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Gender mainstreaming in science and technology -- a global report

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The thematic meeting on mainstreaming women in science at the Unesco/ICSU World Conference on Science earlier this year received the reports from six regional meetings[1]. An NGO Declaration on Women and Science was also available. This article is based on those reports as well as the panel presentations and interventions from the floor at the thematic meeting[2].

The nature of the problem

Although differing in the details, there was similar evidence from all regions of the world about the nature of the problem and about possible solutions. There was agreement on the basic facts:-

- In many countries, especially in Africa, there are fewer girls than boys that have access to primary education, and of those children that do have access, fewer girls than boys learn about science.
- In many countries fewer girls than boys study scientific and technological subjects in either secondary or tertiary education.
- In many countries fewer women than men pursue scientific or technological careers, and far fewer reach the top professional, managerial or policy making positions.
- Technological change, especially that designed to improve the quality of life in rural areas in developing countries, has been more directed to the tasks that men perform than to the tasks women perform, both in and outside the household. Development programmes frequently have not taken this gender dimension into account.
- Men and women are repositories of different components of indigenous knowledge.

Not all countries have the same situation. A few, especially those in Eastern Europe and some in South East Asia, have rough parity between those men and women who obtain professional qualifications in science and engineering and who enter scientific and technical careers. But even in these countries the most senior jobs still go disproportionately to men.

There is some statistical evidence to suggest that the situation is improving, especially with regard to the proportion of female students who study science and engineering in universities. But there was widespread agreement that country comparisons over time are hindered by the paucity of gender disaggregated statistical data which is comparable, timely, and reliable.

Reasons for the problem

There was more divergence of opinion on the reasons for these facts. Some of the divergence was due to the different situations which exist in different countries and regions of the world. They included cultural differences which in some countries serve to discourage girls from studying science in schools or universities, and from pursuing scientific careers. Other reasons advanced were discrimination, career interruptions due to childbirth and family responsibilities, gender stereotyping of science and technology, and the relative lack of women in policy and decision-making positions. It was also recognized that the full gender dimension of science and its impact on society was imperfectly understood and warranted further study and research.

Does it matter?

Does it matter if the above differences between men and women exist? The meeting was in no doubt that it did matter and for the following reasons:

- **Human rights and social justice**. All individuals should have equality of opportunity to a science education and to a scientific career, and for women and men to benefit equally from advances in science and technology
- **Scientific and economic reasons.** If women are not given equal opportunity to become scientists and engineers then a country denies itself its full complement of scientifically creative minds. This can be a serious handicap both to the development of science and to the generation of wealth in an increasingly competitive world.
- **Social and economic reasons.** Equal access of both women and men to scientific and technical resources and education will benefit their participation in productive and reproductive tasks and contribute to the sharing of roles and responsibilities both within and outside the home.
- **Enriching the pool of insights and motivations.** Some women, it was suggested, bring different insights, values, motivations and methods of work to their scientific jobs than do most men and other women. The inclusion of more women in science will enrich the total pool of talents, insights and motivations, and increase the probability that science will serve the needs of all humanity.

In a few countries in the world there appear to be few major obstacles to women pursuing rewarding careers in science and technology. In most of the world, however, there are major problems. Overcoming these obstacles and problems was seen as one of the most important challenges facing science in the twenty-first century. It is at the heart of the "new commitment " called for by the conference organizers.

What can be done to overcome the problems?

Suggestions fell into two main categories: actions to highlight and improve the opportunities for women to contribute further to science, and actions to ensure that science impacted positively on the lives of women and men equitably.

Within the first category were many suggestions relating to education in science for girls and women at all levels of education, as well as ideas on how the obstacles facing women who pursue scientific careers might be overcome. Within the second category were suggestions aimed at making more explicit the gender dimension of sustainable development, and ensuring that this gender dimension is taken into account in determining research priorities and designing development programmes. The gender dimension pervades most aspects of the way in which science impacts on society, including agriculture, health, environment, industry, employment, local knowledge systems and many ethical issues.

Although there is a need for more research on the topic of gender and science, there is enough already known for action to be taken now. One of the main messages from the thematic meeting was that the status quo is not an option. Change is urgently required.

