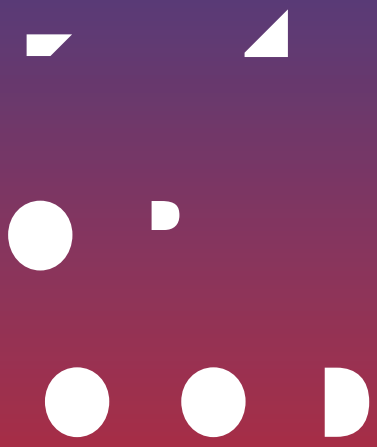

INNOVER POUR LE BIEN COMMUN

TECH FOR GOOD SUMMIT

Progress report

July 2020

TECH FOR GOOD SUMMIT

Progress report

Contents

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Foreword by the French Presidency

The COVID-19 epidemic served as a reality check in many areas. The response to the pandemic was first and foremost human, through an outstanding mobilisation of the caregivers, women and men working on the front line. Their service to the community showed how technology alone is not a cure-all. For many of us, the period was nonetheless substantially digital. Digital practices have experienced a breakthrough, helping to maintain social and family cohesion and accelerating adoption of teleworking, telemedicine, distance learning, and online access to culture and knowledge, among others. These practices, new to some, will not go away when the virus subsides. This great crisis brings many lasting transformations, and digital transformation is not the least.

In this regard, tech companies bear a heavy responsibility. We have known this for a long time and we have been talking about it every year since 2018, on the eve of Viva Tech, in a multi-stakeholder forum: at the forefront of digital transformation, tech players should think more broadly than their own interests and serve as pathfinders for society as a whole. The scale of the challenges facing tech firms has grown steadily during the past three years, at a time when access to and mastery of digital technology are valuable keys to education, health or work. This is also a time when the environmental footprint of digital is uncertain, and when the under-representation of women in science and technology highlights the need for professional equality in the digital sector.

On each of these issues, with the methodological, strategic, and knowledge support of McKinsey teams, the Tech for Good companies undertook commitments during the 2019 Summit and have since begun to implement them. Faced with the epidemic, they reacted to the crisis by rapidly mobilising resources. This progress report is its modest testimony but it is mainly dedicated to trace the trajectory over the next few months.

There is still so much to do! The early successes must herald deeper, more practical and lasting change in people's lives in France, Europe, and the world. Beyond paying lip service to CSR, Tech for Good companies, corporate groups and startups, will need to transform themselves and, together with the support of civil society and the research community, find development models that put digital at the service of humanity, rather than the other way round.

The next Summit will provide an opportunity to collectively draw up a report on actions that have been undertaken, and to explore how to mobilise digital technology and artificial intelligence responsibly to meet major humanitarian challenges. The crisis we are going through will leave traces. We have the responsibility to build the fairer world that our children expect, one in which innovation contributes to the common good.

Executive summary

The Tech for Good Summit, an initiative of the French Presidency founded in 2018, brings together a diverse group of corporate and non-profit leaders from some of the most dynamic organizations across the world. Tech for Good is composed of five groups of 15 to 20 organizations, including large companies (tech and non-tech), NGOs, investment funds and startups.

Over the past twelve months, the five groups developed new cross-company initiatives while delivering on the engagements taken by the more than 80 CEOs during the 2019 Summit. When the COVID-19 crisis broke out, they analyzed the impact of the pandemic on each of their areas of focus and developed concrete actions to face the challenges brought by the crisis. The groups' broad aims and objectives are as follows:

— The **Tech for Education** group aims at training students in technology while supporting technology usage in education. During the COVID-19 crisis, Tech for Education members accelerated their initiatives to support students better, and, in parallel, launched concrete initiatives to supply digital learning equipment, provide remote coaching and tutoring to students, and deploy tech solutions and tools for students and teachers.

— The **Future of Work** group addresses the skill-shift needs brought by the unprecedent technological disruption caused by automation and digitization by defining and promoting trainings on soft-skills and technological skills. During the lock-down, Future of Work members worked as a group to provide the French Ministry of Labor with a list of more than 50 best practices to ensure workers' health, reinforce business agility, adapt working procedures, and prepare for the future—to be used as a support for future public policies.

— The **Tech for Diversity** group aims to promote gender equity and a business ecosystem that promotes inclusion, mainly by increasing representation of women in leadership positions and tech roles. While the crisis might challenge gender diversity targets, Tech for Diversity members reaffirm their willingness to match their commitments within timeframe while considering an additional commitment still under discussion to mitigate the impact of the crisis on women.

— The members of the **Tech for Economic Inclusiveness** group aim at reducing inequalities by digitally empowering their ecosystem—including staff, clients, partners, suppliers, communities, and stakeholders. During the COVID-19 crisis, Tech for Economic Inclusiveness members deployed concrete actions to face immediate challenges brought by the crisis, in particular by providing access to electronic equipment, supplying training in digital skills to individuals in need, and fostering innovative digital services and solutions.

— The **Tech for Environment** group has the objective of decreasing environmental footprint in line with the Paris Agreement and promoting tech solutions to achieve it. Furthermore, the Tech for Environment group has been analyzing how to participate in a "green recovery" from the current crisis.

Finally, this report presents new perspectives for reflections. It shares some of the most impactful initiatives developed by the Tech for Good startup ecosystem both before and during the COVID-19 crisis. The common ambition of the Tech for Good Summit, VivaTech and the Tech for Good startup ecosystem is to increase collaboration of actors of all sizes around "for good" initiatives. Reflections on Tech for Good in Africa (especially the COVID-19 impact on the African Tech for Good ecosystem), on Artificial Intelligence opportunities to address humanitarian challenges and on Accountable Tech with the role companies can further play in mitigating tech risks are also presented in this report. Lastly, the report opens on an active reflection on the role of technology after the crisis.

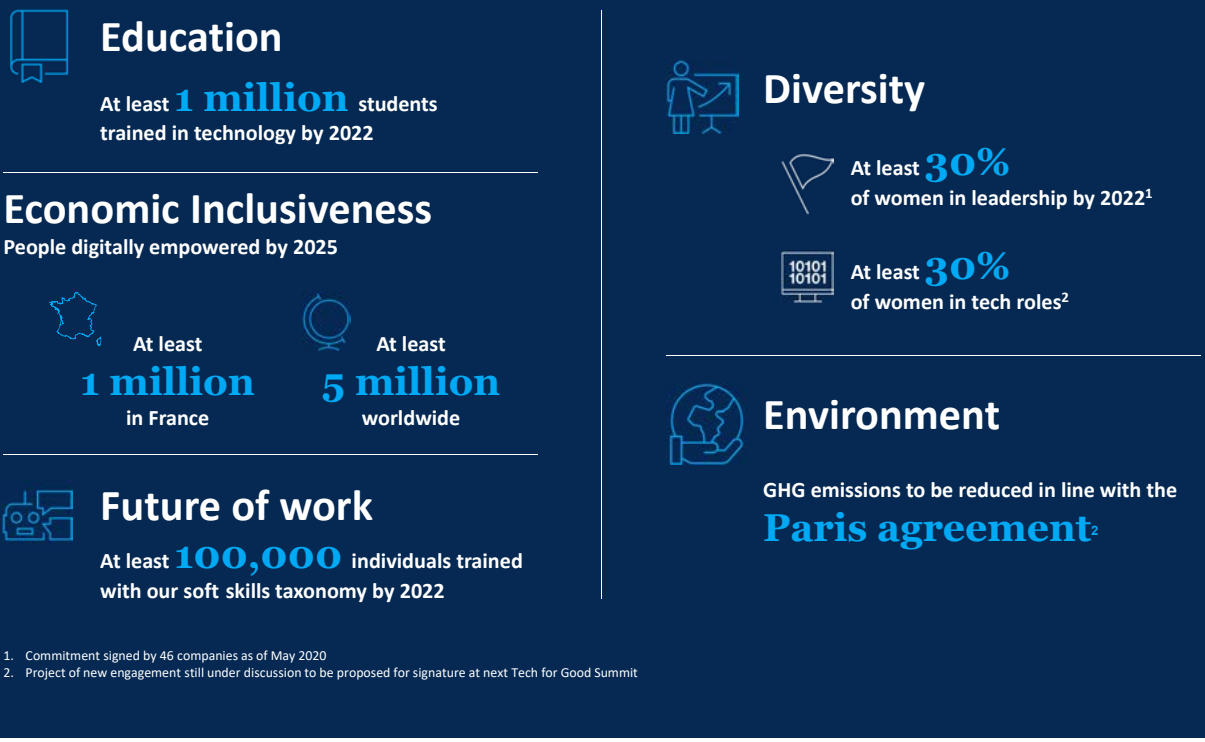
Tech for Good consolidated impact

Since its inception, the Tech for Good Summit has driven significant impact in terms of access to education, gender equity, and preparation for the future of work. The recent addition of workstreams dedicated to leveraging tech to tackle broader economic inclusiveness and environmental issues will ensure that the overall impact of Tech for Good initiatives will increase substantially in the coming years.

Members of the Tech for Good Summit commit to digitally empowering and training millions of people in technology and soft skills, while promoting gender diversity and acting on climate change (Exhibit 1). Progress on these commitments is detailed in the following sections.

Exhibit 1

Overall commitment of Tech for Good workstreams



1. Commitment signed by 46 companies as of May 2020
2. Project of new engagement still under discussion to be proposed for signature at next Tech for Good Summit

Tech for Good progress report

Tech for Education

Co-chairs foreword: Technology and education

Education matters now more than never. The COVID-19 crisis is a reminder that technology is of paramount importance to education. Through the Tech for good process launched by President Macron and beyond, many of us have taken significant actions to shape the future of education as a more inclusive one. Some of these initiatives are highlighted in this report, which shows significant progress of our action.

This crisis is an impetus to accelerate. Economies and societies are under tremendous stress. The specter of a growing divide—not only digital—between the haves and the have-nots risks becoming more acute. In the Education workstream, we are passionate that this digital era be more inclusive and more human. Technology applied smartly can reinforce the value of remote digital learning in bridging divides and providing greater access to economic opportunity after the crisis.

Now is the perfect time to embrace new models, for governments, companies and NGOs to unite, to sit with educators and rethink schools and learning, to serve common goals: pedagogical continuity, equal access to educational content, and to new skills training opportunities for the in-demand jobs. For employers to hire based on skills first, not on a four-year college degree. This is a crucial time for Tech to bring technologies to people, giving them the right skills to be successful in this digital era. From words to actions, we are delighted to share how this workstream has decided to scale its initiatives and to launch new ones, in France and around the world.

Jean-Laurent Bonnafé,
Director and CEO of BNP Paribas

Ginni Rometty,
Executive Chairman of IBM

Overall commitment

Within the Tech for Education workstream, 17 international companies, startups and NGOs from diverse sectors—both tech and non-tech—collectively make a commitment to training more than one million students in technology by 2022. To reach their ambition, these organizations are joining forces to run a wide range of initiatives and concrete actions across the globe.

Progress on 2019 initiatives

Over the previous two Tech for Good Summits, members of the Tech for Education workstream launched the following major initiatives:

First, a series of "pathways in technology" classes, known as P-TECH, aimed at helping youth from all backgrounds acquire skills and access opportunities for entry-level jobs in high-growth industries—with massive support from member-company volunteers and a special focus on students who need it most. Created in a school in Brooklyn (United States) nine years ago by IBM, the New York City Department of Education and the City University New York, P-TECH has now scaled to be implemented in more than 220 schools in 24 countries[1]. A total of 150,000 students have been onboarded globally.

In France, the initiative was launched just one year ago with two pilots in the Paris and in the northern regions, is scaling fast.

Despite the crisis, educators, companies and public authorities joined forces to open new pilots in 2020 to triple the total number of pilots and increase support to students to prepare for jobs of the future. In September 2020, a cohort of 500 volunteers from ten member-partners (companies and graduate schools) will coach 200 students for a five-year period in France. From there, the group wants to continue expand the initiative rapidly, with the full support of the Education ministry.

On these six P-TECH pilots only and without potential new openings, almost 1,000 students will be reached by 2025[2].

