The first anniversary of the World Summit on Sustainable Development (Johannesburg Summit 2002) provides an occasion to assess our prospects for promoting the role of science and technology (S&T) in development. The announcement of a United Nations (UN) Decade of Education for Sustainable Development, to be launched in January 2005, gives us a vision and a timeline for deploying a key tool for achieving sustainability. The ensuing decade should give added impetus to improving the quality of S&T education at all levels and for all people.

In various ways, Science has made the case for cooperation between “the West and the Rest” to address the needs of the developing world. SciDev.net, for example, in which Science is a collaborator, has helped to make critical science information on agriculture, health, education, and environmental management available to scientists and decision-makers in developing countries. Other notable efforts are those of the Third World Academy of Sciences and initiatives by national academies to develop consortia of international institutions to support S&T for development. As we applaud these efforts, we should also recognize their limits and imagine whether other kinds of social-scientific connections are needed to “distribute economic and social opportunity more evenly in the world” (Science, 7 December 2001, p. 2053).

Research documents the fact that women and children disproportionately bear the effects of poverty in developing (and developed) countries. But that immediately highlights a series of important questions: How will the infrastructure envisioned by current efforts to advance science, technology, and sustainable development affect the daily lives and opportunities of women and children? Or will something new, different, or special be required? What structures are needed to ensure that forecasts affecting agricultural practices reach the women who plant, weed, and harvest? What kind of education can help women appreciate, seek out, and use the information that science can offer, or help them begin to create the science and develop the technologies themselves? How prevalent are women in the science organizations that seek to assist them, and what weight will be given to their needs? This is of special concern: Women are more likely to be missing from science and engineering classrooms, sparsely represented at policy tables, and few in number in science academies around the world.

An additional strategy must be used to reach women where they live and to enhance their efforts to bring opportunities to their families and communities. Developing partnerships must link science with practice, connecting individuals, women’s grassroots organizations, women in science and engineering organizations, science and engineering groups, and UN-affiliated organizations. An international panel, using regional assessment and screening processes and working with assistance organizations and community groups of scientists, engineers, and technicians, can identify challenges arising from real problems of local women that S&T can help address. In some cases, existing technologies could be used, modified to meet specific requirements regarding cost, cultural acceptability, durability, and access. In others, new technologies will have to be created.

This broadly representative panel could select among “problems in search of technologies” and offer the most promising as challenges to engineering students, who would develop designs and prototypes to meet the challenges posed in the competition. Students and faculty advisors would need to understand the requirements of the prospective users and could form partnerships with students in other disciplines, as well as with programs elsewhere in the world.

The judges of these efforts must ultimately be the clients: the women whose needs have gone unmet when market forces have worked imperfectly, when communications did not include them, when their voices and claims on resources were not considered, or when they had few advocates at policy tables.

In a perfect world, women’s problems will be addressed in ways they find acceptable. Partnerships with local industry will be forged to facilitate production. Collateral benefits will include interdisciplinary and international conversations and cooperation. Students will use these opportunities to learn principles of sustainable design. And perhaps a view of science and engineering as “helping professions” will stimulate greater interest in these careers.

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Editor's Summary

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