TRANSFORM

Ana Maria Hernandez Salgar
Former head, IPBES

Jehiel Oliver
Founder and CEO of Hello Tractor

THE END OF BUSINESS AS USUAL

HUMANITY IS THE COMPLACENT FROG IN A POT OF BOILING WATER

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#SustainableTransition

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IN THIS ISSUE, WE LOOK AT SUSTAINABLE TRANSITION

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EDITOR'S NOTE:

THE POT IS BOILING — HUMANITY MUST JUMP OUT BEFORE IT'S TOO LATE

The problem is that, for many people, there isn't a problem.

Or at least not one that's visible and immediate as they go about their lives.

"We are very comfortable, we have a lot of things," the global biodiversity expert Ana Maria Hernandez Salgar told me. "We stare out of our window and see a lot of green out there. So why do we have to be concerned?"

Hernandez, former chair of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, sees such business-as-usual complacency as a bad sign.

"We are like the frog that goes into the pot of water, and the fire's turned on and the water gradually gets hotter," she says. "But the frog doesn't want to get out because it's getting comfortable… so the frog dies. Humanity is just like that."

The popular metaphor offers a stark warning about the underlying challenge of achieving sustainable transition — the theme that runs through this edition of *Transform*.

On a more hopeful note: digital technology is enabling some industries to get better at what they do — in a way that makes life on planet Earth more sustainable. Take Jehiel Oliver, an entrepreneur whose digital tractor business uses data and the Cloud to transform small farming businesses.

Also in this edition:

- We hear from the vegan entrepreneur and World Economic Forum leader driving a new lab-grown meat industry: eating fish without killing fish.

- A CEO tells us how she's using "wearables for plants" to decode their secret signals in a way that makes them healthier and improves crop yields to better feed the planet.

- The head of the Tech4Nature Mexico initiative explains why Artificial Intelligence and digital technologies are game-changing forces in nature conservation.

- And we'll see how Ireland is speeding up its transition to renewable energy, including putting solar panels in every school in the country.

You'll also hear a radical take on sustainability from former banking executive Nicole Yuen, who says that, forced to choose between raising a family and having a career in a workplace that isn't female-friendly, many women have launched a "baby-making strike" that threatens the survival of humanity.

"I'm sorry, you don't give it to us on the career and education side? No more babies, we don't give birth," she warns. "If you don't change the system, the system will change the women."

And while you're contemplating that nuclear option, spare a final thought for Ana Maria Hernandez Salgar's mythical frog.

As you reach the end of this piece, the "water in the pot" — the planet as a whole — got just that fraction hotter.

But good news: biologists have shown that in reality, a frog in a pot won't wait to be boiled alive, but will instead jump out. So, there is still hope for humanity, as many of the encouraging polling statistics revealed in this edition of Transform seem to suggest.

Fingers crossed we now all wake up in time to make that life-saving leap to a truly sustainable future.

Meanwhile, anyone else think it's getting hot in here…?

HOW CHILDREN AND EDUCATED FROGS CAN HELP RENEW THE WORLD

Ana Maria Hernandez Salgar, former chair of the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES).

Ana Maria Hernandez Salgar

Former head, IPBES

Until September, you chaired IPBES, a UN body established to strengthen the connection between science and policymaking. What was your greatest achievement there?

Improving dialogue between experts from different disciplines, and moving and opening the door to more voices and different perspectives. That's important if we want to have more robust knowledge about biodiversity.

Are emerging technologies important in addressing global sustainability goals?

If they comply with the principles of accessibility and information sharing. Our experts review and analyze information, then present it as a report. We do the same thing when we assess the impact of new technology. For example, we are starting to work on how to connect artificial intelligence with data on biodiversity.

Land use, particularly for food production, is the main driver of biodiversity loss. Is what we eat — and how much — now a moral or even existential issue for humanity?

Current negative trends are undermining the chances of achieving many of the UN's Sustainable Development Goals (SDGs), including those related to poverty, hunger, health, cities, water and land.

The loss of biodiversity is clearly a moral and existential issue because it's one of the main problems that humans face right now with regard to health and survival.

How does IPBES ensure that as technology develops, it isn't just sustainable, but equal and inclusive for everyone too?

IPBES presents accurate data for decision-making. That data is intended to warn about trends around biodiversity loss, but actions have to be taken by the decision-makers.

Are decision-makers listening to your warnings?

Yes. For example, the World Economic Forum (WEF) considered our information on issues related to trade and biodiver-

> **The loss of biodiversity is a moral and existential issue.**

sity; the World Health Organization (WHO) did the same with health and biodiversity.

In general, not only environmental forums such as CBD, CITES, UNFCCC, Ramsar, and UNCCD, but also a good number of presidents, prime ministers, ministers of environment, and congressional representatives around the world are aware of IPBES reports and are including findings in their policies, laws, and programs.

The problem is that not everybody thinks biodiversity is as important as, for example, climate change. And the reports are not translated into all the different languages around the globe, just the major UN languages, so communication can be restricted. But IPBES has started to open very important windows, and people are now more aware of what is going on with biodiversity.

> My main concern is that humanity does not want — or is afraid — to change the status quo.

Do you think the world has woken up to the need for sustainable transition and that the basic argument has been won now?

The world has been evolving, yes. At a political, economic, and social level, there are more conscious actions towards that end. Nevertheless, there are still individuals, organizations and even political movements that continue to avoid seriously addressing the need for sustainability and the need for transformative change.

So, we're getting there, but not quickly enough. What role do you think technology can play in compensating for that?

Innovation and technology can be a great tool in the development of sustainable solutions. Emerging technologies can move the sustainability dial a lot. They can really reduce pressures on the environment and on lost biodiversity when they are used for that purpose. We will have to see if there is the will to use the new innovations in that way.

Is it possible to be truly sustainable without the world being digitally connected?

The world is already interconnected in diverse ways. And in many parts of the world, for example with indigenous land, there are examples of sustainable ways of life without digital connection.

But definitely, we can benefit from green digital opportunities to find solutions for our environmental challenges. We are using new technologies to better understand, analyze, and monitor biodiversity. So, the use of these green digital opportunities for sustainability is important.

What concerns you most about the future?

My main concern is that humanity does not want — or is afraid — to change the status quo, and that we are happy with business as usual. We are really not conscious of the harm that we are doing to the planet and ourselves.

We are like the frog that goes into the pot of water, and the fire's turned on and the water gradually gets hotter. But the frog doesn't want to get out because the water's comfortable — so the frog dies. Humanity is just like that. We are very comfortable, we have a lot of things, and we stare out of our window and see a lot of green out there. So why do we have to be concerned?

But then we wonder why terrible things happen, such as floods and the pandemic, and we don't have the capacity to link them to our treatment of the environment.

What gives you hope?

My children give me hope. The youth really embrace, from the heart, this awareness of the future. The concerns I was just mentioning are related to adults. They treat the environment as they have learned to do. It's cultural.

But the youth have a culture of conservation, and of sustainability. They understand why everything matters. And they are raising their voices.

Our responsibility is to open the window of opportunity, to start making changes, and to create solutions to all the problems we are facing today. Older generations need to learn from the youth, to embrace their love for our planet. That gives me hope for the future.

> The frog doesn't want to get out because the water's comfortable — until the frog dies.

FROM HIGH FINANCE *TO* AG-TECH BOOSTER

***Transform* speaks with Jehiel Oliver, founder and CEO of Hello Tractor, a company using digital tech to boost the productivity of African farmers.**

Jehiel Oliver

Founder and CEO of Hello Tractor

What is Hello Tractor?

It's a simple concept. Most small farmers can't afford to own their equipment, but they can afford to pay for services. Hello Tractor is a platform that facilitates that. Currently, we operate in 15 African countries, as well as Cambodia, Bangladesh, Pakistan, Guatemala, Thailand, and Jamaica.

How does it work?

When you book the service, you don't get a tractor. Instead, you get someone on a tractor who shows up to service your field. Most farmers own small plots of land, so the work can be done in just a few hours.

Ordinarily, it wouldn't be economic for a tractor owner to pay someone to drive his farm equipment a long distance just to do a bit of piecemeal work. Also, farmers don't typically whip out their smartphones to book tractor services, so they'd be unlikely to get the help they need, even if it were available.

For that reason, we use agents to book the tractor service for the farmers. The agents group the demand from individuals into batches. This creates a large group of farmers who need a tractor in the same place at the same time. That, in turn, makes it efficient to drive your tractor 100 or more kilometers to service large plots of land covering hundreds of acres.

