GOALKEEPERS

Examining Inequality
2019

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GOALKEEPERS

CONTENTS

EXAMINING INEQUALITY

HOW GEOGRAPHY AND GENDER STACK THE DECK FOR (OR AGAINST) YOU

BILL AND MELINDA GATES
Co-chairs,
Bill & Melinda
Gates Foundation

We were born in a wealthy country to white, well-off parents who lived in thriving communities and were able to send us to excellent schools.

These factors, among many others, put us in a great position to be successful.

There are billions of people on the other side of these dividing lines, however. For hundreds of millions of people around the world, hardship is all but guaranteed.

We believe that's wrong. Every person should have an equal opportunity to lead a healthy, productive life.

For the past 20 years, we've invested in health and development in low-income countries, because the worst inequality we've ever seen is children dying from easily preventable causes. In the United States, we've invested primarily in education, because a good school is a key to success, but you're less likely to have access to one if you're low-income, a student of color, or both.

Goalkeepers is our annual report card on the world's progress toward the Sustainable Development Goals (SDGs), 17 ambitious goals the member states of the United Nations committed to reaching by 2030. As we write, billions of people are projected to miss the targets that we all agreed represent a decent life. If we hope to accelerate progress, we must address the inequality that separates the lucky from the unlucky.

LAYERS OF INEQUALITY

The UN published a helpful diagram last year that shows how complex inequality can be, with five overlapping categories, each of which can be broken down into subcategories. We will focus this report on geography and gender, a subcategory of demographics.

STARTING OUT AHEAD

If you think about life as a journey, every single disadvantage makes the journey harder. As the illustration below shows, our path forward has been relatively clear of obstacles. For a girl born in the Sahel, one of the poorest regions in the world, getting to a healthy, productive life requires overcoming hurdle after hurdle after hurdle.
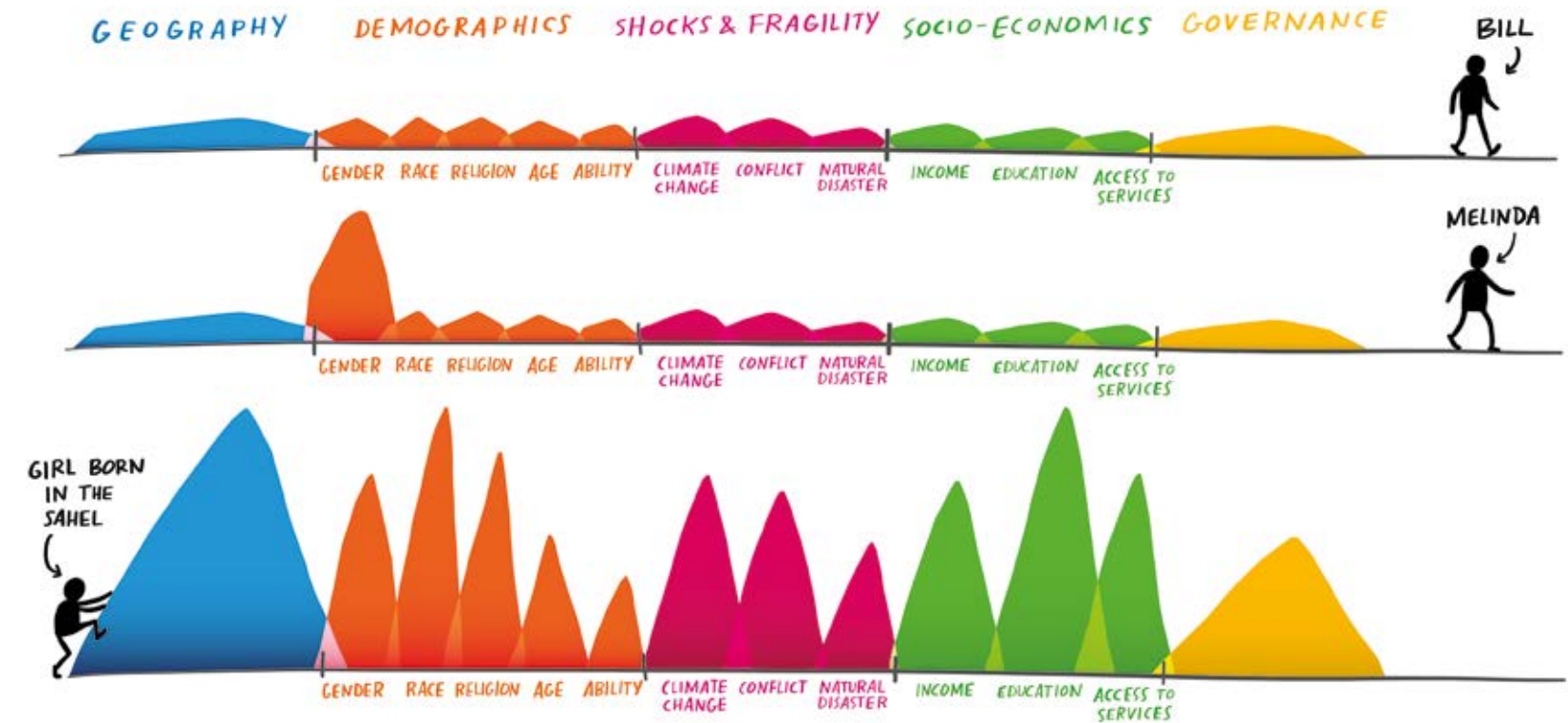
LET'S TAKE A CLOSER LOOK AT THE LAYERS OF INEQUALITY

1. THIS NARROW BAND near the top of Africa is the Sahel, where child mortality (along with most other kinds of suffering) is worse than everywhere else on the planet. We've visited many Sahel countries and met with government officials committed to improving life for their citizens. They've told us about their goals for their countries and also about the barriers that stand in the way.

CHILD MORTALITY RATE
(children under five)

- 0–3 %
- >3–6 %
- >6–9 %
- >9–12 %
- >12–15 %
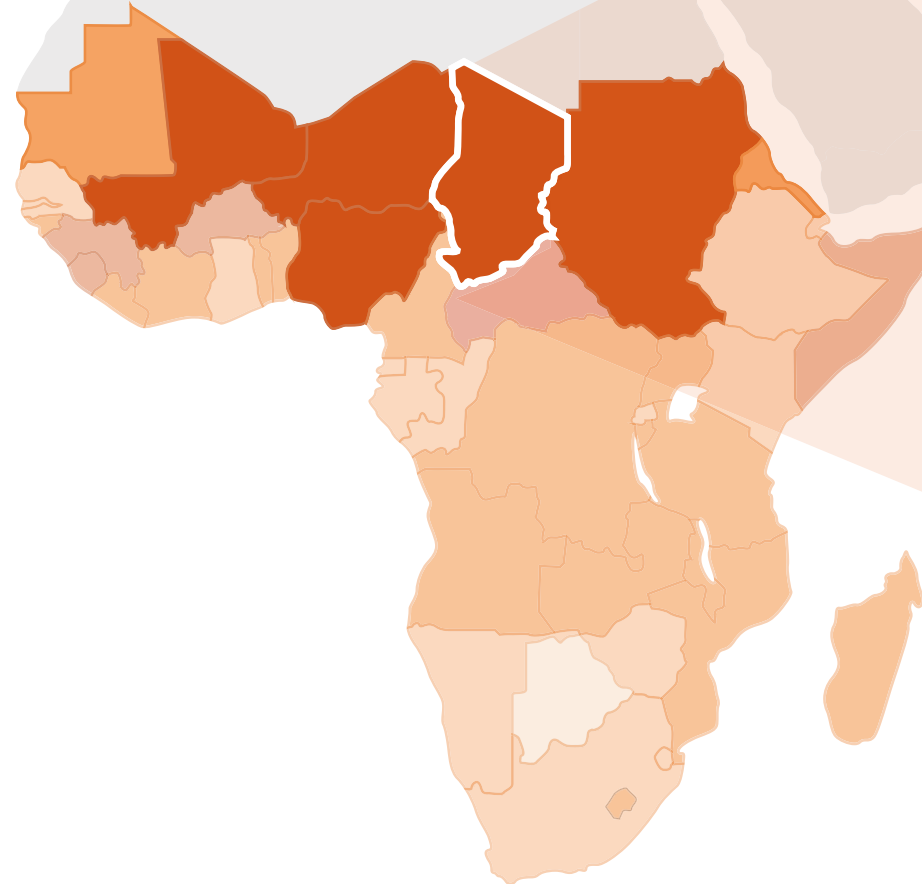
2. NOW LET'S FOCUS ON A SINGLE COUNTRY WITHIN THE SAHEL

We'll pick Chad, a country we've traveled to recently. A child in Chad is nearly 55 times more likely to die than a child in Finland, a ratio so lopsided that it starts to be incomprehensible.

3. AND THIS IS A DROUGHT-PRONE REGION

in the southwest of the country, which is becoming even more drought-prone —and therefore harder to farm— as the climate changes.

4. WITHIN THIS DRY REGION

there is a traditionally marginalized
ethnic group—one of many.

5. AND WITHIN THIS COMMUNITY, THERE IS A GIRL WHO IS TRAPPED

by social norms dictating that her
role in life is to serve her husband
and bear him children.

(Guelengdeng, Chad)

E ach time we zoom, we see yet another layer of disadvantage. These disadvantages don't need to pile up on top of one another to make life hard—but when they do, as for the marginalized girl in Chad, the effect is brutal.

What is her life like? The data says she has probably been close to starving to death several times. The odds are that she never got the nutrients her body and brain needed to develop fully. It is likely that she can't read or write, and that she will get pregnant well before she turns 20, although her body won't be ready for the rigors of childbirth.

And when the time comes, there is a good chance she will give birth alone.

She deserves a better life. And we believe she can have one, as long as the world understands the many challenges she faces and gets to work on addressing them.

(Kal Amin kebele, Ethiopia)

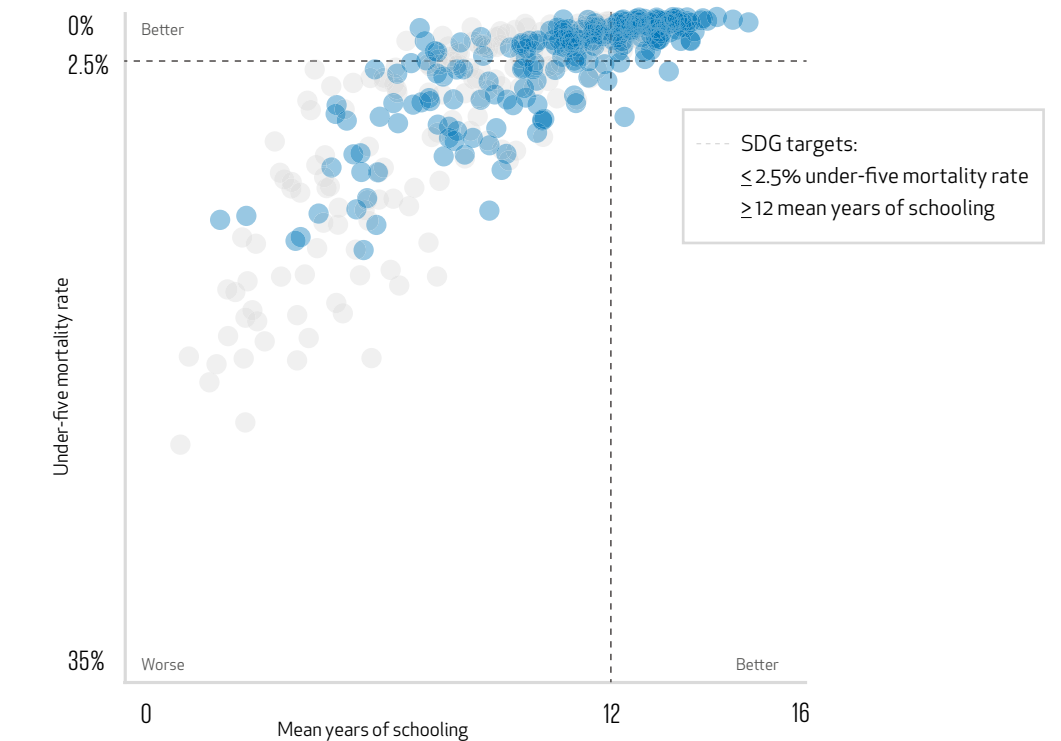## HEALTH AND EDUCATION IS IMPROVING EVERYWHERE IN THE WORLD

The first thing you can see is universal progress. Think of the most challenged country you can imagine. The people there are healthier and better educated than they used to be.

HOW TO READ THIS CHART
The vertical axis depicts the mortality rate for children under five, and the horizontal axis depicts the mean years of schooling for 20–24-year-olds. Each dot reflects the child mortality rate per years of schooling in a selected country. Each gray dot represents that country in 2000. Each blue dot shows the same country in 2017, the most recent year for which we have data.

WHERE YOU ARE BORN IS MORE PREDICTIVE OF YOUR FUTURE THAN ANY OTHER FACTOR

The series of charts that follow tell you a lot about geography and inequality.

We plotted health and education because they are the key components of what economists call human capital, which we highlighted in last year's Goalkeepers Report as "the best way for a country to unlock productivity and innovation, cut poverty, create opportunities, and generate prosperity."

Investments in human capital today help people increase their incomes tomorrow. But without human capital—that is, for those who are unhealthy and uneducated—it is virtually impossible to escape poverty.

Country progress on child mortality and education, 2000–2017

Each dot represents one country in ⚪ 2000 🔵 2017

Under-five mortality rate

0%
2.5%
Better

35%
Worse

Better

0   Mean years of schooling   12   16

SDG targets:
≤ 2.5% under-five mortality rate
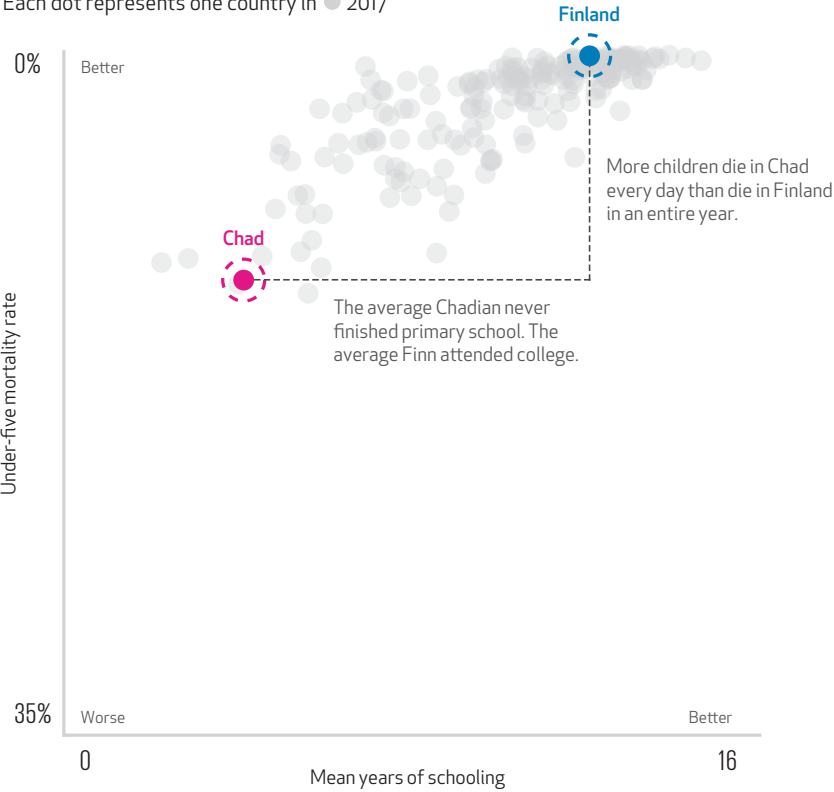≥ 12 mean years of schooling

INEQUALITY BETWEEN COUNTRIES HAS NARROWED BUT REMAINS LARGE

The second thing you see, however, is that in many countries, even though life is better, it is still bad. The gap between Chad and Finland is closing, but it remains enormous. More children die every single day in Chad than die in Finland in an entire year.

Child mortality and education in Chad and Finland, 2017

Each dot represents one country in ● 2017

Finland

Chad

More children die in Chad every day than die in Finland in an entire year.

The average Chadian never finished primary school. The average Finn attended college.

0% Better
Under-five mortality rate
35% Worse   Better
0   Mean years of schooling   16

THESE GAPS EXIST WITHIN COUNTRIES, TOO

The third thing you see is that this pattern, big progress and big gaps, also holds true inside countries. For the first time ever, we have human capital data at the district level. (Different countries have different names for this political subdivision. In the United States, they are counties; in India, districts; and in Nigeria, local government areas, or LGAs.)

