



**GAB Meeting Report:
Gender, Science and Technology for Sustainable Development:
Looking Ahead to the Next 10 Years**

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1. Introduction

The Gender Advisory Board was established in 1996 as a result of a set of recommendations made by the UNCSTD Gender Working Group from 1993-1995. Those recommendations were also submitted to the 1995 Beijing World Conference on Women and were directed at the UN system and national governments.

The GWG commissioned studies and met four times over the course of two years to consider the extent of the research base which existed to support the idea of a “gender perspective” in science and technology. This work resulted in *Missing Links: Gender Equity in Science and Technology for Development*, and a policy document that proposed “transformative actions” for nations to implement in moving toward a greater role for women in S&T, as well as a greater use of S&T to address women’s needs. Both the GWG and the Gender Advisory Board (GAB), were supported by the Ministry of Foreign Affairs of the Netherlands. The Carnegie Corporation of New York also contributed to the work of the Gender Working Group.

The Gender Advisory Board met again in December 2006 at UNESCO in Paris to assess the first 10 years of its work, as well as to assess where the international gender, S&T for development movement "is" in relation to Beijing +10. It did this taking into account:

- UN system activities and policies in the area of gender, science and technology for development
- the current status and range of research, activities in the area of gender, science and technology for development
- current global trends and issues.

The goals of this meeting were to meet with collaborators, network members and like-minded colleagues to:

- Review the lessons learned from international efforts over the past decade to achieve greater gender equity in science and technology for development.
- On the basis of these lessons and new development goals, identify what further international and national action is required for the next decade.

- Review the institutional arrangements, especially at the international level, that are needed to ensure that action and implementation occur.

The Gender Advisory Board of the UN Commission on S&T for Development is an advisory body to the Commission, and is in a unique position to bring together gender issues with S&T for development approaches. Through this conference it brought together a range of the main international organisations and agencies working in the area.

Participating organisations included: Gender Advisory Board, UN Commission on Science and Technology for Development; UNESCO; Global Alliance for Diversifying the Science and Engineering Workforce; Third World Organisation of Women in Science; M.S. Swaminathan Research Foundation; ICSU; the Carnegie Corporation; the National Council of Women, Egypt; WIGSAT; the Inter Academy Council; and others. The full set of meeting documents, including presentations, is available at the GAB web site, <http://GAB.wigsat.org/GSTconference.html>.

2. The Gender Advisory Board

The Gender Advisory Board was established in 1995 to provide advice to UNCSTD, national governments and the UN system on the gender dimensions of S&T policy. Board members are experts in gender, science and technology policy from Brazil, Egypt, Netherlands, Pakistan, Romania, United Kingdom and USA. As followup to the CSTD Gender Working Group report in 1995, the Board oversees activities which support national governments and UN agencies in implementing the GWG recommendations, provides support and advice to agencies for mainstreaming gender concerns in science and technology, and liaises with other UN agencies through the UN Commission on Science and Technology for Development.

Three Regional Secretariats, for Africa, Southeast Asia and the Americas, act as nodes to support national governments, facilitate the development of National Committees on Gender, Science and Technology which work with a range of national stakeholders, and regional activities supporting the mainstreaming of GST into national and regional policy and programming. The GAB Regional Secretariat for Africa is hosted in Kampala, Uganda by the Association of Women Engineers, Scientists and Technicians in Uganda (WETSU). The Regional Gender, Science and Technology Secretariat for Southeast Asia (RESGEST) is hosted by the Indonesia Institute of Sciences (LIPI) and the UNESCO Office in Jakarta; while the Americas Secretariat is hosted by York University in Toronto, Canada.

National committees have been established in: Brazil, Egypt, Indonesia, Kenya, Philippines, Rwanda, Tanzania, and Uganda; with National Focal Points established in Australia, Cambodia, China, Laos, Myanmar, New Zealand, Papua New Guinea, the Republic of Korea, Swaziland, Sudan and Tunisia.

More information on regional and national achievements is found in Appendix One.

3. Context: International policy on gender, science and technology for development.

What can be done to support the economic, political, civil, educational and social empowerment of the world's women? How can their lives be made easier? How can the roles that they play in the family and community be supported, roles that in many places in the world include providing water and food and finding fuel, and in most places include maintenance of the household and care of the young and old? How can women be enabled to be active participants in their countries' development?

How do we incorporate a gender perspective into the policy- and decision- making process in such a way that women share in the benefits but do not bear disproportionate costs in the development process? How do we utilize the talents of women and men within the science and engineering enterprise to support sustainable development? With a goal of bringing women and men, equally, into the process of supporting development, and meeting the needs of all, what do we need to do to make this happen?

These questions have been asked for decades, and yet clear answers have yet to emerge. Much has happened in the 60 years since the establishment of the UN Commission on the Status of Women in 1946. Women have gained political rights and made great strides, more in some regions of the world than in others. Where they have not had access to educational opportunities, where countries have been slow to develop economically, not much has changed in the lives of these women. And where there has been war and conflict many have seen their situations worsen.

There have been many other changes in the world over the past 60 years, many driven by advances in science and technology. Satellite technology, cellular/wireless communication, personal computing, Internet, GPS technology, and advances in agriculture and medical science have transformed the options and opportunity structures, creating greater disparities in some cases and reducing them in others, leaving the poorest economies struggling to advance and the poorest people of the poorest economies (disproportionately women and children) in desperate conditions.

Efforts have been mounted both within and beyond the UN structures to document, recognize and address these concerns on a world basis. Beginning with the World Summit on Women in Mexico City in 1975 there have been calls to assess and reduce the disparities in education, health, access to income generating opportunities and so on. Over time it has been recognized that disparities created in part by access to S&T can only be addressed by taking hold of S&T, to enable, educate and empower.

The target effort over the next 10 years must include building the capacity among women and men to assess needs and effect changes that yield benefit for women and men. This may mean an initial focus on equity for women before there can be equality. It may require that in certain situations women are to be seen as having a greater claim on resources and opportunities so that they may contribute at the highest levels of which they are capable, unfettered by the chains of historical inequities and lack of access.

However, it is also clear that patterns of gender inequality for men also emerge in both the highly industrialized and developing nations, where males are attending schools in much lower proportions than females, and where they are less likely to be enrolled in higher education and therefore are under-participating in the S&T workforce (Malcom, 2006b).

4. Context: Current Global Trends in International Gender, Science, Technology and Innovation

Since 1995, when the UNCSTD Gender Working Group set its agenda, several major global trends which affect the ability of women to use S&T for social needs and development and to play a greater role in S&T systems have emerged or gathered momentum.

HIV/AIDS is causing a dramatic decrease in the life expectancy of both women and men in Sub-Saharan Africa, where the rate of infection for women is now higher than that for men. This is in addition to the double burden women bear as producers of food and caretakers of the sick. They are more at risk of infection for physiological, economic and cultural reasons, while women who

experience food insecurity are more likely to die when infected with HIV. The loss of labour force due to HIV/AIDS in Sub-Saharan Africa means that women are more in need than ever of labour-saving technologies and crops which improve production while requiring decreased labour inputs (Kebede and Retta, 2004). Rates of infection are increasing in other regions as well. Globally, there were 2.9 million deaths and 4.3 million new HIV infections in the past year.

Globalisation poses both promise and peril for women. They are employed in greater numbers than men in certain sectors of the IT industry, especially where it is expanding in South and Southeast Asia. Women make up the majority of SME owners in many regions, and globalisation can help them find greater access to markets for their products. New technology fields may be burdened less with stereotypes about what is appropriate work for women, although there is some evidence to suggest that this "window" occurs for only a relatively short time before the participation of women begins to decrease. Studies in Southeast Asia show that many of the jobs emerging for women in this sector in the region are at the lowest levels, with little pay and low skill requirements (Carr, 2004; Blum et al, 2006; Schinzel, 2002; Blecker and Jacobs, 2004; Mitter, 2001).

In view of these trends, in which the need for smaller-scale technologies for women is increasing in importance, development assistance and government policy has been moving away from what used to be called "appropriate technology" to a focus on "high tech" – biotechnology, computers and internet, etc. For example, in a recent internal survey on S&T funding at a bilateral agency, it was noted by staff that funding for technology development tends to go to the big flashy technologies, disregarding the low and medium technologies needed by women in much of the developing world for their agricultural and productive activities. Work in this area continues to be urgently needed.