"With P-TECH, we have the opportunity to meet committed women and men, driven by a generous enthusiasm, flawless optimism, talents with multiple resources inspiring both our students and ourselves. Certainly, there is a P-TECH spirit, which accompanies us students, teachers, mentors, partners at each stage of the journey."

Laurence Guiganton, P-TECH literature and history professor, vocational school La Tournelle, La Garenne-Colombes

"This relationship I have with my mentor is one of the best part of P-TECH. I also liked the immersion week at the partner companies, which was fun and instructive."

Hanane, P-TECH student, vocational school La Tournelle, La Garenne-Colombes

"For me integrating P-TECH is a real asset, both for the experiences we have the chance to live and the opportunities of being hired more easily at the end of the studies, associating global companies on our resume."

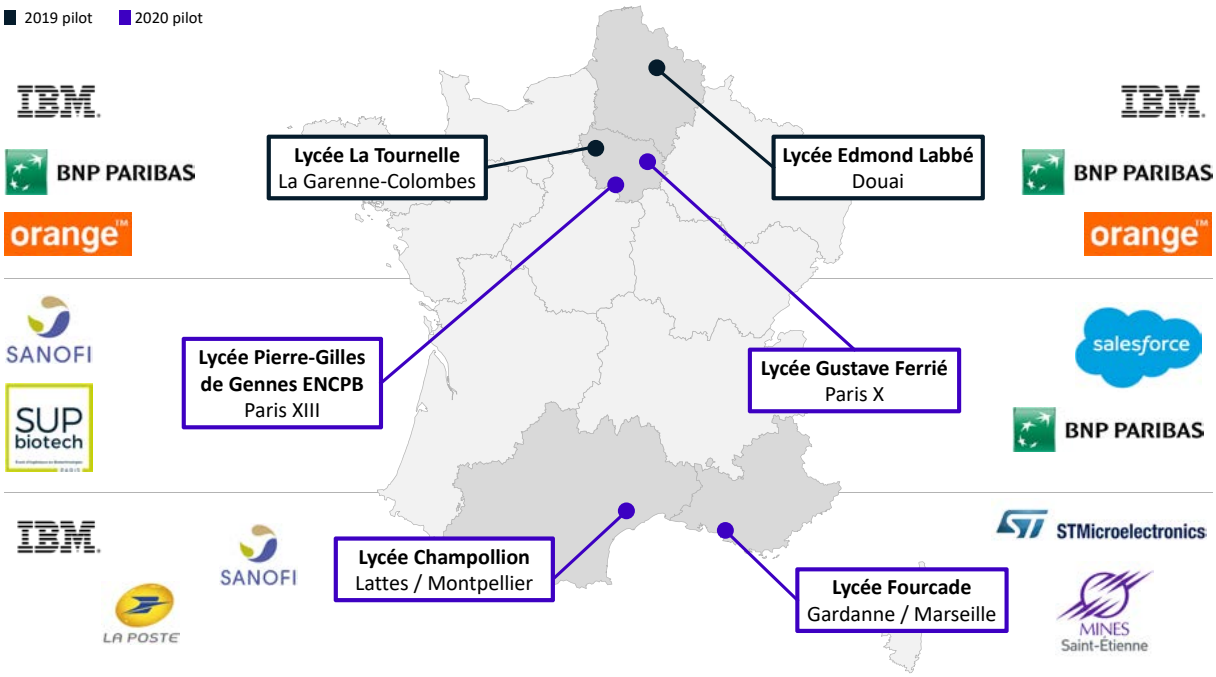
Stan, P-TECH student, vocational school La Tournelle, La Garenne-Colombes

[1] Argentina, Australia, Brazil, Canada, Colombia, Czech Republic, France, Ireland, Italy, Mexico, Morocco, Philippines, Poland, Singapore, South Korea, Taiwan, United Kingdom, United States, Hong Kong, Egypt, Netherlands, New Zealand, Peru, Thailand.

[2] Each year, a new class ("seconde" grade) will be opened in each of the six schools. This forecast is calculated based on a constant perimeter of six P-TECH schools, and does not take into account potential new openings.

Exhibit 2

P-Tech pilots in France (x3 in 2020 vs. 2019)



"The journey accomplished together with the student I am mentoring is quite exceptional as we succeeded in building a strong relationship based on respect, bridging with confidence the worlds of workplace and school."

Antoine Jeanpierre, IBM mentor

"My mentee was willing to prove to me that he was able to honor his commitments, on my side this experience really challenges my manager posture."

Khadidiatou Ba Guisset, BNP Paribas mentor

In March 2020, as the crisis intensified, the digital platform Open P-TECH was launched. The goal is to provide free digital learning on the tech skills of tomorrow. This platform gathers in one place learning on cutting-edge technology, engaging videos and gamified assessments to spark and keep student interest, and special resources for teachers. It is free to schools, academic institutions, students and teachers and offers industry-recognized digital badges. Open P-TECH has already reached 30,000 students in 90 countries and expects to reach 150,000 students by 2022. Open P-TECH is now available in English, Spanish and Portuguese. Throughout the year, other languages, including French, will follow. The plan is to launch this initiative in France, with high-quality French-speaking education contents accessible for free to schools by the end of 2020.

The second major initiative is a Tech and Education Alliance, created to scale the most successful collective initiatives to promote tech education. Companies including Thales, Accenture, Airbus, Engie, IBM, and Sanofi joined forces within the Alliance to encourage company collaboration around significant STEM programs, develop and give free access to pedagogical content and learning, and increase students' exposure to tech jobs and careers opportunities by sharing employee testimonials.

Programs include initiatives in France, and around the world, on cutting-edge technologies; pre-apprenticeship and online apprenticeship programs (for example with the online French-education provider OpenClassrooms); and actions focused on girls and diversity (such as the STEM for Girls program in India, with IBM and BNP Paribas, or Capital Filles in France).

The Alliance's aim is to reach 200 000 students by 2022.

"Technology for good? Yes but … not without girls! This is Capital Fille's ambition, supported by Sanofi and more than 70 companies, so that girls from poorer districts and rural areas can be trained on digital skills and access jobs of the future. In 2020, with the support of their teachers, more than 12,000 girls will benefit from Capital Fille's activities."

Dominique Goutard, Capital Filles General Delegate

"Thanks to its global impact, Tech For Good provides opportunities for many to benefit from new technologies and be prepared for tomorrow's world. This year again, Thales joins fellow companies to widen Tech For Good's scope with new initiatives for more youngsters to be reached, wherever there is a need."

Patrice Caine, Chairman and CEO of Thales

Initiatives launched in 2020

To double down on their ambition, the Tech for Education workstream members deployed two additional initiatives in 2020 to tackle the critical issues raised by Artificial Intelligence (AI) and to unlock the full potential of EdTech in the future:

Objectif IA. This training course is provided by OpenClassrooms in collaboration with Institut Montaigne, a leading French think tank. The objective is to make the subject of AI, its benefits and its challenges, accessible to all. In the Tech for Good spirit of reaching diverse populations, Objectif IA is targeted at a non-expert audience and takes the form of a free online training course delivered in French. The course duration is five hours and it covers critical issues such as AI myths, ethical and responsible AI, and the future of work. The group ambition is that, by the next Tech for Good Summit, more than 50,000 students will have taken this class, and that this number will increase to 650,000 by 2022. Objectif IA benefits from the ongoing support of numerous companies, including more than ten Tech for Good members—either French companies or companies operating in France. They all promote the course among their respective teams.

The EdTech Task Force. This special task force will issue a short report outlining the main challenges faced by EdTechs in France, and provide up to five immediately actionable recommendations to foster the development of the EdTech industry in France.

COVID-19 impact and workstream's actions

Mid-April 2020, almost 200 countries had shut down all their primary and secondary schools, affecting almost 1.6 billion students.[3] Where it was possible, school authorities switched to remote learning with successes but also with many challenges. However, this shift has been uneven. Some systems were able to train teachers, roll out remote learning, and put in place student-support services in less than a week. Others are still struggling, constrained by lack of access to technology or expertise. The disparity is evident between countries; it is also evident within them—with a risk of increasing inequality.

If anything, this tragic crisis serves to reinforce the importance of technology in areas such as digital learning. However, addressing learning and outcome inequities in a remote-learning environment is a complex challenge as students' vulnerability comes in many forms: low-income students, immigrant students, students with special needs, students in remote rural areas, and those in risky home situations all need tailored strategies and dedicated attention. In this context, the Tech for Education workstream has been fully committed and active in its response to the crisis.

During the French lockdown, Objectif IA began to offer a free online AI training course. Numerous companies, including 11 participants of the Tech for Good Summit, joined forces to support the initiative, for example by deploying it internally. The initiative has shown success, as 18,000 people have already completed the training.

During the crisis, Tech for Education members launched several ad hoc initiatives, in addition to their workstream engagements and corporate initiatives. Many Tech for Good participants contributed greatly during this time, and we acknowledge their efforts.

[3] UNESCO website, https://en.unesco.org/.

Here we highlight some of the actions the Tech for Education workstream members launched to support students, teachers, schools and education systems to face the ongoing crisis:

Digital-learning equipment supply for needy students, either directly or through NGOs (for example, 3,000 computers and printers handed out by BNP Paribas).

Remote coaching/tutoring sessions to support students during the crisis.

To support high-school students in the crisis, Article 1, a Future of Work group member, launched the #Réussitevirale coalition. The coalition was joined by both BNP Paribas and Accenture. In particular, Accenture consultants are involved to ensure the application security while consolidating the solution to become a long-term platform to fight school dropout rates.

As presented in the Future of Work section, the crisis may increase the need for skills of the future (including technological skills). For this reason, IBM and Cisco, an Economic Inclusiveness member, launched "digital Fridays" with the Versailles Education authority to offer online webinars for students covering topics such as AI, quantum, cybersecurity and the future of work.

At the 2019 Tech for Good Summit the future SkillsBuild digital platform designed to help unemployed adults acquire the skills needed for today's jobs with personalized coaching was announced. When the crisis occurred, IBM accelerated its worldwide development with the goal of reaching 15,000 learners in 2020.

Tech solutions and tools to ensure learning continuity and develop solutions for the future.

To ensure students' learning continuity, education providers added technical gateways to grant remote access to curricula (for example, 95 percent of School 42 students were able to complete the curriculum remotely).

While all schools and teachers were not fully equipped to switch to remote learning, Tech for Education members offered free e-learning platforms or adapting business solutions for schools and students (for example, 240,000 lessons were delivered free to over 50 million students in March on Huawei's WeLink). To support the deployment of these technologies within schools, members launched cross-company implementation actions (for example, IBM and Cisco implementation of school distance-learning tools with over 2,500 volunteers supporting 80,000 students in 13 EU countries).

In parallel, companies joined forces with international organizations to find solutions to reduce the impact of COVID-19 on our daily lives, focusing on education (for example, IBM's global "Code for Code" with the United Nations). In particular, some group members (for example, Huawei, IBM) joined the UNESCO coalition for education to mobilize actors and resources, coordinate action globally, match on-the-ground needs with local and global solutions, and provide distance education.

Participants

Future of Work

Co-chairs foreword: COVID-19 and the future of work

In the coming decade, workplace digitization and the next wave of automation technologies will reshape how our companies operate and how each of us will work. As intelligent machines and other digital solutions become fixtures in the workplace, we will need to develop new skills and adopt new working modes. The need for some skills, such as technological (+55 percent by 2030) as well as social and emotional skills (+24 percent by 2030), will rise, even as the demand for others, including physical and manual skills, will fall.[4] These changes will require workers everywhere to deepen their existing skill sets or acquire new ones. Companies, too, will need to rethink how work is organized within their organizations.

During the 2019 Tech for Good Summit, participants discussed how the future of work implies a skill-shift that is both a business and a social imperative as technology, including automation and artificial intelligence, is expected to profoundly affect our lives. By 2030, an estimated 375 million workers will have to switch occupations or acquire new skills by 2030.

The ongoing situation is accelerating this transition with the urgent need for workers and businesses to fully integrate new technologies and address the new normality.

