightly since that time, and park rangers and Soldiers now stop trucks at checkpoints and confiscate charcoal shipments that are not accompanied by an official certificate of origin given by the DRC Department of Environment.

The charcoal-conflict phenomenon is not unique to the DRC. In Somalia, where tree cover is sparse and wood is extremely valuable, the terror group al-Shabaab funded its attacks by exporting huge amounts of charcoal to the Middle East. The group systematically stripped the land of 100-year-old acacia trees and exported charcoal across the Red Sea. In return, the group bought arms and sugar, which it smuggled into Kenya for sale.

"The charcoal trade for al-Shabaab is like the poppy trade for the Taliban," UN Dispatch reported in 2012. "It is the single most important source of income."

In all cases, the illegal charcoal trade thrives in the absence of state institutions and with the connivance of corrupt officials. Strengthening the rule of law in these regions and weeding out corruption are the two keys to ending this crime.

SHARING THE WEALTH

One of the most common grievances that propels conflict is a group believing it is not getting its fair share of resources. When a group lives in an area with bountiful energy reserves, but does not see a share of the profit, anger tends to grow. In a groundbreaking 2014 study in the *Journal of Conflict Resolution*, academics Victor Asal, Michael Findley, James Piazza and James Igoe Walsh found that oil wealth serves as a unifying factor for rebel groups and a source of income to fund insurgent campaigns. They found that people living in areas of oil wealth who feel excluded from national politics are more likely to take up arms than are groups who simply feel excluded but do not live in oil-rich regions.

The rebel group Movement for the Emancipation of the Niger Delta (MEND) is a prime example. Since 2004, the group, from the oil-rich region of Nigeria, has used the oil issue as a recruitment tool and gained revenue through illegal bunkering. It has long argued that the delta region remains among the poorest in the country, and its people live in environmentally despoiled conditions while Nigerian elites and multinational companies get rich.

A woman bags charcoal in front of a chalk sign commemorating a death during a rebel attack in Mbandaka, the capital of the Democratic Republic of the Congo's northern Equateur province. REUTERS

Protesters march through Lagos in opposition to the Nigerian government's decision to remove a fuel subsidy in 2012. REUTERS

It is estimated that since the country's independence in 1960, $300 billion to $400 billion in oil revenue has been stolen or misspent in Nigeria. That figure is nearly equivalent to the total amount of Western aid money the country has received in that same time. "There should be no inevitability in the relationship between oil, corruption, and violent conflict," Nigerian scholar Cyril Obi wrote. "The reality is that oil alone does not lead to violence or corruption. Conflict occurs only as a result of the politicization of the oil factor, in ways that make the exclusive control of oil and its distribution the exclusive preserve of 'a few' to the exclusion of others."

Keeping the MEND example in mind, countries are beginning to understand that if energy reserves are to be a blessing instead of a curse, the profits must be shared. A country hoping to lead the way in this effort is tiny São Tomé and Príncipe, 300 kilometers off the coast of West Africa in the Gulf of Guinea.

Oil was discovered off São Tomé's shores in the late 1990s, and in 2004 the country created a National Oil Account that ensures a large portion of oil revenue is spent on public projects to reduce poverty and diversify the economy. The country also created a Permanent Reserve Fund to put money away for future generations. Although oil production has not begun and the country has faced setbacks, including bribery scandals and a coup, the government has added $60 million to its coffers and believes it has laid the groundwork for what could be as much as $20 billion total, equivalent to hundreds of times its current gross national product. "Although

the country continues to face an array of challenges, these policies have generated much-needed government revenue, helped diversify the economy, lowered inflation and rates of poverty, and minimized corruption and the exploitation often associated with oil exploration and production," wrote Benjamin Sovacool in a 2016 article for the journal *Environmental Science & Policy*.

PRICE SHOCKS AND BLACKOUTS

Energy can lead to conflict in other ways. When oil suddenly becomes scarce or unaffordable, it changes people's lives. Commerce grinds to a halt, and families must immediately adjust their finances. It also can lead people to take to the streets in protest. In 2012, the Nigerian government lifted oil subsidies in an attempt to reduce its deficit. Overnight, the price of fuel at gas stations doubled from 45 cents per liter to about 90 cents. The shock brought thousands of protesters into the street who marched, burned tires and clashed with police. They argued that cheap oil was one of the few benefits they got from the state, and they rejected giving money back to a government they viewed as rife with corruption. At the end of more than a week of demonstrations, 16 people had died. Similarly, rolling electrical blackouts and what are perceived to be unfair electric prices have been a regular source of frustration in South Africa and have spawned protests.

It's not just citizens who have been the victim of energy fluctuations. In 2015, the price of crude oil dropped to an 11-year low of $36 per barrel. This has

A Somali Soldier walks past bags of charcoal set to be exported from the port of Barawe. Charcoal sales have funded the terror group al-Shabaab. REUTERS

been a major hit to the coffers of numerous nations that depend heavily on oil revenue. Angola, one of Africa's booming economies that relies on oil for 95 percent of its revenue, announced in October 2015 that it was cutting spending by more than half. This move affects everything from infrastructure projects to trash pickup. In fact, a reduction in waste removal services was blamed for a yellow fever outbreak in the capital city, Luanda, in 2016.

