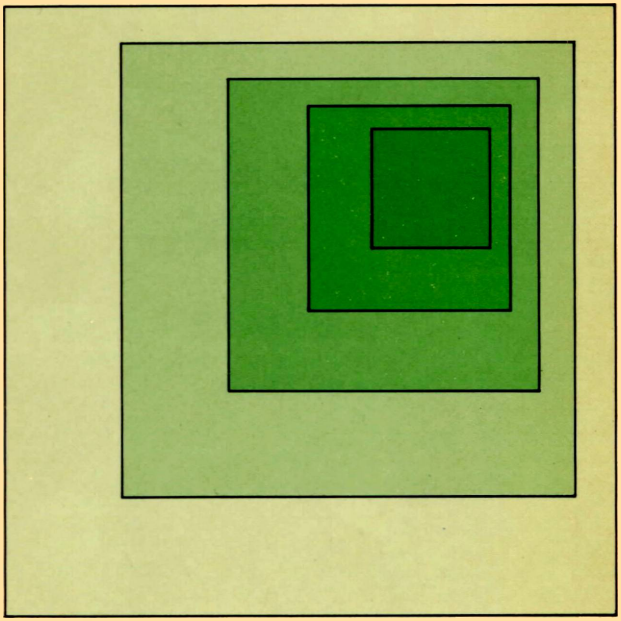
BACKGROUND TO AN INTEGRATED PLAN OF ACTION ON HUMAN RESOURCES DEVELOPMENT FOR THE ESCAP REGION



UNITED NATIONS

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UNITED NATIONS
ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC

ST/ESCAP/601



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PREFACE

As the Economic and Social Commission for Asia and the Pacific has observed repeatedly at its recent sessions, the self-sustaining growth of the region's economies requires the ongoing development of a sound human resources base. At the same time, the region's economic growth must be translated into results that are directly meaningful to an Asian and Pacific population fast approaching the 3,000 million mark.

In adopting resolution 260 (XLIII) on 30 April 1987, the Commission raised the issue of human resources development to the highest priority level. Through that resolution, the Commission decided that the theme of its forty-fourth session, to be convened at Jakarta from 11 to 20 April 1988, would again be human resources development. It was decided that at that session, special attention would be given to the formulation of an ESCAP integrated plan of action on human resources development, taking into account all its relevant components.

The secretariat, in keeping with the directives contained in the resolution, undertook a comprehensive exercise consisting of background studies, consultations with member and associate member Governments, and the preparation of a draft plan of action as a basis for the Commission's further deliberations on the subject. The draft plan of action has been submitted to the Commission at its forty-fourth session as document E/ESCAP/600. The present monograph has been prepared for presentation to the Commission as a supplement to the draft plan of action. It provides a source of in-depth information on the major issues, expanding upon the series of recommendations and proposals for action contained in the plan itself.

The monograph presents the report of a high-level expert group meeting convened in Tokyo from 7 to 10 December 1987, to formulate guidelines for the plan of action. In addition, it contains five background studies on major aspects of the plan of action. The first considers the overall scope and content of an integrated plan of action on human resources development for the region. The other studies explore four basic dimensions of human resources development: employment and manpower development, science and technology, quality of life, and implications for women's human resources development. Lastly, the monograph contains a statistical annex providing selected quantitative indicators of the human resources development situation in the Asian and Pacific region.

I should like to express my gratitude to the Government of Japan for its generous financial support in hosting the expert group meeting to formulate guidelines for an ESCAP integrated plan of action on human resources development and for the background studies that were prepared for that meeting. The present monograph has also been published with the generous assistance of the Government of Japan. The study on women's issues in human resources development was prepared with generous assistance from the United Nations Development Fund for Women (UNIFEM).



S.A.M.S. Kibria
Executive Secretary

Bangkok
March 1988

PART ONE

REPORT OF THE EXPERT GROUP MEETING TO FORMULATE GUIDELINES FOR AN ESCAP INTEGRATED PLAN OF ACTION ON HUMAN RESOURCES DEVELOPMENT TOKYO, 7-10 DECEMBER 1987

I. BACKGROUND

At both its forty-second and forty-third sessions, convened in 1986 and 1987 respectively, the Commission deliberated upon the theme topic of human resources development. At the forty-second session, the debate focused on the technological aspects of human resources development and at the forty-third session on its social aspects.

At its forty-third session, the Commission decided that the theme topic for the forty-fourth session, to be convened at Jakarta in April 1988, should continue to be human resources development, with a view to considering an integrated plan of action on human resources development for the region.

At its forty-third session, the Commission also adopted resolution 260 (XLIII) on an ESCAP integrated plan of action on human resources development. In that resolution, it was indicated, *inter alia,* that:

(a) In considering human resources development as the theme topic of its forty-fourth session, the Commission would give special attention to the formulation of an integrated plan of action on human resources development for Asia and the Pacific;

(b) The Commission welcomed the offer of the Government of Japan to host an expert group meeting in Tokyo to formulate guidelines on an integrated plan of action on human resources development and to provide substantial funding towards the preparation of the plan of action;

(c) The secretariat should formulate a draft integrated plan of action on human resources development for the region in pursuance of the decisions and recommendations of the Commission at its forty-second and forty-third sessions and in the light of the report of the above-mentioned expert group meeting.

In compliance with the directives contained in resolution 260 (XLIII), the secretariat, in co-operation with the Government of Japan, undertook preparatory activities to convene the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development, which was held in Tokyo from 7 to 10 December 1987. It was expected that, on the basis of the guidelines formulated by that meeting, the secretariat would subsequently finalize a draft integrated plan of action on human resources development in Asia and the Pacific for presentation to the Commission at its forty-fourth session.

II. ORGANIZATION OF THE MEETING

A. Tasks of the Meeting

Within the context of the mandate set by the Commission, the tasks of the Meeting were:

(1) To examine the major human resources development issues and trends in the region and review the current situation regarding national policies and programmes;

(2) To indicate priority areas and provide guidelines for an integrated plan of action for the mobilization and strengthening of policies, plans and programmes for human resources development in the member and associate member countries and territories in respect of the employment and manpower development, science and technology and quality of life dimensions of human resources development and with special reference to the concerns of women;

(3) To consider appropriate means for achieving national, regional and inter-agency co-ordination of a regional integrated plan of action on human resources development, with special attention to the importance of intersectoral co-ordination.

B. Attendance

The Expert Group Meeting was attended by 20 experts from the following member countries of ESCAP: Bangladesh, China, France, India, Indonesia, Islamic Republic of Iran, Japan, Malaysia, Pakistan, Philippines, Republic of Korea, Sri Lanka, Thailand, and Viet Nam.

The Meeting was also attended by representatives of the United Nations Children's Fund (UNICEF), United Nations Commission on Transnational Corporations (UNCTC), United Nations Development Fund for Women (UNIFEM), United Nations Development Programme (UNDP), United Nations Fund for Population Activities (UNFPA), United Nations University (UNU), International Labour Organisation (ILO), World Health Organization (WHO) and International Telecommunications Union (ITU).

The following intergovernmental organizations also attended: Asian Development Bank (ADB), and Colombo Plan Council for Asia and the Pacific.

Observers were also present from the Government of Japan – Ministries of Labour, International Trade and Industry and Foreign Affairs – and from the following non-governmental organizations: SAARC Association of Bangladesh and World Federation of Trade Unions (WFTU).

C. Election of officers

Her Excellency Ms. Rosita Fondevilla, Under-Secretary for Attached Agencies, Department of Social Welfare and Development, the Philippines was elected Chairperson, Mr. Sayuti Hasibuan, Deputy Chairman, Manpower and Population Division, National Planning Agency, Indonesia; Mr. Suh Jung-Man, Director-General of the Manpower Policy Bureau, Ministry of Science and Technology, Republic of Korea; and Mr. J. Veera Raghavan, Secretary, Ministry of Human Resource Development, India, were elected Vice Chairmen. Mr. S.M.L. Marikar, Secretary, Ministry of Plan Implementation, Sri Lanka, was elected Rapporteur.

D. Agenda

The Meeting adopted the following agenda:

1. Opening of the Meeting.
2. Election of officers.
3. Adoption of the agenda.
4. Consideration of the overall scope and content of an integrated plan of action on human resources development for Asia and the Pacific.
5. Formulation of guidelines for an integrated plan of action on human resources development for Asia and the Pacific with respect to:
   (a) Employment and manpower development;
   (b) Science and technology;
   (c) Quality of life;
   (d) Women's concerns.
6. Guidelines for co-ordination mechanism for an integrated plan of action on human resources development for Asia and the Pacific.
7. Adoption of the report.

III. OPENING OF THE MEETING

The Deputy Executive Secretary of ESCAP, in his opening statement, noted that the Meeting had the responsibility of helping set the Asian and Pacific region firmly on the path to the full realization of its human resources potential. The prospect of the regional population surpassing the 3 billion

mark by 1990, while viewed by many with dismay, could also be regarded as a blessing. The challenge was to mobilize and direct that vast reservoir of human capabilities for development and, in turn, ensure that the benefits of development were shared fully among the people themselves.

He also underlined, however, the problems posed by that rapidly-expanding labour supply in the face of a relatively slow-growing demand for labour. The particular problems of displacement of labour from the agricultural sector, rural-to-urban migration, uncertainties and growing protectionism in international markets, unrealistic educational programmes and increasing skill redundancies were identified. The influence of tradition on social systems already burdened by widespread illiteracy, ill-health, constraints on social mobility and inequitable distribution of resources in marginalizing women and other disadvantaged groups was also noted.

The rapidly-changing nature of scientific and technological progress was seen to constitute both a challenge and an opportunity for the region. Vigorous and immediate steps were necessary to adapt the region's human resources to new technological realities if the development opportunities offered by modern science and technology were not to be lost.

In detailing the specific tasks of the Meeting, he noted the emergence of a consensus on the need for a wide-ranging, integrated strategy for human resources development rather than a piecemeal or sectoral approach. He concluded by thanking the Government of Japan, especially the Ministry of Foreign Affairs, for its generosity and excellent preparations in hosting the Meeting and wishing the participants success in their deliberations.

His Excellency Mr. Keiwa Okuda, Member of the House of Representatives of Japan and Head of the Delegation of Japan to the forty-third Commission session, gave a keynote address. He was personally convinced that the development of any country was determined by its people and that, therefore, human resources development was of the greatest importance for overall development. He recollected that, as Head of the Japanese delegation to the forty-third session of the Commission, he had personally put forward the original proposal for the formulation by ESCAP of a long-term integrated plan of action for human resources development and had indicated that the Government of Japan was ready to host an expert group meeting in Tokyo to attain that objective. He was gratified that the resolution which contained that proposal had been adopted, and he was therefore very pleased to be present at the opening of that Meeting.

Mr. Okuda noted that Japan, as a country in Asia and the Pacific, had consistently made the strengthening of friendly and co-operative relations with the countries of the region a focus of its foreign policy. The holding of the Meeting was an indication of Japan's continuing efforts for the social and

economic development of the region. He concluded by welcoming the participants to Japan and expressing the wish that the experience would deepen friendship between Japan and the other Asian and Pacific countries.

In a welcoming speech, Mr. Minoru Endo, Director-General, United Nations Affairs Bureau, Ministry of Foreign Affairs of Japan, observed that, because of its lack of natural resources, Japan had depended in great measure upon human resources in its economic and social development. That national experience had made the country fully aware of the importance of human resources development. Consequently, Japan had always placed great emphasis on human resources development activities in Asia and the Pacific.

Mr. Endo expressed his appreciation to the secretariat and its staff for their dedicated and effective work in preparing for the Meeting and voiced the hope that, with the active participation of the experts attending, the Expert Group Meeting would be most fruitful. He wished all visitors attending the Meeting an enjoyable stay in Japan.

IV. GUIDELINES FOR THE OVERALL SCOPE AND CONTENT OF AN INTEGRATED PLAN OF ACTION ON HUMAN RESOURCES DEVELOPMENT FOR ASIA AND THE PACIFIC

In considering the guidelines to be formulated under that topic, the Meeting had before it secretariat document SD/EGM/IPAHRD/1, which set out the analytical framework within which an integrated plan of action on human resources development for Asia and the Pacific might be organized. The Meeting expressed its appreciation of the useful statement of the proposed scope and content of the plan as contained in the secretariat document and agreed that the views expressed therein provided a valid basis on which to proceed.

It was proposed that human resources development could be effectively examined in terms of three major themes: employment and manpower development, science and technology and quality of life. The thematic approach was suggested as a means of facilitating comprehensive examination of human resources development while at the same time accommodating all relevant policy interests and areas of expertise. It was emphasized that those themes constituted, in effect, different dimensions of the overall development process. They were thus interdependent and of equal consequence.

Although the Meeting recognized the need to consider each of the three major themes separately, it was noted that the plan of action should combine the themes within an integrated structure. A functional rather than thematic

framework was therefore suggested as an appropriate format for the plan. It was proposed that the major functional components of the plan should constitute (a) policy and planning, (b) institutional strengthening, (c) education and training, (d) research and analysis, (e) information collection and dissemination, and (f) monitoring and evaluation. That view was discussed at some length and endorsed by the Meeting.

The Meeting considered the special problems posed by limited resource availability for human resources development in the developing countries of the Asian and Pacific region. The implications of current trends in international markets and the legacy of indebtedness were emphasized in that connection. The consequent importance of cost-effectiveness and the need to compare alternative approaches and programmes and carefully establish the feasibility of specific proposals were highlighted.

Because of the urgent need for human resources development in the Asian and Pacific region in the face of severe resource constraints, the Meeting considered that programme priorities might be established within the plan. However, the diversity of national concerns, experiences and situations demanded that priorities should be assigned within the context of individual national frameworks. Differences between the situation prevailing in the more and less developed developing countries of the region and between countries with large and small populations were highlighted in the discussion. In addition, special problems faced by particular countries, for example, with respect to emigrant labour, refugee or illegal immigrant populations or large agrarian landless labour forces, indicated that the plan should accommodate flexible national approaches with regard to the establishment of priorities. It was also noted that the question of allocating priorities could not be adequately resolved until the overall plan had been fully considered and its programme components identified.

Several participants noted the special significance of employment as a focus for human resources development in the particular situations pertaining in their countries. It was also noted, however, that comparative success in employment generation in a number of countries had not eliminated the need for additional attention to human resources development. The complex interactions between the science and technology and quality of life aspects of human resources development, on the one hand, and the employment and manpower development aspects, on the other, were also stressed. It was felt that a broad and integrated approach to planning for human resources development would be required.

Identification of specific target and enabler groups was advocated as an important means of obtaining maximum impact with limited resources. The Meeting discussed at length the various specific target groups that might be

accorded priority attention for human resources development. Considerations of efficiency led to a suggestion that the multiplier effects of programmes directed at specific target groups should be taken fully into account. In that regard, population groups whose human resources development would be likely to extend to others through employment generation or demand creation should receive special attention. Women were identified as a key target group capable of generating significant multiplier effects among other vulnerable sections of the population. The importance of giving special attention to early childhood was also stressed in view of the fact that the major portion of a child's mental and physical development was completed before the fifth year. A number of other important target groups, among which were the poor (both rural and urban), landless agricultural households, the underemployed, early school leavers, migrant workers, illegal migrants, refugees and child workers, were identified. The effectiveness of programmes to promote self-employment and entrepreneurship was pointed out as one means of mobilizing the human resources of those target groups.

Attention was also devoted to the identification of specific enabler groups for human resources development. The importance of such groups was considered in the context of the need for enhanced community and private sector participation and in the considerable emphasis placed on cost effectiveness in programmes for human resources development. It was suggested that a programme emphasis on grass-roots service delivery personnel would link the strengthening of enablers directly to disadvantaged target groups.

A number of participants advocated a more demand-oriented approach to human resources development. A demand orientation required policies and programmes that would more explicitly affect values and attitudes, which were recognized to be critical determinants of demand. That was considered especially important in view of the importance of employment generation and its demand-derived determination. It was noted that supply-focused strategies tended to generate a dependency syndrome among disadvantaged groups and that a demand-focused strategy would serve to counteract that problem.

The implications of uncertainty on the formulation and execution of strategies, policies, plans and programmes for human resources development were raised. The existence of uncertainties with respect to future trends relating to both the demand and supply aspects of human resources development were noted. Emphasis on demand-oriented strategies would have to take into account the element of uncertainty. Participants stressed the consequent need for flexibility in the formulation and implementation of an integrated plan of action. It was agreed, for that reason, that the plan should adopt an indicative rather than a prescriptive approach.

Several views were expressed on the appropriate time frame for the plan of action. It was proposed, first, that the plan might be phased in terms of discrete time periods. The first phase, 1988-1990, would serve to lay the basis for subsequent plan implementation, including the realignment of ongoing activities with human resources development content into an integrated approach. The second and third phases, 1991-1995 and 1996-2000, would see the formulation and implementation of a co-ordinated series of human resources development activities by Governments and the supporting international agencies and bodies.

A second view, not incompatible with the first, was that the time frame for the plan of action might follow the conceptual framework that had previously been devised by UNDP. That approach distinguished three phases. In the short term, activities would be considered within the scope of fixed budget constraints; the short term would thus focus on the rationalization of existing programmes that had already received budgetary allocations. The medium term would consider the introduction of additional activities under expanded budgetary allocations. The long term would be characterized by structural adjustments and organizational developments going beyond budgetary considerations.

A number of participants stressed that the urgency of the need for human resources development demanded a plan of action that would focus on proposals capable of yielding early and concrete benefits. Others noted the wide range of national variation within the region in respect of the timing and duration of national development planning cycles and suggested that the plan of action should be compatible with those different cycles. Thus, a third view was expressed that, within the overall time frame of the plan to the year 2000, fixed phasing of activities would not be desirable.

In discussing the question of integration and co-ordination in human resources development planning and policy-making, the need for intersectoral and inter-agency co-ordination at both the national and regional levels was noted. Several participants remarked on the need for strengthened co-ordination and care to avoid overlap in the work of different ministries. Similar views were expressed concerning the activities of the United Nations system and other international agencies and bodies. The recent experience of some countries and international agencies in establishing a single ministry, co-ordinating committee or other body for human resources development co-ordination or programme execution was noted. The desirability of establishing in each country a national administrative focal point for human resources development was thus fully recognized. Participants suggested that, at the regional level, international agencies should also strive to co-ordinate their human resources development programmes. Furthermore, the importance of

the interface between sectoral, national and international programmes for human resources development was emphasized.

V. GUIDELINES FOR THE SPECIFIC CONTENT OF AN INTEGRATED PLAN OF ACTION ON HUMAN RESOURCES DEVELOPMENT FOR ASIA AND THE PACIFIC

To assist in its deliberations on that topic, the Meeting had before it the following documents: "Employment and manpower development aspects of human resources development" (SD/EGM/IPAHRD/2); "Science and technology aspects of human resources development" (SD/EGM/IPAHRD/3); "Quality of life aspects of human resources development" (SD/GM/IPAHRD/4); "Integration of women's concerns into human resources development" (SD/EGM/IPAHRD/5) and "Current and prospective human resources development activities of the ESCAP secretariat and other United Nations bodies and agencies in Asia and the Pacific" (SD/EGM/IPAHRD/6).

Four major themes were covered during the discussions: "Employment and manpower development", "Science and technology", "Quality of life", and "Women's concerns". The Meeting commended the secretariat on the excellence of the documentation elaborating on those themes and expressed its general agreement with the suggestions for action contained therein. The main findings of the discussion and the guidelines proposed by the Meeting for the integrated plan of action in respect of those themes were as follows.

A. Employment and manpower development

Employment and manpower development were regarded by the Meeting to be critical components in an integrated strategy for human resources development. The crucial importance of both supply and demand factors in employment and manpower development aspects of human resources was underlined. It was considered that employment policy in the developing countries of Asia and the Pacific should emphasize the need to generate productive employment for new entrants to the labour force as well as for increasing the productivity and incomes of those who were underemployed or likely to be displaced from depressed or marginalized sectors of the economy. On the supply side, manpower development involved education and skill development programmes emphasizing the matching of job needs in an efficient and cost effective manner. In a situation of rapid economic and technological change, the need to build a training system that could respond quickly and effectively to changing labour demand was considered essential. It was noted, however, that education and skill development programmes should not only train people for employment

but should also enhance the quality of life for overall human development. The Meeting voiced its concern that employment and manpower development had tended to be considered separately from the development planning process and had been treated as a by-product rather than an integral element of development strategy.

A number of problems and issues related to employment and manpower development were discussed. In the light of the failure of past development to lead to a general improvement in the quality of life or alleviate poverty, and of increasing pressure from growth in population and the labour force, a fundamental reappraisal of development strategies was considered necessary. In the face of a relatively slow growth in the demand for labour, especially in the agricultural sector and for unskilled labour, rising unemployment and underemployment were recognized to be serious threats in many countries in the region. In a number of Asian and Pacific countries, those problems would be aggravated by unstable and possibly deteriorating domestic and international demand conditions, growing protectionist forces, and increasing obsolescence in the presence of technological change. The uncertainty of future changes in demand combined with the certainty of rapid technological change would add to the problems of mismatch, leading to simultaneous shortages of new skills and surpluses of many obsolescent skills. That situation further emphasized the need for flexibility in manpower development programmes.

The Meeting felt that unless major changes were made in basic policies, the prospects for rapid expansion of the demand for labour would be bleak. It was noted that past import-substitution oriented growth strategies had not created sufficient additional employment in most countries, particularly for less skilled workers, despite industrial expansion. Changing conditions in international markets and recent technological developments has also reduced the opportunities to expand the demand for unskilled labour through export-oriented growth strategies, as had occurred in the case of some of the newly industrializing countries in the region. The result had been rising unemployment of trained and educated manpower in several countries. The Meeting felt that a successful employment strategy would lead to growth and increasing resources to finance development. The quality of employment and productivity of labour should be considered cardinal measures of successful development.

In developing a framework for employment and manpower development, the Meeting distinguished between short- and long-term human resources development responses to labour market problems. The principal short-term issues were identified as: expanding employment opportunities and productivity of marginalized workers, particularly women and workers in the informal sector; assisting workers displaced by changing technologies, such as mechanization in agriculture or automation of assembly processes in industry; improving the efficiency of labour-market clearing mechanisms through improved information

systems concerning job vacancies, employment opportunities and skills requirements; and ameliorating the negative impact of structural adjustments and cyclical economic fluctuations, particularly on women, inexperienced and less-skilled workers and temporary overseas migrant workers.

Among the longer-tem issues identified were: reorienting growth strategies so as to affect a more favourable structural alignment for productive labour absorption; training individuals for greater adaptability in acquiring new skills in a rapidly-changing work environment; increasing the efficiency and capacity of training systems to produce required skills; increasing economic participation levels for specific population groups, such as those in the informal sector, women, landless agricultural workers and those with professional skills; and the adoption of appropriate population policies to control the growth of the labour supply.

Planning and policy priorities for employment and manpower development were also discussed. There was general agreement that the prospects of success for employment-creation policies in the countries of the region would depend largely on the effectiveness of Governments in removing or reducing the basic social and institutional constraints to employment generation. It was realized that stability in the political, social and economic fields was a condition *sine qua non* for the successful implementation of a human resources development strategy. It was also realized that, while a suitably integrated human resources development policy might not be sufficient to eliminate some constraints, it could still be important in mitigating some of the adverse short-run conditions by dampening the negative impact of such rigidities on marginalized groups and in preparing the ground for more fundamental long-term programmes.

It was emphasized that appropriate macro policies were necessary to influence investment patterns in ways that would favour employment generation. Past fiscal and monetary policies should be re-examined to correct biases towards capital intensity in production. In addition, the Meeting indicated that productivity-enhancing sectoral reforms should be considered in agriculture, the rural non-farm sector, the informal sector and the services sector, where potential large-scale employment-generation opportunities existed. In that regard, selective application of technology was a necessary component for a successful simultaneous productivity and employment-enhancing strategy. The need to strengthen linkages between large-scale and small-scale production and between agriculture and industry was emphasized.

The Meeting considered the need for continuous monitoring by Asian and Pacific developing countries of international trends, such as industrial restructuring in developed countries and changes in demand for developing countries' exports, of both goods and human resources, to anticipate their

employment impacts. In many instances, policy responses would have to be prompt for countries to take advantage of the changed employment opportunities. However, the need for caution was expressed in cases where a country's industrial structure and skill requirements might be transformed primarily to serve the transitional adjustment needs of the developed and/or importing countries but would be inappropriate for the long-term needs of the developing country itself.

Other institutional constraints on employment-generating activities, such as governmental controls that obstructed or restricted economic activities of the private sector, were discussed. The need for deregulation, especially of small-scale production activities, was cited as an important means of promoting employment generation. In the government sector, decentralization and devolution of power to local-level government entities were also considered critical for increasing the capability of those entities to mobilize resources and undertake appropriate training activities to suit local employment opportunities.

Several policy issues in education were discussed, including the need to re-examine the preference often given to tertiary-level education over primary and secondary education and to consider the privatization of tertiary education; the urgent need to improve the quality of education at all levels, especially in generating a reorientation in favour of science and technology education; the need to improve the efficiency of education in providing for the training needs of skilled labour; the need to improve access by all sectors, especially the children of the poor, to basic education; and the need to develop a continuing education approach to update scientific and technical know-how. The need to re-examine the remuneration system was also stressed.

The Meeting emphasized the need for developing entrepreneurial skills among the population as one innovative means of addressing the employment problem. The training of the potential labour force to create their own employment rather than seek paid employment would divert surplus labour from the wage labour market into alternative avenues of productive activity. The content and methods of formal education, especially at the tertiary level, should be modified to include the development of entrepreneurial values and skills. Short-term training in entrepreneurship would also need to be developed.

Short-term vocational and technical training and retraining programmes were viewed as a useful means to further address the changing skill requirements in production. In that regard, the need for training modules and exchange programmes among countries in the region was emphasized. It was recommended that existing regional and international training information networks should be strengthened to assist countries in the region to develop appropriate manpower training materials.

The need for developing cost-effective approaches in training was stressed in the light of resource constraints in many countries in the region. It was felt that greater participation of the private sector in on-the-job skills training might usefully be encouraged. Promotion of potential training opportunities through contractual employment by companies in developed countries in the region was also advocated.

The Meeting identified several critical concerns related to the need to strengthen manpower planning. One was the importance of the development of a manpower planning system under the supervision of the planning ministry and involving all sectoral ministries. Another related to the training of policy makers and planners to develop awareness and sensitivity to employment and manpower development issues, in addition to training in general manpower planning for policy makers and development planning personnel. The need for effective co-ordination in planning, policy and programme formulation on employment and manpower development was also emphasized.

The importance of an efficient monitoring system was highlighted. One concern here was the assessment of the employment impact of policy and programmes so that Governments could make appropriate policy and programme modifications. Another was the need to monitor critical trends in labour market supply and demand conditions in order to forecast changes in skill requirements. It was noted that increasing uncertainty and rapid changes in labour market trends indicated a greater need for collection and analysis of more qualitative data to facilitate prediction and for training in the handling of information for effective analysis of labour market dynamics. The need for regional monitoring of related trends in international labour markets was also emphasized to enable concerned countries to better respond to changing trends.

The Meeting stressed the need for tripartite co-ordination among the providers of education and training, the sectors requiring skilled manpower and government as the planning and regulating force. Monitoring and consultation among those three sectors would minimize mismatching between skill-formation processes and skill requirements. That would develop more effective response capabilities to address the urgent training changes needed to accommodate rapid technological progress and the accompanying production changes.

The Meeting considered the research areas identified in the note by the secretariat. It acknowledged the considerable work that had already been carried out in reviewing the state of the art in manpower planning and country experiences in the region. That work, as well as the contributions of existing institutions and networks, at both national and regional levels, should be taken into account in the plan of action. Programmes to broaden dissemination and repackaging of available materials to make them more useful to users, especially policy makers and planners, were advocated. The need for research on the

structural changes in the economy that influenced supply and demand for labour was also stressed.

B. Science and technology

In considering the incorporation of the science and technology aspects of human resources development in an integrated plan of action for human resources development, the Meeting recognized that ESCAP had already adopted a regional plan of action on the science and technology aspects of human resources development. It was agreed that in developing the integrated plan of action the secretariat should take that earlier plan fully into account.

The Meeting observed that rapid accretions to the international fund of scientific knowledge and technology were currently revising the region's agenda of development opportunities. Recent scientific and technological progress in such fields as informatics, biotechnology, micro-electronics, materials and energy technologies had been so rapid and far-reaching that, unless vigorous steps were taken immediately to adapt the region's human resources to the new technological realities, many of those new opportunities would be lost. A major favourable aspect of the adaptive process with respect to the new technologies, however, was that it permitted a range of responses that included appropriate technologies and intermediate technologies suitable to the specific circumstances of developing Asian and Pacific countries.

The Meeting accepted the view that science and technology comprised a complete system, including the four elements of invention and innovation, application, the policy environment and institutional infrastructure. That was felt to provide a comprehensive framework for identifying, locating and relating activities that bore on the acquisition and use of technology. The technology system framework revealed the wide range of skills that were necessary for the effective development and use of technology and thus highlighted the importance of education and training.

It was noted that much of the new technology, particularly information technology, could be very difficult for untrained workers to use. Considerable effort would be required to adapt the new technologies to the labour-dominant factor proportions prevailing in many countries in the Asian and Pacific region. Organizational structures would have to change if technology use were to be made responsive to the region's problems, especially its employment problems.

The Meeting recognized the need to make formal education more supportive of science and technology through such measures as universalizing primary education, strengthening the science and technology orientation of both primary and secondary curricula and, in particular, increasing the practical element in secondary curricula. Work-study programmes were suggested

as one means of achieving practicality in secondary curricula. The special need to expand the science and technology orientation of education for girls was noted.

The need for curriculum reform in primary education in order to improve science and technology achievement levels was recognized. Populations that did not have some minimum level of familiarity with basic scientific and technological ideas were observed to be unable to absorb technology or adapt to its continuing change. The Meeting recognized, however, that curriculum reform was slow, expensive, and had to be undertaken continuously in response to changing knowledge. It was not a panacea.

Improvement in the quality of science and technology teaching was considered to be at least as important as improved curricula. Participants noted that improved curricula must be combined with improved teaching to produce effective learning. That was associated with the fact that teachers in many countries of the region were often poorly motivated, partly because of low salaries. It was also observed that learning by rote was common in many Asian and Pacific countries, although it was considered destructive of student creativity and adaptability. It was believed, on the other hand, that competent and dedicated teachers would repay the costs of their training many times over, as they would themselves generate curriculum reform as required.

It was recognized that a variety of educational alternatives would have to be developed to complement the formal education system. Non-formal education had been found by a number of countries to be cost-effective and responsive to rapidly changing circumstances. It was suggested that experience with various approaches to non-formal education should be shared among countries.

One approach to the need for continuing adaptation of human resources to technological change, as advocated by the Meeting, was the concept of life-long education and training. The media were considered to have an important role to play in the development of life-long education. Another suggested approach was the introduction of new technology through agreements with transnational corporations, under which they would undertake to provide the training necessary for the use of the new technology, including its use in local enterprises. In discussing the need to make vocational training more responsive to demand, several strategies were proposed. Among those were the establishment of links between private schools, governmental resources and industry; the development of contractual linkages between enterprises and government vocational education institutes; and the promotion of work-study programmes. The effectiveness of those strategies would be enhanced by locating them in a larger framework that would establish career development guidelines and processes.

The Meeting discussed appropriate strategies for technician-level training. Two broad principles were advanced. Because of anticipated rapid changes in technology and high rates of skills obsolescence, training should encompass wide bands of technological knowledge rather than single technologies, and re-training should be facilitated by an emphasis on "know-why" rather than just "know-how".

The Meeting emphasized the importance of broadening and deepening basis science capabilities in the Asian and Pacific region. It was recognized that ultimately the region must become its own source of creativity and new technology. Resources were more often wasted than saved in failing to develop basic sciences. Participants advocated the development of regional academies to improve the immediacy and quality of scientific discussion in the region, develop subject areas chosen for their relevance to the region and facilitate interaction among prominent regional and international scientists. The establishment of university-industry links was suggested as a means of improving the responsiveness of research and development to market forces.

The important role of motivation and incentives in the development of science and technology was noted. In that context, higher status and upgraded wage and salary scales for scientific and technical occupations and provision for more rapid promotion based on merit were suggested as appropriate policy measures. The need for improved domestic incentives as a means of stemming the emigration of valuable professional and skilled human resources was considered important for a number of countries in the region.

