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**Bloomberg
Businessweek**

November 4, 2019

**THE NEW
ECONOMY
ISSUE**

Continental

Shift

Where to find the future



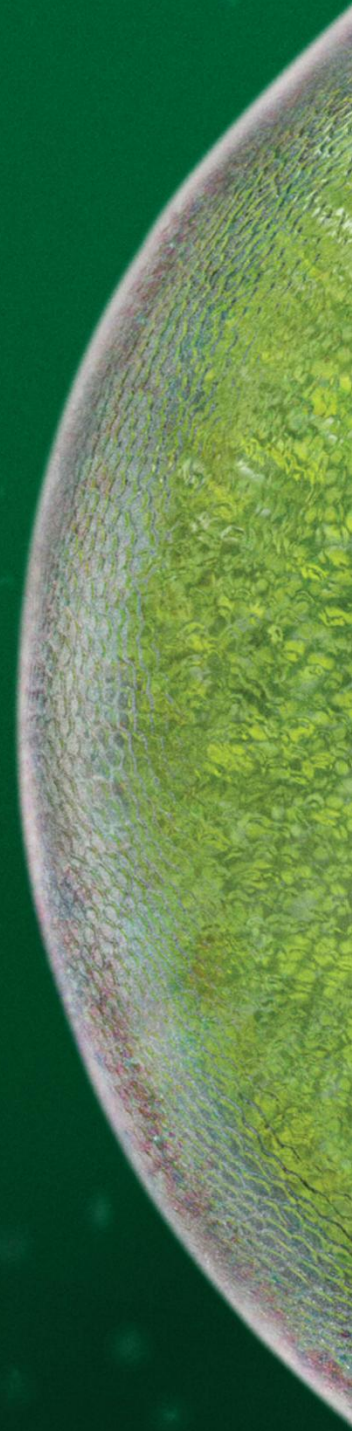
Could a single-celled organism be the future of fuel?

Algae biofuels could one day power planes, trucks and ships — and cut their greenhouse gas emissions in half. That's why ExxonMobil and Synthetic Genomics are expanding their research to an algae farm — all part of their plan to have the technical capability to produce 10,000 barrels of biofuel a day by 2025. Read more at [EnergyFactor.com](https://www.energyfactor.com)

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SYNTHETIC GENOMICS®





The Shocks

of

the

New

Economy

By Henry M. Paulson Jr.

Perhaps you've noticed: The world isn't in especially great shape. Which is exactly what makes the second annual Bloomberg New Economy Forum this November so important. Our challenges are vast; it's easy to feel dispirited. Yet there's no time like the present for capable leaders—especially those in emerging economies—to come together, find

actionable solutions, and inspire the world. This issue of *Bloomberg Businessweek* is dedicated to those ideals.

The New Economy Forum is timely, first, because wealth and power continue to shift to the rising economies of Asia, the Middle East, Africa, and Latin America. Indeed, the World Bank projects that in 2020 the emerging economies will grow at 4.6% on average, compared with just 1.5% for developed economies.

The forum is well-timed for another reason. It's being held in Beijing against a backdrop of growing tension and fundamental change in U.S.-China relations. The next century's geopolitical landscape hinges on how this suddenly fragile relationship evolves.

As corporations, governments, and leaders of civil society seek to navigate the New Economy, a better understanding of these key shifts and shocks will be essential. More than ever, challenges around the world are interconnected and require joint solutions.

Take technology. U.S.-China competition, such as the races for dominance in 5G and artificial intelligence, is a global challenge. Many in the U.S. are so concerned about the national security implications of technological interdependence that they argue for decoupling. Such a move could have far-reaching

effects, Balkanizing the world and stifling growth. Efforts to exclude one another's technologies from national supply chains would contribute to what I've described as an economic iron curtain that fundamentally breaks the global innovation ecosystem.

Or look at global governance. Existing institutions, pacts, and agreements need to be updated to reflect today's realities. One clear example is the World Trade Organization, where successful economies like China, South Korea, and Singapore are still able to claim developing country status. This disadvantages not only other developed economies, but also the developing nations that truly need differential treatment.

And then there's climate change, the most formidable economic and social risk facing mankind. Avoiding disaster will require a truly global effort, yet China—the world's largest carbon emitter—will play an especially significant role, since its emissions exceed those of the U.S. and European Union combined. Moreover, China's green finance initiatives and the prospects of a national carbon market could provide major breakthroughs in the battle to reduce carbon emissions. If they're successful, similar initiatives could be applied elsewhere.

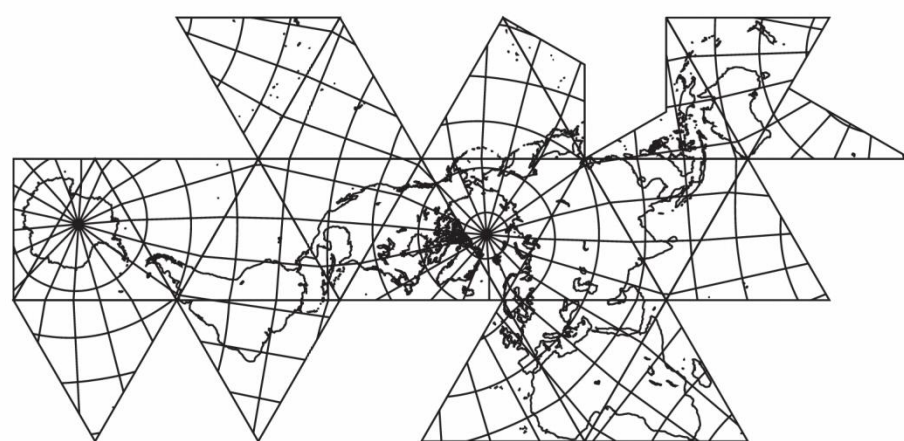
Finally, consider global growth and income disparity. The recent slowdown in trade combined with rising pressure on cross-national supply chains has made it increasingly difficult for multinational businesses to plan for the future with enough confidence to make long-term investments. Increasing income disparity, driven by automation and globalization, is also fueling a populist backlash around the world. These issues demand adjustments to our economic policies so the benefits of growth can be spread more broadly.

These are some of the central challenges we face in a world filled with increasing uncertainty and risk. A critical goal for business and policy leaders, therefore, should be to better understand these issues and to develop strategies for mitigating their impact.

The forum aims not just to curate that discussion, but also to drive new solutions and joint action. By bringing together the best minds from business and government, and from developed and emerging nations alike, real, measurable progress can be made toward addressing the challenges of, and transition to, the New Economy. **B**

Paulson co-chairs the Bloomberg New Economy Forum advisory board

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 *From **employee to entrepreneur***

Nisha learned how on YouTube. What will you learn?

"After I got laid off from my job, I didn't have enough money to buy a nice birthday gift for a friend's daughter. Then a light bulb went off. I had a sewing machine, and always had a knack for design—maybe I could make something? I didn't even know how to turn it on, so I pulled up YouTube to learn how to use it. I kept watching videos, over and over, until I finally made my first stitch. I taught myself to make these colorful bows that my friend's daughter could wear in her hair. And the parents went crazy for them. I left that birthday party with six customers.

That's when I started reimagining myself as an entrepreneur and started my company, Knotzland. We now make handmade bow ties from reclaimed fabrics. It's beyond what I dreamed—I'm not only a designer but also a business owner. I gave myself a whole new life. It's been a crazy journey."

Watch Nisha's story: youtube.com/NishaLearnedHow

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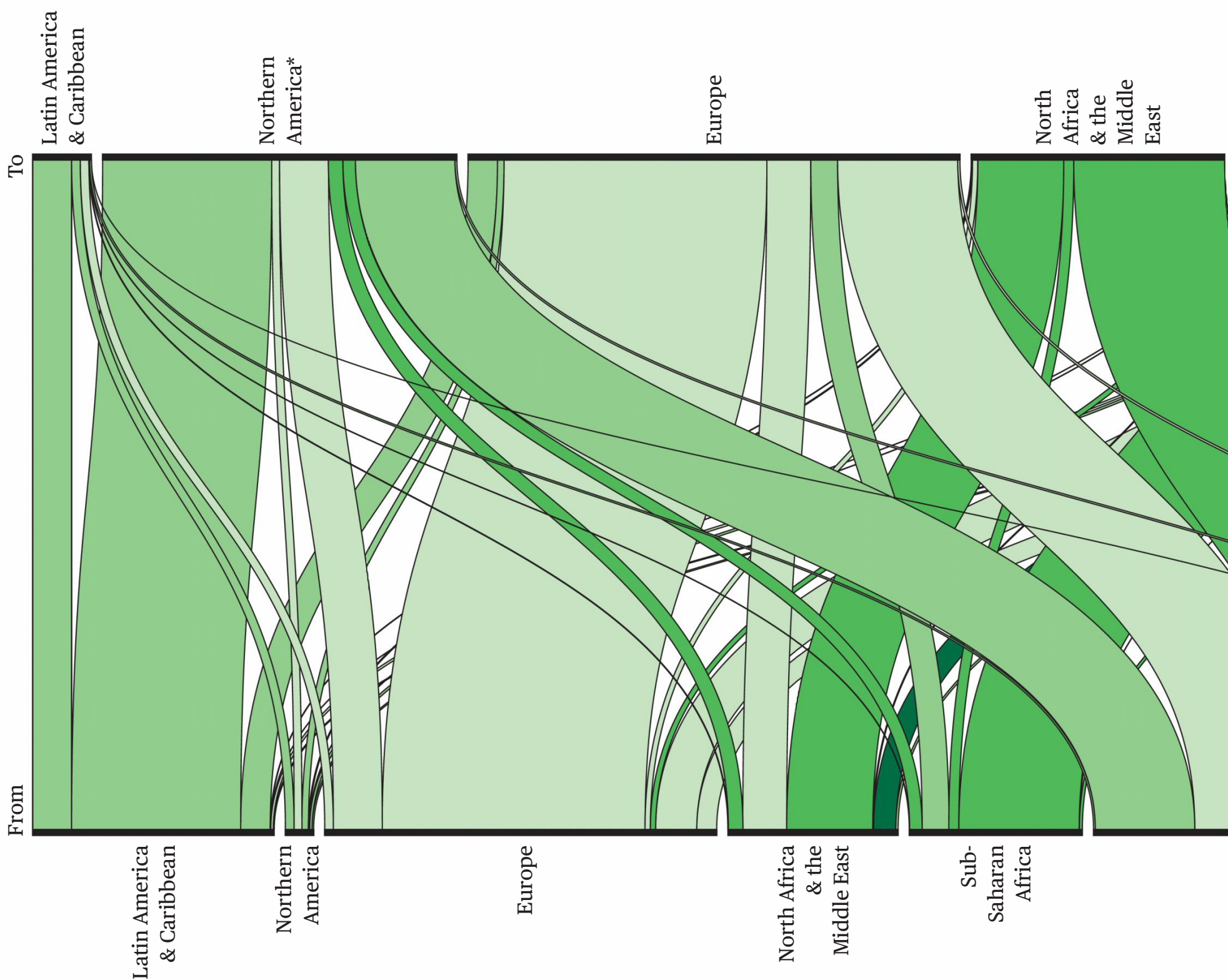
01

GOV
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Calling All Strivers

Number of migrants by region, as of 2017

Change since 2005: ■ Decrease ■ Increase of 1%-25% ■ 26%-50% ■ 51%-100% ■ More than 100%
People: ■ 1m — 10m



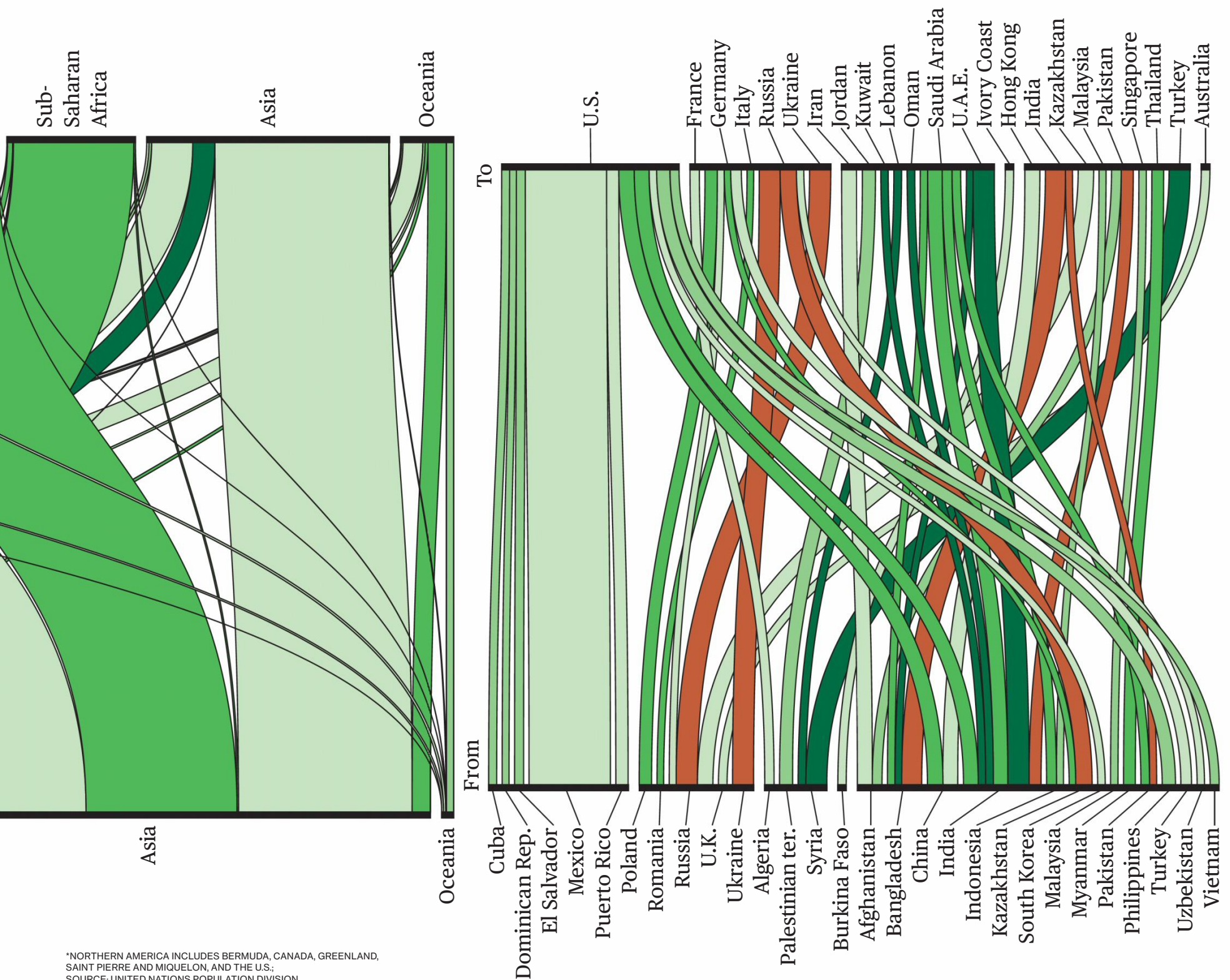
Governments the world over are grappling with how to make immigration work for their economies without fanning political flames. Nativism helped crystallize support for Brexit in the U.K. and almost cost German Chancellor Angela Merkel a fourth term. President Trump says the U.S. immigration system is “broken”—and while some of his opponents may grudgingly agree with that, there is little common ground on how to repair it.