SOLUTIONS

There is no way to completely decouple energy from conflict, and African nations will experience bumps in the road as they seek to meet growing demand. However, there are certain things that can help make the transition smoother.

ENERGY DIVERSITY

Countries that get energy from a variety of sources are less vulnerable to price shocks and less beholden to foreign sources. Ethiopia has led the way on the African continent in embracing renewable energy by using wind, solar, geothermal and hydroelectric power. In 2016, Morocco inaugurated the Noor 1 Ouarzazate solar thermal plant, which is one of the largest in the world and will eventually bring power to 1 million people.

EXPANDED GRID

Africa still has the lowest rate of access to electricity on the planet, which is why so many people are forced to rely on charcoal and other energy sources that are

tied to conflict. Expanding access to electricity will boost economies and put the violence-plagued charcoal industry out of business. One effort to make this happen is the U.S.-funded Power Africa Initiative launched by President Barack Obama in 2013. It seeks to double access to electricity in Sub-Saharan Africa, adding 30,000 megawatts and 60 million new connections.

IMPROVED INFRASTRUCTURE

One of the biggest drains on fuel consumption is outdated and congested roads. For instance, due to congestion, a truck traveling from Lagos, Nigeria, to neighboring Benin could be on the road for 24 hours or more, in what should be only a three-hour trip. Railways can help lighten this load. A railway connecting the port in Djibouti to Ethiopia's capital, Addis Ababa, is reducing travel time from two days to 10 hours and will take thousands of trucks off the roads in the coming years.

SEEING THE BENEFITS

The most effective way to prevent energy-related violence is to make sure that local populations benefit from energy profits. There is much work to be done to make this a reality. The World Bank estimates that in Nigeria, 80 percent of oil energy revenues benefit 1 percent of the population. Nigerian President Muhammadu Buhari has made cleaning up the oil industry a central objective of his administration and even named himself minister of petroleum. ❑
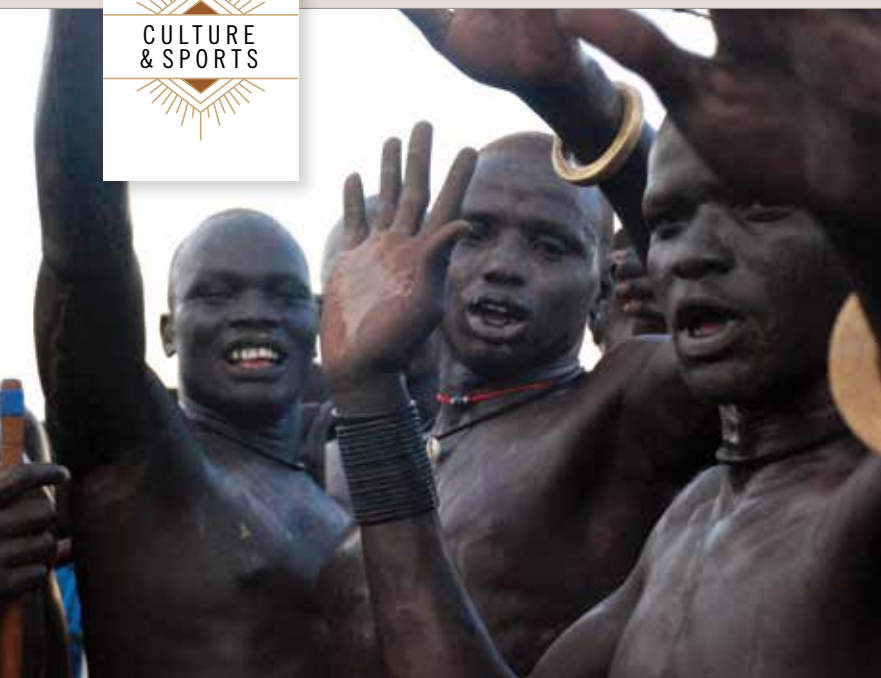
Rival Tribes Choose Wrestling Over War

VOICE OF AMERICA

South Sudan sponsored a "wrestling for peace" tournament, bringing together athletes from around the country. The last big tournament was canceled when civil war broke out in December 2013.

South Sudanese wrestlers prepare for competition.
AFP/GETTY IMAGES

With chests bare and leopard skins tied around their waists, 30 South Sudanese wrestlers marched into Juba stadium in April 2016. Four teams from different tribes competed to take home prizes of cattle and bragging rights.

Traditional wrestling is hugely popular in the country. The tournament also was about showing that different South Sudanese tribes can find peace after more than two years of war that divided the country along ethnic lines.

Peter Biar Ajak, CEO of South Sudan Wrestling Entertainment, which organized the event, said South Sudan's leaders had been too slow to end the civil war. He said it was time ordinary folks did so themselves through sport.