The Meeting noted that science and technology had had an enormous impact on the demand for labour in the region. Unemployment was high and likely to rise further in many countries, while foreseeable changes in technology indicated that employment objectives in a number of countries might have to be revised downward. It was also observed that modern technology tended to create a polarized demand for labour, with relatively few highly-skilled and creative people working at the top of the employment hierarchy and large numbers of virtually unskilled workers employed at the bottom. The implications of that situation for training and its impact on the nature of organization for production were discussed. The potentially deleterious effect on other aspects of human resources development that was likely to result from the implied distribution of income was noted.

Both dangers and opportunities were identified in the potential for future technological change in agriculture. The danger was felt to lie in the greatly increased productivity that could be anticipated in the near future. It was reported that probable large increases in the yields of virtually all crops would be achieved, *inter alia,* through genetic manipulation and the development of symbionts. Further, it was predicted that such improvements would probably

be developed by large transnational enterprises, raising the possibility that some countries in the region could become dependent on those global firms even for food. The Meeting was advised that the role of transnational corporations in future agricultural innovations would probably require careful negotiations between them and host Governments and new approaches to intellectual property rights. A more obvious danger posed by those new technologies was that unless labour-using ways of utilizing those impending innovations were found, the potential displacement of agricultural labour would be huge.

On the other hand, the Meeting observed that the new agricultural innovations would also create opportunities, since even small improvements in agricultural technology could benefit large numbers of the disadvantaged. Possibilities for the development and use of labour-using agricultural technologies should be exploited. It was noted, in comparing the experiences of the various countries of the region in the development of high-yielding varieties of food staples, that one problem in some countries had been a shortage of field technicians to assist farmers and that that skill category was likely to become increasingly important as agricultural innovation proceeded.

A number of participants emphasized that small and medium-scale industry was vital to the maintenance of maximum employment levels, to certain kinds of innovation, and to manpower development. Small and medium industry could be developed in a dispersed way to fill employment gaps created by inevitable decreases in the relative size of the agricultural sector in the national economy. It was noted that industry at that level required special consideration: special kinds of linkages needed to be established between small- and medium-scale industry and vocational education institutes, and they required a particular kind of entrepreneurship that was in short supply in a number of countries in the region. Directing government resources to on-the-job training in those industries and providing special training for the kind of entrepreneurship required were suggested as appropriate strategies for technological development in that sector.

The Meeting felt that technology management had become an area deserving of increased attention and resources. The uncertainties inherent in technology innovation were expected to grow in the foreseeable future, and management techniques were considered necessary to minimize the negative consequences of that uncertainty on further technological development. It was thought that technology management courses that had been developed in a number of countries, both within the region and elsewhere, could be replicated in existing regional training institutions. It was considered that the major need for technology management would be in large enterprises using state-of-the-art technology, but that government organizations that interfaced with those enterprises or that were involved in technology policy-making would also need improved management capabilities.

C. Quality of life

The Meeting noted, at the start of the discussion on that item, the evident failure of the development process in developing countries in the region to generate substantial improvements in the quality of life for the majority of the population or to eradicate poverty. It also acknowledged that the problems of inequality and poverty were unlikely to be overcome in the absence of carefully co-ordinated strategies, policies and programmes at the national and regional levels in key areas such as education, health, population, urbanization and the environment, and concluded that a direct approach to quality of life issues was necessary.

Quality of life was introduced as the least understood dimension of human resources development. It was noted that, while its importance in relation to social development as a development objective was widely recognized, the productivity implications of quality of life issues were less often appreciated by planners and policy makers. The Meeting rejected the traditional dichotomy between the actively productive economic instruments of development and the supposedly passive, consumption-oriented "social" objectives of development. Improvements in the quality of life should be seen as contributing to development both directly, by enhancing the productivity of human capital, and indirectly, by providing an incentive for future human resources development.

Thus, quality of life was seen, not as a new label or slogan, but as a new strategy to both widen the concept of development to include certain non-economic aspects and to secure the benefits arising out of mutual reinforcement of the various programmes and activities inherent in the concept. It was not a matter of "old wine in new bottles" but rather constituted an integrated approach to development that emphasized the human potential, the need to develop such potential in all individuals, including the poor and other disadvantaged groups, and the possibilities of utilizing it to overcome obstacles to economic, social and cultural progress.

The Meeting agreed that, in terms of systems analysis, quality of life as an approach emphasized the capacity of individuals to develop their capabilities to overcome constraints to achieving systemic goals. The quality of life approach was seen to place the individual at the centre of development, not as a passive recipient and beneficiary but as an active and innovative agent of development. As a consequence, outlays on quality-of-life-related programmes should no longer be seen as social expenditure that diverted funds from productive investments to unproductive, consumption-oriented outlays, but as essential investments supplementing and reinforcing investments in physical infrastructure development. The Meeting noted that over-emphasis on physical infrastructure in many Asian and Pacific countries without concomitant atten-

tion to human infrastructure, including especially quality of life concerns, had in the past been a major factor contributing to failure to achieve sustained benefits.

Viewed thus, quality of life was seen to offer many rich possibilities. Those, however, could not be realized unless the premises underlying the approach were well understood in the policy and planning stages, as reflected, for example, in the establishment of organizational and institutional mechanisms to put programmes into operation and in the other key stages of the implementation of a quality life approach.

In respect of policy and planning, the Meeting identified the following as important guidelines:

(a) Policy and planning should be based on the premise that the enhancement of the quality of life would generate sustained increases in productivity;

(b) Balanced development called for investment in both physical and human infrastructure. It was noted that that would help to avoid the problem of under-utilization arising from the supply and demand mismatches experienced by many large-scale projects in the past;

(c) There should be flexibility of planning in the face of resource constraints and changing domestic and external conditions. Quality of life programmes, in particular, were seen to suffer from problems of resource scarcity. That was considered to imply not only that plans and programmes should be indicative rather than prescriptive, but also that cost-effectiveness, taking into full account the long-term nature of quality of life benefits, should be a primary consideration;

(d) Programmes for human resources development should be geared towards developing self-reliance among individuals. They should, in particular, avoid the dependency syndrome that in the past had tended to be associated with some social service delivery programmes;

(e) The ideals of social equity and social justice were advocated, with special reference to human resources development for disadvantaged groups. Growth with social justice was held to imply that improvements in the human resources of those groups were crucial. Such improvements would not only contribute to the attainment of a minimum quality of life but would also stimulate and accelerate economic growth by maximizing human productivity through skill development via education and training, the release of human productive capacity via programmes in health, nutrition, family planning,

and so on, and the expansion of internal markets via improved distribution;

(f) Priority should be given to programmes for human resources development with synergistic linkages. The failure of many past policies and programmes addressing quality of life concerns was attributed by the Meeting to the inability of planners to recognize and take into account intersectoral linkages and the interdependence of quality of life goals and concerns with other aspects of human resources development. Plan, policy and programme integration and co-ordination were considered to be necessary at every level to ensure significant and lasting gains.

The Meeting also considered guidelines for the organizational and institutional reforms that would be necessary to implement the plan of action at all levels. It was noted that, at the local and national levels, implementation of such reforms would not be easy. Only through a clear understanding of the concept and its implementation mechanisms, and on the basis of strong political will and unwavering commitment, would the requisite changes be brought about. It was pointed out that there might be opposition to the introduction of a co-ordinated and integrated approach from groups with vested interests in the conventional system. However, the nature of the problems being faced by many countries in the Asian and Pacific region would compel the eventual adoption of some, if not many, of the desired changes. Political and administrative wisdom was thought to dictate that that need should be foreseen and introduced in a planned and systematic manner.

Included among the guidelines proposed by the Meeting for institutional and organizational reform were:

(a) The desirability of decentralization of power and resources and the integration of quality of life programmes at the local level. Past failures to achieve integration were thought to indicate the folly of underestimating the strength of institutional constraints. It was considered essential to identify the constraints and draw up realistic and feasible programmes for reform;

(b) The Meeting noted that, at the highest levels of government, where political will was present, the need was more often for new approaches and strategies than for new institutions. Such new strategies were considered to require a clearer delineation of tasks, responsibilities and authority. Another requirement was that the output of existing agencies and resources be effectively utilized. A "mission" approach, in which a task force comprising staff from several ministries was assembled to tackle a particular intersectoral problem, was suggested as an example of such a strategy;

(c) It was considered imperative that organizations and institutions within the public sector at all levels involved in quality of life programmes be made more accountable and responsive to the needs and demands of target populations. That was stressed as an integral element of all demand-focused approaches to human resources development;

(d) The potentially important role of non-governmental organizations in quality of life programmes and in the training of human resources for such programmes was emphasized, particularly because of the importance attached to strategies to enhance community participation and leadership and avoid the creation of structures of dependence. The need for cost-effectiveness and the existence of severe resource constraints on Governments in the region were also noted to favour a prominent role for non-governmental organizations;

(e) Similarly, the participatory role of the private sector in human resources development programmes was stressed. It was felt that, despite severe financial resource constraints, considerations of equity required that the role of public services in providing education, health, nutrition and other basic social services necessary to ensure a minimum quality of life for the disadvantaged groups should be carefully re-emphasized. However, the Meeting agreed that, under appropriate national circumstances, the privatization of certain services could be considered in recognition of prevailing budgetary pressures and the importance of avoiding the dependency syndrome. It was stressed that privatization should be encourage only where it did not involve denial of access of the poor to meeting their basic needs;

(f) The Meeting advocated strengthening the capabilities and commitment of local personnel involved in community-level programmes. That level of the administrative and technical infrastructure was recognized to be indispensable to efficient programme implementation. It was emphasized, therefore, that the effective utilization of local personnel required careful planning, management, monitoring and evaluation, especially efforts to provide motivation through incentive schemes.

In considering the role of education and training, it was argued that training for quality of life aspects of human resources development should not be constrained by the conventional concept of manpower development, which tended to be restricted to training of personnel with specialized technical skills and to narrow programme foci. Instead, it was suggested that the approach should identify a core of knowledge, attitudes and skills required to put into operation an integrated, intersectoral approach to the quality of life aspects

of human resources development. Training should focus less on the transmission of a fixed body of information or specific skills and more on dynamic exposure to the concepts, assumptions and experiences relevant to the quality of life approach. The development of flexibility, adaptability and commitment among quality of life personnel were seen as important objectives for that kind of training. That training was considered essential for the lower levels of implementation personnel, especially extension workers, and professionals involved in the traditional social sectors such as health, education, family planning, community development and the like. It was also proposed that other specialists, especially personnel assigned to rural areas, such as agricultural extension agents, irrigation engineers and water supply technicians involved in projects and programmes associated with human resources development, also be exposed to that kind of training.

Some elements of the common core of knowledge, attitudes and skills that might be included in such a training programme were identified. Among the training topics considered to be important were: the motivation, mobilization and organization of people for development; the identification of information sources and the collection, analysis and utilization of simple quantitative and qualitative data relating to the various aspects of human resources development; participation and participatory planning processes; programme implementation, monitoring and evaluation; establishing, strengthening and working with local-level organizations; and leadership.

It was agreed that such orientation and training programmes required innovative training methods, including immersion in appropriate settings (such as poor rural communities, urban slums and so on) and role-playing and simulation exercises to sensitize participants to the totality of particular human resources development situations. Training was regarded as an integral element of institutional reform and development.

In respect of research and data collection, the Meeting suggested that in the short-term utilization of existing materials rather than the initiation of new research projects should be given priority. In particular, the importance of disseminating research results in usable form was stressed. Studies to identify replicable or adaptable and cost-effective strategies for quality of life human resources development in the region was suggested as a key focus for limited new research. The impact of quality of life improvements on economic development and vice versa was identified as an additional important research priority.

Continuity and consistency in the collection, analysis and dissemination of information on the quality of life aspects of human resources development were considered important because of the need to be forewarned of emerging trends in a situation of rapid change. The need for co-ordination among data collection agencies in the field of quality of life was also stressed. Participants

noted that currently in many countries data were collected by a number of agencies and were often difficult to collate and compare.

Monitoring and evaluation of quality of life concerns in human resources development were also considered by the Meeting. It was felt that the creation of a series of indicators to provide prompt and timely feedback on the impact of programme implementation constituted a minimum condition for effective monitoring and evaluation. The exchange of experiences among countries on the development of such indicators was considered to be useful, although it was recognized that indicators would necessarily have to be tailored to local circumstances and needs. The feasibility of developing and refining common monitoring and evaluation indicators of quality of life aspects of human resources development on a regional basis was also discussed. It was considered that that should evolve in the context of a regional human resources development strategy.

D. Women's concerns

The special human resources development needs of women, who comprised perhaps the largest disadvantaged group in society in many countries of the Asia and Pacific region and the majority of almost every particular disadvantaged group, were recognized by the Meeting. The high costs of human resources under-development among women, in terms of high infant mortality and high birth rates, low life expectancy for both males and females and low levels of literacy and education for society as a whole, and the impact of those costs on other aspects of human resources development were also recognized.

The development of all aspects of women's human resources was seen to be a key investment in human infrastructure with the capacity to spread multiplier effects through the family to important segments of the wider community. In particular, the role of women's human resources development in improving the human resources of the succeeding generation, both in respect of children's health and through their socializing role, was stressed. It was pointed out that the fundamental, limiting conditions of many aspects of children's physical and mental growth, which formed the basis of their human resources development potential, were determined during early childhood. Thus, the role of women's human resources development in influencing the quality of the human resources of succeeding generations was considered critical.

Opinions diverged on whether women should be singled out as a separate target group or whether they should be considered only as components of other target groups. One view was that women should not be considered a special target group on the grounds of gender alone because that would per-

petuate segregation and encourage the development of special women's programmes isolated from the mainstream of human resources development. Alternatively, it was argued that it was necessary to identify women explicitly as a target group because gender-neutral policies and programmes, in failing to consider the constraints imposed by the institutional situation in which women functioned, inevitably accommodated themselves to the relatively unimpeded male context and were thereby automatically biased in favour of men.

One aspect of women's situation that received considerable attention was the "double burden" of paid employment combined with primary responsibility for child care and domestic work that was borne by increasing numbers of women in the Asian and Pacific region. The importance for women's human resources development of programmes and policies to lighten their burden through, for example, provision of improved access to domestic water, improved housing, increased availability of general urban and personal services, and so on, was noted. In addition to concerns about the impact of the double burden on women's human resources development, the implications of increasing female labour force participation on children, families, the aged and the disabled were considered to require attention.

In that regard and in the context of discussions on the employment problems of a number of countries with large agricultural populations, high levels of unemployment and underemployment and limited employment opportunities, some participants noted that the argument had been advanced that employment and manpower development for women, especially married women with children, should perhaps receive lower priority. Others emphasized, however, that the human resources development costs of low levels of economic activity among women were very high, not only for women but also for men and children and the development process in general. The Meeting considered employment, or at least the option of employment, to be an important component of, as well as a means for, human resources development, and it emphasized the importance of offering women equal opportunities for employment.

In considering the factors that made women's situation different from that of men, the critical importance of the social and cultural context was emphasized. It was noted that women's access to human resources development in all fields was frequently impeded by conservative cultural values that restricted women's capacity to respond to change and adapt to new opportunities, and by conventional attitudes about appropriate roles for women. Several participants suggested that the integrated plan of action should emphasize the importance of efforts to identify such constraints and to develop strategies to overcome their negative impact on women's human resources development. However, it was also noted that policies and programmes dealing with cultural constraints should be based on an informed and sensitive understanding of the

particular cultural context and should recognize the validity of different cultural perspectives.

The Meeting observed that the restrictive impact of social and cultural factors peculiar to the situation of women often resulted in low levels of demand among women for human resources development. Demand-oriented strategies were considered to be particularly necessary in efforts to improve women's human resources. Furthermore, a demand-oriented approach was advocated on the grounds that it would inevitably lead to more explicit consideration of the institutional context of women and to programmes to eliminate the social and cultural constraints to women's human resources development.

Community-oriented strategies and policies favouring community participation were considered to be especially relevant to programmes for women's human resources development. In societies with very strong social and cultural constraints to women's human resources development, only community-wide and community-led programmes to change attitudes and conventions were considered likely to succeed. It was also noted that a community-oriented approach, by incorporating community participation, enhanced an aspect of women's human resources that was often relatively weak. Furthermore, community participation was considered to complement the demand-creation strategies advocated as especially appropriate for programmes for human resources development among women.

While the importance of the quality, as distinct from the quantity, of human resources was frequently referred to throughout discussions, that was considered to be an especially important aspect of women's human resources development. Several participants observed that programmes for human resources development for women too often focused on quantity, while insufficient attention was given to the quality of the human resources produced. Women's education and employment patterns in many countries of the Asian and Pacific region were noted to differ markedly from those of men, with women often receiving lower-quality and less skills-oriented education and consequently crowding into low-status, poorly paid "feminine" occupations.

The importance of cost-effective programmes was frequently mentioned during the discussions on human resources development generally. Participants noted the need to establish the efficiency of potential investments in human resources in order to attract necessary funding. The implications of that for women's human resources development were also considered. Emphasis on the removal of institutional constraints and on demand creation was felt to indicate potential problems in measuring the benefits expected to flow from programmes for women's human resources development. Two responses emerged from discussion of that issue. The first advocated research to devise appropriate methods for measuring, in quantitative terms, investments in the

more qualitative aspects of human resources. The second suggested that recognition of the importance, as well as the use of, qualitative indicators of the benefits derived from investments in human resources should be promoted among policy makers and planners.

The critical role of enabler groups for women's human resources development was stressed. The lack of rapid improvement in human resources development for women in a number of developing countries in the Asian and Pacific region was thought by several participants to have been partly due to inadequate attention to the development of the human resources of critical enabler groups, including women leaders and women in key positions in government and business. It was suggested that that might have been partly the result of the past reliance on indirect strategies for women's human resources development. Programmes often focused on poverty and on improving women's economic status through, for example, income generation projects, in the expectation that that would indirectly result in human resources development. The Meeting thus advocated a more direct focus on human resources development for women in the integrated plan of action and special attention for the creation and support of appropriate enabler groups.

VI. GUIDELINES FOR A CO-ORDINATION MECHANISM TO IMPLEMENT AN INTEGRATED PLAN OF ACTION ON HUMAN RESOURCES DEVELOPMENT FOR ASIA AND THE PACIFIC

In considering the formulation of guidelines for the co-ordination of a regional plan of action on human resources development for Asia and the Pacific, the Meeting had before it secretariat document SD/EGM/IPAHRD/7. That document examined the possibilities of generating co-ordination mechanisms at the national and regional levels and also considered the means whereby national and regional co-ordination might be effectively linked to form a single implementation framework for the plan of action.

The national co-ordinating mechanisms for human resources development planning and programming already in place in several developing countries in the Asian and Pacific region were reviewed by the Meeting. On the basis of those experiences, it was suggested that, at the national level, each country should designate a central co-ordinating body or agency. That body or agency could devise an appropriate national strategy for human resources development and, in accordance with that strategy, formulate appropriate policies, a national plan of action and specific programmes to ensure fully co-ordinated human resources development. It could also monitor and evaluate plan implementation on a continuing basis.

It was suggested that, in some countries in the region, that national co-ordinating apparatus might be established within the national development planning agency. In others, the chief co-ordinating body might be established in a functional ministry. In yet others, it might be necessary to establish an inter-ministerial committee with its own secretariat to undertake co-ordination.

The Meeting agreed that the widely differing circumstances prevailing in the region, including differences in governmental organization (some countries having unitary governments and others federal systems), offered a variety of possibilities. It was recommended that simplicity should be a guiding principle in the establishment of any national co-ordinating mechanism and that, wherever possible, existing mechanisms should be relied on in preference to the creation of additional institutions in an already complex governmental policy-making and administrative structure. In view of the high priority that should be given to national planning for integrated human resources development, it was recommended that the national co-ordinating mechanism should be formed at the highest possible level. While the Meeting recognized that it was not in a position to indicate any specific type of national co-ordinating mechanism as most appropriate for all circumstances, it nevertheless considered that all countries in the region would benefit from some such mechanism.

It was pointed out that the terms of reference of the national mechanism should be determined by each country. However, it would be useful to pay special consideration in that regard to the means whereby national co-ordination might best coincide with the regional plan of action. That would be particularly important if the national focal point were to be given the task of liaison with ESCAP and other international agencies and bodies to ensure regional co-ordination.

The Meeting indicated that, at the regional level, the specialized agencies of the United Nations system, along with other intergovernmental bodies and international non-governmental organizations, should carefully co-ordinate their various activities in support of human resources development in the Asian and Pacific region to ensure the most effective application of the available scarce resources. In that regard, the Meeting recalled that, under General Assembly resolution 32/197 of 20 December 1977 on the restructuring of the economic and social sectors of the United Nations system, ESCAP had been directed to serve as the main general economic and social centre within the United Nations in the Asian and Pacific region, exercising team leadership and responsible for co-ordination and co-operation at the regional level. Thus, it would be the role of ESCAP to ensure that the plan of action would succeed in accomplishing its goals and objectives by bringing into a complementary relationship the wide range of activities of the United Nations system in the region. The active participation in the present Meeting of officials from a number of United Nations agencies was recognized by the Meeting to attest

to the active interest of various elements of the United Nations system in responding to the mandate established in Commission resolution 260 (XLIII) and also provided positive evidence of ESCAP efforts in that regard. The Meeting also agreed that the ESCAP secretariat, in formulating a draft integrated plan of action on human resources development for Asia and the Pacific, should make every effort to take into account all the relevant activities of intergovernmental and non-governmental organizations. It was noted, in that connection, that the ESCAP secretariat would convene on 18 December 1987 an inter-agency meeting to discuss the formulation of the plan of action.

It was observed by the Meeting that co-ordination of the integrated plan of action at the subregional level might not be feasible. It was felt that co-ordination at that level would tend to duplicate regional co-ordination and might introduce administrative obstacles to effective human resources development policy-making, planning and programme implementation.

On the question of funding to facilitate the establishment and operations of national focal points and all planned activities at the national and regional levels, it was explained that ESCAP was not a funding agency. Several international funding agencies participating in the Meeting indicated that they were providing financial assistance for human resources development projects on a case-by-case basis. They also indicated that they were ready to consider providing further assistance at the national and regional levels, provided that priority was given by the respective Governments. It was pointed out in that regard that an integrated regional plan of action might strengthen opportunities for the financing of project proposals concerning human resources development by donor Governments and international agencies.

The Meeting observed that detailed consideration of the financial aspects of the integrated plan of action would have to await the full formulation of the plan of action, including its component activities, and that that matter was therefore not within the scope of the present Meeting. It was noted, however, that the plan would have to be formulated along operational lines in order to generate substantial funding.

The Meeting expressed the hope that a number of fully operational project proposals would emerge from the plan of action. It was suggested that, following the formulation of the plan of action, a group of senior policy makers from the region should be invited to a seminar sponsored by ESCAP to examine the means whereby resources could be generated to implement the plan.

VII. ADOPTION OF THE REPORT

The Meeting adopted its report on 10 December 1987.

The Meeting concluded with a statement by the Deputy Executive Secretary of ESCAP. He noted that, in adopting its report, the Meeting had fulfilled with distinction its duty of advising the ESCAP secretariat on the formulation of an integrated plan of action on human resources development for Asia and the Pacific. He viewed the report, representing the consensus of a broad spectrum of the region's diversity of national socio-economic conditions and policy orientations, as a significant step toward the realization of a major new regional initiative. The Deputy Executive Secretary concluded by expressing his appreciation to the Government of Japan and to the United Nations Development Fund for Women (UNIFEM) for their financial assistance toward the successful convening of the Meeting.

Annex I

List of documents

Provisional agenda	SD/EGM/IPAHRD/L.1/Rev.1
Annotated provisional agenda	SD/EGM/IPAHRD/L.2
Consideration of the overall scope and content of an integrated plan of action on human resources development	SD/EGM/IPAHRD/1
Employment and manpower development aspects of human resources development	SD/EGM/IPAHRD/2
Science and technology aspects of human resources development	SD/EGM/IPAHRD/3
Quality of life aspects of human resources development	SD/EGM/IPAHRD/4
Integration of women's concerns into human resources development	SD/EGM/IPAHRD/5
Current and prospective human resources development activities of the ESCAP secretariat and other United Nations bodies and agencies in Asia and the Pacific	SD/EGM/IPAHRD/6
Co-ordination mechanism for an integrated plan of action on human resources development for Asia and the Pacific	SD/EGM/IPAHRD/7

Annex II

A. Invited country papers

Bangladesh: "Employment and manpower development in Bangladesh: Current and prospective trends, policy options and plans and programmes", prepared by Mr. Nur Ahmad Siddique, Bureau of Manpower, Employment and Training, Dhaka

China: Country paper, prepared by Ms. Liansan Ruan, Deputy Director, Institute of Qualified Personnel Resources, State Science and Technology Commission, Beijing

India: "Human resource development in relation to science and technology", prepared by Mr. J. Veera Raghavan, Secretary, Ministry of Human Resource Development, New Delhi

Indonesia: "Labour force growth and employment in the Indonesian economy", prepared by Mr. Sayuti Hasibuan, Deputy Chairman, Manpower and Population Division, National Development Planning Agency, Jakarta

Islamic Republic of Iran: "Guidelines for a plan of action on human resources development", prepared by Ms. Paridokht Vahidi, Expert Higher Education and Research, Ministry of Plan and Budget, Tehran

Japan: "Employment and manpower development in Japan", prepared by Ms. Tamiko Iguchi, Deputy Director, Policy Planning Office, Human Resources Development Bureau, Ministry of Labour, Tokyo

Japan: "Technical innovations and information technologies in industrial society: Current status and outlook of information technology development in Japan", prepared by Mr. Yuji Masuda, Professor of Business Administration, Tokyo Keizai University, Tokyo

Malaysia: "Quality of life", prepared by Mr. Tham Ah Fun, Principal Assistant Director, Human Resources Section, Prime Minister's Department, Kuala Lumpur

Pakistan: "Formulation of an integrated plan of action on human resources development for Asia and the Pacific", prepared by Ms. Zulekha Zar, Chief, Manpower Division, Ministry of Manpower, Labour and Overseas Pakistanis, Islamabad

Philippines: "The quality of life dimension of human resource development: a Philippine context", prepared by Ms. Rosita L. Fondevilla, Under-Secretary of the Department of Social Welfare and Development and Mr. Marcial Salvatierra, Assistant Secretary of the Department of Education, Culture and Sports, Manila

Republic of Korea: "Experiences in human resources development and its future direction", prepared by Mr. Suh Jung-Man, Director-General, Manpower Policy Bureau, Ministry of Science and Technology, Seoul

Sri Lanka: "The physical quality of life dimension of human resources development", prepared by Mr. S.M.L. Marikar, Secretary, Ministry of Plan Implementation, Colombo

Thailand: "Employment and manpower development in Thailand", prepared by Mr. Phayap Phyormyont, Director, Human Resource Planning Division, National Economic and Social Development Board, Bangkok

Viet Nam: "The development of science and technology in Viet Nam: policies and problems", prepared by Mr. Nguyen Luong, Deputy Director, Department of International Organizations, Ministry of Foreign Affairs, Hanoi

B. Submitted agency papers

"Human resources development: Role of UNDP", UNDP

"Population issues pertaining to human resources development", UNFPA

"Human resources development – challenge and response: ILO's activities for Asia and the Pacific", ILO

Annex III

List of participants

A. Experts

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SAARC Association, Bangladesh	Mr. M.L. Rahman President Dhaka, Bangladesh
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PART TWO

BACKGROUND STUDIES

1. CONSIDERATION OF THE OVERALL SCOPE AND CONTENT OF AN INTEGRATED PLAN OF ACTION ON HUMAN RESOURCES DEVELOPMENT

INTRODUCTION

At both its forty-second and forty-third sessions, convened in 1986 and 1987 respectively, the Commission deliberated upon the theme topic of human resources development. At the forty-second session, the theme focused on the technological aspects of human resources development and, at the forty-third session, on its social aspects. Furthermore, at its forty-third session, the Commission decided that the theme topic of its forty-fourth session, to be convened at Jakarta in April 1988, should continue to be human resources development.

This decision was accorded the Commission's highest priority and was incorporated in resolution 260 (XLIII) on an ESCAP integrated plan of action on human resources development. In that resolution, the Commission recognizes that economic and social development involves basic structural changes requiring progressively better levels of human resources development with diversified skills, especially in the context of dynamic global technological changes. It also recognizes that human resources development is a broad concept encompassing many components and requires sustained efforts over long periods.

In resolution 260 (XLIII), the Commission directs that special attention be devoted to the formulation of an ESCAP integrated plan of action on human resources development, taking into account all its components. It requests the Executive Secretary to formulate a draft plan of action for submission to the Commission at its forty-fourth session. To this end, it directs the Executive Secretary to convene an expert group meeting to formulate guidelines for the draft plan of action. It welcomes the offer by the Government of Japan to host an expert group meeting in Tokyo and to provide substantial funding therefor.

The Commission's perception of the crucial role of human resources in the socio-economic development process, and thus of the need to formulate a regional plan of action on human resources development, is in conformity with the importance attached to this subject in, *inter alia*, the International Development Strategy for the Third United Nations Development Decade (as contained in the annex to General Assembly resolution 35/36) as well as, more recently, decision 87/15, adopted by the Governing Council of the United Nations

Development Programme in June 1987, and the selection of human resources development as a major theme for further consideration by the Committee on Development Planning. On the basis of these global initiatives, ESCAP and all other United Nations bodies and agencies active in Asia and the Pacific have a clear mandate to accord high priority to human resources development in their programmes of work.

I. HUMAN RESOURCES DEVELOPMENT: THE CORE CONCEPT[1]

That human beings stand at the centre of development ought to be self-evident. It is gratifying to find, therefore, that there has been a growing recognition in recent years of the need to re-examine and redirect development efforts in favour of the "human dimension". This is partly in response to the growing awareness that development in too many cases has been "successful" only in narrowly defined economic and statistical terms, while even that "success" has in many cases largely bypassed the majority of the people. It is also partly a reaction to perceptions of the limited immediate human relevance and impact of development planning and programming in many countries. In addition, it arises out of the crisis of human redundancy in many developing countries, whereby continued economic growth apparently does not require the full utilization of the available labour force. Genuine development will need to find some means of ensuring the participation of a population increasing dissatisfied with these conditions.

There is thus a need for a reorientation, a need to "put a human face on development". Human resources development refers, in this context, to the strategies, policies, plans and programmes that would seek to translate this concern into operational terms. Such an approach requires a preliminary conceptual clarification of the means-ends interaction and the intersectoral integration of human resources development. The view of the Commission on these matters, as reflected in its recent reports, offer valuable guidance.

A. Human resources development as means and ends

In its deliberations on the subject, the Commission has observed that, while the human factor plays a decisive role in economic and social progress, it is also the people who are the intended beneficiaries of development. Human

[1] On the essential concepts, see United Nations Development Programme, "Human resources development: issues and implications" (DP/1986/10); United Nations, Administrative Committee on Co-ordination, "Co-ordination of the activities of the United Nations system in human resources development and its contribution to meeting the economic and social objectives of the developing countries" (12 May 1987); and K. Haq and U. Kirdar, eds., *Human Development: The Neglected Dimension* (Islamabad, North South Round table, 1986), among others.

resources development is, in this perspective, much more than an instrument for development: it is the ultimate objective of the development process.

The critical importance of human capital for economic development is not a new idea, but it has acquired added urgency in recent years. This is related to the growing problems that developing countries have encountered in upgrading their human resources to meet development requirements. It is also related to the fact that changes in the composition of global demand have made it imperative for developing countries to reduce their dependence on the production of primary commodities and emphasize modern-sector industries and services if they are to increase their income and employment opportunities. It is related, furthermore, to the growing threat of massive labour redundancy arising out of the introduction of labour-saving technologies, especially those which save on unskilled labour.

Future advances must spring from structural adjustments involving higher levels of human resources capabilities with more diversified skills. In addition, while other physical frontiers of production, particularly land and exhaustible sources of energy, have approached the limits of exploitation in many densely populated countries of Asia and the Pacific, the region's vast human resources remain largely untapped. The challenge in this respect is to raise the productivity of the region's 2.7 billion people in an era of rapid economic and social change. The region's further development is thus closely dependent upon both the effective use of its existing human resources and the continued enrichment of these human resources through education, skills formation, provision of adequate health care and nutrition, and other means.

