The Magazine

2.18

Africa

Will the next Einstein be from Africa?

New generation
The Next Einstein Forum is bringing young scientists from the continent together

Reconciliation in Rwanda
Where the victims and perpetrators of the genocide live as neighbors

Please don't help?
Putting development cooperation to the test

Robert Bosch Stiftung

Dear Readers,

It's high time to show a new side of Africa! When it comes to this continent, there is more to discuss than what tends to dominate the headlines – hardship, corruption and war. This issue primarily focuses on the potential of its talented young people. Take, for example, scientist Tolullah Oni from Nigeria, shown on our cover page. She is one of the fellows of the *Next Einstein Forum (NEF)*, the largest African science conference to date – which took place for the second time this year. The *NEF* was created in partnership with the Robert Bosch Stiftung.

Our involvement in Africa has many other facets. Read, for example, about impressive people working toward peace and the resolving of conflicts, or learn why an African *Robert Bosch Academy* fellow considers development aid a mistake.

We hope you enjoy the read!

Joachim Rogall, Uta-Micaela Dürig, Sandra Breka, Hans-Werner Cieslik
Board of Management of the Robert Bosch Stiftung

You'll encounter some of Africa's best young scientists in this issue. They are *Next Einstein Forum* fellows – an initiative created by the African Institute for Mathematical Sciences (AIMS) and the Robert Bosch Stiftung.

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A Continent in Flux

Expensive milk, smartphones, Nollywood – this, too, is all part of Africa.

Africa has the second-largest market for mobile phones after Asia.

61 million children of primary school age do not attend school.

Nigeria's film industry produces more feature films each year than Hollywood does.

At least

1/3

of researchers born in Africa live and work outside of Africa.

7 out of 10

of the best universities in Africa are located in South Africa.

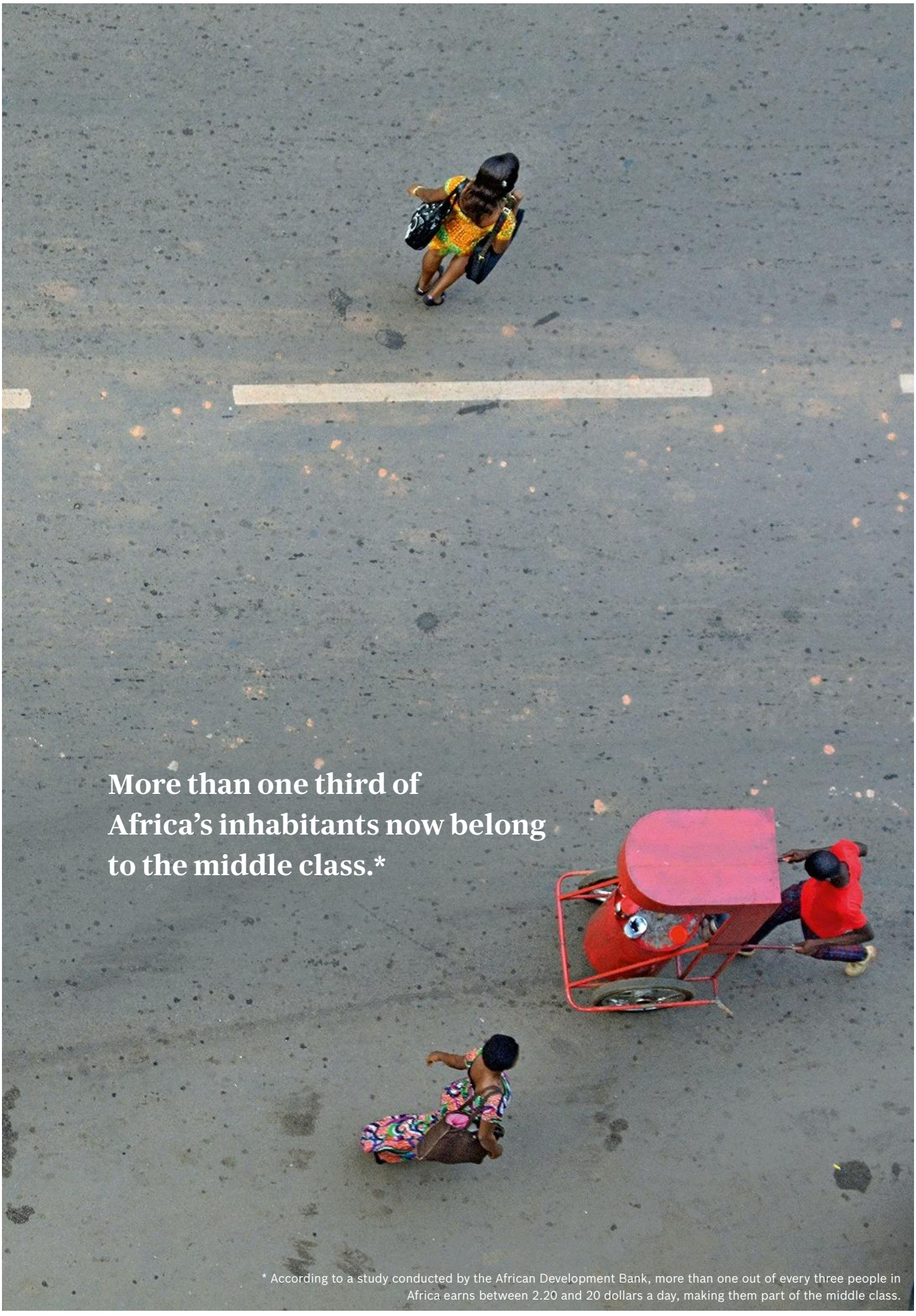
In Luanda, Angola's capital, a liter of milk costs 2.43 euros.

The city is one of the most expensive in the world.

4 trillion

US dollars have been distributed as development aid since 1960, yet living conditions have failed to improve. Africa's share of world trade shrank in the same period from seven to just under three percent.

Sources: Swiss newspaper *NZZ* from 11/20/2014, 2017/18 UNESCO Global Education Monitoring Report, German newspaper *DIE ZEIT* from 8/25/2016, Times Higher Education World University Rankings 2018, 2017 Mercer Cost of Living Study, Stiftung Marktwirtschaft (Foundation for Market Economy), "Argumente zu Marktwirtschaft und Politik," No. 128, 1/15, Claus Stäcker, Head of Programs for Africa at German news outlet Deutsche Welle, dw.de from 7/13/2017, African Development Bank, 2010 UNESCO Science Report



More than one third of Africa's inhabitants now belong to the middle class.*

* According to a study conducted by the African Development Bank, more than one out of every three people in Africa earns between 2.20 and 20 dollars a day, making them part of the middle class.

Text and research: Jan Abele | Photos: Kent Andreasen (2); Nick Turner/EyeEm/Getty Images; Edouard Tamba/unsplash

Tolullah Oni
If you're hoping to bump into Nigerian physician and epidemiologist Tolullah Oni, the best place to do so is during an early morning run at 6 a.m., as our photo demonstrates. Oni is so in demand that her time is limited, to say the least. The physician researches the relationship between disease progression and social and economic conditions. She was born in Nigeria in 1980, studied medicine in London and is currently teaching at the University of Cape Town.

Doctor 2.0

Tolullah Oni thought she would become a heart surgeon, but then she discovered the healthcare sector and she changed track.

I was just eight years old the first time I saw an open-heart surgery. In a report on television, performed on a child the same age I was. To this day, I have no idea why it was being shown on television. I only know that it fascinated me and, even at such a young age, made me think, "How do the insides of the body work?" And: "I have to become a heart surgeon."
I was born in Lagos, Nigeria. I am the second of four children, my mother teaches French and my father is an executive at a company. They were my support system. They always encouraged me. When I got the opportunity to attend secondary school in the United Kingdom, my parents, bearing in mind my early desire to become a surgeon, chose Epsom College, which was founded by a British Royal Medical Foundation doctor more than 150 years ago. I experienced yet another boost towards my professional career during my last year as a medical student at University College London. I took an elective course in international health, a subject somewhat on the peripheral, unpopular side. It became my subject – and that academic year my "year of thinking." It was the first time that I perceived medicine a science. All of a sudden there were more questions than answers: about the development and outbreak of diseases, the economic and social conditions and the measures to take in order to stem the tide of an epidemic. I worked for Doctors Without Borders and spent a year working in intensive care in Australia, but the idea that people's environment and behavior itself could influence diseases had already taken hold of me by that point. Things really came home to me while working on a research project: patients with a chronic illness were supposed to take medicine at specific times of the day. However, the project never ended up taking place and they were never given the medicine – simply because they didn't own a watch! Yet even though they didn't have a watch, they knew very well what time it was due to other factors, such as the position of the sun. These small but crucial questions are what make up my work. And I want to share this enthusiasm with my students as well. I want to contribute to the pool of knowledge surrounding disease patterns – and about the impacts urbanization has on health. I want to focus on health, not on disease. To do so, I started a project at my university called the "Urban Health Group," which allows for an exchange of knowledge about disease prevention between different areas of expertise. The image of being a heart surgeon survived quite a long time, by the way. A distant uncle came to visit me once during my studies in London. When he greeted me he said, "So, you're the heart surgeon." I had by then already forgotten that image. What had remained with me was the connection to the child of the same age undergoing that operation. It unleashed something so special in me: the knowledge that we are all connected to one another. The awareness of this connection is what shapes my work.