"We felt the people of South Sudan need peace, and we start mobilizing as young people from different tribes that we are going to host a wrestling tournament as a way, as our own way, of bringing peace to South Sudan, a peace at grass-roots level," Ajak said.

The Bor Dinka and Mundari tribes participating in the tournament have a history of deadly conflict over pasture and cattle. Bor Dinka coach Chol Jok said bringing young men of the two tribes together to wrestle can prevent violence.

"When you are wrestling with somebody, and you go and dance with him, eat with him, this one will be your friend, and then you sit together and you play everything with him, and then there's no fighting again," he said.

Photographer Brought Malian Images to the World

AGENCE FRANCE-PRESSE

Pioneering Malian photographer Malick Sidibe, whose powerful black-and-white images of local life won him international acclaim and top awards, died at the age of 80 in April 2016.

Sidibe's vibrant images of life in the capital, Bamako, in the 1960s, after Mali gained independence from France, were a social commentary chronicling popular culture and traditional society.

In 2007, he was the first African and the first photographer to be awarded the Golden Lion Award for Lifetime Achievement at the Venice Film Festival.

"It's a great loss for Mali. He was part of our cultural heritage," said Mali's Culture Minister N'Diaye Ramatoulaye Diallo. "The whole of Mali is in mourning."

Sidibe's works adorn the walls of the Museum of Modern Art in New York, the Getty Museum and several more across the world. He was considered, along with Seydou Keita, one of the finest portrait photographers of the 20th century.

He captured candid images in his studio and on the streets of Bamako, including at nightclubs, beaches and sporting events.

Sidibe said in a 2010 interview that whole worlds were captured in people's faces. "When I capture it, I see the future of the world."

Malick Sidibe
AFP/GETTY IMAGES

Ancient Mausoleums Reconsecrated in Timbuktu

A consecration ceremony of the Timbuktu mausoleums, last conducted in the 11th century, was celebrated in February 2016 at the initiative of the local community. It was the final phase of the United Nations-backed cultural rebirth of the age-old Sahara city after the destruction wrought by extremists in 2012.

"These mausoleums are now once again standing," U.N. Educational, Scientific and Cultural Organization (UNESCO) Director-General Irina Bokova said in a message to the people of Mali. "This is irrefutable proof that unity is possible and peace is even stronger than before. We did it, and we can do it again."

Timbuktu was an economic, intellectual and spiritual capital, and a center for the diffusion of Islamic culture throughout Africa during its golden age in the 15th and 16th centuries. The site was heavily damaged by occupying extremists after fighting broke out in January 2012 between government forces and Tuareg rebels, as well as al-Qaida-linked groups.

The ceremony at the Mosque of Djingareyber began in the early morning with the sacrifice of animals and reading of Islamic verses to invoke the divine mercy to provide peace, cohesion and tranquility. It concluded with rites to reject intolerance, violent extremism and religious fundamentalism.

The mausoleums have long been places of pilgrimage for Malians and neighboring West Africans and are widely believed to protect the city from danger. Sixteen are on UNESCO's World Heritage List. Fourteen were damaged or destroyed in 2012.

The government of Mali in 2013 sought assistance from outside partners, including the United Nations. The preservation of ancient manuscripts and rehabilitation of the 14 damaged mausoleums began in March 2014, when local masons under the supervision of the imam of Djingareyber, and with support from the U.N., laid the first earthen brick to reconstruct two mausoleums.

A caretaker of Timbuktu's mausoleums prays over the damaged tombs in 2014. The 14 mausoleums in northern Mali that had been damaged or destroyed by extremists in 2012 have now been restored. THE ASSOCIATED PRESS

'BLOEMFONTEIN BLITZ' TAKES GLOBAL TITLE

Wayde van Niekerk
THE ASSOCIATED PRESS

South African Wayde van Niekerk, the International Association of Athletics Federations 400-meter champion, has blasted the record books.

In March 2016, the "Bloemfontein Blitz" became the first man in history to run faster than 10 seconds for the 100 meters, 20 seconds for the 200 meters and 45 seconds for the 400 meters.

Running in the Free State Championships on his home track, he stopped the clocks at 9.98 seconds. That time slots in next to his 19.94 and 43.38 for the other two distances. Before this success, van Niekerk's 100-meter best was 10.45 seconds.

Van Niekerk said the triple feat is something he had secretly hoped for. "A few months back, while coach [Ans Botha] and I planned the year, I tried pulling her leg and asked her if I could do the 100 meters at Free State champs because I wanted to improve my 10.45," he said. "I knew this weekend would be my only opportunity ... so I took it.

"There's no doubting that the current high that SA athletics is going through helped with any motivation, if needed," he added.

AFP/GETTY IMAGES

Guinea, Turkey Strengthen Partnership With Agreements

AGENCE FRANCE-PRESSE

Guinea and Turkey signed multiple deals in diverse areas including defense, health and energy during a visit by Turkish President Recep Tayyip Erdogan.