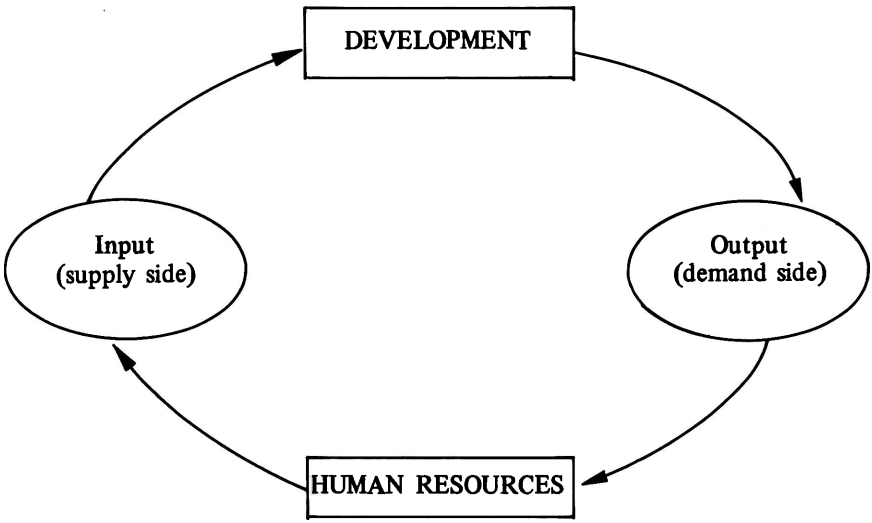
However, the concept of human resources as perceived by the Commission goes even further – well beyond their role as human capital. The Commission has recognized that human resources development is a broad concept encompassing both the means and the ends of development and that it is equally essential for both economic and social progress. Human resources development therefore requires careful consideration of the implications of different development strategies and priorities so that the distribution of the benefits of development may be equalized among the people. Likewise, it should facilitate broad-based participation by the people in the development process, with special provisions to enhance the capabilities and opportunities available to disadvantaged members of society.

These views have been succinctly summed up by the Administrator of the United Nations Development Programme in his statement that "human resources development should be defined as the maximization of the human potential as well as the promotion of its fullest utilization for economic and social progress"[2]. The linkage between human resources development as means and

[2] United Nations Development Programme, *loc. cit.*, p. 4.

ends in the development process is one of circular causation. In such a schema, analytical distinctions can be drawn between means and ends, causes and effects, inputs and outputs, investment (e.g., human capital formation) and consumption (e.g., distribution of development benefits) in sequential terms. Operationally, however, the distinction between the two sides of the development coin becomes an irrelevant abstraction, as means and ends interchange positions in the process of circular causation.

Figure I



The interaction between human resources as means and ends and the consequent blurring of the distinction between the investment and consumption aspects of human resources development also impinge on the conventional distinction between the economic and social dimensions of development. This distinction ordinarily characterizes development as achievable only through the application of economic "instruments" to achieve social "objectives". The economic aspects are thus assumed to provide the active principle in the development process and are often accorded priority over the so-called passive social considerations.

This view that social "ends" will automatically be served so long as the economic "means" are effectively mobilized and channelled is too simplistic.[3]

[3] The venerable "trickle-down" thesis, today held in wide disrepute, is a prime example of the dangers inherent in this spurious analytical distinction.

Social and economic development should be viewed as a single, unified process which involves consideration of both social and economic instruments and is aimed at the achievement of overall, integrated development objectives. The interdependence between means and ends, between economic and social considerations, in the context of human resources development negates the narrow, analytical distinctions. This fuller understanding of the development process provides a conceptual counterpart for the empirical fact that economic advancement is no more possible without a firm social base than is social progress a simple and straightforward derivative of economic growth.

B. Need for an integrated approach to human resources development

The interdependence between development means and ends and between the economic and social dimensions of development, as highlighted in the human resources development concept, necessitates an integrated approach to human resources development. The Commission has noted that strong supply-demand and socio-economic interrelationships reinforce the various aspects of human resources development. These interrelationships require sustained attention if their positive potential for development is to be harnessed effectively. The interface of education and training, on the one hand, and the capacity to satisfy basic needs, on the other, is evident. The further implications of these interrelationships with respect to such fundamental variables as fertility, longevity, employment, productivity and distribution have been particularly emphasized. It is on the basis of such considerations that the Commission has recommended that a time-bound, result-oriented, integrated human resources development plan should be formulated for the region.

Whereas the need for an interdisciplinary or holistic point of view is thus apparent, the concept of an integrated approach to human resources development does not, of course, imply the necessity of a comprehensive approach.[4] In the presence of various constraints, not least of which are budget and manpower, it would be more appropriate to adopt a focused approach, limited to a selected number of major issues, enablers and target groups. It would be necessary under such an approach to consider the need to set priorities for both means and ends in keeping with the immediate concerns of the member and associate member countries and in full awareness of their physical and financial resource constraints.

The prioritization of specific issues, enablers and target groups will necessarily differ from country to country, depending on each country's

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[4] See, for an approach based on the human capital concept, R. Thamarajakshi, "Human resource development in Asian countries – an integrated approach" (ILO/ARTEP, New Delhi, 1986).

physical and human resource conditions, its current socio-economic trends and its national development style. Indicators such as literacy, education and birth rates vary widely, even among countries with comparable economic characteristics and colonial histories. Such variations suggest that solutions to problems of human resources development can be neither uniform nor simple. Despite this, the situations and problems encountered by many countries in the field of human resources development are similar in many respects. This offers immense scope for strengthening regional co-operation through greater interchange of experience and expertise among countries. It also indicates that technical assistance through the United Nations system can do much to further the development and strengthening of national capabilities in human resources planning and programming.

II. ANALYTICAL ISSUES

An informed and purposeful consideration of guidelines for an integrated plan of action on human resources development for the ESCAP region requires, at the outset, a common understanding concerning the analytical framework within which the guidelines could be appropriately formulated. This section outlines a series of basic propositions on the matter.

A. Dimensions of human resources development

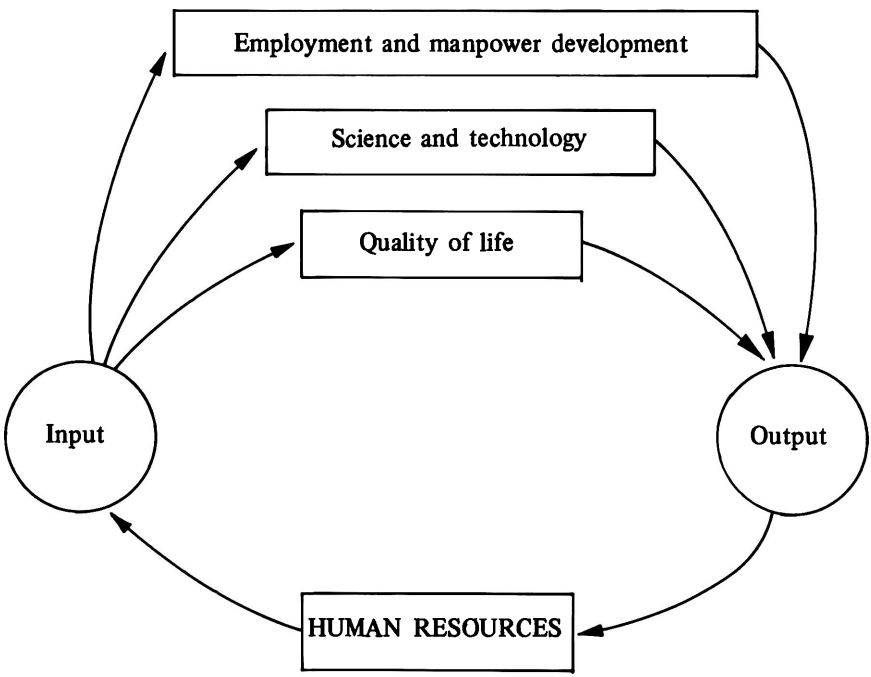
From a broad conceptual point of view, all development may be characterized as human resources development. It has sometimes been argued that propositions which seek to explain everything actually explain nothing. Approached from the perspective of human resources development, however, the main concerns and priorities of the development process take on a clear focus and direction. This clarity is enhanced when the key problems of human resources development are classified in accordance with three major themes: employment and manpower development, science and technology, and the quality of life.

The logic of approaching the issue of human resources development in terms of these three themes has been stressed by the Commission in its resolution 260 (XLIII). In that resolution, the Commission refers back to its forty-second session, at which it highlighted the importance of the technological dimensions of human resources development, and its forty-third session, at which it dealt with the quality of life dimension, and requests that the plan of action incorporate its findings on these matters. Furthermore, it specifically calls for the incorporation of the employment and manpower development dimension of human resources development in the proposed plan of action.

The employment and manpower development, science and technology, and quality of life dimensions of human resources development, in fact, com-

prise a set of complementary and closely interrelated issues. None of them can be fully examined without reference to the others; yet each provides unique insights into the nature of the overall problem and the means whereby it can be resolved effectively and efficiently. Between them, they provide an integrated framework for examining the human resources development process.

Figure II



An analytical background study has been prepared for the Meeting on each of these three dimensions of human resources development. Each of the studies considers the present situation in the region and explores the implications of expected trends over the remainder of the twentieth century. Each study concludes with a series of suggested courses of action at the national and regional levels. In undertaking these tasks, each study takes full account of the interfaces among the various dimensions and the need for an integrated approach. A fourth study has been prepared on the human resources development issues confronting a specific disadvantaged group: women. That study

cuts across the others and emphasizes the manner in which an integrated approach may be devised and executed.

A brief background statement on the priority issues dealt with under each or these theme topics is provided here for orientation purposes:

(a) *Employment and manpower development.* Forecasts to the year 2000 indicate that many of the countries in the region will continue to have rapid population growth. Labour supply will also grow rapidly. In the face of a relatively slow-growing demand for labour, this will lead to a substantial rise in unemployment. Especially serious situations are likely to arise in the agrarian sector and the market for unskilled labour. For many developing countries, additional problems in matching demand for and supply of labour will be associated with unstable and possibly deteriorating domestic and international demand conditions, strengthening of protectionist tendencies and obsolescence of many skills in the presence of changing technological conditions and other factors. Since market conditions are likely to remain highly unpredictable because of the uncertainty of changes in demand and the certainty of technological change, the emphasis should be on flexibility and the creation of a broad-based productive capability, rather than actual committed manpower capacity with narrowly specified skills. Special efforts must also be directed towards providing favourable conditions for the growth of new entrepreneurial skills to take advantage of the emerging new technologies. Specific strategies, policies and programmes of action will have to be devised to address these issues.

(b) *Science and technology.* Rapid accretions to the international fund of scientific knowledge and technology are rapidly revising the region's agenda of development opportunities. The implications of recent scientific and technological progress in such fields as informatics, biotechnology, micro-electronics, material sciences and energy technologies indicate that, unless vigorous steps are taken immediately to adapt the region's human resources to the new realities, the development opportunities offered by modern science and technology will be lost. At the same time, efforts must be made to adapt the new technologies to the region's labour-dominant factor proportions and to its pressing human resources development needs. Strategies and policies need to be refined and specific programmes formulated to address this human resources development issue at both the national and the regional levels.

(c) *Quality of life.* The evident failure of the development process to generate substantial improvements in national and international equity and eradicate poverty in many developing countries has little likelihood of being overcome in the foreseeable future unless carefully co-ordinated remedial strantegies, policies and programmes at the national and regional levels are introduced in a number of key sectors, including education, health, population, urbanization and the environment. In many developing countries of the region,

seriously disadvantaged population groups comprise the great majority of the people. Tapping the potential of these under-ultilized human resources should generate significant socio-economic development progress while simultaneously enhancing the quality of life. The regional plan of action on human resources development will thus have to contain practical measures for improving the living conditions of disadvantaged groups and increasing their level of participation in society.

(d) *Women's concerns.* Past efforts to promote the development of women's human.resources have enjoyed limited success. Women's human resources development as either input into, or outcome of, the development process remains low. Social and institutional changes are essential to increase women's participation in development, but the supply-side focus of many human resources development programmes has restricted their ability to achieve this objective. A more demand-oriented approach to women's human resources development is necessary so that their growing productive skills and abilities will be matched by an enlarged range of opportunities. A regional plan of action including women's human resources development should thus include strategies, policies and programmes that will directly modify the values, attitudes and conventions as well as the organizational and legal structures that currrently form barriers to women's participation. It should also relate women's concerns directly to the employment and manpower development, science and technology, and quality of life aspects of human resources development.

B. Target groups for human resources development

Strengthening the productive capabilities and enhancing the resilience of individuals, communities and organizations to deal with rapidly changing economic and social circumstances must occur at all levels and among all sectors of society if any plan of action for human resources development is to be successful. However, no such plan can hope to influence every individual, community and organization, especially in the presence of the severe physical and financial resource constraints prevalent in developing countries throughout Asia and the Pacific. It is therefore necessary that key target groups for human resources development should be identified. These target groups should be selected in such a way as to optimize the impact of programmes and maximize their human resources development multiplier effects.

Development is fundamentally about, by and for human beings, and in the national context it should be concerned with the well-being of all the people in the country. It is equally true, however, that all developing countries are burdened with great disparities in income and wealth, skills, education, health, access to employment opportunities and participation in decision-making. It has often been noted that the cost-effectiveness of human resources development activities aimed at different segments of the population is highest among

the poor and other disadvantaged target groups. It would thus appear to be appropriate, in any human resources development strategy, policy, plan or programme, to emphasize specific disadvantaged population groups.

The less privileged sections of society form the obvious target for human resources development plans of action not only because of the egalitarian and humanitarian ideals that would be served thereby but, equally important, because of the high long-term social rate of return on investment that would be achieved. Since the underprivileged form the great majority of the population in many developing countries of the region, however, there is a need, at least for immediate operational purposes, to identify specific disadvantaged groups for priority attention.

This approach to deciding upon target groups for human resources development plans and programmes coincides with the Commission's own broad priorities. In a major reassessment of its programme priorities, the Commission determined at its thirty-ninth session, in April 1983, that one of its five priority areas should be "promotion of economic growth and social development leading to alleviation of poverty" and that its activities "should achieve practical results benefiting the poorer sections of the populations of member countries". As a close corollary, another of its priority areas was stated to be "assistance to the least developed countries, land-locked developing countries and developing South Pacific island countries".[5]

These broad priorities provide a frame of reference for the formulation of guidelines for a regional plan of action on human resources development which focuses on the disadvantaged groups in society. The need remains, within this frame of reference, to specify particular target groups for individual programmes and projects. In keeping with the Commission's earlier programme decisions, the specific target groups can be identified as the rural poor, the urban poor, women, youth, disabled persons and the aging. The question of focusing the regional plan of action for human resources development on specific disadvantaged groups will necessarily require further careful consideration.

C. Enablers of human resources development

Just as target groups need to be specified in order to optimize the impact and maximize the multiplier effects of programmes and projects under the plan of action, appropriate enablers of human resources development must be identified for much the same reasons. Enablers of human resources development include those individuals, groups and organizations whose active intervention

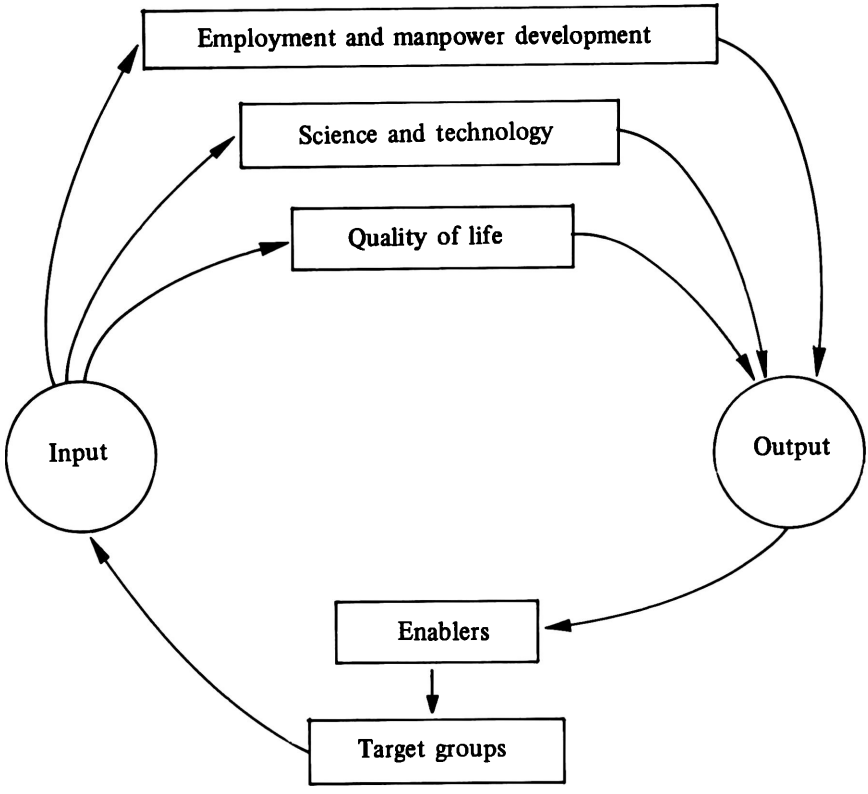
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[5] Official Records of the Economic and Social Council, 1983, *Supplement No. 12* (E/1983/43 - E/ESCAP/341), pp. 49-50.

can catalyse human resources development. They serve, in effect, as the agents or instruments for human resources development.

In the operationalization of a plan of action for human resources development, however, those who are perceived to constitute an enabler group at one level may well be considered to be a target group at another level, since enabler groups cannot be presumed to have "enabling" capabilities without themselves having received prior education, training, mobilization and other preparation. At the same time, target groups that have been successfully mobilized for human resources development may themselves have the potential to serve as enablers in their own right. The nexus between enablers and target groups in the context of a plan of action for human resources development is illustrated in figure III.

Figure III



Since the target groups for a regional plan of action on human resources development have been identified within the general category of the disadvantaged sections of society, it would follow that the enablers should be selected from among those who come into direct and daily contact with the disadvantaged. For the purpose at hand, it is therefore appropriate that the following enabler groups be considered for priority attention: government officers in charge of local administrative units, where the weaknesses of human resources development policy implementation are often most keenly felt; officers responsible for the delivery of essential services at the local level, including such personnel as primary school teachers, local health officials and agricultural extension agents; entrepreneurs and managers, who are responsible not only for providing employment but are also sources of technological and other expertise; staff of non-governmental organizations, whose voluntary efforts play an important role in encouraging citizen participation, developing public understanding and filling important gaps in government efforts at the grass-roots level; and education and mass-media personnel, who staff the increasingly powerful knowledge, information and communications networks indispensable to modern economic and social life. Given the wide range of enabler groups, the urgency of the task and the limitations of budgets and manpower, the selection of key enablers for priority attention is clearly a matter that requires further consideration.

D. Demand-versus supply-focused approaches

In economic terminology, human resources development may be approached from the supply side or from the demand side. The supply-side approach seeks to provide the means for human resources development, on the assumption that the demand already exists. Vocational and on-the-job training programmes, programmes to provide primary health care or modern medical services, research and development activities and programmes to construct and operate schools and hospitals are examples of supply-focused strategies.

The demand-side approach is concerned with the ends of human resources development, with whether and how the means for human resources development are to be utilized, by whom and for what purpose. Because of its focus on stimulating or redirecting demand, the demand-oriented approach is often concerned with changing the traditional values, attitudes, social conventions and behavioural norms that impede popular participation in human resources development programmes. Demand-focused strategies often deal explicitly with the community setting within which human resources development takes place. Mass media campaigns to advise people of their rights and of available opportunities, legislation to ensure that all citizens have equal access to public services and community programmes to generate demand

for primary health care are examples of this approach to human resources development.

The numerous policies and programmes for human resources development that have been implemented over the years by Governments of developing Asian and Pacific countries have concentrated largely on the supply side. Yet the level of human resources development in many of the countries, particularly among rural populations, remains obstinately low, while the need for effective human resources development continues to be an urgent priority. This suggests that a simple supply-focused strategy may not be sufficient.

The limitations of existing programmes for human resources development suggest that more demand-oriented strategies are required. These must ultimately confront the reasons why services, facilities and programmes have often not been utilized in the ways hoped for by policy-makers. The reasons are likely to be found in the institutional setting in which human resources development takes place. Barriers of time, cost and ignorance (itself a reflection of low levels of human resources development) often prevent the most disadvantaged sections of society from utilizing existing services and programmes. The absolute poor, women, disabled persons, members of minority groups or other disadvantaged groups, especially those in rural areas, confront a wide range of economic, social, psychological and physical obstacles to their human resources development. Opportunities for technical and vocational education are unlikely to be utilized in trades requiring technical skills if the rewards, both economic (e.g., wages and salaries, job security and pensions) and non-economic (e.g. status, prestige, access to power and influence), are heavily skewed in favour of clerical and professional occupations.

Programmes that fail to take explicit account of the institutional obstacles to the participation of disadvantaged groups inevitably favour those who are least disadvantaged: the affluent, urban residents, males and those with higher socio-economic status, superior education and training and readier access to development opportunities. If the region's human resources are to be developed, the institutional context within which such development takes place must become an explicit focus of human resources development policy.

E. The problem of uncertainty

Any development plan requires a vision of the preferred future and of the means whereby that future may be realized. Yet the unpredictable remains an ever-present reality. One of the major lessons of the past 40 years of development planning in Asia and the Pacific is that, no matter how refined the analysis of the economic and social conditions and no matter how sophisticated the techniques brought to bear, unanticipated circumstances invariably intervene to distort the planning exercise. Development planning has, as a result of

its difficulties in accommodating the unpredictable, and thus its limited capacity to adapt to unanticipated circumstances, fallen increasingly into disfavour. Nowhere has this been more evident than in the planning of human resources development. If human resources development strategies were devised with this issue clearly in mind, the possibility of formulating and executing practicable approaches would be enhanced.

It is possible to distinguish different degrees of uncertainty that affect different types of socio-economic phenomena. Some trends (e.g., demographic variables) are more predictable than others (e.g., foreign investment). Others may be considered fairly predictable within a certain range of rates of change (e.g., environmental deterioration due to urban crowding). Still others may be more reasonably predictable in terms of their direction than their rate of change (e.g., women's entry into the labour force). The predictability of trends will also differ with respect to the time span involved, with some trends being more predictable over the short term and others more certain only over the longer term.

While some trends of major concern for purposes of human resources development planning are acknowledged to entail considerable uncertainty, especially over the medium to long term (which is the relevant time span for a regional plan of action for human resources development), other relevant trends may be expected to persist and even intensify over the remainder of the twentieth century. Furthermore, the wide range of intercountry variation in economic and social trends that may be expected in the region to the year 2000 and beyond requires that a regional human resources development plan, even more than national plans, should be formulated in such a way that it can respond to a broad spectrum of possible scenarios.

It is invariably difficult to determine the trade-off between long-term commitments in human resources infrastructure (e.g., schools, libraries, hospitals, laboratories) and short term investments (e.g., training programmes, information campaigns, community action projects). One useful rule of thumb is that, in the presence of uncertainty, the advantage lies on the side of those programmes in which resources and efforts are not irretrievably committed.

The lesson is that, over the medium to long term, human resources development plans should minimize prescriptive content. Also, wherever possible, short term commitments of resources should be given priority. In the presence of uncertainty, furthermore, a regional plan of action on human resources development should be fully specified only for relatively short spans of time. Over longer intervals the plan should be primarily indicative in nature. It should have built-in capabilities to respond to change through a variety of programmes to enhance the adaptability of individuals and institutions and

to strengthen their resilience in the presence of evolving development challenges.[6]

In short, human resources development planning should emphasize the concept of capacitation.[7] This concept refers to the creation of human capabilities to respond to the broad range of alternative opportunities that may arise as development proceeds. It extends beyond more narrow concepts relating to "training" or "tooling up", which provide individuals with the specific skills or other limited capabilities to undertake prescribed types of productive activity. Whereas training upgrades human resources as inputs into specific lines of productive activity, capacitation generates flexibility in human resources, as both inputs and outputs, to respond to the uncertain future which is a universal feature in development.

F. National issues in the regional context

A regional plan of action on human resources development must, in the final analysis, be implemented at the national level. Regional analysis, regional co-operation among developing countries (ECDC/TCDC), North-South co-operation within the region and regional co-ordination of international economic and social issues – all such approaches to human resources development among countries remain subordinate to the broad range of programmes and projects that must be undertaken within countries to resolve critical issues relating to the human resources aspects of employment and manpower development, science and technology, and the quality of life.

In this regard, it is essential that any regional plan of action on human resources development should take due account of the diversity of national situations in the region.[8] Asia and the Pacific is unique among the major world regions in the heterogeneity of its economic, social, cultural and political conditions, not to mention its physical features. Given the broad diversity of the region's national development situations, any regional plan of action must ensure sufficient flexibility and generality to accommodate the full range of national circumstances.

Considerable thought was given in the past to identifying the range of critical variables characterizing the developing ESCAP countries. This has led to many attempts to classify the region in terms of the types of development situations that the various countries exhibit. A number of approaches have been

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[6] See United Nations, "Report on a unified approach to development analysis and planning" (E/CN.5/519).

[7] See C.A. Mallman and O. Nudler, eds., *Human Development in Its Social Context,* (London, Hodder and Stoughton, in association with the United Nations University, 1986).

[8] The diversity of national experiences is reviewed in ESCAP, *Human Resources Development in Asia and the Pacific: Its Social Dimension* (ST/ESCAP/472).

based on economic and social structure, development policy orientation and development "style". Other efforts have considered such factors as cultural, political and geographic similarities. Some international financial institutions have decided to classify the region's national situations simply in terms of the level of economic development as defined by per capita income. Other analysts have considered aggregate national product, resource base, population size and the like as appropriate indicators for grouping countries in the region.

The table below illustrates the broad diversity of conditions among the region's 39 developing countries and areas in terms of their population sizes and per capita income levels.

A typology of the developing ESCAP countries as at 1985, for human resources development strategy approaches

Income level (per capita GDP)	*Population size*			
	Large (>75 million)	*Medium (10-75 million)*	*Small (1-10 million)*	*Very small (<1 million)*
High (>$US 2,000)	–	Malaysia Republic of Korea	Hong Kong Singapore	Brunei Darussalam Guam Nauru
Intermediate ($US 500-2,000)	Indonesia	Islamic Republic of Iran[a] Philippines Thailand	Mongolia Papua New Guinea	Cook Islands Fiji Samoa Solomon Islands Tonga Trust Territory of the Pacific Islands
Low (<$US 500)	Bangladesh China India Pakistan	Afghanistan Burma Nepal Sri Lanka Viet Nam	Bhutan Democratic Kampuchea Lao People's Democratic Republic	Kiribati Maldives Niue Tuvalu Vanuatu

Source: ESCAP, *Asia-Pacific in Figures, 1987*, and national sources.

a 1975 per capita GDP.

The many exercises that have sought to identify the basic uniformities and essential differences among the developing ESCAP countries have arrived at no definitive conclusion as to a "best" classification. This inconclusiveness reinforces the widely accepted perception that it is the very heterogeneity of the ESCAP region that marks its identity and explains its vitality. The underlying principles of any plan of action on human resources development for the region must therefore take into full consideration the essential need to accommodate the diversity of national experiences and situations in the region.

III. ORGANIZATIONAL MATTERS

A. Co-ordination mechanisms

The implementation of a regional plan of action on human resources development will require careful co-ordination at the regional, subregional and national levels and between Governments, United Nations and other intergovernmental bodies and agencies, and non-governmental organizations.

As the main United Nations body in Asia and the Pacific charged by the General Assembly with responsibility for co-ordinating activities in the economic and social fields in the region, it is appropriate for ESCAP to serve as the co-ordinating institution for the plan of action at the regional level. At the national level, each country should establish a national co-ordinating unit to serve as the national focal point on human resources development matters. These key co-ordinating entities at the regional and national levels, working in close consultation, would in turn serve as the means of ensuring effective co-ordination among all concerned United Nations and other intergovernmental agencies, subregional groupings and non-governmental organizations in the execution of the regional plan of action.

The co-ordination mechanism envisaged for the regional plan of action is more fully elaborated in a separate secretariat paper submitted to the Meeting.[9]

B. Time frame

In view of the fact that human resources development is a long-term process, requiring decades for its full realization, no plan of action on human resources development could hope to make any substantial impact if it were restricted to the short or medium term. However, major human resources

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[9] ESCAP, "Co-ordination mechanism for an integrated plan of action on human resources development for Asia and the Pacific" (SD/EGM/IPAHRD/7).

development policy and planning initiatives of a long-term nature run the risk of being dissipated over time as national interest inevitably gravitates to new areas of urgent current concern. It is therefore essential for a regional plan of action on human resources development to incorporate activities having a clear-cut short- to medium-term time horizon and aiming at clearly identifiable and tangible results, while at the same time retaining a well-defined direction to achieve broad aims and objectives over the medium- to long-term. The plan might therefore consist, at the outset, of three components: (a) short-term projects, (b) medium-term programmes and (c) long-term aims and objectives.

It is therefore proposed that the integrated plan of action on human resources development for the ESCAP region should be targeted for the year 2000. Within this time horizon, the planning activities to be undertaken at the outset might be considered to consist of the following:

(a) An initial three-year period covering 1988-1990 (the short term) could be earmarked for the formulation and implementation of a series of activities aimed at preparing a base for future plan execution over the decade of the 1990s. This initial three-year period could also serve as a phase during which a fully articulated plan of action covering the decade of the 1990s could be devised to ensure the active and effective participation of all Governments and concerned organizations in the region during the course of the closing decade of the twentieth century;

(b) The five-year span covering 1991-1995 (the medium term) could at the outset have its programme tentatively prepared, in anticipation of further elaboration and modification at a later date in the light of the implementation of the short-term activities and other evolving circumstances;

(c) The remaining five-year span covering 1996-2000 (the long term) could at the outset have its anticipated ultimate achievements tentatively framed, in anticipation of a preliminary definition of the programme of activities for this plan phase in follow-up of the activities to be executed over the medium term.

The ultimate target of the plan of action, given this time span and phasing of activities, would be for the countries of Asia and the Pacific to conclude the twentieth century with a human resources base capable of realizing the full human resources development potential of the region in the early decades of the twenty-first century.

2. EMPLOYMENT AND MANPOWER DEVELOPMENT ASPECTS OF HUMAN RESOURCES DEVELOPMENT*

INTRODUCTION

The Commission at its forty-third session, in April 1987, emphasized that the human factor plays a decisive role in the development of societies and that it is the people who are the intended beneficiaries of development. It also emphasized that human resources remain largely untapped in the Asian and Pacific region and that the challenge is to make the region's huge population of 2.7 billion more productive in an era of rapid technological change. The Commission thus considered the region's economic future to be closely tied to the effective use of its enormous human resources.[1]

One approach to making more effective use of available human resources would be to improve the skills and abilities of people, on the one hand, and to modify their motivations and values so as to make them more productive participants in the economy and society, on the other. This is an exceptionally complex task, arising from a multidisciplinary nature that encompasses economic, social, psychological and political considerations. The fact that human beings are not only a critical means of attaining development but also constitute the end of development itself adds further complications.

While it recognizes that the dimensions of human resources development extend far beyond economics, this paper emphasizes the economic aspects. Employment and manpower development represents an aspect of human resources development to which relatively narrow economic considerations can be fruitfully applied.

The employment aspects of human resources development can be examined from two perspectives. The first is basically concerned with the quantity and quality of employment required in the production system, or with issues of labour demand. The second focuses more on the quantity and quality of the various forms of labour available, and thus on issues of labour supply. The two sides of the problem are closely interrelated. For example, the structure of labour demand has important implications for both the kinds of education and training required to prepare people for jobs and where and

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* This chapter was prepared by the secretariat with the assistance of Mr. Tapas Majumdar, Professor, Yawaharlal Nehru University, India.

[1] *Official Records of the Economic and Social Council, 1987, Supplement No. 14* (E/1987/34-E/ESCAP/590), p. 45.

how this training might be conducted. Similarly, job markets, and thus the overall pace and pattern of development, will be dependent on the quantity and quality of labour available.