Human capital has increased in more than 99 percent of districts in developing countries in the past 17 years. No matter how many times you hear the opposite, life is getting better, even for the very poorest.
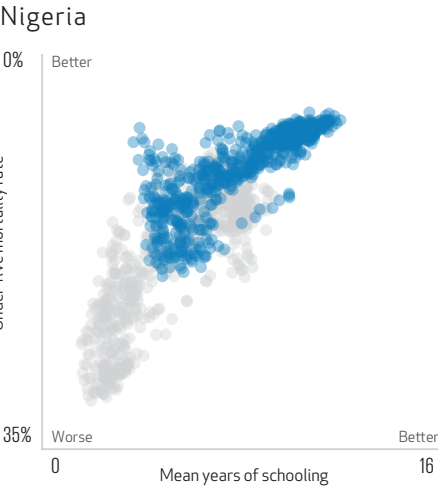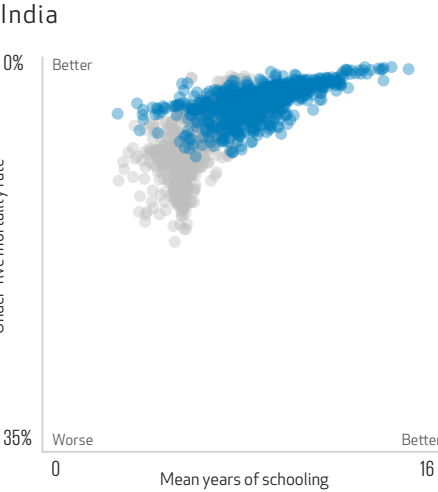
However, the inequality between districts in countries is massive. Consider India. In Kollam district in Kerala state, 1 percent of young children die, and the average person has more than 14 years of education, almost comparable to the most developed countries in the world. By comparison, in

Budaun district in Uttar Pradesh state, more than 8 percent of children die, and the average person has approximately six years of education. Budaun, by the way, is not small. Approximately 4 million people live there.

In Nigeria, the data says the same thing: world-class achievement juxtaposed to serious deprivation. For example, the average person in Ado-Ekiti, in Ekiti state, has more than 12 years of education, whereas the average person in Garki, in Jigawa state, has five. When we model these charts into the future, you see that the Chads, Budauns, and Garkis of the world are not catching up fast enough.
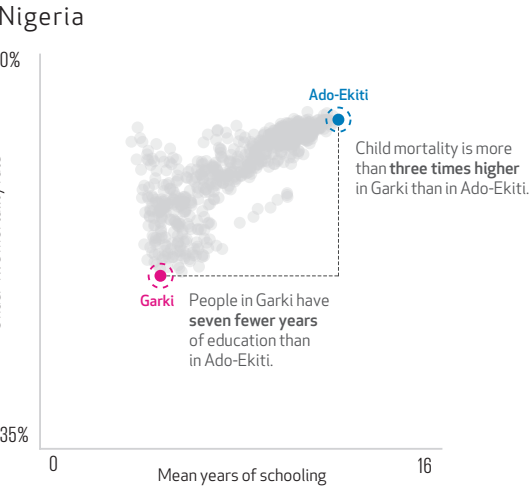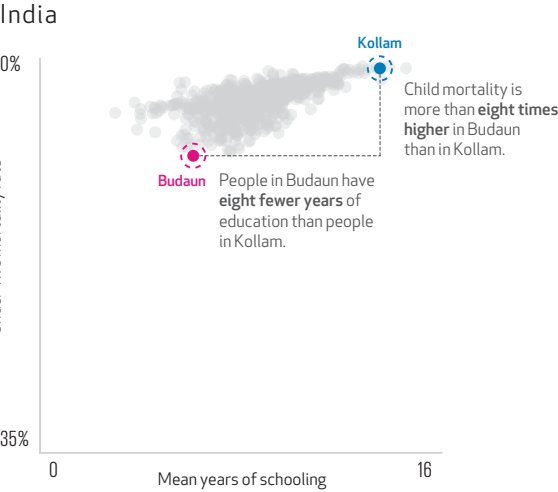
Districts are making steady progress

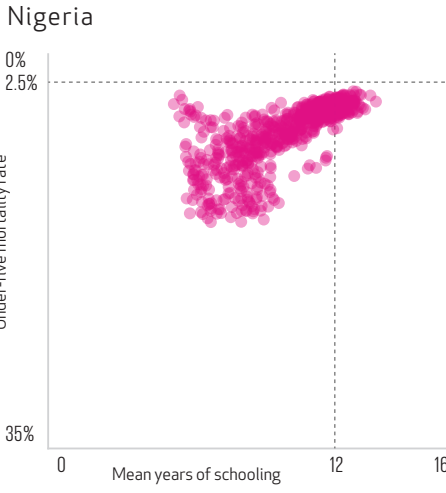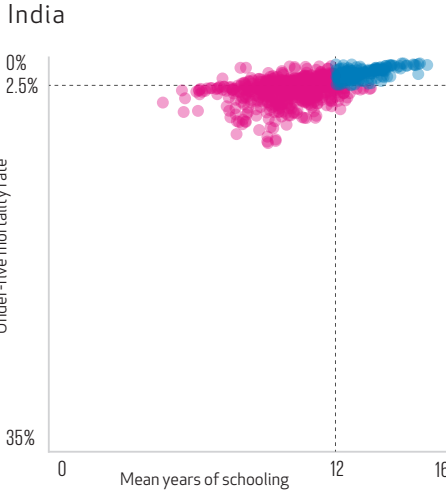Each dot represents one district in India or LGA in Nigeria in ● 2000 ● 2017

India

0% Better
Under-five mortality rate
35% Worse   Better
0   Mean years of schooling   16

Nigeria

0% Better
Under-five mortality rate
35% Worse   Better
0   Mean years of schooling   16

But inequality persists between districts

Each dot represents one district in India or LGA in Nigeria in ● 2017

India

Kollam

Child mortality is more than **eight times higher** in Budaun than in Kollam.

Budaun People in Budaun have **eight fewer years** of education than people in Kollam.

0%
Under-five mortality rate
35%
0   Mean years of schooling   16

Nigeria

Ado-Ekiti

Child mortality is more than **three times higher** in Garki than in Ado-Ekiti.

Garki People in Garki have **seven fewer years** of education than in Ado-Ekiti.

0%
Under-five mortality rate
35%
0   Mean years of schooling   16

And many districts aren't on pace to meet the SDGs

Each dot represents one district in India or LGA in Nigeria in 2030
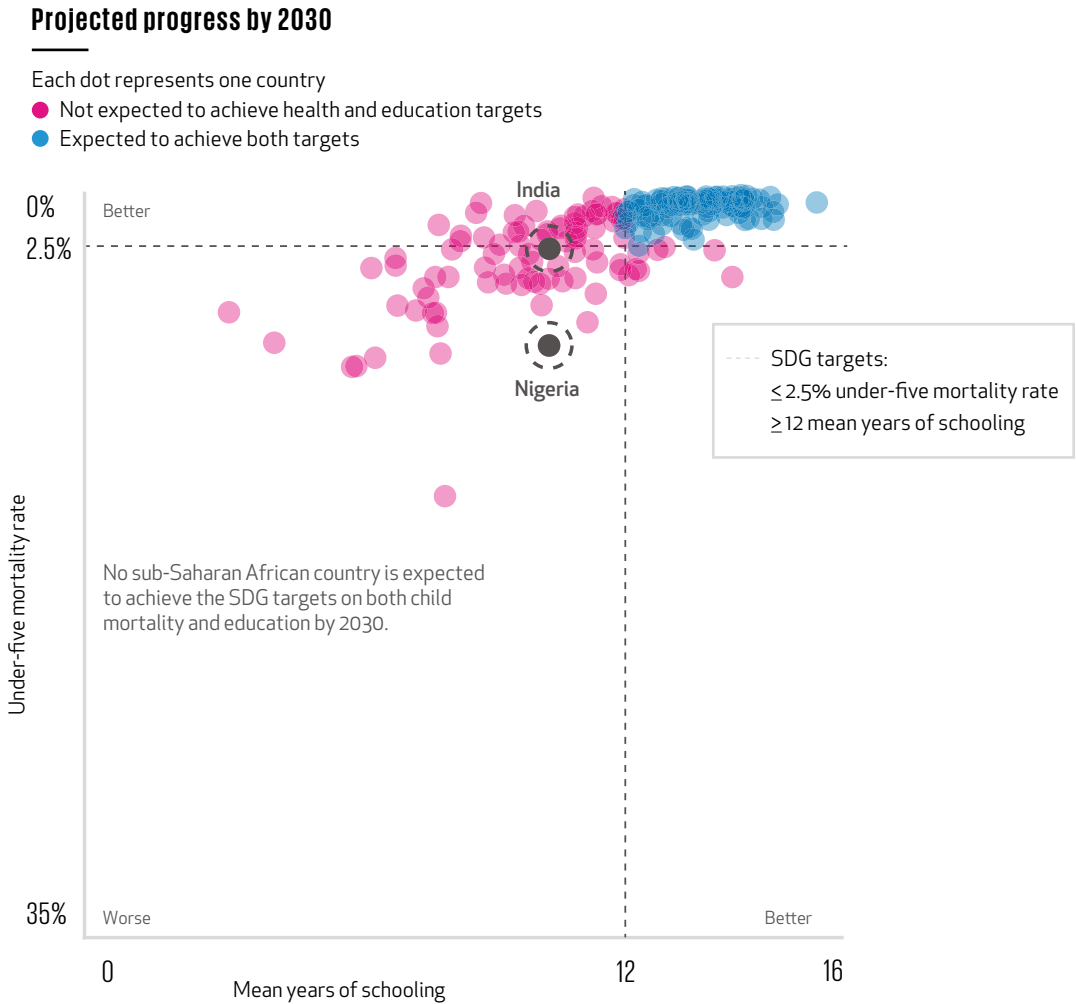● Not expected to achieve health and education targets
● Expected to achieve both targets

India

0%
2.5%
Under-five mortality rate
35%
0   Mean years of schooling   12   16

Nigeria

0%
2.5%
Under-five mortality rate
35%
0   Mean years of schooling   12   16

GAPS PERSIST WELL INTO THE FUTURE

Very few developing countries are projected to meet the health and education SDGs. Nearly two thirds of the children in low- and low-middle income countries live in districts that, at their current rate of progress, won't reach the SDG target for child mortality by 2030. One third live in districts that won't even reach it by 2050.

If we are serious about the SDGs, then we have to accelerate the fight against geographical inequality and make sure that more districts are excelling like Kollam and Ado-Ekiti.

Projected progress by 2030

Each dot represents one country
- Not expected to achieve health and education targets
- Expected to achieve both targets

India

0%
2.5%

Nigeria

SDG targets:
≤ 2.5% under-five mortality rate
≥ 12 mean years of schooling

Under-five mortality rate

No sub-Saharan African country is expected to achieve the SDG targets on both child mortality and education by 2030.

35%   Worse   Better

0   12   16

Mean years of schooling

Better

NO MATTER HOW MANY TIMES YOU HEAR THE OPPOSITE, LIFE IS GETTING BETTER, EVEN FOR THE VERY POOREST.

Sushila and Sakshi (Kamrawan Village, India)
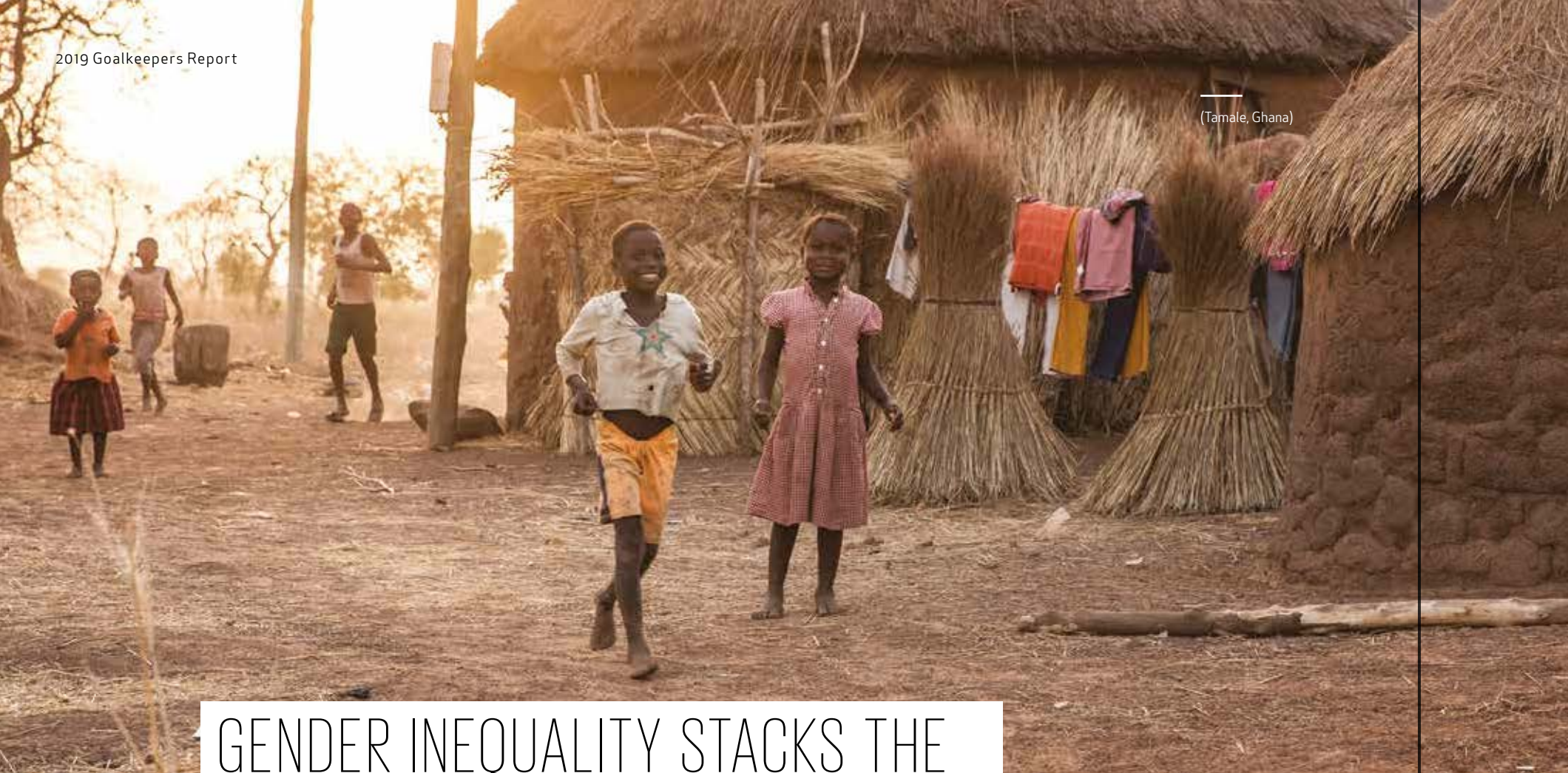
(Tamale, Ghana)

GENDER INEQUALITY STACKS THE DECK AGAINST HALF OF HUMANITY

Gender inequality cuts across every single country on Earth. No matter where you are born, your life will be harder if you are born a girl. If you are born in a poor country or district, it will be even harder.

Adolescence is when girls' and boys' futures really start to diverge. Boys' worlds expand. They rely less on their parents, venture farther and farther from home, and enroll in high school or college or get a job, which puts them in contact with wider society.

At the same time, girls' worlds contract. They transition, sometimes at a very young age, from being subservient to their parents to being subservient to their husbands. Although they enjoyed some measure of freedom while attending primary school, they are expected to return to the confines of the home, to devote themselves to cooking, cleaning, and raising children.

The proportion of girls who do at least two hours per day of unpaid domestic work almost doubles after they reach the age of 15; by the time she is an adult, the average woman spends more than four hours every day doing unpaid work. Men, by comparison, average just over one hour per day.