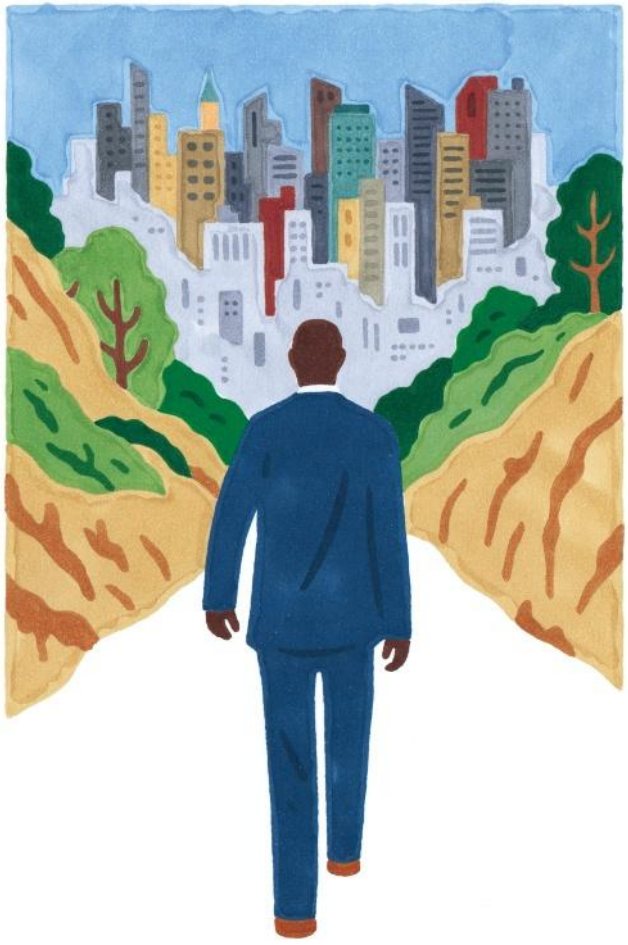
"I want to focus on health, not on disease."

Text: Nicole Zepter | Photo: Lêmrich

Should I Stay or Should I Go?

My home is science

Tolulope Olugboji, 35, New York
Maybe I always knew what was missing, but I couldn't put a name to it. When I came to the USA as a student, I could see it: the normality of research, the openness to new ideas and world-class mentors who constantly gave me support. I was born in Lagos as the eldest of four children. I come from simple roots: not particularly rich, not really poor. My mother is a civil engineer but earned money as a teacher when my father lost his job. She was also the person who made sure that I did my math homework. Another milestone for me came at the end of the 1990s. Our church received a computer. Because my uncle worked there, I got the chance to sit down and use it. The first time I sat there, I thought, "What a machine. I have to become a computer scientist." After completing my bachelor's degree in computer science in Nigeria, I worked as an engineer at a computer company. I could have worked for start-ups or banks, but I was looking for an opportunity where I could set up a career for myself as a scientist. And the options for me to do so were limited. It was disappointing. What followed would impact the rest of my life: I successfully applied for a scholarship at Yale. I received my doctorate in 2014. The route I took is based on my own personal choice. None of my siblings followed in my footsteps. They all stayed in Lagos. My sisters work as a teacher and a nurse, and my brother is just finishing school and has his heart set on becoming a graphic designer. This summer I will start working as a professor at the University of Rochester near New York. Would I want to go back to Lagos? Certainly not right now. I would find myself too busy setting up institutions, instead of being able to pursue my own research. However, I am using my connections, in particular through my *NEF* fellowship, to try to establish a geophysical observatory. I hope to be able to use my work to better understand the structure of the African continent. The *Next Einstein Forum* has meant a lot to me – it is so rare to be able to look up at so many African mentors. And African schoolchildren and university students have come to me and asked with sheer astonishment, "What? You're black, you're African and you're a doctor of science?" My home is science. Regardless of this, we Africans all have an African soul, no matter where on the continent we originate from – whether it's South Africa or the Maghreb. Yet I find myself becoming more and more American.



Text: Nicole Zepter | Illustration: Hisashi Okawa

Two *NEF* fellows, two paths: Chemist Ghada Bassioni chose to go to Cairo, while Nigerian geophysicist Tolulope Olugboji has been teaching in the USA for years.

I want to give something back

Ghada Bassioni, 43, Cairo
I am multicultural. My mother tongue is German; my home is Egypt. My family lives here, and this is where my scientific career began. As a professor and Head of the Chemistry Department of the Faculty of Engineering, as well as German-Egyptian Coordinator of the Science and Technology Development Fund within the Egyptian government, I find myself moving between these two worlds. I not only find myself taking care of funding and support locally, but also fostering cooperation between German and Egyptian scientists. I came to Germany with my parents as a small child. I could understand Arabic, but I only spoke in German. My parents are both professors and came to Dortmund in the 1970s on a doctoral scholarship. When we were back in Cairo, they sent me to the German school. This is why I grew up, loosely speaking, with German order and Arabic warmth. Egypt has made it easy for me to balance my life in science with motherhood. I finished third in my class and immediately landed a job at the university upon graduating. Shortly afterwards I had a daughter. I never sought to

“I believe that, as an individual, you can achieve a great deal.”

leave Cairo. It has always been my home. That’s why I’m here. I had the opportunity to take time off as a mother, to spend several years in Germany and the USA and to complete my doctorate at the Technical University of Munich. During my time at that university, I was elected to become the women’s representative. In Germany, I was able to pass on a lot of what had benefited me here in Egypt. I also think that, as a woman, it’s important to find the right partner. My husband, who is now a professor as well, saw my potential and has always supported me. Later, I spent four years setting up a lab in Abu Dhabi. Ain Shams University in Cairo is and remains my focus, not least because I was able to keep my position during this whole time. I am really not missing out on anything. Sometimes I miss having a good lab. In that respect, I do face a bit of a dilemma. As a ministerial representative, I am not entitled to apply for a grant myself. But everything in its own time. Ain Shams University has done so much for me; I want to give something back. I believe that, as an individual, you can achieve a great deal. And history is repeating itself: today, my eldest daughter is studying medicine. Just like I did – in Egypt and in Germany.

Text: Martin Petersen | Photos: Lena Giovanazzi

Ready for Takeoff

Young director Mbithi Masya spent a semester in Germany. Shortly before his return to Kenya, he takes a look at filmmaking here and there – and at its importance to society.

I still have three days before I return to Kenya. For four months, I was fortunate enough to be able to attend an international masterclass at the Film Academy in Ludwigsburg together with a wide range of people from all over the world – a truly unforgettable experience. I'm only just beginning to process what I've experienced.

Over the past few months at the Academy, I was able to start developing my next film with the help of a mentor. But I also had the opportunity to see a lot of German films. This taught me to appreciate the impact film can have on society. I believe that that is precisely why Germany invests so much money in public film funding – and I absolutely have to bring this knowledge back home with me. Germany is like a whole book full of movies that let you understand the Germans better. I'd like to give an example. I watched a documentary by Ella Bergmann-Michel from the 1930s. You could see Nazi flags and communist flags hanging outside. An election was soon to be held. People had their hopes and fears. The film helped me understand that the Nazi dictatorship came about gradually, and that some people, including the filmmaker, were against Hitler.

East Africa is a difficult place for a filmmaker because we do not benefit from any public film funding as filmmakers do in Germany. Most African filmmakers have to figure out a way to somehow make some money on the side. I myself came to filmmaking by chance. My parents were both civil servants. While I was studying in Nairobi, I made a few friends and ended up founding an artist group and making music with them. It was through the music videos we would film ourselves that I began to develop an interest in storytelling, and I decided to try my luck in film. We had enormous success with my first film, *Kati Kati*. It won the Prize of the International Federation of Film Critics at the 2016 Toronto Film Festival and was then shown at more than 40 festivals across several continents.

Because equipment is getting less and less expensive, a new generation of filmmakers has cropped up in East Africa that is able to write and film productions on its own. This comes with the advantage that you end up with completely different exciting films. I am interested in the unnecessary burdens we carry around with ourselves. Since gaining our independence, there have been a few events of national importance in Kenya – terrorist attacks and outbreaks of violence after various elections – and we never talk about them publicly. The government stays silent. My film, *Kati Kati*, is a commentary on this, which, in turn, led to some articles, a lot of discussions on social media and some good talks at film premieres. That is exactly what I wanted to create with my film. To my mind, any kind of art that gets people talking with one another is a good thing.

> **"Any art that gets people talking with one another is a good thing."**

Now I'm going back home, and I'm looking forward to it. I believe I will be taking a lot back with me: not only technical skills, but also in terms of my worldview. I've gotten to know and love people from Palestine, Brazil, Bahrain and Sri Lanka here. My view of the world as a whole has broadened. I'll miss the trains and the German beer. It's funny that you drink beer as if it was tea.

Talented filmmakers from East Africa

Mbithi Masya achieved broad international acclaim and won several film prizes with his debut film, *Kati Kati*, which follows a woman in the mystical world between life and death. Mbithi Masya received a scholarship for young East African filmmaking talents from the Robert Bosch Stiftung to attend the Film Academy in Ludwigsburg as a guest student for the 2017/2018 winter semester – to develop ideas for his next film projects, among other things.

TEXT
Linda Tutmann

PHOTOS
Lêmrich

The Next Einstein Will Be from Africa

A look at the future
Attendees of the *Next Einstein Forum* wait outside of the Convention Centre in Kigali for the next talk to begin. For many, this is the first time that they will meet world-class African colleagues and mentors.

In Kigali, African scientists got together at what is currently their continent's largest science conference. We accompanied *Next Einstein Forum* fellow Hamidou Tembine.

Hamidou Tembine stands at the side of the stage in the Convention Centre in Rwanda's capital city of Kigali, slowly breathing in and out. The air conditioning has cooled the room to a comfortable 68 degrees Fahrenheit. It is the rainy season, but at the moment the sun is shining down from a nearly cloudless sky. A moderator stands on stage, calling each speaker one by one in a firm voice. Five scientists, each of them has ten minutes to present their research. Tembine knows that is not much time. He's got to keep it short and quickly gain the audience's attention.