Erdogan arrived in the Guinean capital, Conakry, in March 2016, accompanied by 230 businessmen as part of a regional tour that included stops in Côte d'Ivoire, Ghana and Nigeria.

The new deals could increase annual trade between the two countries from $69 million to $500 million, Erdogan said.

The two countries signed "conventions and cooperation agreements in the domains of national defense, tourism, mining, energy, health and environment," a Guinean government spokesman said, describing the deals as a "win-win." In addition to the agreements, Turkish Airlines planned to begin flights to Guinea in 2016.

Guinean President Alpha Condé described his Turkish counterpart's visit as "just as important for the Turks as it is for us."

We "need a healthy and sustainable economic recovery" after the Ebola epidemic that hit West Africa in 2013, he said.

President Alpha Condé of Guinea, left, walks with Turkish President Recep Tayyip Erdogan on March 3, 2016, at Conakry International Airport upon his arrival in Guinea.

AUSTRALIAN DEPARTMENT OF DEFENCE

AUSTRALIAN NAVY INTERCEPTS WEAPONS HEADED *for* SOMALIA

AGENCE FRANCE-PRESSE

An Australian warship seized almost 2,000 assault rifles, grenade launchers and heavy machine guns destined for Somalia in March 2016.

Sailors from the HMAS Darwin boarded a fishing boat that was headed toward the Somali coast 313 kilometers off Oman, seizing a huge cache of embargo-busting weapons hidden under fishing nets, the Navy said.

"The weapons were seized under United Nations sanctions, which authorize interdiction on the high seas of illicit weapons destined for Somalia," Australian Vice Adm. David Johnston said, adding that "such a large haul of illicit weapons is highly significant."

Sailors seized 1,989 AK-47 assault rifles, 100 rocket-propelled grenade launchers, 49 PKM machine guns and 20 mortar tubes.

If it had not been stopped, the boat would also have passed by the coast of Yemen, also in civil war. Not long after the seizure by Australian forces, French naval forces patrolling the northern Indian Ocean seized a ship loaded with weapons that also was believed to be heading toward Somalia. The cache included hundreds of assault rifles, machine guns and anti-tank weapons. The French helicopter that spotted the ship is part of the multinational Combined Maritime Forces, which patrols the Indian Ocean, the BBC reported.

U.S., FRANCE
HELP BOLSTER
TUNISIAN SECURITY

AGENCE FRANCE-PRESSE/REUTERS

The United States is partnering with Tunisia to install an electronic security surveillance system on the country's border with strife-torn Libya, the U.S. Embassy said in March 2016.

The $24.9 million project involves the installation of an integrated surveillance system using sensors and regular security equipment. It includes training Tunisian forces to use the system, a statement added. No start or completion date was given.

Tunisia has built a 200-kilometer land barrier that stretches about half the length of its border with Libya to prevent militants from infiltrating. A series of deadly attacks by ISIS in 2015, which have dealt a devastating blow to the country's tourism industry, are believed to have been planned in Libya.

Additionally, France has pledged $1.1 billion over five years to help combat youth unemployment, which can leave people vulnerable to recruitment by an extremist group. The program will aid development in poor regions, foster job creation and modernize Tunisia's administration, a major hurdle to the disbursement of international aid. "There is a socio-economic breeding ground on which radicalization is prospering," a senior French diplomat told Reuters. "There is a direct link between massive youth unemployment, neglected regions and the fact that Tunisia provides one of the largest contingents of foreign fighters for jihadists."

France also pledged $22.7 million to strengthen its partnership with Tunisia's military, offering equipment and training for special forces.

A Tunisian police officer stands guard after ISIS-linked militants attacked Army and police barracks in Ben Guerdan, near the Libyan border, in March 2016.

REUTERS

NAVAL EXERCISE TURNS REAL
When Tanker is Hijacked

THE ASSOCIATED PRESS

What was supposed to be a naval training maneuver off the coast of West Africa turned into a rescue mission when pirates hijacked an oil tanker.

Navies from Ghana, Nigeria, Togo and the United States tracked the hijacked tanker off five countries before Nigerian naval forces stormed aboard on February 20, 2016, amid a shootout that killed one of the pirates.

Capt. Heidi Agle, commodore in charge of U.S. operations in Africa and Europe, had been directing a training exercise against piracy with maritime agencies of Ghana when the hijacking provided a real-life lesson. The first word came from the French Embassy, which sent information to Agle's USNS Spearhead via Ghanaian officials and U.S. diplomats of a possible pirate ship loitering off Abidjan, Côte d'Ivoire.

There, pirates seized the Dubai-owned MT Maximus, carrying 4,700 tons of diesel fuel, on February 11. The Spearhead tracked down the Maximus, identified it and then monitored its progress for two days as it sailed into Ghanaian waters. Then Agle handed over to Ghana's Navy, which continued to shadow the ship until it entered the waters of Togo, when that country's Navy took over.