For inspiration on possible fixes, Americans might look north to Canada, which uses a points-based system to screen economic migrants—a group that makes up almost 60% of its immigrants. The method, which factors in criteria such as education and work experience, is a reason only 27% of Canadians

regard immigrants as a burden on their country—the lowest percentage among the 18 nations surveyed in a Pew Research Center poll released in March.

That pro-immigration consensus is absent in Japan, where migrants make up less than 2% of the population. There, the government is treading cautiously as it rolls out a five-year residency permit designed to alleviate critical shortages of workers in several industries. By comparison, Latin America’s policy response to the Venezuelan exodus has been hasty and improvised and threatens to give rise to an underclass of undocumented workers. The stories that follow detail how Canada, Japan, and Colombia are dealing with immigration and include interviews with recent arrivals. —Michelle Jamrisko

Pathways of more than 1 million people, as of 2017



*NORTHERN AMERICA INCLUDES BERMUDA, CANADA, GREENLAND, SAINT PIERRE AND MIQUELON, AND THE U.S.; SOURCE: UNITED NATIONS POPULATION DIVISION

Japan Nudges The Door Open

Mexicans toiling in America's chicken processing plants, Indians sweltering on Dubai construction sites, Filipina nannies tending to the children of Malaysia's middle class. They're among the world's estimated 164 million guest workers, according to the International Labor Organization. The jobs are often hard and sometimes dangerous, but the money these workers wire home—\$480 billion in 2017, according to the United Nations—makes the risks worth taking. “Poverty in the sending countries is what keeps the whole thing going,” says historian Cindy Hahamovitch, author of *No Man's Land*, a 2011 book about migrant labor programs.

Japan, a country that's long resisted immigration, officially began issuing temporary visas to unskilled foreign workers in April. After years of insisting the country's labor shortages could be solved by employing more women, delaying the retirement age, and using more robots, politicians grudgingly came to a realization that those steps wouldn't suffice. Japan's aging workforce is expected to shrink by 23% in the next 25 years, and job vacancies already outnumber applicants by more than 3 to 1 in such fields as construction and nursing.

The new program will grant five-year residency permits to as many as 345,000 low-skilled workers over the next five years. That's a drop in the bucket compared with what's needed, but in establishing a pathway for permanent residency, its significance goes beyond the math. In the past five years, the number of foreigners working in Japan has doubled, to almost 2 million. Many come with student visas or through a technical trainee program meant ostensibly to offer overseas development aid—back doors that have allowed Japan to import hundreds of thousands of low-paid workers on short-term visas, without having to acknowledge them as immigrants.

Critics of the trainee program say it's susceptible to abuses by unscrupulous companies. In September three Vietnamese trainees sued their employer for failing to tell them their work hauling dirt in towns near the Fukushima Daiichi Nuclear Power Plant may have exposed them to radiation.

To placate conservative voters, Prime Minister Shinzo Abe has argued that the visa program “is not an immigration policy,” because the foreign workers won't be there permanently. Less advertised is that the law will let some workers extend their visas indefinitely and eventually settle in Japan, assuming they can pass language and skills tests. The details are vague, but opening even the narrowest path to permanent residency—for carpenters and welders, not just bankers and software engineers—represents radical change.

Bureaucrats in five Tokyo ministries and at least 14 departments are still working out the nuts and bolts of the policy. By the end of August, the Immigration Services Agency had granted just 205 new visas, more than a third of which went to people already in the country. Kouichi Takeuchi, who runs GlobalPower Inc., a placement company, blames the slow start on red tape rather than obstructionism. “There's mountains of paperwork,” he says.

By Jason Clenfield



Van Linh Nguyen

Left Vietnam for a construction job in Japan

KI-Star Real Estate Co., north of Tokyo in Saitama prefecture, used to outsource construction work, but labor shortages drove prices too high. In 2013 the developer started bringing in carpenters from Vietnam, where labor is much cheaper.

Van Linh Nguyen, a tool repairman from Hanoi, was the first hire. The 32-year-old now manages a crew of 46 Vietnamese men. “I want him to join management,” says Mamoru Sonobe, the head of KI’s construction business.

That idea is more plausible now that Japan has cracked open a path to permanent residency. Nguyen has a visa that lets him work in the country for the next five years. (He may later be able to convert it into one that lets him settle.) He spoke with Bloomberg Businessweek at a KI office near its headquarters. Excerpts, translated from Japanese:

“Eighty percent of me wants to stay... It’s easy here, it’s convenient”

“ When I finished high school, I went to a trade school in Hanoi, learning how to fix tools. My teacher got me a job at a repair shop. I slept in a little loft above the store. I worked hard at the job for about two years, but when I asked for a raise, my boss ignored me. I started to feel restless.

I didn’t know anything about Japan. But my friend had worked for Suzuki in a town near Mount Fuji. He said he made 130,000 yen [about \$1,200] a month, which was more than 10 times what I made. My friend told me if I wanted to try working in a foreign country, there were a lot of choices. You could go to Taiwan or South Korea, but Japan paid the best.

I applied to a temp agency that promotes international exchange. I paid them 1.5 million yen for Japanese classes and getting to Japan. I borrowed the money from my parents’ brothers and sisters and from the bank. It was the biggest investment the family had ever made and took me two years to pay back.

I was really scared when I joined KI. I was alone, with just Japanese people around me. I could hardly understand or speak the language. But I worked with them every day, and they were nice to me.

I started by learning how to read blueprints. I’d translate all the words into Vietnamese, put them in a notebook, and memorize them. After about five months of studying in the office, I started to work on job sites. People had to show me everything. Now, except for concrete work, I can basically do anything it takes to build a house. I’ve built about 50 so far.

One of our clients is a Vietnamese engineer who’s been here a long time. I didn’t know we were building the house for a Vietnamese guy. I went by the job site and realized who the buyer was. I want that to be me someday.

The president is always saying, ‘Keep going, we want you to become a permanent resident and stay with the company.’ Eighty percent of me wants to stay in Japan. It’s easy here, it’s convenient. There are hospitals, convenience stores, the roads are safe. There’s no crime. ”

Making The Grade In Canada

Canada welcomed 321,040 immigrants last year, the largest number since 1913. Almost 60% were economic migrants chosen for their potential to put down roots in a land where winter temperatures routinely drop below freezing.

Canada wasn't always selective about who it took in. After a couple of decades of unchecked immigration from postwar Europe, concerns began to build that new arrivals weren't contributing to the economy, says Stephanie Bangarth, an associate history professor at Western University in London, Ont. In 1967 the government introduced a point system that graded aspiring residents on criteria such as age, language proficiency, and skills. The framework has endured, though rules have been amended many times to reflect changing priorities.

Like many developed economies, Canada faces the prospect of low fertility rates and retiring baby boomers. If immigration were to stop entirely, the labor force could lose 100,000 workers a year starting in 2026, according to the Conference Board of Canada. Already, more than 580,000 jobs in the \$1.7 trillion economy are unfilled.

After consulting employers, the government revamped the point system in 2015, adding an expedited pathway called Express Entry. Candidates fill out a short online questionnaire that determines whether they meet minimum requirements. If so, they complete a detailed profile that generates a score used to rank the applicant pool. Every two weeks or so, the government discloses how many people in the pool will receive an invitation to apply for residency. Invitees have 60 days to submit supporting documents. Their files get processed in about six months.

Last year, 17% of the invited candidates worked as software engineers, IT analysts, or programmers. Almost half were from India, with the next largest groups coming from China and Nigeria. (It's worth noting that prior to the introduction of the points system, those admitted were overwhelmingly white.)

Canada's method isn't perfect. Stories abound of doctors and engineers whose credentials aren't recognized by the country's professional associations and are unable to work. Quebec province—home to a fifth of the population—runs its own selection process and recently reduced immigration targets. Meanwhile, some rural areas are having a hard time luring people.

Nonetheless, Canada's approach is "widely seen as a role model for successful migration management," according to the Organization for Economic Cooperation and Development. Australia and New Zealand have points-based systems of their own. Legislation co-sponsored by Republican Senators Tom Cotton of Arkansas and David Perdue of Georgia would introduce one in the U.S.

Daniel Béland, director of the Institute for the Study of Canada at McGill University in Montreal, says the system has made immigration less divisive an issue than in other nations. "There is strong support for economic immigration, that it's important for the country, demographically and economically," he says. "The debate is more about how many immigrants and how we can tweak the point system."

By Sandrine Rastello



Osman Ansari

Awarded permanent residency four years after emigrating from Pakistan

“I’ve grown up more in this place than I would have in any other. It’s shown me what I’m made of”

Osman Ansari works as a project manager at fintech company Koho Financial Inc. in Toronto. The 30-year-old came to Canada in 2015 from Karachi to study. Achieving permanent status was, he says, a “bumpy road.” It should have taken six months, but it took 11, because he had issues proving he could support himself. (Ansari wasn’t working at Koho when he applied for residency, and he doesn’t have any immediate family in Toronto.) Now that he’s in Canada for good, he ultimately wants to work as a business strategist to help tech companies grow. Excerpts from a conversation with Bloomberg Businessweek:

“ I’m coming from Pakistan, where we’ve basically been in a state of war since Sept. 11. I love Pakistan, it’s my country, but I wanted to live in a place where I would have peace of mind.

The initial plan was to go to the U.S., because a lot of my family lives there. But there’s lots of horror stories coming out of America about immigration. The cost of grad school is insane. I started researching what’s best for me in terms of immigration, in terms of job prospects, and Canada stood out.

I got accepted to an MBA program. I applied for my study permit. It came in about two months, no problem. I moved to Toronto. I remember exactly the time and day: My airplane landed at 5:07 p.m. on Aug. 30, 2015.

Within a month, I fell in love with this city. I loved the school, I loved the people that I met there. I’m coming from a city that’s primarily a desert, so the variation in temperature—you go from +40C to -40C—was something that took a lot of getting used to.

I graduated in 2017. I qualified for a three-year work permit. I started working at a tech startup right after, but due to funding issues, I was let go. From January to December 2018, I was applying for jobs, I was interviewing, I was going on coffee chats. I was working a minimum-wage job. You have people graduating from Canadian schools who have lived and worked here their whole lives, and then you’re opening the market to immigrants as well. There’s going to be significant competition.

I applied for permanent residency in September 2018. Once you send in your application, you don’t have 100% transparency on where it is. I got approval in August 2019. I sat and stared at the email for 10 minutes because I couldn’t believe what I was seeing. It was relief, immense joy, and the feeling one gets when something he’s worked so hard for is realized, all rolled into one.

I’ve grown up more in this place than I would have in any other. It’s shown me what I’m made of. You can be who you want to be, what you want to be, and where you want to be—no one is going to bother you. I’m staying here for as long as I’m on this planet. ”

Venezuela's

More than 4 million Venezuelans have fled their homeland in recent years to escape hunger and violence. Every day an additional 5,000 join an exodus that, at its current pace, is set to surpass the 6.3 million refugees created by the Syrian civil war.

Government representatives from Venezuela's neighbors have met repeatedly to address the influx of migrants, which has strained resources and stoked tensions across a region where economic growth has been subpar in recent years. But South American nations have so far failed to come up with a coordinated response. Instead, national governments have moved to toughen immigration controls. "Increasingly, what we're seeing is a race to the bottom, where countries jockey over tighter and tighter restrictions in a contest to shift the burn from one country to the rest," says Geoff Ramsey, a Venezuela expert at the Washington Office on Latin America, a research and advocacy organization focused on human rights.

Colombia, which shares a 1,400-mile border with Venezuela, has been hit hardest by the refugee crisis, receiving 1.6 million Venezuelan migrants, who now make up about 3% of the population, up from virtually none five years ago.

The Colombian government estimates it's paid \$1.5 billion—a figure equal to 0.5% of gross domestic product—to care for the exiles. A refugee fund set up by the World Bank, the United Nations, and the Islamic Development Bank approved a \$31.5 million grant for Colombia in April. Meanwhile, international donors have pledged \$340 million in humanitarian aid to help Venezuelan migrants in Colombia and elsewhere. However, those figures pale next to the more than \$23 billion that countries and multilateral organizations committed to help Syrians fleeing their war-torn country in the first five years of the exodus, according to UN data.

Some 600,000 Venezuelans in Colombia have been issued permits that allow them to work and access health care. However, the government virtually stopped handing these out in December of last year—except to deserting Venezuelan military officers—according to Jessica Bolter, an analyst at the Migration Policy Institute, a Washington-based think tank. Therefore the majority of Venezuelans residing in Colombia are undocumented.

Many find work either in the informal or gig economy. Thousands work as couriers for Rappi Inc., a Bogotá-based startup that's developed a delivery app. Teleperformance SE, a Paris-based company that runs call centers and other customer relationship services, employs about a thousand Venezuelans on contract in Colombia, according to Juan Carlos Hincapie, who heads operations in the country. No one in Colombia ever objects to dealing with someone with a Venezuelan accent, says Hincapie: "We have been brother countries for all our lives."

Venezuelans have traditionally regarded Colombia as a poor and violent place, so refugees with skills and money still try to go elsewhere if they can. But for others, this is home for now.

Exiles



Nohemí Suárez

Fled the crisis in Venezuela and is living Bogotá

“Most of my friends have gone. They’re dispersed across the world”

A migrant from Venezuela’s Monagas state, Nohemí Suárez has been in Colombia since 2017. In her native country she studied industrial engineering and was employed in the oil industry. In Bogotá, the 29-year-old—who recently renewed her permit, allowing her to stay until 2021—waits tables and makes deliveries for Rappi Inc. She talked with Bloomberg Businessweek in Rosales, an area with many restaurants, where she frequently hangs out outside a bakery-pizzeria waiting to go on a delivery run. Excerpts, translated from Spanish:

“ I work from 7 a.m. to 4 p.m. as a waitress, and then I come to this neighborhood, and I leave at 10. In the restaurant, I work from Monday to Saturday, then one Sunday on and one Sunday off. I work every day for Rappi. I would say that most Rappi workers in Rosales are Venezuelans.

I made the decision to leave Venezuela when we saw that we couldn’t afford breakfast, lunch, or dinner. I send money to my mother back home. My goal in emigrating is to help those back there—not for me to be eating well and thinking about my family without anything to eat.

In Venezuela, in about 2013 or 2014, I started to feel that the situation was no longer normal. There was no rice; things were missing from the shelves. Then cash began to run short—you’d go to the bank, and there was no cash.

Most of my friends have gone. They’re dispersed across the world. We talk via WhatsApp. Everyone says that as soon as Venezuela is fixed, they’ll go back. No one thinks of staying here, even if they’re doing well. Everyone has this feeling for their homeland.

I grew up under Hugo Chávez and his Bolivarian Revolution, and my mother was a strong follower of Chavismo. She was annoyed when I started to have a different opinion about politics. But I’ll say this: Under Chávez, things weren’t like this. Maybe it’s my ignorance talking, but I believe that if Chávez were alive, this wouldn’t be happening. Everything started to fall apart when he died.

I’ve lost a great deal. I’ve lost sharing time with family, and as the years go by, I’ve lost my youth. I would have liked to keep working in my profession and have my house and my family and have a stable life in my own country.

