



**PMAC 2022:  
Moving Towards  
the World We Want**

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The Prince Mahidol Award Conference (PMAC) is an annual event held in Bangkok, at which humanitarian leaders and experts in various disciplines meet to discuss global challenges, including health crises and climate change. This year, the conference ran from the 25th to the 29th of January, featuring seven sessions with international speakers. The theme of [PMAC 2022](#) was 'The World We Want: Actions Towards a Sustainable, Fairer and Healthier Society'. This article highlights some of the main global issues and megatrends discussed at the conference.

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## Coming Together to Address Global Challenges

Humanity is facing many challenges, ranging from the COVID-19 pandemic to climate change, and from natural resource depletion to social inequity. To effectively address these challenges, world leaders must work together with countries, communities and the private sector to achieve a fairer and more sustainable world.

The Prince Mahidol Award Foundation was established in 1992, on the 100th birthday anniversary of Prince Mahidol of Songkla. In Thailand, Prince Mahidol is known as the 'Father of Modern Medicine and Public Health', as he dedicated much of his life to improving the country's public health. The Prince Mahidol Award Foundation was created with the mission of bringing international policymakers, futurists, academics, and humanitarian workers together to discuss pressing global challenges.

Every year, the Foundation holds a conference in Bangkok, Thailand, which runs for several days. The Prince Mahidol Award Conference (PMAC) is

a great opportunity for scientists and leaders to share their perspective and expertise on important global issues and network with other international experts. The conference unfolds over various sessions, each with a different group of speakers and focusing on different world challenges.

## PMAC 2022: The World We Want

This year, the core theme of PMAC was 'The World We Want: Actions towards a sustainable, fairer and healthier society'. The COVID-19 pandemic revealed just how unprepared the world was for a health crisis of this scale. As there could be other similar crises in years to come, leaders and humanitarian organisations should collaborate to promote better emergency responses.

The pandemic, climate change and environmental degradation are perhaps the most pressing ongoing world issues. At PMAC 2022, speakers from all over the world discussed these interconnected issues, their effects, and actions that could help to promote more sustainable, fairer, and healthier societies.



The first session of PMAC 2022, held on the 26th of January, was a deep and reflective discussion about the primary megatrends of the 21st century and how they may impact on the world's health status, moderated by Dr Dennis Carroll, Chair of the Global Virome Project's Leadership Board and Senior Global Health Security Advisor at University Research Co.

The discussion was centred around six megatrends, namely changes in population, changing demographics, urbanisation, climate change, land use change and transformative technologies, and their implications for global health. In addition to discussing these issues individually, the panellists explored the intricate relationships



between them and how they could be collectively addressed through leadership, policymaking, and collective action.

### **Six Crucial Megatrends**

Between the 1950s and the 21st century, the world population has increased dramatically. Forecasts by the United Nations reveal that half of the growth over the course of this century will occur in sub-Saharan Africa. This stark rise in the global population will have profound consequences on global health and on the management of natural resources.

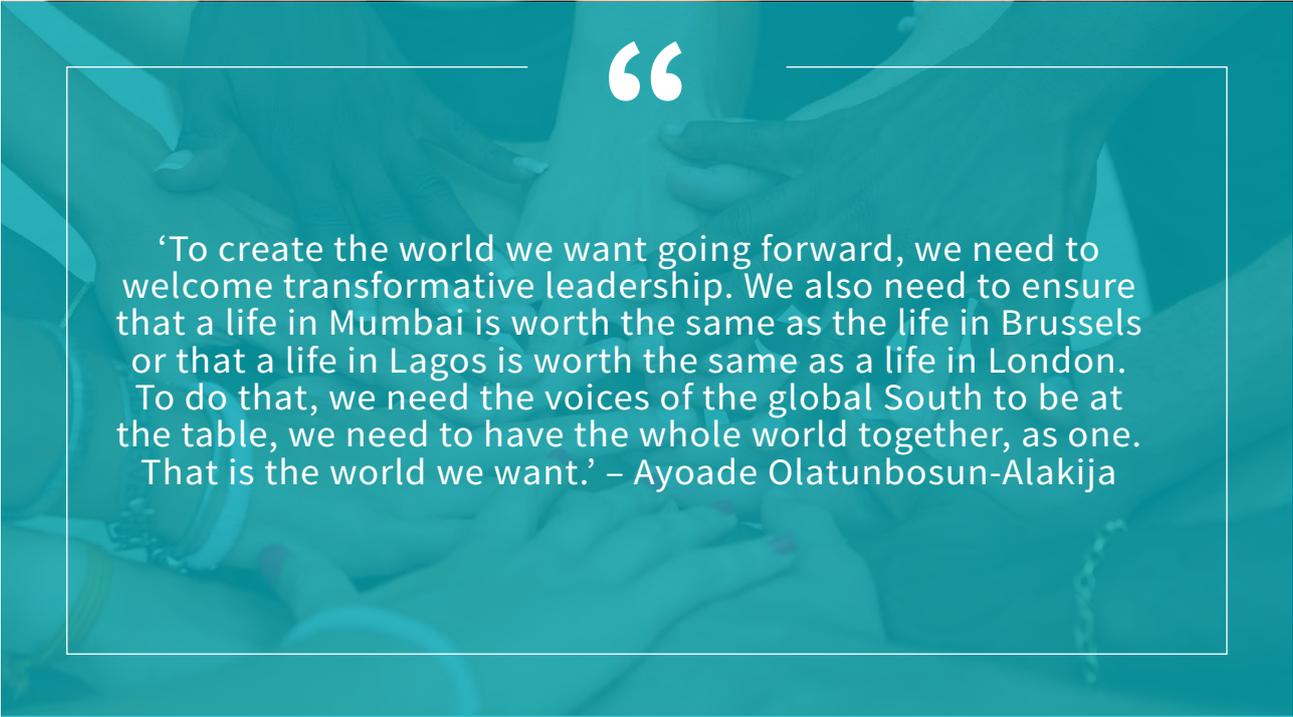
The observed rise in the world's population has also been accompanied by substantial demographic changes. Statistics have shown that the population on Earth is getting older. This trend coincides with a rise in non-communicable diseases, which are diseases that cannot be directly transmitted from one person to another, such as diabetes, stroke and other cardiovascular diseases, and Alzheimer's disease.

