
Climate Crisis ... Dynamic Briefing

Generated 19 November 2019 for Deepak Kumar Dash

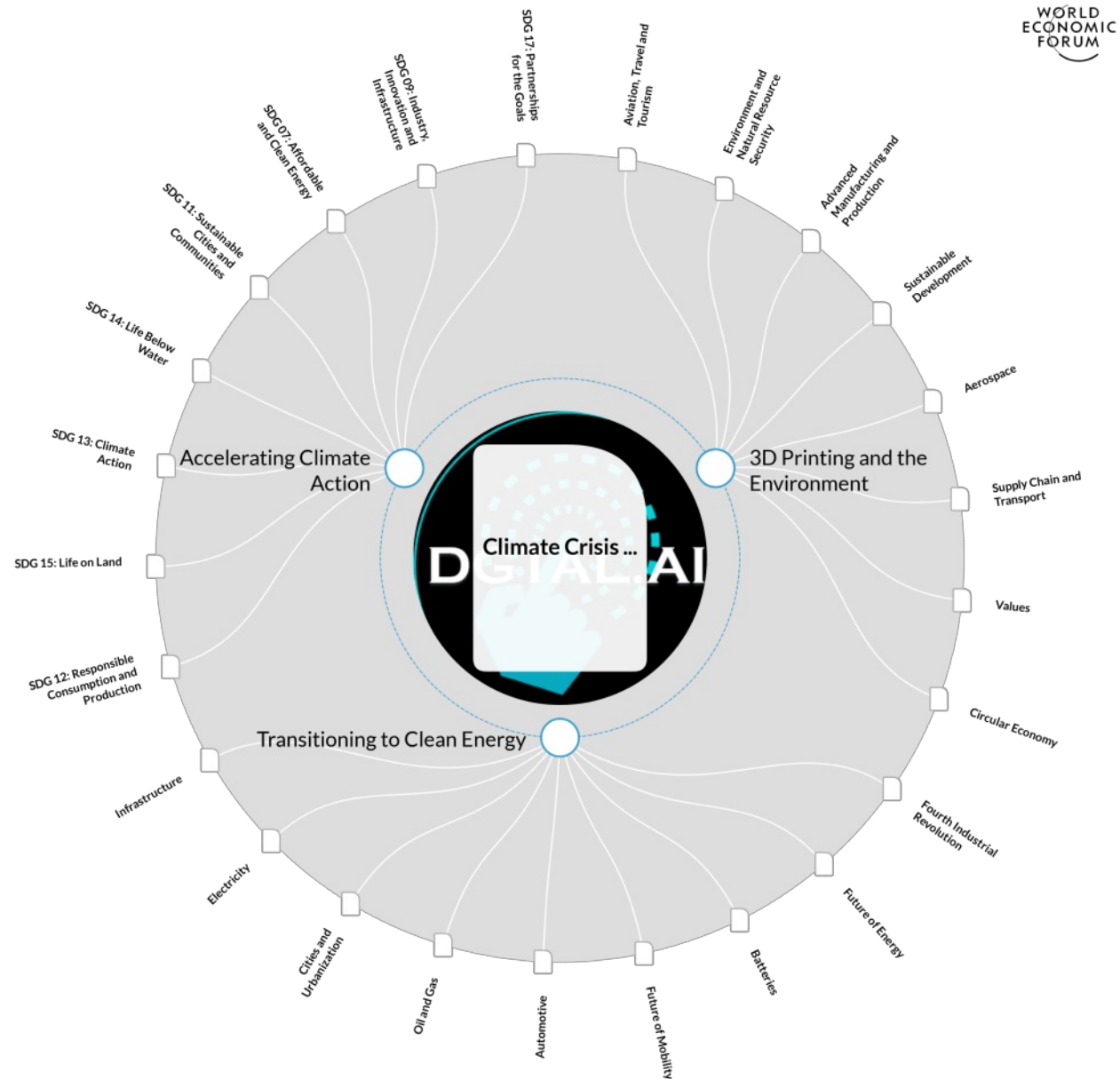


Climate Crisis ...

