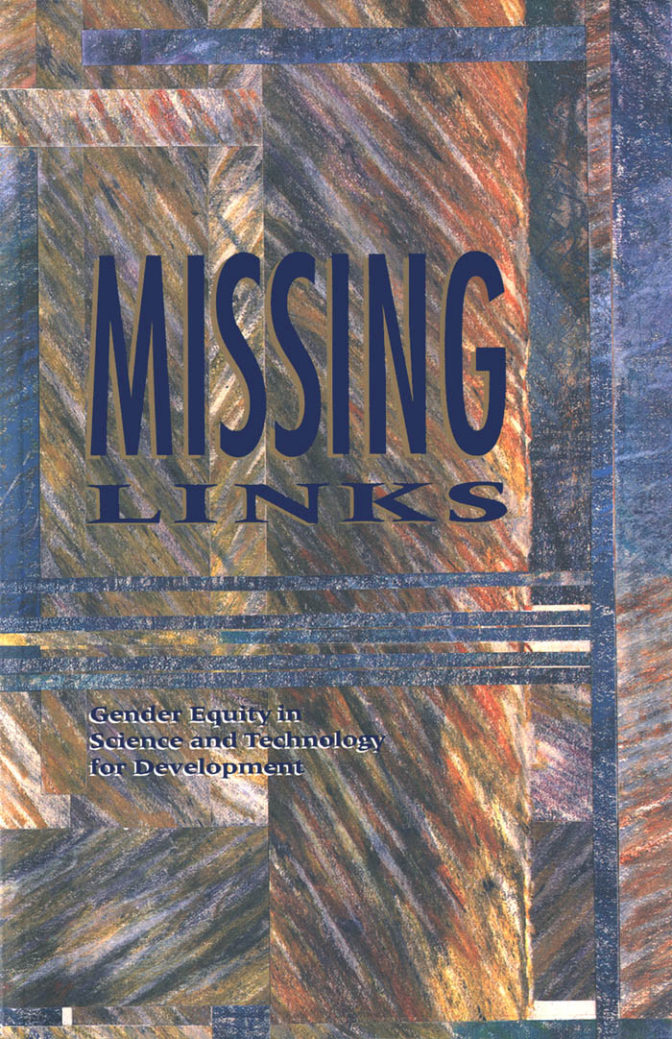




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*This book is dedicated to Stanislas Ruzenza,
a member of the Gender Working Group.
Professor Ruzenza died in June 1995,
a victim of civil strife in Burundi.*

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Chapter 1

Taking action

Conclusions and recommendations of the Gender Working Group¹

Introduction

The overlap of science and technology, sustainable human development, and gender is an area of human activity that has never been deeply explored, until now. But what are the essential elements of each of these three domains? Knowing this will enable you, the reader, to identify the common perspectives shared by all members of the Gender Working Group and understand the basis for the analysis, diagnosis, and prescriptions presented in this book.

Science and technology

A distinction was made by the Gender Working Group between the development, diffusion, and use of modern science-based technologies, and the local knowledge and traditional technologies that have evolved within communities over many years of trial and error. Both knowledge systems are important for sustainable human development, but science-based technologies have formed the basis for industrialization of the more developed countries over the past

¹ This chapter is a modified version of the final report of the Gender Working Group — as presented to the United Nations Commission on Science and Technology for Development — entitled *Science and Technology for Sustainable Human Development: The Gender Dimension* (Gender Working Group, February 1995).

century. Those developing countries that have invested in their own modern scientific and technical capabilities have been able to join the industrialization process. Several East Asian countries have experienced remarkable economic growth rates over the past 20 years with this strategy.

Developing countries that have not been able to make comparable investments in their own scientific and technical capabilities have not shared these successes, and current trends in "globalization" render these countries increasingly marginalized. There now exists a wide spectrum of developing countries, ranging from those with little capability in science and technology, which are all but excluded from the global economy, to those with advanced capabilities and whose economic growth rates are outstripping many of the older developed countries.

It is not only in economic growth and wealth creation that science-based technologies have made substantial contributions; there have also been major transformations in agricultural practices made possible by new technologies. Perhaps most dramatic has been the contribution of modern science to the eradication and amelioration of diseases and the improvement of health care worldwide.

The impact of science and technology on society has not been uniformly beneficial. Not all members of society have shared in the benefits; and the development of weapons of mass destruction and growing pollution and environmental degradation demonstrate the flip side of the coin, as do the social problems of alienation, unemployment, and increased crime, which often seem to follow in the wake of technical change.

Technological change, for good or bad, does not automatically follow from the results of scientific research. It is a consequence of countless decisions made by scientists, engineers, corporations, and governments, which collectively govern the impact of science and technology on all of our lives. It must be an objective of science and technology policy to maximize the benefits to be derived from science and technology and to minimize its harmful effects, for all members of society. This objective underlies the Gender Working Group's approach to examining the gender dimension of science and technology.