What gave you the idea for Hello Tractor?

I was broadly interested in sustainable economic development in low-income regions, with Africa being at the top of the list. Agriculture forms the bedrock of African economies. It makes up between 30% and 40% of Africa's GDP and accounts for 60% of its labor force.

But it's hard to finance agriculture, and one of the biggest missing elements is tractors. When you look at this business

> **"If I had been a farmer myself, I probably would never have started this business."**

on a spreadsheet, owning a tractor in a low-income community can be a good business. You just have to divide the cost of ownership among enough paying customers that it becomes workable for users and profitable for the tractor owners.

What kind of tech do you put on the tractors, and what does it do?

We started out in 2014 selling white-label tractors made by a contract manufacturer in China. We installed some tech in the tractor and put the Hello Tractor brand on it.

But we soon learned that we enjoyed no competitive advantage in that space, which had razor-thin margins and high fixed costs. You have to be able to service the tractors and supply spare parts — it was just way too complicated.

Where we did have an advantage, though, was in the underlying technology. We recognized that, in emerging markets, small-engine tractors are sold to entrepreneurs delivering services called contractors, not farmers. Contractors need to protect their equipment; it's the biggest investment they'll make in their lives.

Tech can monitor and protect the equipment while making sure it's in constant use. We embed tractors with GPS and sensors to capture various data points. We process that data in the cloud, and we've built algorithms to help tractor owners make sense of that data.

> Once you protect the tractor, you can ask the next obvious question, "How do I make more money with this asset?"

How does Hello Tractor make money?

Tractors behave differently in different environments. The data pulled from the tech we embed in the tractors is made available to the owners — our customers — by subscription. We make money on subscription fees, and on commissions charged by booking agents and tractor owners.

Is Hello Tractor an NGO?

No, we're a for-profit company. We get called a social enterprise a lot as well. I started my career in investment banking and developed an appreciation for how commercial capital markets can scale a solution, unlike philanthropy, which is typically how non-profits are funded. Philanthropy plays an important role in our market as a catalytic capital source, but it is with commercial capital that we expect to scale the solution fully.

Did you grow up on a farm, or work on one?

No, I grew up in Cleveland, Ohio. My understanding of the tractor business and agriculture was broadly born out of desk research, where I uncovered the attractive unit economics of tractor service delivery. This was done using Excel, a very basic financial tool. However, it allowed me to look through all the bias that exists regarding businesses in African agriculture. People gave me a million reasons why starting Hello Tractor was a bad idea. But those reasons weren't quantitative, they were just someone's opinion. It was like, "Oh, farmers are poor."

Once you protect the tractor, you can ask the next obvious question: "How do I make more money with this asset?" Start with booking the tractor. We realized that most of our customers weren't digitally enabled. So, we started with booking using SMS. But it's hard to make that work.

So, we developed a mobile booking application for agents who could be trained to digitally book the many farmers in their community. We also needed to ensure that the agents had a commercial incentive, so we designed commission structures to promote more booking.

> Most people see Africa as a philanthropic story. We see it as a commercial opportunity.

In the household I grew up in, farmers in Africa were thought to be low-income. But just like my family, they still bought stuff. Hello Tractor services are replacing things that farmers are already purchasing, but at a lower cost. That's what gave me the impetus to push ahead with the business. If I had been a farmer myself, I probably would never have started this business.

What are your plans for the future?

Most people see Africa as a philanthropic story. We see it as a commercial opportunity. If you want a tractor on your field, and you can afford it, we want to make sure you have it. That's our goal. Clustering farmers together can increase their productivity, making small farmers just as productive as larger ones. By closing the productivity gap, we believe we can strengthen the global food system and help make Africa the next global breadbasket.

THE SECRET LIFE OF PLANT SIGNALS

Crops are communicating. By decoding their information, we can feed the world more sustainably.

Carrol Plummer

Co-founder and CEO of Vivent SA

Today's agricultural practices are inefficient and unsustainable. Food production and agriculture currently account for more than one-quarter of global greenhouse gas emissions, consume half of all inhabitable land, and contribute to 70% of freshwater withdrawals.

One way to feed the planet is to continuously measure crop health and respond to crop stress as it happens. That allows each plant to deliver optimal yields while conserving limited natural resources.

Taking it one plant at a time

Measuring plants themselves rather than the environment around them is enabling new agriculture innovations. For example, the World Economic Forum recently identified "wearables for plants" as one of the Top 10 emerging technologies of 2023. By improving plant health, these wearable sensors will help increase food production in order to meet the roughly 70% increase in global food demand expected by 2050.

Monitoring crop health in real-time requires widespread digital infrastructure, such as 5G or LoRa wireless networks. It also requires access to cheap, cloud-based data storage and computing solutions, AI and advanced analytics, and intelligent sensors.

My company, Vivent SA, based in Switzerland, is rising to meet these challenges.

Most people don't know that plants use sophisticated networks based on electrical signals to gather and share information. These communications usually take place in response to changes in the environment: shifts in the level of water or nutrients in the soil; changes in ambient light, temperature, or humidity; or the presence of diseases, fungal infections, or insects both above and below the ground.

> **Monitoring crop health in real-time requires widespread digital infrastructure.**

Vivent's biosensor optimizes management of climate conditions in a strawberry greenhouse.

Vivent's biosensor managing water and fertilizer usage in a tomato greenhouse.

> One way to feed the planet while conserving natural resources is to respond to crop stress as it happens.

Vivent has developed hardware and software to record and transmit these signals continuously, monitoring crops around the clock so farmers can respond quickly to environmental stressors, sometimes days before plants show any visual signs of distress.

How it works

Step 1. We connect to plants in a field or greenhouse by inserting micro-needles in living tissue at two locations on a plant's stem. Depending on the crop, the electrodes can stay in place for weeks, months, or even years. We capture signals emitted by the plants throughout the entire crop cycle.

Step 2. The signals are transmitted to Vivent's cloud, where they are processed and analyzed. We use this analysis to create value for our clients.

Step 3. In addition to alerting farmers when crops are stressed, Vivent provides regular reports on crop health and identifies the causes of lost productivity. We also offer customised tips to farmers on optimizing growing conditions based on their crops and operations.

Decoding the secret life of plants with AI

The electrical signals that Vivent records were discovered more than 120 years ago, when Charles Darwin brought Venus flytrap plants from the US to the UK. Jagadir Chandra Bose, an Indian scientist, discovered plant signals. These were so complex that, at the time, Bose and others had no way to interpret them.

Today, scholars such as Edward Farmer at the University of Lausanne have successfully characterized plant signals, showing, for instance, that certain electrical transmissions are linked to the wounding of plant leaves.

This information provided the steppingstone Vivent needed to begin decoding the signals.

Machine learning has enabled Vivent's data scientists to build algorithms to detect specific stressors. We measure healthy plants and those exposed to a specific stimulus, such as a fungal infection or the application of a biostimulant (a biologically active crop treatment that arouses a plant's immune system).

We then look for signal characteristics that differentiate two or more groups of plants and alert growers when plants start responding to environmental stimuli. These early warnings of crop stress allow farmers to choose more sustainable solutions.

For instance, farmers can apply a biostimulant that encourages a plant to activate its defenses against an emerging insect attack. If the insect population remains low, then the farmer does not need to treat the crop with a pesticide. This saves money and reduces the need to apply potentially toxic chemicals that could pollute the environment.

> Monitoring crop health in real-time requires widespread digital infrastructure.

The power of advanced ICT

By harnessing the power of advanced technologies such as IoT, data analytics, and smart systems, Vivent is helping farmers gain a deeper understanding of their crops. Among other benefits, our solutions enable efficient management of irrigation water, reduced environmental impacts from improper use of pesticides or fertilizers, and 24/7 crop health monitoring.

Good-quality data infrastructure and strong support for R&D are key to bringing more innovation to the food supply chain. Vivent is proud to be part of an ecosystem that will enable everyone to have access to sustainably grown, healthy, and delicious food.

AGRICULTURE WITH A DIGITAL BIAS

How tech helps small farmers in Africa make better decisions

MERCY CORPS | AGRIFIN

Sieka Gatabaki

Program Director, Mercy Corps AgriFin

What is Mercy Corps AgriFin?

Mercy Corps is an international NGO doing humanitarian and development work. AgriFin is a Mercy Corps ag-tech program focused on the transformation of agriculture through digital innovation.