In the future, changes in demographics are thus likely to have a significant impact on global health, requiring more medical researchers and practitioners to shift their focus on non-communicable diseases, which are already among the primary causes of death worldwide. In addition, due to the rising incidence of mental health conditions, medical experts will need to elevate their focus on mental health research and treatment.

A further change forecasted by experts is the rise in megacities (cities with over 30 million inhabitants), 13 of which are expected to be in sub-Saharan Africa. This profound change is already posing significant challenges, such as increasing pollution and related urban diseases. Another pressing global trend is climate change, which is already having serious repercussions on health, producing extreme weather conditions, and causing the depletion of natural resources in many parts of the world.

The 21st Century will also be marked by radical changes in land use. By 2050, natural grasslands are set to decrease substantially, and more land is expected to be used for agriculture. Changes in land use are known to be associated with the extinction of species and the emergence of 'hot spots' for new infectious diseases, so this transformation is also likely to give rise to new problems.

The sixth and final megatrend discussed at PMAC 2022 is the rapid development of innovative and potentially transformative technologies, such as artificial intelligence (AI) and robots. These technologies could prove to be essential in overcoming world challenges, for instance by helping to forecast natural disasters, monitor the environment, and advance medical procedures.



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‘To create the world we want going forward, we need to welcome transformative leadership. We also need to ensure that a life in Mumbai is worth the same as the life in Brussels or that a life in Lagos is worth the same as a life in London. To do that, we need the voices of the global South to be at the table, we need to have the whole world together, as one. That is the world we want.’ – Ayoade Olatunbosun-Alakija

### Promoting International Cooperation

While not all forecasts and predictions turn out to be true, some are known to be very accurate. For instance, many scientists predicted the possibility of a lethal global pandemic before COVID started spreading in 2019.

Many panellists at PMAC 2022 highlighted the need for international superpowers to work together to prepare for forecasted challenges and work towards a brighter future. Examples of effective international collaborations include the Paris climate agreement, the UN’s sustainable development goals, and the Nuclear Non-Proliferation Treaty.

The sustainable development goals outlined by the United Nations, including lowering emissions and achieving universal health coverage, should ideally have been met by 2023. To ensure that these goals are met on time, which currently seems unlikely, global leaders and citizens must work closely together.

While the past decades have been marked by remarkable innovation, this innovation is not always equally and fairly distributed across different countries. The most recent example of this is the COVID-19 vaccine, which is far more accessible in some countries than others, slowing down global recovery. To ensure that innovations have a global and far-reaching impact, international collaborations should thus ensure that they are fairly distributed across all countries.

Another key challenge that will need to be tackled collectively by all countries worldwide is the rise of fake news and misinformation. The COVID-19 pandemic offered a perfect example of this worrying trend, as it gave rise to conspiracy theories and anti-vaccination propaganda, which were

disseminated on social media and other online platforms. Inaccurate information spreading at such a rapid pace significantly undermines democratic processes and global collaboration.

### Three Challenges in Public Health

PMAC 2022 panellists also discussed three of the most pressing public health challenges worldwide, namely inequity, lack of trust, and lack of partnerships.

If in the past, societies were divided based on income, many experts believe that they will soon be arranged based on access to data, and that this will also be reflected on public health. In other words, people who have access to data are likely to have better access to health services than those who do not.