Last review on Tue 19 November 2019

About

This dynamic briefing draws on the collective intelligence of the Forum network to explore the key trends, interconnections and interdependencies between industry, regional and global issues. In the briefing, you will find a visual representation of this topic (Transformation Map – interactive version available online via intelligence.weforum.org), an overview and the key trends affecting it, along with summaries and links to the latest research and analysis on each of the trends. Briefings for countries also include the relevant data from the Forum’s benchmarking indices. The content is continuously updated with the latest thinking of leaders and experts from across the Forum network, and with insights from Forum meetings, projects communities and activities.



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Executive summary

Its more than a topic of discussion at UN or global conferences, time to think at each country,group, organization and the bottom most at each individual level...lets deep dive...we consider 3D Printing a 40 years old technology is on its exponential growth, a cause of support to our environment at large...deep dive...

1. 3D Printing and the Environment

The technology has shown promise in terms of helping cut energy use, waste and emissions.

2. Transitioning to Clean Energy

A faster transition to clean energy is the most effective option for combatting climate change.

3. Accelerating Climate Action

Advancing multistakeholder efforts through innovation and best practice.

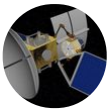
3D Printing and the Environment

The technology has shown promise in terms of helping cut energy use, waste and emissions

3D printing (or “additive manufacturing”) is capable of significantly reducing the amount of raw materials necessary to make things. Conventional machining processes, for example, are based on the “subtractive” removal of material from larger blocks, until a final geometry is achieved. By way of contrast, 3D printing successively adds material in a layer-by-layer process, and selectively applies it only where it is needed - facilitating a “near net shape” technique that produces parts as near as possible to a final shape, and eliminates much of the need for finishing. The resulting lack of waste material is due to the fact that only a small amount of total material needs to be re-machined in order to achieve a desired surface roughness, or to remove support structures. Meanwhile the 3D printing-related concept of Design for Additive Manufacturing enables the application of hollow, lighter-weight lattice structures and components, which further decrease the so-called “energy burden.”

An ability to produce lightweight parts is particularly crucial for the aerospace industry. GKN Aerospace, for example, has said it has used 3D printing to significantly reduce its so-called “buy-to-fly ratio” such that only about 10% of material used in production ends up as scrap. Lockheed Martin has meanwhile managed to reduce the buy-to-fly ratio of its bleed air leak detector brackets all the way to 1:1 from 33:1 by using 3D printing, according to a report published by Deloitte. Another example is Airbus’s work with design software firm Autodesk to develop a “bionic” cabin partition with more than 100 3D-printed parts for its A320 aircraft. According to Autodesk, installing the lighter partitions throughout an A320 would remove as much 500 kilograms of weight. The resulting decrease in fuel use would eliminate up to 166 metric tons of carbon dioxide emissions per aircraft every year - and, multiplied across thousands of A320s, could cut emissions by hundreds of thousands of tons annually.

Related insight areas: [Aviation, Travel and Tourism](#), [Environment and Natural Resource Security](#), [Advanced Manufacturing and Production](#), [Sustainable Development](#), [Aerospace, Supply Chain and Transport](#), [Values](#), [Circular Economy](#)



[Australian Strategic Policy Institute](#)
Towards Space 3.0

13 November 2019

The space age has gone through two paradigm shifts since the launch of Sputnik 1 in 1957. Until the early 1990s, 'Space 1.0' was the province of government-run, taxpayer-funded space programs. Civil space agencies such ...



[Nature](#)
New 3D printer makes multi-material robots

13 November 2019

3D printers can create a huge variety of shapes, usually deposited layer by layer using a single material. Creating objects made from several materials is po...



[South African Institute of International Affairs \(SAIIA\)](#)
Harnessing the 4IR in SADC: Roles for policymakers

12 November 2019

First popularised by the World Economic Forum in 2015, the Fourth Industrial Revolution (4IR) or 'Industry 4.0' has become a catch-all term to describe imminent changes to global business, labour and education models stemming from the advent of 'cyber-physical systems'.