As the pirates steamed across the Gulf of Guinea toward the tiny island nation of São Tomé and Príncipe, officials there contacted the Nigerian government for help. The tanker had sailed nearly 1,280 kilometers before the Nigerians made the assault.

Dirk Steffen of Denmark-based Risk Intelligence said the operation was "the first anti-piracy success in the region of this scale."

The rescue was directed by Nigerian Rear Adm. Henry Babalola, who said it was made possible by a maritime agreement allowing Nigeria to patrol São Tomé and Príncipe's waters.

"When we challenged them [the pirates], they said that they were in international waters" with the law of the sea on their side. But the agreement allowed the Nigerians to storm the ship after eight hours of attempted negotiations.

"International cooperation is the new mantra for maritime security," Babalola said. "We cannot go it alone."

Six pirates were captured and 18 crew members freed. Several pirates escaped with two crew members who remain hostages, Steffen said.

Nigerian naval officers escort men accused of hijacking the MT Maximus.
THE ASSOCIATED PRESS

KENYA
Strengthens
Anti-Terror Fight with
ARMORED VEHICLES

Kenyan police added 30 armored personnel carriers (APCs) to be used in areas hit by terrorism.

To protect and equip police officers, Kenyan President Uhuru Kenyatta authorized the deployment of the APCs to the northeastern and coastal regions where police are fighting al-Shabaab militants crossing into the country.

The president has said he expects police to work without the help of the military and other security sectors.

Analyst Yan St. Pierre, who runs the Berlin-based security company MOSECON, said Kenya has realized it is fighting a war inside its territory, and all security sectors need to be equipped to counter the threat.

"It is a good sign the government is willing to invest more resources into other security outlets," he said.

Kenya's Interior Ministry spokesman Mwenda Njoka said officers were trained in how to use the APCs before they were delivered.

"These are new challenges we have not had before, but the more you get a new challenge the more you deal with it," he said. "When a new challenge comes, at first you do not react the way you should; you learn from it and ensure that next time you face similar problems you are ready and prepared."

Njoka said paramilitary police units, not regular police, would use the carriers. Al-Shabaab has targeted security officers and civilians in Kenya.

OFFICE OF THE PRESIDENT, KENYA
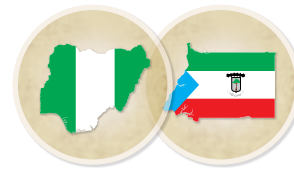
NIGERIA, EQUATORIAL GUINEA
Combine Forces in the Gulf

Nigeria and Equatorial Guinea signed an agreement to establish combined patrols to bolster security in the Gulf of Guinea, which has been plagued by pirates in recent years.

Nigerian President Muhammadu Buhari signed the agreement amid a rise in pipeline attacks in the oil-producing Niger Delta.

The Gulf is a significant source of oil, cocoa and metals for world markets, and the attacks pose a threat to shipping companies. Pirates target oil tankers, usually wanting hostages for ransom and to sell stolen fuel.

Nigerian President Muhammadu Buhari, left, inspects troops alongside Equatorial Guinea's President Teodoro Obiang at the airport in Malabo, Equatorial Guinea. *THE NATION*, NIGERIA

"The conclusion and signing of the agreement is expected to enhance security in the Gulf of Guinea and help in curbing maritime crimes such as piracy, crude oil theft, sabotage of oil rigs and arms smuggling," said Garba Shehu, a spokesman for Nigeria's president.

Shehu said the agreement established "a combined Maritime Policing and Security Patrol Committee."

Nigeria's information minister vowed that the government would prosecute those who attack the country's oil pipelines. Security experts say pirates have emerged from militant groups in Nigeria's oil-producing Niger Delta, such as the Movement for the Emancipation of the Niger Delta.

Drones Could Save Lives in Malawi

BBC NEWS AT BBC.CO.UK/NEWS

Drones could be used to solve the logistical challenge of swiftly delivering HIV/AIDS care in rural Malawi, a United Nations official said.

The government reported that 10,000 children died of HIV-related illnesses in Malawi in 2014, which is the "equivalent to a school bus full of youngsters dying every week," said Judith Sherman, head of HIV for UNICEF in Malawi. A young child may get the virus from an HIV-positive mother during pregnancy or birth, or when the mother is breastfeeding, but drugs can reduce transmission risks.

Only half of the young people with HIV have access to treatment, and their initial diagnosis is often delayed because of poor roads.

Unlike adults, screening for the virus in children with HIV-positive mothers requires special laboratories. Only eight such laboratories exist in the country, and for many people they are hard to access.

With many Malawians living in remote villages, the blood samples from rural HIV clinics need to be transported by motorbike along dirt tracks, and that is where drones could have a revolutionary effect by slashing the waiting time for the blood test results.

The U.S.-based company Matternet has designed a drone as part of an experiment being conducted with UNICEF. Just like mobile phones transformed health care in remote areas more than a decade ago, drones could do the same for HIV programs.

