Australian Government

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Science and Technology as a Driver for Development

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Thank you for the opportunity to present to this forum. I'm very pleased to be meeting here as an international community and I thank our hosts.

Around the world, governments are looking to science to offer solutions to what are serious and pressing issues -- whether climate change, energy, or water and food security.

In my brief remarks, I want to focus on how we as scientists can respond to this call, and contribute in a way that offers the most value to the global community.

First – and I'm sure we agree on this – it's clear that global challenges necessitate global solutions.

As has been brought home to us in the pandemic, no country is safe until every country is safe. In the same way, clean energy in wealthy countries is of enormous benefit, but it is only of lasting benefit when clean energy is the norm everywhere. Food security impacts every country, the wealthy countries as well as those in food crisis.

In Australia, we have the luxury of a large country with a relatively small population, and a conducive landscape for farming. But we are not immune from the challenge of food security. Our agriculture puts pressure on waterways and our animal production is a challenge for greenhouse gas emissions. There are impacts on our environment, emissions, and the carrying capacity of our pastures and waterways.

This makes sustainable farming methods, novel pest control methods, and new sources of protein an important focus for in Australia. We have identified biotechnologies as among our critical technologies for research and investment.

So that is my first observation: We all have a critical interest – and solutions are only solutions if they are available to us all.

My second observation is that we must get our heads around the scale of transformation required.

The scale of production for energy alone is mind-blowing. In the extraction and processing of critical minerals, the manufacturing of batteries, solar cells and other renewable energy technologies, the needs are enormous. One calculation, just for Australia, is that the solar arrays required to decarbonise energy would cover an area the size of Tasmania five times over. It's staggering to think about.

We should also remind ourselves that many of the technologies – including for clean energy and decarbonisation – have not yet been invented. Substantial investments are required in discovery research – and we need to bring our collective expertise together to maximise the chances of success – especially when there is a deadline.

Modern science is not done lab by lab, or country by country. It is a collective enterprise – one that requires a shared effort and complex, shared infrastructure.

It is also true to say that the emerging technologies are interconnected. Whether land use, clean water, food security, whether it be electrification of transport, or low-emissions steel-making -- whichever sector you consider -- the complexities are significant. There are synergies and there are trade-offs. And we must be realistic about that.

So that is my second observation. The complexity and the scale are enormous, and require a collaborative effort.

My third observation is that science is an enduring global connector, which gives it a special role on the world stage.

Science and technology are our common languages. They enable efficient collaboration and cooperation, and create strong connections across borders. Using science and technology as universal languages helps transcend differences. And it ensures policy solutions are informed by the needs of end users.

In the spirit, I'm pleased to let you know that we are working towards an Open Access Strategy for research literature in Australia. My firm view is that bringing research literature out from behind paywalls will help drive innovation, improve visibility of the science, and speed the development of new technologies. It will help lift scientific literacy and bring science more directly into classrooms, and into government and industry. Open access is one part of the international focus on open data and open science. I welcome this conversation.

This brings me to my final comment. And that is that science offers an example of how to approach the problems we face.

Almost by definition, science is an open endeavour. It doesn't impose an outcome, or pursue an agenda, but is an endeavour that is responsive to the evidence. It seeks to understand the world the way it is.

Just as an investigator might follow the money, science reminds us to follow the evidence. It doesn't always lead to a simple answer; research findings can, of course, conflict. But if you follow the evidence, you have a pathway to understand why there might be differences in outcomes -- and to design new experiments. Eventually, the weight of evidence will be conclusive.

This is a great blueprint for how to manage complexity. It is collaborative, iterative, and effective.

Sometimes, it feels like world wants to step back into siloes. But my message is quite the opposite. My message is that we must embrace the emerging technologies wholeheartedly at the same time as we build in environmental, social and governance protections right from the start. We must embrace the connectivity that digital innovation offers us. And we must make full use of science as the common language and the connector.

This is the mission that I am committed to. Thank you again for the opportunity to share it.