The Millennium Task Force Report on STI picks up this theme in the distinction it makes between developing national capacity to develop and adapt new technologies such as biotechnology and ICT, recognizing that for some countries it is more appropriate and more important to adapt and use "mature" technologies to meet the MDGs, promote employment, and address poverty reduction. These include mechanization of small farms, small-scale irrigation and potable water installation, small energy systems, rural roads and transportation, and basic ICTs (Juma and Lee, 2005). Creative approaches are needed to blend new technologies with old technologies, local and traditional knowledge and know-how with science and engineering R&D.

The recognition, conservation and ownership of women's intellectual property rights is an issue which is increasing in importance and urgency. It is currently addressed in the framework of WIPO, WTO, and through biotechnology research and policy. According to an Overview Report on Gender and Trade published by the Institute for Development Studies at the University of Sussex, "the gender dimensions of both the health aspect of intellectual property laws as well as the impact on traditional knowledge, food security, sustainable agriculture and transfer of technology are still relatively unexplored." In particular, it is important to ensure the documentation of women's and men's local and/or community IP and investigate legislative, legal, and ownership strategies to ensure rightful ownership of IPR and fair recompense to owners.

In this global context, three new S&T issues in particular have emerged as having both important global implications and gender dimensions: biotechnology (both health and agricultural); new information and communications technologies; and climate change.

Biotechnology

Work by the GAB and others indicates that health-based and agricultural biotechnologies could be detrimental to women's health, food security and status if implemented in a gender-blind manner. As yet, there is very little attention paid to the gender, social and environmental implications, including

implications for small-scale farmers in particular, of the introduction of agro-biotechnologies. As identified at the GAB Expert Consultations on Gender Dimensions of Biotechnology R&D, the overarching issues involve:

- cultural relationships and culturally-based differences in roles, status and power between men and women, and how they affect gender equity as well as the opportunity of women and men to benefit equally from technological development and implementation; and
- technical assessment of socioeconomic, political and cultural costs and benefits, and how appropriate bio- and conventional technologies can be developed which have a positive impact on all members of society (GAB 2004).

Information and Communications Technologies (ICTs)

ICTs have an important role to play in the globalized knowledge society: they have greatly affected the generation, flow and use of information and knowledge, and provide the vehicle for the rapid pace of knowledge exchange, technological advance and globalization of economies. According to David and Foray, increasing numbers of jobs in production, processing and transfer of knowledge and information signal a societal shift to knowledge-intensive activities (2003).

A digital divide which is allowed to remain inequitable will entrench and exacerbate current global imbalances. For these reasons, "ICTs are vital for enhancing human development as facilitators of economic growth productivity improvements (UNDP, 2005:2)." ICTs encompass a range of technologies, both old and new, which are appropriate to differing economic, geographic and social contexts depending on levels of technology and differing abilities for technology uptake.

Building human capacity to develop, design and use technology, including ICTs, is a gender issue. In most countries, the capacity of women to engage in the knowledge society is grossly under-developed and under-utilised, as indicated by the gender divide and women's participation in the technical workforce. Building capacity in this respect involves four main elements:

- 1) Improving the quality of human capital and factors of production, or the ability of a country "to create new knowledge and ideas and incorporate them in equipment and people (David and Foray, 2003:3)."
- 2) Generating a greater mass of capacity to design, develop, adapt, adopt and utilise technologies for national development.
- 3) Ensuring the access of all sectors of society to ICT and appropriate technologies for poverty reduction and development.
- 4) Moving beyond access to ICT towards technological and information literacy, which involve "cognitive capacities and intellectual frameworks... to interpret, select and utilise information in ways that augment their capabilities to control and enhance the material circumstances and qualities of their existence(David and Foray, 2003:3)."

This issue is being addressed by a range of groups, including WIGSAT, the International Taskforce on Women and ICT, the University of Manchester, WOUGNET (Uganda) and many others. GAB can and should keep apprised of this work vis a vis its mandate through the CSTD to monitor the UN system-wide followup to WSIS.

Climate Change

The effects of climate change on women's environment and natural resource-based activities is not known, although we know that it will pose added stresses to women's activities, particularly as rates of natural disaster and natural shocks are likely to increase. Joni Seager has pointed out the gender dimensions of natural disasters which are related to poverty as well as to physical abilities. In the

2004 tsunami in southeast Asia, death rates for women were 3-4 times that of men as a result of sex differences in physical ability, gendered differences in development of physical ability, and gendered family responsibilities. That is, women were less likely to be able to swim, less able to withstand physical shocks and forces, and more likely to be slowed down in their movements by children (Seager, 2005).

Key climate-change related effects on gender roles and relations include:

- gender-specific resource-use and management patterns that can degrade the environment such as men's higher car and fuel purchasing from male-dominated industries
- gender-specific effects of climate change such as the extra time women need to spend collecting water during droughts
- gendered aspects of climate change mitigation and adaptation such as women's valuable indigenous knowledge and practice of environment management
- decision-making on climate change such as the limited role women are playing as producers in the energy sector and in energy policymaking
- human capacity inequalities such as women's lower access to education, training and technology (Dankelman, 2002).

Where are the men in gender?

Finally, while more research is emerging on the role of men in development, i.e. in the area of masculinities, conflict and violence against women, differential assessments of effects and contributions of men is not yet an advanced field. Some work on educational enrollment trends of boys in different regions indicates that these are issues which are also in need of attention.¹

5. Revisiting the Gender Advisory Board Transformative Action Areas

In 1995, the Gender Working Group articulated a set of transformative actions as a result of a deliberate desire to develop recommendations that were forward looking, that were long term rather than immediate, and that were what one scholar has referred to as “glocal” – global issues viewed through a local lens, with implications for local practice.

The Transformative Action Areas identified are:

1. Gender equity in science and technology education
2. Providing enabling measures for gender inequalities in scientific and technological careers
3. Making science responsive to the needs of society: the gender dimension
4. Making the science and technology decision-making process more "gender aware"
5. Relating better with "local knowledge systems"
6. Addressing ethical issues in science and technology: the gender dimension
7. Improving the collection of gender disaggregated data for policy makers.

In 2006, Transformative Action Area 8 was added:

8. Equal opportunity for entry and advancement into larger-scale science, technology, engineering, mathematics disciplines (STEM) and innovation systems.

For each of the areas, the CSTD Gender Working Group recommended a series of feasible policy actions for national governments and science and technology bodies and agencies. In its 2006 meeting, the Gender Advisory Board revisited each Transformative Area in view of whether it has continuing relevance, and if so, how it should be expanded 10 years later. In general, it was concluded that while there have been changes in the availability and depth of research in many areas as well as

¹ See the GST Gateway Section on "Men and Gender" for a list of resources.

changes influenced by global trends, the 7 areas continue to be relevant today. In each case, a series of recommendations are made for policy, research and science institutions, to add to the recommendations made 10 years ago.

1. Gender equity in science and technology education

While gender parity in access to formal education is changing, gender inequality in favour of boys continues to exist in many regions; and gender inequality which favours girls is seen at secondary and tertiary levels in many regions (and overall). However, it remains that 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.

In view of the remaining obstacles and issues to gender parity and equal access in terms of race and socioeconomic level to quality science education, the GAB makes the following recommendations:

Equity in Gaining Access:

- All girls and boys should have equal access to quality basic and literacy education, including science and technology education.
- All women and men should be enabled to achieve at least the level of functional literacy that includes science and technology concepts and skills.
- All males and females/young men and women should leave the secondary /tertiary level with a basic understanding of S&T concepts.
- Conduct research to understand the causes of male non-participation in those cultures where gender imbalance is in favour of females, e.g. Caribbean
- All women and men should have equal access to tertiary level S&T education.

Equality of Opportunity Within Schools:

- Ensure that the infrastructure, laboratories, and equipment in schools are 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)

Opportunities for Formal and Non-Formal Education

- Education should include formal and nonformal experience and approaches

2. Providing enabling measures for addressing gender inequalities 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.

There are marked variations globally and regionally in participation in S&T workforce by field and country, which are for the most part unexplained. Recent national government task forces and reports have explored options for removing barriers to women in science and technology careers. 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. There is a need to better understand what are the differing factors and preconditions for greater or lesser gender equity in science and technology. Can these preconditions be replicated? What are the differences between institutions?