Sustainable human development

Sustainable human development emphasizes people rather than economic growth, *per se*. It seeks to improve the quality of life of all people today without harming the prospects of future generations. It is a concept that has been elaborated at length by the United Nations

Development Programme (UNDP) in its annual *Human Development Report* and is the type of development to which the Gender Working Group subscribes. As described in a speech by James Gustave Speth, the Administrator of UNDP, to the April 1994 UN Global Conference on Sustainable Development and Small Island Developing States:

Sustainable human development brings together the vision of sustainable development at the Earth Summit with the vision of human development we expect from Cairo, Copenhagen, and Beijing.... Sustainable human development is a powerful concept of a new type of development. It is development that not only generates economic growth but distributes its benefits equitably; that regenerates the environment rather than destroys it; that empowers people, enlarges their choices and opportunities, and provides for their participation in decisions which affect them, rather than marginalising them.... It is development that is pro-poor, pro-nature, pro-women, and pro-jobs. It stresses growth, but growth with equity.

Gender

Gender refers to the distinct roles that men and women are assigned in any society. As a result, women and men assume distinct socially and culturally defined responsibilities and tasks both within the household and in the wider community. The knowledge and experience gained from undertaking these tasks, as well as their requirements, lead women and men to have different needs and aspirations. This concept of gender differentiation underpins the conviction that "science and technology for development" must systematically and purposefully recognize the gender-specific nature of development and respond to the concerns, needs, and aspirations of both women and men appropriately and equitably.

The Working Group accepted the conclusions of previous studies that had demonstrated that development itself is gender specific. As well, all studies point to the fact that women are among the poorest of the poor and are notably disadvantaged. As described in the 1993 *Human Development Report* (UNDP 1993, pp. 16–17):

In industrialized countries, gender discrimination...is mainly in employment and wages, with women often getting less than two-thirds of the employment opportunities and about half the earnings of men. In developing countries the great disparities, besides those in

the job market are in health care, nutritional support and education. For instance, women make up two-thirds of the illiterate population. And South and East Asia, defying the normal biological result that women live longer than men, have more men than women. The reasons: high maternal mortality and infanticide and nutritional neglect of the girl-child.

Mandate: the overlap

Within the area defined by the overlap of these three domains, the Gender Working Group was required to

- ♦ Make science and technology policy recommendations to national governments;
- ♦ Review the performance of the United Nations system and suggest improvements; and
- ♦ Provide advice to "other relevant organizations."

In fulfilling its mandate, the Working Group was hindered by the paucity of available data.² What data that do exist, however, strongly suggest that, within the area of concern, women are more disadvantaged than men.

Particular attention was paid to the gender dimension of science and technology for basic needs in developing countries. It was hoped that this approach would complement the recommendations of the Basic Needs Working Group of the United Nations Commission on Science and Technology for Development (UNCSTD). It became apparent, however, that the fundamental issues were germane to all countries. They differed between countries often only in context, scale, and scope. Thus, although the primary focus of this report is on transformative actions for developing countries, it ends with a challenge to all governments to sign a "Declaration of Intent" regarding a set of goals that should underlie every country's approach to gender and science and technology for development.

² More attention must be paid in the future to the collection of data both on "participation rates of women" in science and related decision-making bodies and on the "differential impact of technical change" on the lives of men and women. Interestingly, there is substantially more data available on the impact of science and technology on the lives of poor women than on the lives of poor men.

The Diagnosis

At the close of the 20th century, women in the rural areas of developing countries are still experiencing serious difficulty in meeting their own basic needs and the basic needs of their households. Scientific and technological interventions have improved many aspects of women's lives, allowing for important declines in both maternal and infant mortality. However, over the last three decades, women in the developing countries have also become disproportionately poor in relation to men in their own communities.

Several recent United Nations reports, produced at the highest levels of expertise, have documented women's differential poverty as a significant phenomenon requiring policy attention and intervention. This well-defined difference between men and women worldwide cannot be understood without explicit reference to the gender-specific nature of development, including scientific and technological contributions to the development process.

This book focuses primarily on the basic needs of men and women in rural areas in developing countries. This is where most of the poorest people live and where there is strong evidence, collected over the past two decades, that development itself is gender specific. It was recognized that there are also gender, science, and technology issues in the urban areas of developing countries and in the developed countries. Some reference is made to these issues, but they were not so fully explored as those related to basic needs in rural areas.

To assist the Working Group, essays were commissioned from leading experts to diagnose the ways in which science and technology have differentially affected the lives of men and women in various key sectors: environment, health, agriculture, energy, information, education, employment, small and medium-sized enterprises, and indigenous knowledge systems. These essays are presented in the pages of this book, and, from them, the Working Group drew two key observations.

I. Gender inequity in education and careers in science and technology

In most developing countries, there are serious obstacles to girls and women receiving science and technology education and in pursuing scientific and technical careers. Similar obstacles also exist for women in developed countries, particularly with regard to advanced science and technology training and education. These obstacles,

which extend beyond those faced by boys and men, prevent women from fully contributing to scientific and technological advances, including ones that could better meet women's basic needs and support their hopes and aspirations for the future.

