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**Progress made in the implementation of and follow-up to WSIS outcomes at the regional
and international levels**

Introductory Statement submitted by

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Thank you for inviting me to take part in this intersessional panel and to comment on the current state of play following WSIS. It's always a pleasure and an honour to participate in meetings of CSTD.

It's almost twenty years since the idea of WSIS was proposed at the ITU's Plenipotentiary Conference in 1998. As we say in Britain, a lot of water has flowed under the bridge since then. Many new technologies have been developed and deployed. Some of them have come and gone: come into use since WSIS and already fallen out of use. We're now, it's widely agreed, beginning a new time of even more advanced technologies, which have the potential to change our lives, economies and institutions more radically than any we've experienced so far.

The issues that were discussed at WSIS were mostly new back then. Now, they're at the core of all discussions about our economies, societies and cultures: central to what we think about sustainable development, the environment, politics, human rights, jobs, even warfare. Whatever we discuss in public policy today, we can no longer ignore the Information Society in doing so.

When we review what has happened since WSIS now, therefore, I think we need to do more than look back at what it recommended all those years ago and how far we've fulfilled its aspirations since then. We also need to look at where we are today and what we've learnt from experience. But above all, I'd say, we need to focus on the future. It's the technologies that are coming into use today that will shape that future, and that we need to shape in the interests of our own and future generations.

The spirit of WSIS was about the potential of information technology to change the nature of development. We need to think about policy today, I suggest, in that spirit of WSIS.

This morning I aim to spend five minutes each on the past, the present and the future, and will end with some suggestions to policymakers, business and this Commission.

Looking back

Looking back, what do we see? Well, in terms of basic numbers, we should look to the publication next week of ITU's latest *Measuring the Information Society* report, on which I've had the pleasure of working with the ITU. For the moment, I must use data from its website.

- The number of mobile phone subscriptions has grown from less than a third of global population in 2005 to exceed global population today – though, of course, in practice, many individuals still don't own a phone.
- The estimated number of Internet users has grown from 15% to 50% of global population.
- There were, effectively, no mobile broadband users in 2005; now there are more than four billion of us.

All this is familiar. These rates of ICT adoption and use have gone up very fast, compared with previous innovations – electricity, for example – though the pace of growth in Internet adoption looks as if it may be slowing. But we should always disaggregate these numbers. ICT adoption and use have remained highly unequal. Those in developed countries are more than four times likelier to have a mobile broadband subscription than those in LDCs; Europeans are more than four times likelier to have Internet at home than those in sub-Saharan Africa.

We've become more aware of differences, too, within countries, between urban and rural areas, and between those with more and less income or education. And we've become much more conscious of the gap in access between women and men, especially in lower-income countries. These

inequalities reflect wider structural inequalities within societies. A crucial question for us is whether access to ICTs reduces or exacerbates these structural differences, while it's recognised that ICTs alone can't fix them.

Alongside these changing numbers, we've seen waves of technological and service innovation. We've already discussed these, but it's worth remembering that much of what we think of as the Information Society today has come about since WSIS. Mobile Internet's a post-WSIS development. Social media were in their infancy at the time of WSIS: Facebook a novelty; Twitter, Instagram and WhatsApp uninvented. We can stream videos today because of an enormous growth in bandwidth. For many of us, high-tech's the new normal.

This is why I think we should reach beyond the aspirations that we thought of in 2005 to emphasise the spirit of WSIS. In that spirit, I suggest, we need to spend more time on two aspects of the information revolution.

First, I'd say, we should look in more detail at the quality, not just the quantity, of access and use: at the issues of content, and capabilities, and creativity that we recognise are part of meaningful access alongside connectivity and affordability; at the ways in which people make use of ICTs, for good or ill; including both positive innovation and criminality.

And second, I'd say that we should look in greater detail at the impact which the Information Society is having on our economies, societies and cultures. And I don't mean here just impacts that we wish for, but also unexpected impacts; and especially impacts on the underlying structure of our economies, societies and cultures.

Looking now

What do we see, next, if we look at changes which the emerging Information Society is making now? Of course, these are very different in different countries. We should therefore relate technology's potential to the real constraints and challenges that different countries face. We are concerned in CSTD with development and so particularly with developing countries.