He steps behind the curtain, where the audience can't see him. He briefly raises his arms like a priest asking for God's blessing. He performs this little exercise before every appearance. A colleague showed him this trick years ago to calm his jitters and steady his breathing. Chest out, breathe in, breathe out, let the arms down slowly. Then he steps forward into the spotlight. Along with the four other speakers, Tembine is here today because, as the moderator puts it, he is one of the brightest minds in Africa. They are all fellows of the program with the visionary claim that "the next Einstein will be from Africa." Altogether 16 African scientists were selected for the program in 2018 – from Egypt, Senegal, Ethiopia and South Africa. The cohort includes a climate researcher, an astrophysicist, computer scientists and human geneticists. They are spending these days to meet in Kigali for the *Next Einstein Forum (NEF)*, currently the largest science conference in Africa. With researchers from around the world as well as politicians and experts from the business world, they come together to exchange ideas and talk about how to advance the position of the continent. Tembine's eyes wander across the hall. He doesn't recognize any faces, but he can guess who is listening out there in the audience. The Rwandan president Paul Kagame is there, as is Nobel Prize winner Klaus von Klitzing. The audience applauds, and Tembine smiles self-consciously. Many in the audience are convinced that he, too, has what it takes to someday win a Nobel Prize. Hamidou Tembine, 35, born in Mali, son of a simple farmer, schooled in France, now Professor of Electrical and Computer Engineering at New York University. He is wearing a black suit, black trousers, a white shirt and black shoes. Seven of these suits hang in his closet – one for each day of the week. He is sometimes away

from his New York apartment for weeks on end, so he doesn't often have enough time to have his suits cleaned. "Bonjour Mesdames et Messieurs," he says, greeting the audience in French and then once more in English: "Ladies and Gentlemen." The audience once again applauds. "Who of you would be interested in cooperation?" he now asks. A rhetorical question, of course; now he has the audience's full attention. Five years ago, Thierry Zomahoun, President of the African Institute for Mathematical Sciences (AIMS), started the *Next Einstein Forum* together with the Robert Bosch Stiftung. The aim is to foster top African researchers, but also to raise their profile in the world and bolster networking with other scientists and decision-makers.

A lot has happened since then. The Forum's first global meeting was held in Dakar, Senegal, in 2016, where the first cohort of *NEF* fellows was also presented. During the three-day event in March 2018, more than 1,500 researchers, politicians and scientists from all over the world made the journey to attend. Paul Kagame opened the conference and shared the stage with Senegalese President Macky Sall for a talk on the second day. Science and education are key topics in a young continent like Africa – of that the two presidents are certain.

"It went well," says Tembine as he exits from the stage. "At some point you get used to speaking in front of people." He gives talks in Seoul, London, Paris, New York and Shanghai, i.e., in Asia, Europe and America, but hardly ever in Africa. It's a paradox; of the 60 conferences he attends every year, maybe four are held on the African continent. In Morocco, Egypt, South Africa, and sometimes in Ethiopia.

Tembine is now standing at a bar table in the foyer, eating something for the first time today. As a child in the Malian steppe, there was seldom anything to be had for breakfast. His family had meat perhaps twice a year, and the first meal of the day was often lunch. It remains his favorite meal to this day.

"That's enough," his parents had told him after he had attended school for four years. He had to walk an hour to get there and to get back again. He could now read and write – what more could he want? Why should he continue to go to school, spending time there instead of in the fields where his help was needed to herd the cows and during the harvest? He was the first in his family to understand what an alphabet was, how to differentiate between an A and an O. It is all thanks to his uncle that he was able to switch to a different school to pursue his education – one that was over 20 miles from his parents' house. The course of his life reads like a modern fairy tale. The boy from the countryside meets a French couple at a mathematics competition. They are impressed by the boy's intellectual curiosity and will to learn. They later adopt him and bring him to France. At the time he is twelve years old, doesn't speak a word of English, doesn't speak a word of French and has no idea where Europe is. "I was lucky," he says today. "I have two sets of parents."

When he later calls his Malian parents from his hotel room, he will say that he is travelling, he will ask about his sisters and the cows and his uncle's health. His Malian parents think he works with computers, even though they've never even touched a computer. "And in some ways, that's true," he smiles. His French parents know that he has completed three master degrees in economics, mathematics and computer science. They know his university, the famed École Polytechnique in Paris – and they have some idea of what he does in New York and

Room for ideas
Africa's scientific elite gathers under the dome roof in Kigali's Convention Centre.

In conversation
Hamidou Tembine (on the right) in a discussion with a colleague during the break in the garden of the Convention Centre.

African forces at play
It's also the sense of community that many African scientists take with them after attending the conference.

what his research is about. They know that he works on intelligent transportation systems, with mathematical models that calculate the flow of traffic and that can also predict where traffic will and won't accumulate.

His research is important, especially for the African continent, where megacities are cropping up that will only grow further in the years to come. In 2040, the urban population will overtake the rural population on the continent. Infrastructure, water supply, access to electricity and transport must be geared towards this mass of people. His French parents are both teachers. He can explain to them that the *Next Einstein Forum* is not just there to make sure more scientists come from Africa in future, but is also there to ensure that they stay there or at least come back, so that African research can benefit the African continent as well – not just Europe or the USA. Tembine will also be looking at traffic congestion in Lagos, Nairobi and Accra, not just in New York.

www.bosch-stiftung.de/nef-fellows
You can find the video report of the special "spirit" felt at the *New Einstein Forum* in Kigali on our website.

An Updraft for Science in Africa

The *Next Einstein Forum* is an initiative created by the African Institute for Mathematical Sciences (AIMS) and the Robert Bosch Stiftung. The aim of the Forum is to raise the profile of top African scientists and promote Africa as a location for science. The format of the *NEF Global Gatherings* came about in 2016: more than 1,200 representatives from the spheres of science, politics, business and the media traveled to Dakar to attend what was then the largest pan-African science conference. It is now held every two years – this year in Kigali and in Nairobi in 2020.
In addition to the *Next Einstein Forum*, the Robert Bosch Stiftung supports a wide range of projects for science in Africa. It promotes, for example, the *African Science Leadership Programme (ASLP)* in its efforts to train African scientists in management and leadership. Also, with the project *Script* for scientific journalists, it seeks to improve reporting about science in Africa. In addition, the foundation is partnered with the *Research College on Sustainable Cities*, a pan-African research network that is developing interdisciplinary scientific groundwork for urbanization and sustainable urban development in Africa.

A new generation

The 2018 *Next Einstein Forum* fellows are not just the most innovative scientists in their fields, they also passionately support Africa.

Peter Ngene, chemist

When Peter Ngene travels through Africa, he never ceases to be amazed: by the hope and the continent's power of resistance, which seems to radiate from the population, even those living in greatest poverty. According to Ngene, the rest of the world can learn from Africa's positive attitude. He was born in southern Nigeria and now teaches at Utrecht University. He developed his keen interest in the natural sciences at school under the special tutelage of a teacher there. He studied chemical engineering in Nigeria and completed his doctorate in the Netherlands, where the Royal Dutch Chemical Society honored his doctoral thesis as the best in his field. Ngene's research focuses on developing new materials to store renewable energy like sun and wind.

Aminata Garba, engineer

Aminata Garba was born the daughter of an engineer and a teacher in Niger. Her father would often say, "No matter what happens in your life, nobody can take your education from you." Today she is Assistant Teaching Professor at the Institute of Electrical and Computer Engineering at Carnegie Mellon University in Kigali. She is also Director of the Kigali Collaborative Research Center. Garba studied and completed her doctorate in Canada, after which her desire to return home brought her back to the African continent. "I always knew that I would come home," she says. Her research focuses on the intersection between technology and policy. The panel she sat on at the *NEF* was called "Driving Innovation through Africa's Digital Economy," where, as often when part of a panel, she was the only woman. This doesn't put her off: "During my studies the men were in the majority. I'm used to it." 40 percent of *NEF* fellows are women. "The tipping point will come," says Garba. And that is also one of the goals of the *NEF*: to encourage women who have an even more difficult time in what are often patriarchal structures than their male counterparts.

Text: Nicole Zepter | Photos: Lêmrich

Yabebal Fantaye, astrophysicist

During his second year at Addis Ababa University, Yabebal Fantaye, who was studying mathematics and physics at the time, helped repair the institute's damaged telescope, which gave him the opportunity to observe the craters of the moon and the moons of Jupiter. He was fascinated. He continued to research celestial objects and learned that the constellations Cepheus, Cassiopeia and Andromeda were also known as the Ethiopian king, queen and princess. That was the final bit of inspiration he needed to turn his full attention to the cosmos. After studying abroad in Trieste and Oslo, the postdoctoral cosmologist now researches the origins and expansion of the universe at the African Institute for Mathematical Sciences (AIMS) in South Africa. There, Fantaye holds the position of *Areté Junior Research Chair*, which is part of a research initiative launched by AIMS and the Robert Bosch Stiftung that provides talented mathematicians with support for their research for a five-year period. To get more young people from different disciplines interested in astrology, he drove a bus through his country together with social scientists, fashion designers and artists. The project was called "Astrobus Ethiopia." "We live in such incredible diversity. We have so many different languages and cultures," says Fantaye about his continent. He says that from Africa one can learn how to be tenacious, even in very challenging situations. His vision? "The continent needs an economy that enables its citizens to dream about more than just basic standards."

Sanushka Naidoo, molecular biologist

Pointing out that the population is set to double within the next 30 years, molecular biologists and plant geneticist Sanushka Naidoo says that Africa needs to invest in its young people. By that point, half of the population will be under 20 years of age. Naidoo was born in a small town outside of Durban in South Africa. Her parents, both teachers, encouraged her to ask questions from an early age. When she was at school, Naidoo would take part in Math Olympics competitions and joined an animal and plant club. A truly formative time: she created a complete ecosystem on the school playground and went on excursions to Hluhluwe Imfolozi Park, northeast of Durban. Today, Naidoo researches and teaches at the Institute for Genetics at the University of Pretoria. With the better understanding of plant systems, the scientist seeks to improve harvest yields in Africa. Her focus is on the plant-pathogen interactions in eucalyptus and pines – and on supporting her students. Naidoo has so far advised 20 doctoral students and helped them to successfully complete their degrees.

"What Africa Needs Is Peace"

INTERVIEWS
Peter Browning,
Martin Petersen

ILLUSTRATION
Lisk Feng

Entrepreneur and philanthropist Mo Ibrahim and former German Federal President Horst Köhler outline their vision for the future of Africa – and lay out the steps to make it a reality.

Mr. Ibrahim, at the Bosch Foundation's *Next Einstein Forum* in Rwanda, there were a great many Africans attending from American or European universities. You grew up in Egypt and went to the UK to go to university. How much did this help you to be successful?
It was absolutely important. I wouldn't have been successful if I hadn't done my doctorate and research in the UK. But to attend a university where you have a diversity of nationalities that are free-thinking is also important. I met revolutionaries from Zimbabwe, people from South Africa, the ANC. It was interesting to learn more about Africa in Europe than I would have done in Egypt or Sudan.