Another question to be asked is, do women and men bring different skills and approaches to the study of science? That is, how do women's perspectives change the way some sciences and engineering are "done". Do women foster a more user or audience-driven approach to R&D over research- or technology-driven approaches? Are there gendered differences in the kinds of research questions that are asked; in how results are interpreted? For example, the contribution of women scientists to primatology has been the recognition of the role of matriarchal and female relationships in troop cohesion. This is a counterpoint to the previous tendency of the discipline to interpret primate behaviour in terms of stereotypical male-female relationships, for example the role of the alpha male and "harems".²

Equity in Access:

- Steps should be taken by governments, society and educational institutions to ensure that women and men should have equal access to quality vocational-technical training and careers.
- Establishing targets for participation of women can be a useful strategy. One useful target is the 40:40 target. In this target it is proposed that at least 40% of employees should be women and at least 40% should be men.

Specific Measures For All Employers:

- 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;

² See Schiebinger, 1999.

- Commitment to hiring, promotion and career development of women in science and technology while adhering to the merit principle;
- Policies against discrimination and harassment in the workplace.

Policy Tools for Governments:

- Tax relief for payment of childminders; 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; 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.
- Research and policy experience should be assessed and compared to better understand how science systems, both private and public, can be structured to be more supportive of women's lives and perspectives.
- Better understanding and recognition of women's contributions to science is needed
- Analysis of the preconditions and factors including the nature and root causes of gender inequalities and imbalances in S&T and other disciplines, countries, and institutions.

3. Making science responsive to the needs of society: the gender dimension

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.

Awareness of scientists and science of the needs of society relates to the contributions of women to the formulation of research agendas as well as the implementation of science and technology once developed. This is still in general a missing ingredient in R&D and the setting of the S&T research agenda. More research needs to be directed towards women's interests, needs and concerns. What technologies do women need to increase the rate and quality of food production? What are the community-based issues which have had insufficient technological attention? How can science and technology improve sanitation and cleanliness and provide affordable energy in ways that empower women and girls? These questions are not enough asked, nor are technologies developed to answer them.

To accomplish this, a multidisciplinary approach to science and technology R&D is required. This involves bottom-up, participatory and approaches to defining and designing research and development, approaches which incorporate views of women and men and take into account the perspectives and needs of the less-represented groups in society, particularly women.

Transformative actions:

- Improve the decision-making mechanisms within the science system to ensure clear articulation of gender-specific needs and goals of society by incorporating end-user options, 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 potentials of science to serve goals of society and the basic needs of the 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 NGOs working at the interface of gender in science and technology for development.
- Establish research funding that targets unaddressed needs of marginalized communities.
- Implement tenure and promotion criteria at universities and research institutions that credits work on these issues
- Encourage the scientific community to work towards these objectives and goals: strategies can include higher ratings for innovative ideas and publications that meet social needs, or allocating additional points or credit for identifying gender dimensions of research issues.

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 experiences, aspiration, knowledge, needs and concerns of both women and men in a gender-disaggregated manner. Women's needs and interests have been relatively neglected, as have needs of the poor, ethnic minorities, disabled and indigenous peoples.

Transformative actions:

- Increase the number of women on science and technology decision-making and policy advisory bodies. Set targets for representation on these bodies with timelines 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 frameworks 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 gender, science and technology.

5. *Relating better with "local knowledge systems"*

'Local and indigenous knowledge' refers to the cumulative and complex bodies of knowledge, know-how, practices and representations that are maintained and developed by peoples with extended histories of interactions with the natural environment. These cognitive systems are part of a complex that also includes language, attachment to place, spirituality and worldview. The definition of local knowledge taken here relates to the interaction of locally-based and/or indigenous knowledge with "scientific" or "modern" knowledge. It is an important part of the lives of the poor. It is the basis for decision-making of communities in food security, human and animal health, education and natural resource management.

Science and technology has inadequately addressed the potential of local knowledge systems, including both men and women's local knowledge – which are frequently quite different, 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.

Transformative Actions:

- Ensure the preservation of local knowledge systems with specific attention to its gendered nature.
- Development agencies should give full consideration to the considerations 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 rights should address the capability of the present 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/or women in communities where the knowledge originated.
- Recognize gender differences in types, ownership and usage of local knowledge.
- Recognize the importance of blending modern science with local /experiential knowledge.
- Develop strategies and research to understand the quantity and quality of women's local knowledge, and supporting their equal access to, share of and ability to benefit from it.
- Develop the range of legal and other policies necessary to support and protect the intellectual property rights of both women and men.
- Document indigenous knowledge in non-exploitative ways which allow owners to retain ownership and benefit from the knowledge.

6. *Addressing ethical issues in science and technology: the gender dimension*

Ethical issues associated with both the conduct of scientific research and the application of the results of research frequently have a gender dimension which has not been sufficiently recognized or addressed.

Some of the new health biotechnologies pose grave risks for women, in particular concerning:

- informed consent before undergoing new health procedures
- potential for trade and sale of human genetic resources
- development of health biotechnologies which are appropriate to women's physiologies and address key women's health concerns (i.e. microbicides)
- control and commodification of women's reproduction.

For those clinical trials which take the male as the default/standard – what protections are in place for women? Are clinical trials conducted in ways that are respectful, rigorous, equitable? Are dosages and treatment regimes appropriate to women and men not from the default (often male, white) trial group? Do trials involve clear “informed consent?” Are clear ethical standards in place to protect women in developing countries who are the targets for clinical trials, such as in development of female contraceptives.

Transformative Actions:

- National and international scientific organizations, both governmental and non-governmental, 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 foetal sex when the purpose is to abort the girl is a case where some national governments have taken action to legislate the boundaries of unacceptable practice. Other examples include testing of drugs on under privileged groups, particularly women; the exploitation of local knowledge for commercial gain by outside organizations without appropriate acknowledgment and 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.

7. *Improving the collection of gender disaggregated data for policy makers.*

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

A baseline issue continues to be the need to process, analyse, and disseminate sex-disaggregated data. It continues to be important to educate policy makers and data collection agencies on value of and how to analyse effectively for use in achieving and measuring progress towards national goals.

Transformative Actions:

- An international meeting of statisticians, and science, technology, and gender specialists from national and international bodies should be convened by the United Nations (possibly UNESCO) to identify the critical statistics necessary for policy purposes; to designate responsibility centers; 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 complimentary 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.

8. *Equal opportunity for entry and advancement into larger-scale STEM and innovation systems.*

Advancement into management and leadership of high level STEM organizations, and the ability to establish and manage successful medium and large-scale enterprises, are important factors for national innovation systems and the ability of countries to compete in global innovation systems. Encouraging women to undertake the design and control of development, production, marketing, and distribution will create jobs and generate wealth, contributing to national economic growth. Steps should be taken to encourage women's participation in innovation systems through their own enterprises as well as active engagement in innovation industry (including ICTs and advanced networks) at senior levels. Related issues include promotion and facilitation of women's inventions, protection of women's intellectual property, and access to capital to for industrial/entrepreneurial development, from the level of micro-credit all the way to venture capital.

Some of the questions and issues in this area include:

- What are the implications for development, management and growth of science and technology-based enterprises run by women from small to medium to large-scale?
- How can we promote the greater participation of women and women's enterprises in innovation systems / research, business and government?
- What are the gendered implications of opportunities for men, women at different socio-economic levels in "priority" or high-investment industries and sectors?

Transformative Actions

- Research needs to be undertaken on the effects of trade and globalization on markets and women's production. This includes the need to have reliable access to information on resources, export laws and regulations, cross-border transactions, supply and production networks; as well as market information.
- The implications of trade regimes for IPRs of women and men in developing countries, which is often based on local and indigenous common-property knowledge, need to be better understood

and addressed.

- In assessing and taking steps to address current changes in society and economy resulting from globalized innovation and trade systems, gender dimensions should be recognized.
- Governments and agencies should test and investigate appropriate structures, funding, regulation and training to support small, micro and medium business development based on S&T knowledge, technology and innovation systems.
- Detailed analysis and comparison of women's role and leadership in the private sector using reliable data and case studies should be undertaken, at national, local and regional levels, including sectors and industries where women are more or less represented; the willingness of men to work for women managers; and perceptions about women's physical or intellectual abilities to participate in certain sectors.

6. Moving Forward: Proposed Activities and Projects

The following projects were identified as areas where the GAB is uniquely situated to draw on its resources and its networks to develop forward-looking activities.