What's your mission?

We envision a future where every smallholder farmer is prosperous in a digitally interconnected world.

About 10 years ago, the program started to investigate which opportunities existed to improve the lives of small-scale producers across the global south. The idea was that mobile phones would create an opportunity to increase the resilience, incomes, and productivity of small-scale producers.

So, what is the link between Mercy Corps and sustainability?

The goal of Mercy Corps is to help underserved communities cope, adapt, and thrive in the face of various global challenges: climate change, conflict, or what have you. We want to help those communities become more resilient, adapt to change, and thrive, becoming more sustainable participants in the economies where they are situated.

So when you talk about sustainability, are you using the word in a broader sense?

I mean economic sustainability, security, and the sustainable use of different resources. We have a lot of programs, but Agrifin specifically looks at the agricultural sector with a digital bias. Digital presents an unprecedented opportunity for smallholder farmers to be economically sustainable by changing the way they farm, the way they access information, the way they access markets, and so on.

Can you give an example of how that works?

Many farmers lack access to good agricultural practices or agronomic information. This is because the ratio of "extension service providers"— people who would educate and support these farmers — is just one in 1,000.

We envision a future where every smallholder farmer is prosperous in a digitally interconnected world.

One person can't possibly provide the information that 1,000 farmers need to make decisions that let them farm sustainably. But since most farmers now have phones, we can communicate with them directly, giving them the advice they need.

And it's not just providing information blindly but also providing decision support. For example, providing weather reports, or information on when to plant, what to plant, what type of pesticides to use, and so on.

Under the heading, "Knowledge is power," can you talk a bit about the Sprout platform?

We designed Sprout as a vehicle to understand and improve the way content is digested and delivered to small-scale producers. Sprout is a platform that aggregates content from scientific bodies — information about agricultural value chains, fertilizers, et cetera. Sprout reviews these scientific and technical publications, curates them, and develops digital content that can be consumed through multiple digital channels, such as mobile text messages.

We supply that content to what we call "farmer-facing organizations" — for example, a bank bundling agricultural content with a loan service or an NGO looking to deliver information to farmers through mobile phones.

In some cases, we combine that content with weather information to support decision-making. So it's not just providing content, but providing it at the right time and in the right context.

What are your biggest challenges?

Digital presents an unprecedented opportunity for smallholder farmers to be economically sustainable and better their livelihoods and the communities they serve.

One of the major challenges in Africa is that small-scale farmers tend to be older, with an average age of about 60 to 65 years. So, there's a challenge regarding digital and financial literacy, as many of them do not trust these new tools, making behavioral change a big obstacle.

***Transform* recently spoke with Zambia's minister of Technology, the Honorable Felix Mutati, and he talked about that very problem. So, what are your plans for the future?**

For the ag-tech space in Africa to grow, we need to drive a lot more investment into technologies and innovations that support the sector. We see an opportunity to transform the way agriculture is done.

For example, we've seen a couple of agri-techs exploring ways of aggregating farmland. Instead of having small-scale producers work on individual plots, they now have a professional company that aggregates 50 acres together and professionally manages that land on behalf of the smallholder farmers.

This accelerates the productivity of those farms, improving the livelihoods of the farmers. It also increases food security, a challenge for many African countries.

REGULATION, RETURNS, AND SCIENCE'S SOLUTION TO MEAT-EATERS

avant

Carrie Chan

The CEO and Co-Founder of Avant Meats, Carrie was a World Economic Forum Technology Pioneer and co-chaired WEF's "Summer Davos" in China in 2023.

What does Avant Meats do?

We are Asia's first cultivated fish company. We produce fish and animal protein in an alternative way using the cell culture method and bioprocessing.

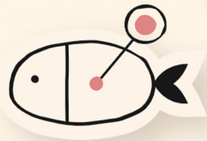
Instead of catching and slaughtering fish, we obtain cells from one fish — it could be a grouper, eel, snapper etc. Then, using a bioreactor, we replicate and reproduce the cells. That yields a protein we can put to different uses, including food and other applications, such as skin care ingredients. It's an animal product, but it's sustainably cultivated, which trims the environmental footprint.

Having sustainably reproduced the cells, your goal is to turn that into food?

Correct. When we eat fish or meat, it's actually muscle or fat cells, animal tissue, and we are just producing exactly that. The DNA of the cells we produce using this method will be identical to that of the original fish, so we don't need to add anything for it to be edible. It's a bit like making yogurt: a small population of bacteria is put in a vessel and multiplied. Imagine a big pot of broth and the fish cells floating inside. Given the right conditions they split and split again. We keep them there for one or two weeks, and they multiply to maximum density. Then we stop the process, scoop them out, wash them, then introduce plant-based material to bind everything together so it can be cooked more easily.

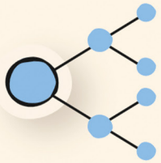
This is first-generation technology. It evolved from the medical field and regenerative medicine for treating burns, growing a patient's cells on scaffold material and transplanting them back to the patient without rejection. That's the backbone of our technology, just adapted. A number of different companies are working in this space, focusing on different animal species or animal parts. Beef, pork, chicken, mutton, fish and even some crustaceans are all very viable using this hybrid product method.

We're still a number of years away from the commercialization of the second- or third-generation product in which cells will grow next to each other outside of the "broth" and bind by forming their



Step 1.
EXTRACT

Step 2.
NURTURE



Step 3.
GROW

Step 4.
BON APPÉTIT

own connective tissues, such as muscles and tendons, to become a more structured product.

It sounds as if you're looking for new technological breakthroughs in order to get to the next stage?

Correct. Biotech is very different from e-commerce. With any solution we need to monitor the life cycle of the animal or plant in order to make observations, modify the process, and make the solution more efficient. Optimizing the process takes time. With some e-commerce ideas, it's "Boom!" You have an app, you market it, and you can generate huge revenue. But with planetary solutions in Big Tech, there's always a longer timeline needed to put in the fundamental research necessary to validate the new solution, and then time and resources to scale-up, a lot of the time, brick-and-mortar infrastructure. Think about renewable energy, electric vehicles

How: how long before your fish makes it onto a restaurant menu?

We have conducted multiple private tastings, but this is a new way of producing food, so most governments have yet to provide a comprehensive food safety framework to regulate it.

Singapore was the first country in the world to allow a private company such as ours to apply for permission to start selling. The US was second, but the regulations haven't been developed anywhere else yet. So, we're in the middle of clearing the Singapore government requirement, and we hope we can do that in the next 12 – 18 months.

So what does it taste like? And, do you envisage a future in which no animals-fish or mammals-will ever need to be killed?

It's a very good question, but the world is not binary. I compare it to sending messages using a pigeon, the telegraph, the fax machine, email, and a handwritten letter. We primarily use email and instant messages to communicate now, and while we may not use pigeons, we do still have handwritten letters.

Similarly, in food, whichever system is most efficient or brings the most economic value to the supply chain will be used by more people and have the highest market share. But some people will still use their preferred alternatives. As for the taste: yes, it tastes good! You may feel that plant-based food misses something. But with animal cells introduced, there are a lot more layers and nuances to the taste.

> **The earliest company in this industry started in the US in 2015 and only got regulatory approval this year.**

> **The sooner the regulation's in place, the more capital the market will pump into this sector.**

How to support sustainable technology entrepreneurs

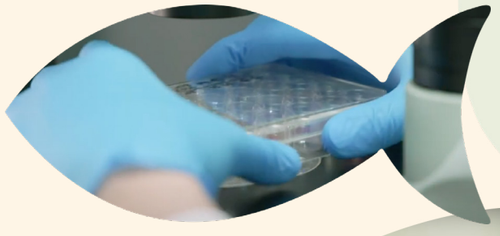
Biotech start-ups involve lots of R&D, so they need a lot of support from the capital market – a risk-taking appetite, as well as a willingness to be patient for a return. Investors in this space will have a time horizon of seven to 10 years to exit. It can't be the two- to three-year private equity types.

Once the technology is mature and ready for the market, new regulatory frameworks must be in place before fledgling companies can scale up commercially. The deeper the disruption to the normal way of doing things – in sectors such as food, finance or transport – the more the government has to protect the general public, and the longer it takes to regulate. The earliest company in this industry started in the US in 2015 and only got regulatory approval this year.

Governments must train or recruit the right people and put a system in place. Again, that takes time. But the sooner regulations are in place, the more capital the market will pump into this sector.