But the COVID-19 pandemic is also putting hundreds of millions of jobs and earning opportunities at risk, including in sectors that were more susceptible to automation over the longer term. In Europe only, almost sixty million workers will be negatively impacted (including reduction in hours or pay, temporary furloughs or layoffs), with similar figures in the US.[5] Facing the unprecedented, companies have had to quickly adapt how they operate to ensure employee's health and business continuity. Across sectors, working mode have switched to remote working at a unique scale as digital usage was skyrocketing. Undoubtedly, World is changing. Business is changing. Work is changing.

Our societies and companies need to prepare for the future. We need, collectively, to put workers on more sustainable career paths, while ensuring the future of our businesses by preparing the skill shift. Jobs of the future will require skills of the future.

Through the Future of work group within Tech for Good, Orange and Uber have found a unique platform for discussion and initiatives building. With large companies, NGOs and startups from different countries and sectors, we were able to build common standards and design training journeys towards skills of the Future. We would like to thank all of them for their participation.

Dara Khosrowshahi,
CEO Uber

Stéphane Richard,
CEO Orange

[4] Skill shift: Automation and the future of the workforce, McKinsey Global Institute, 2018.
[5] Safeguarding Europe's livelihoods: Mitigating the employment impact of COVID-19, McKinsey.com, 2020.

Overall commitment

To anticipate the skills shift initiated by the unprecedented technological disruptions our society is facing, members of the Future of Work group worked on the skills of the future and cooperated in order to design concrete reskilling and upskilling use cases in two areas:

— **Soft skills**. Members recognized and deployed a common set of skills, while supporting JobReady's ambition of occupational integration by training 100,000 individuals in soft-skills by 2022. This initiative was launched in 2019.

— **Technological skills**. Members defined a common set of skills while developing internal and cross-companies use cases to train workers in these skills. This initiative was launched in 2020 and targets will be defined by the next Summit.

Progress on 2019 initiatives on soft-skills

Workstream members have joined forces to promote soft-skills through the following three major initiatives:

First, by signing and promoting a manifesto to their partners. The manifesto, initiated by JobReady, a member of the workstream, defines soft skills and recognizes their importance—both within organizations and for the future of the society. To date, the manifesto has been signed by around 25 major companies and JobReady's ambition is to certify 5,000 individuals in soft skills by the next Summit, with the support of the workstream members.

Second, by creating internal use cases based on the common soft-skills definition. Among other projects, Orange launched an internal pilot, CDiscount, and RATP provided soft-skills training to their apprentice communities while Sigfox trained their HR team on the soft-skills taxonomy.

Third, by creating a cross-company partnership with Uber and RATP to provide soft-skills certification to ride-hailing drivers, enabling them to transition to new contracts as bus drivers.

Initiatives launched in 2020

Research indicates that demand for technological competencies is the fastest-growing skills category, and that these skills will be in high demand by 2030. Moreover, the ongoing COVID-19 crisis is expected to accelerate this growth as technology usage increases.

Therefore Future of Work group members decided to focus on technological skills in 2020 by creating the following:

A common Charter (to be signed beyond the workstream by the next Tech for Good Summit) to align signatories' ambition on:

— their intention to promote upskilling and reskilling in technological skills as a business and a social imperative,

— a list of the key technological skills, built with Uber, Orange, Chance, Fitec and UiPath, to be used as a basis to upskill and reskill employees with the ambition to set a worldwide standard agreed upon across countries and sectors.

Upskilling and reskilling journeys towards roles requiring heavy technological skills. The group's ambition is to create internal and cross-company training journeys on technological skills by next Tech for Good Summit.

As of today, group members developed internal training journeys, such as Orange's 20,000 employees to be trained by 2025 in network virtualization, AI, data, cloud computing, coding and cyber security. As part of its digital transformation plan, RATP aims to develop the technological competences of its 63,000 employees with a focus on digital culture, technology management and new working modes. Other examples include CDiscount's IT Masterclass to train employees from various backgrounds to IT positions or Uber's initiative, in collaboration with Openclassrooms, offering scholarships for Uber Eats couriers to integrate a web-developer part-time program combining studies and job.

Workstream members also developed cross-company training journeys on technological skills. For example, Fitec trains and certifies 2,400 people in various IT solutions in both upskilling and reskilling programs. With a lively community of more than 1,000 active members on its marketplace, UiPath Connect, and several thousands of downloads of the UiPath Academy modules every year, UiPath is training a large ecosystem of people in France in technological skills (Robotic Process Automation).

During the lockdown, 8,000 jobseekers applied to Openclassrooms' 100 percent online training on high-demand jobs and basic technological skills. Through this Pole Emploi partnership, they will acquire technological skills with a focus on 20 IT and system, development and data jobs, including beginner and expert levels, in order to fill the current skills gap in French companies.

Complementary to those initiatives, the concept of "which"-skilling emerged in the midst of the crisis. "Which"-skilling can be defined as the process in which a worker identifies his or her next professional move prior to training for it or applying for it, leading to productivity and performance increases as well as turnover and absentia decreases. In addition, the Future of Work group decided to involve Ma Voie, a coalition of several Tech For Good members – supported by Google.org – which includes Article1, Bayes Impact, Chance and Generation. Ma Voie aims at streamlining access to employment for all, and in particular those affected by the current economic downturn, by efficiently consolidating employment services into a single service pipeline. This service offers a personalized approach to job seekers and offers participants confidence-raising tools. Ma Voie is expected to support hundreds of job seekers as soon as September 2020.

COVID-19 impact and workstream's actions

Even before the current crisis, changing technologies and new ways of working were disrupting jobs and skill requirements. The coronavirus pandemic is drastically accelerating the urgency of this challenge.
Within the crisis, it has been observed that sectors that are the most exposed (in terms of ability to work remotely and ensure social distancing in the workplace) also tend to be those with the highest automation potential in the coming years, such as retail, transport and storage, manufacturing and construction. In these sectors, physical and manual skills are over-represented while their overall demand is expected to decrease by 2030. These are also the occupations which usually require lower educational qualifications and are often lower-paid jobs, with an estimated 90 percent of jobs at risk providing earning below median wage.[6] The need for upskilling and reskilling is therefore a social and business urgency.

The tragic context of the COVID-19 pandemic has led many people to consider new career tracks. At the workstream level, Chance experienced a doubling of the number of applicants (8,000) for its career-guidance digital coaching service. Analysis show that the increase comes mainly from three types of profiles: people anticipating long-term downside economic effects in their current sector, people looking for more meaning in their position or a better match between their roles and personalities, and people looking for better employment security such as freelance profiles. In light of this trend, the Future of Work members are anticipating the need to accompany workers' transitions around the notion of "which"-skilling.

Across industries, workers and corporate leaders must figure out how they can adapt to rapidly changing conditions and, in particular, how to ensure transition to remote working and mitigate potential challenges. Over the past weeks, remote working has drastically increased. Organizations have been instructing staff to continue working from home to ensure business continuity while ensuring the rapid development of remote-working capabilities. As an example, RATP group, a workstream member, went from 1,500 employees working remotely one or two days per week to 10,000 employees in full-time remote working.

That said, embracing remote working poses serious early-stage challenges for organizations across the operating-model dimensions of **people**, **structure**, **process** and **technology**, and leaders have an essential role to play in developing solutions to term.[7]

In the post-crisis future, many organizations might continue to leverage telecommuting. In a world shaped by global competition, potential skill shortages, and changing demographics, remote working could be a key enabler for companies to deploy their workforce more effectively and a competitive advantage to attract a wide array of employees. As an example, the Tech for Diversity workstream identified remote working as the number-one opportunity for gender diversity in the context.
Corporate leaders also need to figure out how to match the workforce with new roles and activities. This is the reason why workstream members defined the most efficient levers for organizations to adapt their workforce and support their business partners. This compendium has been shared with the Labor Ministry to support policy decisions. In particular, four levers were defined, with more than 50 associated best practices:

[6] McKinsey US analysis, April 2020.
[7] For more details on how to successfully embrace the shift to remote working, please see *A blueprint for remote working: Lessons from China*, McKinsey & Company, March 2020, McKinsey.com.

— **Ensure health and social responsibility** within companies and beyond with dedicated actions (for example, equipment supply, communication and training) to ensure safety and inclusion,

— **Reinforce agility** by creating new teams, redeploying workers and fostering cross-team functionality,

— **Adapt working models** such as enabling remote working at scale, increased IT security and digitization (for example, in learning and development, recruitment, and onboarding),

— **Prepare for the future** with upskilling and reskilling in crucial roles while preparing for the "new normal."

Participants

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Tech for Diversity

Co-chairs foreword: Gender equity in technology

Education matters now more than never. The COVID-Over the past few months, we have all been living through unprecedented demanding times. As Corporate leaders, we have focused on solidarity, safety, mutual care and inclusion to make sure our teams worldwide persisted through this crisis in the best possible way. Over the coming months, our societies will face social crises giving rise to situations of great human suffering, particularly for the most vulnerable. In society as in our companies, the crisis might challenge inclusion. However, we believe more than ever that everyone is important and we therefore wish to reaffirm our commitment to Tech for Diversity and confirm that the Tech for Good Initiative was a trailblazer. We are honored to co-lead the Diversity work stream and, thanks to the remarkable work of all its members, very proud of its achievements.

In 2019, 46 companies committed to reach 30 percent of women in leadership positions worldwide. At this date, one third achieved this goal. Also, twelve companies committed to use technology to mitigate bias and promote inclusion in hiring, promotions, and pay equity, and have successfully adopted solutions in order to enables this.

In 2020, despite the COVID-19 crisis, members of the Tech for Diversity workstream are devotedly continuing the work on new commitments aiming to increase the number of women in tech roles and to work with suppliers who promote diversity.

The Tech for Good initiative has become an exceptional platform for our companies of all sizes and backgrounds to come together, share their best practices and join their forces for a common goal. We want to take the opportunity of these few lines to warmly thank all the Tech for Diversity members.

Along with L'Oréal and SAP, we are convinced that the members of our Tech for Diversity group pride themselves in supporting France's endeavors while contributing, at our own level, to a more equal and inclusive world. We look forward to meeting in Paris at the next Summit.

Jean-Paul Agon,
CEO L'Oréal

Christian Klein,
CEO SAP

Overall commitment

Companies in the Tech for Diversity workstream have taken two commitments to increase gender diversity in both leadership and tech roles:

— reaching 30 percent representation of women in leadership positions by 2022 (taken in 2019),

— reaching 30 percent representation of women in tech roles (timeframe to be defined and commitment to be proposed for signature at the next Summit).

Progress on 2019 commitment on women in leadership

During the 2019 Tech for Good Summit, 46 tech and non-tech companies made a commitment to reach a target of 30 percent representation of women in leadership positions within their organizations. By the next Summit, new organizations are expected to join the commitment. One year later, based on the status updates received to date, we see that on average companies improved their percentage of women in leadership positions by 3.6 percentage points over the year.[8]

Additionally, 21 companies have already reached the 30 percent goal—and some have exceeded it. For example, three companies, Mozilla, L'Oréal and Solar Impulse Foundation have now reached or maintained 50 percent representation of women in leadership positions.

Among all potential levers to promote diversity, gender diversity targets (36 percent) are considered by the 46 signatories as the most efficient lever to promote gender diversity within companies. The effectiveness of this measure is confirmed by the progress on the Women in leadership commitment, as we observe that:

— companies that consider gender diversity as a top-three strategic priority increased their gender diversity by 5.3 percentage points in a year,

— companies that consider it is a top-ten priority increased by 2.8 percentage points,

— companies that do not consider diversity as a strategic priority decreased by –2.2 percentage points.

Member companies indicated that other efficient levers to promote diversity included active inclusion (14 percent), recruitment initiatives (14 percent) and debiasing promotions (7 percent).

In 2019, 12 companies in the workstream joined forces in using technology pilot projects to promote diversity. All of them fulfilled this commitment while other companies from the workstream deployed their own tech solutions with great impact. For example, Intel reported an 82 percent success rate with an inclusive retention tool. The Tech for Diversity workstream has also become a best-practice sharing platform with inspiring initiatives shared on a monthly basis.

[8] Non-weighted average, based on companies reporting to Tech for Good and public information.

Building on these successes, the workstream's ambition is now to expand and increase its impact through new companies joining the commitment as well as through new initiatives to promote gender diversity in tech roles and beyond member companies' organizations.

The list of the companies that reached 30 percent representation of women in leadership will be published on the occasion of the next Summit.