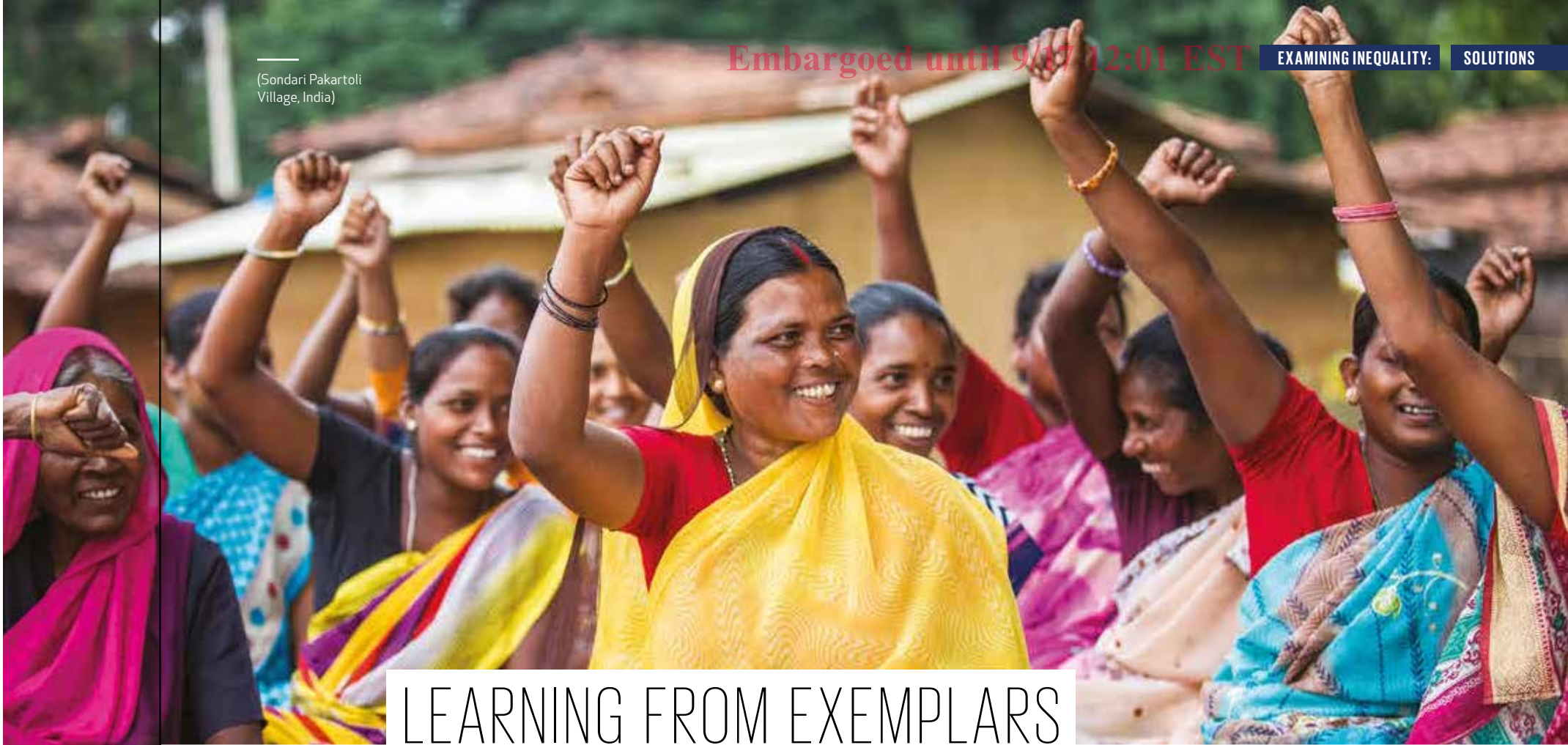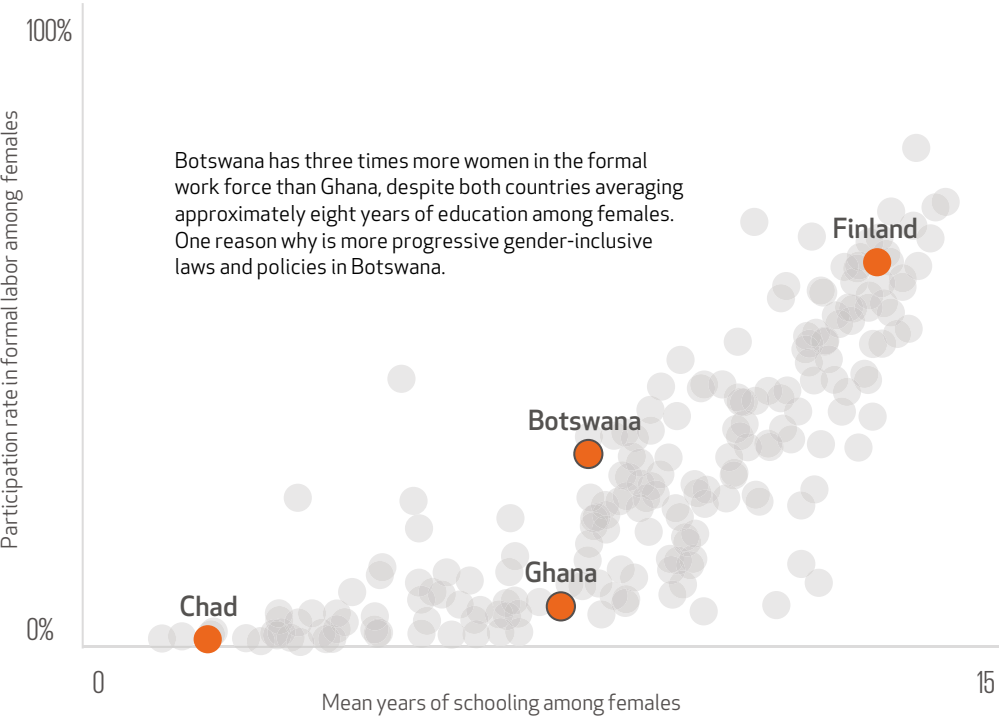These obligations inside the home are just one example of social norms that

THE GENDER GAP

GIRL
BOY

2 FEWER YEARS of SCHOOLING in SUB-SAHARAN AFRICA

21% MARRIED before 18th BIRTHDAY

MORE UNPAID WORK

3x TIME SPENT on UNPAID CARE WORK

LESS OPPOR-TUNITY

24% GAP in the WORKFORCE

SURVIVE TO AGE FIVE | EDUCATION | FAMILY | HOUSEHOLD | WORKFORCE
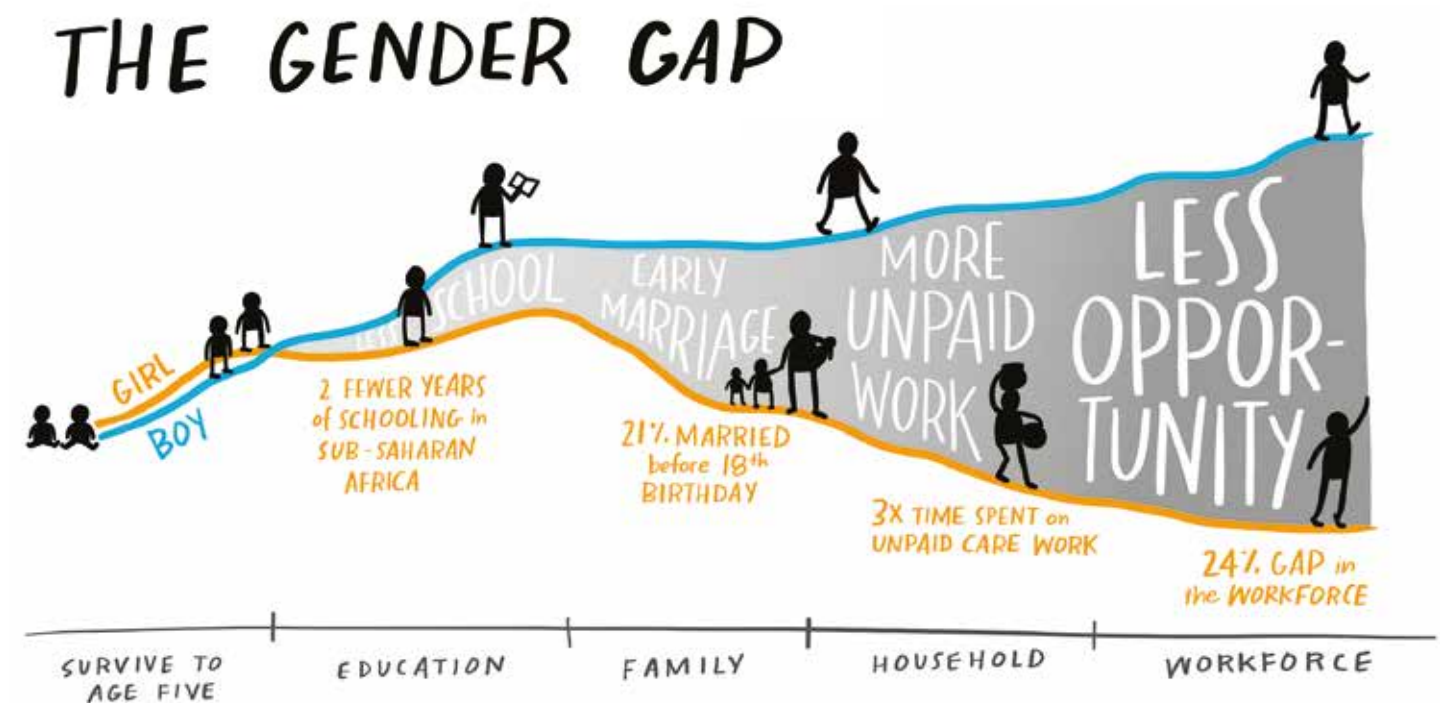
conspire to limit girls' opportunities as they approach adulthood. Across sub-Saharan Africa, for instance, girls average two fewer years of education than boys. And even when girls are well educated, they are much less likely to translate their years of schooling into a job in the formal work force. Globally, there is a 24 percentage-point gap between men's and women's labor force participation.

This lack of access to education and jobs is destructive for everyone. It keeps women disempowered, limits their children's life chances, and slows down economic growth.

Education is necessary but not sufficient to close the gender gap in economic opportunity

The first thing this chart tells you is that, on average, girls are more likely to get better jobs the longer they stay in school. However, it also tells you that in some countries, girls tend to be well-educated yet under-represented in the workforce. In other words, until you address discriminatory norms and policies, women won't have equal access to high-quality job opportunities.

Botswana has three times more women in the formal work force than Ghana, despite both countries averaging approximately eight years of education among females. One reason why is more progressive gender-inclusive laws and policies in Botswana.

Y-axis: Participation rate in formal labor among females (0% to 100%)
X-axis: Mean years of schooling among females (0 to 15)

Labeled points: Chad, Ghana, Botswana, Finland

(Sondari Pakartoli Village, India)

Embargoed until 9/17 12:01 EST

LEARNING FROM EXEMPLARS

The large and lingering gaps between countries, between districts, and between boys and girls prove that although the world's investments in development are working, the lives of the lucky and unlucky aren't converging fast enough. We believe the development community needs to start doing business differently.

In last year's Goalkeepers Report, we argued that human capital is critical to economic growth in poor countries. This year, we argue that human capital investments should be designed to reach girls and prioritize those countries and districts that have to make up the most ground.

That's not an easy thing to do. Inequality, as we have said, is exceedingly complex. There is no silver bullet that will make geography, gender, and other

random factors stop mattering. But guaranteeing that every single child has access to good health and education systems is a very good start in that direction. This is not just a moral aspiration; we believe it to be an achievable goal.

In the case of health, the priority needs to be primary care. If primary health care systems are well designed and fully funded, they reach everyone and address the vast majority of people's health needs.

In this report, Githinji Gitahi, who runs the largest health NGO in Africa, describes what countries like Ethiopia, Rwanda, and Thailand are doing right when it comes to delivering basic care to all their citizens and explains what other countries can learn from their experience.

In the case of education, not that long ago, conventional wisdom held that poor children didn't really need to be educated. That idea has been discredited in every region in the world in the past 50 years, and most countries in the world are approaching universal primary school enrollment. The priority now is to make sure that all schools provide a high-quality education. There are proven approaches to teaching literacy and numeracy in a single classroom, but there is not yet consensus about what it will take to improve basic skills at the massive scale of every single child in every single school in every single country. Last year, this report highlighted promising innovations being tried in Côte d'Ivoire, India, and Zambia, as well as Vietnam's nationwide success.

> ALL THE HUMAN CAPITAL IN THE WORLD, THOUGH, WON'T LEAD TO EQUALITY AND PROSPERITY IF HEALTHY, WELL-EDUCATED GIRLS ARE SUBJECT TO SOCIAL NORMS THAT DISEMPOWER THEM.

Harmful norms can be hard even to see, much less change, but countries are taking steps to help women confront them.

A big part of the solution is policies that help women and girls carve out new paths for themselves. For example, in places like Peru, where women have the right to own land and other assets and have ready access to contraceptives so they can plan their families, women's labor force participation goes up. Later in the report, Arshi Aadil, an expert on digital financial inclusion, writes about policy reforms in India that are not only improving government services for the poor but also chipping away at the foundations of male supremacy.

Rebhia, Kukawa, and Hassan (Umoja Health Centre, Nairobi, Kenya)

CHANGING THE ODDS

Goalkeepers addresses just a few ways to create a better, more equal world. Thankfully, so many advocates are thinking creatively right now about inequality and its solutions. No one has gotten to the bottom of it yet, but we are all getting closer.

In the meantime, we know one thing for sure. No one's life should be a roll of the dice. Were you born, as we were, with the odds in your favor? Or are you one of the billions of people born with the odds against you? Our goal is to even the odds for everyone.

When that happens, the future won't be predicted by random factors like where you're born or how many X chromosomes you have. In fact, it won't be predicted at all. It will be made—by people's dreams and hard work.

STORIES OF PROGRESS

PRIMARY HEALTH CARE

When we started our foundation, we focused on discovering and developing new tools and technologies. We quickly learned that we also needed to focus on delivering them to the people who need them. Primary health care is by far the most important health delivery system in the world. A strong primary health system reaches everybody, including the poorest and most vulnerable, and provides the vast majority of services a person needs to stay healthy. We know that, as governments invest more in primary health care systems, overall health outcomes improve, but unfortunately, low- and middle-income countries spend an average of just 36 percent of their health budgets on primary care. Some governments prioritize advanced health care for a minority of citizens, forcing the majority of citizens to pay out of pocket to meet their basic needs. This inequality feeds the vicious cycle of poverty and sickness. More—and more efficient—investment in primary care can help break it.

Bill & Melinda

REGION FOCUS: Africa

COUNTRIES:
Kenya,
Ethiopia,
& Rwanda

I SPEND A LOT OF MY TIME TRYING TO RECONCILE A BIG IDEA AND A SMALL NUMBER.

DR. GITHINJI GITAHI

Global CEO,
Amref Health Africa
& Co-Chair UHC2030

The big idea is that health should not be a luxury—that all people should receive the care they need without suffering financial hardship. This is called Universal Health Coverage (UHC). The UN General Assembly adopted a resolution in 2012 calling on member states to prioritize UHC, and the idea has been gaining momentum ever since then.

The small number is 51. That's my own personal back-of-the-envelope calculation of how many dollars the average sub-Saharan African country would have available to spend on health care per person

under ideal circumstances. (My definition of "ideal circumstances" is a country collecting 20 percent of its GDP in taxes and spending 15 percent of its budget on health; the reality in most African countries is far from ideal).

To be clear, I am not saying most countries currently spend $51 per person (they don't) or that, if they did, it would be enough (it wouldn't). I am merely demonstrating that compared to richer countries that can spend thousands of dollars per capita on health, sub-Saharan African countries have to figure out how to get by with very little.

EUROPEAN UNION   SUB-SAHARAN AFRICA

GDP

11x

POPULATION

2x

PUBLIC HEALTH ALLOCATION *per* CAPITA

22x
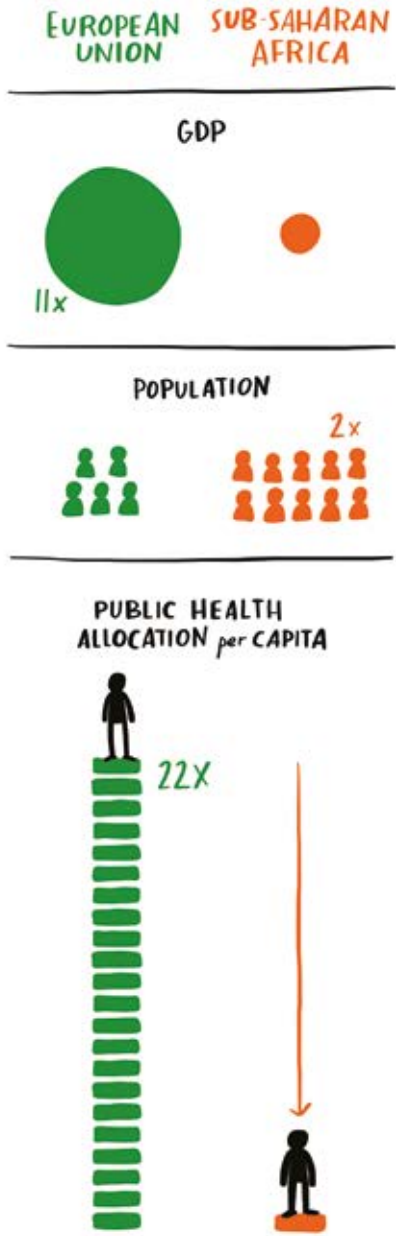
So, how do countries buy UHC when they have less than $51 to spend? The answer is: by investing in primary health care—that is, basic services near where people live and work. A good primary health system is just and equitable, is easily accessible to everybody, doesn't make the poor pay anything out of pocket, and addresses the vast majority of people's lifetime health needs. Its goal is to keep people healthy, because sickness is expensive for the individual, the family, the community, and the state!

When I think about primary health care, I remember walking hand in hand with my mum to our local dispensary in rural Kenya, which was about one kilometer away. That's where I got vaccinated. It's where my mum got prenatal care when she was pregnant with our last-born sister. And it's where everybody we knew went when they were sick and seeking advice or treatment.

Since the turn of the millennium, several African countries have invested in building far-reaching, high-quality primary health systems. Ethiopia and Rwanda, for example, have recruited tens of thousands of community health workers, women who are chosen by their neighbors and trained

by the government to take care of people's health.

Community health workers go to the people, instead of the other way around. And they don't interact with people only when they are sick. They also promote healthy behavior (like proper diet and hygiene) and provide or promote preventive care (like immunizations) to keep people from getting sick in the first place. And then, of course, they are trained to treat common illnesses (like diarrhea and malaria), provide basic family planning services, and refer patients to health facilities if they need more sophisticated care.

As a result of these investments, Ethiopia and Rwanda are among the leaders in the region in reducing maternal and child mortality. And by the way, the GDP per capita in both countries is well below the regional average.

Many other African countries have yet to make the necessary investments. My own country, Kenya, is much richer than Ethiopia and Rwanda, but the primary care system is weaker (though there is finally high-level political commitment to strengthening it). What matters are the choices that politicians make.

HERE ARE THREE CHOICES THEY CAN MAKE TO ACHIEVE BETTER HEALTH RESULTS WITH LIMITED BUDGETS

1 SPEND A LITTLE MORE

In 2001, all 54 member states of the African Union committed to spend 15 percent of their state budgets on health. A precious few have ever met that commitment, and those who meet it year after year can be counted on one hand. Governments must balance countless priorities, so finding more money for health is not easy. But when you are making do with such small budgets, every extra dollar counts. Kenya currently spends $36 per person per year, or 7 percent of its budget, on health. If that went up to, say, $51, the universe of the possible would expand significantly. At $86, according to an analysis based on WHO data, governments of low-income countries could fully fund primary health care.