Governments also play an important role in investment. Historically, they have subsidized meat production, indirectly supporting traditional animal agriculture. Funding for alternative protein has been small by comparison.

With more government resources, start-ups in this space could create jobs, hiring people to be trained in biotechnology and – whether we succeed or not – uplift the skillsets of local talent.



EVERYONE NEEDS DIGITALIZING THE POWER

Marcio Szechtman is Technical Vice President of CIGRE, the International Council on Large Electric Systems, a non-profit organization in the field of high voltage electricity, headquartered in Paris.

Marcio Szechtman

Technical Vice President of CIGRE

cigre
For power system expertise

ELECTRICITY. GRID HELPS THEM GET IT.

What does the digitalization of the power grid involve?

Digitalization allows power utilities to report to society and stakeholders in a more standardized way. It enhances management, technical, and reporting processes, making it easier to know what's correct, what's wrong, and where changes or corrections are needed.

What opportunities does that create in terms of electrical transmission, distribution, and storage?

Digitalization and automation processes enable a more reliable electricity supply service for society. Electricity is as important as food and drinkable water; societies cannot live without it. If you have a blackout, societies will suffer a lot: hospitals may fail, and traffic lights in cities could be a mess.

Because internet services are based on electricity, it's a basic human right. Also, digitalized power companies can be more in compliance with the Sustainable Development Goals (SDGs).

What's the role of ICT and CIGRE in achieving a sustainable global transition?

Digitalization is connected with the increased use of renewables. They are not the same topic, but they are very much linked. CIGRE has incorporated the key elements for a sustainable transition. The concept of sustainable energy transition means expanding the grid with higher amounts of renewable sources to maintain the 1.5°C climate target set by the IPCC. The electrical sector, in some countries at least, is also one of the pollution sources. So you need to know what your contributions are to a better planet. CIGRE is focused on helping with this relevant mission.

Is the need for sustainability becoming a more important part of what CIGRE does? And what are the challenges to achieving it?

> "Electricity is as important as food and drinkable water; societies cannot live without it."

We have the Paris Climate Agreement and the SDGs, and indeed, every new working group at CIGRE needs to see with which SDG they align. We have this preoccupation with helping the planet survive and to improve quality of life for 100% of the population. Also, we plan our technical events in full alignment with the SDGs.

Why is there a need for a worldwide organization such as CIGRE? Aren't electricity generation and transmission national responsibilities?

That's a very good question. It's about information- and experience-sharing. Again, electricity is of fundamental importance, so we really need to pay attention to whether we are doing something that deviates from our main target of the betterment of societies.

Even if your business is located only in your country or region, the problems, experiences, and lessons learned are fairly consistent. So it's important to have an international organization to provide this platform for information sharing and gathering experts from all regions to debate better solutions and actions.

We need to pay attention to Africa and include its people.

Internet services are a basic human right.

Where does CIGRE operate at the moment internationally? And are you looking to open into different areas?

CIGRE was founded as a European organization more than 100 years ago. The Americans joined after the Second World War, and more recently, the Asian countries. But we thought a few years ago that we should develop a special project for African countries. We are doing this in partnership with the World Bank, establishing national committees of CIGRE in many parts of Africa. We need to pay attention to Africa and include its people. We need to improve the quality of life there. CIGRE is currently present in more than 100 countries, with national committees established in 61 countries.

So you want to extend electricity supply across the African continent?

We are going to give them the right mechanisms for expanding their electrical systems. What are the best practices, what are the mistakes they shouldn't make? How should they train people? How can they enhance their skills and educate them? Essentially, it's about how to electrify 100% of their societies in the short term.

"Sharing information and gathering experts from all regions creates better solutions."

IN SUPPORTING THE DEVELOPMENT OF RENEWABLE POWER, IRELAND SHOWS HOW IT'S DONE

With ambitious net zero targets, Ireland's public and private sector are working together to deliver long-term energy solutions.

Ireland's Climate Action Plan 2023 reiterates the ambitious but essential goal of halving Ireland's carbon emissions by 2030 and achieving Net Zero by 2050 (Net Zero refers to the process of reducing carbon emissions such that the quantity of greenhouse gases removed from the atmosphere each year equals the quantity produced).

Power generation accounts for about 55% of the world's CO2 emissions. For that reason, achieving Net Zero requires a global transition to renewable, clean power. Ireland is doing its part by committing to a 75% reduction in emissions from power generation by 2030.

Globally, renewables provided 28.7% of energy generation in 2021 (mainly solar, wind, hydroelectric power, biofuels, and geothermal). Even so, that same year, renewables accounted for just 13% of Ireland's total energy requirements (electricity, transportation, and heat).

But by 2030, the Irish government plans to accelerate the delivery of renewable energy, including both on- and off-shore wind power as well as solar. Earlier this year, it abolished a value-added tax on the supply and installation of solar panels in homes, shaving roughly €1,000 off the cost of installing solar panels in the average home.

The government also plans to install solar panels in all schools. This will have the three-fold benefit of saving money on school budgets, reducing Ireland's carbon emissions, and educating the country's young people on how to address the climate crisis. And it's great to see Ireland anticipating the EU's mandatory requirement for the installation of solar panels on all public buildings larger than 250 square meters by 2027.

> **"Achieving Net Zero requires a global transition to renewable clean power."**

"On a highway to hell"

But to achieve Net Zero by 2050, governments will need to work with enterprises and consumers. By using energy to make things, heat buildings, and transport people and goods, companies generate about 60% of global emissions, so their response to the climate crisis is critically important.

Many large enterprises have publicly committed to reducing their carbon emissions and those of their customers and suppliers. In Ireland, Eir, a telecom operator, has incorporated environmental and sustainability measures into its business. Eir converted its entire vehicle fleet to fully electric or hybrid and is turning 180 old phone boxes into rapid charging points.

The 2015 Paris Agreement on climate change set a long-term goal of limiting global temperature increase this century to 1.5oC above pre-industrial levels. Unfortunately, only about 16% of leading companies are on track to meet this goal. According to a "climate action index" published last year by MSCI, an international investment research firm, listed companies are likely to instead warm the planet by 2.9oC. By one estimate, such a large spike in global temperatures could cause sea levels to rise so dramatically that it could threaten 12% of the earth's human population.

This prediction of 2.9oC global warming is not an outlier. There's an emerging scientific consensus that, unless we rapidly cut CO2 emissions, we're on track to reach 2.8 – 2.9oC during this century. Between the 1970s and the 2010s, weather-related disasters have become five times more frequent, and it has been estimated that between 3.3 billion and 3.6 billion people live in settings vulnerable to climate change.

In the words of UN Secretary General António Guterres, "We are on a highway to climate hell, with our foot still on the accelerator."

Carbon reporting is no longer optional

Many countries have begun requiring organizations to disclose their annual carbon emissions using a standardized reporting methodology. For instance, the EU has proposed a Corporate Sustainability Reporting Directive (CSRD) requiring all large EU companies to report their carbon emissions by 2026. This requirement will extend to large non-EU companies operating in the EU in 2028.

The move from fossil fuels to clean energy will not happen overnight. Collaboration between the public and private sectors will be necessary if the transition is to happen successfully.

For example, in 2020, the Irish government launched the Renewable Electricity Support Scheme (RESS) to support the development of solar and other forms of renewable energy. Two years later, it committed additional resources for solar and off-shore wind generation. This year, one of the first RESS-funded solar farms was connected to the national grid. The Irish arm of French energy giant EDF began operating its first three solar farms in Wexford and Kilkenny with a combined capacity of 17 megawatts (MW), capable of powering 6,600 homes.

At the EU level, the European Parliament passed the Renewable Energy Directive (REDII), authorizing the investment of 201 billion euros in clean and renewable energy systems by 2027. The EU's total installed photovoltaic solar capacity will reach 320 GW by 2025, twice that of 2021. Installing an additional 15 GW of rooftop solar PV panels could save an estimated 2.5 billion cubic meters of natural gas each year.

Every part of society must accelerate its response to climate change. The Irish government and the EU's response to the climate crisis brings hope, as does the response of some leading companies that are helping to reduce carbon emissions by investing in renewable power, electric vehicles, and the circular economy. As consumers and businesses, we should support those companies that are helping deliver a better future for us all.

> "Every part of society must accelerate its response to climate change."

> "'We are on a highway to climate hell, with our foot still on the accelerator.' — UN Secretary General António Guterres"

DIGITAL TRANSFORMATION DRIVES AN ENERGY TRANSITION TOWARDS A NET-ZERO FUTURE

Huawei's Dr. Anthony Hu explains how digitalizing the power grid will usher in a greener future.