Data: identification, awareness of problem

There is opportunity to build on the Orbicom-WIGSAT work on gender indicators in the knowledge society (see www.wigsat.org), through promotion and use of national and regional level data collection and indicator assessment. Work here can be done at two levels: 1) macro data and 2) gender analysis of subgroups and subregions to complement taking into account varying factors and variables, such as culture, income level, socioeconomic position, etc. to show barriers and situations

Design of a reporting document/score card for national achievement in the Transformative Action Areas – for national committees and to chart developments, progress, plans, obstacles and challenges. The scanning done by the RESGEST network is one example and could be a useful starting point.

Need for best practices and assessment frameworks

A clearly identified need was that of the identification, compilation and dissemination of best practices, to demonstrate that something can be done, and what can be done. While best practices exist, they exist in an isolated and non-systematic manner, and results are not disseminated. There is also a lack of systematic analysis for preconditions, contextual factors, etc. to replicate and scale up best practices. Here again the RESGEST-APGEST regional scanning with the national focal points is worth re-visiting, especially since some countries are continuing this activity.

Increasing the role of women in higher education. There could be a role for the GAB to play in contributing to the understanding of strategies and models for institutions, governments and individuals in promoting and encouraging equal access and participation of all groups in higher education in S&T. This could involve an assessment of existing experiences, developing guidelines and establishing baseline criteria and determining factors.

Update Missing Links

Over the last 10 years new data, issues and activities have emerged around the issues and areas identified by the Gender Working Group and addressed in Missing Links. An updating and revisiting of the work and its supporting research would be a useful and timely activity. This could involve a re-

orienting of approach in view of the issues and trends identified, including increasing availability of data and research on the experience of men and boys in different sectors. Some of the work to be included already exists.

Comparative policy analysis on gender mainstreaming, S&T policy and gender, to train and educate donors, agencies and governments on what this is "all about"; to analyse successes and lessons learned, in order to assess the success of mainstreaming and successful strategies for its achievement.

UNESCO STI Capacity Building - UNESCO has suggested that there may be an opportunity for the GAB network to provide input into activities under its "Main line of action 1, Promoting policy dialogue and building capacities in the formulation of science, technology and innovation policies". Activities in this area include support to national and regional formulation of S&T policies and strategies as well as mechanisms for S&T systems improved, as well as promotion of participatory governance of national and regional S&T systems. Input in particular could be explored concerning the UNESCO subregional, regional and international Science Policy Forums and the national Parliamentary committees on S&T.

7. UN and international agency activities

The GAB can re-examine opportunities and venues for raising awareness of the gender issue in S&T policy, through, for example, regional, national and international reports, major conferences, etc. as it has recently with UNESCO.

In view of the new CSTD mandate to monitor the UN system-side followup to the WSIS, the Gender Advisory Board sees this as an opportunity to revisit the original survey in 1998 by UNIFEM on behalf of the Board. The proposed WSIS review of how the UN system and UN agencies are addressing the gender dimensions of the information society can be expanded to look at a wider range of science, technology and innovation activities, including the information society.

The GAB will also pursue new links and build on existing links and collaboration with other development agencies and banks, including the IADB, World Bank, OAS, IDRC and CIDA.

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Appendix One

International Conference Gender, Science and Technology for Sustainable Development: Looking Ahead to the Next 10 Years.

Participants

Dr. Alice Abreu, Director, Regional Office for Latin America and the Caribbean, International Council for Science (ICSU); Coordinator, GAB National Committee in Brazil.

Dr. Joske Bunders, Member, Gender Advisory Board and Director, Faculty of Earth and Life Sciences, Free University, Amsterdam.

Dr. Mustafa El-Tayeb, Director, Natural Sciences Sector, Science Analysis and Policy Division, UNESCO.

Prof. Farkhonda Hassan, Co-Chair, Gender Advisory Board and Secretary-General, National Council on Women, Egypt.

Ms. Wati Hermawati, Coordinator, GAB Regional Secretariat for Southeast Asia; and Program Officer, UNESCO Jakarta.

Dr. Sophia Huyer, Senior Research Advisor, Gender Advisory Board, Toronto, Canada

Ms. Andrea Johnson, Program Officer, Carnegie Foundation, USA

Ms. Tahani Lefebure, Executive Director, World Federation of Engineering Organizations (WFEO), Paris, France.

Dr. Shirley Malcom, Co-Chair, Gender Advisory Board and Director, Education and Human Resources, American Association for the Advancement of Science (AAAS), USA

Dr. Eduardo Martinez, Chief of Section, S&T Strategic Planning and Evaluation, Science Analysis and Policy Division, Natural Sciences Sector, Science Division, UNESCO

Ms. Constance Morella, US Ambassador to OECD, Paris, France

Ms. Susan Mubbala, Programme Coordinator, GAB Secretariat, Kampala, Uganda

Eng. Irene Muloni, Senior Fellow, GAB Secretariat, Kampala, Uganda

Dr. S.T.K. Naim, Member, Gender Advisory Board and Consultant, National Commission on Biotechnology, Pakistan.

Dr. Sudha Nair, India Committee on Women in Science, and Director, Program on Biodiversity, M.S. Swaminathan Research Foundation, India.

Ms Iulia Nechifor, Project Officer, Basic Sciences UNESCO Office in Venice, Italy

Prof. Geoffrey Oldham, Member, Gender Advisory Board and Prof. Emeritus, Science Policy Research Unit, UK.

Dr. Marina Ranga, Member, Gender Advisory Board and Assistant Professor Innovation Management, Faculty of Management and Organization, University of Groningen, Netherlands.

Dr. Peter Smith, Assistant Director-General, Education, UNESCO, Paris, France

Dr. Maseqobela Williams, Acting Director, Department of Science and Technology Ministry of Communications, Science and Technology, Lesotho, and Vice Chair, Commission on Science and Technology for Development (UNCSTD), Lesotho

Dr. Ling-An Wu, China Academy of Science and Technology (CAST), Beijing.

Agenda

Gender, Science and Technology for Sustainable Development: Looking Ahead to the Next 10 Years Room XIV, UNESCO Miollis

December 12 and 13, 2006

**UNESCO, Paris, France
Room XIV, 1 rue Miollis**

Day One

- | | |
|---------------|---|
| 9:30 – 10:00 | Introduction and Welcome on behalf of the Gender Advisory Board and UNESCO <ul style="list-style-type: none">• Farkhonda Hassan and/or Shirley Malcom, GAB• Mustafa El-Tayeb, UNESCO |
| 10:00 – 10:15 | Purpose of the Meeting, Presentation of Agenda |
| 10:15 – 10:45 | Presentation: Review of UN and other international policy, conferences and agreements pertaining to gender, S&T for sustainable development. <ul style="list-style-type: none">• Shirley Malcom |
| 10:45 – 11:30 | Presentation on GAB activities: <ul style="list-style-type: none">• History/background/ transformative action areas: Geoff Oldham• Overview and current activity in TAAs: Sophia Huyer• GAB Activities and accomplishments: Irene Muloni• Questions and comments |
| 11:30 – 12:00 | Coffee |
| 12:00 – 1:30 | Tour de Table
Chair: Geoffrey Oldham

Participants will introduce themselves and their organisations, and outline for the group: <ul style="list-style-type: none">• Past activities related to gender, S&T for sustainable development• Assessments of successes, strengths and weaknesses and lessons learned from past programmes• Planned activities |
| 1:30 – 3:00 | Lunch |
| 3:00 – 4:30 | Discussion: Assessment of the Gender Advisory Board Transformative Action Areas
Chair: Farkhonda Hassan
Report from Naples conference on GST: Geoffrey Oldham |

- Are they still the key issues for national and international policy?
- Are there issues which need to be added?
- Are some of these issues of higher priority?
- Are some issues no longer relevant?
- Have we made more progress on some than others?
- Are there new instruments/infrastructure that need to be factored into strategies?
- Are these issues correctly articulated for the current global situation?

4:30 – 5:00

Coffee

5:00 – 6:00

Assessment of Transformative Action Areas (continued)

Day Two:

9:00 – 11:00

Moving Forward: Key Issues, Venues, Targets and Collaborations for the Future.