[LSE Business Review](#)
Marcus Weldon: '5G will enable a new era of productivity and economic growth'

12 November 2019

In the early aughts, Nokia produced the most coveted mobile phones in the world, before it was disrupted by big tech giants ushering in the age of smartphones. The Finnish multinational corporation no longer produces phones directly, as its core activity has shifted to network equipment. It now aims to lead the market for end-to-end 5G networks. British executive Marcus [...].



[Wharton School of the University of Pennsylvania - Knowledge@Wharton](#)
Three Waves: Tracking the Evolution of India's Startups

05 November 2019

How did India's innovation ecosystem evolve and reach its current position? The authors of this opinion piece share their insights.



[VoxEU](#)
Trade effects of 3D printing

28 October 2019

The conventional wisdom is that 3D printing will shorten supply chains and reduce world trade. This column examines the trade effects of the shift to 3D printing in the production of hearing aids. It shows that adopting the new technology in production increased trade by roughly 60% as production costs came down. An analysis of 35 other products that are increasingly produced using 3D printing also finds positive effects but suggests that product characteristics such as bulkiness can affect the relationship between 3D printing and trade.



[Ulsan National Institute of Science and Technology \(UNIST\)](#)
Soldi: An Everyday Soldering Stationary

15 October 2019

Maker Culture, which can also be called Do-It-Yourself Culture (DIY Culture), is spreading steadily throughout the world. Thus, those industries that provide design tools and DIY kits continue to grow. The same goes for the tools and technologies for the production of various electronic devices, like soldering.

Transitioning to Clean Energy

A faster transition to clean energy is the most effective option for combatting climate change

Renewable energy accounted for about 9.5% of all global energy in 2017, a slight increase compared with the prior year, according to the 2018 World Energy Outlook published by the International Energy Agency. The renewables counted in this mix included solar, wind, geothermal, and modern biomass energy, along with traditional hydroelectric power. More importantly, however, are projections for renewables to increase electrical power as a way to decarbonize the world's energy supply. Thanks to economies of scale, and technologies like efficient solar cells and larger wind turbines, these energy sources now compete with fossil fuels. An analysis by the investment bank Lazard shows that during the past decade the "levelized" cost of electricity from wind farms (its average cost over the farm's lifetime) has decreased by two-thirds, and from utility-scale solar farms by nearly 90%. In many places, wind and solar are now cheaper than coal and natural gas. The emergence of new renewable energy markets has meanwhile reduced operating costs. In developing countries, renewable energy mini-grids are electrifying communities, while in developed countries solar power is reducing reliance on the grid, bolstered by renewable energy credits and tax incentives.

Decarbonizing transportation poses the biggest challenge. The United Kingdom, France and China are among the countries that have announced their intention to curb fossil-fuel cars or entirely phase out internal combustion engines, and the number of electric vehicles on the road is projected to increase by more than 7,000% between 2017 and 2030. Still, this will be less than 15% of the nearly 2 billion vehicles expected to be in operation by then. Aviation and shipping are on track to account for nearly 40% of carbon-dioxide emissions by 2050. A report published by the Energy Transitions Commission outlined a plan to cut emissions with smarter logistics that improve efficiency by tempering demand for carbon-intensive transport. The high cost of energy storage in batteries is the main barrier preventing widespread adoption of intermittent renewable energy; a massive improvement in energy density is needed for lithium-ion batteries to compete with liquid fuels. Just as important as scaling-up battery technology will be the cleaning up of entire product chains, from working conditions in the mines that supply raw materials for batteries, to the pollution associated with the improper disposal of batteries. The World Economic Forum's Global Battery Alliance was created in 2017 to address these challenges.

Related insight areas: [Fourth Industrial Revolution](#), [Future of Energy](#), [Batteries](#), [Future of Mobility](#), [Automotive](#), [Oil and Gas](#), [Cities and Urbanization](#), [Electricity](#), [Infrastructure](#)



World Economic Forum
Trump's withdrawal from the Paris climate deal is bad for US business. Here's why.