46 signatories

Accor
Alibaba
Atomico
Bharti Enterprises
Blablacar
BNP Paribas
Booking
Cdiscount
Dataiku
Deezer Deliveroo
Doctolib
Engie
Ericsson
HPE
IBM
Iliad
La Poste
Linagora
L'Oréal
Malt
Mirakl
Mozilla
Open Classroom
Orange
OVH
Qwant
RATP group
Ripplewood
Salesforce
Sanofi
SAP
Sinovation Ventures
SNCF
Sodexo
Solar Impulse Foundation
Symphony
TF1
Thales
Uber
UiPath
United Bank for Africa
Upwork
Visa
Wynd
YNSECT

2020 commitments

For the next Summit, the Tech for Diversity group aims to do the following:

— take an additional commitment to reach a target of 30 percent women in tech roles, in both tech and non-tech companies. To date, 20 companies are considering making this commitment, with timeframe definition and final signature expected during the next Summit.

— promote diversity within member organizations' ecosystems, for example by working with suppliers and vendors and other key business stakeholders to promote diversity in the value chain.

After having focused on gender equity as a first step, the Tech for Diversity workstream is planning to expand its scope of work in 2021 to other key topics in diversity and inclusion. This will include topics such as equal opportunities and inclusion in the workplace for people from different multicultural and socio-economic origins.

COVID-19 impact and workstream's actions

COVID-19 has caused worldwide disruption and the impact on women has been particularly pronounced. Women are over-represented in some of the most exposed sectors; for instance, 70 percent of healthcare professionals are women. There has also been an increase in domestic violence in France by up to 30 percent during the lockdown.

Moreover, the lessons from previous crises show that there is a very real risk that inclusion and diversity (I&D) efforts may recede as a strategic priority for organizations at this time as they focus on more pressing basic needs.[9] Early signs this time around are not encouraging. One pulse survey of companies leading the way in I&D found that 27 percent report that their organizations have put all or most I&D initiatives on hold because of their response to the pandemic.[10] Tech for Diversity members and "Women in leadership" signatories have identified recruitment (44 percent), inclusion (15 percent), sponsorship (8 percent) and revised diversity targets (8 percent) as areas under threat.

However, research shows that leveraging I&D in the crisis presents new opportunities as leaders and companies that reaffirm their commitment to I&D can seize the moment as they stretch for gains in five key domains:

— **Winning the war for talent** by monitoring the demographic profile of the workforce to ensure no loss of diverse talent; the shift to remote working could in fact offer an advantage with its benefits of increased flexibility

— **Improving the quality of decision making** as research has demonstrated that diverse teams bring multiple perspectives to bear on a problem

— **Increasing customer insight and innovation** as diverse teams have been shown to be more innovative and stronger at anticipating shifts in consumer needs and consumption patterns

— **Driving employee motivation and satisfaction** as there is an opportunity to emphasize the critical importance of inclusive leadership to ensure that all employees feel included, valued, and motivated in this context of increased vulnerability

— **Improving a company's global image and license to operate** as companies that maintain—or even increase—their focus on I&D during the downturn are likely to avoid the risk of being penalized in its aftermath, for example by losing customers, struggling to attract talent, and losing government support and partnerships.[11]

[9] Paulette Gerkovich, "Want to thrive through crisis? Focus on diversity & inclusion," Your brain at work, Neuroleadership.com, April 23, 2020, neuroleadership.com.
[10] Carol Morrison, "Don't let the shift to remote work sabotage your inclusion initiatives," Institute for Corporate Productivity, March 31, 2020, i4cp.com.
[11] "Diversity wins: How inclusion matters," McKinsey & Company, May 2020, McKinsey.com.

Conscious of these opportunities, the Tech for Diversity workstream members want to maintain their commitment to equality with an unchanged ambition to promote women in leadership and in tech roles within timeframe. Many group members indicate that they consider the ongoing situation as an opportunity for gender diversity as the crisis has led to more flexible working (78 percent) and greater inclusion between employees (8 percent). When asked about the expected change on Diversity ambition as a result of the COVID-19 crisis, surveyed companies indicate that they expect either no change (56 percent) or gender diversity to become even more important (30 percent).

To mitigate the potential negative impact of the COVID-19 crisis on women, while ensuring that gender diversity is part of the recovery phase, 22 companies are considering signing a new commitment to be released ahead of the Summit.

Participants

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Tech for Economic Inclusiveness

Co-chair's foreword: Leveraging technology to decrease inequalities

We believe that reducing inequality and improving economic inclusion is one of the most important challenges of our time. In particular, we are convinced that the digital divide is a fundamental issue. While technology should be a lever for inclusion, for millions of people it is a factor of exclusion. For instance, in France alone, 13 million people are struggling with digital, of which 7 million have no equipment and therefore no access to internet.[12] The need for action has become even more urgent due to the COVID-19 crisis. With more than 4 billion people confined worldwide and 1.5 billion children affected by school closures as of April 2020,[13] inequalities resulting from digital exclusion have been reinforced, severely impacting families, work, education and social interactions.

Digital inclusion has long been a priority for La Poste and Samsung, and we know this concern is shared by the rest of the members of the Tech for Economic Inclusiveness coalition: BPI France, Cisco, Ericsson, La Française des Jeux, Generation, Linagora, Malt, McKinsey, Mirakl, One Web, OPTIC, Simplon, Sinovation Ventures, and Symphony.

We have collectively decided to set ourselves three objectives: bridging the digital divide, training our ecosystem and fostering innovative startups and solutions. We would like to celebrate the collaborative action of all members which has led to the creation of numerous initiatives.

The objective of our coalition now is to scale-up these actions. We believe that together we can contribute to impactful changes for the excluded populations.

Philippe Wahl,
CEO La Poste

Young Sohn,
Corporate President & Chief Strategy Officer Samsung

[12] "Numérique : La Poste accompagne ses clients," Groupe La Poste, July 26, 2019, groupelaposte.com.
[13] "Coronavirus : 4,6 milliards de personnes toujours appelées à rester chez elles," Le Monde, May 3, 2020, lemonde.fr; McKinsey.

Overall commitment

As leaders in business and technology, the organizations in this workstream share the ambition of ensuring that member companies' ecosystems—including staff, clients, partners, suppliers, communities, and stakeholders—are digitally empowered.

A digitally empowered member of an ecosystem:

— has access to affordable equipment,

— is trained to master the capabilities needed to use digital tools,

— has access to innovative digital services and tech solutions.

As a group, the workstream can have significant impact. In 2019, the companies in this workstream represented approximately 750,000 employees and hundreds of millions of consumers, and had a combined turnover of more than $275 billion. Members of the Tech for Economic Inclusiveness group consider it imperative to build significant impact and to deploy initiatives at scale, using their networks, resources and wide range of capabilities.

By 2025, the group's targets are to digitally empower the following:

— one million people in France,

— five million people worldwide.

With these targets, the group commits to reinforce and complete the ambition of the French government in terms of digital inclusion. In particular, the French State has implemented the "Pass Numérique" initiative which gives beneficiaries the right to access—in pre-qualified locations—to digital support services, with total or partial coverage by a third-party payer, and aims at reaching one million people by 2022. The following development needs regarding the Pass Numérique have been identified: identification of people in need, marketing and upgrading of the offer with additional training programs, geographical expansion, and financial support.

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Progress on initiatives

Together, the members of Tech for Economic Inclusiveness have launched dozens of concrete actions to promote digital inclusion. They have developed actions to face challenges brought by the COVID-19 crisis, such as providing access to electronic equipment to facilitate remote working and schooling, and developing a platform to facilitate the sourcing of critical products. The members are also progressing on actions that are intended to have impact in the medium and long term to digitally equip excluded people, provide training throughout ecosystems and foster digital solutions. Some of them include an infrastructure effort in 3GPP standardization led by Ericsson, a project to connect every school in the world by One Web, Malt's peer-to-peer learning academies, and the Accelerator Seine-Saint-Denis hosted by BPI France that creates opportunities in marginalized communities.

Looking forward, to achieve its overall commitment, the group decided to join efforts to scale up six of the existing long-term concrete activities. Each member of the group is currently considering how its organization can contribute to the development of these six actions, given its strengths and capabilities. These actions have already achieved a strong positive impact:

— **Connect To Learn** is a global education initiative, co-founded by Ericsson, with the purpose of improving access to quality education for all children through the use of broadband and ICT. By the end of 2019, more than 180,000 students had benefited from the program across 25 countries.

— **Digital Inclusion** by La Poste aims to foster social, digital and banking inclusion of individuals suffering from "illectronism". The program identifies digitally precarious clients when helping them use digital tools—such as automatic teller machines and websites—and offers them training from partner associations. As of May 2020, the program has supported 42,000 people in France with a 95 percent satisfaction rate.

— **Digital Factories** by Simplon builds free, inclusive training in digital skills. Training is provided to underserved communities and/or employees directly or indirectly impacted by the digital transformation. The Digital Factories initiative—a network of more than 100 centers located in more than 20 countries—has trained 8,000 adults, mostly with no or a low diploma, including 40 percent women, and educated approximately 150,000 young people across the world since 2014, and aims to train 10,000 people a year by 2022.

— The **Networking Academy** led by Cisco provides free online training and employment opportunities. Up to 2.15 million students enrolled last year from more than 12,000 locations globally.

— **Generation** is an independent non-profit founded by McKinsey. Since launching operations in 2015, Generation has recruited, trained, and placed youth in jobs, with 37,000 graduates globally in 13 countries across 26 professions.

— The **Extreme Tech Challenge** (XTC) is a non-profit organization inspired by the United Nations 17 Sustainable Development Goals, and comprising more than 30 partners, including Samsung, Cisco, Microsoft, Deutsche Telekom, and NXP. The XTC hosts and runs the world's largest global startups competition which selects entrepreneurial ventures that utilize technology to address global challenges, and raises the investment potential for these companies. In 2019 and 2020, the XTC facilitated 11 regional events in 10 countries across Asia, North America, Europe, and Australia. Over 2,400 startups from 87 countries have applied for the XTC 2020 global competition. The competition has also added two additional tracks to select the top COVID-19 Innovator and Female Founder's startups. The global finals are due to be held on July 15, 2020.

Several potential partnerships between Tech for Economic Inclusiveness members are currently being discussed to achieve the desired scale-up of these concrete actions.

COVID-19 impact and workstream's actions

Members of the Tech for Economic Inclusiveness group have been active in their response to the crisis, particularly in mobilizing to increase access to digital services—much needed at this difficult time—and to reduce inequality, increase economic inclusion, and provide support for communities.

Many Tech for Good companies took action in this regard and we acknowledge their efforts. As of May 2020, Tech for Economic Inclusiveness members have taken the following concrete actions in a variety of areas:

Providing access to electronic equipment to facilitate remote working, home schooling and support communities. Examples include making solutions available for free (free video-conferencing and cyber-security solutions by Cisco, free software by Symphony for 70,000 beneficiaries, and a free open-source Work@Home platform by Linagora), distributing equipment to enable home schooling (secure distribution of 10,000 laptops available in schools to unequipped families and free sending and digitization of 6,000 pieces of homework every day since April 20 by La Poste) and providing equipment to allow patients to keep in touch with their loved ones (more than 20,000 pieces of equipment were delivered all over France by the #GardonsLeLien coalition initiated by Isabelle Kocher and Carlo Purassanta (Microsoft France) and led by the Simplon Foundation).

Training ecosystems by offering online training to pupils and teachers (Cisco and partners hosted online webinars for pupils and teachers), to the medical staff (Generation developed short online courses for medical and non-medical staff for COVID-19 upskilling needs, which have been launched in Italy with 51,453 nurses and 12,020 doctors and dentists enrolled thus far, Mexico, and India and are being created in Spain, France, and Pakistan) and to the general public (Malt Academy offered free masterclasses to 15,000 people in France, Spain, and Germany).