Chair: Irene Muloni

- What are options and extensions beyond national engagement to move forward with transformative actions?
- How best to develop partnerships, as appropriate, with other UN agencies, NGOs, regional bodies, etc. that might benefit from the expertise of the GAB in gender, S&T and development?
- What new groups and sectors do we need to reach out to for collaboration and analysis?
- What new research is needed to inform further action? What don't we know that we need to know?
- How do we broaden the base of those involved in these efforts to include younger scholars, persons from all parts of the world and greater numbers of men?
- How can the arguments and issues be reframed, how can new collaborations be formed and a joint plan of action articulated to readjust the trajectory of current initiatives?

11:00 – 11:30

Coffee

11:30 – 1:00

Moving Forward (cont.)

Chair: Tanveer Naim

Presentation by Dr. Peter Smith, Assistant Director-General, Education, UNESCO

1:00 – 2:30

Lunch

2:30 – 4:30

Action Plan and Agenda for the Future

Chair: Shirley Malcom

- Where are there opportunities for moving forward? New actors? New programs?
- What are the opportunities for collaboration among existing initiatives?
- What should be the balance between targeted and mainstreamed strategies?
- How to find and develop new partnerships with new actors?

Appendix Two

Gender Advisory Board, CSTD Activities Report, January 2003 – December 2006

GAB Secretariat, Kampala

Introduction

This Report outlines the activities and achievements for the period January 2003 – December 2006.

The Association of Women Engineers, Technicians and Scientists in Uganda (WETSU) assumed central coordination and administration of the Gender Advisory Board as of July 1, 2004, taking over from York University (Canada) which had been in charge of this role. Thus, WETSU has been hosting both the GAB Central and Africa Regional Secretariats for two and a half years.

The Southeast Asia Regional Secretariat is hosted by the UNESCO Office in Jakarta under the Gender Program in Science and Technology (GST) where there are two sub-programs doing different but complementary activities through networking:

- The Regional Secretariat for Gender Equity in Science and Technology (RESGEST) for South Asia, and
- The Asia-Pacific Gender Equity in Science and Technology (APGEST) whose concerns are on *Science for Women*.

The Americas Secretariat, coordinated by Sophia Huyer (Senior Research Advisor), took on responsibility for activity in North and South America after the transfer of the Central Secretariat to WETSU. It covers region-specific activities as well as international networking and collaborations. York University agreed to continue to administer remaining project funds and funds targeted for Americas activities without charging an overhead fee.

Regional and National Activities

1. AFRICA

In Africa, as in other parts of the world, the gender dimension in science and technology is recognised as a critical factor in poverty reduction and overall sustainable national development. The use of ICTs as a means to facilitate fast and cheap communication and information exchange and sharing is also well understood.

To date several national governments including GAB Africa participating countries i.e. Egypt, Kenya, Rwanda, Sudan, Swaziland, Tanzania, Tunisia, and Uganda, have developed strategies and put in place institutional frameworks to formulate and implement gender, sciences and technology related policies to meet the challenges and harness the underlying potentials and opportunities. There are on going processes of reviewing/formulating and gender mainstreaming science and technology as well as ICT policies related to national poverty eradication programmes such as Poverty Reduction Strategic Programmes (PRSP) and Poverty Eradication Action Program (PEAP) for sustainable development.

In countries like Kenya, Uganda, and Tanzania gender ministries were instituted at the time of the preparations for the Beijing Conference to mainstream gender in policies and upgrade laws from a gender perspective. There are gender focal persons at district and provincial levels who sensitise and train civic and government leaders the importance of mainstreaming gender in every section. Furthermore, they are part of district and provincial development committees who develop strategies, programs and draw budgets for local government that ensure specific gender allocation for various programs. In Tanzania, the Minister of Gender is a member of the GAB TZ, to voice GAB's concerns at higher levels.

Seven Eastern Africa countries including Uganda, Rwanda, Kenya, Tanzania, Eritrea, Ethiopia and Burundi established the East African Gender Budget Network (EAGBN) in 2001 whose goal is to coordinate efforts and share experiences with regard to approaches that promote gender equality, advancing women and influencing regional policies.

In this context, GAB Africa facilitated a series of activities:

1.1 Establishment of National Focal Points and National Committees

During the course of the period June 2003 to August 2006, the GAB Regional Secretariat facilitated and supported creation of partnerships with governments through the establishment of and networking with eight NFPs and/or National Committees (NCs) in Kenya, Rwanda Tanzania, Uganda (Eastern Africa sub-region); Egypt, Tunisia and Sudan (Northern Africa sub-region), and Swaziland in Southern Africa. (See Annex1 - Name and Contacts of NFPs and NCs)

In general, the GAB Africa strategy of working through National Focal Points and National Committees has increased awareness of the UNCSTD recommendations among various stakeholders and enabled the understanding of gender dynamics and disparities in S & T at different levels. The specific accomplishments for the past three (3) years (June 2003 – August 2006) are:

Policy Research and Advocacy aimed at creating awareness and promotion of gender equality and women's empowerment in science and technology:

Each of the NFPs established National Committees whose role is to provide avenues for convening national stakeholders' workshops to bring to the attention of government and civil society, the gender dimension of national S&T policy and input into important national and regional policy processes. NFPs and NCs reviewed situation analysis of national policies and existing frameworks in gender, science and technology, identified gaps, and made recommendations that were shared in workshops with other stakeholders.

As a result of the situation analysis at national levels, the NFPs and NCs in Sudan, Egypt and Tunisia, Kenya, Rwanda, Tanzania, Uganda held national consensus building workshops that drew a wide selection of stakeholders who authenticated the research findings, identified gender gaps, agreed on key issues in science and technology for follow-up activities.

Sub-regional workshops were convened in North (Tunisia, Egypt and Sudan) and East Africa (Kenya, Rwanda, Tanzania and Uganda) to discuss key issues generated at national levels, prioritise common

gender concerns in science & technology and develop a strategic framework and follow-up activities to address the gender imbalances in their respective sub-regions.

Toolkit Development and Communication Materials

A toolkit on Guidelines for Mainstreaming Gender into Science and Technology Policy Formulation and Review Processes in Africa was developed. It targets a broad section of stakeholders including policy-makers, planners NFPs, and implementers and provides guidelines for mainstreaming gender in science and technology formulation and review processes; indicators to measure gender sensitivity at the different levels of the policy making and highlights the common challenges and strategies..

A film documentary, that creates awareness about the importance of girls education and factors that inhibit their study of science and technical subjects was produced. The documentary depicts different roles played by different stakeholders (parents, local leaders, policy makers and head teachers etc) in girls' decision making to the subjects they study and subsequent career choices. The documentary will to be used with other tools in the outreach efforts to share success stories about women who have excelled academically, challenges and obstacles to girls' education and performance in science and technical subjects.

Gender disaggregated data in science and technology on enrolment and performance in science and technical subjects focusing on four secondary schools, two tertiary institutions in Eastern and central parts of Uganda has been compiled. The data that reflects gender inequality in enrolment and performance in science and technical education will be used as an advocacy strategy tool to inform and lobby the relevant authorities such as planners, legislatures, policy makers and development agents about the need to provide level ground for girls and boys education such as equal opportunities and the necessary science materials (equipment and laboratory etc) needed for the teaching of science and technical subjects.

Teacher training on transformation of education from a gender perspective; career guidance and counselling coupled with role modelling. Face-to-face dialogue with students, parents, and community leaders and government helped to create confidence and dispel the myth that women/girls cannot take on the science disciplines, helping to motivate girls to opt for science careers and subjects.

Documents and more information on national committees and regional activities are available from the GAB web site and from the GAB Africa Secretariat.

2. RESGEST, SOUTHEAST ASIA

The International Seminar on Women in Technology in Jakarta, 1996 is a basis for the establishment of RESGEST.

At the national level, RESGEST NFPs and GEST National Committees function within their respective national gender and S&T policy framework.

The main RESGEST commitments are to:

- Advocate for more women in key S&T policy making positions including Advisory Boards;
- Establish a National Committee on GST or identify an existing national body that can serve as national committee on GST (*in all participating countries*);
- Collaborate with National Statistical Agencies to ensure GST data collection taking into account the available GST Tool Kits;
- Encourage member countries to start documenting local and traditional knowledge being mindful of Intellectual Property Protection;
- Support regional workshops for NFPs and GEST stakeholders;
- Provide timely GST information to UN agencies;
- Encourage the involvement of women/gender study centres to undertake the analysis of GST issues for appropriate use and applications in policy formulation, planning and program;
- Promote and maintain strong interactive regional and international network, both electronic and other means, and strengthen regional cooperation and networking;

Various programs and activities have been undertaken by RESGEST in pursuit of these goals, providing leadership on GEST in the region. The activities are as follows:

2.1 National Committees and National Focal Points

Through the advocacy and awareness-raising efforts of RESGEST in the Philippines, Memorandum Order No. 67 was issued by President Gloria M. Arroyo directing the Secretary of the Department of Science and Technology to coordinate and oversee the implementation of a comprehensive and responsive Philippine platform of action on Gender, Science and Technology. Subsequently, DOST establish the GEST National Committee under its Science Education Institute.

