



UNITED NATIONS

ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC

Status of Women in Asia and the Pacific Region

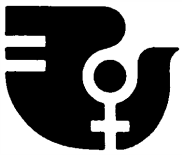
Series 3

IMPACT OF SCIENCE AND TECHNOLOGY ON WOMEN

1986



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PREFACE

Five papers on issues concerning women's status in Asia and the Pacific were commissioned for the Regional Intergovernmental Preparatory Meeting for the World Conference to Review and Appraise the Achievements of the United Nations Decade for Women: Equality, Development and Peace which was held on 26-30 March 1984 in Tokyo. The meeting was organized by ESCAP in co-operation with the United Nations Center for Social Development and Humanitarian Affairs and hosted by the Government of Japan. These papers, which documented regional issues emerging from accumulated evidence during the United Nations Decade for Women, were subsequently expanded into more detailed studies which could be of value for governments and concerned agencies as a basis for planning and implementing programmes to advance the status of women and their full integration in the Asian and Pacific region.

The five studies on specific issues concerning women in development are now being published by ESCAP as the Status of Women in Asia and the Pacific Region *series which include the following publications:*

1. *"Women in the economy: employment", by Linda Y.C. Lim*
2. *"Socio-cultural and attitudinal factors affecting the status of women in South Asia", by T. Scarlett Epstein*
3. *"Impact of science and technology on women", by Malee Suwana-adth and the ESCAP secretariat*
4. *"Participation of women in politics", by Rounaq Jahan*
5. *"Role of the women's movement and non-governmental organizations in enhancing the status of women", by the ESCAP secretariat*

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A. INTRODUCTION

To link science and technology with a social group, as this paper does, is to endow images of test tubes and machines with a human face. The juxtaposition of these images restates the fundamental purpose of science and technology, which is to serve the interests of humanity. Yet "social" aspects of science and technology are often relegated to second place, and an observer of today's world can be forgiven for wondering if the fundamental premise has been forgotten.

The human element is integral not only to the basic premise, but also to every step of scientific and technological endeavour. The advancement of science and technology as a dimension of economic development requires the participation of human beings as producers and consumers, involves policy related to human-power planning; raises issues regarding the distribution among people, of the benefits and control of improved artifices and methods of producing goods and services.

A major dilemma accompanies technological advances. While representing a potential for improving the human condition, there are numerous examples of the deleterious consequences for human life which accompany the benefits of progress. These are not unique to today's age. History provides ample evidence of how applications of new technologies have resulted in the displacement of human labour; the redistribution of power and wealth; ill-effects on human health; the movement of people from rural to urban centres where facilities do not keep pace with growing needs; the breakdown and replacement of traditional authority; the creation of the need for new knowledge and skill and for different ways of relating to emerging social and economic institutions. The issues which these consequences raise, have a "social" base, and reflect human failure to manage science and technology in a just and fair way.

In differing degrees, these anomalies of potential for progress and carriers of diswelfare, continue to the present, contemporary technology adding only new designs to old patterns. Today's tapestry is made more complex by increasing global inequalities, large populations and an explosion of technological development and scientific knowledge. Moreover among current consequences of scientific advance is the looming reality of an ever-present threat of massive destruction.

Against this background, it must be assumed that modern governments are committed to harnessing the potential of technology, minimizing its harmful effects, while maximizing the productive potential of human resources as an essential component in the process of achieving development goals. To neglect

half of this human potential, or to consign it to a marginal and inefficient position, is to be wantonly wasteful. Nevertheless, such waste has occurred in several countries because women have been perceived in ways rigidly prescribed by social custom and habit.

In this discussion of the issues as they touch on science, technology and women, it is necessary first to distinguish between three perspectives on women:

(a) Women, who comprise half of any given population, reap the benefits and costs of scientific and technological advances in the same way as every other member of that population;

(b) Women, because of differentiated social and economic roles and functions, are affected in different ways by science and technology;

(c) Women are a heterogeneous group, and cannot therefore be assumed to have common needs or reactions.