Fostering innovative digital services and solutions to support the healthcare sector (examples include The StopCovid19.fr platform, by Mirakl, which facilitates the sourcing of critical products, including 20 million masks and 840,000 liters of hydroalcoholic gel as of May 2020; the 'masques-pme' platform by La Poste dedicated to ordering masks; and #readytohelp by Malt to offer tech expertise to health organizations. Docaposte contributed to the self-assessment solution MaladieCoronavirus.fr, which is the most widely used e-health web application in France with eight million users), support open research efforts (Ericsson supported open research efforts by national and governmental organizations) and ensure long-term ethical reflection (Samsung and Optic ensured long-term ethical reflection on data usage by companies and governments, in particular for contact tracing).

Participants

Tech for Environment

Co-chair's foreword: Sustainability and technology

Faced with several threats due to mankind's impact on the environment, and in particular climate change, our companies are rethinking the way we do business to deliver the greatest impact for people, prosperity and the planet.

Support to act in this direction comes from consumers, civil society and is reflected in government regulations, but is also a collective desire from within our companies, and a priority for our employees and investors alike.

Both Hewlett Packard Enterprise and Engie are working to reduce the carbon footprint from our business activities and to provide our customers with more sustainable and low-carbon products and services. We are committed to reducing the environmental impacts from not only our operations, but also from the customer use of our products and services and from our supply chain.

Sustainability is good for business. Having a positive contribution to the environment and addressing climate change enables us to create new sources of value and to become more resilient to threats in the long run.

While the digital carbon footprint must be properly monitored, it is also important to keep in mind that digital innovation is a critical component on the sustainability roadmap, contributing to the needed reduction of consumption of natural resources. This spirit drives the activity of the Tech for Environment workstream that we co-chair.

We are convinced economic performance goes hand in hand with having a positive impact on people and on the planet. It is thanks to the strong involvement and collaboration from members of our group that we are able to share our initiatives with you, just one year after the launch of Tech for Environment. Enjoy reading!

Claire Waysand,
Interim CEO Engie

Antonio Neri,
President & CEO Hewlett Packard Enterprise

Overall commitment

The companies in the Tech for Environment workstream believe that addressing climate change is the most urgent environmental challenge and that drastic reduction of emissions is needed across all sectors.

To stabilize the climate, emissions would need to decline by approximately 50 percent by 2030 and reach net zero by 2050. Under the Paris Agreement, governments around the world committed to keeping the increase in global average temperature to well below 2°C, and to reduce global emissions.

Therefore, the ambition and overall commitment of the Tech for Environment coalition is to decrease greenhouse gas emissions in line with the Paris Agreement.

Initiatives launched in 2020

Companies in this workstream have identified the following three initiatives to reach their goals:

Disclosing and monitoring greenhouse gas emissions. This initiative aims to create transparency on greenhouse gas emissions and set reduction targets aligned with the Paris Agreement. The objective is to have 100 percent of the large companies participating in Tech for Good engaged in disclosing scopes 1 to 3 of greenhouse gas emissions (via the Carbon Disclosure Project initiative), setting aspirational reduction targets on greenhouse gas emissions (by committing to the Science Based Targets initiative) and increasing the use of zero-carbon energy (through the RE100 initiative) by 2022.

Reducing the tech carbon footprint, in particular the data carbon footprint. As of November 2019, the digital sector was responsible for 4 percent of global greenhouse gas emissions and the strong increase in use suggests a doubling of this carbon footprint by 2025.[14] This initiative includes two concrete actions: decarbonizing data centers, and building an educational campaign for consumers and employees aimed at reducing the data-usage footprint.

The goal is to reach one million individuals through this campaign by the next Summit and ten million individuals by 2022.

Leveraging and promoting tech to decrease the global environmental footprint. The group believes that technology is a great enabler of the ecological transition. Therefore this initiative fosters green tech solutions that are currently being developed by startups. Solar Impulse Foundation, Hello Tomorrow and the Ministry for the Ecological Transition have compiled a catalogue of such solutions. The group proposes that Tech for Good companies select solutions that they are interested in, partner with their founders, and accelerate the solutions via the implementation of pilot projects. The group's ambition is to enable two pilots of green tech solutions by 2020 and ten by 2022.

Furthermore, during the 2019 Tech for Good Summit, Tech for Environment CEOs highlighted that moving towards zero waste to landfill is a priority. Therefore the workstream will launch an initiative regarding zero waste to landfill (including considerations for e-waste) during the next Tech for Good Summit.

[14] "La face cachée du numérique," ADEME, ademe.fr.

The members of Tech for Environment will continue to work together to be able to define concrete actions to achieve their objectives and track progress against critical metrics. The group believes that taking action on environmental issues is an opportunity to make a difference in mindsets and, in time, to change the world.

COVID-19 impact and workstream's actions

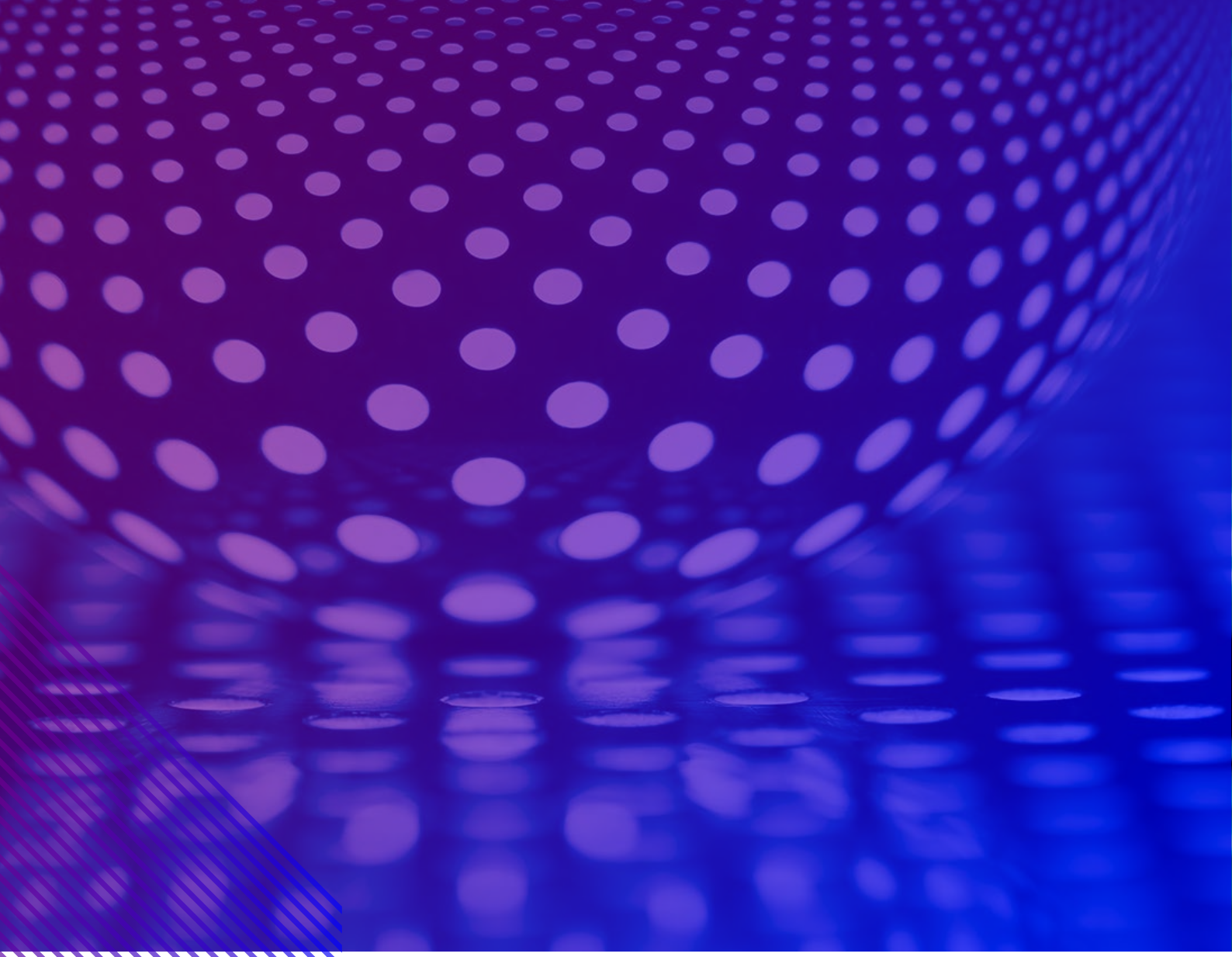
Members of the Tech for Environment workstream have been analyzing how to participate in a "green recovery" from the current crisis. The group believes that it is essential to take climate change into account in post-crisis reconstruction decisions. The crisis may in fact open opportunities for changing behavior towards more environmentally friendly ways of working, for example taking fewer flights, buying more locally produced goods and reducing consumption. Two areas for action have been identified and, as of May 2020, are still being analyzed:

- launching a Tech for Good petition to motivate for the inclusion of climate change priorities in all recovery discussions,
- engaging with the different committees in charge of reflections on climate change (for example, Citizens convention for ecological transition and Green Deal)[15] with regards to including more impactful measures in line with the French and EU policy makers' priorities on sustainability in the workstream's activity.

Participants

BackMarket, BlaBlaCar, BLADE, Center for Humane Technology, data iku, ENGIE, hello tomorrow, Hewlett Packard Enterprise, Microsoft, ORACLE, sodexo, Solar Impulse Efficient Solution, Valeo, Ynsect

[15] The Citizens' Convention is a democratic experiment in France during which 149 proposals have been defined by 150 citizens to achieve a reduction of at least 40% in greenhouse gas emissions by 2030.



Introducing new reflections

Tech for Good should be about both proactively doing good and avoiding “tech for bad”, that is, mitigating potential tech risks. Technology has the potential to help tackle some of the world’s most challenging social problems, but it can also generate negative effects on society and, because of its massive and rapid development, sometimes poses new challenges and risks.

France and Europe can become leaders on the use of technology for inclusive growth and accountable technology, as shown by the impactful activity of VivaTech and the French **Tech for Good ecosystem**. The African continent is positioning itself at the forefront of a new technological emergence, whereby cross-fertilization of projects and ideas arise. As a network representing the African Tech ecosystem, **Digital Africa** contributes to this movement by highlighting and fostering the most promising projects in the field, while offering an acute perspective on the African entrepreneurs ecosystem and the COVID-19 impact. Business leaders have an essential role to play and our aim is to further engage member companies in new discussions: the **AI for Good** workstream will be launched to identify opportunities where AI can address critical humanitarian challenges, and the **Accountable Tech** theme will find ways to help mitigate tech risks when they exist. Reflecting on the role of tech after the crisis and ensuring that it contributes to the common good will remain a priority of the French Presidency after the crisis, when the focus will expand to rebuilding a stronger and fairer innovation-enabled economy.

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Tech for Good ecosystem

Tech for Good France foreword

FOR A BROADER AND MORE AMBITIOUS VISION OF TECH FOR GOOD

Scientific research, technological innovation, economics and entrepreneurship are powerful levers for addressing our global challenges by developing innovations that offer actionable responses to the major issues we face as societies. For nearly 10 years now, **a host of agile and creative non-profits, startups, collectives and innovation centers** have been part of a far-reaching movement that seeks to place innovation, technology and the economy at the service of the common good. The recent health and social crises have shown just how quickly these structures and ecosystems can provide solutions for society's most basic needs (such as health and education). In the coming months and years, other issues (the climate emergency) and crises (environmental and possibly economic) will accelerate the transition towards new social, economic and environmental frameworks (in this respect, the UN's 17 Sustainable Development Goals (SDGs)[16] are already widely shared by the sector actors'). "Tech for Good" has become one of the driving sectors of the economy, with the creation of new organizational and service models. A recent report from the Good Tech Lab (October 2019)[17] claims that, by 2030, tech and deep tech solutions in response to the SDGs could represent a sector worth $12 trillion and employing 380 million people worldwide. Science and emerging technologies such as synthetic biology or nanomaterials are key enablers to shift our industries towards more sustainable models. For example, 97% of deep tech startups selected though the Hello Tomorrow Challenge are targeting some SDGs, especially those related to healthcare (51%) and environmental issues (40%).

[16] https://www.un.org/sustainabledevelopment/sustainable-development-goals/
[17] Good Tech Lab report: *The Frontiers of Impact Tech: the opportunities and challenges of Impact Tech across the 17 Global Goals*, (October 2019).