More girls remain marginalized from the mainstream of education than boys. Girls do not enjoy equal access to the formal education system. Outside the education system, this disparity between women and men in terms of literacy and access to science and technology training is pronounced. Among girls who do gain entry to school, fewer study science and fewer advance to high levels in science and technology, where women are clearly under-represented. Girls and women are disadvantaged compared with boys and men both in acquiring a scientific and technical education and in entering and staying in scientific and technical careers. This conclusion is not new.

A recent series of national government task forces, regional workshops on gender in science and technology, and international reviews have analyzed the evidence and reached similar conclusions (for example, Ellis 1990; APPROTECH Asia 1992; AAAS 1993; Logue and Talapessy 1993; NABST 1993; Baringa 1994; Office of Science and Technology 1994). Many of the observations made about education and careers apply to all countries, although some aspects are culture and country specific. All agree that, in most developing countries,

- ♦ Cultural attitudes and gender stereotyping are obstacles to education and careers for girls and women;
- ♦ More boys than girls receive basic education;
- ♦ Among those who receive education, more boys than girls study science and technology;
- ♦ There are more men than women in scientific and technical careers; and
- ♦ There are very few women in science and technology policy and decision-making positions or on advisory boards.

In many regions of the world, there have been substantial improvements in the gender balance of students studying science and technology subjects in tertiary education. The exceptions are Africa, where the ratio of women to men has remained around 10% over the last two decades, and Eastern Europe where the ratio has declined over the past 10 years (APPROTECH Asia 1992).

There are compelling reasons to create policy and institutional environments that foster and promote gender equity in education, careers, and decision-making in science and technology. Beyond the moral force of fairness, there is also the need for nations

to succeed in the global marketplace. Governments of developed and developing nations alike recognize the need to maximize the creativity and ingenuity of all available human resources. Marginalization of one half of the pool of national talent does not make good sense.

The Gender Working Group explored the reasons why there is such pronounced under-representation of girls in technical education and women in scientific careers. Although there is considerable variation between countries and cultures, and although improvements have occurred in some countries over the past two decades, there appeared to be a set of common characteristics that contribute to the persistent under-representation of women in science.

The Working Group identified a range of factors that serve to mitigate against young girls gaining access to the school system and continuing in the science and technology stream:

- ♦ Social conditioning and gender stereotyping, particularly of young children worldwide;
- ♦ Lack of national government resources to support education for all and, in some cultures, a national bias favouring the education of boys over the education of girls;
- ♦ Parental preference favouring the education of boys over girls because of cultural reasons and economic constraints, resulting in young girls assuming family and household responsibilities early in their lives;
- ♦ The misleading perception of parents, some teachers, and guidance counsellors that science and mathematics are “difficult subjects” and not as suitable for girls as for boys;
- ♦ Curricula and textbooks that do not relate science to everyday experiences of both boys and girls, contain gender-biased language, fail to give due recognition to the contributions to women scientists, and do not promote women role models for girls; and
- ♦ The fact, in some countries, that girls’ schools are not as well equipped with laboratories and equipment as boys’ schools.

Among the many factors that explain why women are under-represented in scientific careers are the following:

- ♦ The challenge of combining family responsibilities with professional careers where household responsibilities are not equitably shared;

- ♦ The pace at which science advances makes it difficult to re-enter a scientific career once it is interrupted to raise a family or for other reasons;
- ♦ The difficulty of breaking into the formal and informal scientific networks that characterize the workings of the scientific community and which have been largely male dominated; and
- ♦ The reluctance of some employers to invest in training women due to the perceived likelihood of their leaving the organization to raise a family.

2. The gender-specific nature of technical change

Technical change aimed at benefiting people in rural areas in developing countries has, in fact, tended to benefit men more than women. This is because science and technology programs have not explicitly recognized the gender-specific nature of development. As a result, technical change offered to women has often been inappropriately formulated and designed. Also, although women in the rural areas of developing countries have the most significant difficulties in meeting their basic needs, in the urban areas, women are also poorer than men and are affected differentially by technical change.

The Rural Impact

The conclusion regarding the impact of technical change in rural areas has a number of components. Although some members of the Working Group considered them to be firm conclusions, others viewed them as hypotheses that require further testing.

- ♦ The potential of science and technology to effect changes in the lives of rural women and meet their basic needs has not been fully realized.
- ♦ Most science and technology programs oriented toward addressing basic needs in rural areas of developing countries have failed to recognize the gender-specific nature of development.
- ♦ Most technical change appears to have been oriented to the tasks that men perform and to men's interests and needs in the development process.
- ♦ Although some technical advances clearly benefit society as a whole, other scientific and technological activities may cause harm for some groups of people or some aspects of the

natural environment. Individuals may lose income, jobs, or status. There may be unwanted environmental impact, such as the spread of pollution or toxic contamination. Women have been differentially and, in many cases, more adversely affected by negative consequences in the sectors investigated by the Working Group.

- ♦ A substantial amount of local traditional knowledge is held by women in the areas of agriculture, environmental resource management, and health. This knowledge is often different from that held by men in the same areas. There is a need to find more effective ways of recognizing the value of this gender-specific knowledge and to integrate it with modern science and technology for more sustainable development.