2 SPEND ON RIGHT PRIORITIES

Many countries spend more on what is known as secondary and tertiary care than on primary care. That makes sense in one respect, because MRIs, X-rays, and many other features of secondary and tertiary care are expensive. But African governments can't afford to spend most of their money to meet some of some people's needs. In Thailand, which has one of the best primary care systems in the world, the government temporarily reallocated all its health infrastructure spending to rural areas because the health gap between rural and urban areas was so big. Now there is at least one health center in every single Thai village. African governments need to say, "Until we are sure primary health care has the investment it needs, we'll make do with what we have for secondary and tertiary care." It's a difficult position to take, but it's what countries that care about UHC have to do when there is so little money available.

3 SPEND MORE EFFICIENTLY

Primary care systems can do a lot to stretch the dollars they spend. For example, they can invest in digital health, especially electronic medical records. Or they can focus on managerial innovation, like new ways for a continent with many countries and a large geographical area to pool purchasing and improve supply chains. This would ensure that the right products are available at the right prices and delivered to the right places at the right times.

Finally, it is crucial to use data to answer two key questions about UHC: What and who?

When you know you can't provide every service, choices about what to provide make a big difference. For African countries, I boldly prescribe prioritizing sexual and reproductive health and rights. But you still have to decide where to put your resources, based not on generic global calculations but on actual conditions on the ground. For example, vasectomies may look cost-effective on paper, and they are good and encouraged, but the return will be less in a country where few providers can perform them, men are resistant, or the biggest challenge is a burgeoning adolescent population.

Next, the who. To make sure no one suffers financial hardship, you need to subsidize the most marginalized and vulnerable, including women, children, and girls, as well as the indigent. However, in countries where most people work in the informal economy and data is unreliable, it's hard to know precisely who the indigent are. Kenya, with 80 percent of its population employed informally, is working on developing rigorous methodologies

(Iloodariak Dispensary, Kiserian, Kenya)

to target services more effectively. Ideally, as primary health systems begin to get the same results for less money, they'll invest what's left over in getting even better results.

When I was seven, the World Health Assembly announced its commitment to "health for all." The tragedy is that when it turned out to be hard to pay for, the world stopped thinking about

it, even as a moral principle. Today I am 49, and we finally believe in health for all again. With the global dialogue about UHC, we are also thinking practically about how to achieve it. In other words, we have a second chance. Now leaders in Africa and around the world have to take advantage of it.

STORIES OF PROGRESS

DIGITAL INCLUSION

Some pessimists warn that technology will usher in a dystopian future. Some naïve optimists predict it will create a utopia. The truth lies somewhere in between. Technology is disruptive, and countries need to invest to maximize the positive disruptions and manage the negative ones.

Few countries have been as innovative and thoughtful about using digital technology to make people's lives better as India. The government understood early on that technology made it possible to connect directly with citizens instead of working through layers and layers of bureaucracy. Then it started creating smart policies built around digital technology that improved both the quality and reach of government services. This essay, which describes the reform of cooking gas subsidies, demonstrates how aligning technology and policy can create a surprising domino effect.

Bill & Melinda

REGION FOCUS: Asia

COUNTRY:
India

THIS IS THE STORY OF THREE GENERATIONS OF COOKING GAS SUBSIDIES IN INDIA.

ARSHI AADIL
Manager—Government and Social Impact,
MicroSave Consulting

But it's about cooking gas only in the narrowest sense. In a wider sense, it's about how digital technology helped the government of India design a series of innovative policies that have empowered 75 million marginalized women. In the very widest sense, it's about how governments can serve citizens better.

For decades, Indian households bought the liquid petroleum gas they cooked with at a fixed, low price guaranteed by the government. This subsidy was poorly targeted, because everybody, including the rich, could receive it. (According to

the IMF, the wealthiest 10 percent of Indian households received seven times more of the subsidy than the poorest 10 percent.) It was inefficient, because a lot of subsidized gas was sold in the black market to hotels, restaurants, and other businesses that should have paid market price. Finally, it was expensive; various gas subsidies could cost the government almost $10 billion per year, depending on the global price of gas.

Now comes the turning point of this story: India's pioneering of what is known as "the JAM trinity." The J stands for Jan Dhan Yojana, an Indian government program to help poor people open bank accounts. The A stands for Aadhaar, a program to provide every Indian resident with a unique ID linked to biometric authentication like fingerprints. And the M stands for mobile phones, which are quickly becoming ubiquitous in India. Together, accounts, ID, and phones make it possible for the government to deposit money directly into people's bank accounts and verify the recipients' identity. This in turn enables the government to be much more precise and ambitious about policymaking.

Starting in 2012 and continuing through 2015, the government used the JAM trinity to shift gradually from subsidizing the price of gas to transferring cash directly into people's bank accounts after they had bought the gas at market price. The fully redesigned subsidy, launched nationwide under the name PAHAL in 2015, is the world's largest cash transfer program.

The JAM Trinity

In an analog world, government benefits reached poor people through an inefficient network of intermediaries. In a digital world powered by the JAM trinity, the government can reach people directly—and people can reach back.

JAN DHAN YOJANA — AADHAAR — MOBILE PHONES

J — BANK ACCOUNTS
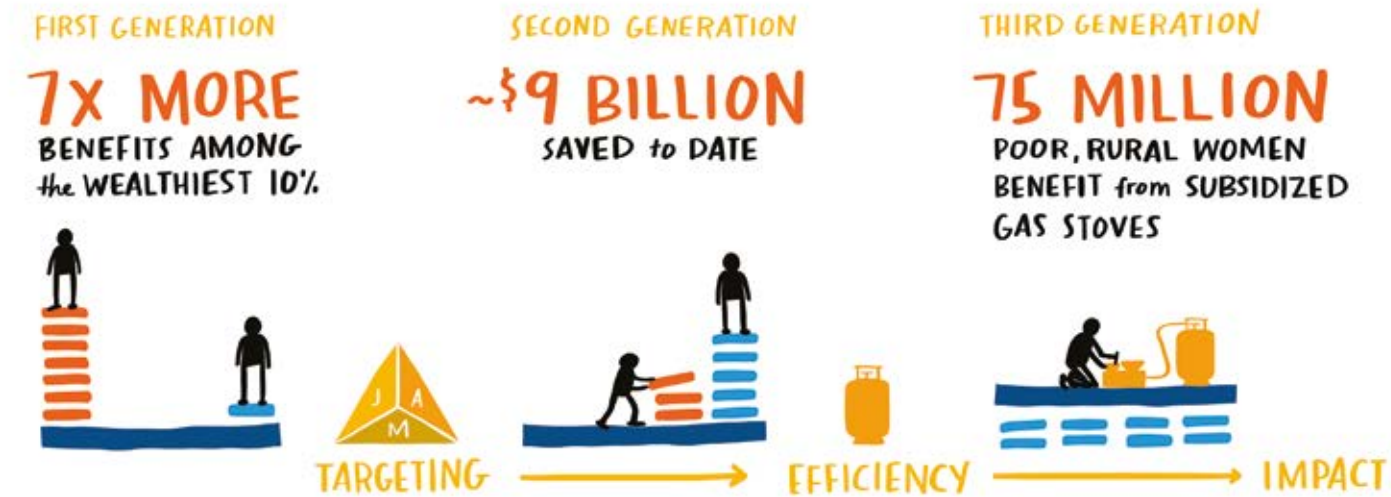A — IDENTIFICATION
M — MOBILE PHONES

PAHAL has addressed all three major problems with the old subsidy. Using Aadhaar, the government was able to remove 36 million duplicate or ghost recipients from the rolls, decreasing diversion to the black market and increasing overall efficiency. After a government campaign encouraging better-off people to stop claiming the subsidy, another 10 million Indians removed themselves from the rolls, improving targeting. As a result, PAHAL reduced the financial burden on the government: Although estimates vary, the government puts the savings at almost $9 billion since the PAHAL launch.

But the government hasn't just pocketed the savings. It's used them to create a brand new, third-generation cooking gas program, also powered by the JAM trinity, called Ujjwala. This program has been carefully designed to help poor women transform their lives in profound ways.

Most poor families, especially in rural areas, don't cook with gas; even if it's subsidized, it's still more expensive than building fires with wood or animal dung. However, wood and dung fires fill kitchens with hazardous smoke (household air pollution is responsible for nearly 500,000 deaths per year in India). To address this crisis, Ujjwala provides qualifying rural households with a 50 percent subsidy to purchase a gas

FIRST GENERATION

7x MORE BENEFITS AMONG the WEALTHIEST 10%

SECOND GENERATION

~$9 BILLION SAVED to DATE

THIRD GENERATION

75 MILLION POOR, RURAL WOMEN BENEFIT from SUBSIDIZED GAS STOVES

TARGETING → EFFICIENCY → IMPACT

connection and stove. (The other 50 percent can be paid in installments.) So far, approximately 75 million women have benefitted from Ujjwala. The government is now considering additional reforms to encourage Ujjwala recipients to refill their gas canisters, which are not necessarily affordable enough or easy enough to get.

But Ujjwala's impact doesn't stop at health. The program is also helping women chip away at discriminatory social norms that have limited their horizons.

For example, the average Indian woman spends more than 40 hours per week doing domestic work, leaving precious little time for anything else. Using cooking gas saves women several hours per day they had been spending gathering firewood, building and managing fires that made them sick, and then cleaning up the ashes and dust.

Moreover, the government made an important decision about how the benefits would be disbursed that is disrupting traditional power dynamics in the home. Unlike with traditional benefits programs in India, it is

women—and not their husbands— who are eligible for Ujjwala. To receive the gas subsidy, women need to sign up for a bank account.

Merely having and using a bank account changes women's lives, by giving them decision-making power over the family's finances. A randomized control trial of a different Indian social benefit program, a work guarantee program, found that when women received payments directly into their own accounts (instead of accounts in their husband's names) and received training on how to use the accounts, they worked more and

earned more. Their husbands also said they were more comfortable with their wives working outside the home. In other words, helping women gain control over financial resources ends up changing everyone's sense of who they are and what they are capable of.

There is yet another way that policies designed around the JAM trinity are empowering the poor—by making government more accountable. For example, with the new cooking gas subsidy, government officials in 640 Indian districts receive daily

progress reports on PAHAL, including enrollment, cash transfer, and error rates, so they can identify and address problems as soon as they arise.

Various states are also experimenting with ways to proactively solicit citizens' input whenever they interact with government. In one state, for example, beneficiaries receive an automated call soliciting feedback on the quality of the service: Was the customer treated courteously? Did she receive the benefits she expected? Did she receive them without having to pay a bribe? Negative responses roll over into a human system to generate formal complaints.

On its own, the JAM trinity doesn't do much. It needs to be paired with smart, pro-poor policies and services built around digital technology. Even then, digitally powered policies and services by themselves won't end poverty and gender inequality. They need to be accompanied by analog reforms like changing discriminatory laws and policies. When all these pieces come together, though, the status quo can change fast.

Sangeeta (Targaon Village, India)

STORIES OF PROGRESS

CLIMATE ADAPTATION

The global climate change debate is mostly focused on how to limit carbon emissions. We are still waiting for the big technology and policy breakthroughs we need. Meanwhile, the climate is already changing. It is a terrible injustice that the people who suffer the most are the poorest farmers in the world. They didn't do anything to cause climate change, but because they rely on rain for their livelihoods, they are at the front lines of coping with it. These farmers already have no margin for error. They don't have the resources to adapt to droughts and floods, disease outbreaks among their herds, or new pests devouring their harvest. In Ethiopia, the government and millions of farmers have embarked on an impressive crash course in building resilience, and it is working. As State Minister Kaba writes, the 2015 drought didn't cause anywhere near the death or destruction of the infamous 1984 drought. Ethiopia's success offers hope. Worldwide, we need greater investment in developing and distributing improved crop varieties that tolerate stresses like extreme heat or floods. The world's agricultural research system needs more support.

Bill & Melinda

REGION FOCUS: **Africa**

COUNTRY:
Ethiopia

THE 1984 FAMINE IS A DARK HISTORY THAT WE HAVE GONE THROUGH.

DR. KABA URGESSA

State Minister for Natural Resources
and Food Security at the Ministry of
Agriculture, Ethiopia

But sometimes—although it feels strange to say—there's opportunity in crisis. Shortly after the famine, we established a disaster management policy and built up food reserves so that when droughts happened, we could at least save the lives of our people.

As the years passed, we invested heavily in the productivity and resilience of our agriculture sector. We had to, because more than 80 percent of our people live in rural areas. In 2003, the African Union met in Maputo, Mozambique, and governments committed to spend 10 percent of their budgets on agriculture; we spend more than that. In 2015, we suffered a drought just as severe as the one that led to the 1984 famine, but the world never heard about it because we had built better systems to help farmers cope.

Our thriving agriculture sector is part of why Ethiopia's overall economic growth has been so impressive, and why we are on track to become a middle-income country by 2025. But there is one thing that could derail us: climate change. Climate change is caused by the actions of richer countries, but the most vulnerable people in poorer countries are feeling it first.

Since I was a boy, the temperature here has increased by about 1 degree Celsius. But the rain is a much bigger problem. Overall, there is less of it—20 percent less in some places. What rain is left is less predictable. It comes late and leaves early. When it does come, it can come in destructive torrents. Every calculation a farmer makes is based on weather. Smallholder farmers are very good agronomists, but they have spent their lives learning things about a climate that is ceasing to exist.

Fortunately, the work we've been doing for the past 20 years will help our farmers respond to the changing climate in the next 20. In 2005, we launched a very large program that pays people to work on agriculture-related public works projects. The impact is twofold: The poor have the means to purchase food and other necessities when emergencies strike, and they build community assets like bench terraces, bunds, check dams, deep trenches, and microbasins that conserve water, prevent soil erosion, and ultimately contribute to higher yields. Three years later, we launched another program to foster a mass movement around sustainable land management.

We have also hired one of the largest cadres of agricultural extension agents in the world. They are a source of timely information; for example, they provide early warnings about droughts and advice about how farmers might adjust. They also focus on longer-term education. Our network of extension agents is one reason why Ethiopian farmers are more likely to use fertilizer, improved seeds, or irrigation than farmers in many neighboring countries.

We have no illusions about what we are up against. Several years ago, we launched our Climate Resilient Green Economy strategy, which recognizes that our future prosperity is riding on proper stewardship of our environment.

We cannot stop the droughts. We can flourish in spite of them.

(Alaba Kulto, Ethiopia)

THE WEATHER IN OUR AREA IS THE WILL OF GOD.

MITSELAL TEKELE TESFAY
Farmer,
Ethiopia

Twenty years ago, when I started farming this land, the weather was better. But it keeps getting hotter. July should be a cold month; this year it's much hotter than usual. And the rains are not dependable. One year there are good rains, and the next year there's drought. It usually begins raining in late May or early June. This year, it's already late July and it hasn't rained yet. We're still waiting. We try to sow at the best times, but we can't control the rain. If it doesn't start raining until July and stops before October, we won't get anything from our fields. If things get bad, I have some sheep I can sell or trade. I am thinking about investing in beehives for honey.

Even though the weather is worse, our farming is much better now. When I was growing up on my parents' farm, the land was destroyed. They didn't get any kind of help from the government. When the famine came in 1984, moving the family to Sudan was the only option.

Now, we get information and education from agricultural experts who come to our community. Before, we didn't use modern seeds. Now I use the best wheat seeds. I plant wheat that's ready to harvest earlier, so it does better in a drought. Before, we didn't use fertilizer, herbicides, or pesticides. Now I can use all three. I know about weeding. I know how to protect my field from drying out in the sun. My yields have almost doubled.

This year, we were told that the rains would be less, and we received training about what to do. We harvest rainwater by collecting the runoff and storing it for later. With all our strength and ability, we try to keep the ground moist. We do that in many different ways: applying mulch, digging trenches, plowing, mending gullies. When a little rain starts to fall,

Mitselal
(Kal Amin kebele,
Ethiopia)

WE TRY TO ADAPT TO THE CONDITIONS HERE AND OVERCOME.

every household works hard to make sure it stays in the soil. No one sits in the house if there is rain.

We try to adapt to the conditions here and overcome. I want my children to get an education. I didn't get one when I was a child; I didn't go to school a day in my life. But all three of my children are enrolled. I must make sure that they are fed. If I grow wheat early this year, I will switch to barley during the next growing season because I want barley for my kids to eat. My children can't learn and study with empty bellies. Every decision I make is about what my family needs.

Based upon an interview

EXPLORE THE DATA

We started writing the Goalkeepers Report to track progress toward the Sustainable Development Goals (SDGs). We believe that seeing where the world is succeeding will inspire leaders to do more, and seeing where the world is falling short will focus their attention. So we promised that, every year, we'd publish the most recent global data about the 18 indicators most closely related to the work our foundation does. This year, given our theme, we have tried to emphasize the role of inequalities in blocking the achievement of the SDGs. We have also explored maternal mortality, stunting, and neglected tropical diseases (NTDs) in more detail, because those stories provide insights about inequality and how to fight it.

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STUNTING

Stunting is complex. There is no single lever to pull to address it; you have to pull many at once to achieve significant progress. That may be why the global stunting rate has come down more slowly than some other indicators. But it's also why stunting reduction is a clear indication of good development.

One way to accelerate progress is to study exemplars, the countries that have made impressive progress, like Nepal.

In 1996, two in three Nepalese children were stunted, the highest rate in the world. By 2016, it was about one in three. Underlying this progress were investments in health, nutrition, and education. For example, the percentage of pregnant women receiving prenatal care from a skilled provider has tripled since the turn of the millennium (to 84 percent), and primary school enrollment is now 97 percent.

Prevalence of stunting among children under age five

- ● Current projection
- ● If we progress
- ● If we regress
- ● 2030 target

SDG target: End all forms of malnutrition, including achieving, by 2025, the internationally agreed-upon targets on stunting and wasting in children under five. Target shown on chart is provisional and has been extrapolated based on existing 2025 target.