Today, Tech for Good goes far beyond the scope of entrepreneurship and the ecosystems of startups and nonprofits: it is also a vector of transition and transformation for public services, major corporations and industrial firms, with a potential for fast large-scale impact.

Tech for Good can't be limited to taking "compensatory" measures. It must act as a catalyst to update our models through renovated and responsible approaches, so as to instill an obsession for "change for good" into them. But this will not be possible without a deeper transformation of a number of historical paradigms: the ways in which economic and industrial actors collaborate with ecosystem actors; the short-term scope businesses typically rely upon (most Tech for Good projects develop over a longer timeframe); questions of governance (the place of employees and users in decision-making processes) and over the sharing of collectively produced value. The "for good" promise needs to lie at the core of the companies' organizational and business models.[18]

SECTORAL CHALLENGES TO BE ADDRESSED

To meet these transformation challenges, it is now vital that we disseminate and support an ambitious vision of Tech for Good. And it is urgent for all of us to contribute to building a French and European Tech for Good sector with massive support from government and private actors. This strategy could be based on **a set of concrete measures and actions**, such as:

— Create funding levers and structures (public, private, and hybrid) to foster burgeoning companies, nonprofits and activities by factoring their impact into the evaluation criteria for awarding subsidies and funds;

— Promote multi-actor projects, in particular those that involve structures such as startups, SMEs, midcaps and/or large groups (e.g. economic and industrial partnerships, co-innovation of services, cross-business synergies);

— Train and encourage a "for good" generation, through the promotion of "for good" careers in university and supporting the development and activities of incubators, accelerators, innovation spaces and dedicated events;

— Create a "Tech for Good" label building on the typology elaborated by the network.

Following on from the two Tech for Good Summits and the initiatives they inspired, France and Europe must now make an even stronger contribution to structuring and developing the sector, in close cooperation with sector collectives and ecosystems, and also with all of the international economic actors. With a single imperative: to respond collectively and rapidly to the major social, environmental, economic and industrial challenges of the coming decade.

[18] On this subject, see the manifesto co-authored by the entrepreneurs of the Tech For Good France network, with a vision of Tech for Good that is closely related to that of "Good in Tech" through its insistence on the need to adopt an ethical, inclusive, ecological approach that prioritizes the sharing of value and wealth: https://www.techforgoodfr.org/manifeste/

Tech for Good France ecosystem

While the Tech for Good workstreams are composed of a mix of large companies, investment funds, NGOs and startups, the following section offers an additional outlook on the initiatives led by the French "for good" startup ecosystem.

The Tech for Good France network supports more than 200 organizations, including entrepreneurs and start-ups (for example, Bayes Impact, AssoConnect, Data for Good), financiers and impact investing players (for example, Seed makesense, Citizen Capital, Raise Impact) as well as other networks supporting the development of the sector and developing multi-actor innovation programs with large groups and public institutions (for example, Liberté Living-lab, makesense, Schoolab, Hello Tomorrow).

Tech for Good France network main missions are to:

- Structure the Tech For Good ecosystem;
- Publish a White Paper covering best practices of entrepreneurs in terms of SDO resolution, innovation, governance, and environmental commitment;
- Launch public advocacy actions;
- Organize a digital training program for entrepreneurs.

2020-2021 ECOSYSTEM ACTIONS

Over the past few months, **several Tech for Good french startups have built new services to address urgent issues**: preventing and helping cure diseases (Nabla, Continuum), helping vulnerable people to access to essential goods (Banlieues Santé, Entourage), fostering circular economy and sustainable food system (Phenix, Castalie, HelloZack). Another big challenge is to combine technological innovation with sustainability by developing clean energies and green IT solutions (Datafarm, Ilek, Naoden).

In order to support transformation of companies towards impact business models and services, some players of the ecosystem have developed multi-actors projects (including large groups, startups and public institutions). For example, in early 2020, Liberté Living-lab kicked off the "Shift Lab" program to guide companies in their alignment of tech, economic performance and socio-environmental impact. MoHo has launched two international coalitions, "Deplastify" with UC Berkeley, to find innovative solutions to reduce impacts of plastic and "AI for Humanity" to leverage AI to solve Health or Agritech challenges.

Another illustration of the dynamism of the Tech for Good scene is **the rise of events** such as ChangeNow Summit (20,000 visitors in 2020) or Hello Tomorrow Summit; and **dedicated massive venues** where all stakeholders can collaborate to initiate and accelerate positive impact projects. Norrsken, in Stockholm and soon to be in Rwanda, is hosting daily more than 400 changemakers and financing startups to build impact unicorns. In Normandy (France), MoHo will open early 2021 the first "Collider" in Europe to recreate the coalition spirit of WW2 D-Day: 1000+ changemakers from all over the world will be hosted to tackle the most pressing challenges faced today.

SELECTED ACTIONS RELATED TO COVID-19

The ecosystem's players have developed solutions to deal with the crisis.

Initiatives have **helped healthcare professionals control the pandemic**. In a context of strong pressure on the emergency services, the Liberté Living-lab (LLL) developed a real-time flow management tool alongside the Paris Public Hospital (AP-HP).

To **provide caregivers with protective equipment** (masks, gloves), Tech for Good France handled the collection of donations launched by the Protège ton Soignant movement, which raised seven million euros. To further support them, makesense launched the Re.action program, which trained 5,000 volunteers to help the hospitals.

Tech For Good players have developed actions to **bridge the digital divide** that affects the most fragile individuals and companies. For example, more than 20,000 pieces of equipment were delivered all over France by the #GardonsLeLien coalition allowing 150,000 COVID19 patients and elder residents to

keep in touch with their loved ones. Schoolab has launched a free program to support small and medium businesses in their digital transformation so that they can operate during lockdown.

The ecosystem has **supported impact entrepreneurs** by accompanying them on their urgent needs (TEKHNE program from Liberté Living Lab) and by setting up a free Help Room (Tech for Good France).

In a **global approach**, the "HackingCovid19" hackathon brought together 1,400 participants in April to work on 102 projects, some of them are now accompanied by Schoolab.

Participants

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VivaTech's perspective on COVID-19 impact on startups

The startup ecosystem has been hit hard by the Covid-19 crisis, in particular by the collapse of the sales and funding pipeline, which has resulted in major cash flow issues. Yet European startups have been resilient. They have shown exemplary responsiveness and agility, putting the test-and-learn process into action, to adapt their working methods and upgrade their offerings, going as far as to pivot when necessary. Some have thus been able to seize the new opportunities created by the rapid evolution of digital practices and the multiplication of collaborations with large companies, with the public sector or with other startups, in various fields (cybersecurity, health, productivity tools, online education...).

Given the difficult circumstances, we must salute the solidarity startups have shown as they mobilize to face the emergency. Some of them, like Doctolib (telemedicine) and OpenClassrooms (e-education), provided free access to their tools. Others, such as Blablacar, Mirakl and collectives such as "Protège ton soignant" (Protect your caregiver), have developed new services to promote intergenerational solidarity or simplify the supply of medical equipment.
The crisis is inadvertently giving rise to a unique opportunity for in-depth transformation of business models in light of the upheavals, both economic and societal, that it generates. Companies are indeed being encouraged by all of their stakeholders to rethink their mission and their organizations in order to contribute to the common good.

VivaTech, Europe's biggest startup and tech event, wants to contribute to this sea change. We have been committed since our inception to harnessing the power of innovation for a more sustainable, inclusive, responsible and resilient world. We call on all stakeholders in the ecosystem to participate and collaborate to give meaning to technological innovations. It's everyone's business, not just of those already doing good by design. This is why we have created a cycle of conferences lasting several days, to be inspired by those who are redefining the boundaries; we have designed thematic spaces to discover the most promising innovations to preserve our planet or promote inclusion; and we have imagined start-up prizes to encourage female entrepreneurship or accelerate the ecological transition by connecting them to business partners and investors.

Collectively, let's put innovation at the service of societal and environmental challenges and accelerate the emergence of digital champions in Europe, pioneers of this transformation. Our mission is more relevant than ever and it will be at the heart of both the 2021 edition of VivaTech and the Tech for Good Summit.

VIVA TECHNOLOGY

Tech for Good in Africa

Digital Africa

The Digital Africa initiative, launched by President Macron in 2018, envisions digital transformation from the standpoint in which technology is intrinsically "for Good." Breakthrough innovations driven by African tech entrepreneurs from all over the continent are now improving quality of life, supporting the real economy, and gradually becoming solutions for the rest of the world.

By supporting entrepreneurial endeavors and innovation players from local ecosystems, Digital Africa fosters resilient, frugal and inclusive innovations that contribute to the sustainable development goals, including access to education, jobs, health, and other essential services. This emerging model of innovation from the global south takes into account the limits encountered by historic technological players in industrialized countries such as negative carbon footprint, lack of diversity, and growing inequalities.

COVID-19 impact on African entrepreneurs

The COVID-19 pandemic has significant economic and sanitary implications for the African continent. It puts a stress on the resilience of local digital and entrepreneurial ecosystems.

The African Union (AU) forecasts a negative growth of −0.9 percent owing to the effects of the crisis. These include disruptions in trade flows from the European Union, United States and China, as well as reductions in remittances from the diaspora, foreign direct investments, and illicit financial flows. Furthermore, the AU expects falling commodity prices and a decrease in the demand for exports (such as oil, rice, mineral ores and metals) to affect both production and revenues. Adding to these impacts are the tangible realities of increasing mortality rates, decreases in tax revenue and increases in public spending.

These projections paint an even harsher reality for businesses and the micro, small and medium-size enterprises (MSMEs) that make up a significant part of many African economies. According to the International Labour Organization, the informal sector in sub-Saharan Africa accounts for over 89 percent of all employment. MSMEs represent 38 percent of the region's GDP, and were already facing challenges before the pandemic linked to access to finance (a $331 billion gap), access to international markets, or access to support structures.

Digital Africa in collaboration with the I4Policy Foundation, AFD, Briter, Enabel, Facebook and GIZ launched a continent-wide survey of entrepreneurs to quantify and assess the impact on African entrepreneurs and assess policy measures and interventions in place to support them. The MSME survey was conducted across 46 African countries and addressed mainly projects in the sector of telecommunications and tech, but also in agriculture and education.

Key figures regarding the impact of the COVID-19 pandemic on African startups highlight that nearly half of them were at risk of failure, while 40 percent said they had enough operating capital to sustain themselves for the next three months. As two-thirds of the respondents reported losses in revenue, temporary closures were also expected. The biggest need that was expressed was, unsurprisingly, the need for capital support (89 percent), and the main challenges remain access to finance, access to markets and business support. As a result of COVID-19 crisis measures, 37 percent of MSMEs have had to reduce working hours, and 18 percent have had to reduce employees' pay. Overall, employment fell by an average of 18 percent for MSMEs.

Nevertheless, it is important to underline that some MSMEs (about 17 percent) have also been positively affected by the effects of the pandemic. For instance, sectors such as fintech are exploding in a quarantined world as cashless payments are increasing as part of social-distancing measures.

An overwhelming majority of MSMEs believe that entrepreneurs, artists, and other innovators have ideas and solutions that can contribute to the response and recovery of this pandemic. In fact, some of them were quick to react, and 62 percent of the actors surveyed are already implementing COVID-19-related initiatives either within their organization or with other organizations.

AI for Good

AI capabilities have the potential to help tackle some of the world's most challenging social problems. Many aspects of AI opportunities for social good are already addressed by the existing workstreams. To bring a new perspective and focus on critical humanitarian challenges, we will launch the AI for Good workstream by the next Summit.