I’m not the Nohemí I used to be—the Nohemí who went out with her friends, who’d go out with her work colleagues. Here my life has become a monotonous routine. I don’t have any social life, because on my free day I want to rest. ”

SAMSUNG

Galaxy Fold



The future unfolds

Image simulated.

02

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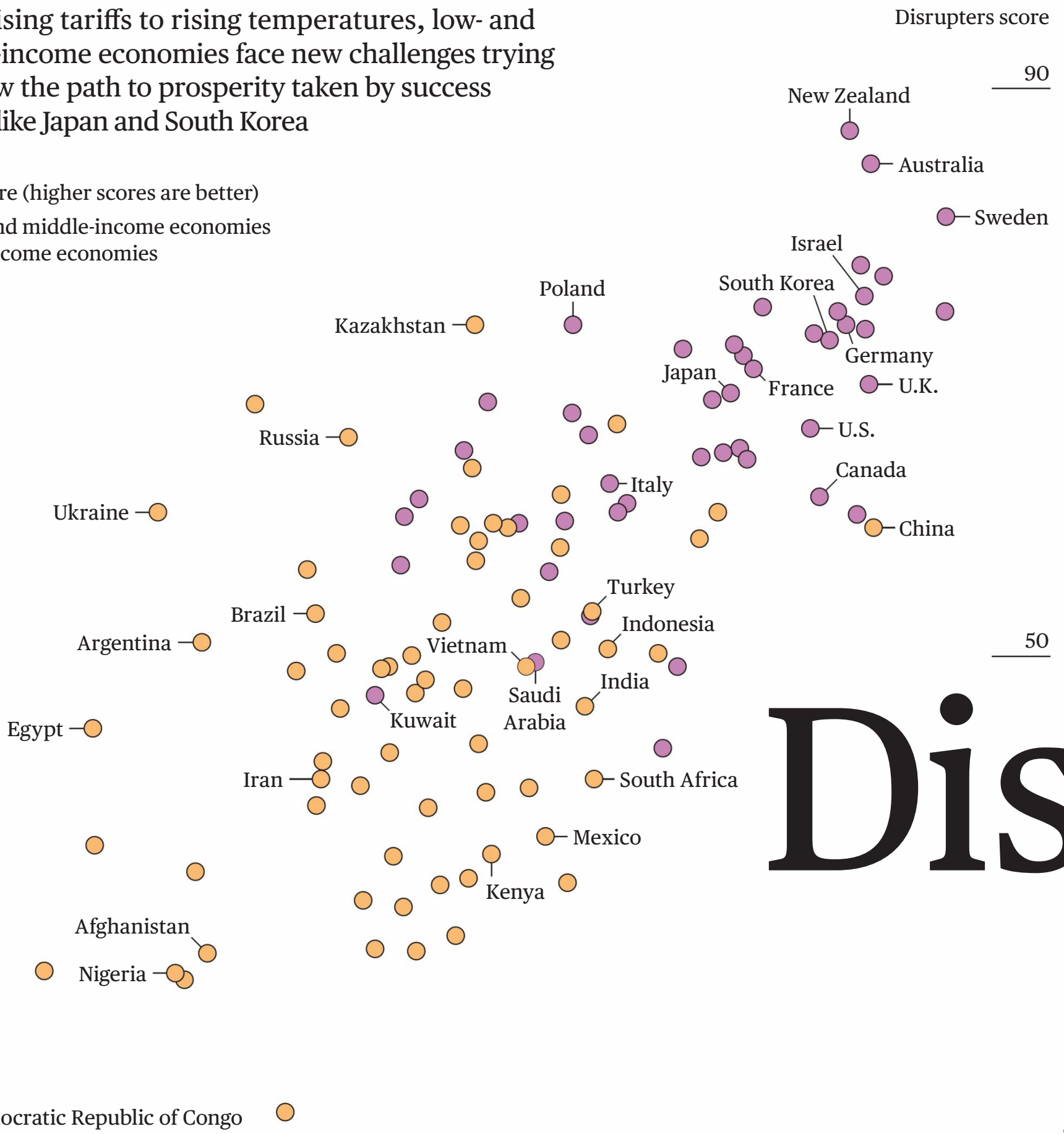
17

Drivers &

From rising tariffs to rising temperatures, low- and middle-income economies face new challenges trying to follow the path to prosperity taken by success stories like Japan and South Korea

Index score (higher scores are better)

- Low- and middle-income economies
- High-income economies



Dis

● Democratic Republic of Congo

25 Drivers score

Ethiopia 50

Less vulnerable to disruption ▲
75 10
Stronger growth drivers ►

By Tom Orlik, Scott Johnson,
and Alex Tanzi

Twenty years ago, China's economy was one-tenth the size of the U.S.'s. In 2019 it's two-thirds as big. Based on the current trajectory, in 2039 it will be more than 10% larger. India will have leapfrogged Japan and Germany to claim the No. 3 spot in global rankings. Vietnam will be closing in on the top 20.

Or not.

Disruptive forces are sweeping the global economy. Populist regimes are throwing out the policy rulebook. Protectionism is choking the trade flows that fueled China's rise. Automation and the digital economy are increasing productivity for some, eroding old sources of advantages for others. The threat of climate change looms.

The path to prosperity taken by successful countries such as South Korea and Japan is increasingly

rupters

hard to follow. From Beijing to Brasília, getting the right mix of smart investment, a skilled workforce, capacity for innovation, and effective governance is already tough. Combating forces—whether protectionism or climate change—that threaten to have an outsize impact on low- and

middle-income countries adds to the challenge.

Bloomberg Economics' *Drivers and Disrupters* report captures the forces narrowing the path to development and upending the pattern of winners and losers in the global economy. The report covers 114 economies accounting for 98% of global gross domestic product. It gauges their performance on the traditional drivers of development: investment, labor force, and productivity. Uniquely, it also tracks the disruptive forces that promise to redraw the global economy's pattern of winners and losers: automation, climate change, digitization, populism, and protectionism.

Drawing on a variety of data, we build a set of indexes to rank countries from best to worst on traditional drivers and new disrupters of economic prosperity. The main finding: Catching up is getting harder. Low- and middle-income countries are, in general, poorly positioned to adapt to disruptions.

Without an early, ambitious response forged at national and international levels, the number of nations moving from low- to middle-income status and then on to high-income—already limited—could dwindle further.

Take China. Measured by traditional drivers of development, it



Protectionism Risk (higher index scores are better)

Australia	94
Argentina	78
Japan	77
Russia	73
Indonesia	68
Brazil	68
Italy	67
Turkey	67
South Korea	64
India	60
Germany	55
Vietnam	55
France	55
Saudi Arabia	55
South Africa	52
U.S.	49
U.K.	41
Nigeria	38
Canada	26
China	20
Mexico	0

National income level

High
Middle or low

◀ outperforms. Rapid modernization of infrastructure, advances in education, investment in research and development, and can-do government have delivered four decades of stellar growth. As for the disruptive forces rippling through the global economy, China is less well-placed. Protectionism threatens to stem its trade flows and slow its technology catch-up to global leaders. Climate change will compound stresses on the country's long coastline and a population already parched from water scarcity. High income inequality and limited social mobility pose a medium-term threat to political stability.

For China and other low- and middle-income countries, getting it right on the traditional drivers of development remains vital. Yet a skilled workforce, modern infrastructure, and supportive government, on their own, are no longer sufficient. The right response to disruptive forces, developed at a national and international level, is essential.

Advanced economies face the same challenge. For the U.S., a workforce boosted by immigrants and accelerating gains in productivity could support annual GDP growth of 2.7% in the next decade. Without those, projections by Bloomberg Economics show, growth could slump to 1.4% a year.

● *Protectionist Perils*

Many of the disruptions to the global economy can be traced to two sources—trade and technology.

Trade is a driver of prosperity. But trade without agreements on the rules of the game and without compensation for losers has resulted in a protectionist backlash. Bloomberg Economics estimates the cost of the U.S.-China trade war could reach \$1.2 trillion by 2021, with the impact spreading across the Asian supply chain. Brexit and threatened U.S. tariffs on auto imports would add to the price tag.

Our protectionism index starts with a calculation of the risk countries face from the trade war. We use two metrics: the share of GDP exposed to U.S.-China trade, Brexit, U.S. automobile tariffs, and other disputes; and a measure of trade uncertainty developed by International Monetary Fund economists Hites Ahir and Davide Furceri and Stanford's Nicholas Bloom. We also incorporate countries' exposure to future protectionist risk, gauging the importance of trade to the economy, trade balance with the U.S., current tariff levels, and participation in global supply chains.

China appears as one of the most vulnerable major economies. The U.K., with Brexit threatening to break its ties with the European Union, is

Automation Risk (higher index scores are better)

China	86
U.K.	80
U.S.	77
Canada	72
Russia	71
France	70
Germany	62
India	61
South Korea	53
Turkey	46
Italy	44
Brazil	41
Japan	40
Vietnam	40
Mexico	38
Argentina	1
South Africa	0

DATA FOR AUSTRALIA, INDONESIA, NIGERIA, AND SAUDI ARABIA AREN'T AVAILABLE

also high on the list. For late bloomers such as Vietnam that aim to travel China's road to prosperity, the door to global markets is creaking closed. Without free trade, development is a harder slog.

● *Robots Rising*

Automation is delivering advances in productivity and profits at the expense of job security. McKinsey Global Institute estimates that by 2030, some 14% of the global workforce—375 million workers—may have to find a new occupation. Rapid progress in artificial intelligence and machine learning could push that number even higher.

If badly managed, the result for advanced economies will be a further polarization in income, with a growing divide between high-skill haves and low-skill have-nots. In emerging markets, lower wages reduce the incentive to automate, but that doesn't mean the risk of disruption is low. Automation is rapidly approaching the level where a substantial share of low-value-added work can be done by machines, undermining developing countries' low-cost advantage. Harvard economist Dani Rodrik finds that the combination of globalization and automation has resulted in "premature deindustrialization" in low- and middle-income economies, blocking their path to prosperity.

Our automation index draws from a study by IMF economists Mitali Das and Benjamin Hilgenstock that cross-references data on which tasks are easily automated with national surveys showing the composition of labor markets. It also incorporates a measure of workforce skills and flexibility, spending on workforce training and income support, and the share of the population with university education.

The results show that countries with a high share of workers in routine jobs, low spending on support for displaced workers, and a small university-educated population face the highest risks. Of course, the data doesn't capture all the factors. Japan, for example, faces high exposure to automation, but also benefits from the competitiveness of its robotics industry.

● *Digital Divide*

Globally almost 4 billion people are connected to the internet. In high-income countries, 4 of 5 people are online. In developing economies, internet use is at 45% and rising rapidly.

The impact is far-reaching. In China, e-commerce is creating opportunities for entrepreneurs and consumers, supporting the rebalancing of the economy. A vast increase in data flows is driving what Richard Baldwin, an economics professor in Geneva, ►

Digital Economy Opportunity
(higher index scores are better)

South Korea	96
Germany	89
U.S.	83
U.K.	79
Japan	78
France	77
Italy	75
China	72
Canada	67
Australia	64
Russia	62
Saudi Arabia	54
Turkey	53
Brazil	50
India	50
South Africa	48
Argentina	46
Vietnam	43
Mexico	39
Nigeria	29
Indonesia	27

Populism Risk
(higher index
scores are better)

Australia	86
South Korea	77
Japan	76
Vietnam	68
Germany	65
Indonesia	58
Argentina	57
France	55
U.K.	52
China	50
Canada	47
South Africa	43
Mexico	41
U.S.	40
Russia	39
Italy	39
Brazil	38
India	29
Saudi Arabia	23
Turkey	18
Nigeria	8

Climate Change
Risk (higher index
scores are better)

Germany	94
Australia	94
Canada	93
France	93
U.K.	93
Italy	86
Russia	82
Turkey	81
U.S.	81
Argentina	72
Japan	71
South Korea	70
Brazil	68
Mexico	68
Saudi Arabia	66
China	66
South Africa	63
Indonesia	49
Vietnam	39
Nigeria	36
India	32

◀ calls the “third unbundling,” with the potential for services to be outsourced across borders in the same way manufacturing has been.

Done right, digitization holds out the promise of higher productivity, with the potential for low- and middle-income countries to leapfrog along the development process. Done wrong, the digital divide will exacerbate income polarization in high-income countries and make it harder for low- and middle-income countries to access global opportunity.

Our digital economy index assesses preparedness across four dimensions: quality of internet infrastructure, and engagement of consumers, businesses, and governments. The results show a stark divide. High-income economies, with Singapore and South Korea topping the list, have high-quality infrastructure and high levels of engagement among consumers, business, and government. With a few exceptions, low- and middle-income countries don’t. The digital economy presents an opportunity for development. Most developing nations aren’t well-positioned to seize it.

● *Populist Politics*

Trawling data on elections since 1870, a team of researchers led by Manuel Funke at the Free University of Berlin found

that financial crises trigger a surge in support for populist parties. The 2008 crisis was no exception. From the U.S. to Italy, a tide of resentment has redrawn the political map. We define populist rulers as those who advocate for the common people against corrupt elites, simple solutions vs. complex policies, and national unity over international engagement. Following that definition, 43% of total GDP in the Group of 20 economies is under the control of populist rulers, up from 8% in 2016.

Based on the evidence so far, populist rulers are better at identifying problems than they are at finding solutions. The result has been protectionism, opposition to immigration, unfunded tax giveaways, attacks on central bank independence, and head-spinning policy uncertainty.

Populist rulers differ. (Some even question the value of the term as a catch-all category.) Yet there’s a distinct family of factors that contributes to their rise—high inequality, low social mobility, and high unemployment. Other factors, such as rising immigration, high crime rates, and weak political institutions, are frequent contributors.

Our results show the highest risk in low- and middle-income countries. Turkey, where policy missteps have contributed to a current-account

crisis, shows up among the most vulnerable.

● *Climate Calamity*

Inward-looking leaders are poorly equipped to confront another systemic risk: climate change. The consequence of temperatures 1C above preindustrial levels is already evident. Extreme weather events—whether historic floods in Thailand or Category 5 hurricanes battering the U.S.—are wreaking havoc on housing, infrastructure, and supply chains. Insurance losses have risen fivefold since the 1980s.

As temperatures continue to move higher, the economic impacts will be wide-ranging. Uncertainty about climate risks creates a disincentive for businesses to invest. Higher temperatures reduce labor productivity. Climate adaptation diverts resources away from more productive uses. The transition to a low-carbon economy brings opportunities, but a trade-off between emissions and growth may be unavoidable. Putting a dollar value on the economic impact is tough. The United Nations Intergovernmental Panel on Climate Change estimates the cost is from 0.2% to 2% of global GDP a year. Even at the lower end of that range, the costs will be measured in hundreds of billions of dollars a year. At the upper end, they're in the trillions.

To measure the risk from climate change, we use the Notre Dame Global Adaptation Initiative vulnerability index from the University of Notre Dame in Indiana. In the index, low- and middle-income countries, with high temperatures, reliance on agriculture, vulnerable populations, and limited resources for adapting, are the most exposed. Among major economies, India and Vietnam show up among the most vulnerable.

● *Driving Development*

Even as disruptive forces loom, low- and middle-income countries face a challenge in putting the traditional drivers of growth into place. We track traditional drivers of development across four pillars:

○ Increases in the labor force provide a basis for growth. We employ projections of the rise in the working-age population through 2030.