A closer look at the data shows that although Nepal has decreased its stunting burden, it has not yet made it more equal. To the right, you see stunting plotted by wealth quintile between 1996 and 2016. Although every quintile improved—by a lot—the richest improved more than the poorest. And there is now an even bigger gap between the poorest and everyone else.

For Nepal, the priority now is to close the gap. For guidance, Nepal can look to Peru.

The same chart for Peru, an exemplar country whose stunting burden in 2000 was close to Nepal's now, shows that the gap between the poorest and richest quintiles shrank by half in just 15 years. This progress toward equality was by design: Peru's government created a health insurance system for the poor; implemented a conditional cash transfer program to encourage women in key areas to use health, nutrition, and education services; and targeted key health and nutrition interventions to ensure that the people who needed them most received priority.

Together, Nepal and Peru provide insights for countries at every stage of the fight against stunting.

Prevalence of stunting by wealth quintile in Nepal

- ● Lowest
- ● Second
- ● Middle
- ● Fourth
- ● Highest

Prevalence of stunting by wealth quintile in Peru

- ● Lowest
- ● Second
- ● Middle
- ● Fourth
- ● Highest
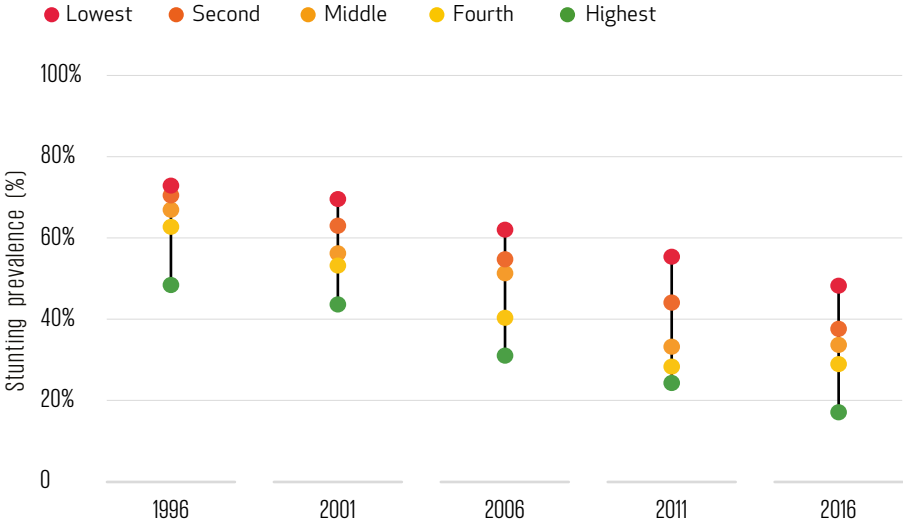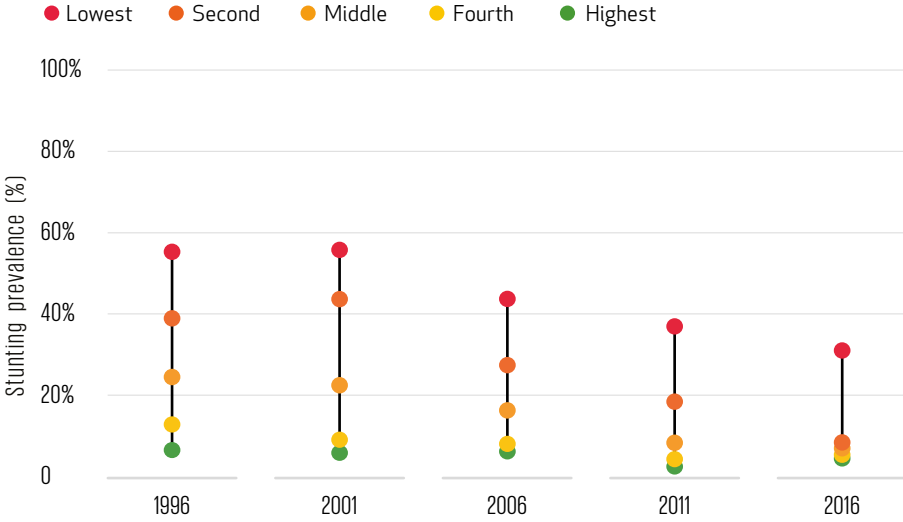
MATERNAL MORTALITY

Most maternal deaths are preventable with tools we already have. The key is giving mothers high-quality care throughout their pregnancy and during childbirth.

Tragically, many mothers receive no care at all. One of the most searing images of inequality is a young woman giving birth alone.

Fortunately, many governments and their partners are innovating to erase this image. For instance, our partner Jhpiego is reimagining the way pregnant women interact with the health system.

Most pregnant women spend a few minutes receiving care from a nurse or midwife several times during their pregnancy. One-on-one attention sounds good, but these meetings tend to be impersonal and rushed.

So in 20 health facilities in Kenya and Nigeria, Jhpiego invited groups

Maternal deaths per 100,000 live births

● Current projection   ● If we progress   ● If we regress   ● 2030 target

260
238
220
180
139
140
143
126
115
100
60
Target
20
0
1990   2018   2030

SDG target: Reduce the global maternal mortality ratio to less than 70 per 100,000 live births.
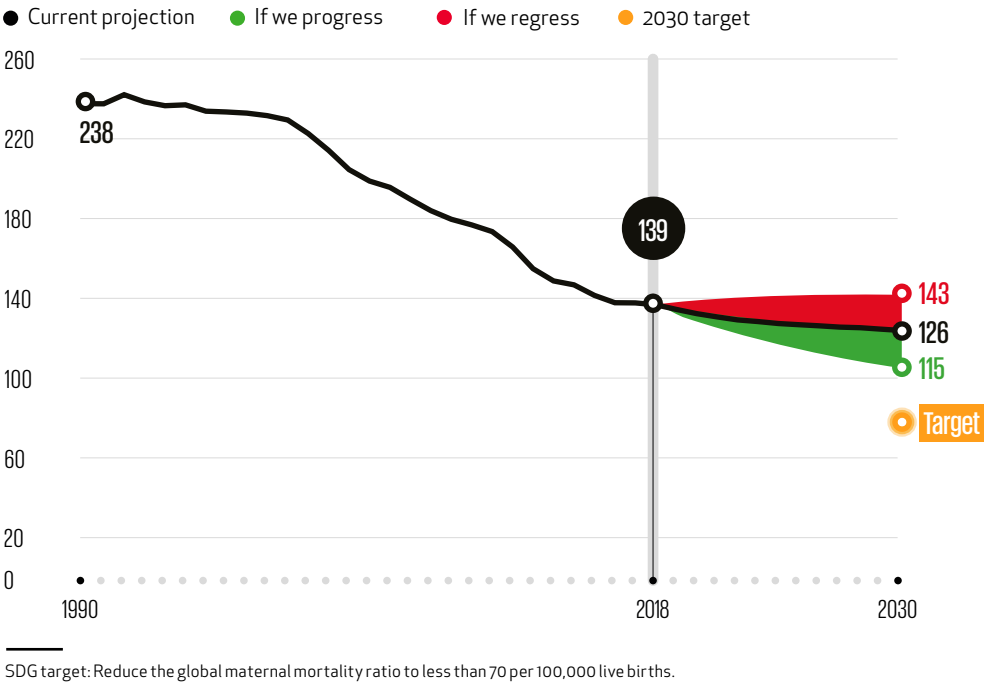
of 15–20 women at similar stages of pregnancy to attend a series of two-hour group antenatal sessions. They got more time (as much as 30 times more!) with a health provider who got to know them personally. What's

more, they got to know each other—and build a support network that lasted beyond the pregnancy.

These group antenatal care (G-ANC) pilots achieved eye-popping results.

First, the care was simply better. In both Kenya and Nigeria, women in G-ANC were more likely to receive key interventions and information about how to care for themselves and their newborns.

Second, the women felt better about the experience, which suggests they are more likely to keep on using the health system. Nigerian women who participated in G-ANC were much more likely to give birth at a health facility, where the staff can manage an obstetric emergency.

Third, the women scored higher on an overall measure of empowerment, suggesting that G-ANC can affect not only maternal health but other important development priorities.

Although the project ended in 2017, all 20 test sites continued to offer G-ANC on their own, in part because the providers and mothers demanded it. The next step is to scale it up to other districts and countries so that the maternal mortality curve starts bending faster.

Change in mothers' use of health services at Nigerian G-ANC sites

● Individual care   ● Group ANC

100%
80%
60%
40%
20%
0%

42%   91%   54%   77%

Four + antenatal care visits   Facility-based delivery
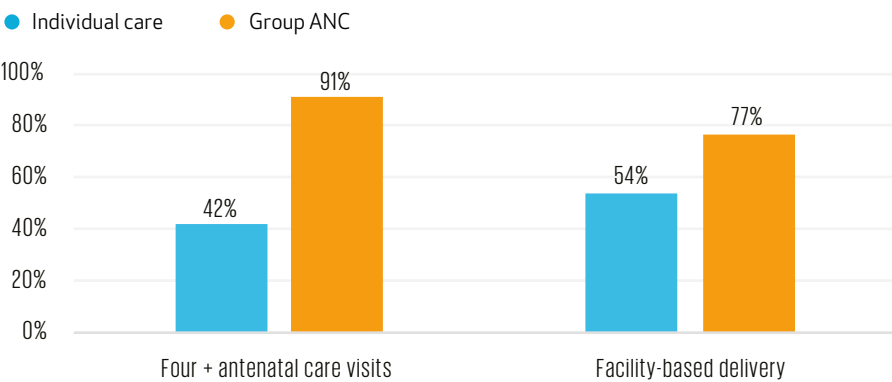
Ladi and Lami, Lucy and Godwin (Agyaragu Yakubu, Nigeria)

NEGLECTED TROPICAL DISEASES (NTDs)

In the phrase "neglected tropical diseases" (NTDs), the adjective "neglected" refers to a group of approximately 20 diseases, but it could just as easily describe the 1.5 billion people affected by them. Winning the fight against NTDs requires learning how to meet the needs of people whose needs have never been met before.

Consider onchocerciasis, a parasitic disease that causes horrific itching and, in severe cases, blindness (it's also known as river blindness). Onchocerciasis is transmitted by black flies that breed near fast-flowing rivers. As a result, some of the poorest farmers in the world have been forced to abandon the best soil found in river basins and try to eke a living out of infertile land.

The good news is that onchocerciasis is treatable with ivermectin, a drug that Merck has been providing for free since 1987. Unfortunately, although ivermectin kills symptom-causing juvenile worms, it doesn't kill adult worms—which can
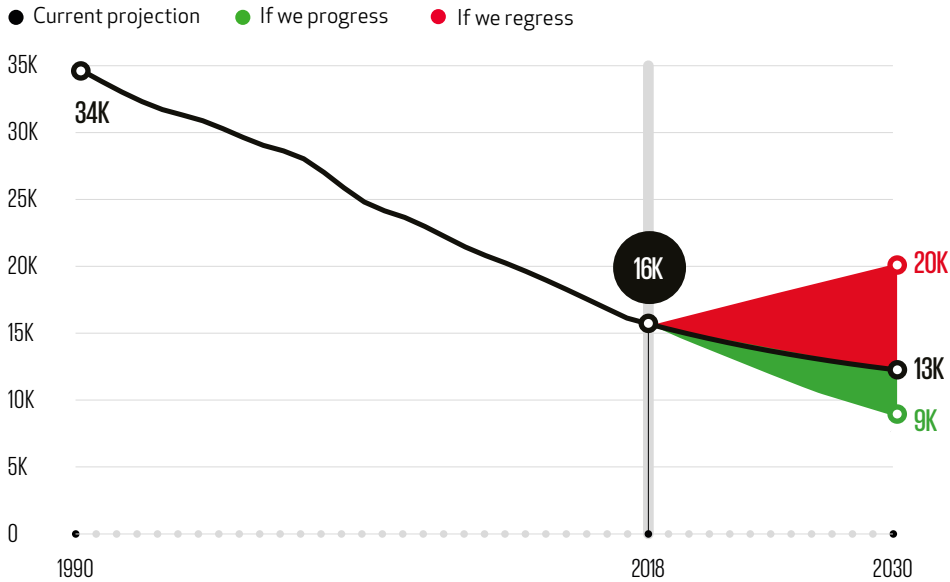
keep reproducing for up to 15 years. Moreover, 200 million people in remote villages spread across sub-Saharan Africa are at risk of being infected.

Given these challenges, onchocerciasis elimination is based on what is known as mass drug administration (MDA):

every year, volunteer health workers in tens of thousands of far-flung villages give ivermectin to every local resident. After approximately 15 years, if MDA coverage is consistently high, the adult worms in people's bodies die of old age and transmission is broken.

Prevalence rate of 15 NTDs per 100,000 people

● Current projection ● If we progress ● If we regress

SDG target: End the epidemics of AIDS, tuberculosis, malaria, and neglected tropical diseases.

But the more successful we are, the harder the work gets. First, people who've taken a drug for 10 years in a row and probably don't feel sick are not eager to keep taking it. Second, diagnostic tests aren't sensitive enough to pinpoint where the disease is totally gone and where it's just at very low levels. Consequently, we don't know when it's safe to stop doing MDA.

We continue to invest in better diagnostics and drugs, yet we must rely on some of the most fragile health systems in the world to conquer the massive logistics of high-quality, widespread MDA campaigns year after year. Many are rising to the challenge. Onchocerciasis transmission has been interrupted in two Nigerian states and parts of Mali, Senegal, Sudan, and Uganda. Moreover, countries like Malawi and Sierra Leone, with GDP per capita below $1,000, have exceeded 75 percent MDA coverage for multiple NTDs three years running.

The task now is for every country to achieve and sustain this kind of progress everywhere NTDs are endemic until they are either under control or completely eliminated.

Status of onchocerciasis elimination programs in Africa, by district

● No MDA or <65% coverage
● Effective MDA delivered
● Non endemic
● No MDA because elimination thresholds achieved
● No MDA due to low prevalence (but not necessarily below elimination threshold)
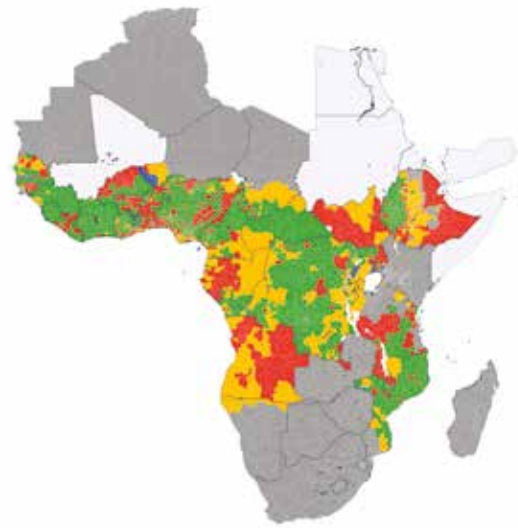
People receiving preventive treatment for river blindness

● People in need covered   ● People in need not covered
● Preventative treatment coverage
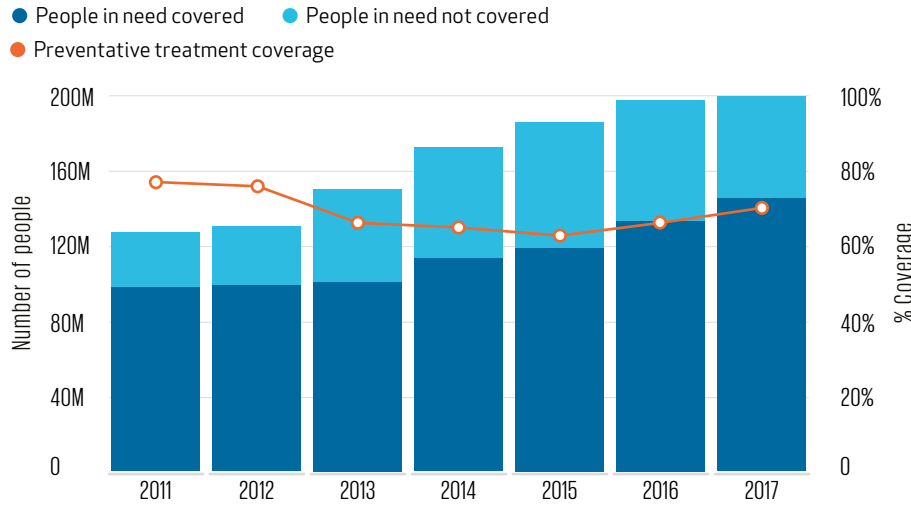
POVERTY

The most concerning thing about this chart is the slope of the sub-Saharan Africa curve. Ideally, sub-Saharan Africa would follow the recent pattern of South Asia, with a precipitous drop in poverty; instead, progress in the region is projected to be relatively slow between now and 2030. The key to reducing poverty in sub-Saharan Africa over the long term is targeting investments in health and education so that they reach people who are usually missed.

SDG target: Eradicate extreme poverty for all people everywhere.

Percentage of population below the international poverty line (US$1.90/day)

- Global
- Sub-Saharan Africa
- South Asia

AGRICULTURE

Previously, we've had to put "insufficient data" under agricultural productivity. This chart doesn't measure the SDG target per se, but it represents a breakthrough because for the first time we have relevant data that is comparable across countries. Although small-scale producers vastly outnumber large-scale producers in almost all these countries, they earn just a fraction of the income, because they lack access to financial services, improved inputs like seeds and fertilizer, agricultural knowledge, and efficient markets. In addition, both small- and large-scale producers tend to earn less in sub-Saharan Africa than in other regions.

SDG target: Double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers.