Applying the tremendous capabilities of AI to tackle humanitarian challenges

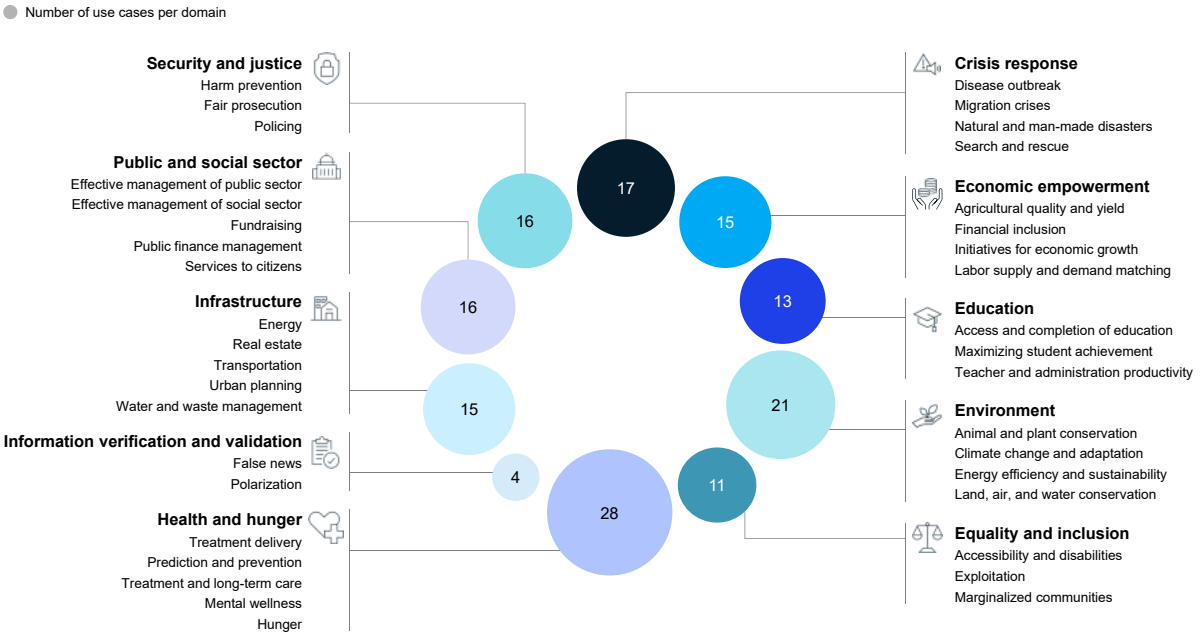
Many AI capabilities, primarily in the categories of computer vision, natural language processing, structured deep learning, robust IoT and cyber-physical networks or new generation robotics, can enable large-scale social impact. This social value can be analyzed and targeted towards humanitarian challenges within ten impact areas (Exhibit 3).[19]

One of the concerns of Tech for Good initiatives is to promote equality and inclusion by fighting the digital divide. However, it is worth noting that connectivity keeps growing worldwide, including in emerging economies. There are many AI-based tech initiatives that could further social good, for example by leading to more efficient functioning of local markets, and providing access to micro-credit and cheaper payment systems. Access to trusted digital identities are also key to legal empowerment of marginalized communities. The development of public utilities and new public and social services in under-served communities could now be enabled through basic mobile phones thanks to AI. These advances could all become a core reflection of AI for Good.
Leveraging the capabilities of AI for social good is already embedded in the reflection of the existing workstreams. The Tech for Education workstream, for instance, has launched a dedicated initiative this year. The objective of the AI for Good workstream will be to provide a new perspective, focusing particularly on the potential of AI to tackle humanitarian challenges that are not yet addressed.

[19] "Notes from the AI frontier: Applying AI for social good", Discussion paper, McKinsey Global Institute, December 2018, McKinsey.com.

Exhibit 3

Use cases leveraging Ai capabitylities can be categorized within ten impact areas



Note: Research into areas where AI is already being used for broad social impact reveals roughly 160 use cases, all touching on some aspect of the 17 United Nations Sustainable Development Goals. Each use case highlights a type of meaningful problem that can be solved by an AI capability or a combination of AI capabilities. They can be categorized within ten social impact domains.
Source: *Notes from the AI frontier: Applying AI for social good*, McKinsey Global Institute, December 2018 – McKinsey Global Institute analysis

To launch the reflection, companies will reflect on the main challenges as well as the key success factors in ensuring the successful application of AI for humanitarian good at scale. Companies will also discuss potential solution spaces, leveraging examples of successful use cases.

Bottlenecks limiting the use of AI for humanitarian good at scale

While there are many AI use cases worldwide, few have achieved impact at scale. The most significant bottlenecks to scaling solutions are data accessibility, a shortage of talent to develop AI solutions, and "last mile" implementation challenges.
Data needed for social impact uses may not be easily accessible. A wide range of stakeholders own, control, collect, or generate the data that could be deployed for AI solutions. These data sets may contain highly confidential personal data that needs to be anonymized. Obtaining access to them by social entrepreneurs and NGOs can be difficult because of regulations on privacy and risks concerns.

Furthermore, the expert AI talent needed to develop and train AI models is in short supply. Problem complexity increases significantly where use cases rely on several AI capabilities to work together cohesively and require multiple different data-type inputs.

Other "last mile" implementation challenges, such as change management that includes adapting processes to integrate AI-powered solutions, are major obstacles.

Innovations are multiplying in different sectors and branches of AI, and they take place in a very competitive and technologically complex context. The non-commercial and humanitarian sector is not necessarily placed on an equal footing with the industrial or service economy.

The complexity of technologies, the development of relevant algorithms, the capacity to access relevant quality data, and the ethical analysis of their potential but also of their limits, are based on the prerequisites of digital infrastructures, data heritage and advanced human skills, which are still rare and therefore expensive.

The sustainable adoption and dissemination of AI technologies can be achieved within the framework of a global digital transformation. This would require decision and action, with clearly defined steps and a long-term investment perspective.

In order to remove obstacles, public authorities and companies will need to cooperate to successfully launch and maintain AI-based humanitarian projects. Public authorities could even more develop and contribute their infrastructure skills to support humanitarian causes. Companies could contribute by revising their corporate social responsibility programs.

In this way, public structures could take over a substantial part of the selection, digital formatting and preparation of public data useful for humanitarian action. Where this data is held by private actors, they could make it available free of charge, or at cost price, for the benefit of humanitarian projects. They could also contribute in kind, with computing capacity or right of access to their infrastructure.

Concerns around risks related to AI are also rising. Main categories of risk, particularly relevant when leveraging AI solutions for humanitarian good, include bias and fairness, privacy, security and explainability. Bias in AI may perpetuate existing social inequalities, leading to unfair outcomes. Stakeholders will require transparency of use and will likely want to provide individuals with clear explanations of decisions or predictions based on AI-enabled tools.

Tech for Good companies could reflect on potential solution spaces in major humanitarian domains where AI can unlock step-changing impact

Successful application of AI for humanitarian good demands an efficient cross- collaboration between private and public-sector organizations. This will require tech companies, NGOs, government entities, and impact experts to work on data availability, accessibility, and connectivity issues, collaborating closely on use cases to ensure implementation and impact at scale.

There has been growing momentum over the last few years to use AI for the common good. The AI for Good Global Summit, a ITU/UN-sponsored AI summit established three years ago, has seen consistent growth, and the Global Data Commons, co-organized by The Future Society, UN Global Pulse, AI Commons and McKinsey's Noble Intelligence initiative, has seen over 100 organizations participate.[20] Other cross-sector alliances are emerging such as 2030 Vision and The Global Partnership on Artificial Intelligence.[21]

During the Summit, companies could focus on four critical humanitarian challenges where AI can unlock step-changing impact: health, hunger, crisis response (including natural disaster resilience) and security and justice.

Technological advances can promote equitable access to healthcare. For example, during the COVID-19 pandemic, many patients experienced medical teleconsultation for the first time.

[20] AI for Good Global Summit 2020: Accelerating the United Nations Sustainable Development Goals, aiforgood.itu.int; Global Data Commons, Global Pulse, September 25, 2019, unglobalpulse.org.

[21] 2030 Vision, 2030vision.com; French Coordinator of France's National Strategy for Artificial Intelligence. Proposed jointly by France and Canada, The Global Partnership on AI is an international multi-stakeholder initiative that will be officially created in June 2020. It will include more than a dozen founding states and will be open to many more. Its aim is to detect, support and perfect responsible uses of AI, with a concern for compatibility at all times with the values of human autonomy, respect for democratic principles and attention to the challenges of sustainable development (French Coordinator of France's National Strategy for Artificial Intelligence).

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Where connectivity permits, similar solutions could be developed to support dispensaries and health centers in poorly covered and underprivileged areas. Rapidly developing satellite connectivity solutions could be mobilized to facilitate access to medical services. One can thus imagine the development of an international humanitarian medical action that would use advances in telemedicine to deliver care at lower cost to the patient, taking advantage of lower operating costs and reduced travel time.

The increased digitization of humanitarian or local medical services could also provide databases for the development of epidemiology and public health policies based on data more suited to the humanitarian context.

In order to fight hunger more successfully, the development of precision agriculture based on local data (for example, meteorology, early detection of plant diseases, and targeted treatment) could be used to preserve soil quality and improve crop productivity. Similarly, facilitated access to data and real-time evaluation of opportunities could greatly improve the functioning of agricultural micro-markets fed by food surpluses.

To support companies in their reflection, we share below some successful use cases led by McKinsey's Noble Intelligence initiative.[22] Please note, this list is not exhaustive; as mentioned above, many other AI for good initiatives have been deployed recently.

[22] Noble Intelligence is an initiative by McKinsey & Company, engaging non-governmental organizations, respected think tanks, and industry leaders as part of a global movement to use technology responsibly to benefit society and the environment and drive AI applications for humanitarian causes; for information see "Noble Intelligence: Harnessing artificial intelligence and other advanced technologies to address social and humanitarian crises," McKinsey.com.

Crisis response: Leveraging AI and satellite imagery to improve disaster relief

Natural disasters kill more than 50,000 people and displace tens of millions more each year.[23] McKinsey Noble Intelligence is working with an international aid organization to assess damage to schools from a devastating cyclone in Africa that displaced more than 160,000 people, and damaged 205,000 buildings and 4,000 classrooms. Traditional damage assessments of buildings and schools can take weeks. An AI-enabled solution involves comparing satellite and drone image data before and after the disaster to detect where displaced people are located and assess schools damage post-disaster—speeding up aid, optimizing the distribution of temporary schools and focusing rebuilding efforts to get more children back to school faster.[24]

Satellite imagery linked to AI could also better anticipate the impact of climate change on people, buildings and assets, so that corrective and adaptive measures can be taken as quickly as possible to protect the population and preserve livelihoods.

Security and justice: Harnessing the power of AI to improve recovery for survivors of human trafficking

Worldwide, about 40 million people are victims of human trafficking each year. By applying analytics and AI algorithms to a database of anonymized survivor support journeys, McKinsey Noble Intelligence helped an anti-slavery organization understand how it could improve the likelihood of recovery for survivors and scale the number of people it helps. McKinsey experts used a combination of machine learning, natural language processing, and journey analytics mapping to understand the drivers of survivors' recovery and find ways to raise the likelihood that they could quickly regain their lives. As a result, the aid organization enhanced its survivor aftercare delivery program, one that will help survivors recover faster and give them the tools to remain healthy and self-sufficient. The analysis identified specific areas to improve aftercare services, such as making a 30-day contact window standard, using early indicators to flag survivors who may need additional support, and monitoring survivor sentiment in case notes.[25]

Driving AI applications for humanitarian causes and scaling impact on a global level requires a focus on applied AI and impact delivery as well as a strong collaboration between many stakeholders including tech companies, NGOs, government entities, and impact experts. The AI for Good workstream will reflect on concrete actions that could be collectively undertaken to applying AI capabilities to address critical humanitarian challenges.

[23] "Notes from the AI frontier: Applying AI for social good", op. cit.
[24] "Noble Intelligence", op. cit.
[25] "Harnessing the power of AI to improve recovery for survivors of human trafficking," McKinsey.com.

Accountable Tech

As highlighted above, business leaders have a key role to play in protecting society against tech risks when they exist. The workstreams are already taking action. The Tech for Environment workstream for instance, has launched dedicated initiatives to reduce the tech carbon footprint. During the next Summit, our objective is to set further ambitions, and dedicate sessions to reflect on five major tech risks for society, as described below, and discuss solution spaces to address them through examples.

Online harm

As more of our daily lives move online, the risk of online harm is becoming increasingly prevalent. Risks here includes addictive behaviors, anxieties such as fear of missing out (FOMO) which generate further addiction, cyberbullying and trolling, and the dangers of illegal content dissemination.