Anthony Hu

Chief Expert of the Electric Power Digitalization business unit at Huawei's Enterprise business group

Gavin Allen: How is digital technology transforming the power grid and the generation of electricity?

Anthony Hu: Today, the world's energy industry is moving towards a high level of low carbonization and energy transition. As the core of energy transition, the power grid is facing big challenges from unstable and unpredictable renewables like wind and solar. With the acceleration of a new round of global technical revolution, emerging digital technologies such as 5G, cloud computing, AI, and big data have become important cornerstones for the electric power industry. They play crucial roles in scenarios such as wind and sunlight forecasting, load and demand response, and generation-grid-load-storage integration.

In terms of power transmission and substations, our power grid is a huge network, covering tens of thousands of kilometers of area. Sometimes the towers and overhead lines are located on mountains or in forests. That's neither easy nor safe for our people to operate, maintain, and inspect. So we use AI cameras, robots, and drones, together with IoT capability for detection monitoring and control for automatic operation and maintenance.

For distribution, in the past, we'd have to do procedural maintenance changes district by district. However, now we

> "5G, cloud computing, AI, and big data are important cornerstones for the electric power industry."

Gavin Allen

Editor-in-Chief
Huawei Technologies

can use the synergy between terminals, edge computing, cloud, and AI technology to update all maintenance, metering, and billing programs and procedures across tens of thousands of transformer districts within seconds. It's a huge improvement in maintenance and energy efficiency, but even more importantly, it ensures the safety of our people and the reliability of the power grid. We can now identify failures before they occur, and even in unfortunate events, we can provide quick responses automatically, and obviously improve the customer experience. Our solution will be adapted to the bidirectional technical and business models that have been totally changed via distributed energy resources. This greatly improved energy efficiency means we can all benefit from ICT infrastructure and new digital technologies.

Gavin Allen: Are you excited about what this can do for sustainability in the long term?

Anthony Hu: Our world is experiencing three mega-trends: net-zero carbon transformation, energy transformation, and digital transformation. To address these three different dimensions, we've built a strategy model called the T-cube. All our solutions and technologies will create value and provide the capability for our clients and partners to utilize advanced digital technologies for improved energy efficiency and reduced carbon emissions. For energy transformation, our solution drives the full value chain of energy production, transmission, consumption, distribution, and transaction. For zero-carbon transformation, we support the full lifecycle management and optimization of carbon emissions for the campus. The digital transformation facilitates the transition to clean energy and enhances efficient resource operations.

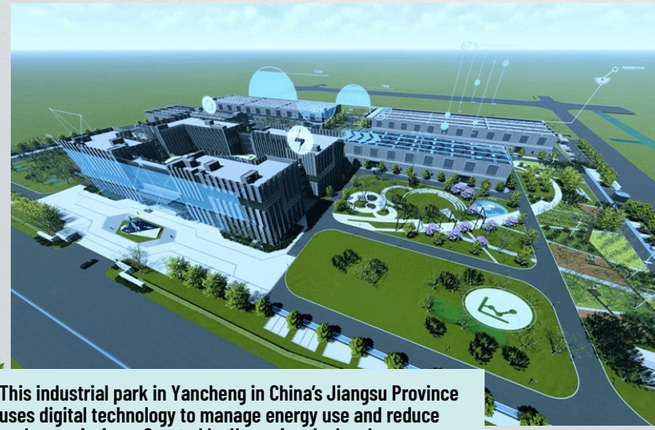
We already have a specific solution called the Intelligent Net Zero Carbon Campus, which was piloted with the State Grid Corporation of China in Jiangsu Province and won a UN/ITU global champion award in Switzerland last year. Based on the T3 development model, this project achieved energy savings and efficiency improvements through distributed new energy and strengthened proactive carbon emission management. This resulted in the gradual establishment of a smart energy campus with near-zero carbon emissions. In addition, the project supported multi-energy complementation, energy efficiency improvements, lifecycle carbon management, and carbon trade, carbon energy big data and business model optimization, achieving a smart zero-carbon campus. Through our methodologies, models, and solutions, we helped our clients reduce carbon emissions by 5,600 tons each year, saving about 3 million GWh per year in electricity consumption. We will continue to help society and industries achieve efficient, green, and innovative transformations and upgrades.

Gavin Allen: How else will you use AI within an industry which values reliability and security so highly?

Anthony Hu: AI is a group of capabilities, just like the human brain: predicting, sensing, recognizing, and judging. Artificial intelligence enables new energy power generation, power transformation, dispatching, distribution networks, safety supervision, marketing, infrastructure construction, and enterprise operation and management under new power systems, which will effectively promote the intelligent development of new power systems. Based on the cloud platform, deep learning frameworks, and AI technologies such as image recognition, speech recognition, and natural language processing, electric power enterprises can provide professional model training, intelligent analysis, and diagnosis services. These services include accurate energy demand forecasting, helping enterprises formulate more scientific and reasonable energy scheduling solutions. This helps avoid waste and loss due to energy shortages or surpluses. AI also enables real-time monitoring and optimization of power systems, improving their stability and safety while reducing the risk of accidents. Additionally, AI improves the efficiency and accuracy of power equipment, reducing the failure rates, and thereby reducing maintenance costs and prolonging the service life of equipment.

To balance generation and demand and to reduce energy usage, we need AI to calculate and predict energy consumption. But distribution is perhaps the most challenging area because millions of electric vehicles (EVs) are now connecting to our power grid, especially in China. As with renewable energy, they create a very unpredictable load. So we use AI, with big data and our ICT infrastructure, to enhance capabilities: monitoring all terminals, devices and EVs, thereby improving the management of electricity use and demand. This ensures responsive, reliable, and secure energy systems that also reduces carbon emissions. In short, AI technology is necessary not only now but also for the future of all parts of the power grid.

> **With AI, we can update maintenance programs across thousands of districts within seconds.**



This industrial park in Yancheng in China's Jiangsu Province uses digital technology to manage energy use and reduce carbon emissions. Created by Huawei and a local power company, it won first prize at the 2022 World Summit on Information Society.

GREEN ENERGY SNAPSHOT

Green energy takes different forms, some of which might surprise you.

For example, energy-efficient technology is helping elephants in South Africa..

Bringing power to the high plateaus of western China ..

And enabling the city-state of Singapore to build floating solar farms five times the size of a football field.

Learn what Huawei is doing to generate power more sustainably in this Green Energy Snapshot.

Scan QR code to watch the Videos

Elephants and solar panels

Clean energy from the vast plains of west China

Singapore's floating solar farm

GOING GREEN IS THE BEST THING COMPANIES CAN DO TO ENHANCE THEIR REPUTATION

To avoid reputational damage, organizations must embed their climate response in their business strategy, says David Trevitt, a digital transformation advisor at Huawei in Ireland.

David Trevitt

Digital transformation advisor at Huawei in Ireland

Climate response is an ethical issue that is becoming an increasingly important part of reputation management for many enterprises.

A recent GSMA Intelligence survey across 16 countries found that around 80% of people now rank climate change as the number one global challenge, above inflation, economic stability, war, and geopolitical conflict. This view remains at the forefront when considering the next five years.

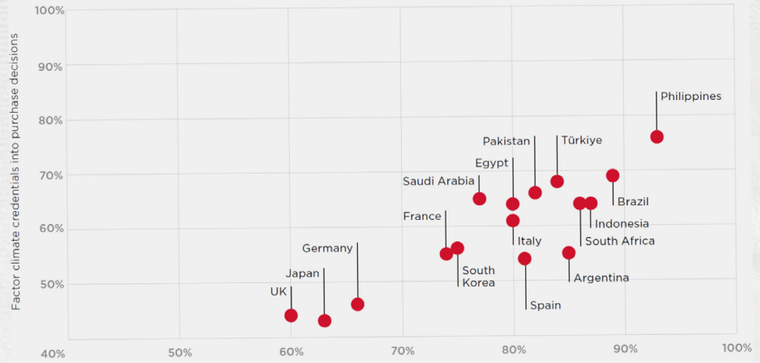
The same survey found that, on average, 60% of people consider climate or sustainability when buying a product, while 45% say they are willing to pay a premium for carbon-neutral certified products and services.