This has already been observed throughout the COVID-19 pandemic, as countries that were less able to collect data, such as many in sub-Saharan Africa, fictitiously appeared to be less impacted by the virus. This in turn limited the number of tests and vaccines they received from international organisations.

In Nigeria, with a population of over 210 million, just over 4 million COVID-19 tests were performed throughout the entirety of the pandemic, which is an incredibly small number when compared to the 900 million tests performed in the US, with a population of 332 million. This huge disparity is closely linked to a lack of access to diagnostics and because Nigeria does not have a health system that can support the collection of data. To reduce data-related inequalities, world governments will thus also need to collectively work to strengthen the global data infrastructure.



Another issue affecting global public health is the widespread lack of trust in science and public institutions, which is fuelled by misinformation and the circulation of fake news. To overcome this challenge and increase public trust in institutions, governments, journalists, and scientists might need to re-think the ways in which they communicate with the public. This could mean, for instance, simplifying complex concepts to ensure that they can be easily digested by all segments of the population.

Final, the global public health infrastructure has often been characterised by a lack of partnerships – with governments, civil society and the public sectors working in parallel, rather than together. To effectively tackle new global health issues, these different sectors will need to work together and build successful partnerships based on shared data, resources, and trust.

### **The Need for Meaningful Change**

While there have now been countless initiatives promoting international collaboration to address global challenges, not many of these have led to meaningful and observable change. For instance, the rise of population in sub-Saharan Africa and other developing parts of the world has had a crucial impact illegal migration, which many international organisations have so far struggled to address effectively.

Every minute, an average of 77 people move into Lagos, in Nigeria, most of whom are escaping conflict and desperate situations. Moreover, many of these migrants are seeking a way out of the country, with over 1000 people migrating illegally out of Lagos each day.

The growth of population in sub-Saharan Africa thus also impacts many other countries in the region's vicinity, including most countries in the European Union, which are faced with huge waves of illegal immigration. This trend clearly demonstrates that the billions of dollars poured into development projects have ultimately failed to change the lives of people in Africa and in other parts of the world in meaningful and sustainable ways.

While discussing world issues and investing in international development projects is valuable, therefore, it is not enough to achieve radical and meaningful changes. To truly reduce inequity across different countries, world leaders should be trying to establish an entirely new world order, based on equitable processes and international cooperation.

### **The Potential and Challenges of AI**

Another important megatrend discussed at PMAC is the rise of AI and deep-learning technology, and the huge possibilities that come with it. Deep-learning algorithms have brought huge innovation in numerous fields, as they allow researchers to utilise large amounts of available data in unique and ground-breaking ways.

While AI and deep-learning technology could help to tackle current and future global challenges more effectively, leaders and engineers need to take important measures to ensure that they do not cause unintended harm. Two of the most renowned shortcomings of these technologies are their lack of transparency and their possible tendency to perpetuate disparities in society.

Today, most AI systems make predictions without being able to clearly show the processes behind them. This can be very problematic, as it can result in systems that base their predictions on irrelevant or problematic data features.

For instance, a few years ago a team of dermatologists and computer scientists at Stanford developed an AI that was able to distinguish between benign and malignant skin lesions with remarkable accuracy. The images used to train the AI were taken from medical databases, and those containing malignant lesions also included a ruler measuring their length. A few months later, the team realised that their system was basing its predictions on the presence or absence of this ruler on the skin segments it was analysing.

To ensure that AI systems are truly effective in making specific predictions, and to facilitate their use in tackling complex problems, engineers will thus need to increase their transparency.

Moreover, AI works by processing existing data, and this data often reflects the inequity of the world we live. Therefore, when trained to replicate existing patterns in data, AI tools might prevent positive change and perpetuate existing problems or social divides. To prevent this from happening, engineers should carefully evaluate the systems they create before they are introduced in real-world settings.

### **The Promise of mRNA-based Treatments**

A further innovation that was widely discussed at PMAC 2022 is mRNA technology and associated therapeutic treatments. These are medical treatments that target ribonucleic acid (RNA) – a molecule present in all living cells that converts information stored in DNA into proteins.

In conjunction with effective disease prevention strategies, mRNA treatments could help to tackle numerous health challenges more effectively. While the



vaccine against COVID-19 has become the most renowned mRNA-based treatment, mRNA technology could also be used to treat many non-inflammatory and genetic diseases.

In addition, as mRNA is naturally created inside the human body and does not need to be synthesised, drugs based on mRNA technology could be far more affordable. This might help to treat diseases on a larger scale, while also reducing inequities in health, which currently prevent many people worldwide from receiving effective medical treatments.

### **A Call for a New Global Health Architecture**

Ultimately, the megatrends discussed at PMAC 2022 are bound to affect humanity at large. The conference's first session emphasised the growing need for international cooperation in developing a new global health system that is truly sustainable, fair, and equitable.