1. Technology and women

The general effects of science and technology on total populations have been thoroughly discussed elsewhere, as this is the usual perspective of development planners, theorists and politicians. Among the major issues have been: the relative advantages and disadvantages of exporting technologies from more advanced countries; the considerations of the appropriateness for any country of a technology in relation to its costs, its effectiveness and the capacity of the country to utilize it. Women, together with men, will be affected by political decisions on these questions. The consequences will include employment opportunities, as these are expanded, altered or lost, increase of agricultural production and logically of household income; the relative ease which is introduced into life; the cost of consuming new facilities; the necessity to acquire new knowledge and skill to fully utilize new technology, and to make meaningful decisions regarding its use.

Issues as have been debated, such as the decentralization of technology, the institutions of distribution, the degree of control and power allowed to consumers, are of relevance to women as thev are to men. However, the distinct position of women in communities the world over calls for special consideration of the impact and potential of technology and science. The following section therefore will receive major attention.

2. Women's socially differentiated functions

It has become common to describe women as invisible, to depict a situation in which planners of development strategies have failed to pay serious attention to the differentiated roles and functions of women. Invisibility like beauty is in the eye of the beholder. The consequences for women of this

myopia in planning has been well documented. The observations show parallels to the evidence of the shortcomings of development strategies which concentrated on economic growth, ignoring social differentiations, and assuming that everyone would benefit from increases in GNP. The effects of development on women add another dimension to inequality, the elements of which include a greater share of negative effects and increasing disadvantage where disparities exist and become more pronounced.

The differentiation between men and women's roles and work may be classified as follows:

(a) In agricultural processes: a sexual division of labour assigns to women specific tasks. For instance, in rice cultivation, women are involved to a greater extent than men in transplanting, weeding, harvesting and in some post-harvest processes;

(b) In industry: women have provided the bulk of the labour force in light industries which in many developing countries have spearheaded industrialization programmes, e.g., industries such as electronics, textiles and garments, food processing and pharmaceuticals. Within these industries there is an uneven distribution of the sexes within employment hierarchies, women dominating the lower wage, unskilled or semi-skilled production processes. This means that women are vulnerable to particular occupational hazards in the operations in which they are concentrated;

(c) In domestic roles: in addition to the unsubstitutable function of childbearing, women are the main providers of basic family needs: food, water, clothing, domestic energy and maintenance of family shelters. They bear the major responsibility of child-care, thus functioning as the principal transmitters to future generations of attitudes and values. In their hands is the burden of the health and well-being of present, past and future generations of the enumerated labour force. The performance of these tasks, particularly in rural areas, is inefficient in the use of resources of time, labour and energy. It is these tasks which account for much of women's labour, resulting in an imbalance in which women's work-hours exceed those of men.

In maintaining and nurturing the family, women frequently find ways to add to household income. Their entry or exit from market activities are sometimes flexible, dependent on contingency. This activity occurs mostly in the "informal sector", and is commonly small-scale, requiring low levels of skills, and earning low returns.

The basic purpose of science and technology for women in these specialized roles, therefore, must be the reduction of inefficient and unproductive time use, the increase of productivity and earnings in market activities and an increase of efficiency in non-market economic activities. Reduction of time and labour spent in domestic work can mean more time available for activities which have monetary and productivity returns. However, the achievement of

these objectives raises questions which must be considered in developing interventions for change.

The following discussion takes the approach that while science and technology must serve to propel women towards a more equal share of monetized activity, their non-market functions must also be addressed.

(a) Issues related to women's employment

(i) Productive use of time. The release of women from inefficient and unproductive time use, so that they might participate more extensively and effectively in market activities and greater production must be accompanied by two other developments. The first is an increased demand for women's labour, a requirement which will pose an added, but necessary, item on the agenda of human-power planners.

The second consideration in any plans for the increase of women's participation in the formal labour force is that it can expand only insofar as substitutes are found for the roles they play in the household. In other words, women cannot be viewed as a "reserve" pool of labour waiting in the wings for their cues. This erroneous view is a consequence of myopia. Greater efficiency in the performance of tasks will not remove the responsibility altogether. To utilize women's potential, requires "factor inputs", be this greater sharing of household tasks by men, or the assumption of some family responsibilities by the state or other formal agencies or bringing technology specifically to bear on the roles which they currently perform.