There is a clear correlation between green purchasing and those countries most exposed to extreme weather conditions induced by climate change. The highest correlations are seen in the Philippines, Brazil, Türkiye, Pakistan, and Indonesia–fast-growing emerging economies with direct exposure to warming and extreme weather events.

The trend is likely to increase as more people experience the effects of extreme weather. No country will remain unaffected. More consumers will vote with their wallets.

Similarly, 66% of survey respondents rated climate action as very or extremely important in their choice of employer. How far does this go? Between 30% and 40% of people in

Consumers on the front line of climate change are most likely to vote with their wallets



Source: GSMA Intelligence based on Sustainability Consumer Attitudes Survey across 16 countries

> Around 80% of people rank climate change as the number-one global challenge.

Europe say they would take a pay cut to work for a company with a net-zero commitment. In countries on the front lines of climate change, the figure exceeds 50%.

When selecting a mobile phone operator, the attributes most highly prioritized by consumers today are privacy and personal data protection, price, network coverage, brand, and device range. Environmental sustainability is still a second-level criterion for most consumers, but this is expected to become a higher priority as the impacts of climate change become more widespread and severe.

Some 50% of consumers say they are willing to change their behaviors in response to climate change, although the extent of this varies depending on the level of personal sacrifice involved. For example, a smaller number are willing to fly or drive less compared to those willing to use an electricity supplier or mobile phone operator that uses 100% renewable energy.

The fact that more than 50% of people say they are willing to pay a premium to offset the carbon impact of a purchase or support certified carbon-neutral products or services. This indicates that consumers are more willing to spend discretionary income than to give something up.

From an industry perspective, there is a latent "green premium" available if product design and marketing can incorporate sustainability criteria, such as carbon-neutral mobile tariffs, before regulation requires product adherence to strict environmental standards.

Telecoms operators selling 5G and IoT to enterprise verticals offer a dual-value proposition: productivity gains and higher power efficiency, which lowers their customers' carbon footprint. Such a combination can offer significant reputational benefits.

Sustainable procurement will only grow in importance. According to a GSMA Intelligence survey, some 75% of companies across six industries claim to have sustainable procurement policies in place. While there is some variation in the specifics of such policies, the percentage of enterprises auditing more than 75% of their suppliers for compliance to these policies is negligible.

Establishing sustainable procurement practices takes time, but it will eventually become necessary because of Scope 3 reporting and regulatory compliance. (Scope 3 emissions include those generated by a company's suppliers.)

When it comes to investing, sustainability is no longer considered a niche. Increasingly, the investment management industry has begun incorporating ESG key performance indicators into company ratings and broker research. Evidence suggests that companies with a higher ESG rating have achieved a lower cost of capital.

> 45% are willing to pay a premium for carbon-neutral certified products and services.

In the long run, governments and societies will need to make difficult choices, but much of this comes down to political will and regulation, not technology. The timeline for emissions-related regulations will vary by country and industry, but it has already started in the 89 countries that have adopted net-zero commitments by the end of 2022, representing 86% of global emissions.

Any company on a 2050 net-zero timeline will have to cut CO2 emissions by 50% in each successive decade. This is good for business.

> 75% of companies across six industries have sustainable procurement policies in place.

GREEN IS GOOD FOR BUSINESS

Going green isn't just the right thing to do. It's actually good for business.

Research by GSMA Intelligence (GSMAi), a consultancy, shows that nearly half of all consumers surveyed would pay a premium for products and services that are certified carbon-neutral.

In these two Transform Talks videos, analysts from GSMA Intelligence, a consultancy, explain why adopting energy-efficient technology is both more profitable, and more affordable, than many CEOs realize.

Going green needn't cost the earth

Scan QR code to watch the full interview

Consumers would pay more for green tech, study finds

Scan QR code to watch the full interview

UNLEASHING TECH CAN RESTORE EARTH'S BIODIVERSITY

C MINDS

Regina Cervera

Future of Earth Lab Coordinator at C Minds

In a world where possibilities are as boundless as the value of nature itself, the urgent need to protect and restore our planet's biodiversity has taken center stage. The astonishing tapestry of lifeforms that call Earth home, from the tiniest microorganisms to the mightiest trees, sustains not only our ecosystems but our very existence.

But this richness of life faces an unprecedented challenge: the looming threat of extinction that hovers over more than one million species.

Amidst this challenge, regions like Latin America and the Caribbean have emerged as beacons of hope and resilience. They are the guardians of 40% of the world's biodiversity, harboring 30% of the global fresh water reserves and sheltering nearly half of the Earth's tropical forests.

Protecting these ecological treasures is not merely a choice but a moral imperative, an essential step towards securing a sustainable future for generations to come.

AI systems: a game-changing force in nature conservation

Artificial intelligence systems are transforming the way we understand, monitor, and protect our natural world. In the midst of biodiversity loss, AI systems are powerful allies in the fight for planetary survival.

One of AI's most promising applications is in the analysis of vast datasets related to our ecosystems. AI can crunch through mountains of data to provide insights into the management of natural resources. It can also identify endangered species through the automated analysis of thousands of images and audio recordings. This technological leap has the potential to fast-track our efforts to protect biodiversity and make informed decisions in line with global sustainability goals.

Recent innovations in AI, particularly deep learning and convolutional neural networks, have opened up new frontiers in our quest to understand and protect biodiversity. These advanced techniques allow us to extract subtle and essential information from images and sounds, enabling us to identify species with unparalleled precision.

A tropical symphony, brought to you by AI

Imagine being able to listen to the symphony of a tropical rainforest in real-time without leaving home. Acoustic monitoring sensors, paired with AI, can automatically detect not only the sounds of human activities such as tree-cutting but also the presence of key species.

Organizations like Rainforest Connection (RFCx) and movements like AI for Climate are harnessing these innovations to safeguard forests across the globe. The combination of species identification from images and acoustic monitoring through the use of AI systems is providing new high-impact case studies, like Tech4Nature

> **“One of AI's most promising applications is in the analysis of vast datasets related to our ecosystems.”**

Mexico, a project in southeastern Mexico that, through continuous monitoring of biodiversity and the use of AI systems, has automatically detected and identified priority species, such as the jaguar, and generated a baseline of ecosystem health to strengthen conservation of the area in the medium and long term.

On the microscopic scale, AI-driven platforms can analyze environmental DNA, revealing which species inhabit an area. This level of precision allows us to make informed and responsible decisions regarding projects like infrastructure development, minimizing their environmental impact. Companies like NatureMetrics are leading the charge in this groundbreaking field.

Realizing the full potential of these technologies requires a concerted effort. We must invest in training, secure financing for innovative projects, facilitate data sharing, and build the technological infrastructure necessary for large-scale data analysis.

> **The threat of extinction that hovers over more than 1 million species.**

> **We must invest in training and build the infrastructure needed for large-scale data analysis.**

No time to waste

The adoption of AI and other cutting-edge technologies is not an option; it's a necessity. As a species, we have a moral obligation to use these tools to protect the diversity of life on Earth. Regions like Latin America have a strong potential to lead the charge in biodiversity conservation through digital innovation. But the window won't stay open forever.

Science, technology, innovation, and collaboration across sectors are our most potent weapons against the environmental crises that threaten both humanity and the ecosystems we depend on. In this pivotal moment, the entrepreneurial sector plays a crucial role in driving innovative solutions that can light the path to a sustainable future.

The time for action is now. Let us harness the power of AI and digital technologies to preserve the astonishing variety of life on our planet, ensuring a thriving and harmonious coexistence for generations to come. Together, we can rewrite the future of biodiversity conservation and secure a healthier, more sustainable world for all.

EARTH'S BIODIVERSITY

THE NET ZERO CAMPUS: THE BUILDING BLOCK OF *SUSTAINABLE* CITIES

Safder Nazir

Senior VP of Public Sector
Huawei, Middle East & Central Asia

> Cities consume 78% of the world's energy and produce more than 60% of its greenhouse gas emissions.

In 2015, Jan Eliasson, then Deputy Secretary-General of the United Nations, made a statement that was simple but profound.

"Cities," he said, "are where the battle for sustainable development will be won — or lost, if we fail."

Throughout history, people have moved to cities seeking security, prosperity, and social interaction. Today, cities are growing bigger. Megacities with populations greater than 10 million will have grown fourfold by 2023, housing more than five times as many people as in 1990.

When it comes to sustainability, cities matter. They consume 78% of the world's energy and produce more than 60% of its greenhouse gas emissions.

The campus is key

To control carbon emissions, we must focus on the campus.