○ Expansion in the capital stock, efficiently allocated, raises labor productivity. We use measures of investment as a share of GDP and as proxies for the quality of that investment, gross government debt as a share of GDP, and a measure of investment freedom from the Heritage Foundation.

○ Policies that increase productivity unleash the economy's potential. We incorporate a set of measures to capture education, macroeconomic stability, ►

Development Drivers (higher index scores are better)

China	70
Australia	69
U.K.	69
Germany	68
South Korea	68
Canada	67
U.S.	67
France	64
Japan	63
Italy	57
Indonesia	57
South Africa	57
Turkey	57
India	56
Mexico	54
Saudi Arabia	54
Vietnam	54
Russia	45
Brazil	44
Argentina	39
Nigeria	37

Disruption Risk
(higher scores
are better)

Australia	85
Germany	73
South Korea	72
France	70
U.K.	69
Japan	68
U.S.	66
Russia	65
Italy	62
Canada	61
China	59
Turkey	53
Brazil	53
Argentina	51
Indonesia	50
Saudi Arabia	49
Vietnam	49
India	46
South Africa	41
Mexico	37
Nigeria	28

◀ openness to trade, financial market development, innovation, and business climate.

○ Distance from the frontier—or, to put it another way, the potential to catch up—gives low- and middle-income countries space to grow simply by learning from advanced technology and management practices in high-income countries. We measure GDP per capita as a percentage of U.S. GDP per capita.

Unsurprisingly, the results show that high-income countries have a considerable advantage. Sweden, Switzerland, and Denmark top the rankings, reflecting high levels of education, openness, and effective governance. China leads the ranking for emerging markets, bolstered by strong investment, support for innovation, and considerable scope to close the gap with high-income countries.

Other middle-income countries have found China's example tough to follow. In Brazil, the foundation of high-quality basic education is missing, and high government borrowing has crowded out private investment. In Russia, Poland, and other former communist countries, a shrinking working-age population is a drag.

● Looking Forward

Low- and middle-income countries are more vulnerable to disruptions to the global economy. Protectionism blocks

access to global markets. Populism takes policy off track. Climate change creates havoc.

Policies matter. Within the low- and middle-income group, countries that have moved early to get traditional drivers of development in place will be better positioned to adapt. China is making major investments in innovation, which is necessary to move the economy up the value chain. Brazil isn't.

Among high-income countries, those with a dynamic response to disruptive forces are better placed. Denmark is investing in workforce training and providing support for displaced workers as a cushion against automation. The U.S. isn't.

What's needed: at a national level, policies that create the right environment for investment and innovation, provide training for workers adapting to automation, and open opportunities in the digital economy; at an international level, new rules on trade in goods, preparation for a digital surge in trade in services, and renewed momentum in the fight against climate change.

International dialogue creates opportunities to learn from best practices and avoid missteps. As this report makes clear, some countries are getting it right, and some aren't. For those in the second category, the results are a wake-up call and an opportunity. **B**

This is an excerpt from Bloomberg Economics' Drivers and Disrupters report. For the full report, go to [Bloomberg.com/NewEconomyIndex](https://www.bloomberg.com/neweconomyindex).

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03

CLIMATE

By Matthew Hill

Photographs by Zinyange Auntony

A Hard Life



A makoro—the local version of a dugout canoe—at dawn in Zambia. Fish accounts for about half of the country's animal protein consumption, but breeding grounds that are usually flooded by rains were dry this year. Fishermen accustomed to bringing in bream and tigerfish are lucky to get mudsuckers, a small, spiky fish they would normally give to their dogs.

on the River

For millions of people across southern Africa, the Zambezi River serves as highway, fishing ground, water fountain, laundromat, and swimming hole. From its source—a trickling spring in the highlands of northwestern Zambia—the river winds almost 1,700 miles through the forests of eastern Angola and along the borders with Namibia, Botswana, and Zimbabwe before fanning out into a delta with dozens of channels in Mozambique.

As global warming intensifies, the Zambezi basin and other impoverished coastal or riverine communities worldwide are increasingly at risk.

“For Africa, climate change is not a remote prospect, it is a crisis now,” United Nations Secretary-General António Guterres said in August.

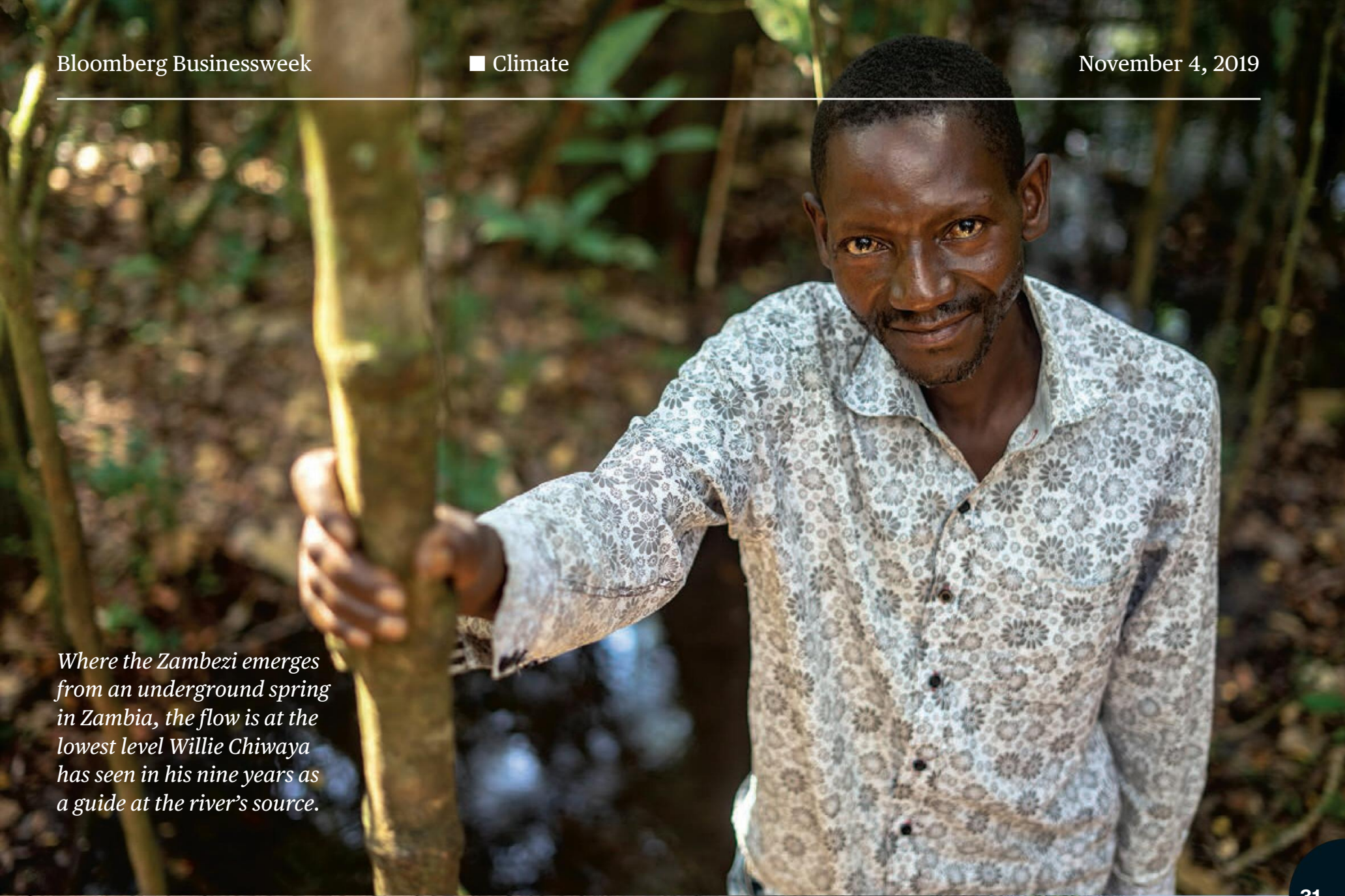
A two-week journey down the Zambezi shows the hardships faced by those whose livelihoods depend on the river. Water on the upper reaches is near its lowest level in a half-century because of drought, resulting in crop failures, a collapse in fish stocks, and a sharp drop in power from dams that provide Zambia with 80% of its electricity. In Mozambique, flooding from a pair of vicious cyclones has killed hundreds and caused billions of dollars in damage.

With too much water in many places and too little in others, this year’s harvest of corn—the region’s staple food—has been almost entirely wiped out across large areas. The World Food Program says a record number of people in the region—45 million—face severe food insecurity because of climate change. Angola will need more than 1.2 million metric tons of grain to make up for its failed harvest. In Mozambique, the International Monetary Fund has cut its 2019 growth forecast below 2%, the lowest in almost two decades. Zimbabwe is facing the worst food shortages in its history.

In western Zambia, the Lozi people canceled an annual ceremony called the Kuomboka, where the king travels by royal barge to higher ground when the Zambezi’s lowlands flood; the chief in charge of the ceremony says he’s never seen a drought this bad in his 73 years, with marshy areas that should be underwater at the end of the rainy season dry enough to drive through.

Zambia’s president, Edgar Lungu, mentioned climate change 44 times in his annual address to parliament in September. His government has even considered a canal linking the Zambezi with the Congo River—a near-impossibility because it would require pumping water uphill. “The inability to have adequate water, generate enough power, and grow enough food to feed our people have all been greatly caused by climate change,” Lungu told the assembled parliamentarians. “This is a very serious matter that should not be taken lightly.” —*With Taonga Clifford Mitimangi and Borges Nhamire*



A man with a beard and short hair, wearing a light-colored patterned button-down shirt, stands in a forest. He is holding a thick wooden staff or branch in his right hand. The background is filled with green foliage and trees, suggesting a natural, wooded environment.

Where the Zambezi emerges from an underground spring in Zambia, the flow is at the lowest level Willie Chiwaya has seen in his nine years as a guide at the river's source.



Two giant hydropower dams on the Zambezi River offer stark examples of the varied effects of shifts in the climate. At Kariba, on the border of Zimbabwe and Zambia, water levels are close to their lowest in decades, while the Zambezi's lower reaches are flooding. The Zambezi River Authority has been cutting the outflow at Kariba—and thus power production—causing blackouts across the two countries. Just 120 miles downstream, at Cahora Bassa in Mozambique, the reservoir was so full the floodgates had to be opened.

▼ *Nyami-Nyami, the Zambezi Snake spirit, is said to live in the Kariba reservoir. Locals blamed him for floods in the 1950s that killed workers and slowed the dam's construction. These days, they say the drought proves Nyami-Nyami is angry, and traditional leaders have planned rituals to placate him.*



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What the world knows as Victoria Falls is called Mosi oa Tunya—"The Smoke That Thunders"—by locals. The planet's biggest sheet of falling water is 1.2 miles wide and drops 328 feet into a chasm. At the peak of its flow around April, it churns up a mist that can be seen 30 miles away. But this year, with the water at its lowest level in more than two decades, there's little smoke and no thunder.



In Mozambique, heavy rains along the Zambezi flooded cornfields late in the growing season, rotting the roots and decimating the harvest. And this was before two Category 4 cyclones hit Mozambique in consecutive months—the first time in recorded history that has happened. Floods killed more than 700 people in the country and ruined 300,000 acres of crops.

34



Climate change becomes a vicious circle. Namasiku Imasiku cuts down trees, covers the wood in sand, and burns it to make charcoal that she bags and sells in town, three hours away. More people are doing the same as rural incomes slide, causing prices to plunge and accelerating deforestation, a major contributor to global warming. With the water so low, dams are generating far less electricity, so there are plenty of buyers for the charcoal, which they need for cooking.



Rice and vegetables typically thrive on the fertile Barotse floodplain, and cattle graze on its grasses. Farmer Lubinda Kawana says the water should be neck-deep, but this year it barely covers his ankles—forcing ranchers to sell their herds before the worst of the dry season.



Kalaluka Kalima, a 32-year-old environmental engineer, works for a charity in Mwandi, a town of 4,000 in southwestern Zambia. While richer countries produce the greenhouse gases that cause global warming, Zambia and its neighbors pay the price: a total failure of this year's corn crop. "The farmers harvested nothing," he says.

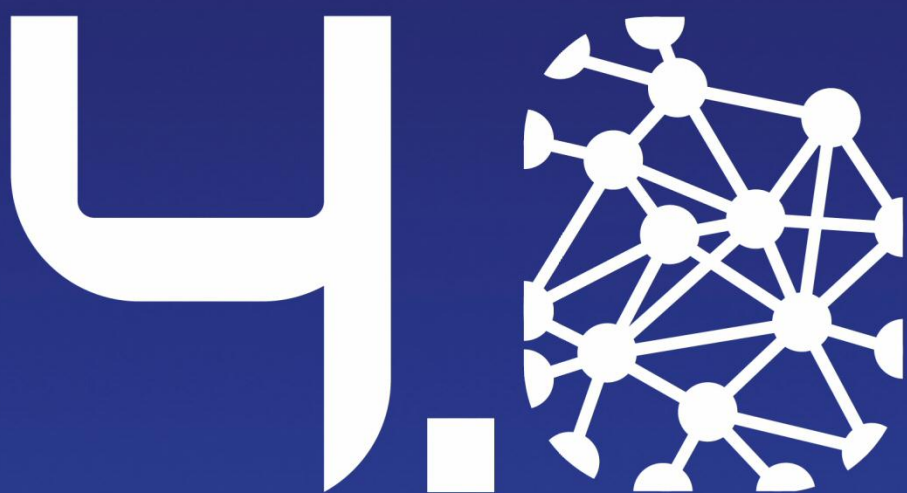


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04

URB
AN
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ION

37

The Walking City

By Wes Enzinna



38

▲ A sign in Vitoria-Gasteiz alerts drivers to the pedestrian paradise ahead

On weekends, Calle de Postas in Vitoria-Gasteiz, Spain, feels like a never-ending block party. Cyclists share the magnolia-shaded street with off-leash dogs and teetering toddlers. There are bustling cafe tables and families on benches eating ice cream. That's life in this city of 200,000 in the Basque Country, where nearly half the streets have been converted into car-free zones over the past decade.

"This city is my test case," says Salvador Rueda, a Spanish urban planner known for overseeing large-scale pedestrian conversions in Barcelona and Buenos Aires, among other places. Vitoria-Gasteiz, he says, is his "laboratory," a city whose history as a center of auto manufacturing—it's home to factories for Mercedes and Michelin—makes it an unlikely showcase. "If we can do something here, others can see it and replicate our results."

Rueda, 66, is known as the world's leading proponent of "superblocks"—in which groups of commercial or residential streets are barred to through traffic, crisscrossed by pedestrian walkways, and carpeted with grassy malls. Thanks to his work, Vitoria-Gasteiz has 63 of them, with plans for 48 more. "It's a revolution," Rueda says as we ride bikes down Calle de Postas. "A cheap revolution, where you don't have to demolish a single building."