The costs involved in the harnessing of women's potential invites a debate involving the economy *vs* political philosophy, or a cost-benefit equation against the right of every person to work which employs the best available technology and which earns a return allowing a decent standard of living. To further this debate, attention must be drawn to the argument which transcends political morality, namely that the employment of women can function as significant prong in strategies to increase productivity and alleviate poverty. Women's earnings raise total household income. Their earnings are of particular importance if they are single heads of household, but are also important if they constitute one unit of an income-earning partnership or team.

(ii) Knowledge and skills. In order to participate fully in the scientific and technological world, women, like men, need to acquire new knowledge and skills. For women the path to this acquisition is longer than for men, given the situation in which disparities exist between the sexes in literacy and school enrolment rates. Furthermore, even when women do attain high levels of education, their numbers tend to be concentrated in non-scientific and non-technical subjects, namely in the social sciences and humanities, rather than in fields such as science, medicine and engineering. These handicaps contribute to an increase in knowledge gaps between men and women as scientific knowledge and technological capacity accelerate. Deliberate and concerted effort therefore

will be needed not only to close this gap but also to take a step further. The additional step involves an anticipation of technologies which will be important in the future, and ensuring women's competence in the emerging fields of employment. Micro-chip technology is one such example. It is paradoxical that while women's dexterity and patience have been said to fit women for assembly work in the electronics industry, they have been by-passed in processes involving research and advancement of the technology.

The will to provide sufficient impetus to propel women into the centre and forefront of the technological age needs to be preceded by an eradication of the perception of women as non-scientific and non-technical, a perception which women also have had of themselves. The stereotype is not supported by evidence. Only a little thought will result in the realization of the mental and manual skills and techniques required by women who were potters in early civilizations, by contemporary women who translate the conception of a pattern into carefully calculated techniques of dyeing and weaving; of women who use intricate precision processes in carpet and lace-making; of women who rely on their time-management capacities to cook food while managing child care and other responsibilities. These techniques and skills are not instinctive or "natural", they are acquired through a long process of training and apprenticeship usually at the elbows of mothers. Generations of women therefore have demonstrated their capacity not only for mastering concepts of relationship between factors, surely the basis of science, but also for imparting these skills. Such talents should be harnessed.

(iii) Fair wages. The essential relationship between employment and education in an increasingly technological world has a tangential plane, namely women's capacity to earn a wage equal to men for equal work. Unless this is ensured, the vicious cycle in which women are caught might be hard to escape. One reason given for the lower earning of women is their lower level of education and skill. On the other hand, given their lower earning capacity, a higher investment in their education is not seen to be worthwhile. Thus the cycle is perpetuated. Like a three-legged race, therefore, all legs, education, employment and a fair wage, must be properly co-ordinated for progress to be made.

(b) Women and non-market activity

Technology has been directed largely at marketable produce, productivity and prestige. Because women's work does not enter the national accounts, it tends to be ignored by agencies promoting the advancement of science and technology.

The priorities in public spending often lead to anomalies. One such, is the sight of women, sometimes children, walking great distances to collect household water and firewood, to carry it home by hand or on their heads in the shadow of satellite tracking stations.

Technology as it is relevant to women's work has not been entirely ignored. However attention has been narrowly focussed and poorly distributed. In

urban areas, or where cash is readily available, women represent a profitable market. There is no dearth of devices to ease the housewife's work provided that she can pay for them. When women-relevant issues have taken a place in planned strategies, it is generally related to other development issues. Among these have been the population control strategies. Much attention has been given to contraceptive methods to be used by women. More recently attention has been directed to new forms of energy for cooking and improvements to the thermal efficiency of stoves. The impetus has emerged largely out of the fuel crisis and concern over the rapid depletion of non-renewable sources of energy, as well as over the destruction of forests. Insofar as these efforts have benefitted women they must be applauded. However, the benefits have often been offset by failures to anticipate all the difficulties involved in use and acceptability of new technology. The consequences of wastage and additional expense of promotion might have been forestalled by the involvement of end-users at the stage when the new products and techniques were still on the drawing board.