When most people hear that word, they think of a university, but for urban planning, it can have a broader meaning. A campus is a bite-size chunk of city — anything from a single development to an entire district — whose management and control come under a single administration. A shopping mall, a factory, or even a mixed-use development can be a campus.

Breaking cities down into smaller, more manageable segments can accelerate plans for a sustainable transition. This could begin with a target of achieving net zero energy, a situation where the total amount of energy used annually would equal the amount of renewable energy created onsite.

That step would set every campus, and therefore every city, on a path towards carbon neutrality and ultimately toward net zero — a term that refers to removing from the atmosphere a quantity of greenhouse gases (GHGs) equal to those emitted by human activity. Transitioning to a "net zero world" is one of the greatest challenges facing humankind.

The net zero campus

Global carbon emissions from information and communications technology (ICT) are still in the low single-digit range, with some estimates around 4%. That may sound low, but it's already higher than the emissions from the airline industry, and the proportion of global energy used by enterprise and data center networks is expected to nearly double by 2030 from a 2020 baseline. That growth has to be managed through what we call "Carbon Conscious ICT".

When ICT becomes more energy-efficient, its carbon footprint gets smaller. But ICT can also help other industries reduce their carbon footprints. It does this by providing new technologies, energy solutions, raw materials, or business models that replace something currently being used.

This is known as the carbon handprint. According to figures from the Global e-Sustainability Initiative (GeSI), by 2030, ICT's carbon handprint could be 10 times as big as its footprint.

ICT Load Expected to Grow Even with Systems Becoming More Efficient Over the Decade (All Numbers Shown in Twh)

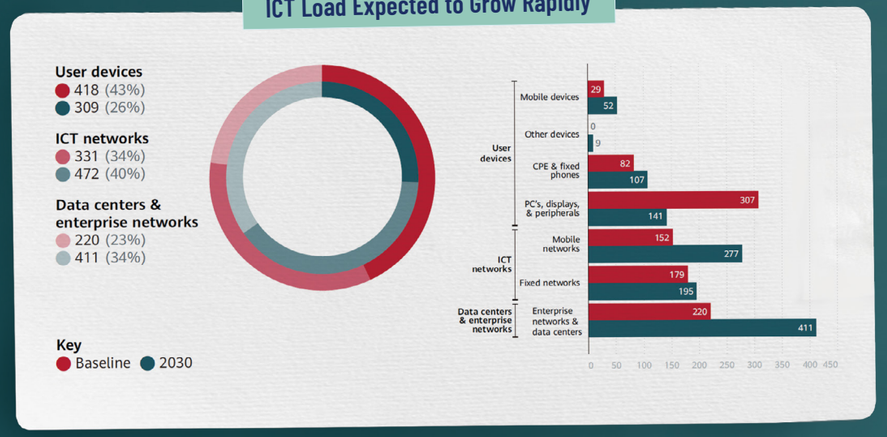
New innovations can allow campuses to optimize their energy use while reducing their carbon footprint. For example, a building could go from employing a traditional three-tier ICT network design to using a two-tier design. Traditionally, ICT rooms (also known as IDFs) would be required on every floor. The floor space, associated power, and cooling requirements can be removed from the building design, lowering energy use by up to 30% and significantly reducing the carbon footprint of manufacturing and shipping.

At the same time, the use of AI in rooftop solar solutions can increase the quantity of energy harvested from each panel. Advances in battery storage technology will also allow greater energy yields to be drawn from the batteries over their lifetime.

Together, these and other solutions will give every campus — and every city and country — a roadmap to net zero.

> By 2030, ICT's carbon handprint could be 10 times as big as its footprint.

ICT Load Expected to Grow Rapidly



> Breaking cities down into smaller segments can accelerate a sustainable transition.

> Transitioning to a "net zero world" is one of the greatest challenges facing humankind.

To learn more about the net zero campus, scan the code above

“NO MORE BABIES”: WOMEN QUIETLY LAUNCH THE ULTIMATE SUSTAINABILITY REVOLUTION

Nicole Yuen

Founder and CEO of the Women Workplace Index

A former investment banker and lawyer, Nicole Yuen is founder and CEO of the Women Workplace Index. Here, she speaks with Huawei’s Executive Editor-in-Chief, Gavin Allen, about why women in some parts of the world are no longer having kids.

women workplace index

What is the Women Workplace Index?

Nicole: It’s an organization founded to track progress in the disclosure of workplace policies and practices related to women by listed companies and other employers. It is the first and only certification regime dedicated to these issues in Asia. We are starting in Hong Kong and expanding throughout Asia.

We welcome all employers to join our certification regime. Participation is voluntary. They will be asked to fill out a questionnaire about women’s workplace issues, such as whether they have a policy on anti-sexual harassment, their maternity and paternity leave arrangements, return-to-work facilitation, or whether employees can work outside of office hours.

And of course, other areas of interest include equal pay, representation of women at various levels of management, and so on. All the information provided by the employer will appear on our website.

If you get certified under our regime, it is a recognition that you’re a responsible employer aware of workplace issues for women and that you are trying to track your own performance and progress.

And then there’s disclosure. We’re not here to judge you. We do not want to say that, for example, if you have 5% women’s representation in your management team, then you’re bad, or if you have 20%, you’re good. Industries are different. For example, law firms have more women; construction and mining companies have fewer women.

We just want to encourage companies to disclose so that the public will see you — and we will show you — particularly to the Gen Zs and the millennials, who wants to spend their money with companies that have a social purpose.

Is there a danger that if it’s voluntary, only the companies with a good PR story will disclose?

No problem — we’ll showcase them. That will produce a domino effect. For example, there might be three or four fast-food companies, and one will come out and say, “We are a Women Workplace Index employer.” And if I have a choice whether to have lunch at this place or that, I’ll go to the place with women-friendly policies. The Gen Z and the millennial crowd will go there; the women will go there; the male allies will go there.

Exactly because of this, we are starting with listed companies because they are already subject to obligations under the listing rules to disclose a lot of this information.

> “Fertility rates are going down to such an extent that Asian societies are no longer sustainable.”

> If you don't change the system, the system will change the women.

And explain why it's important for companies to focus on enacting policies conducive to women in the workplace?

Well, after all, women make up 50% of humanity. Yet, women's representation in the workplace does not measure up, and in decision-making roles, it is still appallingly low.

But I am not just talking about women's empowerment here.

Think of it this way: the only fundamental difference between a man and a woman is that women can have kids. And what do women get for it? Three weeks, four weeks, one month, and maybe one year of maternity leave. That's it.

We make this fundamental contribution to the continuity of humanity, yet nobody recognizes that fact. This is not about the empowerment of women. It's about allowing women to perform the role that we are built for and, at the same time, giving them an equal workplace — an environment that allows them to realize their potential and contribute to society to the fullest. Because, as we have seen, without the latter, women no longer want to have babies.

As the Women Workplace Index expands, we hope that many companies will join us to become certified employers. We are here to raise awareness of these issues among employers and to help them start this journey. If an employer says, "Sorry, we don't have any such women-related policies," okay, fine, we'll help by providing you with one. If you do not have a training video on these topics, we'll give you one to show each new hire.

And in that way, slowly but surely, the whole culture and the workplace landscape will change.

So you're nudging these companies in the right direction?

Absolutely. The workplace landscape is now completely in conflict with our values about family and needs an overhaul. Traditionally, society has hoped and thought that most women would stay home to take care of the family. But as

> Women make this fundamental contribution to humanity, yet nobody recognizes that fact.

women's educational levels rise and they are able to contribute more and attain more success in the workplace, birth rates decline.

Replacement-level fertility is represented by a number: the number of children a productive woman must have in order to sustain a society. The number is 2.1 children.

But Asian countries, except for Indonesia and the Philippines, are all below the 2.1-child replacement rate. South Korea has the lowest fertility rate in the world: 0.8.