18 November 2019

The US withdrawal from the Paris deal is bad news for the country's economy. Here's why - and how businesses are taking back the climate change initiative.



University of St. Gallen
CEMS Graduate climate survey

15 November 2019

An international survey conducted by CEMS, the Global Alliance in Management Education, of which the University of St.Gallen is an academic member, found that 80% - most in their early twenties - believe the responsibility will lie with their generation to find the solution to climate change.



Circle of Blue
Climate Change Magnifies Health Risks at Every Stage of Life

14 November 2019

Floods, droughts, and warming temperatures are already increasing illness and disease risk and may pull back previous health gains, benchmark Lancet Countdown report finds. By Brett Walton, Circle of Blue More people exposed to wildfires. Water temperatures that are more conducive to the growth of Vibrio bacteria, which are responsible for cholera and other debilitating [...] The post Climate Change Magnifies Health Risks at Every Stage of Life appeared first on Circle of Blue .



Project Syndicate
Green Markets for Equitable Growth

14 November 2019

The only realistic solution to the climate crisis is to replace fossil-fuel-based energy with renewables quickly and cost-effectively enough to keep the engines of economic growth running. A global carbon market would do just that.



Project Syndicate
A Green Industrialization Strategy for Africa

14 November 2019

African countries cannot abandon "brown" industries – those that depend on oil, gas, and minerals – and create a green economy overnight. But they can use them as a tool to achieve a clean, sustainable economy.



Ecole Polytechnique Fédérale de Lausanne
EPFL-developed geothermal panels reach international finals

14 November 2019

14.11.19 - EPFL researchers have developed a geothermal system for recovering the heat captured in basements, subway tunnels and underground parking garages. Their technology will compete today in the finals of ClimateLaunchPad – the world's largest competition for green business ideas. If you've ever taken the subway, you've probably noticed that the underground stations can be just as warm as the railcars. In the summer, the heat generated by people packed into unairconditioned cars spills out into the platforms, and in the winter, the railcar heating system ends up warming the tunnels, too. Margaux Peltier, a scientific assistant at EPFL's Laboratory of Soil Mechanics (LMS), came up with an idea for recovering this excess heat with geothermal panels, and then using it to heat water in the summer or nearby buildings in the winter.



SpringerOpen
Schedulable capacity forecasting for electric vehicles based on big data analysis

14 November 2019

Abstract Fast and accurate forecasting of schedulable capacity of electric vehicles (EVs) plays an important role in enabling the integration of EVs into future smart grids as distributed energy storage systems. Traditional methods are insufficient to deal with large-scale actual schedulable capacity data. This paper proposes forecasting models for schedulable capacity of EVs through the parallel gradient boosting decision tree algorithm and big data analysis for multi-time scales. The time scale of these data analysis comprises the real time of one minute, ultra-short-term of one hour and one-day-ahead scale of 24 hours. The predicted results for different time scales can be used for various ancillary services. The proposed algorithm is validated using operation data of 521 EVs in the field.

Accelerating Climate Action

Advancing multistakeholder efforts through innovation and best practice

Related insight areas: [SDG 12: Responsible Consumption and Production](#), [SDG 15: Life on Land](#), [SDG 13: Climate Action](#), [SDG 14: Life Below Water](#), [SDG 11: Sustainable Cities and Communities](#), [SDG 07: Affordable and Clean Energy](#), [SDG 09: Industry, Innovation and Infrastructure](#), [SDG 17: Partnerships for the Goals](#)



[International Institute for Sustainable Development](#)
Sustainable Watersheds for Carbon Offsets: Biomass harvesting for phosphorus capture, habitat renewal and carbon emissions reductions

18 November 2019

IISD's bioeconomy work has been exploring new and innovative practices to reduce flood impacts and nutrient loading, as well as reduce carbon emissions, in the Lake Winnipeg watershed through better water retention management, and the harvest and use of sustainable wetland biomass.