The importance of women's involvement in decision-making has another dimension – the dimension of the household. Availability of suitable implements and devices for reducing drudgery will not necessarily result in their accessibility for the individual woman. This will be contingent on three other factors: (a) her knowledge of the existence and value of the tools and technology available; (b) the capacity to meet the cost of access – most likely involving cash for purchase, hiring or sharing; and (c) her dicision-making power in respect of household priorities and expenditure.

Salient to all the factors discussed, the women's need for knowledge, decision-making capacity and direct access to cash, is the underlying need for women's education. The point has already been addressed in respect of women's wage employment. It remains here only to stress its importance in her non-market functions, the most important of which are the maintenance of family health and the transmission of values and attitudes to future generations. In this competitive world, no country can afford to leave the physical well-being and socialization of its future citizens in the hands of teachers whose horizons may be limited and restricted.

The discussion of science and technology as it is relevant for the specific functions and roles of women has parallels in the general consideration of issues relating to appropriate technology, as these considerations necessarily include situational specifics. Answers are needed to questions such as "appropriateness" to what, for whom, and at what stage of a given process.

In planning technology "appropriate" for women therefore, cognizance must be taken of the current thinking. The problems identified by ESCAP have been delineated as follows: lack of a comprehensive approach; lack of competitive tradition; lack of future orientation; inadequate rate of change; lack of integration with technology transfer; lack of institutional infrastructure; lack of information flow on alternative technologies; emphasizing the tool and not the problem; lack of peoples' participation. To this list must be added the

lack of integration of women's perspective into the mainstream of decisions regarding technological development. It is necessary to forestall the hazard that the label "appropriate" might result in consignment to a backwater.

For women, policy might also adopt the general stance, that in order to overcome the danger that "appropriate" (as it applies to technology) becomes synonymous with backward or inferior, local requirements and capacity should be used as a foundation, which, when combined with innovation and efficiency, can compete in world markets. To a certain extent this principle has been the underpinning of programmes aimed at upgrading and commercializing the traditional tasks of women in producing handicrafts, processed food and animal products. These programmes have generally been small-scale and often plagued by problems of marketing, credit and organization.

The preceding discussion makes it clear that for women, as for society in general, social systems are so interlinked that no one measure can succeed without concurrent interventions in related systems. A fitting analogy perhaps is the millipede which can only move when all legs work in unison.

That women do not constitute a homogeneous group would seem to be obvious. But the most obvious reality often needs to be stated where familiarity might cause it to be ignored. As in total populations, women are differentiated by class, status, income, education, age, ethnicity, rural-urban experience. The impact and potential of scientific and technological advances inevitably are influenced by these varying characteristics. Differences in purchasing power and access to electricity make one group of women an attractive consumer market while another is not; certain cultural antipathies might mitigate against the acceptability of biogas derived from human or animal waste no matter how efficient for cooking; the forms and channels for dissemination of information must be different for non-literate and literate women, and so on. Whether science and technological advances are directed specifically to women or whether a women's perspective is integral to an overall thrust, these differentiations must be borne in mind.

The relevance of science and technology for women in industry is discussed in the succeeding sections. The discussion in each area focuses on (a) the positive and negative effects of contemporary science and technology; (b) the potential value of science and technology in spheres of work and living especially dominated by women, and which seem to have been neglected or overlooked; and (c) the implications of the utilization of scientific and technological advances in these areas.

B. ASIAN-PACIFIC REGION: A GROWING MARKET FOR TECHNOLOGIES

Science and technology has generally been considered a neutral subject and it is only recently that the relationship and interaction of technology with

society has received adequate attention. While equal rights in education and employment have for some time been areas of international concern, the subject of technology as affecting women has received little attention, particularly at the national level.

The Second Regional Preparatory Meeting for the United Nations Conference on Science and Technology for Development in Bangkok in 1978 strongly recommended that ESCAP initiate programmes for women's participation in the application of science and technology to development.