You developed the Ibrahim Index of African Governance which shows which countries are performing best according to different metrics. Do you have a vision for the way Africa will most effectively develop?
We chose governance, it's the big elephant in the room. People think it's about corruption, but it's not just about that. It's about service delivery, about how we organize society, how we deal with people. It's about the rule of law, infrastructure, human development. We have a number of unfortunate conflicts in Africa. The root of them has always been bad governance: you discriminate against a minority, you steal and you deprive people of their rights, you have

"The opportunity is interconnection between African countries."

Mo Ibrahim

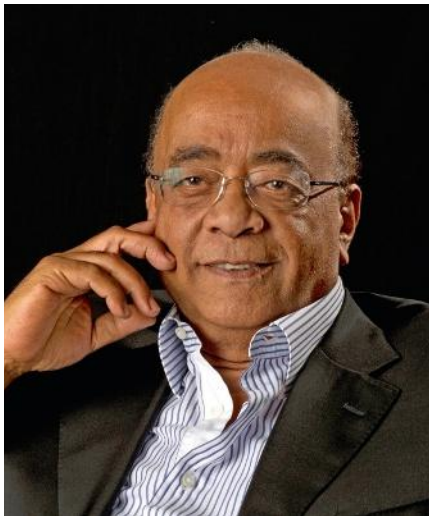
a xenophobic government. When people feel they have been disenfranchised and they fail to impose their will through the ballot box, what do they do? They pick up arms. Once you have conflict, forget about development. So we really need peace in Africa. Then we need to co-operate with each other as countries. I believe the common market was the great achievement of the European Union. Africa needs it more than Europe. We have too many small countries which find it difficult to punch above their weight. It's really important for us to come together and then we'll have a bigger voice. It needs a political will from African leaders. It needs an active enlightened civil society because shared sovereignty is still sovereignty.

What are the biggest economic opportunities for Africa today?
In the past our infrastructure was mainly going towards the sea, from the mines to the ports. Each colony was just shipping out whatever it had to the mother country. The opportunity is interconnection between African countries. At the moment the intra-African trade is only about 18 percent of the total. How can it be 18 percent? In Europe it is over 50 percent. Our biggest market should be Africa.

By 2050 one fifth of the world's population will hail from Africa. What could be done to enable the young generation to fulfil their potential?
According to the Index, education is one of the biggest improvements. But it's still a long way to move forward. Who's going to build Africa's infrastructure? Who's going to build the ports, the airports, the roads, the telecoms networks, all these arteries of commerce and business? It's not just shoving people toward university. We don't need so many people sitting at desks and pushing paper around. What we need are people with skills. In some countries like Egypt, a plumber earns more than a lawyer.

The Ibrahim Prize for Achievement in African Leadership is the biggest prize given to an individual worldwide. The idea was to make it an annual award, but since 2007, it has only been awarded five times. Why?
Let's assume we give this prize to European leaders, would we be able to give it every year? It's for this kind of decisive leadership, that comes and changes things and does things and leaves with integrity. When we launched the prize, we said we didn't expect to give it every year, so don't be disappointed. We have to keep our standards, otherwise we lose credibility.

It's one thing to have one's values and another to try to export them to others. What makes you do this?
As human beings we have duties. We come to this world and we consume, consume, consume. What do we give back? In my case I've done business, I've succeeded, but then what? In this phase of my life, if I have one or two things that can be useful to my people, why don't I offer them? What's the point of spending my life on a beach drinking champagne? That's an empty life.



Mo Ibrahim was born in Sudan and studied in Egypt and the United Kingdom. In 1998, he founded the company Celtel International to set up and operate mobile communication networks in Africa. Celtel became one of Africa's most successful companies. Today, Ibrahim works to promote good governance in Africa. In 2006, he established a foundation dedicated to this aim: the Mo Ibrahim Foundation.

Photos: Mo Ibrahim Foundation; Dennis Williamson

"Our fate is tied to Africa's."

Horst Köhler

Why should we be concerned with Africa, Mr. Köhler? After all, there are already enough major challenges on the international stage at the moment: Brexit and crumbling European unity, provocateurs like Trump, autocrats like Putin and Erdogan.
You're right; our international order is crumbling at an alarming rate. One of the primary causes for this collapse is that we have, as yet, been unable to guarantee the ability to shape national policy in an era of global interdependence. Of course we could shut ourselves off from the rest of the world, the approach advocated by populists of all stripes. But that won't solve any of the challenges we are facing in this century. In fact, our fate as Europeans is closely tied to that of the people on our neighboring continent of Africa. Europe cannot have a bright future unless Africa does, too.

In recent years, the EU's approach to Africa has been to focus on combating the causes that lead refugees to flee to Europe. Isn't that a hypocritical and fundamentally selfish motive? Do you think that's ethical?
It would be an enormous strategic mistake to limit our cooperation with Africa to the refugee issue. We need Africa as a partner, not as a gatekeeper. And we should be honest with ourselves about what "combating the causes" of the flight of refugees really means, and what we can and can't do in the short term. Development in Africa is an enormous strategic task for the entire world. There are no "quick fixes," and the contributions toward a solution won't be limited to Africa either. For example, Germany needs immigration laws that regulate migration and lead to a creative exchange of people and ideas. When we talk about combating the root causes of the flight of refugees, we're obscuring important elements of the context. I don't know whether that's unethical, but I don't think it's a particularly wise political move.

You are calling for a fundamental change of outlook in Germany's policies toward Africa. It's projected that Africa will be home to one fifth of the world's population by 2050. Against this backdrop, what do you think future-oriented policies toward Africa should look like?
The largest-ever generation of young people is growing up in Africa right now. We need to finally come to grips with the global political, economic, and environmental dimensions of this challenge, rather than leaving our policies toward Africa in the passenger's seat of development policy. The IMF has calculated that 18 million jobs would have to be created for young people in Africa every year to meet the demand! Do we really believe that "more of the same" will be enough? Rather than just sending another million euros once in a while, we need to reassess our policies from the ground up. Do our agricultural policies, our tax, financial market, and trade policies really contribute to job creation and income in Africa – or do they actually make the situation worse? I have no doubt that Africa has the potential to become a new global center of growth. Africa and Europe, especially, must work together to create the conditions to make that happen. That will require intelligent cooperation between governments and businesses. The "Compact with Africa" initiated by the German federal government and the G20 is a step in the right direction. The German economy, including small and medium-sized businesses as well as large corporations, needs to get involved in creating new growth markets in Africa in a strategic, proactive way. That would be a forward-looking policy for securing domestic prosperity and stability as well.

Horst Köhler holds a doctorate in economics and joined the civil service at the German Federal Ministry of Economics in 1976; he was later appointed state secretary at the German Federal Ministry of Finance. After his time in the German federal government, he held a variety of posts, including President of the European Bank for Reconstruction and Development and, from 2000 to 2004, Managing Director and Chairman of the Executive Board at the International Monetary Fund. From 2004 to 2010, Köhler was the President of the Federal Republic of Germany. He is considered an expert on Africa and still holds a number of international posts that allow him to campaign for a better partnership with Africa.

“We Are Not Afraid of Our Dreams”

TEXT
Eva Wolfangel

PHOTOS
Ériver Hijano

A young, energetic generation wants to change Africa. These “Afropreneurs” are using cutting-edge technology to do so. A visit with Joseph-Olivier Biley, who wants to revolutionize agriculture using drones and artificial intelligence.

Ben holds the bulky trunk in front of himself with both hands, like a cage with a very rare animal inside. He carries it past the rubber factory with its filthy white walls. The acrid smell of hot rubber hangs like a shroud over the rubber plantation Tropical Rubber Côte d'Ivoire (TRCI), but Ben hardly takes notice of it. He carries his precious cargo past the seedlings to the right of the path and the child-sized saplings, past the rubber plantation's soccer field, where children are training for the national soccer league, over to the small path that leads into the thicket of large trees. They provide welcome shade, forming an enormous, dark forest. But Ben doesn't feel the heat burning his skin through his black shirt. The young man gently sets the trunk down, opens it up, removes a rotor, carefully blows on the screw thread and inspects it thoroughly from all sides through his red-framed glasses. He takes out more rotors and a drone, to which he delicately attaches one rotor after another.

The children abandoned the soccer field quite a while ago, and now they surround Ben from all sides – he's barely older than the eldest of them. He is so focused on the list in front of him that he hardly notices the commotion around him. "Make sure that the propellers are firmly attached" – Ben makes a check mark on his list. That's followed by check marks for "Test the memory card," "Make sure the controller battery is charged," "Check the settings in the smartphone app," and, finally, as he gingerly places the device on the sandy ground, "Select a good starting surface." And while he says "Flight preparation complete" into his headset, the rotors already begin to whir; the noise gets louder and louder and sand sprays in all directions as the drone takes to the skies. Ben watches it drift away for quite some time, then he turns to the children and smiles proudly, as if to say: "Look at what's possible! Fight for your dreams" – because that is what he has been doing since he was old enough to think. And when, six months ago, a real entrepreneur came to his school and wanted to meet him, that was when he knew his dream might really come true: his dream to become a developer, work on advancing cutting-edge technology, and help his native country in the process.

Since then, the quiet young man has been working for the start-up WeFly Agri, launching drones from this enormous rubber plantation in an effort to improve lives. "I can make a real change here," he says. He wants to use technology to make the problem-stricken agricultural sector in his country more efficient, allowing more people to make a living from it and, ultimately, ensuring that more people in the world can be fed. "We young people are Africa's present, not its future," he says, almost a little defiantly.

The drone follows an elaborate flight path over the children's heads; it takes a photo every two seconds, gathering material for a detailed map of the entire plantation – an enormous area that no human being could ever survey, at least from the ground.

Experiencing the perspective from the ground was key for Ben's boss Joseph-Olivier Biley, the founder of WeFly Agri, who returned to his home country from Silicon Valley in 2017 at 24 years of age, full of energy, and with two bachelor's degrees in marketing and finance and a master's in management.

He saw problems everywhere – and viewed every single one as an opportunity. "There's a solution for every problem," he says, walking through the plantation. That includes the problems that he and his father once experienced and that reunited them as a team after a long time apart.