The idea of large vehicle-free blocks, which has been around since the 1920s, has been applied, often with underwhelming results, to the design of corporate campuses and public housing. But nobody has used superblocks as extensively or as successfully as Rueda. In parts of downtown Vitoria-Gasteiz, he and his team have reduced the number of cars on the road by 27%, leading to a 42% reduction in the city's carbon

dioxide emissions. A full 50% of residents walk as their primary mode of transportation, and 15% bike. In September the United Nations named Vitoria-Gasteiz the global Green City of the Year, citing its commitment "not just to sustainability but to citizen equality, security, happiness, and health." Cities in the U.S. and Latin America are considering adopting its model.

To make a superblock, Rueda and his team typically start with nine square blocks totaling about 40 acres. Then they extend the sidewalks, plant trees, add bike lanes, and install benches. Cars aren't entirely

forbidden—in Rueda's Spanish projects, residents and delivery vehicles must abide by a speed limit of 10 kilometers (6 miles) per hour, the equivalent of a jog—but through traffic isn't allowed. Cameras clock cars' speeds and routes, and rule breakers are fined €200 (\$223) for each violation. "Everyone here follows the rules," Rueda says, dismounting from his bike and

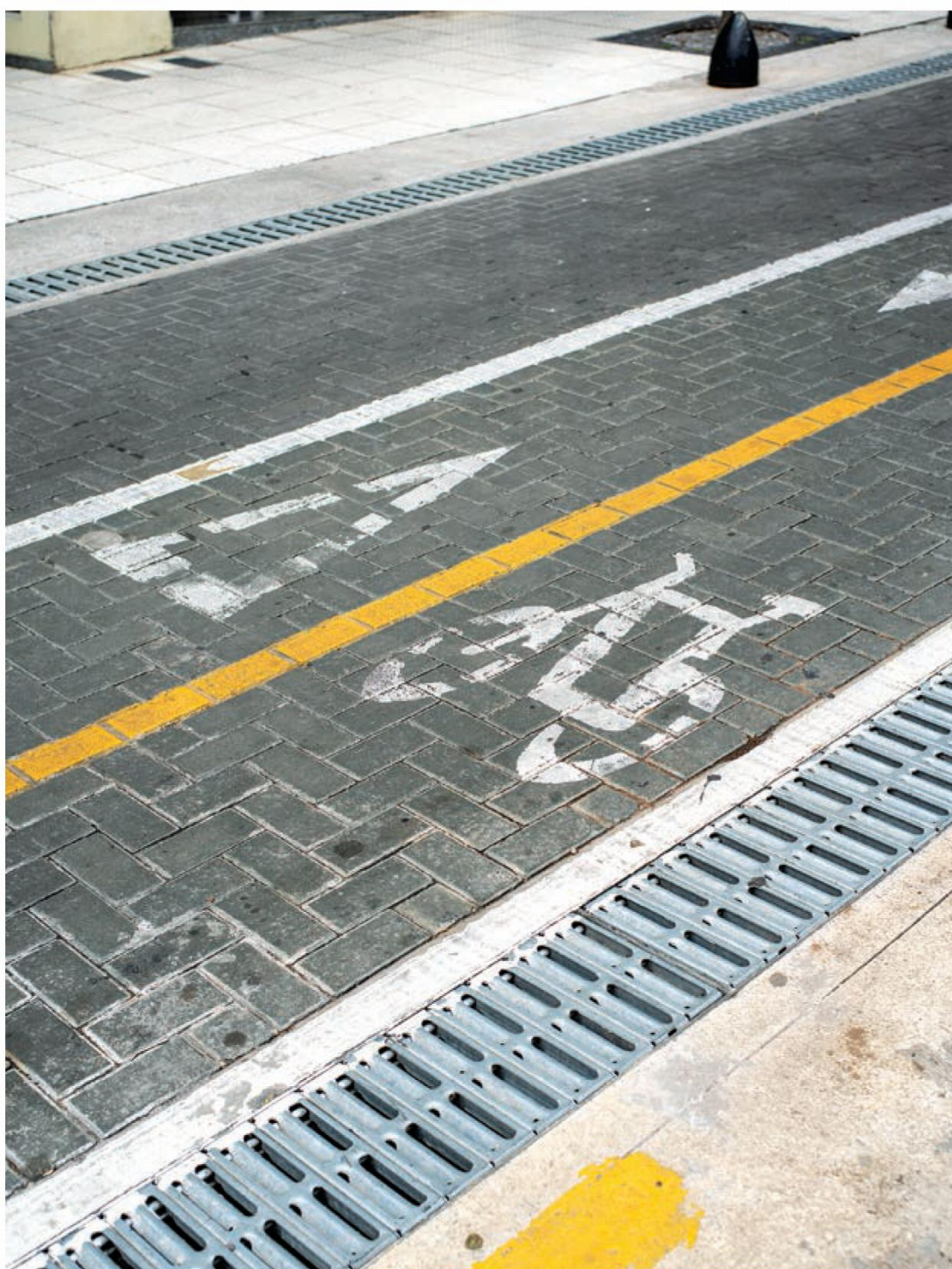
pointing slyly to a closed-circuit camera on a building. "But just in case they don't, we keep an eye on them."

The average conversion for a single superblock costs about €5 million, and the total cost of superblock projects in Vitoria-Gasteiz from 2008 through 2016 was €56.6 million. On Calle de Postas, which is part of a superblock called Sancho el Sabio, the biggest expenses came from creating cycling and pedestrian lanes and public bicycle storage and rerouting bus lines around the perimeter. Building underground garages for stowing parked cars was another big cost, as was explaining the whole thing to the public. Funds were provided by the Basque regional government as well as by Madrid and the European Union. ▶



▲ Rueda

**“It’s a revolution.
A cheap
revolution, where
you don’t have
to demolish a single
building”**



▲ *Bike lanes in Buenos Aires*

“We’re very lucky here,” says Gorka Urtaran, Vitoria-Gasteiz’s mayor. In his city, he says, environmental politics aren’t as polarized as they are in many other parts of the world and even other parts of Spain. The local branch of the center-right Partido Popular supports superblocks, as do the major car manufacturers, which employ 30% of the city’s workforce. Alberto González Pizarro, business director of Irizar E-mobility,

an automotive company that’s been contracted to build electric buses, says carmakers see superblocks as a business opportunity. “What is emerging are other modes of transportation that we’re well-equipped to build,” he says. “We’re ready for the future.” The taxi drivers union has come around, too. “We make the same and sometimes more in fares now, and we’re not destroying the environment to do it,” says Izaskun López de Sosoaga, president of the Taxi Association of Alavesa, a drivers union in Vitoria-Gasteiz. “It’s a win-win.”

Things have been less smooth in Buenos Aires, where Rueda was hired in 2018 to create superblocks in five neighborhoods. Unlike cities in Spain, with their plazas and wending alleys that are ideally suited to pedestrians, Buenos Aires depends more on cars, with less reliable public transit. There have been some successes—the city claims that traffic in parts of its downtown “microcenter” has fallen 77%—but because vehicles are banned from the blocks during the day, shopkeepers complain of having to show up as early as 7 a.m. to receive deliveries. “People love to stroll across these streets,” says Nancy Demellier, 56, who runs ABC Glass on Maipú Street. But “we as retailers are a little bit tired of this situation.”

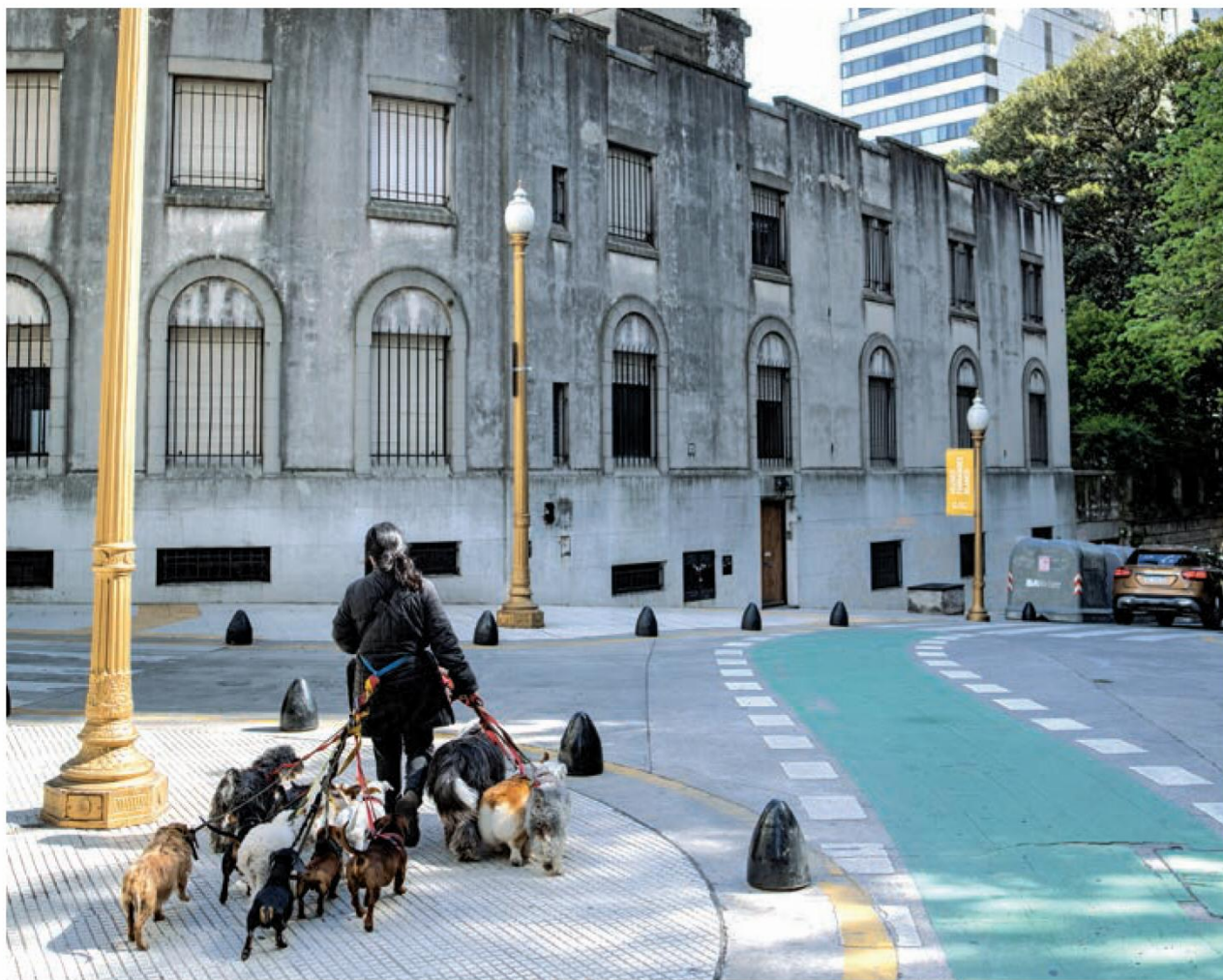
In the neighborhood of Once, west of the microcenter, resistance from warehouse owners and retailers was so intense that the municipality dramatically scaled back its plans. “This is a city where 3 million people go to work every day, many of them by car,” says Pablo Güiraldes, director of urban renewal for the city’s Environment and Public Space Ministry. “It’s hard to calm down expectations of bringing and parking your car everywhere after more than 50 years of pro-automobile policies.”

Similar problems have come up in Quito, Ecuador, where Rueda first drew up plans for

superblocks in June 2014. Since then a few streets have been converted, but because bus lines in the country are mostly privately owned, the city government wasn’t able to reroute the buses, which still roar through the proposed superblocks.

Even in Spain, some residents aren’t willing to cede the streets to pedestrians just yet. In Barcelona, where the city government has built six superblocks, with plans to create as many as 503 by 2050, there

have been small but feisty public protests. In the Poblenou neighborhood, one local, Francesco Abad, complained last year to the newspaper *Ara*, “Now I need another 20 minutes to go to work. I have to walk a third of a mile to get to my car.” The website CityLab reported that car trips around the superblocks were taking three times as long as before. “Continuing this pattern across the city... would make navigating Barcelona by car as complex as solving a Rubik’s Cube,” the article noted.



▲ Retiro is one of five Buenos Aires neighborhoods designated for superblocks

Janet Sanz Cid, the deputy mayor for energy and urban planning, acknowledges the inconveniences but says they're a modest cost for addressing a public-health crisis. Last year at least 351 people died as a result of exposure to air pollution from car emissions, according to the city's Public Health Agency. A study published this September by the Barcelona

Institute for Global Health calculates that the city could prevent 667 premature deaths every year if it built all the proposed superblocks.

Another complaint in Vitoria-Gasteiz and Barcelona is that rents have risen in the apartments adjacent to the superblocks, which risks pushing residents out. It's the iron law of gentrification: Make something nice, and prices go up. To address this problem, Urtaran in Vitoria-Gasteiz and Barcelona Mayor Ada Colau support a national rent control bill. "The solution," Rueda says, "isn't to not build superblocks—it's to build them everywhere, so there isn't competition between different neighborhoods."

Rueda is keenly aware of the dangers cars pose. In 2004 he and his family were driving down a highway when a car in the oncoming lane passed over a manhole cover that had been left ajar. It sent the 50-pound steel disk flying into the air and through the windshield of his blue Volvo. Rueda's wife was hit

in the face and killed instantly. He says he'll forever associate automobiles with "the hell inside the car that day" and points out that in the 20th century, motor vehicle collisions killed about 60 million drivers, cyclists, and pedestrians. "Cars are an interesting artifact of a historical era," he says. "But maybe their moment as a useful technology has passed."



▲ A network of cameras controls traffic in Vitoria-Gasteiz

“Cars are an interesting artifact of a historical era. But maybe their moment as a useful technology has passed”

Even so, Rueda insists today that he “doesn’t hate cars.” He says, “There are many ways to reduce CO₂ emissions in cities. Superblocks are just one little building block helping us think about what the future of cities might look like.”

In a recent paper he offered an appropriately Spanish metaphor for his ideas, comparing the composition of cities to that of the national rice dish: “Paella is a system of proportions,” Rueda wrote. “Even if you use the best ingredients, if you don’t add salt, the paella will be bland, and if you add too much, it will be inedible.” By allowing cars to totally

dominate our cities, he argued, we’ve oversalted and ruined our dinner.

Back in Vitoria-Gasteiz, we’ve ridden our bikes for miles along a seemingly never-ending network of superblocks to the outskirts of town, where the streets and buildings disappear and give way to a greenbelt. It’s a giant maze of forest and wetlands with bike paths and rivers flowing through it. At the far edge of the park, the real world reemerges in the form of a busy highway. On the other side are abandoned

auto plants and some newer factories, too. Standing there astride my bicycle, with Vitoria-Gasteiz behind me, the scene strikes me as a symbol of Rueda’s dream: On this side of the highway, we’re living in an unimaginably pleasant future, and on the other side of the road is the past, the world still trapped in the 20th century. I ask Rueda if he thinks the two worlds can be bridged.

“I don’t know,” he says. He smiles and turns back toward the city and its superblocks. “Let’s just keep pushing toward Vitoria-Gasteiz.” **B**



▲ The city’s first superblock covered the main square




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05

FINANCE

Paying With Plastic

By Sheridan Prasso

Nyoman Dartini used plastic to pay for temple offerings she made for a summer full moon celebration on the Indonesian island of Bali. She plans to use plastic again to buy food and make more offerings during Galungan, a Hindu celebration marking the victory of good over evil.