Increasing competition among developed nations necessitates intense research and development effort aimed at generating new technologies to keep their economies at the leading edge. Developing countries particularly those in Asia and the Pacific increasingly attempt to acquire technology as a short cut in hastening their respective economic development thrust, often with no consideration of potential impacts on women.

A prime concern articulated in the several discussions during the 1983 Asia and Pacific Women's Small Technologies and Business Forum in Manila dealt precisely with the design of technology. Most designers do not have women in mind. One recent classic example is the designing of an artificial heart which precludes women because of its large size.

Educational opportunities for women in the Asian and Pacific region, particularly in South-East Asia, are relatively good at the high level. In considering occupational opportunities for women in the field of science and technology as related to industry, two separate groups of women are taken into account – those with basic compulsory education and those with higher or advanced education.

Asia and the Pacific contains over half of the world's population. It is a region of immense diversity and vast contrasts, due to the differences of geography and resources, religion and culture, class and urbanization, and socio-political systems. As such, it is a difficult area to generalize on most subject matters, including issues related to women.

Among the 94 nations classified as developing and with a total domestic product of more than $ 2.4 trillion many are located in the Asia-Pacific region. These countries are considered as potential third world markets for high technologies by advanced countries. United States companies alone sold $ 59 billion worth of manufactured goods to the developing nations in 1984.

Throughout Asia and the Pacific, manufacturing has grown at an impressive pace, even in the face of a world recession. Once primarily agricultural, many countries are taking on the appearance of developed economies in the proportion of their gross domestic product coming from industry and services. Even in the poorest economies, the shift is on. In several traditional agricultural nations, manufacturing and services account for half of GDP while agriculture's share has fallen below 40 per cent since 1960.

A shift of that magnitude coupled with a large and rising GDP, spells increasing opportunities for women in technology and in manufacturing industry and decreasing opportunities in traditional agricultural fields.

In the year 2000 there will be 671 million more mouths to feed and correspondingly large numbers of people, including women, in the labour force. It is reasonable to expect that the developing countries will be looking for technologies suitable for small localized application that would allow them to leapfrog into the modern era without disrupting their labour-intensive societies. Already significant regional and multinational groups are growing up in the area and many transnational corporations are moving in from outside the region.

With rapid industrialization in many Asian countries (for example, Thailand plans to become an industrialized country within the next 10 years and China plans to shift between 30 to 40 per cent of its agricultural labourers into manufacturing and service industries in the next 20 years) the critical issue facing Asian women today is how to develop strategies that will help them cope with the technological advancement and give them better access to appropriate training and employment opportunities.

C. PARTICIPATION OF WOMEN IN INDUSTRIAL DEVELOPMENT

In the last decade the establishment in several Asian countries (such as Malaysia and Thailand) of labour intensive, sophisticated industry, that is the electronics industry, has created employment opportunities for women. The work force in the electronic industry is predominantly female, young, inexperienced, single, employed at low-skill jobs for low wages, and subject to retrenchment during economic recessions. In many instances, women workers are pressured to resign from work after they marry, or are transferred to less important positions. Reluctance to grant maternity leave is believed to be the major cause of such malpractices by management. There are indicators that in some cases married women are hired on the late-night shift so that they can do house work during the day.

In other more traditional women-employing industries such as textile and leather goods, and food and beverage processing, working conditions are not as good as those of the modern sector such as electronics. Occupational hazards such as exposure to unhygienic plant conditions in food processing plants, and inadequate lighting and bad ventilation in textile and leather processing plants are not uncommon. Lung-disease, fatique and poor health in general are some of the common results. Hearing impairment and the inhalation of textile dust are also experienced by women workers. Eye complaints are common in the electronics assembly industry. One survey in an Asian country found that most workers in this sector developed severe eye problems within the first year of employment (44 per cent became near-sighted and 19 per cent developed astigmatism) and headaches were caused by eye-strain from long hours of

looking through powerful microscopes in the bonding process. It should also be noted that the Occupational Safety and Health Administration in the United States has placed electronics on its select list of "high health risk industries using the greatest number of hazardous substance". Metal solder fumes can cause shortage of breath, nausea, kidney and liver damage and cancer.