Similar advocacy and awareness-raising efforts of RESGEST in Indonesia led to the establishment of the Indonesian GEST National Committee. A Ministerial Act No. 61/Kp/VII/03 dated 17 July 2003, on the establishment of GEST National Committee was issued by the Ministry of Research and Technology of Indonesia. The GEST National committee is headed by the Deputy Minister of Program for Research and Technology and Deputy Minister for Gender Equity of the Minister of Women's Empowerment. Other GEST stakeholders are the member of the GEST National Committee. The committee was launched on January 7, 2004, and presided over by the Hon. Ir. Hatta Rajasa, the Minister of Research and Technology, and Hon. Mrs. Sri Rejeki, Minister of Women's Empowerment. On this occasion, a National Workshop on "*The Commitment for Gender Mainstreaming in S&T*" was organized by the Indonesian Ministry of Research and Technology. About 50 participants attended the meeting, including senior officials from Ministries, Government Departments, NGO, Media and University representatives.

RESGEST promoted the establishment of GEST National Committees in Cambodia, China, Myanmar and Vietnam. In Cambodia, the process was implemented by the RESGEST NFP from the University of Phnom Penh. In Myanmar, the process was done by the Myanmar Women's Union, a non-government organization. In China, the Chinese Academy of Science and Technology (CAST) through Dr. Donghong Cheng, GEST National Committee representative was still in discussion with the Ministry of Science and Technology. In August 2005, the GEST National Committee in Vietnam was established under the Ministry of Science and Technology.

The 2nd Regional Secretariat Meeting on Gender, Science and Technology, was held in Yogyakarta, Indonesia, 21-22 September 2004. The meeting was attended by 4 NFPs and 2 GEST Nat Com, 2

advisors, four observers and some local participants, bringing the total to 20 participants. The small number of countries attending the meeting affected the effectiveness of the meeting itself. The objectives of the Regional Meeting were to review and appraise the 2001-2004 GEST activities at national as well as regional level and the formulation of programs for National Focal Point and GEST National Committee during 2005-2007. Several issues were discussed during the meeting, including the status of GST in each member countries, the role of the National Focal Point and GEST National Committee in each country, GST Data collection, research and studies on Gender in S&T, and GST networking. Other topics discussed included the re-activation of RESGEST web-site and its link with other relevant sites, fund raising and dissemination of RESGEST activities.

The key results of the Meeting can be summarized as follows : (1) The essential role of the NFP or GEST Nat Com was recognized and the tenure of the NFPs should nominally be set at two years, with continuation subject to indicated interest and commitment to meeting the basic responsibilities associated with meeting the targets and goals of the Network; (2) Promotion of GST involves work (such as GST data collection, studies/researches, networking, etc) at national, regional and global levels; (3) NFPs or GEST Nat Coms must work closely together with all GEST stakeholders to attain the goal of GEST ; (4) Re-activate RESGEST web-site; and (5) Improve the mechanism for Regional Networking including preparation of the progress reports from NFPs and GEST Nat Com to the Program Coordinator, and from program coordinator to GAB.

2.2 Gender Mainstreaming

In this area, RESGEST goals are to:

- Implement the GEST training manual and other GEST guidelines *for mainstreaming, monitoring and evaluation* of projects and activities of RESGEST, at the national and regional levels in cooperation with other concerned agencies;
- Consolidate, publish and disseminate RESGEST experiences, *best practices and case studies* through regional workshops *and other related activities*;
- *Promote* wider involvement of women in S&T activities such as science clubs and competitions;
- *Negotiate proactively with UN and other agencies, national, regional and international levels, to provide support to GST programs, projects and activities*;

The RESGEST Program Coordinator assisted the APGEST program in formulating an Asia and Pacific Gender Mainstreaming Training Manual in Science and Technology. The Manual was designed as guidelines for mainstreaming gender at policy and project level for leader of S&T, gender and S&T experts, and other S&T practitioners. 3000 GEST Manual were published and disseminated to all GEST stakeholders in the region.

RESGEST joined APGEST in the latter's National Seminar and Training on Gender Mainstreaming in S&T Policy Formulation in Indonesia held in Jakarta on 30-31 August 2004. It is worth noting that in Indonesia, the APGEST Focal Point is the same as the RESGEST NFP, a situation that facilitates coordination and building of synergy between the two complementary programs. The Seminar and Training was jointly organized by the Indonesian GEST National Committee, UNESCO Office Jakarta, Indonesian Institute of Sciences, Ministry of Women Empowerment and Ministry of Research and Technology. The seminar and training was attended by 90 participants consisting of high and medium level officers and planners of various government offices, NGOs and universities. Four key areas were presented and discussed during the seminar namely: S&T gender responsive policies, Gender Mainstreaming in S&T activities, and Gender Responsive S&T Planning and Development and Gender Concepts and analysis. The seminar used the GEST Training Manual developed by APGEST – UNESCO. The benefit of the seminar and training are to increase the

awareness of policy makers in gender responsive policy and program planning as well as the increase of capabilities in formulating gender responsive S&T policy. Recommendations of the seminar were addressed to S&T Government Institutions, and included the following:

- (a) Establishing gender mainstreaming group in all government S&T institutions,
- (b) Conducting gender analysis for the formulation of S&T policies,
- (c) Developing Gender and S&T Networking and conducting GST data collection,
- (d) GST studies/research as basic information for decision makers/policy formulator.

Other activities include:

- **Publication of 500 copies of the book Guidelines on Gender Mainstreaming.** The book provides stakeholders with guidelines for gender mainstreaming in the development and application of science and technology including guidelines regarding the Scope, Target Groups and Institutions. The book has been translated into Indonesian with the funding from Ministry of Women's Empowerment and has been disseminated to all GEST stakeholders nationally and internationally.
- **Publication of 500 copies of the book on Joint Comparative Study on Gender Dimension of Policies Related to the Development and Application of Science and Technology for Sustainable Development.** The content of the book was based on the study conducted jointly by RESGEST, APGEST and Science Council of Asia (SCA) in China, India, Indonesia, Philippines, Rep. of Korea and Vietnam.
- **A Technical Meeting on the Regional Policy Study on Innovative Grassroots Technology and Gender Mainstreaming**
- This was held with support from Japan Fund in-Trust through UNESCO Office Jakarta, the Engineering, Science and Technology Unit of UNESCO Office Jakarta, in collaboration with APGEST, at IBIS Tamarin Hotel, Jakarta, 26-27 October 2004. RESGEST complemented the UNESCO-APGEST initiative with technical support in the form of programme backstopping. The meeting brought together 20 gender experts, appropriate technology developers and implementers as well as S&T formulators from India, Indonesia, Vietnam, Thailand and the Philippines. The objectives of the meeting were to: (1) produce a concrete and practical questionnaire on how to do the survey analysis on gender sensitive policies; (2) identify activities in innovative grassroots technologies; (3) develop sustainable S&T policy. As the results of two days of discussion, a set of questionnaires and guidelines for survey and analysis of the study was ready to be implemented in 2005.
- **Technical Seminar on the Guidelines of Gender Mainstreaming in S&T Policy, Jakarta, 28 June, 2005.** The Seminar on the "Guidelines of Gender Mainstreaming in S&T Policy" was conducted in LIPI. UNESCO organized the seminar in cooperation with the Ministry of Women's Empowerment and GEST National Committee. The purpose of the seminar was to introduce the use of the "Guidelines Gender Mainstreaming in government offices for S&T policy formulators and decision-makers. About 30 key S&T decision makers came from S&T government offices.
- **National Workshop on S&T for Enhancing the Quality of Life of Women in Indonesia, Jakarta, 23-24 May 2006.** The workshop was organized in cooperation with the Ministry of Women's Empowerment and the Indonesian Institute of Sciences (LIPI) and attended by 40 participants from various Ministries, NGOs and Universities. The objectives of this workshop, among others, were: (1) to increase understanding of S&T development and its benefit for increasing the quality of life of the community, in particular of women ; (2) to

increase the institutional support for enhancing women's participation and access to S&T development and its benefit for community; (3) to formulate sustainable policies and programs for increasing human capability together with the benefit of S&T for increasing the quality of life of the community, in particular of women's life and (4) to develop institutional network. The **results** of the seminar are in the form of recommendations to S&T related institutions, R&D institutions, NGOs and academia, on the improvements of S&T policies for increasing women's quality of life and proposing a program **to implement the policy to** increase the quality of life of women. The development of an institutional network is also proposed.