Instead of using motorbikes to transport blood samples, which often require a large batch to make delivery costs worthwhile, UNICEF and Matternet are testing whether deliveries could be more efficient by air.

"This is the power of things that are unexpected," said Paola Santana from Matternet. "People didn't see them coming, and then they change everything."

The drone used in the test is less than a meter long and is programmed to travel along a designated route, passing predetermined way points, which are plotted using an app.

No pilot is necessary. Instead, it requires a health worker with a password and a mobile phone's GPS signal. At the swipe of a button, the vehicle is airborne.

Malawi's Defense Ministry has certified the drone safe and approved an air corridor for its use. A team is running tests to measure the drone's resilience, cost effectiveness and efficiency. The operating costs are minimal because electricity to recharge the battery is cheap, but each drone costs $7,000.

A group in Lilongwe, Malawi, watches a UNICEF drone designed to deliver HIV tests to hospitals. UNICEF

Zimbabwe Farmers are Hare-Raising

JEFFREY MOYO/INTER PRESS SERVICE

Tichaona Muzariri, a villager in Chivhu, a town 143 kilometers south of Zimbabwe's capital, Harare, quit his job as a teacher in 2009 to start a rabbit farm. He had three female rabbits and one male.

With about $30 as capital, Muzariri started his new business. Today, he breeds nearly 3,000 rabbits every year and slaughters up to 120 every week for sale to grocery stores, restaurants and hotels.

One kilogram of rabbit meat retails for $8 to $10 in Zimbabwe. "If I look back today, I just can't believe that it's me who is making thousands of dollars from rabbit farming, starting from a very humble beginning," Muzariri said.

On average, the price of a live rabbit from Muzariri's farm is $6. Business flourishes because the cost of raising one rabbit is only $1 per month.

"For me, this business is in the right trajectory as many people now find rabbit meat a delicacy they cannot do without," Muzariri said.

A single female gives birth to up to 40 babies in a year. Thanks to rapid breeding, rabbit farming, known as cuniculture, is booming in Zimbabwe. According to the Rabbit Producers Association of Zimbabwe, there are more than 2,000 rabbit farmers in this Southern African nation, ranging from commercial farmers to people raising them in their backyards.

Rabbits have become a source of food and income for Zimbabweans.
JEFFREY MOYO/IPS

VOICE OF AMERICA

Researchers in Uganda say they have developed a new Ebola test kit that detects the virus in minutes, replacing current tests that take anywhere from several hours to several days. The development is a potential milestone in the fight against the deadly virus.

According to researchers at Makarere University in Kampala, the new test can detect the virus in the early stages of exposure. Misaki Wayengera, leader of the research group, said the test may be able to prevent future outbreaks like the one in West Africa that killed more than 11,000 people.

"We want a test that can run through the whole spectrum of infection," he said. "By the time someone develops temperature problems, they're already past 21 days of infection. So the test we're developing should be able to capture people even before they develop their symptoms — you know, the fever, the bleeding."

THE ASSOCIATED PRESS

The accuracy of the test has been verified by Grant Challenges Canada, a Canadian government-funded program that promotes health projects in low-income countries. The organization partially funded the research that developed the new test.

Babirye Janet Peace, a lab technologist who was part of the rapid test kit's development, said it is easy to use. With one drop of blood on a small piece of paper, medical workers will be able to detect whether someone has Ebola within hours of initial exposure.

With current methods, medical staffers often need a laboratory and must carry out elaborate tests. This proved quite challenging with the virus surfacing in remote forest villages.

One of the main challenges for the project was finding sufficient funding. But with the major epidemic in West Africa, donors were more willing to step up. Wayengera said profit cannot be the driving factor when developing medical projects that can save lives.

THE ASSOCIATED PRESS

ETHIOPIAN ENTREPRENEURS TURN TO BEEKEEPING

THOMSON REUTERS FOUNDATION

Beekeeper Ayenalem Ketema is the proud owner of three hives, which have produced enough honey for the young Ethiopian to build a house equipped with solar panels and buy some farm animals with the proceeds.

Ketema, who lives in Jimma in southwestern Ethiopia, left school when she was 17 and has kept bees for four years.

"I have benefited a lot from using a modern beehive," said the young farmer, now 22. She belongs to the Boter Boro Cooperative, whose members run 50 beehives among them. With the profit from the 60 kilograms of honey she harvests each season, Ketema now has bigger ambitions.

"I plan to open up a wholesale honey shop where I can sell high-quality honey in large quantities in a bigger market," she said.

Ketema benefited from a project led by the International Centre of Insect Physiology and Ecology (ICIPE), which launched a fresh program in March 2016 to provide work for about 12,500 young Ethiopians in beekeeping and silkworm farming.

Nairobi-based ICIPE and the MasterCard Foundation plan to invest $10.35 million in the five-year project, which will support out-of-school and unemployed people between 18 and 24 with starter equipment and training.

The Young Entrepreneurs in Silk and Honey initiative will involve an additional 25,000 people in the value chain, from harvesting to processing, packaging and marketing of the two sets of products.