To move towards a brighter future, many perspectives should be considered and involved in decision-making. Many PMAC panellists highlighted the need bring different stakeholders together, including people who are

well-acquainted with world issues and experience them every day.

In addition, to identify tangible and meaningful solutions to global issues, all sectors will need to come together and share their knowledge and expertise. Even when discussing a particular issue, such as climate change, leaders should ideally consider the views of experts in various disciplines. Instead, some of the panellists observed that at conferences focusing on climate change, health-related consequences are not typically discussed.

While all speakers emphasised the need for unity and cooperation, the current geo-political landscape might not be helping to achieve this. Over the past five to ten years, many governments have stopped prioritising global issues, in favour of placing greater focus on national problems.

Ultimately, this year's PMAC conference re-iterated the need to cease the rhetoric, join forces, and collectively work to create the world we want and need to survive, while also ensuring that data, technologies, and medical advancements are equally distributed across the globe.

# Meet the researchers

**Dennis Carroll**  
PMAC Moderator  
Chair, Global Virome Project  
USA

Dennis Carroll is the Chair of the Global Virome Project's Leadership Board. Previously, he directed the US Agency for International Development's Pandemic Influenza and other Emerging Threats unit. While at USAID, he led the Emerging Pandemic Threats program, aimed at combatting disease threats before they become significant threats to human health. Carroll led many of the agency's programs targeting different emerging disease threats, including the H5N1 avian influenza and H1N1 pandemic viral attacks.

**Ayoade Olatunbosun-Alakija**  
Co-Chair  
Africa Union and Africa Vaccine Delivery Alliance  
Nigeria

Ayoade Olatunbosun-Alakija is Special Envoy and Co-Chair of the World Health Organisation's Act Accelerator, African Union, and African Vaccine Delivery Alliance. She is also the founder of the Emergency Coordination Centre and former Chief Humanitarian Coordinator for Nigeria. With a background in medicine, public health and policy, Olatunbosun-Alakija is a recognised Pan-African strategist and analytical thinker specialised in devising creative and innovative solutions for complex problems and situations.

**Brian Christian**  
Author and Visiting Scholar  
UC Berkeley  
USA

Brian Christian is a bestselling author and Visiting Scholar at University of California Berkeley. He holds degrees in Philosophy, Computer Science, and Poetry from Brown University and UC Berkeley. One of his books, 'The Most Human Human', was named a Wall Street Journal Bestseller, a New York Times' Editors' Choice, and a New Yorker favourite book of the year. His third book, The Alignment Problem, has just been published in paperback and has already become a finalist for Best Science & Technology Book of the Year by the LA Times.

**Gro Harlem Brundtland**  
Former Prime Minister of Norway  
Former Director-General of the WHO  
Norway

Gro Harlem Brundtland became Norway's first female Prime Minister in 1981 and served for a total of ten years. She chaired the World Commission on Environment and Development, also known as the Brundtland Commission, established to promote sustainable development worldwide. She was Director-General of the World Health Organisation from 1998 to 2003, a UN

Special Envoy for Climate Change from 2007 to 2010, a member of the UN Secretary General's Global Sustainability Panel from 2011 to 2012, and co-chair of the Global Preparedness Monitoring Board.

**Katalin Karikó**  
Senior Vice President  
BioNTech RNA Pharmaceuticals  
Germany

Katalin Karikó holds a PhD in Biochemistry from University of Szeged in Hungary. Karikó became Senior Vice President at BioNTech RNA Pharmaceuticals in 2013 and has since been leading all mRNA-based protein replacement programs at the company. For four decades, her research specifically focused on RNA-mediated mechanisms towards developing treatments for both acquired and genetic diseases. Her work contributed to the development of the FDA-approved COVID-19 mRNA vaccine.

**Mohamed Mamdouh Elsayed Sayed Ahmed Eissa**  
Liaison Officer for Public Health Issues  
IFMSA  
Egypt

Mohamed Eissa is a 6th year medical student from Alexandria, in Egypt. He is passionate about both medicine and public health, and strongly believes that the latter is necessary to create healthier communities and reduce health disparities. For the past four years, he has been volunteering in the Public Health sector and he is currently the Liaison Officer for Public Health Issues at the International Federation of Medical Students' Association.

**Naveen Rao**  
Senior Vice President  
The Rockefeller Foundation  
USA

Naveen Rao is Senior Vice President of the Rockefeller Foundation's Health Initiative. His work focuses on ensuring more equitable access to COVID-19 tests and vaccines. Under Rao's leadership, the foundation launched the Precision Public Health initiative, aimed at using a data-driven approach to address the current pandemic in various countries worldwide. For decades, Rao has been a leader in equipping healthcare providers with the skills and technologies they need to combat health threats.

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