In many developing countries of the Asia-Pacific region, the overwhelming challenge of providing sufficient jobs for the steadily growing streams of new entrants into the formal wage sector has caused Governments to concentrate most of their attention on employment creation. However, changes in economic development stratgegies and production structures in many developing countries in response to rapid advances in technology and the changing international context of development indicate the need for a more balanced and integrated approach involving both the supply and demand sides of the employment and manpower development aspects of human resources development in the future.

I. THE EMPLOYMENT AND MANPOWER DEVELOPMENT CONTEXT TO THE YEAR 2000

A. The supply of labour to the year 2000

In its most comprehensive sense, the supply of labour is determined by the size and rate of growth of the labour force. The rate of growth of the labour force for an individual country is a function of the past population growth rate, the resulting age structure, changes in labour force participation rates and net international migration. Migration within countries, especially rural-urban migration, is also important. Between 1973 and 1984 the annual growth rate of the labour force in Asia and the Pacific ranged from 1.6 per cent in China to 3.3 per cent in Pakistan.[2] Although the rates of population growth are beginning to slow down in many countries in the region, the high rates of the past will continue to swell the numbers of new entrants into the labour force for the remainder of the present century in most developing countries. It is this daunting prospect that has caused the Governments of many developing countries in the region to make employment creation a major human resources development priority.

Countries with large populations, such as India and Indonesia, have necessarily adopted a demographic outlook, not only in their medium-term plans, but also in their longer-term perspectives to the year 2000. In India, for example, the prospect of 120 million more persons entering the labour force over the remainder of the twentieth century has made employment creation

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[2] World Bank, *World Development Report, 1986* (New York, Oxford University Press, 1986), annex table 30.

a top priority.[3] In Indonesia also, where the number of new entrants into the labour force had been doubling every 10 years (1971-1980 compared with 1961-1970), the number of labour force entrants recently doubled in just five years (1981-1985). The expected continuation of this trend makes productive labour absorption a priority.[4] In Viet Nam, an example of a smaller country, the age composition of the population is expected to mean not only continued high population growth rates but an average annual addition of about one million young people to the labour force over the coming years – a magnitude that cannot be easily or fully absorbed under the existing economic conditions. It has been recognized, in fact, that demographic and employment issues are serious constraints on Vietnamese socio-economic development.[5]

While the contribution of population growth to labour force growth can be predicted with reasonable confidence, the effect of other factors on the supply of labour is less certain. Some factors, such as delayed entry into the labour force due to education or military service and premature withdrawal due to early retirement, are to some extent amenable to policy intervention. Other factors, such as female participation rates or international migration patterns, tend to be highly volatile and less subject to direct government control.

Female labour force participation rates range from 5.4 per cent in Bangladesh to 50.6 per cent in Thailand[6] and are greatly influenced by social and cultural factors that are not always readily amenable to government intervention.[7] Policies affecting international migration for employment, which is particularly important to a number of countries in Asia and the Pacific, are largely in the hands of Governments in the countries of destination. The cyclical curtailment of overseas employment opportunities for international migrants can mean the sudden re-entry of large numbers of experienced workers into the domestic job market at the same time as this formerly important source of jobs for new entrants into the labour force is closed. It has been estimated, for example, that one third of the increase in the labour force of Pakistan during the fifth five-year plan period (1978-1983) may have been absorbed by

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[3] J. Veera Raghavan, "Human resource development in relation to science and technology in India", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development, Tokyo, 7-10 December 1987.

[4] Sayuti Hasibuan, "Labour force growth and employment in the Indonesian economy", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[5] Nguyen Luong, "The development of science and technology in Viet Nam: policies and problems", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[6] See statistical annex, table 10.

[7] See the accompanying paper on the integration of women's concerns into human resources development in the ESCAP region.

jobs in the Middle East.[8] Short-term fluctuations in the supply of labour, both in particular industries and sectors and in the aggregate, are thus likely to be a complicating feature in the regional employment situation for the foreseeable future.

The economic structure and the size and composition of the labour force are critical considerations in determining the employment situation in particular industries and sectors. Thus, agriculture continues to dominate the employment situation of most developing Asia-Pacific countries.[9] In eight Asian countries in 1980, the proportion of the labour force in agriculture was more than 50 per cent, rising as high as 75 per cent in Bangladesh.[10] Conditions in the agricultural sector, in turn, continue to be a major determinant of the supply of labour to other sectors in the countries concerned.

Given the dominance of agriculture in the labour picture, employment conditions in the agricultural sector are a focus of government policies in most developing ESCAP countries. The Philippine medium-term development plan (1987-1992), for instance, is designed to be both employment- and agriculture-oriented because more than half the population live in rural areas and about half of the labour force is employed in agriculture. Increases in agricultural productivity and agricultural incomes are required in order to alleviate poverty.[11] In Indonesia, the goal of food (rice) self-sufficiency has been attained, but the importance of agricultural employment means that priorities may now have to be shifted to non-food agricultural commodities.[12] In India, the emphasis on well-organized extension services, supply of inputs and a stronger co-operative movement based on government policies indicates that the need to ensure productive employment in agriculture has been recognized.[13]

The employment implications of present trends in world demand for agricultural products and the current of technological change in agriculture show, however, that increasing numbers of workers will be moving out of agriculture in search of alternative employment opportunities during the next

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[8] Rashid Amjad, ed., *Human Resource Planning: The Asian Experience* (New Delhi, ILO/ARTEP, 1987), p. 12.

[9] See statistical annex, table 7.

[10] Rashid Amjad, *op. cit.*, pp. 4-5.

[11] Rosita L. Fondevilla and Marcial Salvatierra, "The quality of life dimension of human resource development: a Philippine context", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[12] Sayuti Hasibuan, *loc. cit.*, p. 20.

[13] J. Veera Raghavan, *loc. cit.*, p. 2.

decade.[14] In this regard, the Chinese Government has sought to create alternative employment programmes for rural manpower leaving agriculture. The "Spark Programme" was begun in 1985 for the purpose of creating small-scale, rural factories to promote rural construction, transportation and other service industries so that people would "leave the fields but not the countryside".[15]

It has recently been suggested that the reduced levels of demand and prices for primary products which currently characterize the world market are not short-term phenomena but are destined to remain as permanent features of a changing world economy.[16] This analysis implies furthermore, that the growing surplus labour supply in developing countries arising out of the commodities depression will not find employment opportunities in other sectors because of the increasingly labour-saving nature of the new technologies. If this analysis is corrrect, the employment prospects in primary product exporting developing countries may be projected as being grim. In particular, developing countries will no longer be able to base their economic development on low labour costs. The employment prospects for their largely uneducated, unskilled labour now employed at low levels of productivity in the agricultural sector will become an increasingly serious development problem.

B. The international setting: trends in the demand for labour

Current changes in the international setting of development suggest that the demand for labour is unlikely to expand commensurate with anticipated increases in supply. They also suggest that the composition of the demand for labour is likely to change rapidly in ways that will exacerbate the human resources development problems of developing Asia-Pacific countries. The probable scenario for the international economy and its implications for the domestic economic and social situations of developing ESCAP countries will be increasingly important considerations in human resources development planning in the region for the remainder of the present century.

The crises, shocks, dislocations and stagnation that have characterized the world economy in the 1970s and 1980s add another dimension to the question of employment and manpower development. Levels of economic activity in developing countries have fluctuated sharply, either in response to

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[14] "Proceedings of a Regional Seminar on Strategies and Policies for Employment Expansion through Rural Industrialization in Asia", New Delhi, 24-26 September 1986, in Rizwanul Islam, ed., *Rural Industrialization and Employment in Asia* (ILO/ARTEP, 1987), chap. 9.

[15] Liansan Ruan, "People's Republic of China: country paper", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[16] Peter F. Drucker, "The changed world economy", *Foreign Affairs*, Spring 1986, pp. 768-791.

sudden changes in the external economic situation or as a result of structural adjustments required by international financial institutions as a condition for loans. These sometimes drastic short-term adjustments can cause severe social dislocation and have affected employment by either increasing levels of open unemployment or increasing underemployment and causing shifts of employed labour from the formal sectors of the economy to the informal sectors.[17] A case in point is the Philippines, where structural adjustment aimed at financial stability resulted in severe cuts in government expenditure, decreased private investment, reduced output and increased unemployment. The economic contraction caused open unemployment to reach 12.5 per cent in 1985.[18]

The era of sustained high growth in the world economy has come to an end. Although the medium-term outlook seems to be for some recovery from the depressed levels of the recent past, there appears to be no early prospect that the world economy will regain the high growth rates experienced in the 1960s and early 1970s. It is generally agreed that, at best, world economic growth will be modest for the foreseeable future. Slow growth of world output and demand will mean continued excess capacity, heightened international competition, growing protectionism and reduced profitability in many industries.

The demand for labour thus seems unlikely to expand at the rate that will be required to absorb the unemployed, underemployed and under-utilized labour force available in the developing countries of Asia and the Pacific. There will continue to be a shortage of jobs in most countries and this shortage will grow. More serious, however, is the fact that the types of labour which will be in active demand will also change. Some countries may find themselves, paradoxically, with both a shortage of jobs and a shortage of workers, arising from serious problems of "mismatching" in the labour market.

Such a "mismatch" problem is apparent in Sri Lanka, where the Government has become a major employer (26 per cent of the labour force). There are too many clerical workers and managers, while there is a great need for qualified nurses, doctors and teachers, especially to serve in villages and rural areas.[19] A complex type of mismatch of a different nature is anticipated as Japan transforms to an advanced "information society". An aging work force in a lifetime employment system may have morale problems owing to shortages of high-level posts and will need increased welfare services and systematic education and retraining to keep pace with technological progress. In other words,

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[17] Rashid Amjad, *op. cit.*, p. 6.

[18] Rosita L. Fondevilla and Marcial Salvatierra, *loc. cit.*, pp. 2 and 4.

[19] S.M.L. Marikar, "The physical quality of life dimension of human resources development in Sri Lanka", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

an aging work force will increasingly require on-the-job (re-)training, skill (re-) formation and career development. Possible supply-demand mismatches have been identified in this context between age groups, industries, occupations, skills and geographic regions.[20]

Changing consumer tastes, market saturation in some products and changes in technology and relative factor costs are reducing world demand for major primary products. Some branches of industrial production are moving from heavily material-intensive to capital- and knowledge-intensive products and processes. The pace of change in technology, design and production processes has also quickened tremendously, causing shorter product cycles and increased investment risks. Technology development, product design, marketing and distribution, rather than manufacturing, are accounting for increasing proportions of product value.

At the same time, declining export prospects for major primary commodities, slow growth of domestic demand and shrinking opportunities for import substitution are placing greater pressures on developing countries to increase manufactured exports. This inevitably requires improvements in labour productivity, management and marketing to enhance international competitiveness. Increasing dependence on international markets in many developing countries forces industry to follow global trends. These include a shift from industries and technologies that are primarily labour-intensive to ones which, by their very nature, are capital- and knowledge-intensive. Thus, future industrialization in the developing ESCAP countries is likely to be less effective in generating new employment than it was in the past for the region's newly industrializing economies, such as Hong Kong, the Republic of Korea and Singapore.

Two other industrialization trends are also important for employment prospects in the region. The first is the trend towards smaller-scale plants. This has been intensified in some developing countries because of the greater burden of modern labour laws and regulations on larger employers compared with smaller employers, who either are not bound by the regulations or can successfully evade them. Minimum-wage laws, leave provisions, retrenchment benefits and other provisions regulating working conditions can increase relative labour costs in developing countries beyond financially viable levels. Large firms can avoid some of these costs by subcontracting to small peripheral firms rather than establishing their own plants.[21] This is one reason why the number

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[20] Tamiko Iguchi, "Employment and manpower development in Japan", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[21] Kalpana Bardhan, "Women workers in South Asia, employment problems and policies in the context of the poverty target groups approach", ILO/ARTEP Working Paper, June 1987.

of workers with formal wage employment in large firms in many developing countries has remained relatively small while the numbers obtaining semi-informal employment in small enterprises are on the rise. However, small subcontractors often bear the brunt of fluctuations in economic activity. They consequently tend to have brief "lives" and thus offer an unstable and insecure source of employment.

The second important industrialization trend is towards technologies which are less labour-intensive. It has been observed that within the developed economies there has been a movement away from "blue-collar", semi-skilled industrial employment.[22] The labour force in large industrial plants in these countries is increasingly divided between a larger group of workers with low levels of education and skills who are employed in simple assembly tasks or, increasingly, in tending automated machinery and a much smaller group of highly educated and highly skilled technical, managerial and administrative staff. At the same time that the gap between these two groups is tending to widen, the numbers of workers in the first group are decreasing as automation, robotization and similar technological advances are introduced.

Employment in the industrial sector of developing countries seeking competitiveness in international markets is beginning to be similarly affected, and it is expected that the trend will strengthen. For example, pressures generated by increased protectionism among countries seeking to protect domestic employment are forcing exporters to restructure away from labour-intensive production. Thus, rising protectionism in the OECD countries has forced the textile industry in Hong Kong, the Republic of Korea and several other ESCAP countries or areas to restructure towards products with fewer trade restraints and higher value-added. This involves the introduction of new, increasingly labour-saving technologies.

As was noted in an earlier section of this paper, the proportion of the labour force that can be absorbed in agriculture is declining and can be expected to decline further in most developing Asia-Pacific countries. However, workers displaced from agriculture are increasingly unlikely to be absorbed by industry. In 9 of 11 Asian countries examined in a recent study, the proportion of the labour force employed in industry was less than 20 per cent.[23] It appears that the surplus is most likely to be absorbed by the expanding services sector.

Policy-makers in a number of ESCAP countries have been working on various strategies to absorb workers displaced from agriculture. Indonesia has targeted labour-intensive industries related to agriculture, such as agro-processing for domestic and export markets, and light engineering industries

[22] Peter F. Drucker, *loc. cit.*, pp. 775-777.

[23] Rashid Amjad, *op. cit.*, pp. 4-5.

related to agricultural equipment and services.[24] As noted previously, China is promoting rural industries and services as part of its "Spark Programme".[25] Likewise, Bangladesh has targeted rural cottage industries for promotion and upgrading in order to create employment, especially since the technology- and capital-intensive nature of modern industries is too expensive and has low labour-absorption capacity.[26] More generally, China, Pakistan and Sri Lanka have each identified the services sector as important for making a greater contribution to both GNP and employment creation. The tourism industry is considered important in Sri Lanka, despite some of the social problems arising from tourism.[27] In the cases of Pakistan and Sri Lanka, the government spending on health and education is creating new jobs for teachers and supporting staff, doctors, nurses, engineers, vocational technical teachers, and so forth.[28] While Japan is at a significantly higher stage of economic development, the tertiary sector is equally important for employment absorption. In fact, by the year 2000 over 60 per cent of the work force is expected to be in that sector. At the same time, that sector will require workers with new skills and proficiencies as the nature of communication and distribution services, welfare and leisure services changes drastically.[29]

C. Employment and manpower development experience

Past experience in employment and manpower development in certain Asian and Pacific countries provides important insights into current problems and prospective trends in the region. One important group in the region – following Japan's earlier strategy – is the newly industrializing economies, including Hong Kong, the Republic of Korea and Singapore. In these economies, rapid export-oriented industrial growth has made a significant contribution towards creating employment opportunities, leading to low levels of unemployment. A second major group comprises the middle-income south-

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[24] Sayuti Hasibuan, *loc. cit.*, pp. 18-21.

[25] Liansan Ruan, *loc. cit.*, p. 10.

[26] Nur Ahmad Siddique, "Employment and manpower development in Bangladesh: current and prospective trends, policy options and plans and programmes", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[27] S.M.L. Marikar, *loc. cit.*, p. 10.

[28] S.M.L. Marikar, *loc. cit.*, pp. 10-11; Zulekha Zar, "Country paper on Pakistan", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[29] Tamiko Iguchi, *loc. cit.*, p. 3; Yiji Masuda, "Technical innovations and information technologies in industrial society: current status and outlook for information technology development in Japan", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development, p. 30.

east Asian countries of Indonesia, Malaysia, the Philippines and Thailand, where a mix of export-oriented and home-market-based industrialization has generated substantial growth, although it has been related more to productivity advances than to employment expansion. The rate of growth of industrial employment in these economies has barely exceeded the rate of growth of the labour force, with the result that the impact of industrialization on employment has been disappointing.

In analysing the extent to which industrial expansion in the newly industrializing countries has been successful in generating employment and achieving growth with equity, attention has focused on the Republic of Korea. The experience of Hong Kong and Singapore, although instructive, has been considered less immediately relevant to other countries because of the formers' relatively small scale and also because they do not possess a significant agricultural sector and the associated burden of rural poverty. The experience of the Republic of Korea is a more relevant example of rapid industrial expansion and successful employment creation.

There has been much discussion of the reasons for the rapid industrial growth of the Republic of Korea and the possible lessons that can be drawn from it by other countries.[30] It has been noted that the Republic of Korea made significant progress in the agricultural sector prior to its phase of rapid export-led industrial growth and that, as a consequence of successful agrarian reform implemented earlier, labour absorption as well as productivity and income had markedly improved in the agricultural sector. This narrowed rural-urban income disparities and reduced incentives for the rural population to move to the cities, where they would otherwise have swelled the ranks of the urban unemployed.[31] Thus, agricultural progress in the Republic of Korea has reduced the dimensions of the problem of providing employment.

The industrialization process that followed also supported employment creation and thus augmented the earlier favourable employment trends emanating from the agricultural sector. It has been observed that "the extraordinary high growth rates in labour-intensive manufactures over a sustained period of more than a decade ensured that the impact on labour absorption, economy-wide, was substantial".[32] The high demand for labour that ensued from the rapid growth of labour-intensive manufactures was supported by strong govern-

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[30] See, for instance, P.W. Kuznets, *Economic Growth and Structure in the Republic of Korea* (New Haven, Yale University Press, 1977); and ILO, Asian Employment Programme, *Proceedings of a Symposium on Expert-Led Industrialization and Employment*, Pattaya, Thailand, 24-25 February 1980 (Bangkok, Asian Employment Programme, 1980).

[31] Eddy Lee, "Export-led industrialization in Asia: an overview", in Eddy Lee, ed., *Export-Led Industrialization and Development* (Bangkok ILO/ARTEP, 1981), p. 17.

[32] *Ibid.*

ment policies to maintain labour discipline and control trade union activity, which kept wages in check. The fact that increases in real wages were kept significantly below increases in labour productivity not only gave a strong impetus to maintaining the high demand for labour but increased the international competitive advantage of the country's exports.

The industrial growth and employment creation experience of the middle-income countries, as represented by Indonesia, Malaysia, the Philippines and Thailand, presents a somewhat different picture. Despite substantial industrial growth, the impact on labour-force absorption has not been entirely satisfactory. Indonesia's experience from 1971 to 1980, for instance, indicated that, out of a total of 12.3 million new jobs, 16 per cent were created in industry; from 1980 to 1985, industry accounted for only 10 per cent of the total of 10.9 million new jobs. In the light of this experience, Indonesia's employment priorities for the future will not lie with industry.[33] In Malaysia and Thailand, the lack of job opportunities in industry is implied by the efforts of the respective Governments to train and encourage more people to engage in self-employment and entrepreneurship.[34] This could represent another path to industrialization different from medium- or large-scale labour-intensive industries. However, sectors or industries conducive to self-employment and entrepreneurship do not appear to have been identified (or have not yet been given appropriate policy incentives) by the respective Governments. Industrialization has consequently made little contribution towards solving the problems of unemployment and underemployment in these countries.

By the latter half of the 1970s, the share of manufacturing output in GDP was between 17 and 21 per cent in Indonesia, Malaysia, the Philippines and Thailand, while employment in the manufacturing sector accounted for between 7 and 12 per cent of total employment.[35] The reason for the low absorption of labour lay largely in government policies (such as tax holidays, accelerated depreciation allowances and low or non-existent duties on imports of industrial machinery and other production inputs) that favoured the selection of capital-intensive, rather than labour-absorbing, technologies and lines of production.

Under such conditions, there is a strong case for these countries to move away from policies which subsidize the use of capital and to initiate measures

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[33] Sayuti Hasibuan, *loc. cit.*, pp. 19-20.

[34] Tham Ah Fun, "Quality of life in Malaysia", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[35] ARTEP, *The Development of Labour Intensive Industry in ASEAN Countries* (Bangkok, Asian Employment Programme, 1981).

that would more accurately reflect its scarcity price.[36] This experience suggests that, although subsidies for capital utilization may offer a useful incentive to attract investment into the manufacturing sector in the earlier stages of industrialization, their continued use cannot be justified from the point of view of the social costs associated with their weak impact on employment creation.

Another conclusion that can be drawn from the experience of the above-mentioned newly industrializing countries is that a narrow import-substitution industrialization strategy results in lower growth of employment than an export-led strategy. Despite its weak employment effects, export-oriented industrialization involves more leabour-intensive manufacturing activities than does import-substituting industrialization.[37] Furthermore, competition on the international market gives rise to domestic price structures that better reflect factor scarcities. However, successful replication of the development experience of the Republic of Korea is doubtful under the present increasingly competitive international market conditions. Developing countries should therefore search for other growth patterns to generate employment. In this search, the potential of domestic market expansion must be carefully considered not only because of its still unsaturated state but for its possible widespread development linkages.

Both the Republic of Korea and the other middle-income countries discussed above have sought to generate the required increase in employment primarily within the urban, industrial sector. At least until 1978, a somewhat different approach had been adopted in China, focusing on rural industrialization. The Chinese experience provides a unique example of a socialist and, until recently, inward-looking development strategy where rural industrialization was pursued through collectives of peasants. The institutional organization of China's socialist economy was particularly suited to this strategy.[38]

Starting in 1978, the rural industrialization strategy was altered somewhat as China began changing its basic economic strategies and policies, which in turn changed the nature of its manpower requirements. With the establishment of 4 special economic zones and 14 open cities, mostly along the Chinese coast, development was targeted to areas where and industrial base already existed. Labour was allowed increased mobility and labour service companies were set up starting in 1978 to register job-seeking youth, undertake employment-creating activities and organize vocational training. By 1985 there were about 45,000 labour service companies. Some labour service companies in Guangdong Province have even organized international migration of Chinese workers. It

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[36] Lyn Squire, *Employment Policy in Developing Countries: A Survey of Issues and Evidence* (New York, Oxford University Press, 1981).

[37] *Ibid.*, p. 7.

[38] A Eckstein, *China's Economic Development* (Ann Arbor, University of Michigan, 1975), pp. 179-275.

is reported that from 1978 to 1986 GNP increased by 103 per cent, total industrial and agricultural output increased by 116 per cent and per capita income increased by 139 per cent. At the same time, the rate of those "waiting for work" fell from 4.9 per cent in 1980 to 1.8 per cent in 1985.[39] The policies of the sixth five-year plan (1980-1985) have resulted in over 36 million new job entrants in urban areas as the structure of ownership has changed from predominantly State-owned to collective units and self-employment. At the same time, however, many organizations and enterprises in China are considered to be overstaffed. The economic reforms suggest that the "iron rice-bowl policy" is being altered and that many more people will need to be retrained and look for new jobs.[40]

Rural industrialization is based on the extension and intensification of existing linkages between the agricultural sector and rural industry. A major objective is the absorption of displaced agricultural labour by rural industry as an alternative to large-scale rural-urban migration. The following factors have been identified as important ones in the historical success of this strategy: significant prior agricultural growth, a relatively important prior role for the rural non-agricultural sector, egalitarian land reform which favours primary accumulation for industrialization, excess absorptive capacity for technology in agriculture and rural demand for the products of rural industry.[41] A number of other developing countries in the ESCAP region have recently adopted rural industrialization strategies as the principal means of achieving employment creation. Bangladesh is a leading example.[42] One aspect of Bangladesh's strategy includes temporary employment under the food for work programme and rural works programme. Another aspect is development of rural infrastructure using labour-intensive methods to provide short-term employment. The third aspect is application of technology to industries which will lead to more widespread, systematic use of fertilizer and irrigation techniques. The fourth aspect is to upgrade and promote cottage industries and identify rural industries for future development such as crop processing, fisheries and livestock raising.[43]

Malaysia's two-part strategy is aimed at poverty eradication and has been called "group farming and rural urbanization". Target groups are identified and, under group farming, small, uneconomic holdings are to be consolidated and managed on an estate basis as group or co-operative farming, thus

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[39] Liansan Ruan, *loc. cit.*, pp. 1 and 7-8.

[40] *Ibid.*, pp. 1-2.

[41] Shwani Saith, "Contrasting experiences in rural industrialization: are the East Asian successes transferable?", in Rizwanul Islam, *op. cit.*, pp. 297-301.

[42] Rashid Amjad, *op. cit.*, pp. 14-15.

[43] Nur Ahmad Siddique, *loc. cit.*, pp. 5-7.

creating employment and economies of scale. Rural urbanization will amalgamate scattered villages into organized settlements to make the provision of social services and facilities more efficient and systematic. Rural urbanization can incorporate elements of group farming and small-scale, agro-based industrial activities and local trade and business activities.[44] Similarly, the Philippines' short-term development strategy focuses on a rural-based employment programme. For 1986 and 1987 the programme was designed to create 1 million jobs through small-scale, labour-intensive infrastructure construction projects such as communal irrigation systems, school buildings and local feeder roads.[45]

In a number of ESCAP countries, including the heavily labour-surplus South Asian economies, the limitations of both the agricultural and industrial sectors for employment creation have been recognized. Planners have turned not only to the non-farm rural economy, but also to the development of employment in informal economic activities, especially in the services sector, as an alternative employment creation strategy. Such strategies will have important consequences for manpower development policies. Because of their scale, many informal-sector enterprises are unable to participate in specialization and division of labour to the same extent as larger enterprises. They therefore do not generate an effective demand for many of the types of specialized skills and abilities that, in larger enterprises, are usually provided by highly skilled technicians. Much of the competitive weakness of informal-sector enterprises is related to their lack of expertise in quality control, marketing, management and finance. A similar problem has recently been identified as a major weakness of producers in the small island economies of the Pacific.[46] If small-scale services, self-employment and informal-sector production are to be the focus of employment creation, these issues will need to be effectively addressed by manpower development strategies.

II. KEY EMPLOYMENT AND MANPOWER DEVELOPMENT ISSUES IN HUMAN RESOURCES DEVELOPMENT

A. Growth strategies and the mobilization of human resources for work

Some four decades of experience with promoting economic development have now been accumulated in the developing ESCAP countries. What can

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[44] Tham Ah Fun, *loc. cit.*, p. 11.

[45] Rosita L. Fondevilla and Marcial Salvatierra, *loc. cit.*, pp. 6-7.

[46] Helen Hughes, Dennis Ahlburg and Sun-Hee Lee, "Human resources development in the Pacific island developing countries", in ESCAP, *Human Resources Development in Asia and the Pacific: Its Social Dimension* (ST/ESCAP/472), 1986, p. 83.

this experience tell us about the human factor in the process of economic growth? What has been the effect of human resources development on growth? How have human resources in turn been affected by growth?

Third world economic development, measured in terms of GDP growth, has been appreciable over the past several decades. GDP in the developing countries grew at an average of 6.0 per cent per annum in real terms during 1965-1980. If a distinction is made between low-income and middle-income countries, annual growth rates still remain impressive by historical standards, with the former group averaging 4.8 per cent and the latter group 6.5 per cent.[47] These rates appear particularly favourable when compared with the growth performance of developed countries in their earlier stages of development. None of the developed countries has historically sustained a rate of increase of more than 3 per cent over any extended period.[48]

However, in many cases the rapid GDP growth experienced by developing countries has not brought with it a greater sharing of the fruits of economic progress. On the contrary, the problem of poverty alleviation remains largely unresolved. Nor has any significant progress been made in reducing the problem of labour redundancy. In human terms, the pattern of growth as experienced thus far in many developing countries leaves much to be desired.

The rapid population growth experienced in the past by developing countries in the region has begun to slow down in the last decade (as noted in section I of this paper), but population growth has complicated efforts to maintain high rates of economic growth. The complications arise from high and rising dependency ratios, which have lowered domestic savings; that, in turn, has dampened the expansion of domestic productive capacity in these countries. This process has induced greater dependence on external sources of investment and assistance.

Beyond the demographic explanation, difficulties result from the over-emphasis consistently given in development strategies to the so-called "modern" sector as the presumed engine of GDP growth. Policy-makers expect that rapid expansion of the modern sector will spread to other parts of the economy and ultimately benefit the entire population, an expectation that has largely been unfulfilled. The shift of labour from low-productivity to high-productivity industries and occupations has not occurred to the extent expected. Employment generation in the modern sector has accounted for only 15 to 25 per cent of total labour absorption.

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[47] World Bank, *World Development Report, 1987* (New York Oxford University Press, 1987).

[48] A Maizels, *Industrial Growth and World Trade* (London, Cambridge University Press, 1963).

The reasons why growth strategies have failed to give adequate attention to this issue and why serious social problems have multiplied in its wake can be better understood by looking at the conditions of life and labour that prevail in the so-called "traditional" sector and the gap that prevails between this situation and the type of growth promoted in the modern sector.

It has been repeatedly and persuasively argued that concepts of labour force, employment and unemployment as understood and widely used in the developed countries are of only limited applicability in analysing socio-economic conditions in the traditional sector of the developing countries, including those of the ESCAP region.[49] For example, the labour force is usually defined as the sum of the employed and the unemployed. The employed are those people above a certain age (often 15 years) who are economically active (i.e., working for pay or for profit) during a reference period (usually a week). The unemployed are those people, having the same age attributes as the employed, who are out of work during the same reference period but are available for and seeking employment.

Such a definition raises considerable difficulties for classifying workers in the traditional sector of the developing countries. To begin with, it may not be possible to distinguish between a member of the labour force and his or her dependents, as most members of the family may spend some of their time in productive activity and share the burden of work. Further, there are likely to be workers who are willing to work but who are not seeking jobs because they have little hope of finding any – the so-called "discouraged workers". The concept of underemployment adds to the difficulty by calling attention to the large number of workers who work less than full time (seasonally or otherwise intermittently, or short weeks or hours), or who are employed in activities that fail to utilize their skills fully or effectively.

Because of these complexities and the paucity of systematic empirical investigations, there remain large gaps in present-day knowledge concerning the character and magnitude of the under-utilization of labour in the region.[50] It is possible to list the forms that this labour under-utilization takes, as follows: (a) openly unemployed – those who are not working and are seeking work; (b) discouraged unemployed – those who are not working and have quit seeking

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[49] See, for instance, the quite different but complementary arguments of Hla Myint, *The Economics of the Developing Countries* (London, 1964); Shigeru Ishikawa, *Economic Development in Asia Perspective* (Tokyo, Kinokuniya, 1967); and Lyn Squire, *op. cit.*

[50] There are, however, valuable exceptions, e.g., experiments with alternative approaches such as the "labour utilization framework" and the "active population approach" developed by the Organization of Demographic Associates and the Council for Asian Manpower Studies and applied in seven countries and areas in the region. See Philip M. Hauser, "The measurement of labour utilization" and "The measurement of labour utilization: more empirical results", in *Malayan Economic Review*, April 1974 and April 1977, respectively.

work out of a sense of hopelessness; (c) visibly underemployed – those who are working less than they would prefer or less than the normal or appropriate daily or weekly work hours set for the task; (d) invisibly underemployed – those who are at their work stations for the prescribed period but are either idle much of the time or, if fully occupied, produce an unacceptably low value of output because of inadequate complementary resources; (e) impaired underemployed – those who work full time but with reduced capacity because of malnutrition, preventable ailments or inadequate skills or training; (f) prematurely retired – those who are out of work owing to lowered retirement age to make room for younger people; and (g) delayed entrants – those whose entrance into the labour force is artifically postponed, such as secondary- and tertiary-level students and military conscripts.

Statistics from Thailand for 1984 show that about 389,000 persons were considered as openly unemployed. At the same time, it was estimated that there was an almost equal number, an additional 300,000 to 400,000, outside the labour force but willing to work. The existence of this second group, outside the labour force and willing to work, is considered to be a major manpower utilization problem for Thailand. Equally serious is the problem of seasonal unemployment of people with low education working in the agricultural sector. In 1984, the number of seasonally unemployed was estimated as 3.8 million, out of which approximately 700,000 were prepared to do other work.[51]

In Indonesia, the general picture for open unemployment appears to have improved; the unemployment rate declined from 8.8 per cent in 1971 to 2.1 per cent in 1985. However, a more disaggregated picture of unemployment rates in 1985, according to level of education, showed some rates significantly higher than the general rate: the unemployment rate for people with some secondary education was 4.5 per cent, with completed secondary education 11.6 per cent and with a university education 5.3 per cent. [52]

The existence of serious under-utilization of labour in the developing countries due to various combinations of the above-mentioned conditions plays an important part in the criticism that has been levelled against conventional growth strategies and their lack of success in overcoming poverty and unemployment. The argument as to what has gone wrong – or, at least, what has not gone right – in many developing Asia-Pacific countries proceeds as follows.