Ethiopia is Africa's leading honey and beeswax producer, but honey production is largely traditional and only reaches about 10 percent of the country's potential, experts say. The Horn of Africa nation produces dozens of honey varieties that could be of interest for the export market, said ICIPE Director General Segenet Kelemu.

"The project will help to ensure food security, promote more tree-planting than tree-cutting, and encourage agro-forestry programs to flourish," Kelemu said.

Bees pollinate a wide range of crops and plants, playing a key role in the provision of food and nutrition. They also pollinate forage plants, indirectly supporting milk and meat production.

"Without bees and other related insect pollinators, our lives would be negatively impacted," Kelemu said. "This work will be generating great incentives to take care of bees and their well-being."

With the amount of annual global food production dependent on pollinators estimated at between $235 billion and $577 billion, bees must be included in plans to feed the world's growing population, she added. Bees require flowering trees and vegetation from which they can secure high-quality pollen and nectar year-round. This means the young Ethiopian beekeepers will have to conserve trees and plant more of them, while reducing the use of pesticides that harm bees.

Alemayehu Konde Koira, senior manager of the Youth Livelihoods Program at the MasterCard Foundation in Toronto, said the modern hives that will be used in the Ethiopia project can produce 20 kilograms of high-quality organic honey each season, compared with traditional beehives, which yield 6 to 8 kilograms of low-quality honey.

AFRICA'S UNIVERSITY ENROLLMENT IS RISING

Although Africa has among the lowest higher education enrollment rates in the world, the 21st century has seen huge growth in virtually all its tertiary education systems.

In Uganda, where Makerere University traditionally dominated national higher education, half a dozen public universities have opened since 1988. As a result, enrollment has grown from less than 10,000 in the 1990s to nearly 200,000 today.

In Ethiopia, Africa's second-most-populous country, growth in higher education has been phenomenal — from two institutions in the early 1990s to the current 35.

Nigeria, with 1.7 million students, has comparable enrollment figures to Egypt, which is considered to have the highest number of postsecondary students in Africa — more than 1.8 million. South Africa with 1 million students and Ethiopia with 600,000 stand third and fourth in Africa.

The spike in enrollments started in the late 1990s, with a growing awareness of the critical role higher education plays in development. Other causes included institutional and national policies, improved access, and better funding.

Africa's flagship universities are those established in the lead-up to and just after independence in the 1960s. Their age, size and reputation mean they are considered their countries' leading institutions. Given their age, capacity and reputation, flagship universities also tend to be the most internationalized and advanced when it comes to institutional cooperation.

Now, some constituent members of flagship universities have broken away to form independent, fully fledged new institutions — a common phenomenon in Africa. University mergers are also becoming more common. The University of Rwanda, for instance, is one flagship that has brought several institutions together under one roof.

The total number of graduates from flagship universities in Sub-Saharan Africa is estimated at between 2.5 million and 3 million.

Students study on the campus plaza at the University of Lagos in Nigeria. AFP/GETTY IMAGES

THE ASSOCIATED PRESS

SOUTH AFRICA, ZIMBABWE PROMOTE COOPERATION

South Africa's Trade and Industry deputy minister is pushing for increased trade between his country and neighboring Zimbabwe.

Traders prepare flowers for a celebration in Harare, Zimbabwe. The country is trying to improve trade relations with neighboring South Africa.

Deputy Minister Mzwandile Masina spoke at a March 2016 dinner hosted by the Zimbabwean Ministry of Macro-Economic Planning and Investment Promotion. The dinner was part of the Investment and Trade Initiative to Harare, Gweru and Bulawayo, organized by the Department of Trade and Industry.

"As neighbors, it is incumbent upon us to work together closely in ensuring that we increase trade between our countries and achieve economic growth," Masina said. "The role of business in this mission can never be overemphasized. As government, our main task is to create a conducive environment for business to operate smoothly."

Masina was accompanying a 30-member business delegation on the initiative to Zimbabwe. He said the bilateral economic and political relations had been strengthened by the signing of the Bi-National Commission agreement in April 2015. This, he said, opened doors for broader, more intense and high-level cooperation between the countries.

"That is why we are here with a group of business people," he said. "We want them to engage with their counterparts here in Zimbabwe and exchange ideas that will result in them establishing partnerships and joint ventures and start manufacturing operations."

He emphasized the value of pursuing industrialization and the benefits of mineral resources throughout Africa to grow the economies of the continent.

He said Zimbabwe and South Africa need to contribute to efforts aimed at achieving regional integration in the continent. He cited the tripartite free trade area comprising the Southern African Development Community, the Common Market for Eastern and Southern Africa, and the East African Community as an example of regional integration.

"The importance of the free trade area is that it will provide a market of 600 million people for our goods and services," he said. "This will expand to 1 billion when the continental free trade area that is being negotiated by our leadership is achieved."