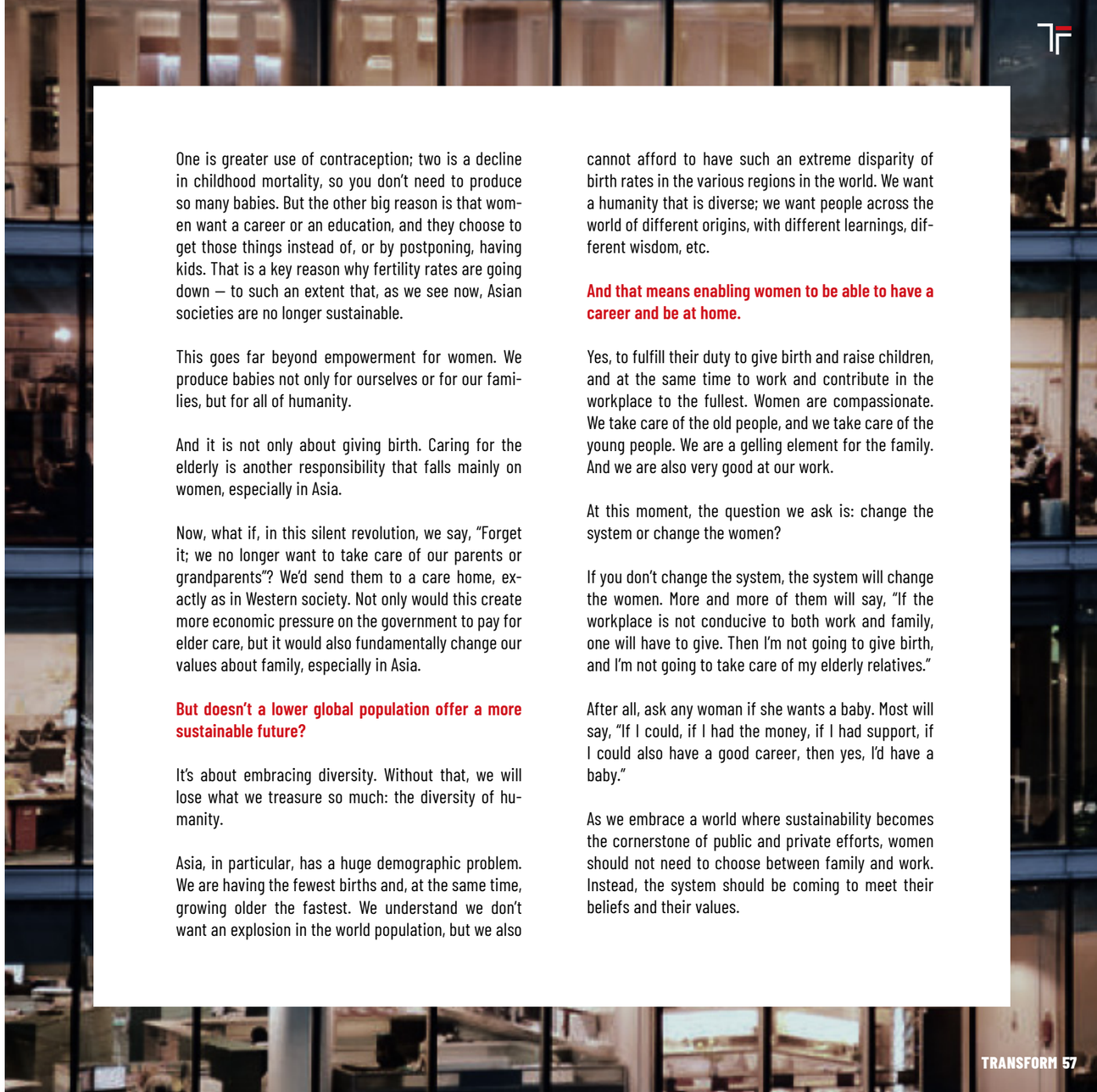
Hong Kong, Singapore, and Macao are around or below 1.0; China is 1.2.

India is only about 2.0, down sharply from 3.96 in 1991. More women are graduating from universities in India now than men. It's climbed from about 30% of women graduating from college in India to more than 50%. No doubt, this will cause India's fertility rate to decline further. Women will say, "I want my choice; I want to work. It's more exciting, more interesting. We won't give birth."

Women are smart. We've called for women's empowerment for so many years, but nobody's given it to us. So, quietly, we do our own revolution, saying, "You won't give it to us with respect to career and education? Sorry, no more babies."

So you attribute declining fertility rates to a lack of women-friendly workplace policies?

World Bank research cites three main reasons why world fertility rates are down.



One is greater use of contraception; two is a decline in childhood mortality, so you don't need to produce so many babies. But the other big reason is that women want a career or an education, and they choose to get those things instead of, or by postponing, having kids. That is a key reason why fertility rates are going down — to such an extent that, as we see now, Asian societies are no longer sustainable.

This goes far beyond empowerment for women. We produce babies not only for ourselves or for our families, but for all of humanity.

And it is not only about giving birth. Caring for the elderly is another responsibility that falls mainly on women, especially in Asia.

Now, what if, in this silent revolution, we say, "Forget it; we no longer want to take care of our parents or grandparents"? We'd send them to a care home, exactly as in Western society. Not only would this create more economic pressure on the government to pay for elder care, but it would also fundamentally change our values about family, especially in Asia.

But doesn't a lower global population offer a more sustainable future?

It's about embracing diversity. Without that, we will lose what we treasure so much: the diversity of humanity.

Asia, in particular, has a huge demographic problem. We are having the fewest births and, at the same time, growing older the fastest. We understand we don't want an explosion in the world population, but we also cannot afford to have such an extreme disparity of birth rates in the various regions in the world. We want a humanity that is diverse; we want people across the world of different origins, with different learnings, different wisdom, etc.

And that means enabling women to be able to have a career and be at home.

Yes, to fulfill their duty to give birth and raise children, and at the same time to work and contribute in the workplace to the fullest. Women are compassionate. We take care of the old people, and we take care of the young people. We are a gelling element for the family. And we are also very good at our work.

At this moment, the question we ask is: change the system or change the women?

If you don't change the system, the system will change the women. More and more of them will say, "If the workplace is not conducive to both work and family, one will have to give. Then I'm not going to give birth, and I'm not going to take care of my elderly relatives."

After all, ask any woman if she wants a baby. Most will say, "If I could, if I had the money, if I had support, if I could also have a good career, then yes, I'd have a baby."

As we embrace a world where sustainability becomes the cornerstone of public and private efforts, women should not need to choose between family and work. Instead, the system should be coming to meet their beliefs and their values.

TECH FOR SUSTAINABILITY

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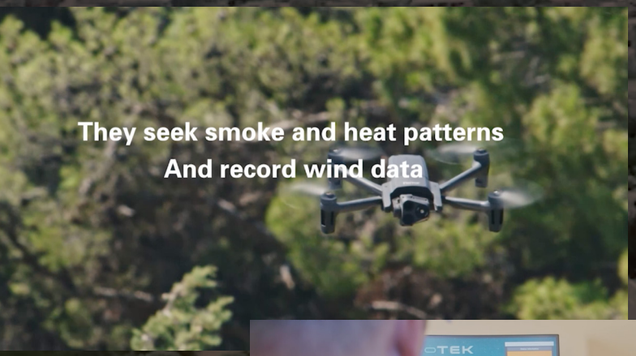
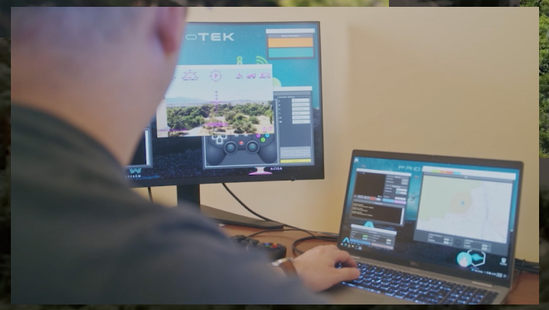
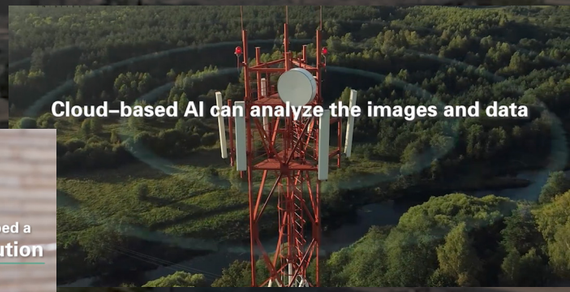




Boosting agricultural yields in Austria



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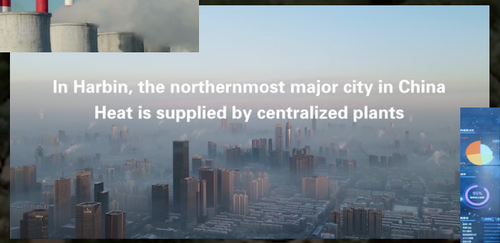

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