Average annual income from agriculture, PPP (constant 2011 international $)

- Non-small-scale producers
- Small-scale producers
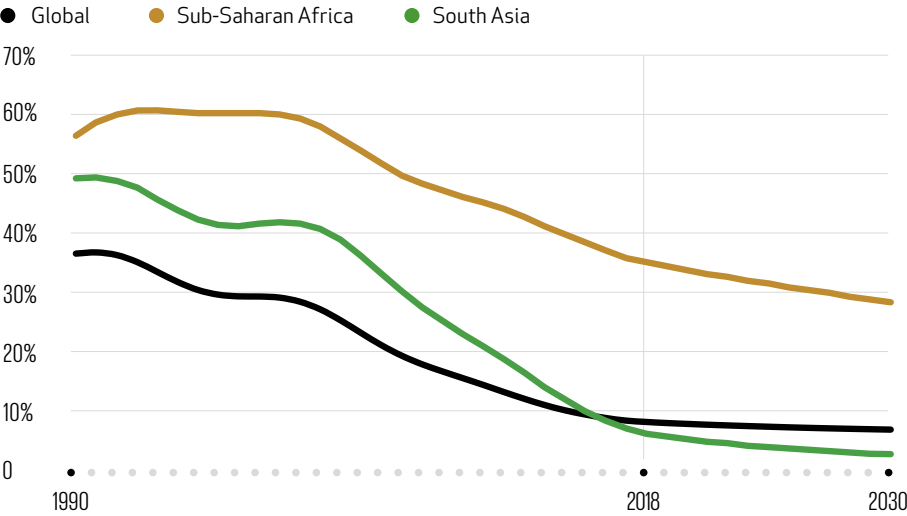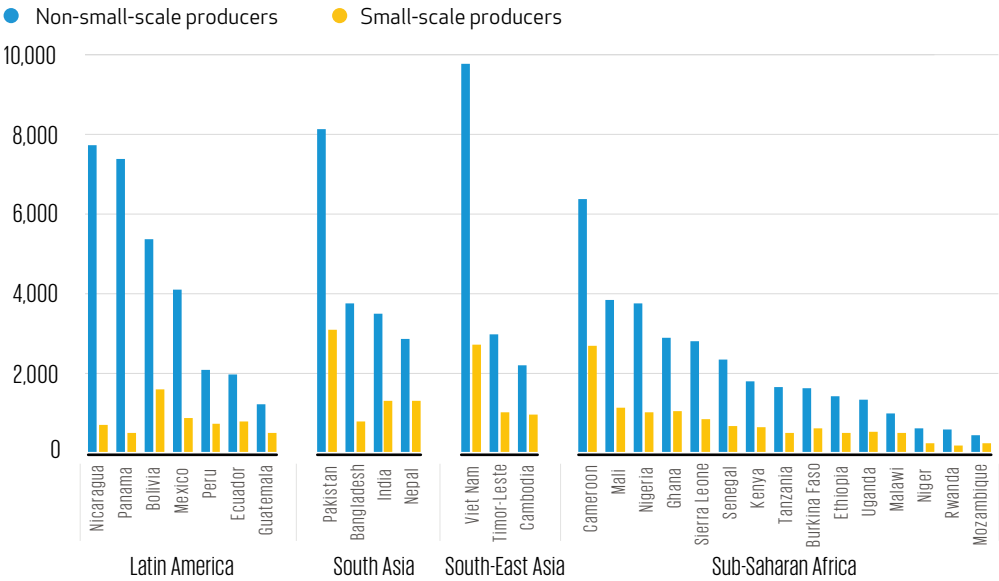
UNDER-FIVE MORTALITY

Pneumonia is the leading infectious cause of child mortality and second only to neonatal disorders as a cause of overall child mortality. However, just 3 percent of global research and development spending and 6 percent of global foreign aid spending on infectious diseases goes to pneumonia. Globally, fewer than half of children are currently protected by the leading pneumonia vaccine. A less expensive vaccine may become available soon, which would enable more countries to protect more children and drive down the global child mortality burden.

SDG target: End preventable deaths of newborns and children under age five, with all countries aiming to reduce under-five mortality to at least as low as 25 per 1,000 live births.

Number of under-five deaths by cause of mortality
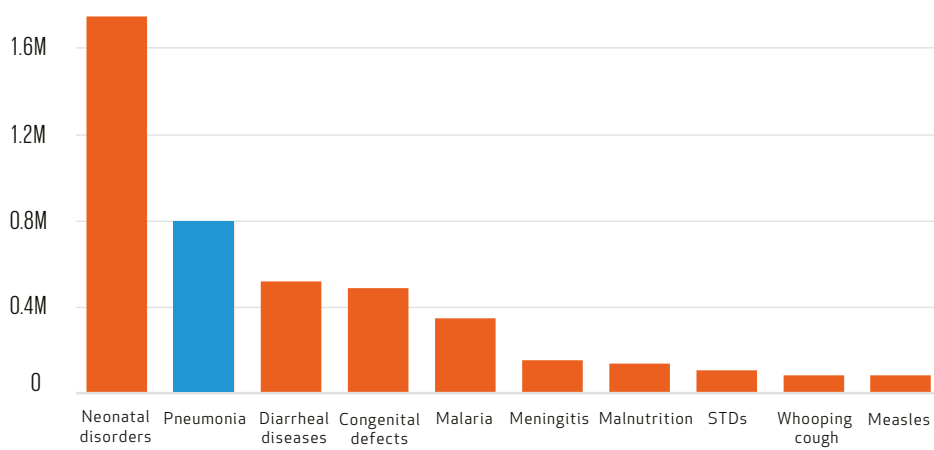
NEONATAL MORTALITY

The number of children under five who die has declined steadily. The number of newborns (0–28 days old) who die has also declined, but more slowly. As a percentage of overall child mortality, therefore, newborn mortality is rising. Almost half of all child deaths now occur in the first 28 days of life. Future progress on child survival requires a renewed focus on newborn health. In addition to delivering a proven package of basic interventions, it is especially critical for low- and middle-income countries to make sure specialized care for small and sick babies is available in facilities where mothers give birth.

SDG target: End preventable deaths of newborns and children under age five, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births.

Global trend in timing of under-five deaths

- Neonatal (<28 days)
- Children 28 days–5 years
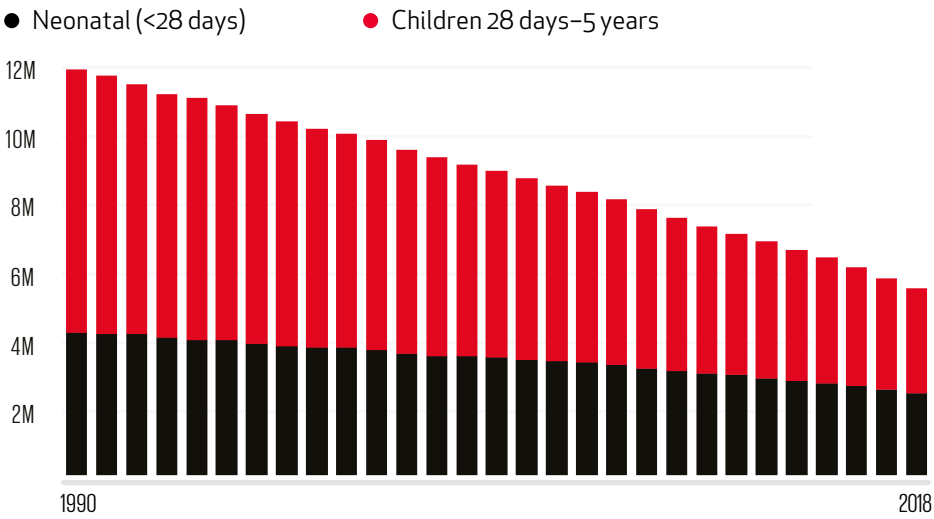
HIV

Between ages 10 and 24, females are significantly more likely than males to contract HIV. (Over age 24, by the way, it's often just the opposite.) Young women are vulnerable for a variety of reasons. For example, a lack of power in relationships leads adolescent girls to engage in risky sex, and social stigma leads them not to seek (or not to receive) adequate reproductive health care. This gap is especially worrying because of the youth bulge: The population of girls reaching the age at which they are most vulnerable keeps growing.

SDG target: End the epidemics of AIDS, tuberculosis, malaria, and neglected tropical diseases.

New cases of HIV among 10–24 year olds per 1,000 people

● Male ● Female

TUBERCULOSIS

The spike in TB cases in sub-Saharan Africa in the 1990s and 2000s offers yet more evidence of how devastating the HIV/AIDS epidemic was. HIV makes people more susceptible to TB, which explains why the region's TB incidence went up. However, the fact that it went back down just as sharply after 2008 is evidence of how successful Africa's HIV response has been. The next priority is for sub-Saharan Africa and South Asia to diagnose and treat all active cases of TB and close the gap with other regions.

SDG target: End the epidemics of AIDS, tuberculosis, malaria, and neglected tropical diseases.

New cases of tuberculosis per 100,000 people

● Global ● Southern sub-Saharan Africa

MALARIA

These lines show why malaria is the poster child for global health inequality. Lower-income countries carry the global burden; there are nearly zero cases in higher-income countries. Within countries there are also significant differences in burden, with the hardest-to-reach, poorest communities suffering the most. Globally, the burden has declined steadily, but success will come only when malaria inequalities are addressed within and across borders. The places with the highest burden are also likely to be the last places to eliminate the disease, so the sooner we address inequalities, the closer we get to the goal of eradicating malaria from the face of the earth.

SDG target: End the epidemics of AIDS, tuberculosis, malaria, and neglected tropical diseases.

New cases of malaria per 1,000 people

● Global ● High SDI ● Low SDI

FAMILY PLANNING

When it comes to family planning, sub-Saharan Africa is a region apart. By now, every other region in the world is clustered near the top of the chart; then there's a gap, and then comes the line for sub-Saharan Africa. The gap is projected to close, but only gradually. If just a handful of sub-Saharan African countries can speed up their improvement in family planning coverage, then the region will achieve its global targets for meeting women's needs for contraceptives and reproductive health.

SDG target: Ensure universal access to sexual and reproductive health care services, including those for family planning.
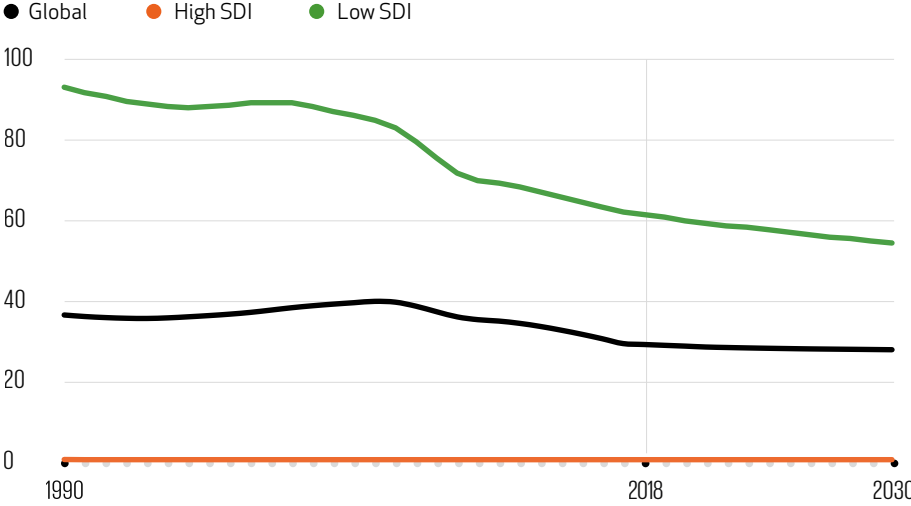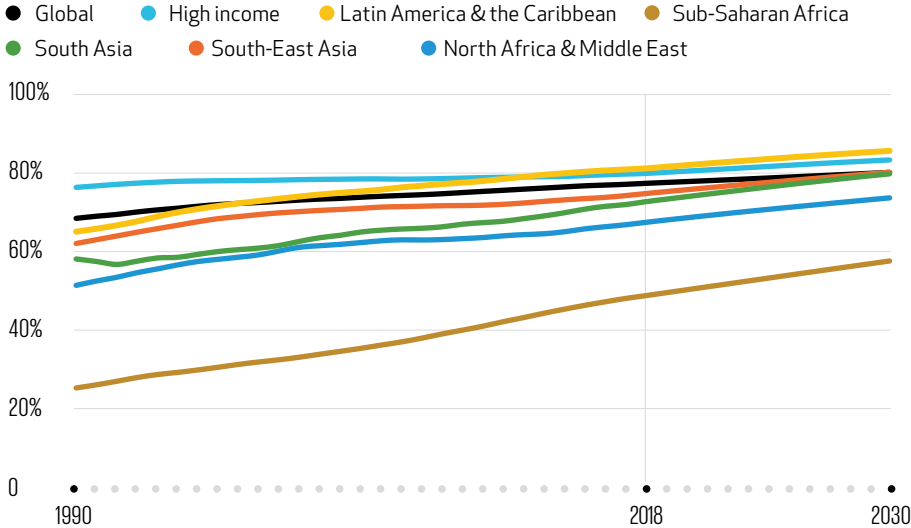
Percentage of women of reproductive age (15–49) who have their need for family planning satisfied with modern methods, by region

● Global ● High income ● Latin America & the Caribbean ● Sub-Saharan Africa
● South Asia ● South-East Asia ● North Africa & Middle East

UNIVERSAL HEALTH COVERAGE

With Universal Health Coverage (UHC), all people in a country have access to essential health services without risking financial hardship. Higher-income countries are more likely than lower-income countries to achieve UHC, but this graph shows that some lower-income countries get much better results than others. Although Rwanda and Ethiopia are poorer than the other countries, both have invested heavily in community-based primary health care. As a result, their UHC performance has improved dramatically.

SDG target: Achieve universal health coverage for all.

Performance score for coverage of essential health services

● Global ● Ethiopia ● Ghana ● Kenya ● Nigeria ● Rwanda

SMOKING

In two thirds of sub-Saharan African countries, girls are more likely to smoke than adult women. Traditionally, smokers in Africa tend to be men, but that may be changing. Countries can reverse this disturbing trend by adopting proven tobacco control strategies. One of the most effective, especially for the young, is raising the price of cigarettes through increased tobacco taxes. These taxes bring overall health costs down by limiting smoking while also generating revenue that governments can use to spend on other priorities.

SDG target: Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries.
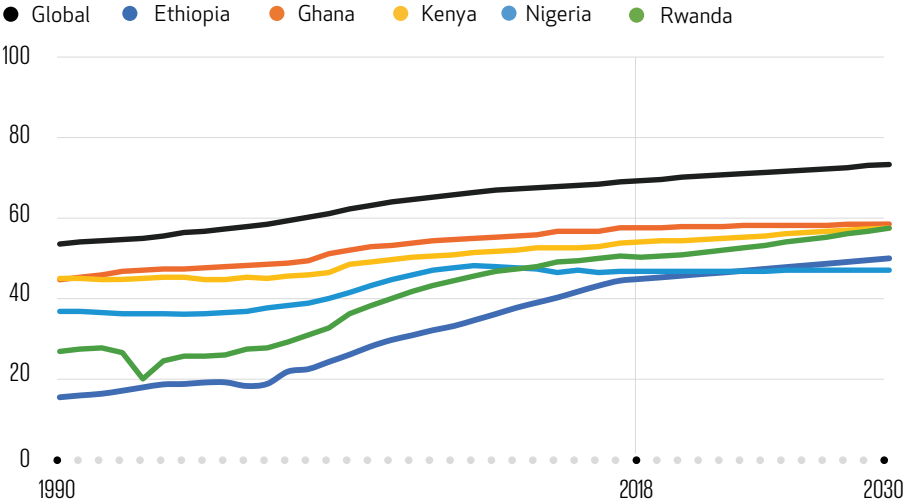
Smoking rates in girls vs. women in 30 countries in Sub-Saharan Africa

● Smoking prevalence higher among young females (10–19 years old)
● Smoking prevalence higher among adult females (20 years and older)
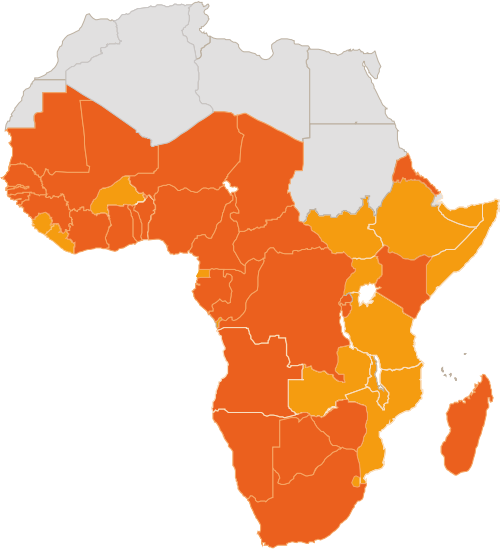
VACCINES

This year's U.S. measles outbreak was the worst in a generation. Globally, even larger outbreaks have occurred in Chad, the Democratic Republic of Congo, and Madagascar. Measles epidemiology makes it necessary to vaccinate an extremely high percentage of children, but as this map shows, more than half of one-year-old children in Africa live in districts where measles vaccination coverage is below 80 percent. However, the situation may be improving in critical geographies. According to preliminary data from the North West Zone of Nigeria, renewed government commitment to measles and other routine vaccinations has paid off with signs of rapidly increasing coverage over the past two years.

SDG target: Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all.