REMEMBERING AFRICA'S
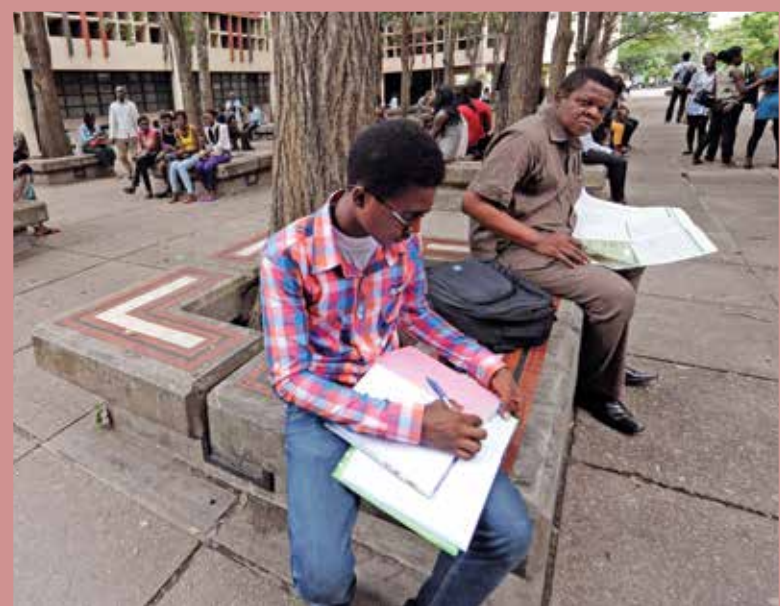
1st INDEPENDENT AIR FORCE

ADF STAFF

In November 1922, Teferi Mekonen, an Ethiopian noble-man, visited a British Royal Air Force show in Yemen's coastal city of Aden. Airplanes were big news, having been invented less than 20 years earlier.

The young Ethiopian had never seen an airplane up close and was fascinated. He asked whether it would be possible for his country to buy one. It is said that the British were somewhat put off by the request, coming from this 5-foot-2-inch Ethiopian aristocrat, and may have ridiculed him, telling him to stick with his country's horses.

The Ethiopian was not to be denied. He championed the notion of an Ethiopian air force, and his country took delivery of its first military plane, a French single-engine biplane, in 1929. That plane constituted the beginning of the first air force of an independent African country.

Within months, the fleet had eight planes — six French biplanes and two German-made monoplanes. The air force, called the Imperial Ethiopian Aviation (IEA), was commanded by a French pilot and mainly handled transport and diplomatic duties.

A year later, the visionary Ethiopian nobleman became Emperor Haile Selassie, one of the most influential leaders in the history of Africa. There were countless obstacles for Selassie's new force. It would take years to establish a pilot training program, and, in the meantime, Ethiopia had to rely on foreign pilots. By 1935, the air force had 13 aircraft but only four pilots, and only two were Ethiopian. There were no native mechanics for maintenance.

When Italy invaded Ethiopia on October 3, 1935, the IEA was not prepared to defend the country. None of its airplanes was combat-ready, and it had no combat-trained pilots in its ranks. But from the beginning of the war, the IEA flew troops, ammunition and supplies as needed, often while under attack from Italian planes and groundfire.

Many black Americans were offended by the Italian invasion, considering it an affront to their ancestry. Two of them, John Robinson and Hubert Julian, joined the IEA to fly military materiel and medical supplies. Robinson also brought Ethiopian students to the United States for flight training.

The Italians, with their superior armaments, eventually overwhelmed Ethiopia and occupied the country until 1941. By the war's end, the IEA no longer existed. In 1945, a new air branch of the armed forces was established, the Imperial Ethiopian Air Force, with new aircraft and a fresh start. Selassie, working with Robinson, established a new flying school with 75 students. But the Air Force relied heavily on foreign pilots and instructors for training, particularly Swedish aviators, and it did not have a native-born commander until 1962.

Robinson's place in Ethiopian history is assured — he helped establish a civilian air service, which became the kernel of what is now Ethiopian Airlines, one of Africa's largest and most success-ful air services.

In 1953, Ethiopia's Air Force signed a defense agreement with the United States, getting a squadron of F-86 fighters in 1960. But the country struggled financially to maintain and build its forces, and by the mid-1990s, its numbers of useful aircraft were negli-gible. Ethiopia is now one of the world's true commercial air powers, but not a major military one.

Today, Africa has about 25 countries with 20 or more military aircraft, and nine of those countries have large forces rivaling those of other countries on the world stage. It should not be forgotten that Ethiopia, and its visionary emperor, did it first.

Emperor Haile Selassie prepares to enter one of his Air Force's planes near Addis Ababa, Ethiopia, in 1950. THE ASSOCIATED PRESS

1. This area covers 400,000 hectares and includes 289 villages.

2. The Tellem people lived here, mostly in caves, between the 11th and 16th centuries.

3. The Dogon people succeeded the Tellem and live in the region to this day.

4. The majority of the area is covered by plateaus and cliffs.

ANSWER: The Cliff of Bandiagara, Mali

share your knowledge

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