[Project Syndicate](#)
An Appeal for Sudan's Future

18 November 2019

Sudan today is on a knife-edge: it can evolve toward peace and democracy, or spiral into instability and violence. Vital and timely international assistance can make the difference between success and failure for the new government.



[LSE Business Review](#)
The role of international climate finance initiatives

18 November 2019

Financial institutions have a critical role in stepping up the actions against climate change. In Article 2 of the Paris Agreement, nations agree to scale up finance flows consistently, opening a pathway towards low greenhouse gas emissions and climate-resilient development. Consequently, 'climate finance' will continue to remain central to the climate change agenda. The recent United Nations Climate Action Summit [...].



[World Resources Institute](#)
PODCAST: Fixing Land Use, Fixing the World

15 November 2019

"If you want to change the world, it's not a little bit like Archimedes said: 'Give me a lever and I can tilt the world,'" says Paul Polman, chair of the Food and Land Use Coalition (FOLU). "Here you need a few levers to tilt the food system." Polman and FOLU's Ed Davey explain how those levers can work, following a high-level meeting organized by WRI and WWF and attended by His Royal Highness the Prince of Wales.



[Wharton School of the University of Pennsylvania - Knowledge@Wharton](#)
How to get Corporate Strategy to Engage with Climate Change

15 November 2019

Climate change is becoming an emergency around the world. So why doesn't it get more priority among corporate strategy executives? Oxford University's Rafael Ramirez poses and answers that question in this opinion piece.



[Project Syndicate](#)
Mind the Learning Gap

15 November 2019

In setting global targets for closing the gender gap and achieving universal education by 2030, governments and development advocates tend to focus on the need to build more schools and increase enrollment rates for women and girls. But while these objectives cannot be ignored, Afghanistan's experience shows why they are not enough.



[INSEAD Knowledge](#)
Climate Crisis: From Dreams to Hope

15 November 2019

Sustainable trends in business need to focus on facts, rather than on romantic ideas about the environment.

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1. 3D Printing and the Environment

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2. Transitioning to Clean Energy

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Acknowledgements

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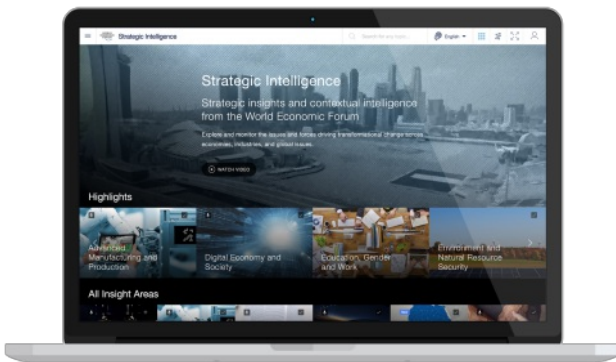
In today's world, individuals and organizations can find it difficult to keep up with the latest trends or to make sense of the countless transformations taking place around them.

How can you decipher the potential impact of rapidly unfolding changes when you're flooded with information—some of it misleading or unreliable? How do you continuously adapt your vision and strategy within a fast-evolving global context?

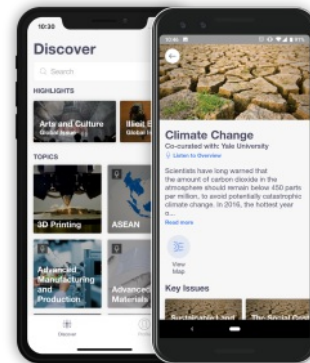
Leaders require new tools to make better strategic decisions in an increasingly complex and uncertain environment. The World Economic Forum developed Strategic Intelligence to help you understand the global forces at play and make more informed decisions.

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World Economic Forum
91-93 route de la Capite
CH-1223 Cologny/Geneva
Switzerland
Tel.: +41 (0) 22 869 1212
Fax: +41 (0) 22 786 2744
contact@weforum.org
www.weforum.org