Sub-national measles vaccine (first dose) coverage 2017

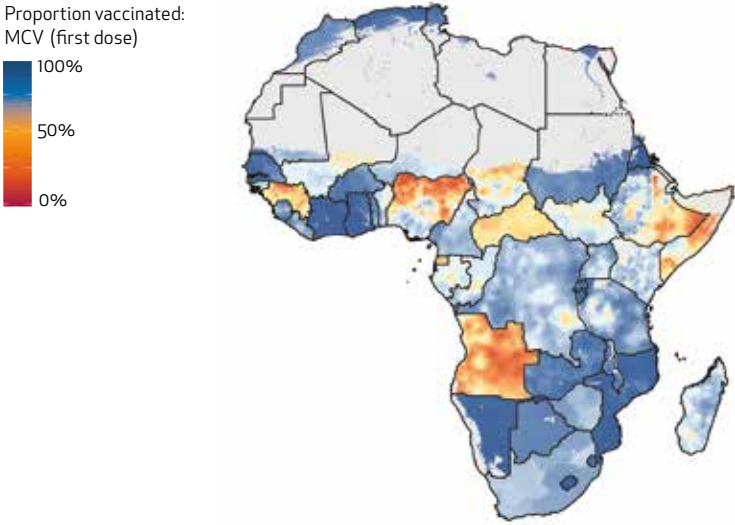Proportion vaccinated: MCV (first dose) 100% 50% 0%

EDUCATION

The past generation has seen a huge increase in school enrollment. However, as more students enroll, it is proving challenging to provide a consistently good education. Today, more than half of sixth graders in 10 French-speaking African countries are not minimally proficient in math and reading. Worse, the trend is negative: Unless something changes, two thirds of students in school in 2030 won't master the basics. To change this, education leaders need to prioritize literacy and numeracy in the early grades.
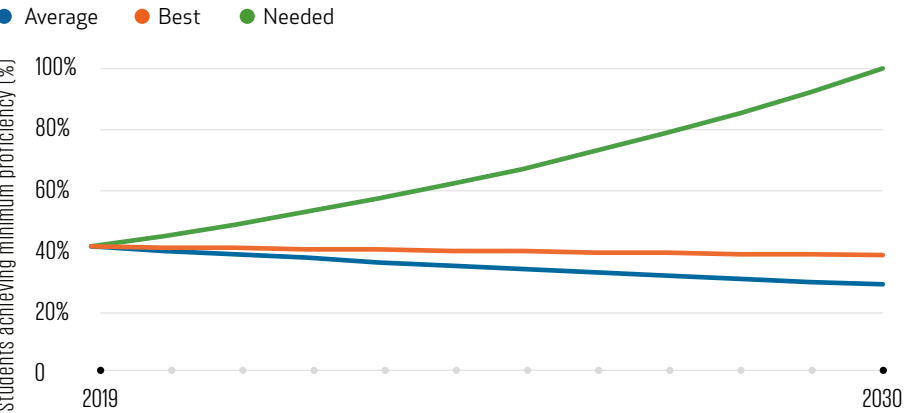
SDG target: By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.

Percentage of grade six students achieving minimum proficiency in 10 Francophone Sub-Saharan African countries

● Average ● Best ● Needed

GENDER EQUALITY

Globally, women do three times more unpaid care work than men. The gap is largest in Northern Africa and Western Asia, but it exists in every region. This work is currently valued at $10 trillion per year, but even that huge number still doesn't capture the full extent of women's lost economic potential. In 2013, the international definition of "work" was refined to recognize unpaid care, and since then, our partners have been developing guidance to better capture women's work in surveys around the world. This is a crucial step toward addressing gender gaps in paid and unpaid work.

SDG target: Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate.

Ratio of female-to-male time spent on unpaid care and domestic work by region, latest available year

Each dot represents one country

SANITATION

This chart shows the wrong thing: It suggests progress will only come from sewer connections, wastewater treatment plants, and other expensive infrastructure that is impractical in many places. The SDGs rightly established a new, "safely managed" sanitation goal to help track and improve sanitation systems used by billions in low-income countries. The challenge is that leaders don't yet have enough data to measure safely managed sanitation or target key areas for improvement. If countries are serious about SDG 6, it is critical that more of them start reporting to the Joint Monitoring Project of UNICEF and the WHO.

SDG target: Achieve access to adequate and equitable sanitation and hygiene for all, and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.

Prevalence of populations using unsafe or unimproved sanitation

● Current projection ● If we progress ● If we regress ● 2030 target

FINANCIAL SERVICES FOR THE POOR

Being able to prove who you are is key to accessing financial and social services as well as securing rights (like voting) and seizing economic opportunities (like registering your business). Yet 1 billion people lack basic proof of ID, and as many as half of the world's population lacks ID that authorities routinely trust and accept. Moreover, there is an ID gender gap in low-income countries, with only 55 percent of women able to prove their identity compared to 70 percent of men.

SDG target: Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance, and financial services for all.

Adult ID coverage by income group and gender

● Male ● Female
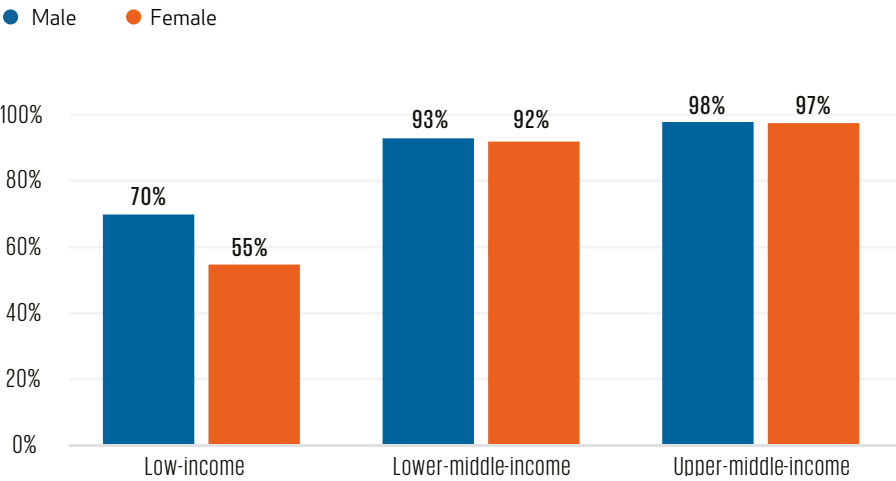
SOURCES AND NOTES

The data sources for facts and figures featured in the report are listed here by section. Brief methodological notes are included for unpublished analyses. Full citations, links to source materials, and additional references can be found on the Goalkeepers website (www.gatesfoundation.org/goalkeepers).

EXAMINING INEQUALITY

Layers of Inequality
The diagram on page 4 is adapted from the United Nations Development Programme's original version, found in *What Does It Mean to Leave No One Behind? A UNDP discussion paper and framework for implementation*, July 2018.

Geography
The Institute for Health Metrics and Evaluation (IHME) estimated under-five mortality and educational attainment at the 5x5km level for low- and middle-income countries, including trends for the period 2000 to 2017. These estimates are based on methods previously described in detail for under-five mortality (Golding and Burstein et al., 2017) and education (Graetz et al., 2018). In addition, IHME created future scenarios of these indicators to explore the likelihood that countries and subnational units, e.g., districts, will meet the targets for the SDGs. IHME prepared three future scenarios: a reference scenario based on past trends and relationships with key drivers, and alternative "progress" and "regress" scenarios to highlight the potential for faster progress and to examine the potential for reductions in inequalities in health and education.

To generate the reference scenarios for under-five mortality and educational attainment at the 5x5km level, IHME computed the annualized rate of change (AROC) over the period 2000 to 2017 for each 5x5km grid cell. For educational attainment, IHME computed the AROC using a half-logit transformation which bounds mean years of education between zero and 18 years and also captures the larger AROC observed at lower mean levels of education. Each 5x5km grid cell's AROC was used to produce a preliminary prediction of under-five mortality and educational attainment for all grid cells from 2018 to 2100. The preliminary 5x5km level estimates were then scaled to national-level reference scenarios of under-five mortality and educational attainment. Those national-level reference scenarios incorporate more extensive data and methods into the future projections; e.g., for under-five mortality they incorporate estimated future trends in drivers such as income per capita, risk factors such as childhood malnutrition, and interventions such as vaccine coverage (Foreman et al., 2018).

To generate the progress and regress scenarios, IHME determined the 85th and 15th percentiles of the observed district-level AROC for the period 2000 to 2017. The AROCs are applied to all districts into the future unless the district-specific

reference scenario is better than the progress scenario or the district-specific reference scenario is worse than the regress scenario. In those cases, the reference scenario replaces the alternative progress and regress scenarios.

Gender
Refer to the following sources for data points cited in the illustration "The Gender Gap": Gender gaps in education and labor force participation from IHME, 2019; early marriage reference from UNICEF Global Database (2018) based on Demographic Health Survey, Multiple Indicator Cluster Survey, and National Survey, 2000-2017; unpaid care work reference from UN Women, 2019.

Unpaid care work — See UN Women, 2019, and International Labour Organization (ILO), 2018.

Workforce participation — IHME estimates total employment to population ratios (proportion of the population that is employed) using spatio-temporal Gaussian process regression (ST-GPR) by five-year age groups and sex, for the age range 15 to 69 years. Input data comes from household census, survey, and ILO tabulations. To be considered employed, respondents must report having worked at least one hour in the previous seven days for wages, in self-employment, as an apprentice, or for a

family business, or else they must report being temporarily absent from such a position in the preceding week. IHME then uses ST-GPR to model the proportion of the employed population that are informal workers as defined by the ILO using data from ILO tabulations. Results are used to determine the proportion of the total population employed in formal work.

Schooling —Mean years of schooling among females is estimated for the age range 15 to 69 years. Figure on page 16 is shown in log-scale.

STORIES OF PROGRESS

Primary Health Care
The graphic on page 23 is derived from GDP and population estimates sourced from World Bank, World Development Indicators, 2018. Estimates are in current U.S. dollars.

The estimated target of $86 per capita in government health expenditure is cited by Gitahi from Chatham House, 2014. The estimate is derived from initial analysis by the High Level Taskforce on Innovative International Financing for Health Systems (HLTF, 2009), and is expressed in 2012 U.S. dollars.

Digital Inclusion
For more information, refer to the following sources: Anand et al., 2013. Field et. al., 2016. Gelb & Diofasi, 2015. Ministry of Petroleum and Natural Gas, Government of India, July 2019. Mittal, Mukherjee, & Gelb, 2017. Muralidharan et al., 2016.

Climate Adaptation
For more information about the 2015 drought in Ethiopia, see FEWS NET, 2015. For more about the growth and resilience of Ethiopia's agricultural sector, see Dorosh & Rashid, 2015, and Bachewe et al., 2015.

EXPLORE THE DATA

For the health indicators, IHME generates three future scenarios. "Current projections" are based upon past trends. To generate the "progress" and "regress" scenarios, IHME determined the 85th and 15th percentiles of the observed AROCs of the indicator or its drivers across country-years for the period 1990 to 2017.

Stunting
IHME measured stunting prevalence as height-for-age more than two standard deviations below the reference median on the height-age growth curve based on WHO 2006 growth standards for children 0-59 months. Estimates are based upon the GBD 2017, with forecasts for 2018–2030. For a detailed description of methods, see GBD 2017 Risk Factor Collaborators, 2018.

Peru and Nepal research and charts provided by SickKids Stunting Reduction Exemplars Research Team, 2019.

Maternal Mortality
IHME defines a maternal death as any death of a woman while pregnant or within one year of the end of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes. Ages include 10 to 54 years. Estimates are based on the Global Burden of Disease study (GBD) 2017, with forecasts for 2018–2030. For a detailed description of methods, see GBD 2017 Causes of Death Collaborators, 2018.

Neglected Tropical Diseases
IHME measures the sum of the prevalence of the 15 NTDs per 100,000 that are currently measured in the Global Burden of Disease study: human African trypanosomiasis, Chagas disease, cystic echinococcosis, cysticercosis, dengue, food-borne trematodiases, Guinea worm, soil-transmitted helminths, leishmaniasis, leprosy, lymphatic filariasis, onchocerciasis, rabies, schistosomiasis, hookworm, trichuriasis, ascariasis,

and trachoma. Estimates are based on the GBD 2017, with forecasts for 2018–2030. For a detailed description of methods, see GBD 2017 Causes of Death Collaborators, 2018, and GBD 2017 SDG Collaborators, 2018.

The map of onchocerciasis elimination programs in Africa is from Expanded Special Project for Elimination of Neglected Tropical Diseases, 2016.

The bar chart is adapted from Uniting to Combat Neglected Tropical Diseases website, based on WHO data.

Poverty
Extreme poverty rates measure the fraction of a country's population that is estimated to live on less than $1.90 per day, measured in 2011 purchasing power parity (PPP) adjusted dollars. Nationally representative data on extreme poverty rates was extracted from the World Bank for the time period 1980 to 2018. However, this data does not provide a complete time series of poverty rates for every country. To estimate a complete time series for all countries, we used a method developed and widely used by the Global Burden of Disease study: spatio-temporal Gaussian process regression (ST-GPR). ST-GPR was chosen because it makes predictions by building from data when available and borrowing strength across time, geography, and predictive covariates (GDP per capita, female education, and kilocalorie consumption) when data was not available. Forecasted poverty estimates were calculated for 2018 to 2030 by estimating the year-over-year change in the poverty rate using an ensemble model. For more information, see IHME, 2019.

Agriculture
See FAO, Rural Livelihoods Information System (RuLIS), as accessed July 2019. This is the most recent data available for select countries, ranging from 2005–2016; see RuLIS for additional information. For methodology, see FAO, 2018.

Under-Five Mortality
IHME defines under-five mortality rate as the probability of death between birth and age five. It is expressed as number of deaths per 1,000 live births. Estimates are based on preliminary GBD 2019 findings, with forecasts for 2019–2030. For a detailed description of methods, see GBD 2017 Mortality Collaborators, 2018.

Neonatal Mortality
IHME defines neonatal mortality rate as the probability of death in the first 28 completed days of life. It is expressed as the number of deaths per 1,000 live births. Estimates are based upon preliminary GBD 2019 findings, with forecasts for 2019-2030. For a detailed description of methods, see GBD 2017 Mortality Collaborators, 2018.

HIV
IHME estimates the age-standardized rate of new HIV infections per 1,000 population. Estimates are based on the GBD 2017, with forecasts for 2018–2030. For more detailed description of methods, see GBD 2017 Disease and Injury Incidence and Prevalence Collaborators, 2018.

Tuberculosis
IHME estimates new and relapse tuberculosis cases diagnosed within a given calendar year (incidence) using data from prevalence surveys, case notifications, and cause-specific mortality estimates as inputs to a statistical model that enforces internal consistency among the estimates. Estimates are based on the GBD 2017, with forecasts for 2018–2030. For a detailed description of methods, see GBD 2017 Disease and Injury Incidence and Prevalence Collaborators, 2018.

Malaria
IHME estimates the age-standardized rate of malaria cases per 1,000 population. Estimates are based on the GBD 2017, with forecasts for 2018–2030. For a detailed description of methods, see GBD 2017 Disease and Injury Incidence and Prevalence Collaborators, 2018, and Weiss et al., 2019.

The socio-demographic index (SDI) is a summary measure produced by IHME that identifies where countries or other geographic areas sit on the spectrum of development. Expressed on a scale of 0 to 1, SDI is a composite average of the rankings of the incomes per capita, average educational attainment, and fertility rates of all areas in the GBD study.

Family Planning
IHME estimates the proportion of women of reproductive age (15–49 years) who have their need for family planning satisfied with modern methods. Modern contraceptive methods include the current use of male or female sterilization, male or female condoms, diaphragms, spermicide foam or jelly, oral hormonal pills, implants, injections, intrauterine devices (IUDs), or emergency contraceptives. Estimates are based on preliminary GBD 2019 findings, with forecasts for 2019–2030. For a detailed description of methods, see GBD 2017 SDG Collaborators, 2018.

Universal Health Coverage
IHME defines the UHC index to be the coverage of nine tracer interventions and risk-standardized death rates from 32 causes amenable to personal health care. Tracer interventions include vaccination coverage (coverage of three doses of DPT, measles vaccine, and three doses of the oral polio vaccine or inactivated polio vaccine); met need for modern contraception; antenatal care coverage (one and four visits); skilled birth attendant coverage; in-facility delivery rates; and coverage of antiretroviral therapy among people living with HIV. The 32 causes amenable to personal health care include tuberculosis, diarrheal diseases, lower respiratory infections, upper respiratory infections, diphtheria, whooping cough, tetanus, measles, maternal disorders, neonatal disorders, colon and rectal cancer, non-melanoma cancer, breast cancer, cervical cancer, uterine cancer, testicular cancer, Hodgkin's lymphoma, leukemia, rheumatic heart disease, ischemic heart disease, cerebrovascular disease, hypertensive heart disease, peptic ulcer disease, appendicitis, hernia, gallbladder and biliary diseases, epilepsy, diabetes, chronic kidney disease,

congenital heart anomalies, and adverse effects of medical treatment.

IHME then scaled the 41 inputs on a scale of 0 to 100, with 0 reflecting the worst levels observed between 1990 to 2016 and 100 reflecting the best observed. They took the arithmetic mean of these 41 scaled indicators to capture a wide range of essential health services pertaining to reproductive, maternal, newborn, and child health; infectious diseases; noncommunicable diseases; and service capacity and access. Estimates are based on the GBD 2017, with forecasts for 2018–2030. For a detailed description of methods, see GBD 2017 SDG Collaborators, 2018.