Not plastic as in a credit card, but the bottles she collects from her job as a sweeper at a market in Denpasar. She brings them to a collection center operated by Plastic Bank, which tallies her deposits and sends her texts updating her balance. “My salary is not enough,” says the 60-year-old, speaking cheerfully about the extra 100,000 rupiah (about \$7) she averages every month. The money supplements her own wages as well as those from her husband’s construction work and their son’s job in hotel housekeeping. “If I didn’t have this money, we would have to take out loans.”

People the world over have been collecting plastic and selling it to recyclers for decades. But the notion of turning waste into a means of financial enfranchisement is a big new idea in economic development circles. Plastic Bank collectors earn the highest rate for bottles in their local markets, plus bonuses. And they can store value at the bank, rather than cashing out daily.

Environmentalists are pleased, too. Motivated collectors pick up more plastic, which has the potential to boost the dismal rate of plastic recycling.

Around the world, efforts are under way to redefine plastic as a currency to keep it from being discarded in landfills, oceans, and waterways. The Indonesian government operates a network of so-called trash banks—recycling centers that not only give collectors cash for plastic but also grant them loans they can repay with plastic. In Surabaya, the country’s second-largest city, residents can pay bus fare using plastic bottles or cups; it’s an initiative of the city’s first female mayor, Tri Rismaharini, who set an ambitious target of reaching zero plastic waste by 2020. A two-hour bus ticket costs 10 plastic cups or up to five plastic bottles, depending on their size.

Some subway stations in Beijing and Rome have been outfitted with machines that accept plastic bottles in exchange for credits that can pay for metro tickets. In India, some community schools accept recyclable plastic for tuition payments. On the Italian island of Sardinia, the Taiwanese company

Miniwiz Co. opened a pop-up store selling items made from recycled plastic; the only way to pay was to deposit more plastic objects into a machine called the Trashpresso. And in June, Anheuser-Busch InBev SA/NA’s Corona sponsored a weeklong beer-for-plastic program, through which drinkers in five countries exchanged recyclable plastic for a brew in bars.

Plastic Bank seeks to operate on a larger scale than these local and short-term projects. The brainchild of Vancouver entrepreneur David Katz, whose 2018 TED Talk on plastic waste has been viewed 1.8 million times, the bank was introduced in Haiti in 2015 and then expanded to the Philippines and Indonesia. Egypt is next. Katz recently visited the Vatican to discuss getting Catholics around the world to bring recyclable plastic to church on Sundays—a project he says is under way in Brazil.

When it enters a new country, Plastic Bank works with existing recycling centers and engages a large international company to support its programs. In Indonesia, S.C. Johnson & Son Inc., an American manufacturer of household cleaning supplies—and a prodigious producer of plastic packaging—committed to funding the nine Bali branches of the bank for 2019. The company also announced plans to start making some bottles for Windex window cleaner entirely out of plastic brought to Plastic Bank locations in Indonesia and the Philippines. “We would like to be, if not the front-runner, then at least a pioneer” in moving to all-recycled packaging, says Nanto Kartohadiprodjo, an S.C. Johnson country manager for Indonesia. Consumer-goods businesses “are aware that people aren’t going to stand for them using virgin materials,” Katz says. “So we’re building out the supply chains now.”

Plastic Bank is also drawing people into the formal financial system. “Most banks don’t want the poorest of the poor, because there’s no money to be made,” says Shaun Frankson, a co-founder of the organization. “Recycling is a way to get them their first bank accounts.” Of the more than 3,200 account holders in Bali, about 1,200 have a positive balance in an e-wallet on the Plastic Bank app. That means they may eventually become interesting to regular lenders. Ni Made Supartini is the accounts manager at Unit Simpan Pinjam, a cooperative bank adjacent to Plastic Bank’s local headquarters ►



► A woman collects plastic on Sanur Beach to supplement her income

PHOTOGRAPH BY CLAIRE MARTIN FOR BLOOMBERG BUSINESSWEEK

◀ in Denpasar. She predicts it's only a matter of time before she'll be able to convert some Plastic Bank account holders into her clients and ply them with products they currently don't have access to, such as consumer loans or mortgages. "Every time a collector is coming in, there's a possibility they'll become a customer and increase our deposit base," she says.

Muhammad Abdullah Sajad, a collector who lives with his wife and toddler in a shack connected to a Plastic Bank-affiliated center in Denpasar, used to struggle to save. "I would just be spending it all the time, buying things for the wife and kid," he says. After registering with Plastic Bank he opened his first account with a traditional bank, a co-op whose representatives make neighborhood rounds collecting money from laborers. His savings already exceed \$50; at some point he hopes to have enough to convert the bamboo home he owns back in his native Java into a solid brick house. He has additional savings in the form of bonus tokens held in his Plastic Bank account.

"Before, these collectors would all take loans from loan sharks," says Susyati (who goes by only one name), a rare female entrepreneur who runs the Denpasar recycling center affiliated with Plastic

Bank and manages the app that sends texts to her eight collectors, including Sajad. "Now that there's a bonus, they are more independent and don't need loans anymore." They also work harder. "The volume I get from three people is the same as what I used to get from eight," she says.

Gusi Made Astri, 54, a cleaner on Sanur Beach in Denpasar, starts before dawn and works two beach-sweeping shifts for the city, earning \$127 a month. She supplements that selling the plastic she collects to the bank. That money covers occasional purchases of headache medicine after working in the hot sun, which she couldn't afford previously, and temple offerings for holidays—maybe even a new dress for Galungan, she says. Now that word has gotten out that plastic is worth more, Astri finds she can fill only two shopping bags in a shift, down from two large sacks. "Awareness is high now," she says, "so it's getting harder to compete." **B**



▲ A bag of bottles earns about 36¢

India's Stressed Banks

By Abhishek Vishnoi,
Marcus Wright, and
Suvashree Ghosh

The government in India has pumped \$37 billion into ailing banks in the past three years. Lenders have been forced into mergers, and the central bank has wrested more than a dozen companies from the control of tycoons who defaulted on their debt.

But cleaning up the financial system has been like playing whack-a-mole. India's banks still sit on the biggest pile of bad loans, relative to total loans, among the major economies. They're about 9% of debts.

And now S&P Global Ratings is warning that the country's banks risk getting swept up in a crisis in a less-regulated pocket of the financial system known as shadow banking. Shadow banks are companies that lend money but typically don't take deposits from savers—they're funded by mutual funds and regular banks. After one major shadow lender, Infrastructure Leasing & Financial Services Ltd., neared collapse in

late 2018, others began to have a harder time getting funding, and they've had to rein in their own lending.

Shadow banks make loans to everyone from consumers to real estate developers to manufacturers, so the pullback is being felt throughout the economy. There's been a record slump in car sales, and residential building projects have stalled. A collapse in consumption has dragged the country's gross domestic product growth down to 5%, from a world-beating 8.1% at the start of 2018. The Reserve Bank of India, the central bank, has tried to stimulate lending by slashing interest rates.

But low rates may not be enough. "This is the classic crisis of confidence," Nilanjan Karfa and Harshit Toshniwal, analysts for Jefferies India Pvt. in Mumbai, wrote recently. "We are reaching a point wherein the RBI needs to move

decisively to try and restore faith as a lender of last resort.” In other words, Indian lenders and borrowers need reassurance that money won’t dry up.

The origins of this bad-debt mess go back to efforts to clean up an earlier one. In the wake of the global financial crisis, companies in steel, power, textiles, and construction started defaulting on bank loans. Commercial banks retreated to mend their balance sheets, opening up room for the shadow banks. But risky loans still found their way onto some banks’ books, albeit indirectly. Institutions that might have been shy of extending credit to real estate developers, for example, could lend to a shadow bank targeting the very same borrowers. “The credit profile of a bank could deteriorate sharply due to outsized exposure to weak entities,” an S&P team led by Geeta Chugh wrote on Oct. 22.

There are problems lurking in parts of India’s financial system beyond shadow banks. The Punjab & Maharashtra Co-operative Bank Ltd., an institution that accounts for a small fraction of loans in the banking system, sent a shudder through markets in September after it revealed it had lent money to a troubled developer. The bank used “dummy accounts” and other methods to hide its loans from regulators, according to a letter to the RBI from the lender’s managing director, who’s since been removed.

The public learned about this after the RBI suddenly limited withdrawals from the bank to 1,000 rupees (\$14). The central bank has since raised the withdrawal limit, after a public outcry, but it was also forced to issue a statement reassuring the public that the banking system is “safe and stable.” In the following weeks, the anxiety has spread to some bigger names in Indian finance. Several banks, including healthy ones, have taken to Twitter or newspaper advertisements to tell depositors their money is safe.

To stave off more defaults among shadow banks, the RBI has allowed banks to lend more to the companies, providing partial credit guarantees and easing mandatory liquidity ratios. Vishal Kapoor, chief executive officer

at IDFC Asset Management, says he’d like to see more government support, which would likely come through shoring up state-run banks with more capital injections. Getting state-run banks “better capitalized and stepping up on lending will help improve the sentiment and reduce funding cost,” he says.

Ananth Narayan, a finance professor at SP Jain Institute of Management & Research, has called in a column for India’s CNBCTV18.com for a way to quarantine stressed assets into a separate company. This so-called bad bank would allow lenders to cut their losses and move forward. Bloomberg Opinion writer Andy Mukherjee has proposed a land bank to buy property projects from struggling developers, who could then repay their loans.

“This is the classic crisis of confidence”

Whatever the solution, the RBI also has to be careful not to encourage companies and banks to keep making bad loans. Although it’s maintained that it won’t allow another systemically important lender to fail, the central bank has also said it prefers market-led solutions rather than being shadow banks’ lender of last resort. “The government and regulators have made it clear that they are unwilling to build moral hazard within the system,” says Kristy Fong, a director for Asian equities investment at Aberdeen Standard Investments. But in a nation facing a slowdown and hungry for jobs—1 million people join the workforce every month—it may be difficult to find the right balance. **B**



▲ Account holders line up at a troubled co-op branch bank

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Fertility Rate by Country



Total fertility rate represents the average number of children women in a given country will have over their lifetime.



be forced to adapt or fall behind

By Andre Tartar, Hannah Recht,
and Yue Qiu

At least two children per woman—that’s what it takes to ensure a stable population from generation to generation. In the 1960s, the fertility rate was five live births per woman; by 2017 it had fallen to 2.43, close to that critical threshold.

Population growth is vital for the world economy. It means more workers to build homes and produce goods, more consumers to buy things and spark innovation, and more citizens to pay taxes and attract trade. While the world is expected to add more than 3 billion people by 2100, according to the United Nations, that’ll likely be the high point. Well before then, falling fertility rates and aging populations will become serious challenges—challenges that will be felt more acutely in some places than others. While the global average fertility rate was still above the rate of replacement—technically, 2.1 children per woman—in 2017, about half of all

countries had already dropped below it, compared with 1 in 20 just half a century ago.

Population dynamics needn’t be economic destiny. A study last year by the Organization for Economic Cooperation and Development found that, for most major economies, rising productivity was a more important driver of gross domestic product growth from 2000 to 2017 on average than population growth or change in the employment rate. That may not be sustainable over time, however: For most countries in the OECD study, the relative contribution of productivity to growth has fallen over time. In some countries, too-high fertility may actually be a drag on GDP because of higher costs.

In the U.S. and parts of Western Europe that traditionally attract migrants, loosening immigration policies could make up for low birth-rates. In other places, more

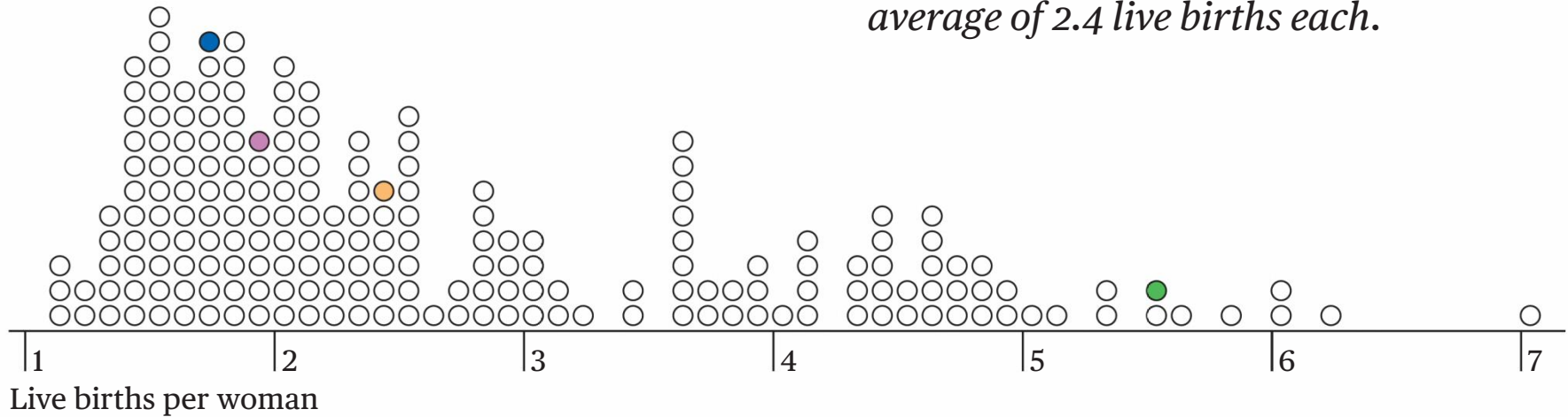
drastic policy interventions may be called for. Most available options put a high burden on women, who’ll be relied on not only to bear children but also to help fill widening gaps in the workforce.

Government attempts to manage population growth are nothing new—consider the generous paid maternal leaves offered by Scandinavian countries or China’s recently rescinded one-child policy, each relatively effective in achieving its stated goals—but a new sense of urgency and even desperation is creeping into the search for ways to reverse the current trends.

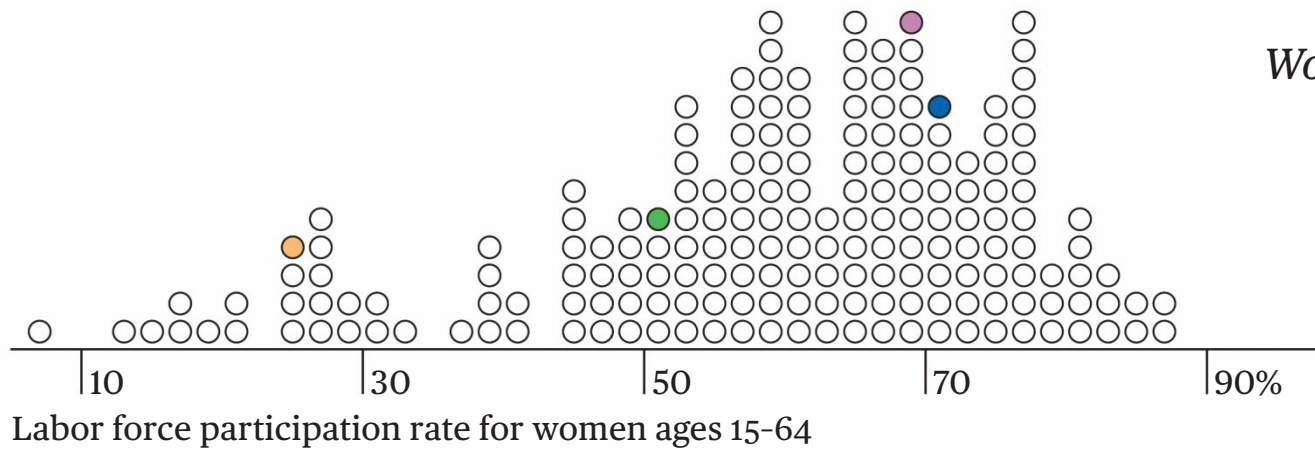
To explore these demographic and economic shifts, Bloomberg analyzed data for 200 countries and focused on four that were outliers in some respects. Local reporters then interviewed one woman in each place about the forces that were shaping her choice to have children—or not.