- **Seminar on Gender In Science And Technology Development: New Direction For Action, Jakarta, Indonesia, 26-27 June 2006.** The Seminar was organized by RESGEST-UNESCO Office Jakarta in cooperation with the Deputy of Societal Dynamics, Ministry of Research and Technology, Indonesia. It was attended by 30 participants including STEPAN representatives and Focal Points from Australia, Malaysia, Philippines, Vietnam and Indonesia. The main objective of the seminar was to ensure that gender equity issues in science and technology are brought to the awareness and consideration of policy makers, and to leverage on the STEPAN network to reach the S&T policy-makers

2.3 Women in Science Program

RESGEST was a member of the Steering Committee for the “Women in Science Program” of Indonesia, in cooperation with GEST National Committee, Ministry of Research and Technology and Ministry of Women's Empowerment. The Program awards grants to outstanding women scientists in recognition of their contributions to the advancement of scientific knowledge. The first fellow who received the grant from this program in 2004 was a young woman anthropologist who dedicated her work on gender issues in Papua. At the international level, RESGEST in cooperation with the Indonesian National Commission of UNESCO, Ministry of National Education and L'OREAL promotes the UNESCO-L'OREAL Fellowship for young women scientists working in life sciences.

2.4 Promoting the collection of sex-disaggregated on S&T

Five countries agreed to do data collection on gender in S&T and received financial support from RESGEST. These countries were Cambodia, China, the Philippines, Indonesia and Vietnam. **A publication on Gender, Science and Technology in Five Asian Countries** compiled the gender data and statistics for these countries that had been gathered in 2005 and completed in 2006. 500 copies of the books have been printed and about 300 copies of the books have been distributed to GEST stakeholders in the region.

2.5 Participation and Contributions to Workshops and Seminars

- **International Symposium on Gender in Sustainable Development (SYGESD)** was held in Yogyakarta, Indonesia, 23-25 September 2004, in collaboration with University Pembangunan Nasional “Veteran” Yogyakarta and Ministry of Women Empowerment. About 70 participants from 22 countries in Asia, Australia, Europe, USA and Africa attended the symposium. The theme of the symposium was “Women make the world different through Science, Technology and Environment in Practice”.
- Science Council of Asia Conferences: Bali, 13-15 May 2003; Hanoi, 11-13 May 2005; New Delhi, India, 16-20 April 2006

- National Workshop on Gender and Energy: The Gender Perspective, held in Yogyakarta, Indonesia: 25-26 January 2005.
- Gender and ICT Seminar, held in Jakarta on 20 April 2005. The objective of the seminar was to share experiences on the use and benefit of ICT as well as to gather information on the best practices of ICT for women in Indonesia.
- Innovative Grassroots Technology Project under the Engineering Program of UNESCO Jakarta. The project was implemented in India, Indonesia, Thailand and Vietnam with funding from the Japanese Fund-in-Trust (JFIT).

2.6 NFP for China: China Association Science and Technology (CAST), 2000-2005

The implementation of the *Law of the PRC on the Rights and Interests of Women* and *Outline for the Development of Chinese Women (2001-2010)* has played an important role in promoting the status of women in China. From the statistics for 2004 the national enrollment rate for children entering elementary school reached 98.95%, while the percentage of girls in junior high school, senior high school, and university was 47.3, 45.81 and 45.65%, respectively. The ratio of women employed in cities was 44.8% of the working population, with 27.8% employed as public servants in 2003. The anticipated life-span of women was 73.33 years, 3.5 years longer than males. However, the ratio of women in science and technology (S&T) sectors is relatively low, and the China Association for Science & Technology (CAST) is working hard to remedy this.

1.1 Research studies on GST

On the recommendation of the China National Commission for UNESCO, CAST participated in the following GST net activities:

- 2001-03 Evaluation and Research on the Resources, Successful Case Studies, and Differences in Asia-Pacific Gender, Science & Technology
- 2001-02 Research on Gender, Scientific & Technological Data in Asia-Pacific
- 2006 Conferences on Using S&T to Promote Gender Equality in Chennai, India, and Gender, S&T in Southeast Asia and Asia-Pacific in Indonesia
- In 2003 conducted *The Third Time Sampling Survey of Chinese People's Opinions about Unknown Phenomenon* with gender as a variable
- The *National Technological Environment Research* project increased studies on female cadres
- Organized a survey of women in S&T in 2005, with the participation of the Chinese Academy of Sciences, Chinese Academy of Engineering, and All-China Women's Federation. Five aspects were addressed: the distribution of women in the various fields, the relationship between gender and S&T development, the pros and cons of female involvement in S&T, disturbing factors that affect female involvement, and good experience from abroad on how to encourage female involvement.
- In 2005 conducted the survey *Do You Care about S&T — Female University Students and S&T*. It was found female students would like to be scientists but lack confidence, and are interested in information about S&T activities, especially health issues.

2.6.2 Programs to encourage S&T development in different gender groups

- In the program *Helping Women Get Rich through S&T* more than 20 thousand S&T training courses and 50 thousand employment advice associations of various forms for women were organized from 2000—2005. As a new force in earning income and changing the economic structure of rural areas women are gaining greater economic independence, and so boosting their status at home and in society.
- In the program *Compete and Contribute through Knowledge and Technology* peasant women receive agricultural training and then take part in competitions, with social services being provided for them. They are also encouraged to participate in the projects *Women Help the Poor* and *Women's Green Project*. About a billion have been trained in some applied skill, of whom 70 thousand won the title of agricultural technician, and 75 thousand were awarded a Green Certificate.
- Female volunteer activities. Women's volunteer consulting groups have been set up throughout the country to offer guidance, information and books, such as those from Beijing who partnered a hundred capable female peasants, giving them technical guidance which they can then pass on to others. In Shanxi province, more than 100 female volunteers with S&T backgrounds have taught in special schools for women
- In the nationwide *Technology for Communities* program 67 thousand wide-scale S&T activities were held, with 1.6 billion people taking part and women benefiting most. A total of 27 million books, 2.2 million CDs, 6.8 million posters and billions of pamphlets were distributed, over three million people attended S&T community lectures, while 29 million attended courses run by schools and universities

2.6.3 Improving gender surveys and awareness of gender issues

In 2002 while implementing the State Council's survey *Index of Major Data on Gender Research for the Development of Chinese Women and Children* CAST added four kinds of gender data to its own survey, including female employees in government organizations, those in leading positions and outstanding women in S&T.

2.6.4 Promoting the recognition of female scientists

In 2004 the *Award for Young Chinese Female Scientists* was established to encourage young women to excel in the life sciences. Five awards and five honorable mention citations are presented every year.

2.6.5. Outlook and challenges for the future

In February 2006 an *Outline of the National Action Scheme to Improve Scientific Literacy* was drawn up within the framework of the *National Medium and Long-Term Plans for S&T*. This will target the rural population in particular and all kinds of S&T training and services will be further increased, with all departments mobilized to conduct such projects. Many institutions have established new centers and will strengthen studies on women's issues; the gender variable will be included in future S&T surveys.

Although much has been achieved women still have a long way to go to catch up with male domination in S&T. Along with China's economic boom some disturbing factors have reappeared in society, such as a return of feudal ideas and job discrimination. These challenges must be met by advancing education for the whole population, increasing public awareness of the problems, as well as by government actions.

2.3 THE AMERICAS

In Latin America, work with the Office of S&T of the Organisation of American States (OAS) resulted in a set of policy recommendations on the gender dimensions of national S&T which were presented at the Meeting of First Ministers and High Officials of Science and Technology of the OAS in November 2004. As well, GAB was represented at the OAS Civil Society Roundtable on Science and Technology, part of the Summit process, in September 2005. GAB worked with the UNESCO Chair on Women in S&T in Latin America to develop gender input for the declaration of the Roundtable, which was presented at the Summit Dialogue with Civil Society held immediately afterward. See www.science.oas.org/english/ev_ini_e.htm. GAB is currently collaborating with OAS on a multi-stakeholder follow-up programme to work with policy makers, researchers and NGOs on GST issues at the national level.