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[51] Phayap Phyormyont, "Employment and manpower development in Thailand", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[52] Sayuti Hasibuan, *loc. cit.*, pp. 13 and 15 and table 8.

In the pre-modernization stage there exists a large stock of under-utilized labour, primarily in the traditional rural sector. This under-utilization can take a variety of forms, as noted above, but it arises mainly as visible and invisible underemployment. Underemployment itself is prevalent for a variety of reasons. First, meager resources of land and capital limit the productive effort. Second, lack of sufficient markets dampens production opportunities and incentives. Third, serious constraints arise out of certain types of social arrangements; economic and political power is unevenly distributed and, as the privileged continue to exert their power at the expense of the disadvantaged, the resources available to the latter become even less than the already low average level would suggest. Fourth, in the presence of modern medicine and other social services, the economic value that children are popularly perceived to bestow upon parents adds a new dimension to the problem in the form of rapid population increase, swelling the labour supply and further reducing the resources available per capita.

Impulses towards modernization are then introduced into this socio-economic milieu. For the most part, these consist of capital injections through domestic savings, foreign investment and international aid. As indigenous reserves of talent in the form of planners, administrators and other professionals and highly skilled technicians are limited and concentrated in the urban areas, capital formation gravitates to where those critcial human resources are located – the metropolitan enclaves and their environs.

The need to economize on the limited supply of available local talent favours large, concentrated projects. This tendency is reinforced by the character of the new technology, imported from the advanced countries, which calls for production techniques that are capital-intensive and economical in the use of labour and require high skill levels for efficient operation. The emphasis on large projects which tend to be concentrated in the urban areas has meant an uneven spatial distribution in the pattern of industrial and infrastructure investment, isolated from major pockets of the unemployed and underemployed.

In the earlier days of planned development, the concentration of capital in the modern urban sector was not thought to pose any serious problem. At that time, it appeared possible for the modern sector to develop at a sufficient pace and in such a manner that the surplus labour pool in the traditional sector would be absorbed within an acceptable time frame. The early models,[53] which have dominated much of the thought and practice of develop-

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[53] W.A. Lewis, "Economic development with unlimited supplies of labour", *The Manchester School of Economic and Social Studies,* My 1954, vol. 22, pp. 343-373; G. Ranis and J.C. Fei, *Development of the Labour Surplus Economy* (Homewood, Ill., Irwin Publishing Co., 1964).

ment economics for the past several decades, also conceived the development process as proceeding along such lines. Thus, capital formation took place in the modern sector, drawing labour from the traditional sector. As labour moved out, rationalization occurred in the traditional sector, thereby increasing productivity and output and gradually modernizing it too.

This is not to say that rural development has been entirely neglected. The approach to rural development, however, has tended to take the form of investment in dams, irrigation works, market roads, electric power grids and other physical infrastructure assumed to provide an environment conducive to the accelerated development of village life. By and large, however, sufficient attention has not been given to the question of creating employment opportunities in the countryside and upgrading labour skills to match such employment opportunities, as growth in the modern sector was expected to solve that problem. Where rural employment projects have been devised, they have often been remedial in nature rather than designed to have a cumulative manpower development effect.

As noted, the modern sector has not been able to respond adequately to the challenge of massive unemployment and underemployment in the surplus-labour economies. By the end of the 1960s it was already becoming clear that the numbers of the very poor in the Asia-Pacific region, as in much of the third world, were rising. At the same time, the degree of inequality was scarcely decreasing and the employment problem remained largely unresolved.[54] Seen in this perspective, the situation in much of the Asia-Pacific region has not changed appreciably. Nor, in the absence of basic strategic realignments, can it be expected to improve substantially over the remainder of the century.

The reasons for the weak spillover of the benefits of growth in the modern sector to the rest of the economy are well known. Concentration of industry and infrastructure in the cities and adoption of basic concepts from the advanced countries regarding work week, wages and fringe benefits have made urban incomes and standards of living much higher than those in the countryside. This, coupled with rising pressure of population on land, has induced underemployed rural labour to migrate to the cities in growing numbers. But the capital-intensive, labour-saving and high-skill characteristics of the imported technologies and associated capital formation that has taken place in the modern sector have had only limited capability to absorb labour. The result has been increased open unemployment in the cities and the growth of the urban informal sector.[55]

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[54] ILO, *Employment, Growth and Basic Needs* (Geneva, 1976).

[55] The informal sector consists of workers engaged in such "self-employment" activities as hawking, street vending, junk recycling, itinerant manual and other low-skill labour, household handicrafts, and the operation of establishments with few workers and small capitalization.

To give some dimension to the problem, the unemployed labour force in the 14 Asia-Pacific countries and areas with official estimates of unemployment for 1981, taken together, totalled 23 million, or 5 per cent of their total economically active population of 463 million.[56] These 14 countries accounted for 77 per cent of the total Asia-Pacific population.[57] Although a large absolute figure and by no means an insignificant percentage, the foregoing unemployment statistic is in all likelihood a gross underrepresentation of the actual state of unemployment in the region. Furthermore, it should be noted that the estimate does not consider underemployment.

Estimates have also been made of the share of informal-sector employment as an avenue of escape for the unemployed urban labour force. They range from a low of 19 per cent for Colombo to 69 per cent for urban areas of Pakistan. The estimates for urban areas in Thailand and Malaysia are 26 per cent and 35 per cent, respectively, while in Jakarta the figure is reported to be 45 per cent. For the developing countries in general, the average share has been estimated to be around 50 per cent.[58]

B. Short-term employment and manpower development issues

Growth strategies adopted in the past, trends in international markets, the direction of scientific and technological progress and the changing socio-cultural milieu and its accompanying values have created major employment problems in Asia and the Pacific. Human resources development planning must address these problems. As discussed in the preceding sections, programmes will have to be developed quickly to cope with the region's existing and fast-evolving employment problems even as long-term planning will have to be undertaken to accommodate secular changes in such areas as demographic trends, trends in science and technology and trends in the international context of development.

Most of the region's labour force remains in the agricultural sector, where labour productivity and income are the lowest. Since industry has very limited absorptive capacity for less-educated, poorly skilled agricultural workers, these workers have been forced to search for employment in the informal sectors in both rural and urban areas. The existing employment alternatives are to a great

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[56] The 14 countries and areas are: Australia, Brunei Darussalam, Burma, Hong Kong, India, Indonesia, Japan, Malaysia, New Zealand, Pakistan, Philippines, Republic of Korea, Singapore and Thailand. ILO, *Yearbook of Labour Statistics*, various issues, 1982-1986.

[57] United Nations, Department of International Economic and Social Affairs, *World Population Prospects: Estimates and Projections as Assessed in 1984*, Population Studies, No. 98 (United Nations publication, Sales No. E.86.XIII.3).

[58] S.U. Sethuraman, *The Urban Informal Sector in Developing Countries* (Geneva, ILO, 1981).

extent labour-supply-generated and are basically coping mechanisms for the generation of household income, however small. Many members of a poor household or family may enter this labour market in the collective effort to maintain household income at the minimum subsistence level.

How can the employment situation of this marginalized work force be improved immediately? At the outset, workers in the informal sector would require information on the additional skills they would need in order to increase their productivity and income in their present line of work. In addition, ways must be found to provide them with skills training which would not take them away from their work and thus critically threaten their daily subsistence.

Assistance should also be provided to workers whose employment is threatened by changing production processes as more advanced (i.e., skills-intensive) and efficient (i.e., labour-extensive) technology is utilized, as in the mechanization of agriculture and the progressive automation in industry. Such changes have displaced increasing numbers of less skilled workers in recent years. A similar employment problem threatens new entrants into the labour force who have acquired very specific skills training, often of a highly technical nature, which has become redundant owing to the adoption of newer and more efficient production technologies. Their retraining needs must also be addressed.

In developing appropriate retraining programmes for these workers, attention must be paid to their specific circumstances. Affected higher-skilled workers are often given retraining by management and are not easily laid off. However, less skilled workers whose skills are made redundant by the introduction of more advanced production techniques are often dismissed. There are also differences in the impact of such changes by gender. For example, women's lower wages have caused them to be predominantly employed in assembly-type production, which is commonly affected harder by the shift to greater automation. The impact of mechanization in agriculture has displaced women more than men owing to attitudes about appropriate work for women, often excluding them from the training needed to operate machines. Short-term solutions include providing them with equal access to training in the operation of modern agricultural equipment and retraining to enable them to find new employment in other sectors. However, the latter type of training programmes must always be clear as to the specific target sectors of potential employment, so that the training effort is not wasted.

Unemployment and underemployment are exacerbated by the inefficient clearing mechanism operating in labour markets for different skills. The main issue here is inadequate or misdirected information flows, which fail to match job seekers and job vacancies. Job search by unemployed workers is ordinarily conducted on a rather disorganized basis, either through written, walk-in or

telephone inquiries or through information from family, friends and acquaintances. Recruitment by well-established firms is often done more systematically through relatively formal channels such as private employment exchanges or placement firms, periodic consultation with schools and vocational institutes concerning possible recruits from among their graduates and classified or other mass circulation advertisements. Since these channels are rather costly, small firms generally resort to more informal methods of recruitment. The limited outreach and imperfect information coverage of these more informal methods are inefficient means of clearing the market. Job search is prolonged, and mismatches between the qualifications of persons hired and the skills requirements of jobs often occur, leading to high turnover of employment. Smaller establishments seeking to fill vacancies and unskilled or poorly skilled job seekers suffer from shorter and/or less effective "information research" and have a greater probability of mismatch in their hiring and job acceptance respectively. Where these problems are prevalent, Government-sponsored placement services and employment information exchange systems might well be called for to deal with different occupational groups and serve high-unemployment localities.

It is not only changes in production technologies that displace workers but also sudden changes in output level and mix. In particular, several heavily indebted Asia-Pacific countries that have been required by international lending institutions to introduce adjustment measures have experienced economy-wide dislocations. Increased unemployment has often accompanied the output shifts resulting from such restructuring measures. Studies have shown that the poorer sections of society and, within these sectors, women and children bear the greater burden of the decline in employment, income and welfare.[59] Such dislocations should be monitored so that appropriate manpower retraining and re-employment programmes can be undertaken especially to help to find alternative sources of income for the most adversely affected workers, who have few or no resources at their disposal.

International market fluctuations can also adversely affect employment conditions in specific sectors of the developing ESCAP countries. Workers in the export sector or in sectors that are critically import-dependent for their input needs are vulnerable to world market changes, which are usually beyond the control of individual countries. The export of labour also belongs to this category. For example, adverse shifts in demand for migrant workers can cause larger numbers of them to return home and suddenly increase the group

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[59] Giovanni Andrea Cornia, Richard Jolly and Frances Stewart, eds., *Adjustment with a Human Face: Country Case Studies,* vols. I and II (New York, UNICEF, 1986).

of job seekers. Most of these workers will need assistance in seeking alternative jobs, while the poorly skilled will need more training.[60]

South Asian countries, which have provided large numbers of migrant workers, have started to address the special issues and needs of returning migrant workers. In Bangladesh, it has been recognized that returning workers have important skills and experience to contribute to national development. Thus, while the short-term benefits of foreign remittances may be reduced, preparations to reintegrate skilled returning workers could contribute to longer-term development benefits.[61] Pakistan has also recognized that reintegration of returning migrant workers can make this group of workers a human resources asset rather than an additional employment burden.[62] For Sri Lanka, the employment implications of large numbers of returning migrant workers centre on whether their occupations and level of skills will be appropriate to local needs.[63]

Most of the recent labour market changes in developing ESCAP countries indicate a tendency for their adverse employment impact to fall disproportionately on the unskilled or poorly skilled workers, who comprise the poor. The large size of this group, and their special needs, make it essential to focus manpower development strategies in the region on these workers. They need programmes that will improve their capacity to learn new skills and upgrade their existing skills to levels appropriate for the changing production structure of the economy.

C. Long-term employment and manpower development issues

The problems in the preceding section were discussed with reference to the need for immediate or short-term solutions to minimize the adverse effects of current economic developments on employment and the ensuing loss of income. But these problems must also be addressed in terms of their long-range implications, which require medium- and long-term policies, plans and programmes for manpower development.

A number of ESCAP countries have endeavoured to incorporate medium- and long-term employment considerations into their national development

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[60] See ESCAP, *Returning Migrant Workers: Exploratory Studies* (ST/ESCAP/454), 1986, and ESCAP, *International Labour Migration and Remittances Between the Developing ESCAP Countries and the Middle East: Trends, Issues and Policies* (ST/ESCAP/471), 1987.

[61] Nur Ahmad Siddique, *loc. cit.*, pp. 21 and 29.

[62] Zulekha Zar, *loc. cit.*

[63] S.M.L. Marikar, *loc. cit.*, p. 9.

plans. Among these countries, some examples may be noted. The sixth national economic and social development plan of Thailand recognizes the close interrelationship between employment, education and training. At the same time, it recognizes that the nature of both agricultural and industrial employment will change. For example, new systems of crop cultivation, introduction of integrated farming and afforestation programmes can help to reduce seasonal unemployment in agriculture and create new types of jobs in rural areas.[64] The Republic of Korea has set a long-term goal for industrial development to the year 2000. To achieve this goal, the Government has prepared a long-term science and technology plan which includes a design to orient the supply of labour in appropriate directions by constructing a co-operative manpower development system.[65] The Philippine Medium-term Development Plan (1987-1992) has been specifically designed to overcome the poverty and unemployment burdens that resulted from the economic crisis and structural adjustment of the early 1980s. The plan focuses on the quality of life of the poorest, most disadvantaged groups and aims at providing education, training and employment opportunities appropriate for people in rural areas.[66]

In order to formulate medium-term priorities, policies and plans, Indonesian policy-makers have considered two sets of structural issues related to productive labour absorption. The first concerns the relationship between agricultural income and employment, on the one hand, and non-agricultural income and employment, on the other. The second refers to the relationship between industrial income and employment, on the one hand, and non-industrial income and employment in the non-agricultural economy, on the other. Analysis of these relationships over the last 15 years has suggested that priorities should be shifted to specific parts of the agricultural sector, to agriculture-related subsectors of industry and to vocational-technical education and training to respond to employment opportunities in specific subsectors.[67]

In devising long-term strategies to deal with the employment and manpower aspects of human resources development in the region, the first point to be emphasized is that policy-makers need to be concerned with more than just employment creation. In the long-term perspective, the issue is one of appropriate manpower development based on accurate projections of manpower needs, among the most difficult tasks of human resources development at the policy and planning level. The increasingly uncertain conditions of the world economy and of national and sectoral labour markets require that

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[64] Phayap Phyormyont, *loc. cit.*, pp. 1 and 8.

[65] Suh Jung-Man, "Experiences in human resources development and its future direction in the Republic of Korea", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[66] Rosita L. Fondevilla and Marcial Salvatierra, *loc. cit.*, pp. 3 and 7.

[67] Sayuti Hasibuan, *loc. cit.*, pp. 13 and 20-21.

employment creation and manpower development be carefully co-ordinated in the developing countries of the region. For example, any new employment likely to arise out of successful national entry into international markets will be increasingly in the form of high-quality human capital. Thus, the major manpower development task in the region for the remainder of the century will be to increase the levels and appropriateness of the skills and education of the vast majority of workers because employability will depend increasingly on their quality.

The primary issue is how to prepare individuals for full participation in a rapidly changing work environment requiring new skills. The appropriate concept of manpower development in this context would be a continuing, life-long educational process providing a broad-based capacity to acquire new knowledge and skills. Such an approach has been advocated in Japan to prepare for employment in the advanced information society of the twenty-first century. Along these lines, companies could be encouraged to become "learning companies" with systematic on-the-job training, especially since training can be related to the lifetime employment system in Japan. Promotion of self-development is also considered to be an integral part of life-long human resources development. To encourage self-development, certain company policies may have to be altered, such as paid leave or temporary retirement for education and training, reduced working hours during periods of education and training and self-development grants.[68] If such programmes were developed in private enterprises, it should be possible to have such working and training-education arrangements in countries at all levels of development.

In effect, individuals could be assisted in adapting themselves to work productively in changing situations. People should enter the labour market better prepared to learn job-specific skills within their broad areas of competence and to undertake retraining as new skills are needed. The incorporation of this concept into appropriate manpower development programmes for different groups in society requires urgent attention. Existing training programmes, both formal and non-formal, will have to be modified to make them consistent with this concept.

Some such modifications have already appeared in a number of countries in the region. India's new education policy emphasizes the development of a vocational education system which has well-planned and rigorously implemented programmes meant to enhance individual employability in identified occupations or skill areas. A vocational education system could correct the supply-demand mismatches arising when individuals pursue higher education without particular purposes or with inappropriate job and career expectations.[69]

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[68] Tamiko Iguchi, *loc. cit.*, pp. 12, 18 and 30.

[69] J. Veera Raghavan, *loc. cit.*, p. 6.

Greater emphasis has been given to technical and vocational education in Indonesia's fourth five-year development plan. Existing technical and vocational schools have been targeted for rehabilitation as technical high schools, agricultural senior high schools, commercial high schools, etc. New schools will also be constructed with the same types of technical-vocational emphasis, as well as polytechnical schools to be affiliated with universities and other institutions of higher learning.[70] In Malaysia, both the Government and the private sector have played major roles in establishing new vocational-technical schools, youth training centres, agricultural institutes and commercial institutes. One goal is to change educational preferences away from the arts and pure sciences towards the applied arts and sciences. An additional aim is to give school-leavers opportunities to return to study at vocational schools in order to provide them with employable skills.[71] Another example is Sri Lanka, where the Government has recognized the need for central direction to achieve better co-ordination among educational, economic and manpower policies and plans. The Cabinet had already approved the establishment of a Human Resources Development Advisory Countril, where the key ministries concerned with education and training could participate in the work of co-ordination.[72]

The formal educational system serves in all countries as the primary institutional mechanism for manpower development. Since the educational system deals with highly sensitive matters related to the socialization of youth in the established values and traditions of the nation and the development of their capacity to become productive members of society, it is usually in the public sector or, if in the private sector, highly regulated by Governments. The growing complexity and sensitivity of youth socialization as well as employment preparation in the volatile social milieu of the rapidly developing ESCAP countries has elevated the management of educational systems to a high-priority level.[73]

There has been a tremendous increase in demand for education throughout the Asia-Pacific region in recent years not only owing to population growth but also because of the overriding perception of the public at large that a higher level of education means better chances of getting higher-paying and more prestigious forms of employment. Given the limited number of preferred jobs available in any economic system, the logical fallacy of composition would indicate that this may be true for some individuals but may not be true for most.[74]

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[70] Sayuti Hasibuan, *loc. cit.*, pp. 21-22.

[71] Tham Ah Fun, *loc. cit.*, pp. 16-17.

[72] S.M.L. Marikar, *loc. cit.*, p. 10.

[73] ESCAP, "Report of the Expert Group Meeting on 'Asia-Pacific 2000': A Consultation of Social Scientists and Youth Leaders of the ESCAP Region" (ST/ESCAP/536).

[74] Fred Hirsh, *Social Limits to Growth* (London, Routledge and Kegan Paul, 1977).

There is an emerging recognition among policy-makers that more years of formal education *per se* do not necessarily improve the nation's capacity to achieve its economic development objectives. Rapidly expanding enrolments and increasing expenditures on education should be accompanied by substantive improvements in the quality of education and systematic co-ordination with other concerned sectors to ensure that the educational system produces the skills needed in the economy. Otherwise, such expenditures would only serve to pull even more scarce resources away from other priority programmes. It can be argued that this has occurred to some extent as increases in expenditures on education have failed to bring about significant improvements in the employment prospects of the average citizen in most developing countries of the region. Economic disparities between rich and poor have widened, unemployment and underemployment continue to grow apace and the "educated" are increasingly swelling the ranks of the unemployed. The early claims that quantitative expansion of educational opportunities would automatically raise living standards, reduce poverty and accelerate economic growth have proved to be exaggerated or misleading.

The massive resource implications of the rapid expansion of school facilities in many developing ESCAP countries in the last decade have generated growing concern among government planners about the efficiency of the educational system. The system's efficiency has two facets – the internal, referring to the productive use of resources in producing intended outputs of educated and trained graduates, and the external, referring to the usefulness of the educated and trained graduates to society at large. Aspects of internal efficiency, such as the numbers of drop-outs and considerations of educational quality, are discussed in the accompanying paper on quality of life. The following discussion will therefore focus on the external efficiency aspects.[75]

An increasingly serious issue of the external inefficiency of the educational system in many developing ESCAP countries is the unemployment problem among university graduates. Although recent data identifying the magnitude of this problem are few, concern has been persistently expressed. The estimate of educated unemployed in India was 3 million for 1978 and it appears to have grown considerably since then. The educational inefficiency represented by jobless graduates is also reflected in the under-utilization of educated persons whose jobs require lower levels of training than university degrees. China, for instance, reports that, as at 1985, 14 per cent of its university graduates were engaged in work that was not relevant to their fields of study.[76] Another aspect of the problem identified in China is that people

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[75] The Discussion is derived primarily from ESCAP, *Economic and Social Survey of Asia and the Pacific, 1986* (United Nations publication, Sales No. E.87.II.F.1), Part II: IV. "Education", pp. 140-167.

[76] Liansan Ruan, *loc. cit.*, p. 5.

are not trained and prepared for appropriate skills and jobs while studying at the middle-school level. It has also been observed in some countries in the region that increasing numbers of university graduates are waiting longer periods for their first employment. These observations could be interpreted as indications of mismatches between the output of the school system and the skill needs of the economy.

Various labour market functions of the educational system in developing countries need re-examination. For one thing, education has absorbed some of the excess labour supply through cascaded underemployment, as described below. Persisting unemployment causes people to accept jobs requiring lesser skills or training than their actual level of educational or training attainment. This reflects their preference for underemployment over unemployment. As less-skilled jobs are filled by more-skilled people, the less skilled who should have been hired in those jobs are induced to pursue more training or higher education. In one respect, the educational system may assist in siphoning off part of the excess labour supply and also generating more skills. However, as mentioned earlier, national economies need a range of skills for production, and the implicit waste of resources due to cascaded underemployment is a situation developing countries can ill afford.

The educational system has also been serving to delay the entrance of new job seekers into the labour market. This has been partly encouraged by growing requirements for higher education credentials, some of which are basically "paper qualifications" that are, technically speaking, not relevent to efficient performance on the job. This has frequently been found in white-collar jobs, especially in the civil service of some developing Asia-Pacific countries.

Such distortions in labour markets create two additional serious problems for manpower development. First is the problem of certification, i.e., how to identify the really best from the nominally best products of the educational system. The failure of the educational system to function as a "filter" for the labour market leads to more costly search by employers for candidates with appropriate skills to fill vacancies. Elaborate screening mechanisms for recruitment thus have to be devised by employers if they want to minimize mismatches in their hiring of personnel. New procedures to establish relevant qualifications for higher-quality manpower need to be designed in order for the educational system to earn the confidence of employers in individual countries.

A related problem is how to induce graduates to enter occupations that are vitally important but have historically been considered of low social status. The solution to this problem may require drastic changes in individual values and social attitudes. To undertake such changes, it would be necessary first

to understand the basis for the low social status attached to certain jobs. Those attitudes which are due to economic considerations of low pays and unpleasant or difficult working conditions could be addressed through appropriate adjustments. Non-economic considerations should be addressed through adoption of measures to modify the undesirable non-economic elements of such jobs, or to change social attitudes about them.

Other types of measures could also be considered. For example, in Malaysia preparatory courses have been initiated to enable *bumiputera* students to study sciences, engineering, medicine and other technical courses.[77] When a country decides to develop such sectors as agriculture and fisheries, as in Sri Lanka, it is clear that young, educated job seekers must be shown that the opportunities are attractive in terms of income, modernization and social recognition.[78] In the Republic of Korea, as well, change in social attitudes has been recognized as important for developing human resources for industrial and technological progress. When major emphasis was directed towards engineers and craftsmen, the technical qualification system was designed to overcome the traditional low regard in which engineers and craftsmen were held.[79] As noted previously, a number of countries, including Bangladesh, China, India, Indonesia, Malaysia, Pakistan, Sri Lanka and Thailand, have given priority to vocational and technical education. In many cases, it will be necessary to change attitudes and convince young people that such education and training have at least as much prestige and job/career opportunities as a standard university education.

A number of critical long-term employment and manpower development issues are of concern to specific population groups. One such group is women. With rapidly rising female labour force participation rates, women will be the largest group to joint the labour force during the remainder of the twentieth century as modernization continues in the region. Their full economic participation has, however, been constrained by gender-specific employment biases and will therefore require the design of special approaches.[80]

In addition, the nature of the issues and government responses concerning women's employment vary according to country conditions. Women have become prominent scientists, engineers and managers in China, for example, but deeply ingrained traditional attitudes make most women's chances of career success difficult. This remains the case despite the government stipulation that women and men be given equal chances of being given work. More-

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[77] Tham Ah Fun, *loc. cit.*, p. 15.

[78] S.M.L. Marikar, *loc. cit.*, p. 9.

[79] Suh Jung-Man, *loc. cit.*, p. 6.

[80] See the accompanying paper on the integration of women's concerns into human resources development in the ESCAP region.

over, with the new employment system there will be more competition between men and women for jobs. But women will be at a disadvantage if they have no help with household work, or if pre-school facilities are inadequate to assist in caring for their small children while they work.[81] If women are to have access to vocational education in India, strong vocational counselling will be needed to motivate young women to choose non-traditional courses and careers. There must also be attitude change at the family and community levels to give parents sufficient incentives to have their daughters educated.[82] In Indonesia the trend towards delaying marriage makes it possible for single women to participate in the labour force to a greater extent.[83] Japan, however, is expected to experience increased labour force participation by women who re-enter the labour market after raising their children. As a result, companies may have to adjust management attitudes towards women employees and training for women – attitudes which were based on the assumption that Japanese women work for only a short period of time, after completing their education and before marriage.[84]

Rapid displacement of workers from the agricultural sector will undoubtedly continue in the developing ESCAP countries for the rest of the present century. Alternative employment opportunities will have to be developed in agro-industries, services and manufacturing, together with appropriate training and retraining programmes, if rural impoverishment and problems of urban slum sprawl are to be avoided. In many countries, most of these employment options will be in the informal sector, which is therefore expected to continue growing in both rural and urban areas. While informal types of employment are sometimes considered mere "coping mechanisms" for the poor, they may actually have the potential to develop into viable longer-term income-generating activities if given appropriate institutional support from the more formal production sectors and government. Long-run views would require more sophisticated training programmes in entrepreneurship, small-scale enterprise management and marketing, in addition to the development of skills for using more technologically advanced, efficient and low-cost production methods. Means of extending complementary factor inputs into the informal sector would also be needed.

The unemployment or underemployment of a third group, those who have highly specialized skills, also indicates the need for a long-term manpower development strategy in this field. The human capital embodied in doctors, engineers, scientists, technicians and professionals must be encouraged and

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[81] Liansan Ruan, *loc. cit.*, pp. 14-15.

[82] J. Veera Raghavan, *loc. cit.*, p. 13.

[83] Sayuti Hasibuan, *loc. cit.*, p. 6.

[84] Tamiko Iguchi, *loc. cit.*, pp. 8 and 22.

tapped to create more human capital in the future and to enable trained and skilled individuals to take up professionally challenging jobs with satisfying working conditions and adequate compensation.

A broader long-term concern in manpower development is the widespread incidence of poverty in many developing ESCAP countries, which is the most critical determinant of their future human resources. Poverty effectively prevents the affected population from having access to opportunities to improve their human capital. Such lack of access, in turn, denies people the means of overcoming their poverty. This vicious cycle has to be broken through conscious intervention by Governments and other institutions and by addressing the need of the poor for a human resources development strategy that covers health, housing, basic education and other "quality of life" concerns,[85] together with employment and manpower development concerns. In addition, economic crises, such as those triggered by structural adjustments imposed on heavily indebted countries, which exacerbate the poverty situation of specific groups, will have to be monitored so that appropriate countermeasures can be taken to minimize their negative effects on long-term human resources development.

A final consideration is the need for greater planning flexibility in the long run, which would allow planners to exercise direct influence in more substantive ways on the employment-generation or labour-absorption capacity of an economy. Increased participation by disadvantaged groups should be given priority by adoptlng an appropriate set of macro and sectoral policies that would create greater employment opportunities in the rural and agricultural sectors, where the majority of the labour force is located. For example, policies to influence the choice of technology towards efficient and labour-intensive production processes and to develop physical, financial and marketing infrastructures conducive to a favourable environment for small-scale production should be explored.

III. STRATEGIES FOR EMPLOYMENT AND MANPOWER DEVELOPMENT

A. Research and analysis

A serious consquence of past development strategies has been declining output-labour ratios in many countries characterized by abundant labour supply, thereby causing unemployment and underemployment. The choice of capital-intensive technology has been encouraged by various distortions in relative

[85] See the accompanying paper on quality-of-life aspects of human resources development in the ESCAP region.

factor prices. In particular, the importance of international trade to many countries in the region has exerted pressure to adopt new production techniques in their export sectors. The new production techniques are usually capital-intensive in order to maintain product competitiveness. Research and analysis are needed to re-examine persisting priorities in current planning and policies regarding the balance between concerns for efficiency and its impact on competitiveness, on the one hand, and employment generation and its impact on poverty and other social problems, on the other.

One major unanticipated consequence of development processes in the past several decades has been the rapid change in skill requirements in a wide range of industries. This trend can be expected to continue into the foreseeable future. Employment and manpower planners cannot assume that this process of change will be gradual and predictable, although there remains a strong tendency among them to do so. Research and analysis are needed to counter the conservative bias of present planning systems. Planners must acknowledge that skill requirements will change rapidly, with a high degree of unpredictability and point towards ways of adapting to such changing needs.

A necessary condition for flexible employment and manpower development policies is the development of better information about current labour demand and supply circumstances and the manner in which these circumstances are changing. It is also necessary to assess current manpower planning mechanisms in the light of the information available and to find ways to correct current inadequacies and gaps in existing systems. This effort should include examination of approaches used elsewhere, analysis of global trends to anticipate their possible regional and national influence and establishment of linkages between existing regional focal points in manpower development. A number of activities can be suggested to meet these needs.

1. Assessment of the current manpower situation

Relevant categories of information on manpower supply and demand situations must be determined, and appropriate sources of information must be located. Many categories of information are needed. In general, the variety and timeliness of the information required will be a function of the rate of change in the skills needs of national economies.

Among the kinds of information needed are those characterizing the supply of and demand for labour, and information on such aspects of the labour market as labour force participation by age, sex, education and training, occupation or skill, and rural-urban location; labour force occupational or skill structure; sectoral skill requirements; employment, unemployment and underemployment; and wages, salaries and other types of incomes by sex, occupation, education and training, industry and location.

It is also necessary to generate and assess information on the current capacity to produce the skills required in each country. Assessment is important to guide the allocation of resources in the education sector to make sure that needed expansion and appropriate contraction in specific subsectors can be identified.

An additional information need will be indicators to measure the flexibility or adaptability of labour as part of the effort to give job seekers general kinds of skills and capacities. The pace and unpredictability of change make it increasingly important to examine elementary school curricula in terms of the general adaptive capacity they create in students.

Some categories of required data will be new to the field of employment and manpower planning. Categories will include combinations of standard information and innovatively related information. An example is standard information on wages and salaries examined in the light of traditions and ideas about "proper" relative status among occupations. Status concerns related to traditional production systems in some societies may have had a useful function, but such concerns will often be found to distort markets for modern skills. This distortion is obviously reflected in labour supply responsiveness to markets and training programmes. Other kinds of information that are both needed and susceptible to non-standard analysis are those that distinguish between the formal and informal sectors and the rural and urban sectors. Data on women's labour force participation in the context of their traditional family and production roles are another example.