● China ● France ● Nigeria ● Saudi Arabia

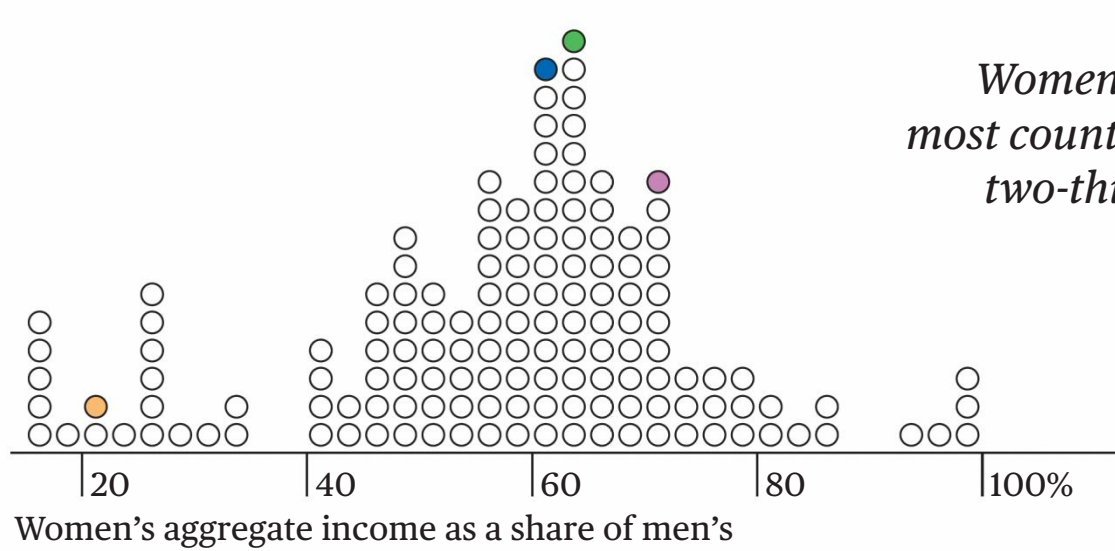
Globally, women have an average of 2.4 live births each.



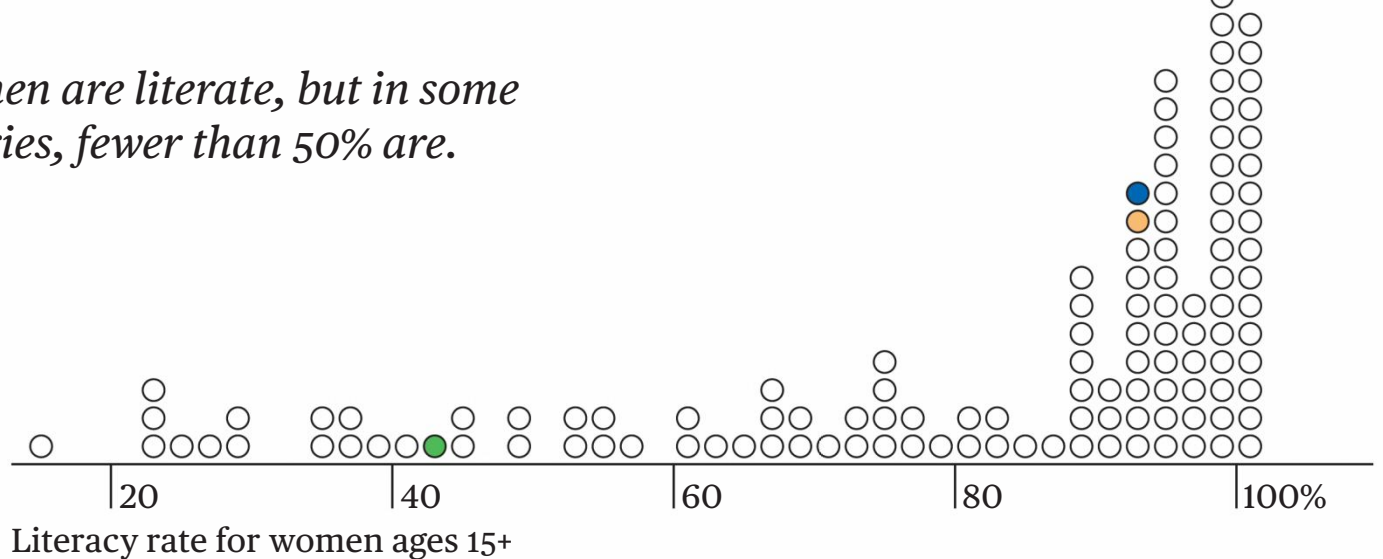
Worldwide, 53% of women are in the workforce.



Women's earnings in most countries are less than two-thirds of men's.

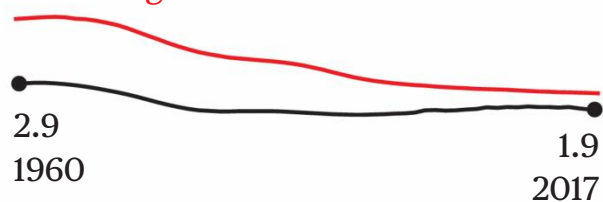


Most women are literate, but in some countries, fewer than 50% are.



France

World Avg.



Women in France may have won suffrage only in 1945, but they've rapidly acquired rights and status. They're now close to parity with men in income and are highly educated on average. This is due partly to generous benefits such as public day cares, called *crèches*, that accept babies as young as 3 months.



“ When I became pregnant [with my first child], I had already done a job interview for a new post, so I had to tell my future employer that I'd arrive four months later than planned, but it didn't set me back. For my second child, I had applied for a post managing a bigger team. I told my employer, but they said that didn't affect their decision. And for the third, nobody said anything either when I told them.

Having children forces you to be more efficient. Before having children, I would often stay late in the evenings. I find that when you manage a team, being a boss that doesn't stay too late removes some pressure from people—it's a routine that is quite healthy for

everyone. After my third child, I went down to 80% [time, working four days a week]. As a civil servant, you have the right to part-time work when you have a child under 3, so 80% is pretty common. People try to adapt, to organize themselves, so that I don't have too many meetings on Wednesdays [my day off], and I make an effort to compensate. I don't hesitate to work in the evenings, I don't hesitate to look at my emails on a Wednesday. I think everyone tries to make an effort, and that's why it works.

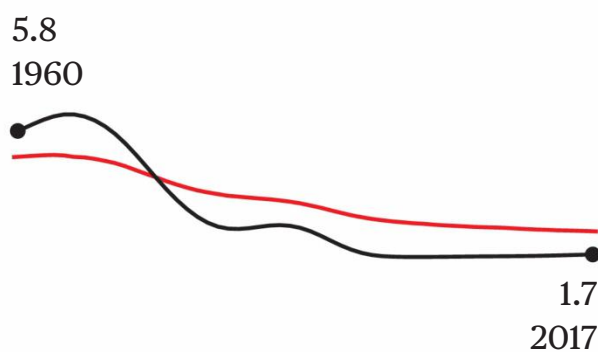
With our first child, we didn't get a place in a nursery, but we had friends who were moving so [they] didn't need their nanny anymore. We have kept her

Celine Grislain works at the Ministry of Health in Paris, where she manages a seven-person team. She and her husband have three children, ages 5, 3, and 1. The older two attend state-run nursery school, while the youngest stays home with a nanny.

ever since because we've become very close. I get a small amount of financial support for working at 80%—it's not much, around €140 (\$155) a month. There are family benefits, but they change depending on your income, and I don't get much. There is what we call a supplement for child care, and there's also a tax credit that helped us a lot when we were sharing a nanny. But the credit is capped, and having a nanny to ourselves makes for a big extra cost.

It's mainly me that does the shopping, the doctor appointments, but I've also got a husband who knows how to cook. I think I do a little more than him, but he does more than my dad did, and he did more than my granddad, so there's been an improvement with each generation. And my husband supports me with my career. That counts for a lot. —*Interviewed by William Horobin, translated from French* ”

China



Decades of limits on family size and a culture of women working have led to a steep decline in China's fertility rate. A recent crackdown on gender discrimination forbids employers from asking female applicants' marital or maternity status, a step toward keeping women in jobs as the population ages.

“ I was 34 years old, working for a startup tech company as the head of the marketing team, when I found out I was pregnant. It came to me as a surprise, and my first thought was: What about my job?

Before the baby, I was a typical career woman: working late hours, leading a team, tackling difficult issues, and always delivering at work. Shortly after leaving the doctor, I sent a group message to the company's CEO and vice president, who are both female, telling them honestly about this. They congratulated me, but just one day later the CEO told me to go on a business trip for several days. I raised the concern that my physical condition may not be fit for traveling long hours, but the CEO said, “Overcome it.”

The first day back from the trip, I found the company put out a recruitment notice online with the same title and job description as mine. My health was unstable during my pregnancy, so I applied for sick leave. The company agreed, but then the human resources supervisor asked me to submit previous medical records for sick leaves, including those that I already took. I didn't keep the records, as that was the first time they brought up such demands. Days later they sent an email informing me they would suspend my salary because I failed to provide the required documents.

By that time, I was roughly three months pregnant. It was so hard to believe a company that I worked so diligently for would treat me this way, so I filed an arbitration suit seeking compensation for my overtime work

since joining the company. Right after that, the company shut me out, suspending my work email and removing me from a work communication group, but they never dismissed me officially. By the time I wanted to quit the job, human resources refused to proceed unless I agreed not to “claim any fees or hurt the company's reputation.” I refused, so they wouldn't let me take my belongings and refused to issue a resignation certificate, a required document in China's job market.

I became one of the first people to act on [China's new anti-employment discrimination measures] and filed a lawsuit against my previous company. I see women are helpless when facing workplace discrimination. With the new [rules], women's rights can be upheld. It also sent a signal to the companies not to infringe female employees' rights.

The whole incident has taken a toll on my personal life. I was a confident career woman, and financially independent, too. But now my confidence has been chipped away. I suffered from postpartum depression, and sometimes I woke up in the middle of the night crying. I blame myself for not taking good care of my child, and the regret will accompany me for my entire life. —*Interviewed by Bloomberg News, translated from Mandarin* ”

Summer Guan, 36, works for a state-owned company in Beijing, where she makes about \$34,000 a year. She and her husband have one child.

Saudi Arabia



Women in the culturally restrictive oil-rich kingdom have among the world's lowest rates of labor force participation and wield little economic power. As the country has gotten richer, a phenomenon that tends to lead to longer life expectancies and smaller families, the fertility rate has dipped down close to the rate of replacement.



“ In other societies, husbands may take on roles that help the wife not be a full-time [caretaker], like helping out when she's out at work. I don't want to be unfair to everyone—there may be exceptions—but in general it's not the case [in Saudi Arabia].

I am not married. It's not an easy decision to take, not at all. Motherhood is a beautiful thing. I have moments where I wish I had a baby I could hold and play with. But I want to make and build my own family, under my conditions. I wanted to choose my husband myself, out of love. When I was at an appropriate age for marriage, this option was not available. Sometimes people said things like “Lubna is not beautiful enough, which is why she's saying no,” or “She's not good enough, and she says no so she won't be embarrassed.”

I have a B.A. in nutrition, but I didn't like that field. I wanted to major in media, but my dad refused to let me travel abroad to study—there were no universities here that offered that specialization at the time. I own my house,

a villa. I was among the first women to drive; I bought my own car. I live alone. My neighbors don't interfere in what I do—still, I don't make it obvious I am alone.

My immediate family, my mom and my four sisters, are very proud of me and very supportive. But I get calls sometimes from people who are not happy. They tell me, for instance, to cover my face. My face is my identity. I did one program once for Saudi TV on women and the economy. Now I have a program on social issues. Today, I'm filming an episode on customs and traditions.

I work long hours every day, including today, Saturday. I am very proud of the decisions I have taken. I am very happy with myself. In our Saudi society, I am no longer at a suitable age for marriage, but I don't consider age as an impediment. I know that when I find the right man we will accept each other, no matter what the challenges and defects—if you consider age a defect—are. —Interviewed by Donna Abu-Nasr, translated from Arabic ”

Lubna Alkhaldi, 34, is a fashion designer and an anchor at her local TV station in Dammam, in Saudi Arabia's Eastern Province. She's single and makes \$102,400 a year.

Nigeria



With their high fertility rates, Nigeria and its sub-Saharan neighbors are expected to contribute much of the world's net population gain over the coming decades. Feeding, educating, and employing these growing numbers will be difficult, and a gender and equal opportunity bill has been stalled in the Nigerian senate since it was introduced in 2010.

“ My dad was in the air force, my mom was a teacher. As a matter of fact, my mom didn't just work, she had every type of business you can [have]. Apart from her day job, my mom sold ice blocks in the house. She sold popcorn, she had a salon, she had a garment-making fashion design place. She had a computer business at some point. She used to travel to China, Dubai, Senegal to buy stuff. Of course, Daddy works, because he wears a uniform every day and he goes out. But I remember thinking, Oh my gosh, mommy must be so rich, because she does all of these things. She's selling that or selling this, you know?

I got married at 31. I graduated university at 20, so for 11 years, somebody was asking every day, “What is going on?” Something must be wrong if you're not married at a certain age, you know? People worry about fertility—“the clock is ticking” is a popular term that you hear around here—and there's the economic side to it. People feel, especially if you're focused on your career and you're thriving, are you going to buy yourself the house and the car and the, you know,


lifestyle? What will your husband do? My mom got married young, and I definitely think it was her expectation for her girls.

You would definitely have low moments. It gets to a point where, for example, if you were a person who used to go to the club, you don't fit in there anymore. And then you start to say, Where do I fit in? Where am I going to meet this person? Should I be going outside of my normal comfort zone?

By the time I got married, it was my decision. Yes, I was conscious of the fact that I was getting older, but it wasn't as a result of pressure or urgency. I always wanted to have kids, no question. To be honest, now I wouldn't change anything. Maybe the days where I felt like, Really, why am I not married? I feel like there is some good in getting married a little later—what our society calls late—because you are very clear about what marriage is. I feel like really and truly, if you were single for 10 years, you could accelerate your career to a point where when you got married, there's no stopping you anymore. **B** —Interviewed by *Tope Alake* ”



Abosede George-Ogan, 36, lives in Lagos, where she has a director-level role at the Lagos State Employment Trust Fund. She and her husband have three children: a 4-year-old girl and 2-year-old twins, a boy and a girl. George-Ogan's annual salary is about \$27,700.



HOW WILL CLIMATE CHANGE SET BACK INDIA AND VIETNAM?

