

## “Putting science, technology and Innovation at the service of the poor and for safeguarding our planet”

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It is an honour for me to be part of the 50th anniversary of the Rencontres de Moriond. I feel especially privileged to talk about the 2030 Agenda, adopted at the highest levels last September. I believe in this agenda and I also believe I am talking to a group of people who can contribute to its realisation.

To give context to the agenda let me quickly summarize what it means to me,

- It is an agenda for ending poverty irreversibly and safeguarding our planet for future generations.
- It addresses the deprivation, aspirations and concerns of humanity through 17 goals and 169 targets. Economic aspirations, social aspirations, environmental concerns, as well as concerns for the creation of just and peaceful societies are at the heart of the agenda.
- The agenda is not a listing of discrete and distinct goals and targets but a network of intertwined relationships. Progress on one is mutually dependent on progress on others. It is about the integration of the economic, social and environmental pillars.
- It is a universal agenda to be realised by all countries big and small; rich and poor.
- It is an agenda created with the involvement of thousands – governments, academia, the UN System, business and civil society at large.
- It is an agenda which will be realised only with the active engagement and application of science, technology and innovation (S.T.I.).

When I use the expression 2030 Agenda, I use it as shorthand to cover the four big conference outcomes in 2015 – Sendai on disaster risk reduction, Addis conference on financing development, the New York Summit on Sustainable Development Goals and the Paris conference on climate change.

In the context of climate change, I would just like to highlight four transformations the world needs most urgently:

- Transformation in food systems and agriculture
- Transformation in energy systems
- Sustainable production and consumption
- Sustainable urban development

While all four are part of the SDG framework I am extracting them and highlighting them only to demonstrate that the climate change agenda and Agenda 2030 are two sides of the same coin.

Let me revert to the central theme of this roundtable. How can basic research contribute to the realisation of the Sustainable Development Goals? Let me provide my own perceptions of the shifts that are needed for research and S.T.I. in the service of people and our planet.

The first conceptual shift that is required is a better understanding of 'integration' which is the interface between the economy, society and the environment. Science and better multidisciplinary approaches need to spell out the relationships between goals and targets. Decision makers need better data and models of target interaction. At the national level, say in the finance or planning ministry, decision makers need to know where the scarce dollar needs to be spent. What will be the greatest impacts? Many of these impacts cannot be dollarized and need a special effort in calculating SDG relevant benefits and costs.

The second shift is the need to orient research towards solutions. These depend as much on S.T.I. as they do on funding models, institutions and mind-sets. Improved systems of drip irrigation for example need to be adopted by millions of farmers working with small holdings. The package they need includes the technology, the finance and the post-sale and extension service. In many areas of applied research, approaches which, from the outset, bring in the science and economics / society interfaces, will be more likely to succeed. Can this practical shift towards solutions, context specific, for wider dissemination and adoption be encouraged?

The third shift, urgently needed, is to track changes, monitor progress and understand new challenges. Indicators that have been developed for measuring SDG progress include economic, social and behavioural data. The use of Geographic Information Systems and related technology, the use of 'big data' and the 'data revolution' is often mentioned but we need research to bridge this and make it relevant to national policy makers. Parallel to tracking progress through regular monitoring and measurement, it will also be important to ensure that our efforts aimed at achieving the SDGs are accompanied with periodic evaluation, including national policy evaluation. Good evaluation informs policymaking, facilitates adaptive management, ensures accountability and enhances governmental and organizational learning. How can basic research contribute to better measurement and evaluation?

The fourth shift is an attitudinal one, in the science community itself. This will firstly involve breaking away from the silos in which research locks itself, and proactively seeking the inter-connections which are so urgently needed. This is particularly important given the 'wicked' nature of so many of the world's problems, where single or unique solutions do not translate into the right answers. Increasingly it will require systems thinking approaches and it will also involve an effort for a louder voice of science in the political decision making space.

The qualified, temperate voices of science are often lost in today's headline reading world. No one has time to read footnotes.

Finally let me talk of three urgent transformations that the world needs and if there was a priority list for research, these would be highest on my list. These are crucial for our planet and for our people.

A transformation in agriculture is calling for urgent attention. This will be vital for food security, water security, energy security and climate change. The multiple food systems we have in our world are complex and multifaceted. But they have to change because of the embrace of death between climate change and our current farm systems. Urgent research is needed to bring drought resistant seed varieties to farmers; increase the nutrition values of the output; develop precision farming, water management and better harvesting, storage and transport techniques. This is not about research alone but a deeper partnership between the private and public sectors and academia. The scale and complexity of the challenge is immense but an 'evergreen revolution' is required for meeting the hunger and climate challenges of this century.

An energy transition will be the basis of ending poverty and curtailing GHG emissions. Access, efficiency and renewables have attracted specific targets in the SDGs. But deep decarbonisation needs technological, economic and pricing solutions. Most of all it needs political will. Can basic research help to twin these issues with customized solutions which bring the world closer to the limit of a 2°C global average temperature rise? This is the challenge for basic research.

Sustainable cities. Cities need to be economically productive, socially inclusive and environmentally sustainable. Cities, especially coastal cities will be vulnerable to environmental shocks. Cities need smart infrastructure, including assured water and electricity for all, waste management, public spaces, education and health facilities. 70% of the 9 billion humans in 2050 will live in cities. Here is where research is most urgent – in urban planning, land use, multimodal transport – actually in getting the interface between science and society right.

Following the SDG Summit a UN Technology Facilitation Mechanism has been set up by Member States which comprises an annual multistakeholder forum, an online platform, and an inter-agency task team of 30 UN entities, in which more than 70 UN System staff are active, as well as a 10-Member Group of eminent representatives from science, technology and civil society communities. The Technology Facilitation Mechanism aims to address all stages of the technology life cycle. This explicitly includes fundamental research and development. Indeed, scientists with a background in basic research have been among the most engaged individuals who have made the Mechanism a reality. I would strongly encourage an effective partnership between the 'Rencontres de Moriond' and the Technology Facilitation Mechanism (TFM). This will help sharpening the identification of gaps, and help in the development, transfer and dissemination of technology, information and knowledge.

Let me conclude by once again thanking you for inviting me. I am not a scientist but what I have hoped to bring to you is a sense of the sustainable development agenda. Thank you.