The Urban Impact

The only aspects of sustainable development that were examined in urban areas were income generation and employment. Within these areas, the main focus was on the employment impact of new technologies, especially information technology. The main conclusion derived from this study was the following:

- ♦ New information technologies have increased employment opportunities for women, especially in service-sector occupations such as banking and finance. But the new technologies have also made many existing jobs in manufacturing redundant or obsolete. These changes have affected men and women differently; but, overall, female labour has been displaced more than male labour. New jobs are more skill intensive than old ones, and women have been at a disadvantage because of limited training opportunities compared with men.

Most studies of women's needs and aspirations identify income generation as a basic need. This has led to increased interest in the role of women as entrepreneurs in small and medium-sized enterprises in the formal sector and in microenterprises in the informal sector. Many efforts are underway to encourage and facilitate women's participation in such enterprises. Most factors that facilitate this participation are not science or technology based. They have more to do with access to credit and other necessary resources. However, technical and managerial training and access to both local and new technologies — including information and technology management and marketing training — are important factors that influence the success of these enterprises.

The impact of technical change on the lives of men and women is different. Sometimes men benefit, other times women benefit. The implication is that a "gender impact analysis" — to identify the nature of the differential impact — should accompany the development of all new technologies. This would enable the introduction of supportive policies, which would lessen the negative impacts on disadvantaged parties.

If the objective of science and technology policy is to maximize the benefits from science and technology for all members of society, then ethical considerations must be part of the policy process. This is especially true for gender-related issues, which often cut across the rural-urban and the developing-developed divides. Specific examples in the health sector include the application of amniocentesis and ultrasound to determine fetal sex for the purpose of selective abortion of the girl child. Another example is the testing of drugs on Third World women without their informed consent. These examples underline the need for both the scientific community and governments to develop ethical guidelines for the conduct of research and the application of research results, with particular emphasis on the gender dimension.

Transformative Actions

Each contributor to this book was asked to identify recommendations for change within her sector of study. As a result, dozens of ideas and recommendations are presented in the following pages. From these recommendations, the Gender Working Group identified seven key issues that it considered to be particularly important and for which transformative actions were both necessary and feasible.

These issues are presented here. Each section states the issue and outlines policy and program options for the consideration of national governments and science and technology bodies and agencies. It has not been possible to estimate the costs of implementing these transformative actions. Some will be easy and cost little to implement; others will take a long time and be costly. It will be necessary for each country to determine its own priorities and implement what it can within its own financial situation.

Issue 1: Gender Equity in Science and Technology Education

Fewer girls than boys are given the opportunity to obtain formal education. Of the girls who do gain access to schools, a smaller proportion than boys obtain training in science and technology. This limits girls' and women's opportunities to meet their basic needs and improve the quality of their lives and those of their families; gain access to employment; create businesses; and acquire skills for citizenship. It also deprives nations of the contribution of many highly talented citizens. The extra barriers and obstacles confronting girls who seek training in science and technology subjects must be removed. *The following transformative actions are recommended:*

Equity in gaining access

- ♦ Provide the same opportunities for access to formal education to girls and boys.

Equality of opportunity within schools

- ♦ Ensure literacy and basic instruction in science and technology for all boys and girls.
- ♦ Ensure that the infrastructure, laboratories, and equipment in schools are equally available for girls and boys.
- ♦ Ensure that teaching materials in science and technology are sensitive to gender concerns in terms of language and illustrations. Where possible, these materials should also illustrate the link between the subject matter and everyday lives of girls and boys.
- ♦ The teaching of science should be broadened to include elements addressing the economic, social, and ethical implications of science and technology.
- ♦ Recognize the importance of mentors and role models by women science teachers and provide rewards to those who devote substantial time to this activity.

Opportunity for distance education and re-entry to schools

- ♦ Provide multiple opportunities for re-entering school, especially for young mothers (in some cultures, early marriage and teenage pregnancy are major reasons for girls leaving school).

- ♦ Introduce education programs with flexible locations and times to enable more students, especially girls, to acquire scientific literacy.
- ♦ Introduce new approaches to science and technology education, such as distance learning, making optimal use of both old (radio) and new (multimedia) technologies.

Issue 2: Removing Obstacles to Women in Scientific and Technological Careers

In many countries, there are few women in scientific and technological careers. In addition to considerations of equity no country can afford to lose up to one half of its pool of creative and innovative human resources. The obstacles to greater participation of women in scientific and technical careers need to be addressed and overcome. *The following transformative actions are recommended:*

Specific measures for all employers

Recent national government task forces and reports have explored options for removing barriers to women in science and technology careers (for example, Ellis 1990; APPROTECH Asia 1992; AAAS 1993; Logue and Talapessy 1993; NABST 1993; Baringa 1994; Office of Science and Technology 1994). These include general policies and policies to support the professional, personal and family needs of all employees and ensure that the employees are able to balance family responsibilities with professional ones and career development. For example:

- ♦ Alternative work arrangements such as flexible hours, flexible locations, and job-sharing opportunities, and commitment to on-site child-care facilities;
- ♦ Maternity and paternity leave policies, and hiring and promotion criteria and processes to allow for family responsibilities so that maternity, paternity, and parental leaves do not jeopardize career progression;
- ♦ Commitment to the hiring, promotion, and career development of women in science and technology, while adhering to the merit principle; and
- ♦ Policies against discrimination and harassment in the workplace.

