

**Keynote Remarks at the ITU AI and Climate Change
Kick-Off Event**

7 July 2021, Geneva, Switzerland

Thank you for your warm introduction.

Mr. Houlin Zhao, Secretary-General of the International Telecommunication Union,

Distinguished Guests, Ladies and Gentlemen,

It is my great honor and privilege to speak to you today at this virtual “AI and Climate Change” kick-off event.

First of all, let me express my special appreciation to Mr. Houlin Zhao, Secretary-General of the International Telecommunication Union (ITU), for inviting me to this timely event.

Indeed, this comes at a pivotal moment for us to find innovative solutions for our ongoing fight against climate change.

I take this opportunity to offer my warm congratulations on the realization of this event, which will launch a series of weekly talks by distinguished experts.

Eventually, this series will also produce a white paper on open problems in climate science that can be tackled with AI alongside tangible proposals for future-oriented solutions to the pressing climate challenges that we face.

And this event truly comes at a significant time for identifying, harnessing, and scaling new solutions to help the international community combat climate change and ensure sustainable development for all. I thank you, distinguished “AI and Climate Change” kick-off event participants, for your meaningful efforts in this regard.

Distinguished Guests, Ladies and Gentlemen,

Today, we find ourselves at the center of a variety of converging global crises and increased uncertainty.

The ongoing COVID-19 pandemic continues to upend our economies, societies, and way of life.

Climate change is steadily worsening; with superstorms, extreme heat, flooding, fires, and droughts all expanding in frequency and intensity.

Great power tensions and regional conflicts are growing, hindering global cooperation when it is greatly needed.

At the same time, new technologies are altering how we communicate, live, and work. Sweeping advances in the fields of AI, biotechnology, and robotics are rapidly changing our countries, cities, and businesses.

However, despite these challenges, we have made progress in key areas and I believe we have invaluable opportunities to change the world for the better.

But, to do this, we need to work together through a driving commitment to sustainability, innovation, and the power of partnerships and multilateral cooperation.

Today, I wish to speak to you about the great importance of coming together in partnership to holistically and urgently address climate change.

First, I will underscore the reality of our current climate crisis and our way forward in taking climate action.

And second, I will highlight how the use of innovative technology, such as AI, can facilitate our common efforts in forging a brighter future for our planet and humanity.

Distinguished Guests, Ladies and Gentlemen,

Considering the long term habitability of our planet and the existential fate of humanity is at stake, we simply must come together to raise our urgency and ambition in addressing the rapidly worsening climate crisis.

Climate change is fueling insecurity, conflict, refugee flows, and public health perils around the world. Species are at risk of extinction and ecosystems are collapsing.

And these threats do not discriminate; all nations are, and will continue to be, endangered by them as the world continues to warm.

As a result of climate change, rising sea levels are an existential threat to many small island developing States as well as some of the world's most populous and economically-important cities around the world.

In recent weeks, much of the northern hemisphere has been suffering through an unprecedented heat wave, with hundreds tragically dying in Western Canada and the US, and temperatures in Siberia soaring to 48 degrees Celsius.

And densely populated areas of the Middle East and South Asia are now experiencing heat waves so severely that doctors are sounding the alarm about the capacity of humans to physically withstand them in the years ahead.

But, warming is not just a future threat. A landmark study released in May in the scientific journal *Nature* says that nearly 37 percent of all global heat-related deaths can now be blamed on human-caused climate change.

How can we mitigate these threats? Western nations such as the EU, the US, or the UK certainly can't do it alone; nor can Asian countries like China, Korea, and Japan.

What is needed is an unprecedented global effort propelled by multilateralism, innovation, and partnership.

With this in mind, I am of the view that we must expediently step-up our collective efforts to cut global emissions and implement the Paris Climate Agreement.

During my ten years serving as Secretary-General of the United Nations, I am

proud to have prioritized climate change and elevated its importance to the very top of the international agenda.

The Paris Agreement, signed by 197 countries in 2015, offers us a clear game plan to confront the serious threats to our planet.

It sets viable targets to impede rising temperatures, constrict greenhouse gas emissions, and spur climate-resilient development and green growth.

To faithfully implement the Paris Agreement and push it further, countries need to expand their ambitions and urgency to cut emissions. And we must secure increased climate financing from upper income nations and through the catalyzing power of cooperation and partnerships. This is particularly critical in the lead up to COP 26 in Glasgow, where the climate “rule book” will be finalized.

In this regard, I commend the growing number of nations for their commitments to reach net-zero emissions. Now, global leaders must go further by expanding climate funding for developing countries and scaling-up financing for climate adaptation to ensure that COP 26 is a success.

