

**CSTD 2015–2016 Inter-Sessional Panel
on "Smart Cities and Infrastructure" and "Foresight for Digital Development"**

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**Statement by
Ms. Shirley Malcom**

**Head of the Directorate of Education and Human Resources, American Association for
the Advancement of Science (AAAS), Chair of the Gender Advisory Board**

Thank you for the opportunity to present at the intersessional of the UN Commission on Science and Technology for Development. I am Shirley Malcom, member of the Gender Advisory Board and Director of Education and Human Resources Programs of the American Association for the Advancement of Science (AAAS). I am here to highlight the Gender Dimensions of the themes of the Commission's upcoming session and the STI dimensions of the gender related themes of the SDGs, to raise issues about the themes and hopefully to inform the discussions and deliberations that will be taking place.

While I will highlight a few specific aspects related to each theme, I want to begin by noting that four issues are common to all:

- Identifying where applications of STI can improve the lives of women and men, girls and boys
- Identifying and considering the gender dimensions of research and development, how agendas and priorities are set and how costs and benefits are distributed across populations, including to women and men, girls and boys;
- Exploring the opportunities and expanding the roles for women to contribute to the human capital needed to advance STI for development, adding to the numbers and perspectives of men; and
- Developing metrics and assessment tools that are sufficiently disaggregated to determine the impacts of STI for development on women and men, girls and boys, and appropriately matrixed to track progress and interactions across goals.

Smart cities and infrastructure

In considering "smart cities" we recognize the increasing global trend toward urbanization and seek to identify circumstances and needs that can be met by the use of STI. Whether this is directed toward monitoring traffic flow, energy use, water quality or safety, more tools are being developed every day to allow us to manage our cities for the benefit of its people. Other work of this Commission several years ago looking at urban and peri-urban environments has already pointed to the different roles and responsibilities of women within the family and community that bear on deciding where incorporating smart design can improve women's lives. It is important, for example, to understand that women often use public transport systems differently and how and when monitoring can inform service improvement.

Another issue that was raised in the previous discussion was around women's concerns for safety and incorporation of STI into policing. In both these examples we begin with the question of how STI can address the needs of the people.

Foresight for Digital Development

I begin my comments with attention to the larger role that foresight might play in digital development, pointing us to possible tools, strategies and ideas to improve the quality and to advance the pace of development; or as stated within the issues paper "the process of forecasting the evolution of technologies and their impact on society with a view towards developing policy within government and/or strategy within firms." There is a clear view that this does not tell us what *will* happen but points to what *could* happen... Inevitably there is a need to look at what is possible, what might be probable, and also what is desirable. The discussion of issues such as privacy considerations would come into play here. I cite two examples from the issues paper to point out the need to look at the gender dimensions of forecasting for digital development: big data and health monitoring and MOOCs and digital learning.

The issues paper points to the use of data from health centers and their role in public health, such as in monitoring and mapping outbreaks of diseases. There is evidence emerging that earlier discussions of illness often occur on social media. Those data are available in real time. Getting signals of health issues and accessing health related information could allow public health agencies to get a running start on response. Obviously there is the need for considerations of privacy as well as ones of access. And access is a gendered issue. Women have different roles in health monitoring and care within families and communities. But with more limited access to devices, the ability of responders to use early warning and to send health messaging based on mining data from social media would be diminished; these emerging tools would not be as useful as they might otherwise be to inform us of disease progress and trajectories.

In the second example, the issues paper notes the availability of MOOCs (massive open online courses) and the opportunities they present to provide high quality education to resource-poor countries at very low cost. The potential advantages are remarkable. Many of the challenges are called out as well such as needing more material in local languages, safeguarding data privacy and security. The paper also notes the need for more systematic study of the gender implications. It is hoped that such study might include concerns such as availability of topics of interest and importance to women, access to equipment, expectations for and attitudes concerning women's education, especially in STI areas, and women's and girls' "poverty of time." In a recent review of MOOCs by Hansen and Reich in a December report in *SCIENCE*, they note that at present there is greater use of MOOCs by those who are more advantaged, leading to a widening of the education divide. They reflect that, "Freely available learning technologies can offer broad social benefits, but educators and policy-makers should not assume that the underserved or disadvantaged will be the chief beneficiaries. Closing gaps with digital learning resources requires targeting innovation toward the students most in need of additional support and opportunity." While this work looking at advantaged and marginalized groups' access to and use of MOOCs is largely US based, there are lessons to be learned. In the examples from Harvard and MIT courses on which these research findings are based, women participated at higher levels in some

courses, such as those focused on health related issues, or poverty or justice. They participated at much lower levels in STI related course such as computer science. There are pedagogical and curricular opportunities in these observations, however, such as strategies for linking STI content within courses while providing real world context.

This work should serve as a cautionary tale for governments seeking to incorporate MOOCs into a development strategy. Bridging learning divides or building new ones—that is the question, whether looking between countries or within them. The special barriers to women may not only be only economic, social, digital and educational, but also attitudinal. As policymakers experiment with MOOCs and other technology enhancements to support learning, it is important to determine the extent to which women and girls are benefiting compared with their presence in the population and the extent to which such technology-based educational enhancements are focused in area of women’s needs or where they have special roles and responsibilities.

STI In Promoting the Gender Related SDGs

Early in 2015 ICSU and ISSC collaborated to produce the report, *Review of Targets for the Sustainable Development Goals: The Science Perspective*. The report aimed to identify for the 17 SDGs and 169 targets how well they were supported by scientific evidence, “whether they address the economic, social and environmental dimensions of sustainable development in an integrated way, and whether they are sufficiently specific to be effectively implemented and monitored.” A very useful effort in the report was to show the interconnections across the different goals. While Goal 5 is specifically directed at gender equality (Achieve Gender Equality and Empower All Women and Girls), it was made clear in the analysis that even when modest expectations are applied, there are gender dimensions across the goals and a need to target STI strategies in keeping with this reality. For example, women are more likely to live in poverty (Goal 1) and have less access to the type of education and skills development (especially in STI) that can lead to wage work. A focus on basic education is necessary but not sufficient to promote women’s full participation in and benefits from knowledge based and STI enabled development (Goal 4). Women assume different roles and responsibilities in food security and nutrition (Goal 2), in health monitoring and care within their families and communities (Goal 3), in accessing water and managing sanitation for their families (Goal 6). Women collect biomass for fuel, and then their health and the health of their children are most affected by the use of this biomass in cooking (Goal 7). This kind of direct and differential impact is seen across the goals. There exists a need to embed gender analyses as we seek to apply STI in addressing the targets set forth.

I am pleased to report that the Gender Advisory Board, through its active participation in Gender InSITE, is developing linkages across many of the agencies and organizations involved in STI to implement the SDGs. Recent additions to the Steering Group include ICSU, ISSC and the Gender Summit. They join TWAS, OWSD, IAP, UNESCO and others in analysis and strategy development as well as the discussions of appropriate metrics. We have met with leadership from Future Earth, and will continue to engage these discussions at global and regional levels.

Returning to the four principles set out at the beginning of this presentation, examples abound of where smart city initiatives, and digital development can be applied to address the development needs of women and men, girls and boys. There are also clear cases where SDGs will not be reached unless gender dimensions are considered, such as in women's role in food security, health monitoring and care or biodiversity (Goal 15), where local knowledge systems are gendered. Women can bring talent and perspectives to address the human capital needed to apply STI to development challenges. But unless we monitor in an appropriately disaggregated way, unless we assess we cannot target our strategies appropriately. The opportunities are before us to bring the tools and resources of STI to support implementation of the SDGs.