There are many different impacts of the Information Society. I have time for only three underlying changes which I think have resonance across all countries.

The first is one to which UNCTAD has paid much attention lately, and that's the digital economy.

This is increasingly important, but it's also complex. UNCTAD's latest *Information Economy Report* dissects it, noting the differences between:

- the ICT sector itself;
- the digital economy of digital services and platform businesses;
- a wider digitalised economy that includes e-commerce, financial services and other areas of business that rely on ICTs;
- and the wider economy which is not as substantially affected.

The pervasiveness of these different areas of business varies greatly between different countries. Most LDCs, for example, export commodities, which are much less susceptible to ICT-enabled growth than manufacturing or services.

Not everything is going to go digital, and going digital's no panacea. But countries that don't facilitate the digital economy are likely to be left behind by those that do. It's that risk that makes it vital for all countries to invest in digital infrastructure, skills and the legal and regulatory frameworks

that facilitate new business models. Vital too explore what new business models will work best in different contexts; how to stimulate sustainable innovation and enterprise in the challenging business environments that exist in many countries. There's an important role here for UNCTAD's new Intergovernmental Expert Group on E-Commerce and the Digital Economy.

The second underlying change I'd emphasise concerns equality. Most of those attending WSIS expected the Information Society to improve equality. There's growing concern now, however, that its benefits are far from equally distributed. The *World Development Report* last year noted that, so far, the Information Society seems to have benefited those with more resources more than those with few. The UN's Expert Group on Exponential Technological Change, which met last December, considered that the benefits of new technologies 'may be disproportionately distributed across countries and segments of the population, which could perpetuate and exacerbate inequalities.' Fears that robotics and automation will polarise employment, and the income that it generates, are widespread – and were mentioned yesterday.

One of the core values of the UN's *2030 Agenda for Sustainable Development* is that 'no one should be left behind', whether that refers to countries or to individuals. This is crucial as we consider new technologies. It isn't just a matter of how many people have access to ICTs. It's a matter of how those ICTs are used by them and how they can be used by them, and how they affect them.

There's a real risk that LDCs, for example, will be left behind in the digital economy. But that's not easy to redress. Most LDCs lack resources to invest in infrastructure, to diversify production, to train the next generation in the skills they need. That's why UNCTAD's initiatives to address the digital economy are so important, and why they require support from the entire international community.

The third set of changes that I'd point to concerns the places where decisions about our digital future are now being made. The Internet is no longer the upstart economic sector that it was at WSIS. It's a critical component in the global economy, like energy production, food or mining. It is primarily a commercial marketplace. The world's five or six largest companies by value are global data businesses. Their business models have enormous power because they leverage data from networks with great economies of scope and scale.

The geographic distribution of this power is also changing, as new data businesses emerge in countries outside the OECD, but it's the biggest players that are best placed to thrive.

Looking forward

Let's now look forward. Hopes and fears about the future are proliferating. As Dong Wu mentioned yesterday, CSTD itself has explored the role of foresight in planning for the future.

We can all name many of the innovations that are happening: big data and social media analytics, algorithmic decision-making, advanced robotics, virtual and augmented reality, autonomous vehicles, the Internet of Things, implants and so forth.

We recognise that these will have most effect, in the near future, in developed countries, but that doesn't make them unimportant for developing countries. First, because successful innovations are usually most valuable to countries that adopt them first, this could exacerbate existing gaps between developed and developing parts of the world. And second, these innovations will change global economic patterns – such as trade, finance and labour – in ways that affect all countries, whether they're replete with ICTs or not.

Last year, the United Nations held an important expert group meeting on it, the World Bank and others have started calling 'exponential technologies'. By which they mean technologies that are changing 'faster than our ability to adapt to them.' Our ability, that is, in terms of legal and regulatory frameworks, of social norms, of governance and institutional capacity.

Eric Brynjolfsson has called what's happening today the second wave of the second machine age. In the first wave of the machine age, he says, we taught machines what we know. Our new tools, our computers, our software, our IT, complemented our existing skills.