Action needs to be taken by many organizations and parts of society. These will include national governments, international organizations, the scientific community, NGOs, employers and individuals.

Action must be targeted at the particular needs of each country. To define these needs and to develop appropriate action plans for solving local problems each government should establish its own mechanisms. Donor agencies can then provide assistance to help implement the national plans and strategies.

The regional preparatory meetings organized by Unesco have clearly demonstrated the value of regional approaches, especially for developing new science curricula which are not gender stereotyped. But regional and global action can go well beyond these proposals. There is a need for a major campaign, which Unesco and UNIFEM should organize, to alert policy

makers and educators and parents in all countries to the critical importance of gender and science. NGOs such as TWOWS and OFAN can also play an important role in helping with this campaign and in promoting networking. The internet is already proving a useful tool in this regard and its use should be expanded.

In brief, the thematic meeting concluded that in nearly all aspects of science and its impact on society there is a gender dimension. This dimension needs to be recognized, made explicit, and action taken to ensure that men and women can contribute equally to the task of maximizing the benefits to society of science and minimizing its harmful effects.

It was noted by many that the issue of gender and science is not just an issue for women alone. Some participants and panelists, however, felt that the issue is a women's issue and could best be solved by forming women's groups to lobby and take political action. Some felt that the choice of a male rapporteur was inappropriate. Others felt that gender equity in science would be achieved more quickly if more men understood the issues. They would have preferred to see a more equitable balance of women and men on the panel (only one of seven speakers was male) and more men participating in the thematic meeting (only 20 of over 120 participants were men).

Some participants wanted to include the issues of women in science in the same category as the issues of minorities and disadvantaged groups in science. There was a strong consensus at the thematic meeting that this would be fundamentally wrong. Women are not a minority, nor should they be treated as a disadvantaged group. Their full participation in science and technology is a necessary condition for achieving sustainable human development.

Postscript

Following the thematic meeting a set of proposals were sent by the rapporteur and chairperson to the Conference Drafting Committee suggesting changes to the draft Declaration and draft Science Agenda. Most of these changes were incorporated in the final texts[3].

Geoffrey Oldham, Rapporteur
Sjamsiah Achmad, Chairperson

References

1. Rapporteur's Report on the Meeting held Monday 28 June 1999.
2. The organisers of these Unesco regional meetings were: Latin America, Marta Borda and Gloria Bonder; Europe, Zofija Klemen Krek; Asia-Pacific, M. Alarcon; Africa, Renee Clair; Mediterranean Area, Maria Paola Chiesa; Arab Countries, N Saleh.
3. Sjamsiah Achmad chaired the meeting and Tullia Carettoni was the president of the session. Renee Clair was the co-ordinator. The Panelists were: Grace Alele-Williams, Gloria Bonder, Farkhonda Hassan, Aleksandra Kornhauser, Shirley Malcom, and Geoffrey Oldham.
   This includes a new paragraph (No. 90) which drew heavily on the discussions at the thematic meeting.
   This paragraph states:

   "Taking into account the outcome of the six regional forums on women and science sponsored by Unesco, the Conference stresses that special efforts should be made by governments, educational institutions, scientific communities, non-governmental organizations and civil society, with support from bilateral and international agencies, to ensure the full participation of women and girls in all aspects of science and technology, and to this effect to:
   - *promote within the education system the access of girls and women to scientific education at all levels*
   - *improve conditions for recruitment, retention and advancement in all fields of research;*
   - *launch, in collaboration with Unesco and UNIFEM, national, regional*

and global campaigns to raise awareness of the contribution of women to science and technology, in order to overcome existing gender stereotypes among scientists, policy-makers and the community at large;

- *undertake research, supported by collection and analysis of gender-disaggregated data, documenting constraints and progress in expanding the role of women in science and technology;*
- *monitor the implementation and document best practices and lessons learned through impact assessment and evaluations;*
- *ensure an appropriate representation of women in national, regional and international policy and decision-making bodies and forums;*
- *establish an international network of women scientists;*
- *continue to document the contributions of women in science and technology.*
- *To sustain these initiatives governments should create appropriate mechanisms, where these do not yet exist, to propose and monitor introduction of the necessary policy changes in support of the attainment of these goals."*