The Christchurch mass shooting attack in New Zealand last year, that was broadcast live by the gunman, was a stark reminder of how difficult it can be to prevent the dissemination of ultra-violent and extremist political content online. Social media networks struggled to stop the spread of the 17-minute video that was uploaded on their platforms, as users shared the original and subsequently uploaded new copies, including modified versions to avoid detection.[26]

Governments came together in a united response through the Christchurch Call To Action Summit in May 2019. Launched by the French President and the New Zealand Prime Minister, this mobilized ten heads of state, government and international organizations, as well as major players in the digital sector all pledging commitment to a set of collective actions. Today this is supported by 48 states, the European Commission and two international organizations as well as a number of international civil society organizations.[27]

[26] Alex Hern and Jim Waterson, "Social media firms fight to delete Christchurch shooting footage," *The Guardian*, March 15, 2019, theguardian.com.
[27] "Christchurch call to eliminate terrorist and violent extremist content online (May 15, 2019)," Ministère de l'Europe et des Affaires étrangères, diplomatie.gouv.fr.

Additionally, the New Zealand government announced the creation of a dedicated team to prosecute terrorist online content, and Australia, France and Germany passed legislation setting out penalties for social media companies that fail to remove identified violent content and asking them to increase transparency. Last but not least, the UK's communications regulator, the Office of Communications, was given expanded powers to ensure that social media firms act on harmful content.[28]

Social media networks also introduced new measures aimed at preventing similar occurrences. For instance, since the launch of the Christchurch Call, members of the Global Internet Forum to Counter Terrorism (GIFCT) reformed the organization's governance and structure to allow for enhanced transparency and better cooperation between companies, states and civil society organizations.[29]

There has been a lot of progress but the debate regarding the status and role of social media, as well as the rules to be applied, is not yet settled as many more complex legal and societal issues are still to be addressed.

Digital infrastructure protection

Risks include cyberattacks on businesses, institutions and IoT devices as well as data hacking and acts of terrorism.

The first known cyberattack on an entire country occurred in April 2007, when Estonia was hit by major cyberattacks targeting parliament, banks, newspapers and broadcasters, which in some cases lasted for weeks. Online services of Estonian banks, media outlets and government bodies were taken down.[30]

Estonia took mitigating actions such as setting up a Cyber Defence Unit in 2011 and training the country's leading IT experts by the Ministry of Defence.[31] North Atlantic Treaty Organization (NATO) members also reacted. In 2008, NATO's first cyber defense policy was prepared and the NATO Cooperative Cyber Defence Centre of Excellence (NATO CCD COE) was created.[32] The NATO CCD COE launched the Locked Shields in 2010, an advanced international cyber defense exercise involving more than 1,000 experts from nearly 30 nations.[33]

The Paris Call for Trust and Security in Cyberspace, which is a call to come together to face the new risks endangering citizens and infrastructure, was launched in November 2018, by the President of French Republic. It invites all cyberspace actors to work together and encourages states to cooperate with private-sector partners, research institutions and civil society. The Paris Call now includes 78 states, 29 public authorities and local governments, 349 organizations and members of civil society and 644 companies and private-sector entities. Other initiatives launched within the G7 (Dinard Declaration) and the G20 are aligned with the core principles of the Paris Call and continue to promote its spirit.[34]

[28] Eleanor Ainge Roy, "Christchurch attack: New Zealand tries new tactic to disrupt online extremism", *The Guardian*, October 14, 2019, theguardian.com; Paul Karp, "Australia passes social media law penalising platforms for violent content", *The Guardian*, April 4, 2019, theguardian.com; "Regulator Ofcom to have more powers over UK social media", BBC News, February 12, 2020, bbc.com; French Ambassador for Digital Affairs.
[29] French Ambassador for Digital Affairs.
[30] Rain Ottis, "Analysis of the 2007 cyber attacks against Estonia from the information warfare perspective", Cooperative Cyber Defence Centre of Excellence, Estonia, ccdcoe.org.
[31] CCDCOE, https://ccdcoe.org/uploads/2018/10/CDU_Analysis.pdf#page=7&zoom=100,93,122.
[32] CCDCOE, North Atlantic Treaty Organisation, ccdcoe.org/organisations/nato/.
[33] "Locked shields", CCDCOE, ccdcoe.org/exercises/locked-shields/.
[34] French Ambassador for Digital Affairs.

Disinformation

Risks include information manipulation and the practice of micro-targeting audiences with tailored messaging, for example for political ends.

France is promoting an open and transparent approach, based on empowering civil society, by developing open tools to counter information manipulation. [35]

The EU has launched an Action Plan against disinformation which addresses disinformation as an evolving risk. One of its pillars is the mobilization of the private sector through the implementation of a Code of Practice against Disinformation that aims at increasing collaboration and transparency regarding social media. Another pillar is the improvement of tools for detecting online disinformation campaigns. The Rapid Alert System (a European network of contact points) has been created for this context. France is also part of the Rapid Response mechanism, a network gathering the G7 States, which aims at sharing best practices to fight disinformation.[36]

Civil society has also launched several key initiatives. For example, Reporters without Borders (RSF) launched the Journalism Trust Initiative that aims to create a common standard which defines and promotes reliable information production. RSF also launched the Information and Democracy Partnership to define principles and objectives to promote access to reliable information. A Stakeholder Forum was launched during the second Paris Peace Forum in November 2019 to support the implementation of the Partnership by drawing up recommendations.[37]

Some social media companies have already reacted by strengthening safeguards to ensure online-content control.

Human bias in AI

The growing use of AI in sensitive areas, including hiring, criminal justice, and healthcare, has stirred debate about bias. Many experts welcomed algorithms as an antidote to human bias, but many others worry that they may in fact scale human biases. To ensure responsible use of AI, the challenge will be to improve AI systems to prevent them from perpetuating human biases or creating bias of their own. Ultimately, human judgment is crucial to ensure that AI-supported decision making is fair.[38]

Many stakeholders, from both public and private sectors, are acting to ensure the responsible use of AI. Several academic initiatives have been launched, including the creation of the AI Now Institute in 2017 at New York University and the Alan Turing Institute's Fairness, Transparency, Privacy group.[39]

The European Commission created the High-Level Expert Group on Artificial Intelligence in June 2018 to support the implementation of the European Strategy on Artificial Intelligence, including Ethics guidelines for trustworthy AI.[40]

France and Canada launched the Global Partnership on Artificial Intelligence (GPAI) in 2019 during the G7 Summit. This partnership aims to bring together global AI experts to foster international collaboration and coordination on AI policy development among like-minded partners. Its goal is to foster an alliance of democratic states respectful of fundamental rights in the digital domain.[41]

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35 https://disinfo.quaidorsay.fr/.
36 French Ambassador for Digital Affairs.
37 French Ambassador for Digital Affairs.
38 *"Notes from the AI frontier: Tackling bias in AI (and in humans),"* McKinsey Global Institute, June 2019, McKinsey.com.
39 AI Now, ainowinstitute.org; "Fairness, transparency, privacy," The Alan Turing Institute, turing.ac.uk.
40 "High-level expert group on artificial intelligence," European Commission, ec.europa.eu.
41 French Ambassador for Digital Affairs.

Leading technology and civil-society groups launched the Partnership on AI in 2016. The partnership numbers more than 100 members from academia, civil society, industry, and nonprofit organizations.[42]

Tech players are engaging too. For instance, Google AI published Google's Responsible AI practices in 2018.[43] Microsoft released its AI principles and IBM launched AI Fairness 360.

Environmental footprint

Society is moving online and digital use within companies is increasing tremendously, leading to some negative impacts on the environment. According to the French Agency for ecological transition (ADEME), as of November 2019, the digital sector alone was responsible for 4 percent of global greenhouse gas emissions and the strong increase in use suggests a doubling of this carbon footprint by 2025. Greenhouse gas emissions in this sector are primarily due to equipment, which is responsible for 47 percent of the emissions; 28 percent comes from network infrastructures and 25 percent is due to data centers.[44]

To reduce the data carbon footprint, the Tech for Environment workstream has already launched dedicated initiatives.

As highlighted, the workstreams are already acting. During the next Summit, we intend to further engage them in reflecting on these five tech risks and the challenges they pose for society. We will discuss what key actions, such as self-regulation measures, companies could further take to protect citizens from potential harm.

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[42] Partnership on AI, partnershiponai.org.
[43] *Google, AI*, "Google AI principles updates, six months in," blog entry by Kent Walker, December 18, 2018, https://www.blog.google/technology/ai/google-ai-principles-updates-six-months/.
[44] *"La face cachée du numérique,"* op. cit.

Postface by K. Sneader and M. Lévy

As this report is being published, millions of people around the world are seeing their lives impacted by the coronavirus pandemic and its devastating economic consequences. People are rightly concerned for themselves and for their loved ones—while many organizations are facing the most severe crisis they have ever faced.

No one knows the specific shape of the "next normal", or what changes in consumer behaviors and policies will stick, nor to what extent. However, the past few months have given us indications for us to venture a directional view:

Technology is expanding within our lives, our economies, and our society. From ecommerce to virtual learning and telehealth, to biotech and the widespread shift to remote working; technology has played a crucial role in the crisis—and adoption of digital solutions has seen a step-change across verticals. Even if technology itself is neither good nor bad, it is what we do with it that matters and we witnessed many truly positive uses of technology for the common good during the crisis.

Public and private sectors increasingly see their futures converging. Around the world, governments have made financial commitments unprecedented in their scale (mid-April, government stimulus plans announced worldwide amount to $10.6 trillion), and the public increasingly expects—indeed, demands—that this money be used for social good, to the benefit of many. At the same time, corporations around the world, among which many are Tech for Good participants, reached far beyond their core business to support healthcare and social services, communities, families and students, making their employees proud and the public thankful. The crisis has brought into sharper focus a sense of purpose and solidarity for the public and private sector alike.

Companies went from competition to common purpose. In the past weeks we saw small tech startups bring their digital solutions to help large corporations rapidly switch to remote working. We saw large industrial players support their local suppliers, adapting their contractual terms to safeguard businesses and jobs. We saw organizations act in incredibly humane ways to support their employees, even while having to let them go to ensure their survival. And there are hundreds of other examples of companies joining together in an unprecedented collaborative spirit with the shared conviction that the only solution is collective. Large and small, tech and non-tech, companies have strengthened their links to defend their ecosystems.

Despite the turbulence that our societies, institutions and companies have experienced, the 86 participants in the Tech For Good initiative have displayed a commendable commitment and undertaken many efforts that made this report possible. They kept pushing forward and even expanded on their range of initiatives, to mitigate the impact of COVID-19. A year after the 2019 Tech for Good Summit, we are able to celebrate some significant successes:

— We launched new workstreams on **Environment** and **Economic inclusiveness**, driving impact on GHG emissions reduction and digital empowerment of millions of individuals in France, Europe and across the globe.

— We developed new initiatives and new commitments to promote tech in **Education**, to increase **Gender diversity** in tech roles and prepare for the **Future of Work** by promoting soft and technological skills within and beyond companies.

— We are setting further ambitions bringing new reflection perspectives on **AI for Good** with the objective of leveraging AI capabilities to tackle critic al humanitarian challenges as well as on **Accountable Tech** to further reflect on potential solution spaces to help mitigate tech risks on society.

— Across workstreams, companies increased their collaboration to drive larger impact together while more startups joined the adventure, which will increase in the future.

As the crisis continues and recovery seems still distant to many of us, we believe that some of what we have witnessed during the crisis will not end. On the contrary, technology usage will continue to grow, common action between actors will be more needed than ever… and Tech for Good companies will continue their collective efforts to promote positive usage of technology for the common Good.

There might be a long way to go. But we are on the road and we believe, in its own way, Tech for Good is a way to accelerate this collaboration.

Kevin Sneader,
Managing Partner McKinsey & Company

Maurice Lévy,
Chairman Publicis

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Brune Poirson (France)	Environment
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Stéphane Richard (Orange)	Future of Work
Chuck Robbins (Cisco)	Economic Inclusiveness
Ginni Rometty (IBM)	Education
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Will Shu (Deliveroo)	Future of Work
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Julie Sweet (Accenture)	Education
Adnène Trojette (France)	Overall
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Niklas Zennstrom (Atomico)	Diversity
Mark Zuckerberg (Facebook)	Diversity

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