The second wave which is happening now, he suggests, is driven by machines that are learning on their own. Machine learning gives them greater capabilities than humans: they can substitute for us, rather than just complementing us.

Information technology facilitates this second wave, but it is not alone. It's one of several fast-changing technologies which are likely to have major impacts in the future. These include developments in energy, in biotechnology and gene-editing, nano-technology and neuro-technology. More will emerge over the next few years. These are interlinked and moving fast.

Let me illustrate the pervasiveness of this from two conversations I had recently in Oxford. In one, a student sparkled with enthusiasm for her work in 3D printing – but not ordinary 3D printing, this was nano-3D printing, printing objects that are too small to be seen by human eyes. In another, a paleo-archaeologist told me how her work tracing the migration patterns of early humans 40,000 years ago has been transformed by innovations in genetics which enable DNA analysis.

The impacts which these new technologies will have are both pervasive and hard to predict. There is great optimism that these advances in technology will enable improvements in development and in the quality of life. But there are also growing fears about what those technologies might mean. There were many issues around this on which the UN Expert Group could not reach a consensus.

In practice, these impacts will vary greatly between different countries because of their different economic, social and cultural contexts. I would suggest that too much thinking about this has been seen optimism and pessimism, and too little's been concerned with diverse contexts. I'd call instead for realism, based on four thoughts:

- these changes are going to happen;
- there will be aspects of them that we're going to like and aspects that we won't;
- the best way for us to shape the future is to do as much as we can to predict, anticipate, prepare;
- the right policies won't be the same for all countries and communities: context will matter, as it should.

What should be done?

I'll return to what I called earlier the spirit of WSIS. One of the Summit's core objectives was to shape the Information Society in the interest of human development. The pace of change in new technology makes that more difficult because it outstrips the pace with which our human institutions take and implement decisions.

If we're not careful, therefore, it will be technology that shapes the Information Society, rather than people and their preferences. There are some who would welcome that, but most don't, and it wasn't WSIS' goal.

How might we improve our capacity to shape the future? In a recent article, I suggested that we should ask three simple questions when we think about the policies we need to deal with rapidly growing, pervasive, (if you like, exponential) technologies.

- What is it about our current world that we most value, and how do we ensure that it's sustained through changes in technology?
- What is it about our current world that we most want to change, and how can new technologies help us to achieve this?
- What is it about new technology that we most fear, and how can we make sure that we avoid it?

Foresight analysis, with an eye to those three questions, is important if we're to shape the Information Society rather than it shaping us.

Business

The Internet, and other aspects of the coming digital revolution that I've mentioned, are driven nowadays by commercial interests. They are going to have much greater impacts on our economies, societies and cultures than we imagined twenty years ago, or than those companies envisaged when they were start-ups. Impacts, to take some issues, on the environment, on politics and the relationships between individuals and the state, on privacy and interpersonal relations, on health and human happiness, employment prospects, leisure, transport and urbanisation, on crime and conflict, as well as freedoms of opinion and behaviour.

That pervasive impact places a burden of responsibility on businesses as well as governments. When something is as important and unprecedented as these technologies, we need to do more than simply hope that things will turn out for the best. Responsible businesses should pay attention not just to commercial interests but also to their impact their products and services will have on economy and society, culture and the environment. Ethical and regulatory issues surrounding this will become increasingly important, as they are in other sectors – both established sectors such as energy and pharmaceuticals, and new sectors such as biotechnology.

CSTD

And lastly, CSTD. There are, of course, many discussion fora within the UN system which are concerned with different aspects of technology. UNCTAD, UNESCO and the ITU obviously have crucial roles. The Expert Group I mentioned earlier was part of DESA's work on science and technology in the Sustainable Development Agenda.

But CSTD has particular capabilities amongst these institutions – a capability to bring together expertise from government, business and academia; a capability to bridge the paradigm gap that's often evident between technologists and those whose primary concern's development. The most productive approaches to the future are likely be found where those different paradigms intersect, which CSTD is able to facilitate.

Conclusion

I've tried in the past twenty minutes or so to say something about the past, the present and the future in the WSIS context, but stressed the future because that must be the priority today. I hope that what I've said has been of interest and thank you for your attention.