Smoking
IHME measures current use of smoked tobacco. IHME collates information from all available surveys that include questions about frequency of tobacco use (e.g., daily, occasional), either currently or within the last 30 days, and information on the type of tobacco product smoked (including cigarettes, cigars, pipes, hookah, as well as local products). IHME converts all data to its standard definition so that meaningful comparisons can be made across locations and over time. Estimates are based on preliminary GBD 2019 findings, with forecasts for 2019–2030. For a detailed description of methods, see GBD 2017 Risk Factor Collaborators, 2018.

Vaccines
IHME's measurement of immunization coverage reports on the coverage of the following vaccines separately: three-dose diphtheria-tetanus-pertussis (DTP3), measles second dose (MCV2), and three-dose pneumococcal conjugate vaccine (PCV3). Estimates are based on preliminary GBD 2019 findings, with forecasts for 2019–2030. For a detailed description of methods, see GBD 2017 SDG Collaborators, 2018.

Estimates of local patterns of vaccine coverage from IHME are produced using geospatial modeling methods described in Mosser et al., 2019. At the time the 2019 Goalkeepers Report was published, measles estimates were not yet published.

Education
The UNESCO projections are based on annualized differences between the average Analysis Programme of CONFEMEN Education Systems (PASEC) scores in 2006 versus 2014. Note that the tests administered in each year were not psychometrically comparable, though they covered largely similar content. The UNESCO Institute for Statistics (UIS) applied an equivalent definition of minimum proficiency across the assessments in each year to create a harmonized performance scale that has not been empirically validated given the design of the assessments. For more information, see UNESCO, 2019, and UIS, 2019.

Gender Equality
The chart is adapted from UN Women, 2019. The data is the most recent available for 88 countries and territories (2001–2017). The age group is 15+ where available (18+ in Ghana). In a number of cases, data is for those ages 10+ or 12+. In the case of Thailand (2015) they are for those ages 6+, and in the United Republic of Tanzania (2014) for those ages 5+. Data for Bulgaria, Denmark, Latvia, the Netherlands, Slovenia, and Spain corresponds to time spent on unpaid care among those ages 20 to 74 only. In the case of Qatar, only urban areas are covered in the analysis. Differences across countries should be interpreted with caution, given heterogeneity across surveys and countries in definitions, methodology, and sample coverage. See the Global SDG Indicators Database of the United Nations Statistics Division for further information on the country-level data.

Sanitation
IHME measured households with piped sanitation (with a sewer connection); households with improved sanitation without a sewer connection (pit latrine, ventilated improved latrine, pit latrine with slab, composting toilet); and households

without improved sanitation (flush toilet that is not piped to sewer or septic tank, pit latrine without a slab or open pit, bucket, hanging toilet or hanging latrine, shared facilities, no facilities), as defined by the Joint Monitoring Programme for Water Supply and Sanitation. Estimates are based on the GBD 2017, with forecasts for 2018–2030. For a detailed description of methods, see GBD 2017 Risk Factor Collaborators, 2018.

Financial Services for the Poor
See World Bank Group, Identification for Development, as accessed July 2019. The data is the most recent available for 99 countries, collected in 2017 through the Global Findex surveys. For methodology, see ID4D, 2018.

PHOTOGRAPHY

Images provided by Gates Archive, with the following additions:
Pages 6 and 7 (photos courtesy of The Carter Center/Emily Staub)
Page 14 (photo courtesy of LightRocket via Getty Images /SOPA Images/Marcus Valance)
Page 35 (photo courtesy of Corbis via Getty Images/Art in All of Us/Eric Lafforgue)
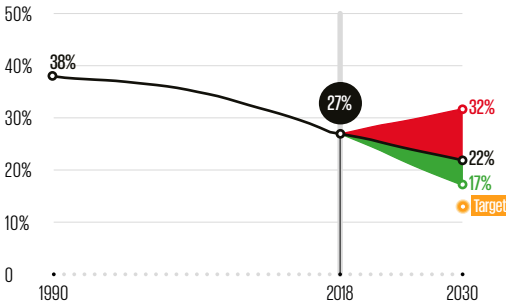Page 41 (photo courtesy of Jhpiego/Paul Joseph Brown)

EXPLORE THE DATA

AT-A-GLANCE VIEW OF THE 18 INDICATORS TRACKED IN THE REPORT

We started writing the Goalkeepers Report to track progress toward the Sustainable Development Goals. So we promised that, every year, we'd publish the most recent global data about the 18 indicators most closely related to the work our foundation does.

- Current projection
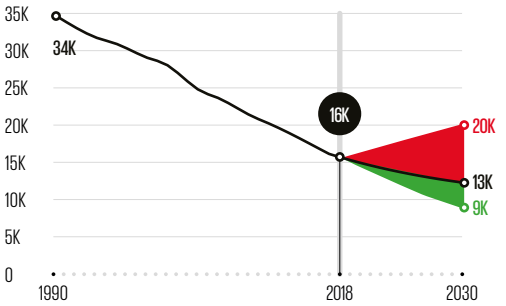- If we progress
- 2030 target
- If we regress

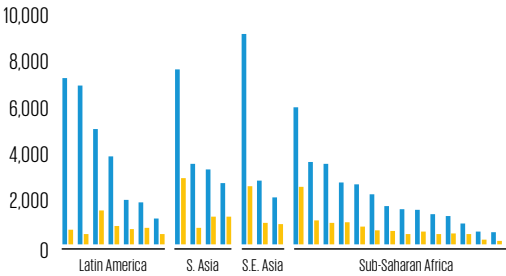## STUNTING
Prevalence of stunting among children under age five

38% · 27% · 32% · 22% · 17% · Target

MATERNAL MORTALITY
Maternal deaths per 100,000 live births

238 · 139 · 143 · 126 · 115 · Target

NEGLECTED TROPICAL DISEASES (NTDs)
Prevalence rate of 15 NTDs per 100,000 people

34K · 16K · 20K · 13K · 9K

POVERTY
Percentage of population below the international poverty line (US$1.90/day)

36% · 8% · 7% · 7% · 6% · Target

AGRICULTURE
Average annual income from agriculture, PPP (constant 2011 international $)

- Non-small-scale producers
- Small-scale producers

Latin America · S. Asia · S.E. Asia · Sub-Saharan Africa

UNDER-FIVE MORTALITY
Under-five deaths per 1,000 live births

82 · 37 · 33 · 29 · 25 · Target

NEONATAL MORTALITY
Neonatal deaths per 1,000 live births

31 · 17 · 16 · 14 · 12 · Target

MALARIA
New cases of malaria per 1,000 people

37 · 29 · 38 · 28 · 6 · Target

SMOKING
Prevalence of current smoking in populations age 10 years and older

24% · 19% · 20% · 17% · 14%

HIV
New cases of HIV per 1,000 people

0.37 · 0.25 · 0.46 · 0.25 · 0.15 · Target

FAMILY PLANNING
Percentage of women of reproductive age (15–49) who have their need for family planning satisfied with modern methods

68% · 77% · 84% · 80% · 76%

VACCINES
Coverage of DTP (third dose)

73% · 86% · 94% · 89% · 74% · Target

TUBERCULOSIS
New cases of tuberculosis per 100,000 people

166 · 132 · 153 · 122 · 94 · Target

UNIVERSAL HEALTH COVERAGE
Performance score for coverage of essential health services

53 · 69 · 79 · 73 · 68 · Target
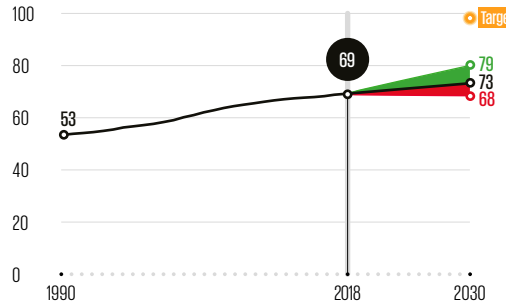
GENDER EQUALITY
Ratio of female to male time spent on unpaid and domestic care work by region
Each dot represents one country

Australia & New Zealand · Central & Southern Asia · Eastern & South Eastern Asia · Europe & North America · Latin America & the Caribbean · Northern Africa & Western Asia · Sub-Saharan Africa
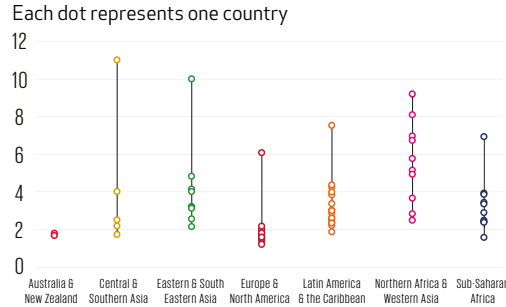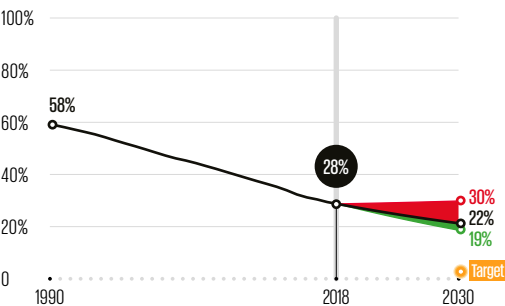
EDUCATION
Percentage of students in grade 2 or 3 achieving at least a minimum proficiency level in reading and math, both sexes

- Central & S. Asia
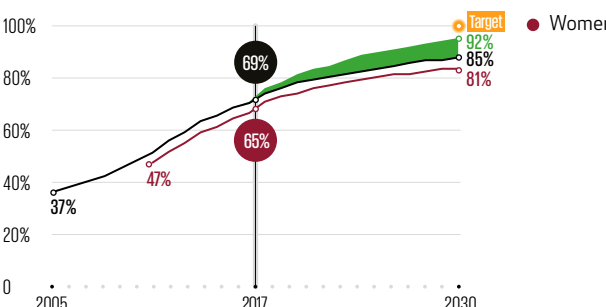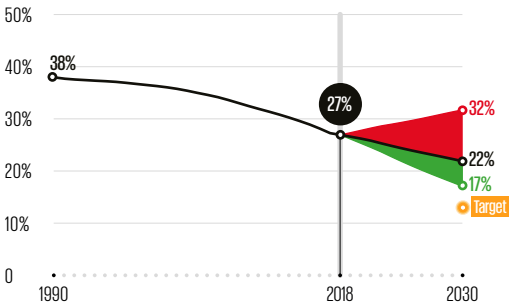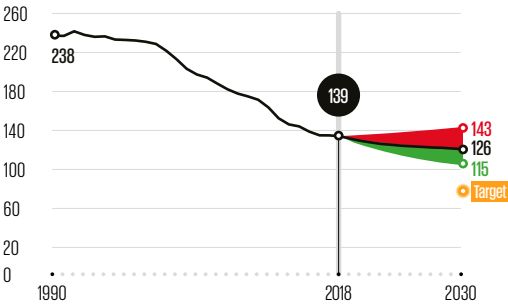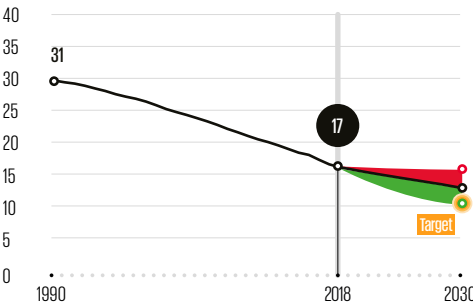- Oceania
- Latin America & the Carribbean
- Europe & N. America
- Sub-Saharan Africa
- Eastern & South-Eastern Asia
- N. Africa & W. Asia

Reading · Math
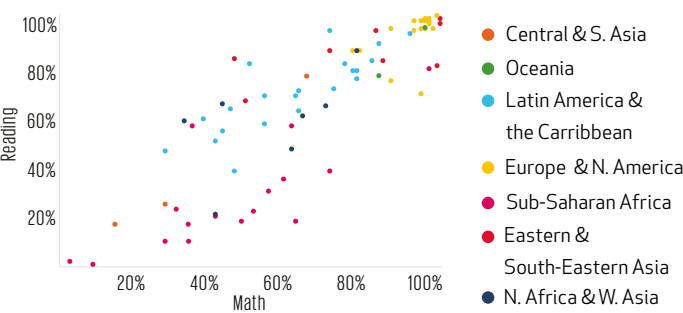
SANITATION
Prevalence of populations using unsafe or unimproved sanitation

58% · 28% · 30% · 22% · 19% · Target

FINANCIAL SERVICES FOR THE POOR
Percentage of adults (age 15 and older) with an account at a bank or other financial institution or with a mobile-money service provider

- Women

37% · 47% · 65% · 69% · 92% · 85% · 81% · Target

2005 · 2017 · 2030

Embarg

AT-A-GLANCE VIEW OF THE 18 INDICATORS TRACKED IN THE REPORT

We started writing the Goalkeepers Report to track progress toward the Sustainable Development Goals. So we promised that, every year, we'd publish the most recent global data about the 18 indicators most closely related to the work our foundation does.

- Current projection
- 2030 target
- If we progress
- If we regress

STUNTING
Prevalence of stunting among children under age five

MATERNAL MORTALITY
Maternal deaths per 100,000 live births

NEGLECTED TROPICAL DISEASES (NTDs)
Prevalence rate of 15 NTDs per 100,000 people

POVERTY
Percentage of population below the international poverty line (US$1.90/day)

AGRICULTURE
Average annual income from agriculture, PPP (constant 2011 international $)
- Non-small-scale producers
- Small-scale producers

Latin America S. Asia S.E. Asia Sub-Saharan Africa

UNDER-FIVE MORTALITY
Under-five deaths per 1,000 live births

NEONATAL MORTALITY
Neonatal deaths per 1,000 live births

HIV
New cases of HIV per 1,000 p
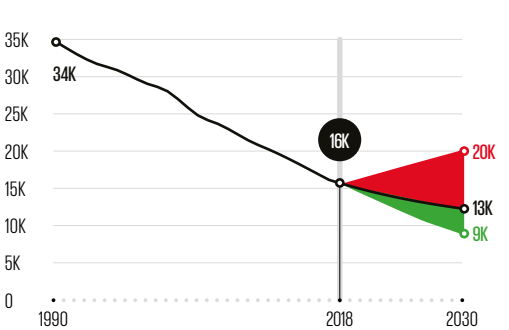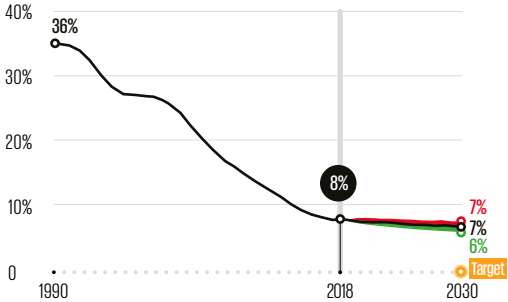
MALARIA
New cases of malaria per 1,000 people
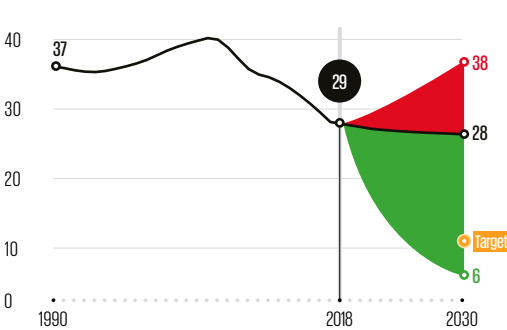
FAMILY PLANNING
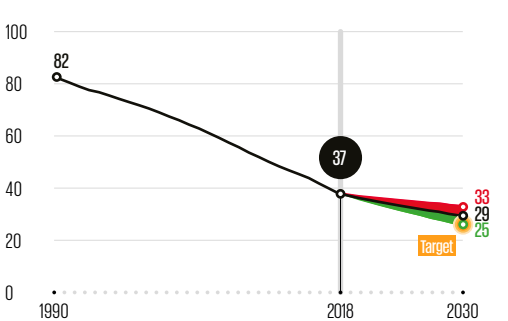Percentage of women of repr their need for family plannin
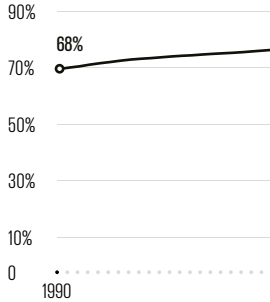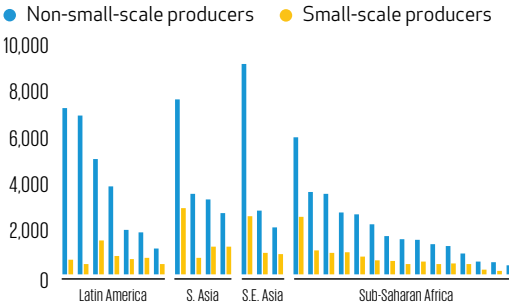
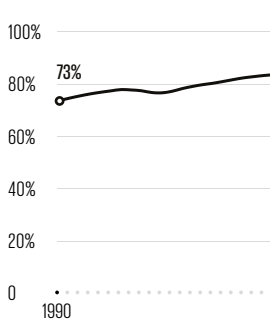## SMOKING
Prevalence of current smoking in populations age 10 years and older
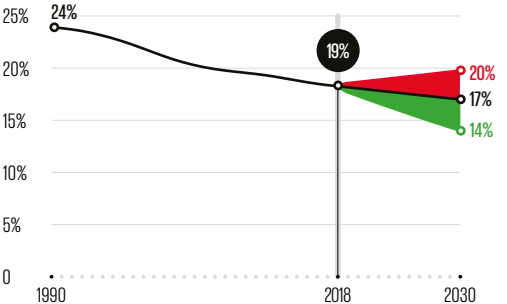
VACCINES
Coverage of DTP (third dose)

THE GLOBAL GOALS
For Sustainable Development

1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS
THE GLOBAL GOALS

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