2. Review and analysis of manpower planning

A regional review and analysis of manpower planning is needed in order to develop an up-to-date body of material for further use in upgrading national approaches and planning and implementation machinery. The material developed in this review and analysis should provide a framework for generating an effective response to the questions and recognized needs which result from national assessments.

The review and analysis should present state-of-the-art thinking on manpower planning, especially as it pertains to the means for dealing with rapid and unpredictable change; in-depth studies of successful examples of manpower development and employment generation; and policy analysis of particular manpower planning problems. This material should be prepared to suit different users. It would include heuristic content for the use of researchers, analytical case studies to permit intercountry comparisons by policy-makers and planners and guidelines and recommendations for specific programming purposes at different levels by enabler groups. The material might also be adapted for

quick dissemination, perhaps through regional information banks, in response to specific requests.

State-of-the-art material should not be restricted to one "best" approach. Rather, a broad range of approaches to be used in different situations should be provided. These approaches should take into account the full variety of potentially relevant variables, and they should be rooted in history so that long-term trends, including cultural ones, are not missed, thus avoiding undue emphasis on more recent innovations which perhaps only exploit and continue misdirected long-term processes.

Among the specific problems that should be addressed are assessment of manpower needs and their satisfaction in dynamic circumstances, development of ongoing two-way links between users and producers of skills, strengthening of social or general population demands for training, development of techniques for monitoring manpower situations so as to provide a quick response to emerging needs and broadening manpower planning frameworks to incorporate a sufficiently wide set of relevant variables.

B. Planning concerns in employment and manpower development

Recent reviews in the area of manpower planning in the region have highlighted certain persistent problems as well as some newly emerging ones. Problems such as difficulties in the assessment of manpower needs and the training requirements to meet those needs, especially substitutability among skills, continue to obstruct more effective manpower planning. There is a need to improve existing training programmes in planning to provide innovative practical solutions to these problems. Research in such areas should be strengthened in order to identify alternative approaches for practical planning. Guidelines and sample training courses needed for the formation of specific skills have to be developed, especially those needed for the application of the new technologies.

Also needed for an improvement in manpower planning is the development of more effective institutionalized monitoring of manpower supply and demand, and feedback mechanisms together with methods to facilitate plan revisions. Continuous assessment of the labour market would have to generate relevant information for different training and production sectors. Data on necessary skills have to be disaggregated sufficiently to guide training activities. Information on improved skills by occupational classification, such as those developed by the International Labour Organization, should be widely disseminated throughout the region.

A variety of sector-specific manpower problems have come to be recognized, especially those of the disadvantaged population groups, which continue to be bypassed by the main industrialization strategies adopted in many developing countries. The specific manpower development needs of various disadvantaged groups need to be addressed with specialized programmes in the short run and should be integrated into overall manpower development planning concerns in the long run.

Another critical problem area concerns the continuing rural-to-urban migration flow in many developing countries in the region, which has swollen urban unemployment, worsened congestion, created housing scarcities and caused basic services delivery brackdowns. Programme will have to be developed to provide adequate employment opportunities and appropriate training for the labour force in the rural areas. Planning for rural industrialization will have to be actively pursued by Governments. The various successful rural industrialization programmes that have been undertaken in the region could provide important lessons.

In the case of migrant workers returning from other countries, the need for assistance in job placement or other income-generating activities should be addressed. Some of these workers might have acquired new skills or other useful work experience in their jobs abroad, which could be of special use in sectors where there are shortages of skills. Others might be interested in small business opportunities in which they could invest their savings. Many, who have been away for some time, may need retraining, with an emphasis on skills that are in short supply.

C. Strengthening the institutional framework for employment promotion and manpower development

Many countries in the region have been encountering growing labour market imbalances in the context of rapid development. High unemployment, even of tertiary-education graduates, is a common condition alongside skills scarcities that constrain the adoption of more efficient modern production technologies. Poor co-ordination between the supply of and demand for skills is a critical factor. This concern is partly a question of adequacy of market information. The mechanisms for information exchange in the labour market are not yet well developed in many countries in the region. Information exchange about existing job vacancies and job seekers is not adequate, much less information on future needs for skills, which is required to guide the career decisions of individual trainees and the training programme decisions of educational institutions. The need for information on future manpower requirements is made more critical by the long period required to develop higher skills. There is a great need to develop stronger co-ordination mechanisms at the planning stage and also to create better means of clearing present labour markets.

At the planning stage, production units and training institutions usually co-ordinate with the Government in identifying expected skills requirements in different production sectors, likely skill shortages and surpluses, and the training programme changes needed to address the imbalances. Mechanisms have to be developed and improved for the regular monitoring of relevant trends and to update forecasts on the required skills so that adjustments in training activities can be undertaken in co-ordination with concerned units in specific sectors to minimize future labour market imbalances.

Specific methods need to be devised to generate relevant information to guide individuals in their training and career choices. Decisions at the level of the individual worker are often based on very scanty job information. In addition, individuals need more than just information on needed skills. Training and career counselling have to be systematically developed for different groups, including school drop-outs, those finishing different levels of schooling and those in rural as opposed to urban areas.

To facilitate the clearing of labour markets for different skills, the development of employment exchanges should be considered. Governments could organize placement bureaux and encourage the establishment of employment agencies under appropriate regulation to assist and project job seekers. Use of the mass media for job information exchange could be further developed. Governments could benefit from a regional exchange of experience and expertise in these programmes.

In many countries, the development of skills for employment has been primarily the responsibility of colleges and universities, supplemented by technical and vocational training institutions. Given the limited capacity of the formal educational process to provide the training required, there is room for increased participation by firms in the training of workers. Firms are, moreover, in a better position to assess appropriate worker training and retraining in their lines of production, especially under conditions of rapid technological progress. The role of workers' organizations in training could also be developed and strengthened. The experiences of some countries in the region could be of benefit to others in this regard.

These mechanisms pertina primarily to the organized or formal production sector. The unorganized, informal sector also needs co-ordinating mechanisms for meeting skills requirements and training needs. A better understanding of the manpower needs in this sector would help to guide policy-makers in developing appropriate mechanisms for manpower planning and labour market information exchange. Not only are the skills requirements expected to be different from those of the formal sector, but innovative training mechanisms need to be developed. Some countries in the region have accumulated con-

siderable experience in innovative planning and organizations in these sectors, and this could provide valuable lessons for others.

Finally, a listing of key target groups, programme foci and enablers that may be considered in connection with the employment and manpower development issues relating to human resources development is presented in the table below. It enumerates some of the major critical concerns that should be addressed in meeting the needs for appropriate education and training in different sectors and in improving co-ordinating mechanisms between skills development and skills requirements in countries of the region.

Employment and manpower development: key target groups, programme foci and enablers

Target group	*Programme focus*	*Enabler*
Self-employed workers	. Basic education . Skills training . Management training	
Girls and women	. Basic education . Skills training . Attitudinal development	. Schools and teachers . Technical/vocational centres . Job placement agencies
International migrant workers	. Job placement . Retraining	. Government agencies for human resources development
Landless agricultural workers	. Basic education . Skills training . Job placement	. Non-governmental organizations . Employers and management groups
Retrenched industrial workers	. Retraining . Job placement	. Labour organizations . Educational media . Mass media
School drop-outs	. Basic education . Continuing education; open university; correspondence course . Skills training . Attitudinal development	. International agencies
Skilled professionals; graduates	. Job placement	. Schools and teachers . Job placement agencies . Non-governmental organizations . Mass media
Schools and other training institutions	. Co-ordination with employment sectors on skills requirements in production . Co-ordination with enablers of human resources development plans and programmes . Accreditation system	. Government planning and human resources development agencies . Government and non-governmental organizations; accreditation groups for schools . Schools . Employers' associations . International agencies

3. SCIENCE AND TECHNOLOGY ASPECTS OF HUMAN RESOURCES DEVELOPMENT

INTRODUCTION

The last several decades have witnessed the rapid emergence of new technologies internationally in areas such as biotechnology and genetic engineering, micro-electronics and material sciences, alternative energy sources and artificial intelligence. These scientific and technological breakthroughs can be expected to have a profound effect on social and economic conditions in the developing countries of Asia and the Pacific over the remainder of the twentieth century.

The new technologies have vastly expanded the horizons of human capabilities. They hold great promise for improving the quality of life in all countries. In many cases, they provide opportunities for more humanized and creative work environments. In virtually all cases, they are providing a vastly expanded range of products and services, often giving higher quality at lower cost. Genetic engineering and biotechnology are giving rise to a wide variety of new or significantly improved products and processes in agriculture, energy production and pharmaceuticals. For instance, materials technologies are generating new synthetic substances with properties permitting mass production of capital and consumer goods at substantially reduced unit costs. Similarly, micro-electronics has led, among other things, to an information revolution.

In some cases the new technologies call for the application of large amounts of financial resources and sophisticated skills. In other cases, they have been found to be largely scale-independent and even virtually skill-independent. In their application to agriculture, industry and other key production sectors, the minimum investment required may be modest, but the need for human resources to adapt and utilize the new technologies effectively places great demands on the citizens and Governments of developing Asian and Pacific countries.

Countries will need to consider carefully not only the structural changes that the new technologies will force on their economies, but also the impact on their human resources, i.e., their citizens, who will face related changes in education, job opportunities and their general ways of life. Such changes call for the development of human resources in response to both the supply

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* This chapter was prepared by the secretariat with the assistance of Mr. Haruo Nagamine, Professor, Department of Architecture, Faculty of Science and Technology, Kinki University, Osaka, Japan.

side and the demand side of science and technology. On the supply side, education and training of human resources are needed to advance national scientific and technological capabilities for development. On the demand side, the recent scientific and technological innovations require the adaptation, upgrading and "re-tooling" of human resources to take full advantage of their potential.

The challenges on the demand side need particularly careful analysis and understanding. For example, advances in robotics and automation will likely cause profound changes in the region's garment and textile industries in the not-too-distant future. These industries have long featured low-cost, low-technology, high-labour operations appropriate for labour-abundant Asian-Pacific countries. In revising the factor cost structure in such industries, the new technologies may lead to the loss of these countries' comparative advantage in labour.[1]

In other industries, too, the new technologies have made the use of inexpensive human resources no longer attractive. Thus, the electronics industry no longer needs large amounts of low-cost labour for assembly operations which are now undertaken semi-automatically.[2] The human resources released by these changes clearly have to be retrained in other areas, particularly for the production of items with higher value added. Retraining assembly workers and production workers is a critical concern for some developing countries in the region if labour redundancy in the wake of technological advances is not to pose increasingly serious economic, and even political, challenges.

It is essential, under these circumstances, to determine the types and levels of human capabilities and skills that will have to be developed to meet the changes brought by science and technology. The countries of the region thus have to address themselves to new, fast-developing technological phenomena for which new combinations of human skills must be assembled.

On the supply side, strategies are needed to develop human resources capable of generating scientific and technological progress. One obvious implication is the need for change and improvement in traditional institutions of education and training. Non-traditional forms of education and on-the-job training must also be considered in terms of their potential to provide

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[1] On this fundamental issue, see Peter F. Drucker, "The changed world economy", *Foreign Affairs*, Spring 1986, pp. 768-791. Also see Asian Development Bank, "Science and technology for development: role of the Bank", 1986, esp. p. 13; and the companion paper on the employment and manpower development aspects of human resources development.

[2] The problems facing the ASEAN economies in this regard are examined in Vincent Lowe, "Dependency within bounds: media and information technology policies within the ASEAN region" (Bangkok, Chulalongkorn University, Institute of Asian Studies, 1985), pp. 38-40.

personnel in all socio-economic groups and in all parts of each country with the requisite scientific and technological capabilities.

There are also several more subtle implications associated with the development of human resources capable of creating new forms of science and technology as well as making appropriate use of these advances. The implications are subtle because they involve the very manner in which the relationship between science and technology, on the one hand, and human resources development, on the other, must be conceptualized.

It is often assumed, for instance, that the new technologies call for high levels of education and training. For generating new technologies, there is no doubt that high levels of specialized education and research training are required. However, in the use or application of many advanced technologies, relatively simple training is often all that is necessary. For example, high levels of expertise are necessary to develop computer software packages, but operating a computer with available software is relatively easy after some training. Similarly, the fundamental research and development work needed to create certain new agricultural production systems based on biotechnology is of a highly specialized nature and calls for advanced education and research training. But applying these technologies in the field may call for relatively rudimentary vocational skills.

The implications of this bifurcation of skill levels for human resources development in Asia and the Pacific are clear. First, the region's human resources have to be developed for various levels of the technology spectrum, from the generation of technology to its application. Second, human resources for the application of various forms of technology in several fields and a number of industries have to be developed simultaneously. Otherwise, there could be serious imbalances in the human resources profile and a mismatch between needs and supplies.

Another implication arising out of the expanding spectrum of new technologies is that new options are created for policy makers as to which levels they wish to emphasize when considering the science and technology arena. They must also decide what forms of technology they wish to promote when setting priorities for their national development plans and programmes. Such decisions constitute a positive response to the emerging technologies. But the decisions are extremely sensitive, since they set the course for further development and, once made, are not easily reversed.

It is often assumed that both farmers and factory workers are reluctant to accept new or improved technologies because of lack of education and low levels of literacy. While education and literacy are to be encouraged for other reasons, the fundamental barriers to the adoption of new and improved technologies lie elsewhere. For instance, illiterate or not, farmers have a good

idea of how to apply the new technologies to the land in order to obtain the maximum yield. Often, the farmers' insight into the issues confounds the best outside experts. If farmers are offered a new fertilizer technology, for example, they will not accept it in isolation. Farmers know they must also have an assured supply of complementary inputs, such as water through irrigation technology, high-yielding seed varieties and effective pesticides. Thus, while education forms a useful input, it is not by itself sufficient to ensure success in applying science and technology. The complementarity of productive inputs, and especially of input technologies, must also be kept in mind.

Science and technology are highly interdependent and integrated in their relationship with human resources development. Policy markers and planners must consider the impact and demands that science and technology will make on the citizens – in their roles as both consumers and producers. At the same time, the means of ensuring the proper supply of human resources to promote scientific and technological advance in consonance with national development goals and strategies need the careful attention of policy makers and planners throughout Asia and the Pacific.

The above views and the discussion contained in the following sections stem directly from earlier ESCAP studies and the findings of the Commission at its forty-second session, held at Bangkok in April 1986.[3] That session took as its theme topic the science and technology aspects of human resources development, and its deliberations resulted in two pertinent resolutions: 247 (XLII) on forecasting, planning and development of technological human resources and 256 (XLII) on an ESCAP Plan of Action on National and Regional Initiatives for Human Resources Development: Its Technological Dimensions. The concluding section of the present paper contains the ESCAP Plan of Action.

I. HUMAN RESOURCES DEVELOPMENT FOR SCIENCE AND TECHNOLOGY

A. The technology system and human resources development

In examining the human resources implications of scientific and technological progress, the manner in which technology is both created and used must be taken into account. In this exercise, it is essential to understand and be able to visualize the types of demands that technology is likely to impose on human resources and how such resources interact with technology, as its de-

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[3] *Official Records of the Economic and Social Council, 1986, Supplement No. 11* E/1986/32-E/ESCAP/536), pp. 34-37. The present paper is adapted from portions of ESCAP, *Human Resources Development: Its Technological Dimension*, March 1986.

veloper, user and ultimate beneficiary.[4] For example, as Japan changes to an advanced information society it is clear that more engineers will be required. These engineers, it has been recognized, should have more than the conventional technical skills; in a society transformed by the impact of information and communications technology, engineers with knowledge in the social sciences are needed to design appropriate social applications of technology systems.[5]

Unlike the situation in the industrialized countries, where most research and development work is undertaken in response to market needs, such responses are limited in many developing countries of Asia and the Pacific. This weak linkage between technology creators and technology users results in large research and development efforts being funded and supported by Governments, generating technologies which remain largely under-utilized in the production process.[6] This problem has been recognized in India as one of insufficient use of research results and government policy makers' lack of appreciation of scientific capabilities in universities, national laboratories and scientific agencies. It has also been recognized that a solution to the problem requires the completion of the total science-technology innovation chain, which consists of basic research, applied research, design and development consultancy, production, services and awareness-building. Only then will the fruits of science and technology be able to reach the larger population and contribute to socio-economic progress in a country such as India.[7]

In developed countries, much research and development activity for the generation of technology takes place within the enterprises themselves. This is supported by highly specialized research and development work carried out by independent research institutes. The situation in developing countries is rather different. Most research and development activity takes place in Government-financed and often Government-run industrial research institutes and laboratories. The productive utilization of technologies thus generated

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[4] The human concerns raised by rapid advances in science and technology have generated varying reactions, not the least influential of which is the view that scientific and technological change should be slowed or stopped to eliminate the threats it poses to the human resources base. See, for instance, A. Elzinga and A. Jamison, "The other side of the coin: the cultural critique of technology in India and Japan", in E. Baark and A. Jamison, eds., *Technological Development in China, India and Japan* (Hong Kong, Macmillan, 1986), pp. 205-253.

[5] Yuji Masuda, "Technical innovations and information technologies in industrial society: current status and outlook of information technology development in Japan", paper presented at the Expert Group Meeting to Formulation Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development, Tokyo, 7-10 December 1987.

[6] Asian Development Bank, *loc. cit.*, p. 12.

[7] J. Veera Raghavan, "Human resources development in relation to science and technology in India", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

policy environment and institutional infrastructure.[8] The technology invention and innovation element includes both technology generation in indigenous research institutions and its acquisition from outside the country, followed by testing, adaptation and commercialization activities. It culminates in the sale of technology to enterprises. In the process, various institutions such as research and development laboratories, pilot plants and prototype centres, workshops and research development and marketing institutions are involved.

The system must be flexible and adaptable, as shown by the experience of the Republic of Korea. In the 1970s the Republic of Korea was at a stage of technological and industrial development which made it possible to import advanced technologies, devise supportive government policies and promote local entrepreneurs and skills technicians in relevant fields. In the 1980s, however, the Republic of Korea's development strategy and the demand for industrial technology changed considerably. This was partly because technology transfer became costlier and more restrictive. International pressures made it more difficult to protect local entrepreneurs and innovators through use of government policies. Higher wages made many local industries less competitive internationally. Therefore, the kinds of industries, technologies, scientists, technicians and workers all had to change. This led the Government to revise its policies in favour of the development of domestic, self-reproducing technological capabilities as part of its development strategy to the year 2000.[9]

The technology application element includes technology acquisition by enterprises, in-plant design and engineering, and plant construction, testing and operation, leading up to the production process. The policy environment element comprises the development policy framework, planning apparatus and various institutions and mechanisms involved in implementing policies for finance, physical facilities and incentive schemes related to technology.

A variety of institutions support technology generation and application. These include standards institutions, development finance agencies, consulting and engineering organizations and industrial safety institutions functioning in both the private and public sectors. These comprise the institutional infrastructure element.

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[8] The evolution of the technology system in South Asia and its human resource implications are reviewed in R. Ahmed, B. Prakash and B.K.R. Burman, "Reflections on policies, plans, achievements and prospects: education, science, culture and communication in South Asia", UNESCO, Principal Regional Office for Asia and the Pacific, Regional Research Seminar on Perspectives on Asia's Future, Bangkok, 20-23 July 1987, pp. 90-120.

[9] Suh Jung-Man, "Experiences in human resources development and its future direction in the Republic of Korea", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

has been comparatively limited. In order to overcome this problem, attention has recently turned to the possibilities of commercializing such technologies. Research development corporations and similar bodies have been set up in a number of countries in the Asian and Pacific region in recent years for this purpose. However, these have yet to prove effective in their endeavours.

The low utilization of indigenously produced technologies in many developing Asian and Pacific countries is basically due to consideration of the supply side of technology development alone. Too often the capabilities and equipment available in an industrial research institute, rather than the requirements of the market, determine the direction of the research and development work. Developing Asian and Pacific countries are thus confronted with the phenomenon of under-utilization of indigenously developed technologies, while local demand for technologies is met through imports.

It should also be noted that technology users complain that indigenous technologies in most cases do not conform to their needs; nor are they available when required. Users are also concerned about the greater risks associated with the innovation of indigenous technologies. Often, the perception of such risks is unnecessarily exaggerated and discourages the wider use of such technologies. On the other side, suppliers of indigenous technology often feel that users lack faith in local research and development capabilities and prefer foreign technology which is already "proven". Furthermore, governmental regulations and incentives are in many cases inadequate to motivate local production units towards greater use of domestically produced technologies.

In order to alleviate such situation and to enhance the confidence of production units in local technologies, it is important that attitudes, skills and expertise be developed through the proper implementation of plans and policies for human resources development for technological progress. Indigenously produced technologies could thus be marketed more widely and more effectively.

To appreciate the concerns of users, it is also necessary to appreciate the manner in which technology affects people at large. The impact of technology is ultimately felt by the consuming public in the form of products or services. For example, improvements in medical technology are generally perceived through improvements in health care and treatment. Solar energy technology in rural areas dries grain cheaply. Solar-power-driven village pumps and satellite-transmitted television and radio programmes provide other examples of the impact of the new technologies on the public at large.

The technology system, as described above, comprises four elements: technology invention and innovation, technology application, technology

The four elements comprise the technology system as this all-embracing concept is used in this study. It is a concept that attempts to integrate the entire range of activities and events from inception to use of technology and thus provides a comprehensive framework for considering the science and technology aspects of human resources development. Analysis of the technology system reveals the kinds of skills and capabilities required for this system to function and for its impact to be felt by consumers, productive units and Governments. The efficient functioning of the technology system depends largely on the availability of human skills and capabilities to put each element into action. Therefore, it is important to identify and develop proper skills and capabilities, taking into account the levels of economic and technological development in each country.

B. Formal education for science and technology

1. Universalization of basic education

A certain level of basic education is necessary if subsequent technical education and training are to prove effective in developing human resources for scientific and technological progress. As is well know, the current situation regarding primary education varies widely among the developing countries of Asia and the Pacific. Since primary education is a pre-condition for successful education in science and technology and technical training leading to the development of appropriate and productive science and technology personnel, emphasis should be placed on concerted efforts to implement universal primary education. Both formal and non-formal methods of education should be promoted to achieve this objectives. Continuing education and adult literacy programmes constitute important additional components in such a drive towards the achievement of a basic level of education for all.

A positive orientation towards science and technology, even at the primary level, is an essential element of basic education. It is therefore important to have a broad base of general education with at least some science and mathematics coverage. Unfortunately, participation in primary education in some developing countries in the region is still low, and facilities remain inadequate. The main population groups suffering the consequences of inadequate facilities are the rural population (especially rural youth and the rural poor), the urban poor and women. A priority issue, therefore, is how to widen access to basic education for these groups in order to strengthen the foundation for subsequent science and technology education and training.

2. Science orientation in secondary education

A stronger science orientation is necessary at the secondary education level in association with greater depth of scientific education, greater relevance

to the environment in which the students live and study and broader coverage of scientific subjects in the curricula. For example, physics, mathematic and chemistry with their new orientations should be included in secondary education. For meaningful science and technology education and training at subsequent stages, it is necessary to make secondary education much more science-oriented than is currently the case in many Asia-Pacific countries. This will involve designing new curricula, developing appropriate teaching methods, relating science and technology learning to the local environment and relating the science-learning process to employment opportunities and working life. In this connection, a number of countries, such as Bangladesh, China, India, Indonesia, Malaysia, Pakistan, Sri Lanka and Thailand, have indicated that strengthening vocational-technical educational institutions will be the best way to link science learning, employment opportunities and working life with each other.[10]

An atmosphere conducive to the study of science and technology is lacking in many developing countries of Asia and the Pacific. This is due in part to the weak technology orientation in education and training. Effective science and technology learning has to be related to the general environment for learning. It is therefore essential to create a positive intellectual approach to science and technology in secondary educational institutions of the developing countries of the region. Such an environment could be promoted through the provision of technological apparatus and implements such as radio, television, computers and other electrical and electronic appliances.[11]

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[10] Nur Ahmad Siddique, "Employment and manpower development in Bangladesh: current and prospective trends, policy options and plans and programmes", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

Liansan Ruan, "People's Republic of China: country paper", presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

J. Veera Raghavan, *loc. cit.*, p. 6.

Sayuti Hasibuan, "Labour force growth and employment in the Indonesian economy", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

Tham Ah Fun, "Quality of life in Malaysia", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

Zulekha Zar, "Country paper on Pakistan", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

Phayap Phyormyont, "Employment and manpower development in Thailand", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[11] "New computer course in HK's schools" and "India: high on aims, low on computers", *Asia Computer Monthly*, October 1987, pp. 18 and 20.

3. Tertiary education for science and technology

Tertiary educational facilities offering programmes in science and technology and related managerial skills have been greatly expanded in many Asian and Pacific countries in recent years, but much remains to be done.[12] In this regard, the learning process should be oriented more towards real-life situations. For example, students in institutions of higher learning for science, technology and engineering should spend more time learning by working in manufacturing enterprises, research and development institutes and consulting and design engineering enterprises. These institutions could also participate effectively in education and training systems by allowing their staff members to serve as teachers and trainers in formal institutions of learning for specific periods and courses.

Several developing ESCAP countries have recognized the need to relate education and training more closely to real-life situations. To develop practical programmes it is clear that close co-ordination is required between the public and private sectors. In the Republic of Korea, emphasis is placed on constructing a co-operative manpower development system in which the Government and private enterprises jointly participate, provide needed finances and share expenses in helping research institutes.[13] Among the development guidelines for education and training in Thailand, emphasis is given to close, continuous co-operation between educational institutions and business enterprises.[14] Management education should also be geared more to real-life decision-making situations and not merely to academic problem-solving exercises.

Technical education institutes in many developing countries in the region need strengthening to improve teacher-student ratios and provide more teaching and training equipment. Generally, technical education planners have little or no practical experience in the productive sectors or in research and development laboratories. Such a condition sometimes leads to disequilibria in the demand and supply situations for the graduates of technical institutions. To avoid such wasteful education, it would be useful to involve potential employers in the development of curricula and teaching programmes for technical education and vocational training.

National development priorities should be properly reflected in the technical education system so as to make such education responsive to the immediate needs of each country. Likewise, vocational and technical education

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[12] The rapid increase in the number of doctorate degrees awarded in India and the qualitative changes that have accompanied this expansion are examined in R. Ahmed and others, *loc. cit.*

[13] Suh Jung-Man, *loc. cit.*, p. 12.

[14] Phayap Phyormyont, *loc. cit.*, p. 14.

should have a place in national development priorities. This has been taken up in a number of countries. In 1986, the State Education Commission of China proposed that one of the main goals of the seventh five-year plan should be making recruitment into vocational-technical schools equivalent to secondary school recruitment by 1990.[15] India's national education policy, which was adopted in 1986, proposed the introduction of systematic, well-planned and rigourously implemented programmes of vocational education as part of education reforms.[16] The Islamic Republic of Iran has also made vocational-technical education for people between 14 and 19 years of age an important part of its human resources development policy.[17] It has been observed that public vocational training in Japan should be an important element in a system of lifelong human resources development.[18] In 1967, the Republic of Korea organized a vocational training system under the Vocational Training Law as part of the national development plan. The system includes public vocational training programmes, in-plant training programmes for enterprises with more than 300 employees and authorized training by other types of agencies.[19]

This is not to say that education should in any way be confined to a narrow spectrum of technical needs. Education must remain a medium for the overall development of human beings, aimed at increasing capabilities with proper attitudes and value systems. To narrow its intent along specific vocational lines would be to prejudge the future courses of scientific and technological change and would run counter to the need to ensure the "capacitation" of each country's human resources.

4. Creativity and scientific inquiry

The stimulation of crativity and scientific inquiry through the educational system plays a decisive role in promoting human resources development for science and technology.

The lack of such stimulation in many Asia-Pacific educational systems has been widely remarked on and is frequently cited as a key reason for these countries' chronic problems in generating an effective science and technology

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[15] Liansan Ruan, *loc. cit.*, p. 6.

[16] J. Veera Raghavan, *loc. cit.*, p. 6.

[17] Paridokht Vahidi, "Guidelines for a plan of action on human resources development: a view from the Islamic Republic of Iran", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[18] Tamiko Iguchi, "Employment and manpower development in Japan", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[19] Suh Jung-Man, *loc. cit.*, pp. 3-4.

establishment. The notion of creativity should not be limited by the false assumption that only a few people are born with the gift of innovative thinking for scientific advances. If such a false notion is transmitted through social values as reflected in the educational system, access to and understanding of science will be seriously inhibited, and technological progress will be hampered.

Understanding of science as promoted by the educational system must include the following viewpoint: science is a method of inquiry whereby all persons can gain knowledge; it is not simply a body of facts and theories to be memorized. Where this understanding is absent, the educational system will ignore the need for early and continuous development of the analytical and methodological skills of science. Given these observations, it may be asserted that the human resources of a country would be enhanced considerably if creativity and scientific methods were seen as integral parts of all science and technology education and training. The development of new approaches as well as the strengthening of traditional approaches to human resources development for science and technology are urgent priorities in the Asia-Pacific region.

C. Alternative approaches to science and technology training

1. Non-formal streams of education

As is well known, the great majority of the population in most developing countries in the Asia-Pacific region live in rural areas or under conditions of poverty in urban centres. By and large, both these groups remain outside the formal systems of education and training. This is not only degrading to the people themselves; it precludes their potential to develop science and technology talents, skills and abilities.

It is therefore necessary to develop these human resources through non-formal systems of education and training in order to make them available for productive work in science and technology areas. Continuing education, adult education and open school systems are possible ways to deal with this issue. Work-related training programmes, apprenticeship programmes and vocational training programmes are other possibilities. Particularly for women and rural (as well as poor urban) youth, new non-formal education schemes need to be developed and made easily accessible. Integrated rural skills development programmes need to be devised and implemented for this purpose.

In the presence of the culture of poverty, the prevailing formal systems of education and training are not functioning as effectively as planned. The situations in most developing countries of Asia and the Pacific thus call for non-formal systems of education and training. The advantage of non-formal

systems is that they can be made easily accessible to the rural and urban poor. Informal systems of education can also take full advantage of existing social institutions and opportunities for popular participation. The active participation of the people will to a large extent determine the success of such programmes. Adequate funding, provision of teachers and trainers and, above all, a supportive environment of training and jobs are necessary to achieve the desired results. The ultimate importance of non-formal systems of education and training lies in their capacity to reclaim unutilized and under-utilized human resources and transform them into productive manpower.

2. On-the-job training

Science and technology personnel include researchers, innovators, managers and entrepreneurs. This nomenclature differs markedly from that used to distinguish skills areas in the academic disciplines and indicates the functions and roles played in the employment system and the broader socio-economic system. Upon entering gainful employment, personnel educated in academic disciplines are required to adjust to an entirely new functional frame of reference. This can create a dilemma for them as well as their employers.

Two approaches may be considered to resolving this dilemma. First, during the academic education phase, some exposure to working environments would be useful and desirable for students. Second, since the educational system provides its graduates with academically-oriented technical knowledge, this knowledge should be supplemented through "topping" training, which may take such forms as on-the-job training or apprenticeship to meet job requirements.

These approaches are raised here because on-the-job training in a number of developing countries in the Asia-Pacific region has not received the emphasis and consideration which it deserves. Employers (factories, farms, businesses, research and development institutes, consultancy organizations, etc.) should contribute to and increasingly participate in such schemes as the impact of the new technologies makes itself felt. Indeed, the need for "topping" training is going to become increasingly important as such new technologies as informatics and micro-electronics continue to alter the shape and content of the region's development matrix.