Policy tools for governments

Tax relief for payment of “child-minders”; pay equity legislation; legislation against discrimination; directives for collection of gender-disaggregated statistics; establishment of focal points for advice on gender in science and technology; and an increase in the number of women appointed to policy-advisory and decision-making bodies.

Initiatives in academia and the school system

Establish networks of female professionals in science and engineering; enhance mentoring, role-model, and career advisory programs; provide flexible tenure criteria to accommodate family roles and responsibilities; and provide refresher courses and re-entry scholarships for women returning to careers in science.

Issue 3: Making Science Responsive to the Needs of Society

Most professionals working in science and technology are insufficiently aware of the needs of their society and the impact of their work on these needs. Equally, citizens are insufficiently aware of the positive potential of science and technology to meet these needs. In particular, the gender-specific nature of the needs and the differential impact of science and technology on the lives of men and women are inadequately recognized by either science and technology professionals or citizens. *The following transformative actions are recommended:*

- ♦ Improve the decision-making mechanisms within the science system to ensure clear articulation of the gender-specific needs and goals of society by incorporating end-user opinions, both those of women and men. Use decision-making techniques, such as technology assessment and decision framework analysis, that make the gender implications of the decisions explicit.
- ♦ Encourage political parties and governments to be more explicit in their policy platforms about how they intend to use “science and technology” to meet the basic needs of both men and women equitably in society.
- ♦ Encourage public media to sponsor popular science programming, including reports on the potential of science to serve the goals of society and the basic needs of people; promote reporting on the impact of science on people’s lives

and, in particular, the differential impact of science and technology on men and women.

- ♦ Support nongovernmental organizations (NGOs) working at the interface of gender in science and technology for development.

Issue 4: Making the Science and Technology Decision-Making Process More “Gender Aware”

Current structures and processes for decision-making in science and technology for development do not systematically take into account the needs and aspirations of both women and men in a gender-disaggregated manner. Women's needs and interests have been relatively neglected. *The following transformative actions are recommended:*

- ♦ Increase the number of women on science and technology decision-making and policy-advisory bodies. Set targets for representation on these bodies with schedules and strategies to ensure adherence.
- ♦ Establish databases of professional women to provide institutions with a pool of names of qualified women to be considered for appointment to policy and advisory bodies.
- ♦ Increase the understanding of all decision-makers about the gender implications of their decisions through explicit training programs.
- ♦ Involve end users, men and women equally, in the determination of research priorities and in the design and implementation of technology and development programs. This will require explicit attention to the participation of women.
- ♦ Subject all development programs with a high science and technology component to “gender impact analysis” before initiation. Gender analysis should be included in the design and the subsequent monitoring and evaluation. Technology-assessment techniques and decision framework should incorporate a gender dimension.
- ♦ Governments should establish a focal point of expertise in gender, science, and technology to be available to advise government departments, facilitate training sessions, and monitor and report on the implementation of government strategies in gender, science, and technology.

Issue 5: Relating Better with Local Knowledge Systems

Modern science and technology has inadequately addressed the potential of local knowledge systems, especially women's knowledge, in the design and implementation of development programs. There is a need to develop new methods of interaction between the two systems for their mutual benefit. Local knowledge is frequently not recorded and is in danger of being lost. *The following transformative actions are recommended:*

- ♦ Ensure the preservation of local knowledge systems with specific attention to its gendered nature.
- ♦ Development agencies should give full consideration to the contributions of local knowledge systems, giving specific recognition to the gendered nature of these systems.
- ♦ Make greater efforts to find creative ways to promote mutually beneficial exchanges between modern and traditional knowledge systems and technologies for the benefit of both women and men in rural areas.
- ♦ Bodies engaged in the study and promotion of intellectual property rights should address the capability of the current system to protect local knowledge owned by communities, paying special attention to its gendered nature. When external agencies exploit this knowledge for commercial gain, mechanisms should be found for compensating the men and women in the communities where the knowledge originated.

Issue 6: Addressing Ethical Issues in Science and Technology

Ethical issues associated with both the conduct of scientific research and the application of the results of research frequently have a gender dimension that has not been sufficiently recognized or addressed. *The following transformative actions are recommended:*

- ♦ National and international scientific organizations, both governmental and nongovernmental, should develop international conventions, declarations, or ethical codes of conduct to provide clear boundaries of acceptable practice both in research and in application pertaining to their fields of responsibility. These should be widely promulgated.
- ♦ National governments should consider whether legislation is needed to enforce adherence to these codes of conduct. The

use of technical procedures to identify fetal sex when the purpose is to abort the girl child is a case where some national governments have taken action to legislate the boundaries of unacceptable practice. Other examples include testing of drugs on underprivileged groups, particularly women, and the exploitation of local knowledge for commercial gain by outside organizations without appropriate acknowledgment or compensation.