The recommendations developed at the joint GAB-OAS meeting on gender and science in August 2004 for the Summit of the Americas were presented at the Meeting of First Ministers and High Officials of Science and Technology of the OAS in November 2004. The Canadian delegation moved that they be accepted, so that they are now referenced in the Lima Plan of Action approved at the meeting.

GAB also participated in the Civil Society Roundtable on Science, a consultation which solicited civil society input into the Summit negotiating documents. GAB made a strong input on gender issues, both at the Round Table on "The Fundamental Role of Science, Technology, Engineering, Innovation and Science Education within the Framework of the Discussion for the Fourth Summit of the Americas", and at the Civil Society Regional Forum: "Creating Jobs to Fight Poverty and Strengthen Democratic Governance", held immediately after, where the workshop declaration was presented. The result of these inputs by the science civil society representatives was a much stronger presence of S&T issues in the Summit document, as well as recognition of the importance of women's use of and education in S&T.

As a result of the lobbying processes which the GAB contributed to, the Summit Plan of Action contains several references to the importance of S&T for "Creating Jobs to Fight Poverty and Strengthen Democratic Governance". The Plan of Action specifically includes references to improving the quality of science education, including science, technology and innovation in national action plans, and recognizing the role of S&T in sustainable national development. It also includes a commitment to ensure equal opportunities for all to employment, remuneration and access to education and training, and "pay special attention to gender-differentiated needs".

GAB is collaborating with the OAS Office of S&T, the Inter-American Commission on Women and the UNESCO Chair on Women in S&T in Latin America among others, on a follow-up activity "Promoting the integration of a gender perspective in science and technology policies and programs in the Americas." The program will focus on improving women's role and participation in S&T government entities, research councils, academies, associations, enterprises, etc. It will emphasise

specific efforts and projects highlighted during the first stage to advance the hemispheric initiative, particularly related to increase women opportunities and contribution in S&T.

GAB was able to document the gender dimensions of the OAS Summit process in an article submitted to the MIT journal *Information Technology for International Development* (ITID), titled "Female Empowerment and Development in Latin America: Use versus Production of Information and Communication Technology" and co-authored by Sophia Huyer and Mary Jane Parmentier of Arizona State University.

Brazil National Committee – GAB Brasil

The Gender Advisory Board signed a Memorandum of Agreement with the Brazilian Academy of Sciences to establish the Brazilian Committee of the Gender Advisory Board and to identify a set of key activities to disseminate information on gender, science and technology, under the coordination of Professor Alice Abreu. Two meetings were held and a work plan for the next four years was established. This will be the basis for all GAB-Brasil projects and fund-raising activities. A webpage is under construction and will be an important instrument to disseminate the activities of GAB-Brasil.

The first meeting of GAB Brasil was held on October 31, 2006, coordinated by Dr. Alice Abreu, Programme Director for Latin America, ICSU. The Committee is hosted by the Brazil Academy of Sciences. Thirteen distinguished scientists and researchers have accepted to be on the Committee. The overall objective of the committee is to build on the policy recommendations and gender and S&T analysis developed through major regional and international policy processes, in particular: the First Meeting of Ministers and High Officials in Science and Technology of the Americas, held in Lima, Peru, in 2004; the Brazilian Ministry of Women Affairs, the Ministry of Science and Technology, the Ministry of Education; and the Gender Advisory Board.

Seven main areas of activity were identified by the Committee:

- 1) Pilot project to create and use gender related material of S&T as a source to the diffusion of women participation in science and technology aiming to stimulate the interest of girls for scientific professions in private and public schools in the area of São Carlos, São Paulo.
- 2) Analysis of science and technology data bases from a gender perspective
- 3) Strengthen the decision making process in public policies in Science and Technology aiming at increasing the participation of women.
- 4) Develop a series of activities to make advocacy within the Congress to increase awareness of issues related to gender, science and technology
- 5) To increase the visibility of women in science by creating role models, establishing a network between young scientists and mentors, increasing the visibility of women scientists and changing the image the general public has of a women scientist.
- 6) Increase the presence and participation of women in the national innovation system. Promoting science education for girls.
- 7) To make the creation of GAB BRASIL visible to the Brazilian scientific and technological community, and strengthen its resource base, structures and systems to implement its programs, projects and plans to achieve the stated goals and objectives.

Detailed program proposals are in development in each of these areas.

International Activities

Understanding the Gender Dimensions of Biotechnology Research and Application Expert workshops were held on November 26-27 in Pretoria, and November 30 – December 1 in Islamabad, included development of regional networks; dissemination of the combined workshop report, and agreements with the UNESCO Chair on Women in Science and Technology in Latin America to develop a joint proposal to hold a Latin America regional expert workshop. Results of the workshops were fed into the internal Biotechnology Task Force of IDRC and the internal Biotechnology Scoping Paper of the Canadian International Development Agency (CIDA), which included an appendix on gender and agribiotechnologies.

International Report on Gender, Science and Technology (IRSTG) , UNESCO. The GAB contributed substantially to the report, both directly through the contributions of Shirley Malcom, Geoffrey Oldham and Sophia Huyer, and indirectly through the collaboration of Sophia Huyer with Alice Abreu (OAS) on Section 1.1, Science, Technology and Innovation for Social Development.

GAB/UNESCO Toolkit on Gender Indicators in Engineering, Science and Technology

UNESCO and GAB updated the toolkit, first published in 1999, to take into account the substantive developments in research as well as data collection and management on women's participation in S&T for national development. The revised toolkit will be published in hard copy and on the WWW in early 2007.

GAB members have contributed to a range of major international reports and initiatives, including:

- Inter-Academy Council Report on Women in Science released in June 2006.
- International Assessment of Agricultural Science and Technology for Development , World Bank.
- Feasibility Study for Developing a Network and Program for Women in Science and Engineering in the Arab Region
- International meeting on Re-Engineering Development: Engendering ICTs, hosted by UNESCO in Paris in November 2006.
- GENWIN, a gender advocacy network around WSIS follow-up mechanisms
- OAS Round Table on “The Fundamental Role of Science, Technology, Engineering, Innovation and Science Education within the Framework of the Discussion for the Fourth Summit of the Americas”,
- Inputs to the WSIS Canadian Consultation convened by the Canadian Commission for UNESCO
- Round table on Gender and Science at the University of Naples on 5 to 8 November 2006, for the journal World Review of Science , Technology and Sustainable Development.

Commission on Science and Technology for Development (CSTD)

The GAB developed input into the Secretary-General's Report to the Commission on Science and Technology for Development on the Millennium Task Force on S&T, on women's role in S&T for development. Many of the gender paragraphs were subsequently integrated into the Millennium Task Force Report on Science, Technology and Innovation.

The CSTD was recently mandated to monitor and review UN system-wide followup to the World Summit on the Information Society. As a body of the CSTD, the GAB mandate can be considered to extend to include monitoring of the gender dimensions of this work. Discussions are underway with the Commission on the Status of Women and potential donors concerning a programme in this area.

ANNEX I

NATIONAL FOCAL POINTS AND NATIONAL COMMITTEES

GAB AFRICA

North Africa Sub region:

- **Egypt National Focal Point:** National Commission for Women in Science and Technology
- **Tunisia NFP:** GIS International, Tunis
- **Sudan NFP:** UNESCO Chair for Science and Development.

Eastern Africa sub-region

- **Rwanda NFP:** Ministry of Gender and Family Promotions
- **Kenya National Focal Point:** National Council for Science and Technology,
- **Tanzania National Focal Point:** TZ Commission for Science and Technology
- **Uganda National Focal Point:** Women and Gender Studies, Makerere University

Southern Africa

- **Swaziland National Focal Point:** Forum for Africa Women Educationalists (FAWE) – Swaziland.

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1. THE AMERICAS

Brazil: National Committee

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Marcia Cristina Bernardes BARBOSA, Adjunct Professor in Physics of the Federal University of Rio Grande do Sul, Brazil.

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Magaly Peres PAZELLO, Research and Advocacy in Gender, Information and Communication. Leader of the advocacy team on the Gender Caucus in the WSIS.

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