The growing importance of on-the-job training in response to technological change has been recognized in Japan. In fact, it is considered that on-the-job training as an integral part of the proposed "learning company" systems and the system of lifelong human resources development will enable Japan to transform itself into an advanced information society. Opportunities for workers to receive off-the-job-training will also be necessary to reinforce on-the-job training in a timely and comprehensive way. The social groups which are

expected to be the main beneficiaries are older workers and women returning to the labour force after raising their children.[20]

While Bangladesh may not have to respond immediately to the advanced technological changes confronting Japan, on-the-job training is considered vital for scientific and technological skills development. It is recognized that training institutions cannot be organized for all occupations and skill levels, so industry-based training is also crucial. There are two parts to Bangladesh's industry-based training. The first is apprenticeship training, based on the 1962 Apprenticeship Ordinance. This programme needs strengthening, as in 1987 there were only 300 apprentices throughout the country. The Ordinance must be updated as a result of work under way by the Planning and Development Committee of the National Council for Skill Development and Training (NCSDT). The second is in-plant training, which is aimed at young, unskilled workers, workers seeking to upgrade skills and workers adapting to technological change. The Government's Bureau of Manpower, Employement and Training (BMET) has played a pioneering role in organizing in-plant training.[21]

A crucial link thus needs to be forged between educational attainments and job requirements. Employer access to training programmes and institutions for this purpose should be as wide and well integrated as possible. Formal educational institutions should also introduce training in "applied" areas such as agriculture, marine resources and rural development. New institutions may have to be set up for this purpose and existing institutions reoriented to make them responsive to present and emerging needs. In Malaysia, for example, two aspects of the need to reorient have been recognized. One aspect is the need to de-emphasize pure sciences and arts at the post-secondary level and emphasize applied sciences instead. Another aspect of linking education with job requirements is the recognized need to emphasize entrepreneurship as well as business and management techniques.[22] Along the same lines, Thailand is placing greater emphasis on business and management skills and techniques, which will require closer, continuous co-operation between educational institutions and business enterprises.[23]

3. Role of employers in training

In many developing countries of the region, most formal education and training is provided by government institutions or Government-supported institutions. Facilities for the development of adequate and appropriate science

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[20] Tamiko Iguchi, *loc. cit.*, pp. 12, 18 and 21-22.

[21] Nur Ahmad Siddique, *loc. cit.*, pp. 26-27.

[22] Tham Ah Fun, *loc. cit.*, pp. 17-18.

[23] Phayap Phyormyont, *loc. cit.*, p. 14.

and technology personnel in this setting typically leave much to be desired. It may be necessary under such circumstances to improve the mobilization and integration of all training facilities and resources in a country. It is vital to involve both private and public sector enterprises in such an effort. The responsibility of employers, in both the public and private sectors, must be emphasized. Large companies should expand their training facilities to provide not only for their own science and technology manpower requirements but also to train others who will add to the national stock of technically trained manpower. Other enterprises should also be able to draw on these resources to meet their needs. The development of inter-enterprise repayment schemes for training programmes might provide a useful incentive in this connection.

The major issues in this regard are to determine the role that enterprises and employers in both the public and private sectors can play in maximizing the use of the available training facilities in the country and to determine how these facilities may be most effectively mobilized for the task at hand.

4. Management development

It is also necessary to develop management capabilities for science and technology. This involves the development of managers capable of running technological research institutions and scientific establishments as well as managers for enterprises and consultancy and design organizations. In Viet Nam, for example, it has been recognized that special efforts are needed to improve management mechanisms for the promotion of science and technology. Among the management mechanisms considered as important for Viet Nam's scientific and technological development are: research and development contracting between scientific and business organizations; giving greater autonomy and responsibility to research institutions; and decentralizing responsibility for product quality through standardization, inspection and quality control.[24] The scarcity of relevant managerial skills in many developing countries of the region indicates that a major effort is required in this connection.

There are a number of management schools and colleges in the region, but relatively few have science and technology management training capabilities. Existing facilities could be expanded and shared, and new facilities should be established. The best institutions in the field will have to be identified and a more intensive system of exchanges and co-operation developed among them and between them and lower-quality institutions. Curricula and programmes of training should be developed to make class-room training more applicable to real management situations, particularly for management of

[24] Nguyen Luong, "The development of science and technology in Viet Nam: policies and problems", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

science and technology systems and institutions. In India, it has been observed that management education could be made more relevant for non-corporate and under-managed sectors. To this end, local management experiences should be studied and documented to create a body of knowledge for educational programmes relevant to the national business and management context.[25] It would also be useful to consider apprenticeship programmes for science and technology management students.

D. Some related issues

1. Promoting motivation in the work place

Career motivation is a widely neglected aspect of science and technology manpower development in the Asia-Pacific region. Motivation of scientific and technological personnel on the job can be generated by both internal and external factors. For example, external factors are involved when a career in science and technology is chosen for reasons of social mobility and not merely because of an intrinsic interest in a particular discipline. Internal factors would include such factors as job satisfaction, pleasure in the search for knowledge and inquiry, fulfilment of intellectual curiosity, concern for peer approval and the desire to upgrade oneself to more rewarding work.

In fostering an environment conducive to science and technology development, these internal motivating factors should be strengthened, while the contribution of external factors should be reinforce.[26] An important task is the creation of team-work in addressing specific science and technology issues. Another is the need to provide linkages among centres of science and technology learning as well as between them and end users in industry.

Developing problem-solving-oriented and interdisciplinary networks would also help. Examples of problem-solving approaches on an interdisciplinary basis in developed countries are the new research programmes concentrating on specific problems. Thus, certain universities in Europe and North America have developed interdisciplinary teams on water resources, energy, environmental conservation, extraterrestrial travel and colonization, artificial intelligence, etc. Such approaches in developing countries of the Asia-Pacific region, though not necessarily on these topics, would help to transcend disciplinary fragmentation and also develop a stronger relationship between science and industry, as well as strengthen the demand structure for scientists, engineers and other technicians in each country.

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[25] J. Veera Raghavan, *loc. cit.*, p. 9.

[26] Commonwealth Secretariat, *Technological Change: Enhancing the Benefits*, vol. 1 (London, 1985), pp. 52-55.

Financial reward systems for science and technology personnel vary widely in the region. In some countries, salaries of scientists and technologists are lower than those paid for routine work requiring for less training. In crucial, promising areas of science and technology, properly calibrated differential reward systems could usefully be introduced, so that those who perform well as research and development personnel could be suitably rewarded.

In universities and research institutes throughout the region, there is relatively little exchange of personnel among different work groups. This is a weakness that could be partly overcome by reformulating contractual agreements. In the government sector, training after graduation, especially foreign training, is often accompanied by a pledge to serve the employer for some length of time. Loosening such ties selectively, by making such contracts transferable to other employers, could help potential researchers to increase their productivity through closer peer-group interaction.

Remuneration and promotion are sometimes tied to extra-scientific criteria. This problem is endemic in many Asia-Pacific countries. It would clearly be desirable to separate status achieved in the scientific field from other general status positions. How this might be done is an issue beyond the scope of this paper, as it crosses over into the realm of social values and political influence.

2. Stemming the outflow of professional and skilled human resources

Many developing countries of Asia and the Pacific face the problem of their well-qualified scientists, engineers and technicians leaving their home countries and settling abroad, frequently in developed countries. This has caused great concern among policy makers and planners in some developing countries of the region. One area of concern is that the departing personnel have been trained at considerable cost to the country. Another concern is that their skills and capabilities were developed with certain expectations and requirements. Thus, the "brain-drain" issue has reached serious proportions in some developing countries of the region.

Skilled personnel from developing countries migrate either on a permanent basis or on a temporary basis. Permanent outflow is usually to the industrialized countries, where Asian and Pacific scientists, technologists, engineers, medical doctors and other professionals can often find highly remunerative jobs awaiting them. The temporary flow of qualified technical manpower and paraprofessionals such as teachers, nurses, draftsmen and machinists is usually dictated by job opportunities in projects in both developed and developing countries. Thus, in the past decade the Middle East and Africa

have witnessed a large inflow of skills and capabilities from Asia and the Pacific for their industrial and infrastructure projects.

There are a number of reasons for this outflow of skills. Job opportunities may be inadequate within the home country. In this case, it may be desirable for technicians to seek work where they can use their skills and capabilities more gainfully. Home countries may also find it desirable to develop human resources through training for purposes of temporary export. The higher the skill levels and their usefulness abroad, the larger their earning potential and the greater the remittances to their home countries. Thus, by organizing science- and technology-related training programmes to equip human resources for temporary assignments abroad, the value added to GNP by these human resources can be increased substantially. Some countries in the Asian and Pacific region have received considerable foreign exchange remittances from such export of human skills.

However, situations may also arise where the technology needs of the home country are jeopardized by the outflow of such skills and capabilities. Such a situation arose in Bangladesh when numbers of workers trained for skilled and semi-skilled industrial jobs migrated to the Middle East in the late 1970s. Subsequently, NCSDT was set up to provide a common framework for all training institutes, especially in an effort to have people trained by BMET in-plant training to replace those skills lost through job migration to the Middle East.[27] The Republic of Korea faced a "brain drain" in the 1970s involving scientists and engineers whose services were needed for local industrial progress. It was also the case that some Koreans educated abroad received educations not suited to their country's scientific and technological needs.[28] The causes and consequences of migration thus have to be examined in the context of each country and appropriate policies developed to prevent, or at least minimize, such outflow where and as required.

To retain qualified personnel in the home country and repatriate high-calibre nationals working abroad, developing countries in Asia and the Pacific may consider the following approaches to the problem of permanent outflow of highly skilled persons, or "brain-drain".[29] First, liberal incentive-oriented policy measures may be set in place to control and discourage the outflow of technological manpower. Second, the educational system can be changed from one which fits the traditional demands in developed countries to one appropriate for meeting current and future demands within the developing home country. Third, different types of incentive schemes may be introduced

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[27] Nur Ahmad Siddique, *loc. cit.*, pp. 21, 23 and 27.

[28] Suh Jung-Man, *loc. cit.*, p. 5.

[29] "Technology atlas in interim report", *Technology Monitor*, January-April 1987, p. 93.

to establish links with skilled nationals abroad on a short-term basis, such as transfer of knowledge through expatriate nationals, on a regular bais. Fourth, alternative sources for scientific and technological personnel recruitment can be created and strengthened, such as through establishment of a talent pool or a permanent clearing-house.

The situation is complicated in some developing Asia-Pacific countries by the fact that the services of these personnel may not be in current demand on the local market. Many of the most highly skilled scientists and engineers in the region have been trained abroad in areas of specialization of little immediate relevance to the situations in their less advanced home countries. Thus, if they opt to stay in the home countries they have to work in fields outside their areas of specialization, or remain jobless. It may be worth while to examine and develop strategies for creating a national profile of skills and capabilities of scientists and technologists trained in the home country that can be more closely attuned to prospective local job opportunities. Educational and training programmes could be planned and designed with the future requirements of the national economy more clearly in view, a situation which is currently not always the case. As a short-term measure, a critical "futures" analysis of the manpower needs for various economic sectors and, in so far as funding permits, a short-term redirection of continuing education and retraining programmes would help to correct the situation. For the long-term, much more difficult and wide-ranging exercises will have to be undertaken, in the light of which national science and technology education and training programmes will need to be comprehensively restructured.

It often happens that upwardly and outwardly mobile scientists and engineers from developing countries become accustomed to the higher salaries offered overseas and find the levels of remuneration offered in their own countries unattractive. However, equally significant are intangible, psychologically important aspects such as job satisfaction and professional and social recognition. Inadequate avenues for promotion in many institutions for scientific and technological research and development in the region lead to frustration and lethargy. This very evident problem requires vigorous countermeasures if the "brain drain" is to be slowed.

The scientific and technological communities in many developing countries of the region see their positions and social status as generally lower than those of government administrators, enterprise managers, businessmen and bankers. This perception is especially evident at the middle levels of the scientific and technological establishment and sometimes compels scientists, engineers and other professionals to seek positions of power and authority in government administration, even if such positions are unrelated to their particular skills and expertise. In such cases, human resources have been properly developed, but improperly utilized. While not directly remediable, this

symptom of the larger problem may be alleviated if related measures are implemented.

3. Forecasting science and technology manpower requirements

As in other spheres of development planning, forecasting is required in order to generate appropriate strategies to develop human resources for scientific and technological progress and to make use of the resulting advances. Forecasting must deal in numbers. Thus, certain numbers of people must be trained and educated in specific subject areas. In turn, appropriate numbers of institutions, courses and instructors will be required. To determine the numbers required in different categories and at different levels of skills, recourse is often had to end-use methodology. This is referred to in economics as the "derived demand" approach. A serious constraint here is that developing countries in the region have found it extremely difficult to quantify their future science and technology manpower demands in the presence of great uncertainties about future possibilities.

Of course, such forecasting might be possible if a country had a clear idea of its short-term and medium-term industrialization path, the general time frame for particular technologies and some general quantitative targets at which to aim. The Republic of Korea seems to be working with such a framework in setting its science and technology and industrialization goals to the year 2000. Thus, it has identified a specific group of science and technology areas for short-term development: informatics, fine chemicals and precision machinery. Another group has been targeted for the medium-term. At the same time, general targets for science and technology education have been set. The basic goal is to have 150,000 research personnel by 2001. From 1986 to 2001, 4,000 persons will be educated domestically at the doctoral level. A domestic post-doctoral research system will be established for about 3,000 participants over the period 1986-2001.[30]

In using the manpower requirements forecasting approach, it is important to take into full consideration the possibilities of scale economies. Thus, for example, if a 50,000 ton nitrogenous fertilizer plant employs 10 chemical engineers and 50 technicians, it might be assumed that a plant with double that capacity would require twice the number of engineers and technicians. However, that may not be true, since the number of technical people (as distinct from operating personnel) who would have to be employed does not ordinarily have a linear relationship with either output or investment. The number of required technical personnel may hardly rise at all with an increase in the size of the plant and might even decrease if less labour-intensive technologies

[30] Suh Jung-Man, *loc. cit.*, pp. 11-12 and 14.

are introduced. It should be noted that what is true at the plant level may also fit at the industry level, the sectoral level and, in the case of some types of highly specialized personnel, at the economy-wide level.

A second issue is that the forecasting of manpower needs as a function of technology end-uses is often based on historical data. It rarely takes account of changes which may result from technological innovations that progressively rationalize job requirements. For instance, if, for historical reasons, university graduate engineers have been employed as operator engineers in a fertilizer plant to turn valves on and off, then the chances are that a manpower forecast for the plant would continue to specify graduate engineers for this purpose, even if the job could be done adequately by trained technicians or semi-skilled line workers. Again, what is said here of the individual plant also may hold true at the economy-wide level. What is needed is a more insightful, flexible approach to the forecasting of manpower needs in the context of scientific and technological change.

This calls attention to the need for periodic reviews of the skills and qualifications requirements for various production activities. Such review should take full account of the types of technology contemplated for future use and their implications in terms of the skills and capabilities required. Periodic exercises of this sort at the national level would prove useful in preventing serious mismatches between demand for and supply of human resources in the presence of technological progress.

II. APPLICATION OF SCIENCE AND TECHNOLOGY TO HUMAN RESOURCES DEVELOPMENT

A. Technological pluralism and human resources development

A characteristic feature of technology is its different forms at various levels of sophistication and scale. Thus, for instance, in the energy field, nuclear technology co-exists with photovoltaics, biogas and various other energy technologies, suitable to meet power generation needs at successively lower levels of human resources skills. The spectrum of technology has to be examined both deeply and widely in the developing Asia-Pacific countries because of the far-reaching implications that its differing forms have for the types of human resources called for by its introduction.[31]

[31] Among the numerous studies that may be cited as general background, the following are particularly valuable: S. Graubaard, ed., "Modern technology: problem or opportunity", *Daedalus* (special issue), Winter 1980; R. Clarke, ed., *Science and Technology in World Development* (Oxford University Press, 1985); K. Haq and U. Kirdar, *Human Development: The Neglected Dimension*, Part V: "Impact of science and technology" (Islamabad, North South Round-table, 1986).

Technological pluralism calls forth three broad principles in its effects on human resources development: people should be trained in wider bands of technological knowledge, rather than in a narrow range of "single technologies"; initial training modules should be designed in such a way as to make retraining easier and faster, with emphasis on "know-why" in addition to "know-how"; and parallel training and development of a wide variety of human resources should be undertaken to achieve desired objectives. These principles are applicable to Japan's transition to an advanced information society. Clearly, increasing numbers of engineers and programmers will be needed, but a more diversified range of vocational abilities will also be necessary. In clerical work, for example, problem discovery and problem-solving will be important skills, along with the ability to select, analyse and present diverse types of information.[32]

In Bangladesh it is recognized that parallel training must be integrated and mutually supportive. These complementary components are the focus of government attention under the common framework of NCSDT: training in vocational-technical institutions at the semi-skilled level under the responsibility of BMET and the Directorate of Technical Education; apprenticeship training in industrial enterprises at the skilled level; and in-plant training for highly skilled and supervisory personnel in industrial enterprises. The latter two are the responsibility of firms and BMET.[33]

Technologies are categorized and classified in a number of ways. Thus, one often hears of high technologies and low technologies, modern and traditional technologies, and labour-intensive and capital-intensive technologies. These categories, while useful, have to be carefully understood and used, for they have far-reaching implications for human resources development for scientific and technological progress. The popular conception of "high technology" is that it is modern, sophisticated, complex, capital-intensive and meant for the large-scale, urban-based manufacturing enterprises. The corollary assumption is that its operation requires highly trained technicians. This is not necessarily the case. While high levels of education and expertise are needed to generate such technologies, the skills required at the industrial plant level may not necessarily have to be at the same level of sophistication. The development of technology to convert bauxite into aluminium, for instance, calls for high-level scientific knowledge, research and training, but the operating skills needed in the conversion plant often involve primarily the reading of dials, pushing of buttons on electrical equipment or turning of valves on machinery.

Training programmes must therefore be devised not only to develop high-level scientists and engineers, but also to train shop-floor workers, foremen,

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[32] Tamiko Iguchi, *loc. cit.*, p. 2.

[33] Nur Ahmad Siddique, *loc. cit.*, p. 23.

first-level supervisors, maintenance personnel, electricians, mechanics and technicians of all sorts. This difference has to be grasped at the policy level. Without this understanding, for instance, a number of high-technology options will be pre-empted from location in rural settings, thereby reinforcing biases which isolate the large majority of the population from participation in technology's socio-economic benefits. In brief, policy-making options and human resources development implications become clearer when technology is perceived as the multifaceted system described earlier in this paper.

Technological pluralism identifies the broad range of special needs derived from technological innovation and application. Among these are the needs of the rural and urban informal sectors, small industrial enterprises, women and youth. These needs are discussed in detail in the following sections of this paper.[34] It is emphasized here that such needs call for a wide variety of human resources skills and more open-minded attitudes. A strategy to apply science and technology to human resources development for broad social progress must not only be meaningful and pragmatic; it must also take full account of diverse social needs.

B. Agriculture

Agriculture has been and will continue to be the main sector where the majority of the people in developing countries of Asia and the Pacific will have their occupations for the remainder of the present century and beyond. It follows that improvements in agricultural yields as a result of improved technology will have a major impact on the economic and social well-being of the people. In order to make agriculture and related activities more productive in the presence of the new technologies, certain new or enhanced types of skills and capabilities will have to be developed. Amost all countries have devised measures for strengthening the skills of agriculturists; yet there are significant areas where such measures need to be further strengthened and new ones initiated.

Several countries have given high-level policy attention to the role of science and technology in agriculture and related activities. There is recognition in Bangladesh, for instance, that the technology of intensive agricultural production must be extended and improved. In recent years, only about one fourth of total agricultural land has benefited from fertilizer-seed-irrigation

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[34] Although the ensuing discussion focuses on the human resources implications of science and technology in the economy, the situation in other domains should not be ignored. An example of concerns in other areas is: ESCAP, "Report of the Expert Group Meeting on the Development and Utilization of Local Manpower and Technology for Disability-related Services in Rural and Poverty Areas of the Asia-Pacific Region", Manila, 21 February-1 March 1983.

technology; consideration is being given to the means of extending these benefits more widely. It has also been observed that technology will be required to rejuvenate rural industries.[35] The long-standing problems of applying science and technology to agriculture in China have been exacerbated in recent years. Of the more than one million people who received secondary or tertiary education in agriculture from 1949 to 1985, 60 per cent have left the field. In the mean time, 120 million young people in rural areas have had secondary education, but not in the vocational skills in practical production methods or agricultural technology needed for agricultural development.[36] In India, furthermore, it has been recommended that farmers' training centres *(Krishi Vigyan Kendras)* could help to disseminate technological information that goes beyond the usual know-how information in order to strengthen agriculturalists' skills.[37]

Increased yields have been generated by the combined use of new and improved fertilizers, seeds and pesticides along with increased access to irrigation facilities and electricity. To the extent possible, facilities supplying such new-technology inputs should be set up in close proximity to the cultivated areas. Training facilities to develop the necessary skills to use these technologies should also be dispersed to the rural areas. If, for techno-economic reasons, it is not possible to locate all such activities in rural areas, then only the most directly productive activities should be decentralized. For example, basic nitrogenous or ammonia-based fertilizer factories may be centrally located or located near a natural gas supply facility. However, the mixing plants which combine nitrogenous, phosphatic and potassium fertilizers in the required proportions to suit local soil conditions could be relocated to rural areas. Necessary skills should be developed locally among the rural population through specialized extension training programmes as well as on-the-job training. Training should be given locally in the proper and safe usage of fertilizers and chemical pesticides to achieve maximum benefits. Local awareness should also be promoted concerning the risks of pollution and environmental degradation.

Biomass and solar energy are being used increasingly in agricultural communities to supply energy for water pumping, grain drying, food processing, etc. Simplified applications of new technologies and equipment made from local materials are now available to farmers in developing countries of the region. It is important to involve local communities in the development and production of such technologies by providing them with the necessary skills for people to set up and operate facilities efficiently.

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[35] Nur Ahmad Siddique, *loc. cit.*, p. 5.

[36] Liansan Ruan, *loc. cit.*, p. 9.

[37] J. Veera Raghavan, *loc. cit.*, p. 18.

There has been a growing tendency towards mechanization of agricultural operations in the region. However, agricultural areas in many developing countries of the region may lack adeqaute facilities and skills to maintain modern agricultural equipment. As a result, power-driven agricultural machinery such as tractor tillers and water pumps remain idle once they have broken down. It is therefore of paramount importance that repair and maintenance skills be developed at the village level. This will not only ensure the optimum use of scarce and expensive agricultural equipment but will also provide an important source of off-farm employment.

C. Rural development

Large segments of the rural populations in developing countries of the Asian and Pacific region are often isolated from the mainstream of development efforts and outcomes owing to inadequate attention to the need for diversified rural employment and income-generating activities. Simplistic identification of "agricultural" with "rural" overlooks the fact that many rural people are not farmers and lack opportunities for gainful agricultural employment. The failure to appreciate this distinction results in inadequate non-farm skill formation and thereby detracts from the fuller development of human resources in rural areas.

Recognition of the distinction, however, can lead to forward-looking policies. The importance of diversified employment and non-farming activities for genrating income in rural areas has been acknowledged, for instance, in China's "Spark Programme". Initiated in 1985, the "Spark Programme" also represents an urgent effort to introduce science and technology to rural areas, as well as to create rural employment opportunities. The programme is designed in part to popularize new and advanced production technology, especially among young people. Another aspect of the programme calls on urban-based scientific and technological personnel to go to the countryside to help farmers. The programme also includes government provision of funds, complemented by locally generated funds, for training and as credit for investment. Youth organizations and the All-China Women's Federation have contributed to training and skill formation efforts.[38]

The skills, capabilities and attitudes that need to be developed in rural areas differ significantly from those required by the urban-based high-technology-oriented industries.[39] One important factor to take into account concerning technology application in rural areas is the limits found in the supporting

[38] Liansan Ruan, *loc. cit.*, pp. 10-12.

[39] K.H. Yap, "Light industry technologies and rural development", in UNIDO, *Appropriate Industrial Technology for Light Industries and Rural Workshops* (Vienna, 1980), pp. 63-78.

infrastructure. Improvement in the level of education and upgrading of skills in rural areas may require innovative approaches to facilitate the dissemination of information and the provision of training with regard to specific technologies.

Women's role is particularly important in the informal sector of rural areas, such as small-scale food processing and manufacturing, which often is for local sale or domestic consumption.[40] Training on new and appropriate technologies for rural women engaged in such productive activities can help to generate income, improve the quality and efficiency of production and generally improve the socio-economic welfare of rural communities.

Dissemination of information on construction industries based on upgraded technologies should enable artisans in rural communities to construct houses, village roads and other community facilities using local construction materials. The application of both solar energy and biogas energy to preserve and process agro-products and to meet power needs of rural communities is another important area where local skills can be readily enhanced in rural areas. Extensive and intensive training, emphasizing non-formal approaches, is needed in order to realize community potential in such industries.

Transfer of technology in rural areas is generally direct, with people-to-people contact, not necessarily through formal training, technical publications, design drawings or other "advanced" approaches that are typically designed in a carefully planned manner. Skills development and the process of teaching in rural areas should thus stress "teaching by doing". To keep pace with improvements in the quality of the technologies being transferred, training courses should be designed so that rural skills can be continuously improved.

If village-level programmes involving rural technologies and industries are to be successful, various types of human resources "infrastructure" have to be developed. Among these are managers and co-ordinators to execute rural schemes, trainers to identify and upgrade artisan skills and traditional technologies, technicians to develop plans and engineering designs for village industrial activities and entrepreneurs to take the lead in organizing and implementing new and innovative activities.

D. Human settlements

Human settlements provide the physical and social infrastructure for the development of human resources. The technological dimensions of human resources development in human settlements are manifold, from the provision

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[40] See the companion paper on the integration of women's concerns into human resources development. Also see UNIDO, "Integration of women in industrial development", (GC.2/15).

of shelter and basic amenities to the provision of complex infrastructure, including the installation of transport systems for the movement of people, goods and services. The construction industry alone absorbs a substantial proportion of a country's total number of human resources at different levels of skill and professional practice. It typically accounts for between 4 and 9 per cent of gross domestic product and accounts for an average of about one fourth of gross fixed capital formation in many countries of the region.[41] National universities and architectural research institutes train people in the production, testing and use of building materials, and carry out research into improved traditional materials and techniques, as well as materials from agricultural and industrial wastes.

Technological activities in human settlements range from the actual provision of shelter using new building technologies to the formulation of legislation on the environment and building construction. These activities involve practitioners in architecture, planning, project management and investment and the administrators of public and private agencies supporting and regulating these affairs. However, the shortfall in the supply of human resources remains a constraint to using the technological improvements which can improve the quality of life in human settlements.

E. Industry

Adaptation to recent technological changes in the industrial sector has been rapid in some countries of the region. In other countries, attempts are under way to accelerate the pace of industrial development through policy reorientations and the creation of a more modern industrial infrastructure.[42] The first half of the 1980s witnessed a series of industrial policy reforms providing various incentives and other support measures, in many cases designed to enlist greater participation by the private sector. Attempts are also under way to promote greater efficiency in public sector undertakings. In these endeavours, there has been a serious effort in many Asia-Pacific countries to generate and make use of new technologies and skills. Many countries in the region have increased their efforts in various manufacturing subsectors, particularly capital goods, to forge dynamic links with the mainstream of technological innovations. By upgrading the efficiency of machinery and equipment and the skills of operators, this sector has helped to raise productivity levels in a wide range of other industries.

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[41] ESCAP, "Improving building technology and strengthening the local construction and materials industry" (E/ESCAP/IHT.9/7), p. 5.

[42] The implications of industrial modernization in the presence of the changed world economy are far-reaching. At the same time, failure to take action may well have disastrous consequences for the industrial future of Asia and the Pacific. See Drucker, *loc. cit.*

In many countries of the region the manufacturing sector has a dual structure. One part consists of modern manufacturing, the other of traditional crafts and often outmoded systems of production. Furthermore, previous import-substitution strategies in some countries of the region have left a large part of their industrial sector isolated from the international mainstream of technological advances. This has largely been due to the shortage of critical capabilities and skills required for competitive efficiency in the industrial sector. However, companies which produce for export have striven to incorporate technologies which enable them to produce goods of internationally acceptable quality. In this regard, they have stressed manpower development. This emphasis needs greater attention at the official policy level. Although the developing countries of the region have increasingly recognized the need for human resources to embody and apply the most efficient technologies in various sectors of industry, the importance of human resources at the individual enterprise level in the industrial sector needs greater attention.

The development of capabilities and skills in the manufacturing sector will be of key concern in the years to come to support the industrial development process in Asia-Pacific countries. Special skills and capabilities necessary for establishing enterprises include preparing feasibility studies and project reports; choosing and selecting technology and negotiating its acquisition; designing and implementing projects; securing project financing; and undertaking entrepreneurial and managerial tasks. The skills necessary for setting up industrial enterprises must not be overlooked, particularly the managerial and entrepreneurial abilities as well as the expertise to make technological choices and use design engineering skills.

Identification of the appropriate institutional infrastructure for enterprise development and for improving related scientific and technological skills involves research and development, quality control and inspection, safety and standards, industrial credit and development financing. The infrastructure includes research institutes, laboratories, universities, vocational training institutions and government agencies. Each of these institutional components requires careful attention in its own right. In addition, co-ordination and co-operation among the institutions are critical to the successful contribution of the whole infrastructure to industrial enterprises.

Industrial enterprises consist of several subsystems, including production, maintenance, process engineering, technology, design engineering, marketing and management systems. Each of these subsystems requires specific skills and experience to operate efficiently and harmoniously.

Personnel with the necessary operating skills include equipment and process engineers, production and maintenance application engineers, technology application experts, product and process design engineers and pro-

ductivity, quality control, standards, safety and inspection engineers. This skills spectrum underscores the diverse capabilities needed, and it provides a choice matrix for the development of human resources for technology-oriented industry. The human resources development process must generate many skills simultaneously so that there is no mismatch either in terms of the skills available and the skills required or in terms of the time at which such skills are available and required.

Industrial enterprises and industrial research institutions must have strong and close linkages, whereby both will benefit. Standards institutions, productivity centres and safety and inspection organizations must also interact closely with production units. Unfortunately, in many developing countries of the region such linkages are weak or non-existent. Special efforts are needed to establish and/or strengthen these linkages. Since the linkages are possible primarily through personal contacts, it is necessary to develop activities such as industry/technology development seminars and industrial sector/research institute workshops for the purpose of bringing together personnel at the working level.

Since training is necessary to produce the human resources needed for industrial enterprises, continuous on-the-job training is an important aspect of the development of technical and management capabilities which does not always receive the attention it deserves. It is important that enterprises have ongoing training programmes as well as providing opportunities for continuing education for their employees. Malaysia, the Republic of Korea and Thailand, among others, have identified public-private sector co-operation as important for the implementation of training and continuing education programmes.[43]

Exposing students enrolled in educational institutions for science and engineering to the actual work environment and its requirements is an excellent way of rapidly building up technical skills for human resources development. Enterprises can play an important role by participating in the formal training of students from educational institutions. This will also help to close the gap between academic institutions and industrial enterprises. Similarly, exchanges of engineers, technicians and managers between research and development institutions and enterprises can be mutually beneficial. This process should not be left to chance but should be incorporated in the regular training programmes of industrial research institutions, industrial enterprises, educational institutions and government agencies concerned with industrial upgrading.

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[43] Phayap Phyormyont, *loc. cit.*, p. 14; Tham Ah Fun, *loc. cit.*, pp. 16 and 18; Suh Jung-Man, *loc. cit.*, p. 12.

F. Small-scale enterprises

One of the key human resources development areas in the Asian and Pacific region is small-scale enterprises. Pakistan, for example, has made development of small-scale industry part of the strategy for its seventh plan. Small-scale industries which have been identified include household, cottage and agro-based industries.[44] The principal needs of small industries are capital equipment, technology appropriate to their levels of production, finance or working capital requirements, and skills. The need to enhance technological and management capabilities is particularly pressing because small-scale enterprises offer employment potential and generate various economic and social externalities.

Improved production techniques, product design and product quality are important inputs for small enterprise success,[45] Research and development work in this field is therefore of great importance. Special institutions for research and development for small enterprises are needed, because such enterprises have neither the human resources nor the financial means to undertake this work for themselves.

The needed skills cover technology, production, finance, marketing, management and entrepreneurship. In small enterprises, technological, marketing and management skills are usually embodied in one person. It is necessary to train and develop small enterprise managers as technologists through specially designed training programmes which are more general in content and flexible in scheduling than the training programmes normally developed for large industrial enterprises.

Service capabilities associated with project preparation, design and implementation are typically inadequate for small-scale operations because their scale properties normally restrict such services mostly to large-scale enterprises. While the basic types of knowledge needed for project formulation, design and implementation are similar, special attention must be given to technologies and production processes appropriate in small-scale enterprises.