- ♦ In determining the ethical issues on which guidelines and codes of conduct are to be developed, there should be wide consultation and involvement of stakeholders and end users.

Issue 7: Improving the Collection of Gender-Disaggregated Data for Policymakers

There is a paucity of data available at the national and international levels on the participation rates of men and women in scientific and technological education and careers. There still is no systematic approach or coordinated method for ensuring the systematic collection of gender-disaggregated data on science and technology. Of equal importance for policymakers is the unavailability of data on the differential impact of technical change on men's and women's lives.

The following transformative actions are recommended:

- ♦ An international meeting of statisticians, and science, technology, and gender specialists from national and international bodies should be convened by the UN – possibly by Unesco (the United Nations Educational, Scientific and Cultural Organisation) – to identify the critical statistics necessary for policy purposes, to designate responsibility centres, and to establish mechanisms for coordination and collaboration. Methods and common approaches should be decided on to permit cross-culture comparisons over time and to ensure the best use of resources.
- ♦ National governments and the United Nations system should revise statistics data-collection methods to ensure gender-disaggregated statistics are systematically and regularly collected both on participation rates and on differential impact. These bodies should coordinate efforts to ensure the collection of complementary sets of data using common methods.
- ♦ Data collected by national governments should be made available to both local and international bodies to ensure their maximum use in policy and program formulation and

to ensure their aggregation at the regional and international levels.

- ♦ Scientific bodies, universities, and academies should also collect relevant gender-disaggregated data.

Performance of the UN System

The Gender Working Group was asked to review the performance of UN agencies in the domain of gender, science, and technology. This task was to include an assessment of interagency coordination.

At the request of the Working Group, UNIFEM (the United Nations Development Fund for Women) undertook a review of 24 multilateral organizations in Bangkok, Geneva, New York, Paris, Rome, Vienna, and Washington in early 1994.³ The result was detailed information relating to the policies, structure, staffing, programming, and evaluation activities of the agencies concerned, as well as information on interagency coordination and relations with NGOs. A written and oral report summarizing the UNIFEM exercise was presented to the Gender Working Group in April 1994.

Based on this report and subsequent discussion, the Working Group drew the following conclusions:

- ♦ Most agencies have a commitment to gender equity that is often enshrined in policy resolutions and have created gender departments, programs, or focal points; many also have a strong commitment to science and technology. However, only four agencies had clearly identifiable gender, science, and technology focal points and, in all cases (except UNIFEM and INSTRAW), corporate-level recognition and promotion of gender, science, and technology issues did not exist.

³ The 24 agencies were UNDP, Unesco, UNIFEM, the Consultative Group on International Agricultural Research (CGIAR), the Economic and Social Commission for Asian and the Pacific (ESCAP), the Food and Agriculture Organization of the United Nations (FAO), the Inter-American Development Bank (IDB), the International Atomic Energy Agency (IAEA), the International Labour Office (ILO), the International Research and Training Institute for the Advancement of Women (INSTRAW), the International Trade Centre (ITC), the UN Children's Fund (UNICEF), the UN Conference on Trade and Development (UNCTAD), the UN Environment Programme (UNEP, Europe Office, Geneva), the United Nations Fund for Population Activities (UNFPA), the UN High Commissioner for Refugees (UNHCR), the UN Industrial Development Organization (UNIDO), the UN Research Institute for Social Development (UNRISD), the UN Secretariat, UN Volunteer (UNV), the World Bank, the World Food Program (WFP), the World Health Organization (WHO), and the World Intellectual Property Organization (WIPO).

- ♦ In most agency program and project work, the concern is to help women gain equal access to improved technologies. There is less emphasis on involving women in the process of technology development and little attention to promoting the increased involvement of women in science and technology decision-making or the systematic incorporation of women's perspectives into the formal science and technology system.
- ♦ Intra-agency mechanisms for appraising, monitoring and evaluating gender, science, and technology projects and programs is very weak for a variety of structural, staffing, and financial reasons. The result of this is that gender perspectives have not been integrated effectively into science and technology activities within the UN system.
- ♦ Although there is some evidence of interagency collaboration on these issues, it takes place on an ad hoc rather than in a coordinated, strategic way. Although there is increased recognition of the importance of learning from NGOs, few agencies have developed mechanisms for supporting NGOs and working effectively with them.

The Working Group also requested a follow-up review by an independent consultant. Accordingly, and within budgetary limitations, selected agencies⁴ were visited in May 1994 and a draft report was presented to the Working Group in July. A matrix was prepared comparing policies across agencies.

Based on this report, the Gender Working Group drew the following conclusions:

- ♦ Most UN agencies perceive the theme of gender, science, and technology as marginal to the main mandate of their individual organizations. Promoting an awareness of the relations between gender, science, and technology should include the provision of practical examples of how current programs can contain a gender bias and how "gender analysis" can help to overcome obstacles by incorporating gender analysis in the design of science and technology policies and programs. Governing councils, which represent the member states of the UN agencies, should recognize the importance of gender issues and require monitoring and regular reporting of agency actions addressing the incorporation of gender

⁴ IAEA, ILO, UNCTAD, Unesco, UNHCR, UNIDO, UNIFEM, UNRISD, and WHO.

analysis and assessment into science and technology policies, programs, and projects.