The intensity of monotonous and repetitive assembly work in the rigidly disciplined environment of electronics factories aggravates nervousness and stomach ailments, and increases likelihood of accidents. The health risks become acute where there is an absence of adequate protection and workers are not informed of the dangers.

The participation of women in labour union organizing to take action in solving work-related problems has not been very high in Asian countries. There have only been sporadic cases in Malaysia, Thailand and the Philippines.

Training opportunities for advancement for women employees are also limited due mainly to the low level of their basic education and partly to the traditional belief that women are less technically-oriented.

D. NEW ENERGY ERA AND ITS RELATION TO WOMEN AT WORK

During the 1970s the world experienced the "energy crisis" caused by oil price increases. One major consequence has been a continuing effort by most countries to become less dependent on imported oil. In general, two common approaches have been pursued by countries in Asia and the Pacific:

(a) Development of renewable resources for energy, such as biogas, gasohol and solar power;

(b) Searches for new gas and oil deposits;

There has also been increasing interest in some countries in a third alternative, adopting a nuclear power energy strategy.

Women, particularly those at home, have a great economic interest in the energy issue. In general, one can anticipate the transition to a more energy-efficient society. Energy conservation can be effective only if massive effort is made. Women, particularly in South-East Asia, play a major role in managing family budgets, and to a large extent control energy use in the residential sector. It is reported that women make over 80 per cent of all consumer purchases.[1]

[1] Irmgard Hunt and others, "Women: tapping a new resource for energy", *Consumer Action Now,* New York (undated).

At work in industry, it is vital for women to be familiar with new alternative energy sources and to keep up with the related technologies with regard to either their application or their effects. It was not uncommon to hear of gas explosions when gas was first introduced as fuel in developing countries. Little effort, if any, has been made to involve women in energy issues in industry.

In as far as potential employment opportunities are concerned, engineering and energy conservation are experiencing great growth which is expected to continue into the late 1980s and 1990s. Yet, Asian women represent only a very small percentage in these fields. A study by Saengbangpla in 1978 indicated that even in liberal countries such as Thailand and Philippines only a small number of women graduate in engineering (20 per cent in Thailand, compared to about 50 per cent in the fields of science and medicine).[2]

New career opportunities are expected to be opening up in conservation and energy technology, not only in developed countries but also in many developing countries in the Asian and Pacific region. It is vital that women who are fortunate enough to advance to higher education become aware of this potential. Otherwise they will continue to be excluded from the high-paying, policy-making positions in the energy field.

E. POTENTIAL FOR ADVANCEMENT OF WOMEN IN INDUSTRIAL EMPLOYMENT

1. Existing industries

In the traditional women-dominated industries, such as textiles and garments, and food and beverage processing, more competition is anticipated in the future particularly in export-oriented industries. As a result, production will have to be made more efficient, possibly through the introduction of semi-or full automation, and quality standards improved. These developments call for new skills from better/higher qualified personnel, possibly in the areas of computerization and management. At present, women work at two levels, i.e., one in low-skilled processing lines and the other in quality control and research and development, including designing of textiles. There would appear to be little opportunity for the low-skilled women workers to advance in the technical production field. A possible solution would be to promote the development of small enterprises to help absorb those who will be pushed out of work and the new entrants into the labour force. In this connection, it will be necessary for planners and policy makers to begin to look inward to internal markets and not just export markets as presently practiced.

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[2] Poonporn Saengbangpla, "The status of women engineers in Thailand", a paper presented at the Fifth International Conference of Women Engineers and Scientists, Ruen, France, 1978.

Food is a basic human need, and agriculture and forestry still provide the source of livelihood for the bulk of Asia-Pacific population. Appropriate technology related to food and agro-processing as well as energy from biomass will continue to dominate in the region. However, in the present difficult economic situation in several countries of the region (which is not limited to the traditional women-dominated industries, but extends to the whole manufacturing sector) women are particularly disadvantaged because of their lower technical education and of traditional practices.