Because of a war in their home country, Joseph-Olivier Biley and his mother spent a number of years in France, always missing his father. Biley ultimately returned to the Ivory Coast to finish school, then went on to study in Paris, London, and Chicago. In Paris, as one of the top eight students in his business college, Biley was selected for a master's program in San Francisco, where he basked in entrepreneurial spirit. He could have stayed on in Silicon Valley, "but why would I have done that?" he asks almost indignantly. "Here, I can still do something that changes the game." Why waste time in Europe or America, "at companies that don't have our problems?" Problems like the ones his father faced when he returned to one of his plantations after being away for two years. It was in the north of the country, a four-hour drive from Abidjan when the roads are clear. His father had spoken to the plantation supervisor on the phone regularly, and the supervisor had always assured him that things were going well. His father had sent money and fertilizer. But when he and Joseph-Olivier arrived, instead of the lush oasis they had expected, they found brown, dried up fields; the plants were dead. He felt humiliated in front of his son.

New perspective
The view from above with the drone helps solve long-standing agricultural problems, Biley says.

Afropreneur
Joseph-Olivier Biley returned to Ivory Coast after finishing his college education. "Here, I can still do something that changes the game."

Many property owners in the Ivory Coast are in the same situation as Biley's father: they aren't able to control their fields, and large swaths of land lie fallow, because investing in cultivating them is too risky and too expensive. "If we can convince more people to invest, it will create jobs on the plantations," says Biley. In contrast to Europe with its efficient agricultural sector, his country still has potential, he continues. "The global population is growing, and we are responsible or feeding these people – and we have the land to do it!"

On the drive back from the plantation, Biley's father was silent, until Biley asked: "What if you could visit your plantation remotely?" "I'd be your first customer," his father responded. And since then, Joseph-Olivier Biley has been working on this vision: drones create a precise map of the plantation, showing the current progress of cultivation and any potentially diseased plants. Plantation owners can use virtual reality to "fly over" their land from anywhere in the world. They can make sure that their plants are growing and flourishing.

Yao Boue Justin, manager of the TRCI plantation, stands in the shade of the enormous trees, surrounded by workers in purple and blue suits. He watches as the workers slit open one tree after the next, hanging little

pails on them to collect the white juice dripping from the bark: the raw material for rubber. The plantation manager scrolls through an endless series of photos of trees on WhatsApp, looking baffled. "How am I supposed to make sense of this?" he asks. The workers mean well; they inform their boss whenever there is a problem or they have a question, and they send photos with detailed descriptions of where the affected trees are located. Biley's app is supposed to make all of this easier by automatically linking the photos with precise geodata. In future, Justin will be able to fly directly to the trees in question without ever having to leave his office – just by using a headset.

"At first, I thought this was all some sort of joke," says the manager of the world's third-largest rubber plantation: 1,415 hectares, 600 workers, its own schools, shops, soccer fields – an entire town under the rubber trees, and a factory that produces 160 metric tons per day. He remembers well how one day, Joseph-Olivier Biley, the TRCI president's son, was standing in his office: a young techie with Ray-Ban sunglasses, a Gucci watch, and Nike sneakers. You wouldn't have known it from his outfit, but the young man had a surprisingly good understanding of the problems the plantation was facing. In the pictures that Biley showed Justin during their second meeting, Justin spotted a plant disease that he couldn't have seen from the ground. "That convinced me; it allowed us to intervene early and saved us a lot of trouble." Now, of course, the manager does not consider the whole thing a joke at all, far from it.

And Biley is convinced that much more is possible. The start-up founder hopes to compile an extensive database in partnership with the local Cooperative Union, a group of small farmers who grow food for the regional market alongside export products such as rubber, palm oil, and cocoa. "We're making our app available to small farmers for free," Biley says. "Thanks to the data and the algorithmic analysis of it, the farmers can learn from each other and plant more efficiently." The algorithm in turn learns from everything the farmers do: What volumes of fertilizer led to which results? What helped cure which diseases? When is the perfect time to harvest? How bad was a given storm? There is still a lot to optimize.

Virtual reality
Manager Yao Boue Justin (left) can now get his own personal picture when workers report a diseased tree.

Young, smart, idealistic
Biley says his goal is to keep the most talented young people, like these two software experts, in the country.

"We are responsible for feeding people – and we have the land to do it!"

The day after winning over his father and plantation manager Justin, Biley headed out to the best schools in his native city of Abidjan to recruit the best students to join his project – and Ben was one of them.

The day that Ben's dream came true started out like any other day. As he so often did during lunch breaks, the quiet young man – who had lost his father in the civil war – was sitting on his bed at boarding school, building a robot. The fact that Ben ended up at this school was part of a pattern that had repeated itself frequently in his life: a teacher had called Ben's mother. "Your son is gifted, and you should nurture his gifts." His mother, a single parent working as a secretary, asked Ben: What do you want to study? And he replied: electronics! So after completing elementary school, he was placed at a secondary school specializing in electronics. His mother scraped together all the money she could to pay for evening classes in electronics, as well. The big break came during boarding school. The most gifted students were awarded a government scholarship,

and they even received spending money. “There’s someone here who wants to meet our school’s best students; come quick!” Ben’s roommate called to him around lunchtime. Moments later, Ben was standing in front of “Mr. Biley,” as he still respectfully calls him today, even though everyone in the company is on a first-name basis. “So, you’re one of the best here?” “I don’t know, but I can promise you one thing: I can build anything that has to do with electronics or technology.” None of the teachers or students contradicted him. And with a handshake, Ben was hired.

Since completing his school diploma, Ben has been getting up every day at four in the morning and squeezing into one of the countless minibuses that rush through the dusty streets of Abidjan to be at the office by six. Once he arrives, he can finally catch his breath – as he does today, the day after he visited the plantation. Biley has set up a little open-plan office in a pavilion located in his parents’ garden, a wonderfully shady place with fragrant, flowering trees. The office has an air conditioner, and fifteen computers are humming away. A group of young men are sitting and standing in front of the computers. There is Daniel, for example, who is building a digital map of all the plantations and working on “a Google for agriculture”; or Roland, the young Android developer who wants to create the perfect app; or Aekson, a young aerospace engineer from Zambia who is building his own drone; or Paulin, a young man from a small village in the south who went from being an intern to chief technology officer in the space of three months. Paulin’s grandfather was a subsistence farmer, but Paulin says: “We have to feed the world; we are responsible for doing better than our parents and grandparents did.” All of the young men have this same drive to change their country.

Ben joins them and starts fine-tuning a drone, a model from the leading manufacturer DJI. The sand clogs the rotors; the battery doesn’t last very long. Ben wants to change that. He and Aekson discuss the details of a drone that is about to have its components 3-D printed; it is the first one developed by WeFly Agri.

“Wow, this isn’t virtual reality, it’s reality!”

Drone specialists
Helping his native country with cutting-edge technology was Ben’s dream. Now, it’s time to make it a reality (left: Ben).

The next day, Biley and Paulin present their latest ideas to the manager, Justin, on the plantation. In the meantime, Ben and Aekson crouch on the ground in front of the office, feeding the latest images into a laptop. Workers keep stopping by to joke around with the young men, who have been here so often that they have made friends. Then, Ben unpacks the VR headset, and the workers take turns "flying" around the plantation. "Wow, this isn't virtual reality, it's reality!" one of them shouts. Everyone here calls him "Dr. Rubber"; he has been working on the plantation for 30 years. "This will convince young people to invest," he says, impressed, "and that will protect our jobs!"

Biley senses this excitement for new things among those of his own generation, too. "We're Afropreneurs," he says. "People who love their homeland in Africa and aren't afraid of their dreams but make them a reality." Biley's intuition was confirmed at the Changemaker summit in Dakar that he was selected to attend in 2017. This initiative funded by the Robert Bosch Stiftung provides a networking opportunity for young people who are working on innovative solutions for social, environmental, or societal problems in their immediate surroundings (see info box). These are people who are driven by important issues in development work and want to help each other answer the question: what will help the continent and its people? The Changemaker summits are a place to exchange ideas about visions for society. "There were lots of people like me – people who want to change things," Biley says. That encouraged him. He gets messages from his fellow Changemakers every day in a WhatsApp group. "Now, whenever I need support anywhere in Africa, I know like-minded people everywhere." Exchanging ideas with the other dedicated Changemakers has helped him a great deal, including with his start-up.

The drive back to downtown Abidjan drags on. Painfully slowly, an enormous convoy of vehicles makes its way past countless stands where people are grilling and hawking chicken and sewing clothes from colorful fabric. Ben yawns. Biley, sitting in the passenger seat, glances at his watch and sighs. It's been two hours since they left the plantation, and now nothing is moving. "That's why we're doing this work," he says to his colleagues encouragingly. Every traffic jam only confirms him in his mission. "No one can visit his plantation every day," he says, because the infrastructure just isn't good enough.

"Let me out here; I don't have much farther to go," Ben says finally and slips out between broken-down cars and trucks, under which people are crouching with welders, trying to repair them. Behind them, derelict and unfinished buildings loom. In the thick gray clouds of exhaust from a truck, the slender young man quickly disappears. His present and his future, his old life and his new – they are a contrast.

Changemaker-Xchange

The project *ChangemakerXchange* is a joint initiative of the Robert Bosch Stiftung and the non-profit organization Ashoka. *ChangemakerXchang*e provides an international networking opportunity for young people in the fields of public administration, business, and civil society who are working on innovative solutions for social, environmental, or societal problems in their immediate surroundings. The program is open to social innovators between 18 and 30 years from Europe, MENA, Asia and Africa.

During five-day interexchange meetings, called "summits," the participants deepen their knowledge and further develop their initiatives and business models. They network, receive new incentives through the dialog with other participants and start new projects together. Particularly innovative project ideas receive financial and non-material support after the summit. Since 2012, 370 changemakers from 78 different countries have participated. Overall, 150 cooperation projects have been accomplished successfully and have reached more than 100,000 people. With an additional 13 summits in 2018, the Changemaker network and its impact continues to grow.

Like Joseph-Olivier Biley, many Changemakers are using cutting-edge technology to effect positive change. Some examples include:

Derrick Hosea Opio from Uganda, who launched his OneLamp project to generate clean light with solar technology for as many as one million East Africans by 2020. He wants to reduce the rate of chronic illnesses caused by the toxic vapors emitted from kerosene lamps. His distribution model is based on mobile communications technology that is commonplace even in the inaccessible regions of Africa.

Richard Yoni Ashaba from Uganda, who wants to create a data support system for micro-insurers working with small farmers in Uganda. Both groups will receive precise weather forecasts and risk-analysis data.