- ♦ Although there is some evidence to suggest that the positioning of high-level women professionals in key technical posts can assist in “engendering” science and technology policies and programming, and there is evidence of improvements in some agencies (such as UNHCR and WHO) in recent years, there are still very few women in senior management or technical advisory positions. Although the gender balance should continue to improve in response to resolutions by governing councils, agencies should be required to report regularly on progress in the recruitment and promotion of women professionals.
- ♦ There is little collaboration between gender focal points and science and technology focal points within agencies with respect to the design, monitoring, and evaluation of policies, programs, and projects. There is a lack of specific guidelines to assist scientific and technical staff to undertake this task. Recent attempts by agencies such as UNIDO and the Women, Science and Technology program of Unesco to introduce agency-wide programs aimed at integration among units should help promote awareness.
- ♦ Although there are a few examples of studies on the “impact of technology projects” on women, there is a general lack of gender-disaggregated “impact assessment” data available to improve programming. The problem of undertaking impact assessments is a generic one, but there are no guidelines on how to build specific gender, science, and technology questions into routine monitoring and evaluation.
- ♦ UN agencies tend to work in isolation; in part, this is due to their perceived separate mandates and to difficulties in communication (lack of travel budgets, e-mail networking, etc.). Although instituting formal mechanisms for coordination would not necessarily promote better exchange of information, methods should be supported to promote and sustain exchange between gender focal points and science and technology focal points on an agency-wide basis.
- ♦ Although there is a general trend among UN agencies to work with NGOs, only some organizations (such as ILO, UNHCR, UNICEF, UNIFEM, and WHO) have established formal relations with NGOs at both the policy and field (project) level. This trend reflects the heightened awareness in recent

years of the capabilities of NGOs to contribute to development policy, including their ability to deliver cost-effective programs and their detailed knowledge of local communities. The experiences of IFAD (the International Fund for Agricultural Development), ILO, UNIDO, UNIFEM, and others testify to the effectiveness of UN-NGO collaboration. Agencies that have not yet fully supported NGOs in their activities should be required to build these partnerships. A 1994 survey of UNIFEM identified some 650 NGOs active in the field of gender, science, and technology. A consortium of these NGOs — the Once in Future Action Network — is actively planning input into the UN's 4th World Conference on Women in Development (Beijing, 1995) to ensure a high profile for issues of gender in science and technology in Beijing and beyond.

In light of these many conclusions, the Gender Working Group makes the following recommendations to the United Nations.

Recommendation 1

The United Nations should be required to review its current corporate policy to ensure that gender, science, and technology is formally incorporated. As a means to successful implementation of such policy, gender, science, and technology specialists within each agency should be required to prepare case studies and training materials. Monitoring and evaluation and statistical divisions within each agency should establish a process for the systematic collection of gender-disaggregated data. Agencies should collaborate to ensure common methods, progress should be assessed on an on-going basis, and a relevant specialized agency should be requested to assist UN agencies in this task, with the UNCSTD Secretariat responsible for overseeing initiation and monitoring progress.

Time frame: Policies to be reviewed and action taken on implementation by September 1996.

Recommendation 2

United Nations agencies should actively respond to policies calling for recruitment of professional women by establishing clear targets and timelines for recruitment of women into high-level professional posts with strategic importance for science and technology. There should be explicit proactive recruitment, retention, and re-entry programs with supporting policies for high-level professional women in

science and technology. Agencies should be required to report regularly to their governing bodies on the progress achieved and specific constraints encountered. Agencies should review some early successful experiences, such as that of CGIAR and WHO, in this regard.

Time frame: Progress to be reported through the UNCSTD Secretariat by September 1996.

Recommendation 3

United Nations agencies should use accessible and practical guidelines for incorporating gender analysis and assessment into the design of science and technology policies, programs, and projects. Although each agency has a distinct mandate and programming approach and guidelines will have to be specific to individual agencies, a set of general guidelines that could be adapted to specific circumstances could be useful. The guidelines developed by UNIFEM could be built upon for this purpose.

Time frame: Specific guidelines in place by September 1996 with briefing to relevant staff on implementation of policies. Progress to be reported annually through the UNCSTD Secretariat.

Recommendation 4

The United Nations should establish procedures to research, document, monitor, and evaluate the gender impact of their science and technology programs, including regular reporting of results and lessons learned to its various governing councils. Experience of such agencies as ILO, UNIDO, and UNIFEM, could be built upon to develop general guidelines for adaptation by other agencies. Gender, science, and technology specialists in each agency should work together with monitoring and evaluation units to implement this process.

Time frame: Specific guidelines in place by September 1996 with evidence of incorporation in at least one project document. Progress to be reported regularly through the UNCSTD Secretariat.