Considering that the fate of the health, security, and well-being of our planet and humanity is at stake, we must also come together to harness science, technology, and innovation to help in the fight against climate change, achieve the SDGs, and succeed in leaving no one behind.

Distinguished Guests, Ladies and Gentlemen,

Over the next 9 years, progress in science, technology and innovation will be essential in delivering on the Global Goals—from poverty eradication to agriculture and food security; to energy, water sanitation, and climate change.

Science, technology, and innovation have been steadily transforming our world in recent years, and we are currently in the midst of a “4th industrial revolution” as new advancements transform our way of living, thinking, and working.

Digital technologies, robotics, AI, biotechnology, and nanotechnology all have fundamental and far-reaching impacts and both present opportunities and challenges.

AI, especially, holds great promise for our planet earth.

This is particularly timely as the scientific evidence underpinning the attribution of global warming to human activity is, frankly, undisputable and new solutions are increasingly needed.

However, significant uncertainties remain, both in our understanding of climate sensitivity, and, in particular, of the impacts of climate change on regional scales that can be expected even under 1.5 or 2 degrees of warming.

With this in mind, the availability of unprecedented amounts of climate datasets from earth observations and climate models provides opportunities – but also huge challenges – as current methodologies are simply not equipped to extract the full information content at scale.

At the same time, artificial intelligence, and, in particular, Machine Learning(ML) is transforming many aspects of society including transportation, commerce, and security.

These exciting transformations are built on algorithms that learn features and patterns in the huge volumes of data now available in these sectors.

In turn, these algorithms have developed at a rapid pace, allowing improved accuracy and robust uncertainty quantification, while simultaneously respecting prescribed scientific constraints.

For many years, climate scientists have used comparatively simple statistical approaches to try and discern subtle changes in observational datasets, or to interpret abundant climate model data output.

The opportunity now presents itself for climate science to exploit advances in machine learning to answer some of the most pressing challenges of our time – while they are still relevant for policy-makers and in support of the urgent efforts needed to address the climate crisis.

This acceleration will be built upon supervised and un-supervised learning of features and patterns in the vast amounts of earth observation and climate model data that is now available transforming our ways to constrain climate models and the detection of climate change.

It will also be built upon robust emulation of existing climate models and their components; and causal detection and attribution of regional climatic changes.

Climate scientists have begun to enthusiastically explore these possibilities.

But, scaling such novel approaches to the exabytes ($*10^{18}$ 바이트) of data, which will be created over the next decade to answer urgent scientific and policy relevant questions in a timely manner, will require concerted collaboration between policy makers, academia, the private sector, and others.

Considering this, let us recall that that SDG 17 highlights the prominent role that dynamic partnerships should play to help achieve the Global Goals. It calls for “multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries.”

In particular, industrial partners can play a leading role in bringing in their extensive expertise and know-how. They can also help in ensuring that climate data is accessible and interoperable with the latest Machine Learning(ML) algorithms and the specialized computational hardware that is required to run them.

Under this backdrop, this impressive series provides a timely forum for leading voices in these fields and across sectors to outline a vision for how we will achieve this – with the aim of “Accelerating Climate Science with AI.”

Distinguished Guests, Ladies and Gentlemen,

I am of the view that science, technology, and innovation cannot be confined solely to the use of new technologies or software.

Indeed, innovation is both a mindset and an attitude.

It means questioning assumptions, rethinking established systems and procedures, and introducing new strategies.

New technologies such as AI are important, but as a means to an end.

This was the message I emphasized to the global community of scientists and innovators in 2016, when, as UN Secretary-General, I presided over the first multi-stakeholder forum on science, technology and innovation for the SDGs.

In this connection, I would like to reiterate this message to you, as this exciting “AI and Climate Change” series continues forward following today’s kick-off event.

The fact of the matter is that we will need the ownership, participation, and active involvement from all sectors of society to limit emissions and implement the Paris Agreement, and for sustainable development to become a global reality within the next 9 years.

And in this era of division and uncertainty, I strongly believe that fighting climate change and achieving the UN’s SDGs are two efforts that simply must unite the world through cooperation and partnership. Quite plainly, our collective existence moving forward depends on it.

But this urgent and historic undertaking can create opportunities as well.

We can create new opportunities for social inclusion, for the cultivation of essential partnerships, for economic growth, for gender equality, and for the greater good.

I am confident that science and technology will be central to these unified efforts. We can use AI to better humanity.

We must remember that global cooperation, ignited by dynamic innovation and coupled with forward-thinking policy-making, is essential for achieving the Global Goals.

I know that we can achieve this. There is simply no other option. With your active engagement and ideas, we can and will continue to flourish and be sustainable for our children, their children, and more generations to come.

I thank you for your attention and active efforts to this end. /END/