Fabrice Iranzi from Burundi, who is developing a media platform to allow people in his country to find balanced information, verify news stories, and freely share their views.

Khalid Machchate from Morocco, who is developing the digital platform Skillearn to make education more interactive, exciting, and affordable, and to connect learners with the right experts.

INTERVIEW
Eva Wolfangel

PHOTOS
Daniel Hofer

Please Don't Help?

Hanna Tetteh was Minister for Foreign Affairs and Regional Integration of the Republic of Ghana. Tetteh was a fellow at the Robert Bosch Academy in Berlin between March and May this year. The program provides fellows with the space they need to go into greater depth of topics outside of their normal scope and engage in an exchange with European decision-makers.

James Shikwati is an award-winning expert in economic development in Africa. He is the founder of the Inter Region Economic Network (IREN), a think-tank for developing innovative strategies to improve quality of life in Africa with multiple trustees presiding over it. He is also a *Robert Bosch Academy* fellow.

More than 4 trillion US dollars have been invested in the African continent since the 1960s, but the living situation of the people there has not improved in the long run. According to economist James Shikwati, to gain economic strength, Africa needs capitalism and self-confident branding. However, former Foreign Minister Hanna Tetteh says the focus should be on promoting infrastructural development and regional integration.

“This help is no help.”

James Shikwati

Ms. Tetteh, Mr. Shikwati, what has development cooperation managed to achieve so far?
Tetteh: Actually, it hasn’t achieved as much as expected because the aims of those giving don’t always align with the priorities of those receiving the aid assistance. That is why I consider policy initiatives like the Marshall Plan for Africa that the German Ministry for International Development is promoting and the G20 partnership with Africa to be much more productive, because they support opportunities for public and private sector partnerships and promoting investment in infrastructure, which is critical to economic growth.

Mr. Shikwati, am I right to think that you share this view?
Shikwati: I would even go a step further and say that this help mindset behind development aid is wrong, since it is anything but a help: it cements problematic relationships, it keeps Africa stuck in the status quo and does not allow for any movement to keep pace with global shifts towards Industrialization 4.0. Traditional development cooperation has not changed any fundamental issues. This help is no help.

Can you give an example of what relationships you believe are being cemented?
Shikwati: Let’s take an example. European companies purchase a gram of vanilla in Uganda for one euro. It’s then processed in their country and ultimately sold on for 345 dollars. This value creation process that enables those in Europe to make 345 dollars out of one euro – Europeans deny Africa this process. This prevents growth. The same is true of the smartphone market. Instead of just purchasing raw materials in Africa, an entire smartphone could be produced there. That would be real transformation. But in maintaining the status quo, Africa’s entry into the global market cannot be realized – as those receiving help are in a poor negotiating position.

Where should we turn to change that?
Tetteh: Something that often gets overlooked in Europe is that Africa is a continent, not a country. There are different challenges across the different regions. In my country, for instance, about half of the population lives in rural areas and are engaged in agriculture, mainly in subsistence farming. The cost to the government of collecting any payments for income tax that were not made voluntarily from our rural communities would likely exceed the revenue to be collected, and effectively whatever tax revenues are generated amount to a fraction of what is required to make the infrastructure investments that would make a significant impact on people’s lives.

That seems like a vicious cycle. The lack of infrastructure prevents people from producing more than they themselves need, and therefore prevents them from paying taxes. And the lack of taxes prevents the state from investing in infrastructure, which, in turn, holds people back …
Shikwati: Yes, but this vicious cycle is man-made, which is why we also have the power to stop it. It is the result of the relationship between Africa and Europe. For example, if a donor contributes to all children under the age of five being immunized against the most harmful diseases in an African country, thereby reducing the child mortality rate, that sounds like a good thing, doesn’t it? But these kinds of activities lead to governments prioritizing making requests for aid – instead of finally taking responsibility for such initiatives themselves. The mentality here needs to change as well, and that is no easy task.

Can you be more specific when you say that the mentality needs to change? In what sense? Is it a question of culture?
Shikwati: I believe it’s more about a strategy of cultivating self-confidence and agency to pitch Africa as an alternate. For example, Europe and the USA engage in economic cooperation and corresponding free trade agreements that spur entrepreneurship among their citizenry. But that is not without its dangers, especially with tariff wars. If the USA were, for example, to all of a sudden be of the opinion that we no longer need this or that product from Europe and were to enormously increase the customs duties, that would be a problem for Europe. The backup plan could be: there is a market in Africa that has yet to be fully tapped. That’s why I think that these notions of aid are not only wrong from a philosophical perspective but also for long-term strategic reasons: Europe should have its own interest in a strong African economy as a possible alternate market partner and not just a burden, a place that requires help.
Tetteh: I agree that as important as it is to reduce child mortality and invest in

social initiatives it is just as important that our governments take responsibility and focus on building partnerships that will help to grow our economies. The only thing I hesitate to fully endorse is James' idea of this "Brand Africa" that would present ourselves as one continent open for business. It is desirable, but we are not there yet.

Yes, that's something I would like to talk about in greater depth: turn Africa into a brand? That doesn't seem to be such a bad idea on the face of it …
Tetteh: It sounds a bit like a cliché and requires a lot of cooperation to make it really happen.
Shikwati: Let me explain: many developed countries that are economically successful have branded themselves and investors follow brands and big buzz. Take, for example, the USA with its "American Dream": this attracts labor and capital, which is what make phenomena like Silicon Valley possible. However, if you look at how people in Europe see Africa, they talk about wars, violence, terrible diseases. No one fears to invest in the USA where deadly shootings are reported quite often. America has worked on its branding. That's why nobody shies away from travelling to the USA. But if there's a shooting in Nairobi, a travel warning is immediately put out. If we all agree that Africa could provide a robust alternate market, we now need to work on our branding.

"No matter how good a PR campaign is, it won't amount to anything if the substance isn't there."

Hanna Tetteh

Do you see this differently, Ms. Tetteh?
Tetteh: Ironically, it was right here in Berlin in 1884 that the conference was held where the European powers agreed on a framework for expanding their influence in Africa, which led to the division of the continent into colonies. The colonial structures largely disregarded the different traditional communities and ethnic groups that were already established and you see the consequences of those arbitrary divisions today. Additionally, different official languages and systems of administration were developed and harmonizing these structures to create the "Brand Africa" will take time. We should focus on improving integration within the regional economic communities to ultimately achieve a more integrated continent.

But to what extent does that go against a common African branding, a positive brand image?
Tetteh: Our first step should be to work on the content. No matter how good a PR campaign is, it won't amount to anything if the substance isn't there. But all the issues currently being discussed and negotiated – from a Marshall Plan for Africa, the G20 Compact with Africa to various other policy instruments … we cannot afford for these debates to remain discussions among the elite, specifically among government officials. The key stakeholders in the private sector and in civil society need to make their contributions to the discussions. The people have to identify with the issues, we need everyone's participation.
Shikwati: History shows us that an interested party is always needed to ensure that these plans are implemented and the tools are used. We need a quick transformation. To my eyes, private companies must demand this, and governments will follow. Only when a company from, for instance, Europe is constrained because it is unable to invest in an African country even though it really wants to will anything truly change. It worries me that Hanna relies so heavily on the official conventions and politics. I have little confidence in our political sphere.

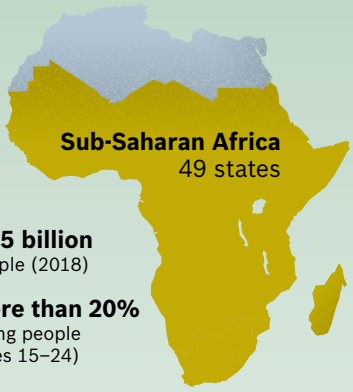
Ms. Tetteh, what is wrong with politics in Africa that makes people like Mr. Shikwati say they have lost trust in the state?
Tetteh: Not every African country has the same politics. There is no "one size fits all" here. There are states in Africa that are close to being dictatorships, but we also have some incredibly agile democracies. We have to talk about how to achieve greater participation on part of the people and civil society since this increases pressure on politicians to do things well. If the politicians are constantly pressured by people demanding action, they realize they will have to make an effort if they want to be re-elected. In my view, competitive democracies are the solution for the problems that have been mentioned.
Shikwati: People have to have something they fear to lose to make a positive impact in politics. Expanding capabilities of indigenous African enterprises will create a constituency of strong and capable stakeholders to ensure that these political structures change for the better and for African interests.

Ms. Tetteh, Mr. Shikwati, thank you very much for speaking with us.

Robert Bosch Stiftung

Education Is Decisive for

Africa is the continent with the largest population growth and a high percentage of young people. The need for good education already looms large there and, left uncovered, will become a dire concern in 20 years. This means the region will be facing some enormous challenges. *The Education Sub Saharan Africa (ESSA)* initiative aims to provide support, primarily by sparking cooperation between actors in the educational sector in sub-Saharan Africa. Challenges await on every level, from preschool education to the university sector. Truly helpful services in individual countries have frequently never been registered.



1.05 billion
people (2018)

More than 20%
young people
(ages 15–24)

Labor market

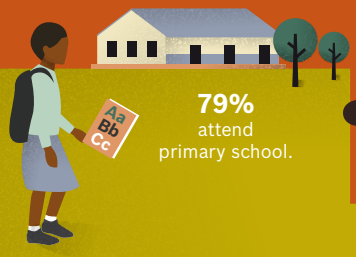
19.4% of companies consider insufficiently educated labor force a problem. However, there are major differences within sub-Saharan Africa:

53.7%	Chad
51.5%	Republic of the Congo
40.8%	Tanzania
5.7%	Nigeria
3.4%	Ethiopia
1.2%	Eritrea

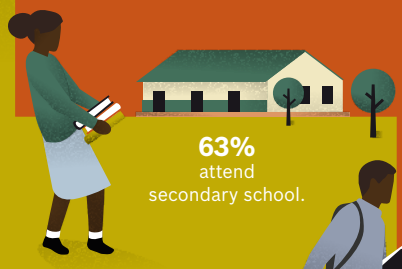
Text and research: Martin Petersen | Infographic: Pia Bublies

School

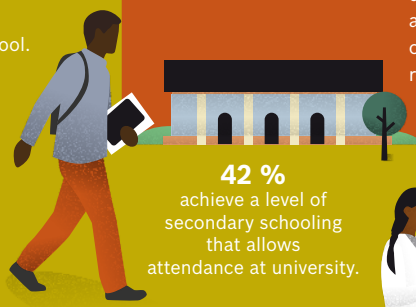
For many people in sub-Saharan Africa, education is a short process. The university sector is particularly ill-equipped to deal with population growth.