Recommendation 5

The United Nations should give its full support to strengthening and sustaining informal methods of interagency networking on gender, science, and technology issues. The UNCSTD should interact with this network in an on-going way to ensure gender perspective and

mutual support in achieving goals. The United Nations should investigate alternative methods of increasing intra- and interagency communication in this area by, for example, establishing an electronic network link on gender, science and technology. This could be linked to existing NGO networks. The process could be facilitated by UNIFEM and UNIDO in conjunction with the UNCSTD Secretariat.

Time frame: Progress on the role of the UNCSTD in this collaboration and cooperation to be reported at its third session (May 1997).

Recommendation 6

UN agencies, particularly those reviewed by the UNCSTD Gender Working Group as having functions at the interface of science and technology, should incorporate "gender and science and technology" analysis into all regular programs and, through redistribution of agency funding priorities, provide increased regular budgetary allocations to gender units. Technically based agencies should support adequate staffing of gender experts and require training of all staff in gender analysis to ensure full incorporation of gender into their regular work programs.

Time frame: Progress to be reported through the UNCSTD Secretariat by September 1996.

Recommendation 7

The United Nations should recognize the value of collaboration with NGOs and expand its formal partnership with, and support for, these organizations both at the level of implementing field projects and also obtaining policy advice and assistance with the design, implementation, and evaluation of gender-sensitive technical cooperation programs. Partnership with the over 650 NGOs active in gender, science, and technology should be forged. Models such as those being developed by UNHCR could be explored and approaches suitable for each agency identified.

Ongoing UN support for the NGO science and technology consortium — the Once and Future Action Network — would assist in this process. Relevant UN staff focal points for gender, science, and technology should be supported to participate in the on-going activities of this NGO consortium.

Time frame: Agencies to explore options and begin to implement plans to enhance cooperation and support to NGOs by September 1996. Progress to be reported through UNCSTD Secretariat. Up to

10 of the most relevant agencies should be active participants in the NGO consortium by September 1996.

Recommendation 8

The Gender Working Group recommends the establishment of an Advisory Board on Gender to the UNCSTD for 4 years to ensure that gender issues are adequately addressed in all future deliberations of the UNCSTD. The Advisory Board should consist of seven international gender experts, appointed by the Secretary General. Among its initial responsibilities will be the task of monitoring implementation of the above recommendations. The UNCSTD Secretariat would support the Advisory Board in its activities.

Time frame: Advisory Board to be set up at the second session of UNCSTD (May 1995).

Conclusion: A Declaration of Intent

The recommendations and conclusions presented here could be the basis for reform of both the current science and technology system and the ways in which the output of that system is used to contribute to sustainable human development for the benefit of both men and women. The specific measures adopted by each government will necessarily depend on the national context. The transformative actions, therefore, are provided as a list of possible actions that each country may adopt according to its own local situation.

Two recommendations, however, apply to all countries and a third is directed at donor governments. The **first recommendation** is that all governments agree to adopt a Declaration of Intent on Gender, Science, and Technology for Sustainable Human Development. This Declaration consists of important goals toward which each country should move.

It is not the job of the Gender Working Group to suggest specific ways in which each country should implement this Declaration of Intent. The **second recommendation**, therefore, is that each country establish an ad hoc committee to make recommendations to its own government on how the goals in the Declaration might be implemented under the specific conditions of that country. The Working Group recognizes that, to implement the recommendations of its own ad hoc committee, each government will need to pass appropriate legislation and establish regulatory policy frameworks.

Declaration of Intent on Gender, Science, and Technology for Sustainable Human Development

All governments agree to work actively toward the following goals:

1. To ensure basic education for all, with particular emphasis on scientific and technological literacy, so that all women and men can effectively use science and technology to meet basic needs.
2. To ensure that men and women have equal opportunity to acquire advanced training in science and technology and to pursue careers as technologists, scientists, and engineers.
3. To achieve gender equity within science and technology institutions, including policy- and decision-making bodies.
4. To ensure that the needs and aspirations of women and men are equally taken into account in the setting of research priorities and in the design, transfer, and application of new technologies.
5. To ensure all men and women have equal access to the information and knowledge, particularly scientific and technological knowledge, that they need to improve their standard of living and quality of life.
6. To recognize local knowledge systems, where they exist, and their gendered nature as a source of knowledge complementary to modern science and technology and valuable for sustainable human development.

The **third recommendation** is directed to donor countries and agencies. Donor agencies may help each “National Ad Hoc Committee on Gender and Science and Technology” to obtain access to relevant information and should target financial support to projects that enable recipient countries to implement the recommendations of their own ad hoc committee.

The manner in which governments adopt strategies to achieve these goals will depend on the national context. It is, therefore, recommended that:

- ♦ Each country establish an ad hoc committee to review the national situation regarding gender, science, and technology and to devise action plans and timelines to achieve the goals stated in the Declaration of Intent;
- ♦ These ad hoc committees be constituted with equitable participation of women and men and with involvement of end users and stakeholders; and
- ♦ Country reports on progress in achieving the goals of the Declaration of Intent be published.

Finally, for donor agencies, it is recommended that:

- ♦ Financial support be targeted at projects that enable recipient countries to implement the recommendations of their own ad hoc committee on gender, science, and technology.