2. Newly emerging industries

More opportunities will be available in new areas of emerging technologies such as computers and biotechnology. Special consideration should be given to the fast-growing field of biotechnology, including genetic engineering, as it relates to agriculture and food production. With the development of agricultural biotechnology, traditional agriculture production of an increasing number of crops may slowly change to factory farming using tissue culture and cloning techniques. Awareness of such technological developments is therefore a prerequisite for improving women's employment in the future "biotechnology" industry.

Judging from the present situation of employment of women in high-technology industry, the integration of women into the newly emerging technologies will not be an easy task. One major constraint would still be the women's tendency to be technology-shy. A recent study[3] at a high school in the United States found that equal numbers of boys and girls took a computer class but far more boys than girls used the computer center beyond class hours. It also showed that the barriers between women and computers are social, not intellectual.

3. Management areas of industry

Women of Asia are gaining strength in management, particularly in communication, industrial relations and finance. A 1984 study[4] reported that many countries in Asia are experiencing a gradual increase in the relative proportion of women in management. Changes in their percentage share range from 2.6 per cent in Hong Kong to 11.0 per cent in the Philippines. One major factor is the shift in marital roles due to economic pressure with both sexes sharing work and responsibilities. Second is the change, although slow, in cultural norms concerning the proper role of women in society. The third factor is the recognized ability of Asian women in financial management from the family level to that of companies and industries.

Women in management in industry find it necessary to know more about technology. It is anticipated that the number of women in industry is likely to increase, particularly in management positions.

[3] Gina Kolata, "Equal time for women", *Discover*, 5(4), 1984, pp. 24-27.

[4] Anderson, Ellen, "Why aren't there more women managers", condensed from the Director, *World Executive's Digest*, V(6), 1984, pp. 1-4.

F. SUMMARY AND CONCLUSIONS

The importance that developing countries in the Asian and Pacific region attach to the role of industrialization in furthering national development objectives stems from the need to generate additional employment opportunities to help absorb an expanding population, without reducing per capita incomes further, as increased employment in agriculture normally tends to do. As a result, labour-intensive industries such as textile and garments, food and beverage processing, pharmaceutical (formulation) and, later, electronics were among the first to be deployed by developed countries. These industries have been traditionally regarded as women's industries, employing simple, repetitive technology.

Generally speaking, working conditions seem to be better in electronics than in textile and garment industries, and better in large transnational than in small domestic factories. Nevertheless, occupational hazards relating to monotonous working situations in constant environments of dusts and soldering chemicals do exist and affect the health of women workers who normally are young single women with little technical knowledge.

Under conditions of increasing economic pressure, and protectionism in developed countries together with the introduction of more advanced technology, including automation, women in low-paying jobs doing simple technological processing stand to lose out with very little potential for advancement.

On the other hand, more educated women, particularly with scientific and technological knowledge and/or management skill and training, may be able to improve their position in relation to men. The fast-growing new technologies such as automation and biotechnology, while offering employment opportunities for more highly educated women, threaten to reduce women's share if proper awareness and drive are not instilled among women early in their career development.

G. RECOMMENDATIONS

(a) With the increasing awareness of biomass potential in relation to food and energy production, it is suggested that serious consideration be given to small-scale industrial development as a means to generate employment and low-cost food production for increasing populations. In this aspect, it would be necessary to arrange for credit facilities for women.

(b) In urban areas where high technologies are to be introduced, awareness needs to be created and appropriate training planned for women. In this connection, it will be necessary for women to plan their careers in a more progressive manner rather than evolving step by step. Counselling programmes may have to be introduced.

(c) In existing women-dominated industries, income-generating training programmes could be organized, probably with the assistance of non-profit, non-governmental organizations. Attempts should also be made to organize women workers into groups/unions to protect themselves against unfair dismissal or management practices such as downgrading of women's jobs.

(d) Finally, in still a few countries of the region where legislation does not protect women's equal rights, international pressure should be applied to hasten the process. In countries where such legislation is not effectively implemented, monitoring and research on such areas should be promoted and supported.