79%
attend
primary school.



63%
attend
secondary school.



42 %
achieve a level of
secondary schooling
that allows
attendance at university.

9 %
attend a university.

University professors

The future demand for qualified university professors is extremely high. However, it is unclear where this pool of professors should be recruited from and what the current university faculty "landscape" looks like exactly.

Scholarships and fellowships

It is not easy for young people requiring scholarships and the institutions awarding them to find out about each other. There are a number of untapped resources available for greater and more efficient scholarship funding.

Academic mobility

There is very little exchange from academics and university staff between African universities.

Corruption

According to estimates, 80 percent of educational funding goes toward teachers' salaries. However, an important share of that funding is being paid to "ghost teachers" – people who are not working as teachers at all. Instead, they are often retired, dead or imaginary. Incomplete or non-networked data gathering, a lack of budgetary analysis and opaque payment systems help people like corrupt civil servants conceal payments

The estimated cost of "ghost teachers" in sub-Saharan Africa every year amounts to around **20 billion US dollars.**

Africa's Future

The Robert Bosch Stiftung supports *ESSA* because developing the educational sector will be crucial – whether Africa's population growth results in making bottlenecks and conflicts worse, or it results in major opportunities for the continent. **www.essa-africa.org**

2.17 billion
2050

1.78 billion
2040

1.42 billion
2030

1.11 billion
2020

Population growth

Over the next 30 years, the population in sub-Saharan Africa is set to double.

Mapping scholarship programs

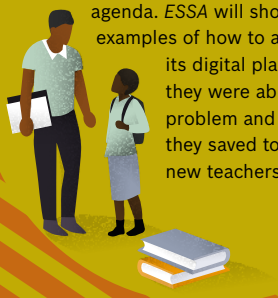
The entire scholarship sector is being mapped. Resources for more scholarships are being created and performance indicators for scholarship programs developed.

Helping to plan

ESSA is creating reliable figures for planning the demand for university professors to enable education and recruiting to proceed in a more targeted manner.

Put "ghost teachers" on the agenda

The magnitude of the problem will be explained and added to the agenda. *ESSA* will show off good examples of how to approach this on its digital platform. In Liberia, they were able to stop the problem and use the money they saved to hire 2,000 new teachers.



Establishing an academic jobs board

ESSA will establish a pan-African academic jobs board in order to promote and support academic mobility within and towards Africa.

What *ESSA* is doing

ESSA is initially focusing on tertiary education because this is where teachers and experts are trained, and it is therefore where the foundation will be laid for good qualifications.

Help educate more statisticians

ESSA is working to determine the current capacity for educating statisticians at universities, formulating needs and the necessary skills and getting scholarship programs for "statisticians in education" going in order to help cover the high demand for statisticians and data experts in the education and health sectors in the long term.

Pooling knowledge

ESSA is pooling expertise on successful educational funding throughout sub-Saharan Africa. This knowledge will be made available to the various target groups on a digital platform. The aim is for networks to be developed and for communication between them to be made easier.

Sources: United Nations World Population Prospects, UNESCO Institute for Statistics, World Bank Open Data, Enterprise Surveys, *ESSA*

Powerful woman
Jaqueline survived the genocide in Rwanda. Today, she lives in the village of Mbyo. Victims and perpetrators of the genocide live there as neighbors.

TEXT
Linda Tutmann

PHOTOS
Jacques
Nkinzingabo

The Road to Forgiveness

24 years ago, up to one million Tutsis and moderate Hutus were killed during the Rwandan genocide. The village of Mbyo brings perpetrators and victims together.

It was a sunny day when the murderers arrived. With a few strokes of their machetes, they killed Jaqueline's family. It had rained the previous day, turning the reddish soil into a muddy quagmire. But when the girl set out to milk the cows, the sky was practically cloudless. She struggled to balance the jug full of precious milk as she trotted down the narrow paths. The corn had grown tall that month, and she would learn later that the plants' broad leaves had kept some of her friends hidden from the attackers. But the corn couldn't help her family. When she returned with her brimming jug of milk, Jaqueline found their lifeless bodies. They never had a chance.

24 years later, she sits on a sofa in her little house, where she lives with her husband and three children. Three rooms: a bedroom, living room, and kitchen, a corrugated metal roof over their heads, a stone floor underfoot. Here in the Burgesera region, an hour from the capital city of Kigali, is where she used to live with her family as well. The genocide in Rwanda is one of the most gruesome atrocities in Africa's recent history. In this small country – just a little larger than Belgium – located in the middle of the continent, radical Hutus murdered between 800,000 and one million Tutsis and moderate Hutus. The roots of the conflict go back to Rwanda's colonial history. The Hutu and Tutsi were originally social groups; they were recategorized as races by the colonial powers. After independence, the government exploited this distinction to incite the majority of the Hutu against the Tutsi minority. Government propaganda on the radio station "Radio-Télévision Libre des Mille Collines" exacerbated the situation. On April 6, 1994, the airplane carrying Juvénal Habyarimana, the president at the time and himself a Hutu, was shot down. Radical Hutus used this attack as a pretext to start the genocide that they had apparently already planned – militias began slaughtering people in the capital just half an hour after the plane crash.

"I was certain that I would die, too," Jaqueline says of that morning in April 1994. She can't find the words to describe the details of how she felt that day. In a panic, she ran into the Catholic church, where other Tutsis were huddled together in fear. She found her uncle there. He had also been lucky. Together, they made their way to Burundi; they walked for four days, hiding behind bushes, drinking water from puddles, and eating seeds they collected along the way. "By the time we arrived in Burundi, we were no longer human beings," she says. Strands of colorful raffia are spread out on the table in front of her; she concentrates as she weaves the dry fibers into a colorful coaster that she will sell to visitors in the little village square. Mbyo is the name of the village – a name known far beyond Rwanda's borders. The village owes its fame to a fact that was unbelievable when it was first founded: in Mbyo, Hutu and Tutsi, perpetrators and families of victims like Jaqueline, live next door to one another. The revolutionary idea for the village came from a young priest, who himself is a Tutsi survivor. "How can we ever be happy again in this country?" he asked himself, and he knew: forgiveness was the only answer. With trembling knees, he went to a prison to meet the men who had killed members of his family. They were Hutus who,

New beginning
Frederic is a former perpetrator of the genocide – and today, he is the mayor of the village of Mbyo. He now speaks for everyone who lives there.

Looking forward
Jaqueline looks at her daughter, who will grow up in a new Rwanda. A country where people say they are Rwandans, not Hutu or Tutsi.

In dialog
The village organizes weekly discussion sessions that bring former victims and perpetrators together.

in the meantime, had been sentenced to prison terms by the new government. When he thinks back to that situation, he remembers the shouts of the prisoners that rang in his ears: "Why is he still alive?" they yelled. "He is a Tutsi! We should kill him." "I'm not here to accuse you of anything," the priest called out. "Let him talk," they agreed. "We can always kill him after that." This man is Bishop Deogratias Gashagaza; he calls himself Bishop Deo. He wanted to change these men. Every two weeks, he went back to the prison and talked to the men about their crimes, about God and his faith, and he read the Bible with them. "I saw them as people, not as animals," he says. "They learned to trust me." They trusted him, of all people – a man that radical Hutu propaganda had once taught them to call a "cockroach." "What happens to the perpetrators when they are released from jail?" the pastor asked himself at the time. Will hatred swell up in them again? He wanted to create a place where Hutus and Tutsis could extend a peaceful hand to one another. A place of reconciliation. Today, he is guiding a tour through the village where Jaqueline lives. 54 families live here now, both Tutsi and Hutu. There is a school, children play together, and in the evenings, they all sit together and sing Rwandan folk songs. Corn and wheat are growing in the village fields again. Everything seems peaceful. Maybe too peaceful. Eerily calm. If you ask the villagers whether they are Tutsi or Hutu, the answer comes quickly, almost mechanically: "We are Rwandans." Whether they are Tutsi or Hutu no longer matters, they say.

Studies estimate that 80 percent of the Rwandan population – both perpetrators and victims – experienced a traumatic event during the genocide. Today, approximately a quarter of survivors suffer from post-traumatic stress disorder. Symptoms of this disorder include depression, anxiety, and emotional numbness. When the village was founded 15 years ago, the residents couldn't even sit together, Deo says. The mistrust and fear were just too strong on both sides. Many of them lost everything during the genocide. Working alongside psychologists, Deo supported the families whose relatives had been killed during that time as well as the perpetrators returning from prison. Together, they rebuilt the houses in Mbyo. Working together to create something was important, Deo says. On the weekends, the residents hold active discussions. There is a soccer team where children and adults play, and they all till the fields together. But the most important thing is that they break the silence. "Without knowledge, there can be no forgiveness," he says. Jaqueline also met the man who killed her family, ten years after the fact. He's a murderer, she thought as the man stood in front of her. A Hutu who hates all Tutsis. Would he take this opportunity to kill her? Forgive him, the priest told her, because one day, you will also be granted forgiveness for your sins in heaven. The man fell to his knees in front of her, pressing his face into the dust. She was afraid. But she said: "Yes, I forgive you." "Life must go on," she says today. "Reconciliation is a process." She speaks freely now; this is not the first time she has told her story to outsiders. Mbyo is often presented as a showcase project to foreign journalists and researchers, who visit to observe how reconciliation and coexistence between Hutus and Tutsis can work. "We understand each other," is how they respond when asked how they've managed to do the impossible every day: to live next to and with the perpetrators. Frederic, one of many perpetrators, also stood before a local court to ask for forgiveness. He's a small man of compact stature; he lives a few houses down the road from Jaqueline. In a monotone, he talks about the day he headed out with other radical Hutus. How they blocked the roads to stop the Tutsis from fleeing. How he killed people. "I was following orders," he says. "If I had refused, they would've killed me, too." He was in prison for eight years. But Frederic can't forget his past. He often starts, his heart pounding, when he thinks back on those days in April 1994. He cannot turn back time; he knows that. But he can live – for reconciliation. For a new Rwanda.