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Temple of the Sun





The world's great powers can't agree on small steps to tackle climate change, but they're cooperating on a huge leap of faith in southern France

By Jonathan Tirone
Photographs by
Alastair Philip Wiper

◀ *The ITER Tokamak Complex in Provence will house a reactor intended to establish the viability of limitless, clean fusion energy.*

The International Thermonuclear Experimental Reactor, a fusion reactor under construction in southern France, is the world's biggest scientific puzzle—and one of its biggest trade puzzles. At a time when tariffs, xenophobia, and intellectual-property laws are restricting the flow of material, people, and ideas across borders, a 35-country network is seeking to harness the power that makes the stars shine. “They all understand that they can't make it alone,” says Bernard Bigot, the man in charge of piecing ITER together. “It's the first time in human history countries representing more than half the world's population and 80% of GDP are working together to achieve a common goal that is absolutely critical.”

Unlike traditional nuclear plants, which generate power that splits atoms inside fission reactors, ITER aims to fuse atoms together at 150 million degrees Celsius, a temperature 10 times hotter than the sun. The reactor, called a tokamak, is derived from designs first tested in the Soviet Union. Lasers and powerful electromagnets are arrayed around a supercooled, doughnut-shaped container to hold superheated plasma in place. The goal is to make the process efficient enough for fusion to be economical, self-sustaining, and safe. Bigot, a doctor of chemistry and physics who scaled the ranks of France's atomic energy commission before joining ITER, figures the machine will ultimately contain about 10 times the amount of steel in the Eiffel Tower.

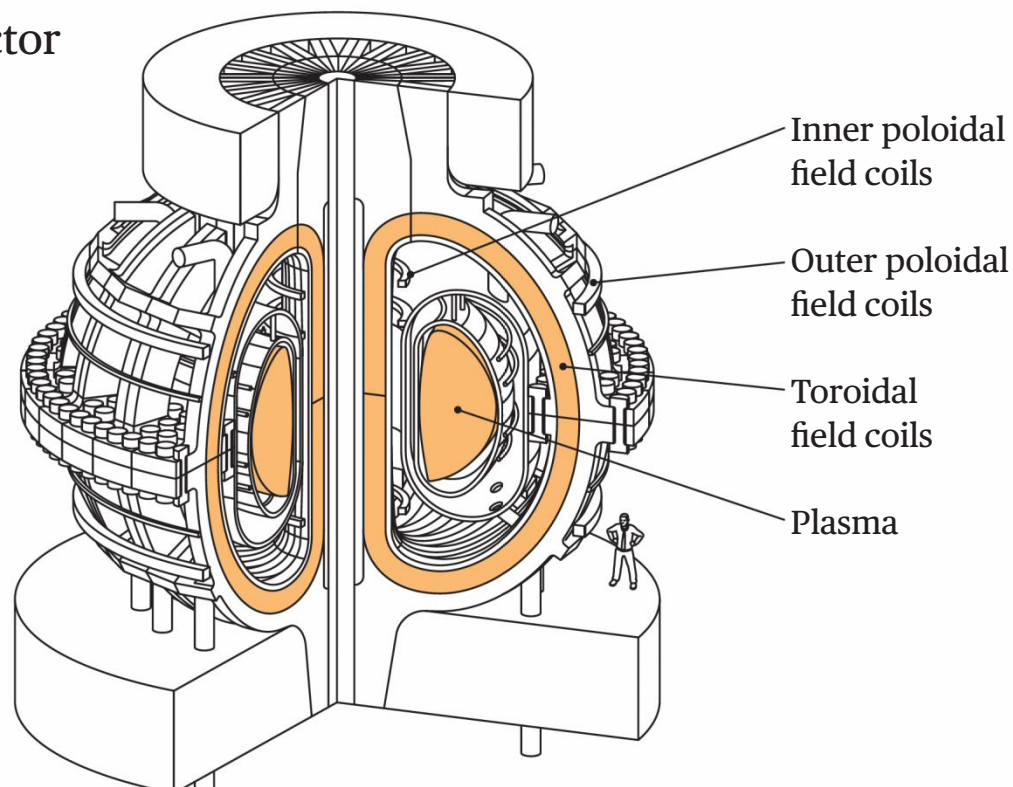
The project, which grew out of Cold War-era collaboration between the governments of Mikhail Gorbachev and Ronald Reagan, was incorporated under a treaty signed in 2006 by China, the European Union, India, Japan, Russia, South Korea, and the U.S. The agreement guarantees free

passage of reactor materials and even distribution of intellectual property among the 35 parties. (Switzerland is also an ITER member via a cooperation agreement with the EU.) More than 1 million pieces of equipment manufactured to strenuously high standards have been making their way to the campus 44 miles north of Marseilles. The sides of a nearby mountain had to be chipped away in preparation for some of the biggest gear to be transported, including poloidal field coil No. 6, a magnetic ring that's being shipped from China. Construction of the \$22 billion reactor is about 65% complete and on course to begin testing in 2025. “We've always been able to bypass difficulties,” Bigot says, noting that his engineers have been unimpeded by Western sanctions against Russia.

That's not to say the smooth road will persist. A no-deal Brexit could at least temporarily sever the U.K.'s participation, for example. The tokamak at the country's Culham Centre for Fusion Energy has been a valuable source of people and knowledge for ITER. “There is a longstanding capability in the U.K. related to fusion, and we could lose very useful services,” Bigot says, adding that it would be up to the remaining members to decide at what cost the U.K. might be allowed to rejoin the project separately from the EU.

Other efforts are under way to prove the viability of fusion power, but none is being conducted in quite the same spirit of collaboration. If ITER succeeds, it will provide a template for world powers to develop reactors of their own, and humankind could have limitless emissions-free power by mid-century. The project could become a symbol of international peace and stability—and a concrete means of achieving it. **B**

Inside a tokamak reactor



► An 800-metric-ton tool will preassemble some of ITER's largest components before a crane lifts them into the machine well. The tool's three columns are arranged in a triangle, shown on the right side of the image.

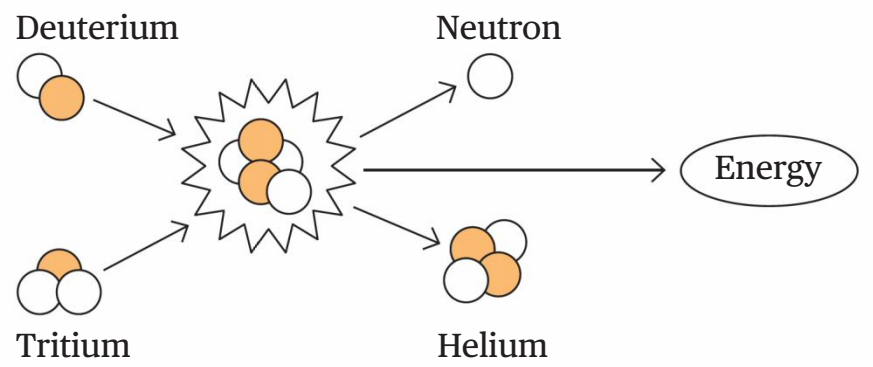


► On a circular table, lengths of up to 900 meters (2,950 feet) of niobium-titanium superconductor are looped into the magnetic poloidal field coils, which carry the power needed to cool the outside of the plasma container. ITER will have six of these coils; four are being built on-site because they're too big to be shipped in. Russia will supply PF1, and PF6 is coming from China.





How ITER plans to achieve fusion



- Magnets, lasers, and particle beams heat a gas containing two forms of hydrogen, deuterium and tritium, creating plasma.
- Magnetic fields compress the plasma, forcing the atoms together to raise the odds of collisions.
- A collision produces a helium atom, a neutron, and a release of energy back into the plasma.
- Neutrons emerge from the plasma and slam into the container walls, heating water to make steam that powers electricity-producing turbines.

◀ *Diagram of PF6's final assembly on a wall in Hefei, China.*



◀ *Engineers perform final tests on PF6 in Hefei.*



▲ PF6 being prepared for factory testing in Hefei. The heaviest of all the coils, it's scheduled to ship to France in December.

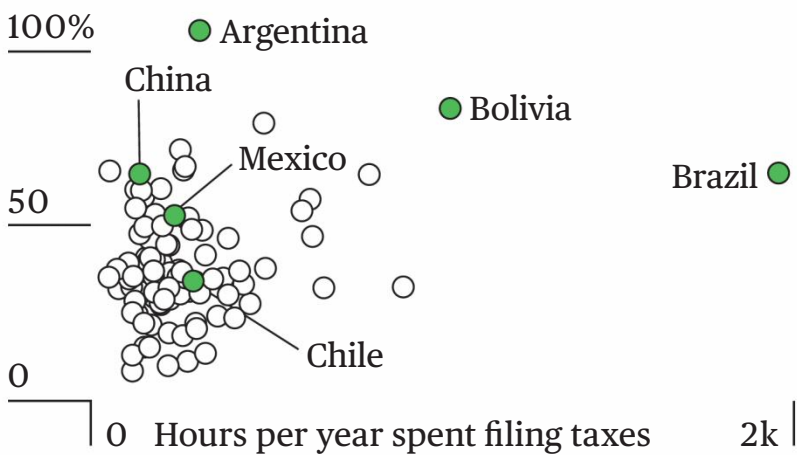
Blueprint

Prospects for growth are fading across much of the world. Here's Bloomberg Economics' five best ideas for giving some major economies a shot in the arm.

Untangle Brazil's Tax Web

Brazilian companies spend four times as long preparing their taxes as their Latin American peers. An overhaul of the Byzantine tax code, now under debate in Congress, could boost gross domestic product by 10% within 15 years, according to the Center for Fiscal Citizenship.

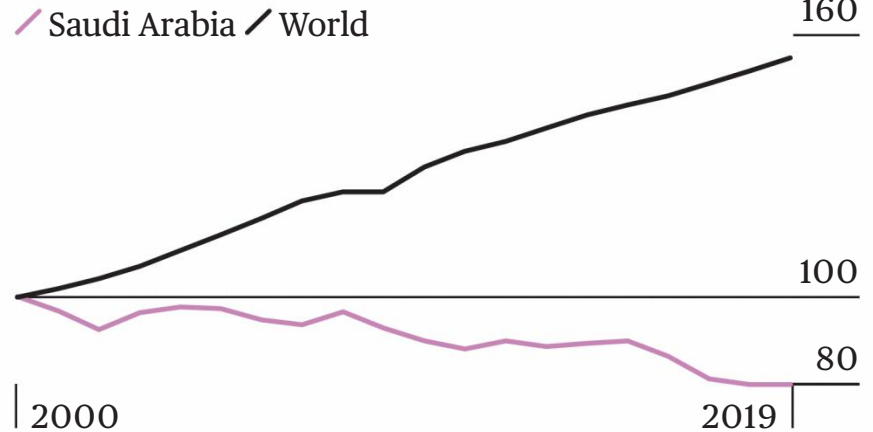
Total tax contribution rate (percent of profit)



Turn Saudi Oil Into Growth Gold

Proceeds from a partial privatization of Saudi Aramco could help improve Saudi Arabia's dismal productivity performance if invested wisely (no wasteful public works, no raises for overpaid civil servants). That could almost double GDP growth, to more than 4%, and cut the unemployment rate to single digits.

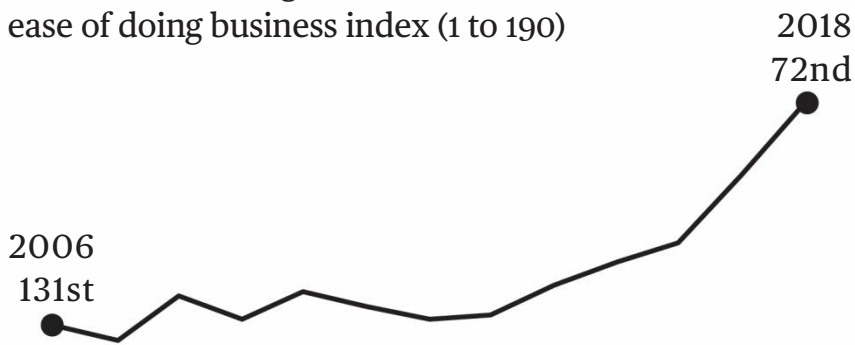
Output per worker (index, 2000=100)



Unleash Indonesia's Animal Spirits

President Joko Widodo has pledged to build out infrastructure, develop human capital, and ease foreign investment limits. If he delivers, growth could rise by 1 to 2 percentage points over the next decade—significant for an economy that expanded 5.2% in 2018.

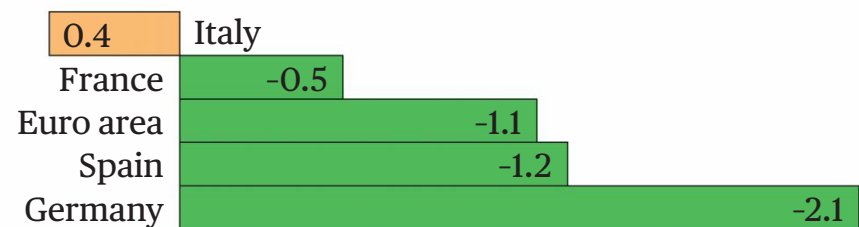
Indonesia's ranking in the World Bank's ease of doing business index (1 to 190)



Reform Italy's Labor Market

Reducing Italy's natural rate of unemployment (i.e., the level that does not spark inflation) to 7%, from its estimated level of 9.2%, would lift potential growth by more than 1 percentage point. The country needs to align wages with productivity, lower taxes on labor, and make dismissals easier.

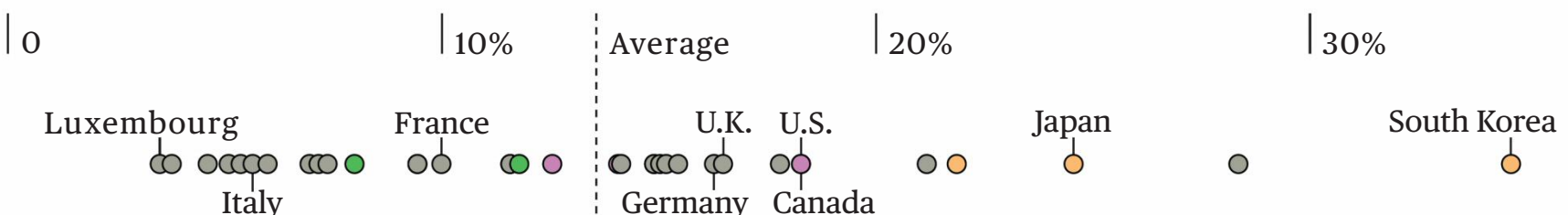
Percentage-point change in natural rate of unemployment since Q4 2012



Put More Women to Work in Japan and Korea

Japanese women do more than five times as much housework as men. In South Korea it's over four times as much. Getting more women into the labor market, and monetizing a larger share of unpaid housework, would deliver a double boost to growth. In Japan unpaid domestic work is worth about 25% of GDP, according to the Cabinet Office.

Gender pay gap in OECD nations ● Europe ● Asia ● Americas ● Oceania





WE'RE CHANGING PARKINSON'S TUNE AND BRINGING MORE HARMONY TO LIFE

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Now, life-changing technology from Abbott can target those exact neurons, among billions of possibilities, to control tremors — restoring harmony, once thought to be lost forever.

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