Nearly a quarter of a century later, Rwanda is a model African country. It's a beautiful place; green hills nestle against the horizon, and the roads are clean and free from garbage. President Paul Kagame has helped develop the country's economy, and he is also committed to reconciliation – so committed, in fact, that some people feel he is forcing an agenda, a "dictatorship of reconciliation." Kagame rules the country with a very firm hand; Rwanda is far from being a democracy. Some families of the victims still don't know how their relatives died or who the perpetrators were. Bishop Deo knows that, even 24 years after the genocide, he still has work to do. Today, Jaqueline and Frederic are neighbors; they trust each other. Sometimes Jaqueline's children play in Frederic's yard. When her cow occasionally fails to produce milk, she can ask him for help. The village elected Frederic its leader, the mayor of Mbyo. He is the one who speaks for everyone today; he mediates conflicts and tries to find solutions to problems. And he makes sure that the old wounds don't open up again.

Truth, Justice and Remembrance

The village of Mbyo is one of eight "reconciliation villages" in Rwanda, where victims and perpetrators of the genocide now live as neighbors – organized by *Prison Fellowship Rwanda* and its founder, Bishop Deogratias Gashagaza. *Prison Fellowship Rwanda* is part of a number of projects in the field of *Truth, Justice and Remembrance* that the Robert Bosch Stiftung supports in Africa and around the world. For example, the foundation is supporting the *Foundation for Justice and Development Initiatives* in constructing the first memorial in northern Uganda, addressing past conflicts while contributing to reconciliation. The Robert Bosch Stiftung also provides support for organizations such as *Fondation Hirondelle, Institute for Justice and Reconciliation* and *Project Expedite Justice*, which are active in Mali, the Central African Republic, Sudan, and the region around the African Great Lakes. These organizations document war crimes and report on processes of reconciliation and dealing with the past.

www.bosch-stiftung.de/reconciliation
On our website, you can find more information about projects on the subject of Truth, Justice and Remembrance.

News from our Foundation

Working to combat distorted images, for better care, inclusion and participation.

African-European journalism network

"You only find out what Europe is really like once you're here." This remark by a Senegalese refugee encapsulates the general tone of a study being conducted by the Erich Brost Institute for International Journalism at the Technical University of Dortmund. In Africa, there is a distorted image of Europe – not least because the African media barely reports on the reality of the migration situation. In the European media, reports about Africa and the causes of migration are in turn often reduced to poverty and war. The "Journalism in a Global Context" program, carried out by the Erich Brost Institute, the organization Africa Positive and the African Media Initiative, and supported by the Robert Bosch Stiftung, aims to provide a nuanced view to these distorted images – with an African-European network of journalists. It was formed in Dakar in spring, with some 30 journalists from the two continents in attendance. After conducting research together, they will report on the topic of migration from different perspectives.

www.jigc.media

Manifesto for better nursing care

"At the moment, society's image of professional nursing care in Germany is often one of turning frail people in their beds and feeding them," says Franz Wagner, President of the German Nurses Association (Deutscher Pflegerat), at a presentation of the manifesto "Elite Nursing" ("Mit Eliten pflegen"). The Robert Bosch Stiftung provided the impulse to take action. 40 experts of the nursing profession, including Franz Wagner, drafted the manifesto and their key claim is clear: nurses in Germany need greater autonomy and responsibility to care for their patients. To do so, the nursing profession should be reinforced with academic skills, which would also make jobs in nursing more attractive. The experts especially see the benefits for older and chronically ill people. Health care in rural areas could also be better provided if nurses were to take on routine primary care tasks, too, they say, as has long been the practice in many countries. That is why the German Council of Science and Humanities recommended a 10 to 20 percent share of academically trained nurses already in 2012. However, Franz Wagner says Germany is currently far from achieving that goal.

Photos: Anita Back; Hans Decker/Africa Positive; Max Lautenschläger

Greater political inclusion for refugees

Refugees want to take part in the discussion and get involved politically in their host countries. That is the key finding of a joint study by the Robert Bosch Stiftung and the International Institute for Democracy and Electoral Assistance (International IDEA). Titled "Political Participation of Refugees: Bridging the Gaps," the study focuses on what has until now been a largely unexplored aspect of migration research. According to the authors, those who are able to vote feel they play an active role in society. However, the conditions for this are anything but ideal. The study calls for host countries to commit more strongly to the inclusion of refugees in political events. A legal framework that would afford refugees' participation in local and regional elections, freedom of opinion and the right to self-organization would be advantageous. In addition, host countries should support migrant representative bodies and organizations run by refugees. These would also create important opportunities for inclusion.

The 2018 German School Award goes to Greifswald

The Evangelische Schulzentrum Martinschule in Greifswald has won the 2018 German School Award, which the Robert Bosch Stiftung and the Heidehof Stiftung award every year in cooperation with German television channel ARD and the DIE ZEIT publishing group. The jury's decision this year sets a clear agenda for inclusion. After all, the school in Greifswald started out 25 years ago as a school for mentally disabled children, then grew to become an inclusive primary school and ultimately an inclusive secondary school.

Nearly 50 percent of pupils at the Martinschule have special educational needs. At the same time, the school has achieved better results in its central university entrance exams and in exams to obtain the general education qualification after grade 10 compared to the average in its home state of Mecklenburg-West Pomerania for years now. "While some are ready to declare that inclusion has failed, the Martinschule, with its extraordinary model of inclusion, proves just the opposite," says educationalist Michael Schratz, Spokesman for the School Award jury. "Inclusion is an arduous task, but it's worth it!"

Five other schools received second prize awards: the Gesamtschule Bremen Ost, the Franz-Leuninger-Schule in Mengerskirchen, the Integrierte Gesamtschule Hannover-List, the Annette-von-Droste-Hülshoff-Gymnasium in Münster and the Matthias-Claudius-Schule in Bochum. The application deadline for the 2019 German School Award is October 15, 2018. Since the first German School Award was granted in 2006, 73 schools have received awards. With these schools, a treasure trove of excellent concepts and proven practical knowledge has been developed – and this knowledge is now pooled on a new online platform, the German School Portal (Das Deutsche Schulportal). Teachers, school principals and anyone interested in education can find inspiration here with descriptive videos, interviews and materials from the award-winning schools.

www.deutsches-schulportal.de

Without Compromise

Mary Maina has just completed her bachelor's degree and is leading the Rwandan national cricket team as their captain. She worked at the Robert Bosch Stiftung's informational booth at the *Next Einstein Forum*.

Focused: during the conference, Maina provided attendees with information about the Robert Bosch Stiftung's projects.

Mary Maina is tired. It's the last day of the *Next Einstein Forum*. Suitcases rattle along the hallways of the Kigali Convention Centre, the scientists ready to depart. The past few days of the conference have been long, but Mary wipes away the exhaustion with a smile. She tells us about how she handed out flyers and magazines and provided information about the Robert Bosch Stiftung's projects, getting to know a huge number of scientists while doing so. "So many smart, inspiring people in one place," she says enthusiastically, digging out her small notebook where she has collected business cards. There's one from Ndyèye Absa, a mathematician and designer. And another from Tolullah Oni, a doctor and one of the most sought-after *NEF* fellows at the conference. "I was ridiculously impressed by Tolullah Oni. Women like her are changing the stereotype of a male- dominated world." And Mary herself is changing the world, too. Her biggest passion is cricket – something she's had to fight for. She discovered the sport at the age of twelve.

Text: Regina Mennig | Photos: Lémrich

Refugees returning to the country after the genocide brought the game with them, especially those coming from Kenya. Many Rwandans had never had anything to do with the sport before, but one thing was certain: it was not for women. "We simply stopped listening when someone said, 'Leave this sport to the men,'" says Mary. She is now captain of the Rwandan women's national team and trains at least three times a week at the new cricket pitch on the outskirts of Kigali. Her journey home, to a residential area with bumpy clay streets and high metal doors in front of the buildings, only takes ten minutes by bus from there. Mary has rented her own little apartment there, something that is fairly atypical for a young Rwandan woman in her early 20s. "Many women stay with their parents until a man comes their way, and then she gets married and moves in with him," says Mary. The irony in her voice can't be ignored. She has no plans to get married any time soon. Her boyfriend is an IT specialist and just got a job offer in South Africa. "That will be a new situation for me. But there's no way I would keep him from going.

Steadfast: Maina takes no heed of those who would try to talk her out of playing cricket. Today she is the captain of the Rwandan women's national team.

"So many smart, inspiring people in one place."

I wouldn't want him to prevent me from taking advantage of a good job opportunity, either." She recently finished her bachelor's degree in biotechnology at the National University of Rwanda. There were 50 men and eight women in her graduating class. When she began her studies, some of the boys in her class speculated on how many women would end up finishing their degrees. As it turns out, they all did. "We sure showed them!" Mary laughs. Until she finds the right master's course, she is spending her time working for a British NGO. The NGO supports the game of cricket in Rwanda. After the *Next Einstein Forum*, early the next morning, she has a meeting lined up with the head of the NGO. "But for now, I just want to go dancing," says Mary as she closes down the information booth at the *NEF*. She will not be missing out on the goodbye party. A lot of students are already on the dancefloor, as are Neil Turok from the African Institute for Mathematical Sciences and astrophysicist Yabebal Fantaye.

10 Questions by Aku Kwamie:

NEF Fellow Aku Kwamie lives and works in Accra, Ghana.

Health researcher

Aku Kwamie's work focuses on health care systems, as well as corporate management, accountability in the public sector, organizational innovation and learning. She teaches and conducts research in these areas and campaigns for academic exchange and cooperation. Kwamie has published a great deal in her field, is often invited to hold speaking engagements, and is a member of several international councils and advisory committees for bodies such as the World Health Organization, among others.

What do you have to do to get started?

What price are you willing to pay?

What is the job of a government?

Why do people follow you?

Will bureaucracies ever become learning organizations?

Can education systems change cultures of thinking?

What changes when a government orients itself toward human interaction rather than toward rules?

How do people feel because of you?

How do you use your pain?

Where will you spend eternity?

Photo: Msingi Sasis