In summary, small-scale enterprises in Asia and the Paicific face various limitations, among which the following are most important: inadequate technical, managerial and interpreneurial skills; inadequate transfer of technical skills from large enterprises and research and development institutions; lack of appropriate tools and dies, fixtures and other capital equipment; absence of

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[44] Zulekha Zar, "Country paper on Pakistan", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[45] UNIDO, *Appropriate Industrial Technology* . . . .

financial support for training of human resources, as well as limited venture capital and risk-taking ability; lack of ancillary arrangements that permit technology improvements and quality control; lack of access to consultancy services for suitable project preparation, design and implementation; and lack of value engineering inputs to improve product design and reduce costs.[46] All such limitations arise from lack of clear appreciation of the specific needs of small-scale enterprises and the need to develop or reorient appropriate institutions and mechanisms for this purpose. In this regard, the public institutions for vocational training in Japan have been identified as capable of providing off-the-job training for workers in medium- and small-scale enterprises, since these enterprises may not be able to provide on-the-job training to develop the multi-skilled workers needed in the future.[47]

In this context, technology centres might be established at the district level to provide complete packages of services to small-scale enterprises. Such services could include product design and prototype development, advisory services on manufacturing processes, marketing advice, finance, access to raw materials and training. This "one-window" approach at the grass-roots level could be of great help to small-scale enterprises. Obviously, such district technology centres would not have all types of expertise in their own organizations. They should therefore be supported by national technology support centres within a regional network. Such a system would provide the required services at the place where they are needed, through a small and efficient team specially trained to be responsive to the human resources problems of small-scale enterprises.

G. The export sector

Production for export plays a crucial role in the economic life of most countries in the region. A desirable shift in the export strategy is to move away from export of commodities and primary products to export of semi-processed and finished products. The result is higher value added, but such a shift must be preceded by technology upgrading and, in turn, the development of human resources to utilize that technology effectively.

The human resources implications for the export sector are obvious. High-level capabilities are required to organize for export production. Export capabilities include such skills as managing export-sector production units, maintaining strict quality control, redesigning products to make them acceptable in foreign markets, introducing technologies which can produce products and

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[46] R.E. Nelson, "Entrepreneurship and self-employment promotion in Asia and the Pacific", in R.E. Nelson, ed., *Entrepreneurship and Self-Employment Training* (Manila, ADB and ILO, 1987).

[47] Tamiko Iguchi, *loc. cit.*, p. 25.

services according to the specifications of foreign buyers, packaging for export, finance, credit and export risk guarantees and providing after-sales service and supply of spare parts in the foreign markets, particularly for capital goods. The general level of capabilities, attitudes and orientations required for export production are somewhat different than for domestic market production. Appropriate human resources must be developed through intensive retraining programmes for these purposes.

H. Technology management

Management of personnel who develop and apply technology at the enterprise level is a relatively new field of specialized expertise in many countries of the region. Such managers deal with scientists, engineers and technicians who are engaged in research and development, project design, quality control and the provision of technology information and other technical services to clients. The nature of this work and the specialized, professional backgrounds of the personnel supervised mean that both technical and management capabilities are needed.

Before the relatively recent advent of modern technology in the Asia-Pacific context, the knowledge required for production was mostly based on trail and error and was embodied in skilled workers and craftsmen. The manufacturing enterprise converted raw materials into finished products through the use of relatively simple technology which remained virtually unchanged for long periods of time. The technology could usually be learned quite easily by workers.

The current pace of technological change has not only spread new technologies rapidly, but has made technologies outmoded more quickly as well. Control and operation of manufacturing processes and equipment have become increasingly sophisticated with these rapid scientific and technological developments. This situation demands management skills based on up-to-date assessment of technologies and the flexibility to change rapidly. In many developing countries of the region where managers lack such skills, the response to new market requirements has tended to be weak. Concerted and deliberate efforts through proper planning are required to generate the needed human resources.

Technology is not always well managed in public sector enterprises. Often, it is purchased without prior evaluation of other available alternatives. Sometimes technology choices are dictated by donor countries as part of tied aid or tied loans. These acquired technologies are often simply transplanted to the recipient country without modification. There is often little attention to development of local skills required for managing the technology or making modifications in order to meet changing demands.

Choice of technology should be based on a careful cost-benefit analysis which includes an evaluation of the social, cultural and environmental impact of technology on the people and the country where it is to be used. This analysis should also include a consideration of the human resources implications, particularly the need for specialized personnel. Enterprises must consider human resources development that allows them to go beyond mere purchase of turn-key projects, to make a selection of appropriate plant designs and to acquire technologies of long-term usefulness. This entails developing the skills to unpackage imported technology as well as skills to utilize and manage technology to suit local situations. The recipient country can also take steps to utilize and manage technology in ways suitable for local conditions. Along these lines, India has begun to develop a technical manpower information system. Such information can obviously help in manpower planning to ensure better responses to changes in the economy, production processes, management practices and scientific and technological advances.[48]

Disaggregation or unpackaging imported technology is usually subject to two basic constraints. One is the pressure to accelerate project execution and thus disregard the long-term benefits which may result from technology disaggregation. The other is the pressure experienced by policy makers and project managers who face increased risks and responsibilities in working with disaggregated technology.

These pressures are counterbalanced to some extent by two other factors. One is the awareness of negative experiences, including economic and social consequences, associated with imported technologies which were not modified to suit local conditions. The other factor is the opportunities which are made available to indigenous scientists and engineers capable of developing local elements that contribute to large projects requiring partial (but not wholly) foreign technology and equipment.

In view of the above issues, it is essential for enterprises to treat technology as a factor which requires specialized management. Human resources for such specialized management of technology have to be development in the context of the overall enterprise system, especially in public enterprises.

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[48] J. Veera Raghavan, *loc. cit.*, p. 8.

III. HUMAN RESOURCES DEVELOPMENT STRATEGIES WITH REFERENCE TO SCIENCE AND TECHNOLOGY

A. Background

The Commission, at its forty-second session, held in April 1986, examined in considerable detail a number of issues relating to the science and technology aspects of human resources development.[49] At that session, the Commission also examined various possibilities for action at the national and regional levels. As a result, the Commission broadly endorsed and adopted the ESCAP Plan of Action on National and Regional Initiatives for Human Resources Development: Its Technological Dimensions[50] and requested all member and associate member Governments, donor countries and agencies to extend their full support and co-operation to ensure its effective implementation.

The Plan of Action is reproduced below.

B. ESCAP Plan of Action on National and Regional Initiatives for Human Resources Development: Its Technological Dimensions

I. BASIC CONSIDERATIONS

Technology has a profound influence on social and economic development. The importance of human resources for technology as a determinant of socio-economic development requires reaffirmation and fresh commitment by politicians and policy makers, administrators, engineers, scientists and technologists, public and private enterprises, workers organizations, and so on. Their reaffirmation involves the recognition that:

(1) The development of human resources is of crucial importance to economic and social development and the promotion of human welfare in the present day world: conscious and deliberate efforts, primarily at the national level, are needed for this purpose.

(2) Sustained efforts on the part of many institutions and organizations in a country are essential in nurturing and guiding human resources development for technological progress. Among these are government policy-making and planning organizations and educational institutions; technical and vocational

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[49] *Official Records of the Economic and Social Council, 1986, Supplement No. 11* (E/1986/32-E/ESCAP/536), pp. 34-37.

[50] See ESCAP, "Report of the Intergovernmental Meeting on Human Resources Development: Its Technological Dimensions" (E/ESCAP/477), annex.

guidance and training centres; public and private sector productive enterprises; scientific, technological and consulting engineering institutions and financial institutions. Regional and international agencies could play an important role in supporting these efforts.

(3) In order to be effective in nurturing the development of human resources for technological progress, all these institutions must possess the ability to make bold, imaginative and purposeful decisions. Such institutions themselves have to be manned by people who have been specially trained in technology, management and decision-making disciplines and who possess a deep understanding and concern for the social and economic development processes.

Human resources for technological development has assumed critical importance. The generation and application of technology call for high levels of scientific and technological education and specialization and involve the ability to work in multi-disciplinary groups; special skills in managing creative human resources and institutions are also called for.

Production processes based on technological innovation have also become increasingly complex and call for highly specialized operating skills and abilities. These have to be developed through intensive training in specialized areas of technology application, superimposed on the normal pattern of engineering, education and training. Such specialized training also has to be imparted to skilled workers and technicians. Innovations should be promoted on a continuous basis and provided with adequate policy support.

In most developing countries of the ESCAP region, dual economies exist consisting of modern and traditional economic sectors. The dual economy has posed problems for policies and institutions concerning technological human resources development. The modern sector and the traditional sector require different levels of general and technological education as well as training. It is also desirable to promote greater mobility of human resources from the traditional to the modern sector, and vice versa where appropriate. Such a structural shift of occupation from one sector to another could be facilitated by new training methodologies and improvements in educational systems. Furthermore, promotion of self-employment and entrepreneurship requires suitable technical training in the processes of production and in management. There is need of greater flexibility in the course content and structures of technical education and training systems in order to meet the diverse and changing needs of the economy and the society. Flexible and modular systems of training are very relevant in this respect.

The impact of technological change affects occupational structures and professional skills. This has occurred in all countries in the region which have embarked on a large-scale industrialization process from traditional agriculture-dominated economies. Government policies and strategies, as well as the planning processes, have to focus their attention on the development of skills and capabilities for the changing structural situation. In this context, there is need to avoid the danger of destroying the traditional occupations and skills before the modern vocations and skills have been established on a wide enough basis to provide adequate opportunities to those shifting from the traditional ones.

Development of human resources could be considerably accelerated by ensuring greater access to technological innovations and financial resources and by earmarking substantially greater intellectual and material resources for human resources development at both national and international levels.

Unless the human resources are appropriately trained and developed in critical areas geared to the requirements of the country, they cannot be productive for society or for themselves nor can they contribute significantly to the economic and social development of their country. Even the existence and survival of a separate national identity may depend upon the ability to cope with the tasks involved in human resources development in an effective manner.

The concept of human resources development is much broader than education and training. It includes helping people to identify their innate aptitudes, motivating them to develop their aptitudes, providing favourable social conditions, such as access to education and vocational training, and also providing them with opportunities for gainful employment where they can use their skills and thus contribute productively to socio-economic development. Human resources development should also include physical and cultural development and provide for the total development of individual personality.

In this context, the four fundamental principles to be established are:

(1) Strengthening the overall co-ordination of forecasting, planning, production and management of human resources development.

(2) Creation of adequate opportunities for formal, non-formal and informal education and training;

(3) Recognition of education and training as a life-long process;

(4) Establishment of a system for effective and efficient utilization of skills and capabilities in furtherance of national technological and socio-economic objectives.

II. ACTION AT THE NATIONAL LEVEL

A. Identification of needs, assessment of capabilities and determination of priority areas

Policy and decision makers are hampered by inadequate information on national technological needs arising out of socio-economic objectives. Identification of technological needs as well as the requirements for technical and skilled manpower can be considered as the starting point for technological human resources development. An analysis of these needs, together with an assessment of the existing capabilities in a country, would provide insights into the gaps to be filled. The building up of capabilities for technological progress requires special measures for formal, non-formal and informal education and training, and the creation of support systems to enhance the participation of people for technological progress. In order to free the society form the vicious cycle of underdevelopment, it is essential to develop systematically its capabilities for applying modern science and technology to its problems and to improve the productivity and efficiency of its economic activities and services. Education and training no doubt fulfil an essential role in the building up of such capabilities. However, there are several other important aspects in devising an appropriate approach to fulfil these requirements, among which are the following:

(1) The scale of science and engineering education, vocational training and supply for technological manpower should be adjusted and determined in accordance with manpower supply and need forecasts.

(2) With the increase in demand for people with creative technological competence, structural changes in the educational and training system will be required. In order to meet this requirement, education standards and training systems should be reviewed, updated and upgraded through the systematic development of noms, guide-lines and quality improvement programmes, the promotion of indigenous research activities and the provision of adequate support.

(3) In the short run, it may be difficult to adjust the education process of the needs of the changing situation. For this purpose, short-term approaches should include the establishment of multi-disciplinary industrial research organizations having two faceted responsibility: one to education and the other to industry itself. The creation of mission-oriented programmes for improving technical and industrial literacy is yet another short measure. Flexible course content and the introduction of modular systems would also enable the education and training process to respond quickly to the changing needs.

(4) Socio-economic incentives play an important role in accelerating the production and utilization of technological human resources. The establishment of adequate systems at the national level to promote the enhancement of the status of professionals in technological fields, particularly for those who practise skills, is an important requisite. The conversion of educated people into innovative, skilled and needed manpower through the provision of proper post-education arrangements is significant.

B. Strengthening of national mechanisms for technological human resources planning and research

Planning for technological human resources assumes a significant role in view of the importance of the development of technological human resources and its close linkage with socio-economic development. The rapid rate of change in technologies and the compulsion of competitive and productive use of technologies generate a demand for a changing spectrum of human skills, and make it imperative to plan for the development of such skills and capabilities. While the matching of demand and supply at any period of time cannot be exact, national planning exercises will help in focusing attention on the priority needs and identifying crucial gaps in the skill spectrum of technological human resources. For example, in many countries of Asia and the Pacific, there is a large shortage of technicians in various categories. Similarly, there is a general inadequacy of institutions and programmes for training in entrepreneurship. A continuing planning exercise would ensure that this gap was bridged through specific strategies and programmes of training which develop such skills rapidly.

Among the elements of such a planning exercise could be the following:

(1) Forecasting population growth and demographic structure.

(2) Forecasting the growth of the total labour force and labour participation rates.

(3) Forecasting skill requirements in various sectors of the economy.

(4) Forecasting world technological trends and assessment of the potential of technologies in the production and user systems in the national context.

(5) Assessment of the quantity and quality of available technological human resources by type of skill.

(6) Assessment of the technological needs of the country based on available resources and desired socio-economic development goals.

(7) Assessment of technology, which would include analysis of the beneficial as well as the detrimental effects of technology on society and ecology.

(8) A data bank for technological assessment.

(9) Determination of the quantity and quality of skills required for both short- and long-term planning.

(10) Achieving a proper balance between applied and basic science.

All these forecasting and assessment exercises have relevance to several developing countries in the region. Methodologies, designs and procedures for such forecasting and assessment are to be established and properly linked with socio-economic goals and plans. For purposeful planning, it may be necessary to move from aggregate levels and issues at the macro level to sectoral and sub-sectoral and functional levels. Thus, for instance, the types of skills and professional capabilities needed for research and development and production of fertilizers have to be planned and computed in very specific detail. Similarly, the functional aspects of management, engineering, technology and technicians have to be carefully planned and the content of their training and qualifications precisely determined. Finally, the process of planning for human resources development has to be flexible in order to cope with the demands placed on it by changes in technological and industrial patterns. The changes in the international economic environment and the difficulties associated with technology transfer and with exports from developing countries pose significant challenges to the policy makers and planners in human resources development. Since the formal educational training cycle is long and somewhat inflexible, it is desirable to make contingency plans for the superimposing of the short-term educational and training programmes considered necessary in the light of newer demands of the technological and production systems. Equally important is the monitoring system to keep track of present and future situation in economic development, technological progress, industrial activity and human resources requirements.

C. Strengthening of national institutional infrastructure and policies for long-term skill upgrading

The institutional infrastructure for education in many countries of the region is neither adequate nor directly responsive to the needs generated in the market place for technological human resources. This is true for the requirements of the self-employed sector as well. The use of new technologies, the pace of change in technological growth and the rate of obsolescence, scale and volumes of production, use of micro-electronics, instrumentation and computers in productive systems, have all influenced the types of capabilities and skills required by human resources. Also, although the pace of technological change is fast and consequently the demand for skills and capabilities is increasing, it is not easy to alter the curricula, course content and pattern of educational systems to keep up with the changes.

Vocational and training institutions have also been somewhat inadequate. Broadly, major sources of development of technological human resources may be identified as general and technological education, vocational training institutes, and on-the-job training.

Planning for the development of technological human resources and indeed for human resources development in general, is undertaken in a fragmented and disaggregated manner in a number of ministries and agencies, such as the ministries of education, industry, labour, and science and technology. The effect of dispersal and disaggregation with regard to human resources development leads to the somewhat unbalanced structure of skill formation. It would be useful to have a national co-ordination body for this purpose.

D. Promotion and formulation of innovative policies at the national level

It is essential and desirable for each country to take stock of the present situation and the future trends with regard to demand and supply in technological human resources. Based on the priorities assigned by each country, innovative policies will have to be developed at the national level. Policy formulators concerned with the development of technological human resources have to take decisions concerning adequate provision of sources of skills and capabilities and launch programmes to achieve the targets. They also have to decide on the provision of vocational guidance, including stipends, scholarships and other appropriate incentives to attract persons to the desired skills and provide adequate facilities for this purpose.

A policy framework has to be developed for specific measures aimed at the following:

(1) Improving the efficiency of national technological human resources.

(2) Making educational and training systems responsive to the requirements.

(3) Balancing the skill structure to meet the demands of the continuously changing technological situation.

(4) Improving the access by women, weaker sections of the society, and disadvantaged groups to training facilities and provision of incentives to encourage the setting up of special training programmes for these groups.

(5) Developing on-the-job training programmes, including apprentice programmes, short courses and co-operative programmes.

(6) Increasing the involvement of employers in all aspects of the educa-

tion and training process through regulatory and incentive mechanisms; encouraging workers' organization to participate in training policies and programmes.

(7) Creating task forces to deal with issues arising out of new and emerging technologies and technological human resources development.

(8) Promoting creativity and relevance in education.

(9) Utilizing education technologies for effective delivery of education and training, for improving the quality of education and training and for shifting from a teacher-based to a learner-based system.

E. Creation of a favourable environment for nurturing technological human resources

1. Popularization of science and technology

Technological progress gains momentum when a suitable environment for its popularization is created. The creation and promotion of such an environment constitute a prerequisite for science and technology development, particularly in a country where social and economic patterns and customs are bound by tradition. From the long-range point of view, without such an environment there can be no indigenous technology development and there would be too many constraints for imported technology to be digested or improved. It is critical for the general public to be oriented to a scientific way of thinking and to acquire a proper understanding of the role of science and technology so that it can indeed serve as the impetus to national development. Technological institutions could play a useful role in this through extension work and programmes.

2. Co-operation at the national level

Co-operation among national institutes is a basic determinant of the development of human resources for technological progress. Networks of institutions to enable interfacing and interaction have an important role in increasing the flow of information, improving co-ordination and fostering combined and complementary endeavours. Some of the more important aspects of national-level co-operation in this field are indicated below.

(a) *Private sector and public sector*

Private and public sector enterprises in industry, research and development, education and training, and policy formulation and planning provide an important mechanism for national-level co-operation in the countries concerned.

Transnational corporations can play a very effective role in the development of human resources in developing countries where they have projects and plants. Regular training programmes for technolgical and industrial workers of all levels, which are not limited to their own requirements but also cover general requirements, would go a long way in strengthening the skills and capabilities of developing countries. This objective can be secured through suitable arrangements and agreements between TNCs and the host Governments, with appropriate incentives.

(b) *Industrial units and research and development institutes*

Much can be done in the field of exchange of various levels of human resources, experience and training, between productive industrial units and research and development institutions in a country. This will ensure greater awareness of each other among these two groups of institutions and closer co-operation between them in promoting economic and social development.

(c) *Universities and industries*

Universities could conduct specialized training programmes on such subjects as development administration; sector-specific programmes, such as human resources development for tourism, marine resources, and rural industry management. Since they have the faculty and physical resources available, these could be used to tackle special needs and specific programmes of human resources needs of particular sectors and functional areas of industry. The co-operation of universities/industries would be particularly useful in the development of entrepreneurs and managers.

(d) *Industry and training institutions*

Fruitful co-operation between industry and training institutions can result in improving the efficiency of technicians, including repair and maintenance personnel. For this purpose, it is necessary for them to interact and identify specific training programmes and related activities.

(e) *Rural and urban sectors*

Training and development resources which exist in institutions and enterprises in the urban sector can be used effectively for developing human resources needs in the rural areas. Formulating composite teams of technologists, engineers, managers and economists and sending them to rural areas to train their rural counterparts will accelerate the training process in the villages considerably. Such composite teams will have to be given specific rural orientation through specially designed short-term orientation programmes. The formulation of action research programmes and the development of technologies and

packages of training relevant to the rural people are also important in this context.

(f) *Research and development institutions and engineering services bodies*

An important and fruitful area of co-operation in human resources development is among research and development institutes and consulting engineering bodies. These have complementary functions and should work together closely, to transfer technology from the laboratory to the industry. This would result in the generation of indigenous technologies which are relevant to the needs of the market place, and the application of these technologies by industry through the provision of appropriate design and consulting engineering inputs. Similarly, co-operation between educational institutions and research and development institutions would optimize the generation of science and technology capabilities.

3. Compensation schemes

It is necessary to adopt an adequate and just compensation scheme and reward structure linked with performance. It is not easy to alter wage policies and reward structures; nevertheless, it is important to consider what is viable and what is achievable. Review of wage policies so that trained people will receive appropriate compensation according to their skills and training would be necessary to prevent avoidable migration of this scarce human resource.

4. National technical qualification and testing systems

For technological human resources, particularly scientists, technologists, practising engineers and technicians, it would be useful to develop a system for testing, certification and awarding. This should not be limited to a one-time testing, but should be undertaken from time to time, particularly in view of the changing requirements and needs. This will further boost the morale of scientific and technical personnel and ensure the safety of industrial, technological and scientific operations. The national system developed for this purpose should provide adequate opportunities, facilities and incentives for continuing education.

5. Status and recognition of the scientific and technological community

Proper status and recognition and remuneration have to be given to the scientific and technological community in the society. Steps also have to be taken towards attracting high-calibre nationals working abroad and retaining locally available qualified scientists, technologists, engineers and managers.

6. Arrangements for adequate supply of teaching faculties

The availability of adequate numbers of teaching faculties and trainers is an important priority. Institutions and programmes have to be specially developed for this purpose and also to ensure that the quality of teachers and trainers is consistently good.

III. REGIONAL INITIATIVES

A. Rationale for co-operation

The various kinds of programmes and facilities required for the development of technological human resources cannot always be completely provided on a national basis. This is the case especially in small island and least developed countries. The countries in the region are endowed with rich natural, physical and other resources whose efficient utilization is dependent on the availability of trained and qualified personnel. In this sense, the development of human resources for technological progress is the controlling element of all other diversified resource endowments within the region. The magnitude of the task in almost all the developing countries of the ESCAP region in planning, producing, managing and evaluating their technological human resources is challenging. The limited financial resources and the competing demands for their allocation to overall human resources development, as well as for technological development, would also emphasize the need for greater co-operation among the countries of the region in order to lower the costs of education and training for the development of requisite skills.

In spite of the heterogeneity of countries in the region, the problems and obstacles encountered in training and technological human resources development are common in nature in several respects. However, there are some outstanding example of institutional and other facilities in some countries of the region for the development of technological manpower and skills. The role of Governments, although varying in degree among the countries of the region, has been significant in providing effective co-ordination and also in the provision of essential infrastructure for these purposes. These factors point towards the possibilities of greater co-operation among developing countries of the region in the development of human resources for technological progress.

The problems of island developing countries and least developed countries are unique and require special skill development activities and programmes. Their relatively inadequate base of education and training facilities and the level of their technological and institutional development would require special co-operative activities. Information on and access to the availability of training opportunities, institutions, and provision for educational and training materials,

are inadequate. Wider diffusion of this information among interested countries should also lead to increased co-operative activities in this respect.

There is considerable scope for co-operation in technical education and training between developing and developed countries. Developed countries have rich experience in devising programmes and training for scientific workers and industrial technicians. They also have considerable expertise in the development of managers and technologists for industrial research and associated industrial activities. The technology of training is also an important area in which developed countries could provide considerable assistance to developing countries. Through a variety of bilateral and multilateral arrangements, developed countries could assist significantly in all these areas. Furthermore, at the enterprise level, technical education and training could become an important component of technology and equipment supply contracts between enterprises in developing countries and those in developed countries. An important constraint which developing countries face is the availability of finance and foreign exchange. Developed countries, through their bilateral and multilateral financial arrangements and programmes, could provide assistance which would be of mutual advantage and benefit. There is abundant scope for international co-operation at the enterprise level also. Training opportunities and on-the-job training in industrial research institutions, design and consultancy organizations and productive industrial enterprises can play a predominant role in the rapid enhancement of the skills and capabilities of human resources in these areas.

United Nations agencies, especially UNFSSTD (United Nations Financing System for Science and Technology for Development), ILO, UNESCO and UNIDO, have greatly contributed to the policies and activities for the development of human resources for technological progress. This has been an integral element of the technical and economic assistance provided by them to several developing countries of the region. Projects initiated and implemented by them have involved several types of activities, such as the establishment of specialized institutions for technologists, teacher training in technical education, and research and development, and have succeeded in introducing useful innovations into the indigenous systems. In view of the growing importance of the subject and the creation of ministries or nodal authorities for integrated human resources development in several countries, there is greater need to step up the specialized assistance provided by United Nations agencies.

International funding agencies can also help considerably in international co-operation through the provision of training clauses in international contracts for the supply of equipment, machinery and technology, and for projects. For projects being set up in developing countries, local technologists, engineers, technicians and skilled workers could be associated in all cases of technology

selection and adoption, project design and engineering construction activities, and in the initial operational activities of the new plants.

B. Specific areas for co-operation

In order to foster regional co-operation, it would be useful to consolidate and extend regional channels of communication for information exchange and develop possibilities for mutual co-operation between training centres and research institutions in developed and developing countries, Governments, international agencies and concerned non-governmental organizations.

In the following co-operative activities, the programmes and projects to be initiated should necessarily involve the preparation of in-depth studies to analyse the technological human resources issues as they relate to particular countries or subregions. Similarly, the preparation of relevant and action-oriented training material, technological notes, case studies and so on have to be provided for. Among the specific activities which have potential in the projects for regional co-operation are the following:

(a) Preparation of a series of country studies;

(b) Publication and dissemination of country studies;

(c) Organization of regional meetings for exchange of experience;

(d) Studies and discussions on new technologies and methodologies for dealing with them;

(e) Studies on new needs and markets for technological human resources;

(f) Documentation of analyses of outstanding success stories and experiments and its dissemination.

Similarly the training programmes envisaged should include:

(a) Training of trainers;

(b) Development of learning materials, background papers, technical notes, case studies and so on;

(c) A needs survey preceding the training, in which the institutions, level of training and the number of participants are all precisely determined;

(d) Special attention to the development of management skills;

(e) Adequate attention to new and emerging technologies, such as micro-electronics, computer-based design and manufacturing activities; in the training content;

(f) The utilization of institutions with established capabilities and reputation in the region;

(g) Efforts towards the initiation of formal courses for recognition and certification on a regional basis, in addition to the conduct of workshops and seminars.

1. Training programmes

(a) *Co-operation in training of policy planners in technological human resources development policies*

The task of policy planners and managers in human resources development, especially for technological progress in specific production sectors such as agriculture and industry, are complex and require competence in several disciplines. With the latest developments in academic theory arising out of new techniques and methods, the need has arisen for more pragmatic approach to the formulation of policy. In this context, the provision of regional co-operative facilities for training policy planners and managers in human resources development, especially in regard to its implications for technological progress in several priority sectors, is important. Such regional facilities could profitably be complemented with international teaching staff and also utilize especially developed case studies and so on in the training programme. Regional co-operation in this regard will be useful to several developing countries in the region.

(b) *Training in manpower forecasting and planning*

The emergence of technological advances has necessitated a new phase of co-operation in many countries. However, the problems faced by them in information collection, technology forecasting, technology assessment, selection, acquisition, adaptation and absorption of new technologies and indigenous development and application of such technologies all have several aspects in common. Therefore, it is necessary to devise continuous mechanisms, not merely for exchange of information on policies and experiences but also for providing training on a subregional and regional basis for several of these new facets of technology management and the development of technological human resources. Similarly, training in technological manpower forecasting and planning is an important regional need.

(c) *Training of trainers and development of modern methods of technical training*

Training of trainers is recognized as a vital need in almost all developing countries of the region. Similarly, preparation of appropriate training material and equipment for different levels of technological human resources is an important need among developing countries of the region. Training of trainers in

the development of training material is also essential. Lack of expertise and adequate financial resources has often acted as a constraint to the development of these facilities in several countries. Technical and vocational training has often suffered owing to a non-professional approach and inadequate facilities. Regional activities to provide support to training for trainers and devise professional standards of such training at different levels are a crucial need. Similarly, some of the modern methods of delivering technological skills, such as distance learning and computer assistance learning, have not been adequately attempted in several countries owing to the absence of suitable expertise. Modular learning programmes which have good potential and scope have also not been used adequately. Regional programmes to promote all these types and forms of training and infrastructure using existing regional and national institutions would be a desirable development.

(d) *Training in core technical and paraprofessional skills*

An analysis of industrial and technical skills established in the middle and lower levels indicates that the development of some essential skills is not always possible through short-term institutional arrangements or through regional support to them. Moreover, the skills involved in dealing with high precision equipment and flexible production practices take a long time to develop. Nevertheless, such skills are considered vital for industrial production and there is an acute scarcity of them in several developing countries. Some of these skills are in tool and die making, pattern and mould making, jigs and industrial fasteners. The development of these skills is a time consuming and costly affair. Regional facilities for the training and development of highly skilled workers in these areas are emphasized as an essential requirement in many countries.

Similarly, repair and maintenance skills are crucial to the improvement of productivity and more efficient utilization of machinery, equipment and systems, thereby leading to better utilization of investment. Such skills are primarily to be developed in each country in response to their specific needs. However, there are large areas of common approaches and common training for developing such manpower where regional experience, inputs and training would be of great help.

(e) *Strengthening national institutes for regional programmes*

The organization of regional and national courses in several of the above-mentioned elements of education and training on a regional training basis would act in support of national endeavours in this regard. This regional training component could be incorporated in the well-established national institutions which exist in a number of countries in the different subregions. Such institutions would include industrial training centres, research and development institu-

tions and universities which have achieved a certain level of competence but which, with additional capacity and other assistance, could achieve recognized standards of competence in a particular field for conducting regional activities of relevance. Similarly, an information system on training needs and training facilities could be established as an integral part of the regional programmes in such national centres.

2. Exchange of experience in planning techniques and methodologies

(a) *Exchange of experience among developing countries of the region through economic co-operation among developing countries/technical co-operation among developing countries (ECDC/TCDC)*

Absence of in-depth information regarding the nature of the problems encountered by different developing countries in the development of their human resources for technological progress has inhibited proper planning as well as sharing of valuable experience and developments. Modern technological developments, their implications and utilization for domestic purposes need empirical understanding and appropriate evaluation of experiences. Similarly, integration of different forms of technical education and training facilities and utilization of private sector on-the-job training opportunities are some of the important aspects on which there is need to exchange experience. Preparation of a series of country studies, and their publication and dissemination, would be very useful. The organization of regional meetings for exchange of experience would enable policy makers, decision makers and trainers to benefit from the innovative measures experimented with in several countries of the region. In a rapidly changing environment, studies and discussions on new scientific ideas, new technologies as well as new needs and markets would also provide suitable reorientation of knowledge and skills for technological human resources. There is also the need for each developing country to focus on the technologies which would be the most beneficial in accordance with its priorities and requirements. Exchanges between scientists, education experts and trainers, and the links between universities and other technical and industrial training units could be utilized bilaterally and multilaterally to enhance the technological capabilities of developing countries. Channels of communication and co-operation could be improved through studies and discussions between developing countries and small and medium enterprises and educational and research organizations in developed countries pioneering applications of advanced technologies.

(b) *Co-operation for development of suitable methodologies for technological manpower planning and skills development*

Planning, production, management and evaluation of human resources for technological progress have often been inhibited owing to lack of uniform

understanding on the concepts used, and inadequate and defective designs and procedures in several developing countries. Formats will have to be designed and methodologies developed for technological manpower in developing countries of the region. This will involve clarification and clear understanding of concepts, and the design and collection of data for assessing the skill spectrum of technological human resources relating to various elements of the technology system. It will further involve the development of uniform concepts, the design and application of procedures for determining the technological needs of a country and putting into operation a systematic procedure for technological manpower planning which developing countries of the region may like to undertake. Regional co-operative activities to assess the skill structures of technological human resources would contribute to making appropriate improvements in their planning and production. Evolving suitable designs and collection of data for these purposes and testing of a methodology on a pilot basis in a few countries could be useful in drawing up guide-lines for planning and procedures for implementation in this field. The putting into operation of a systematic procedure for technological manpower planning, as well as approaches for skill development, would meet the requirements of several developing countries of the region. Co-operation in this area would be of great benefit to all concerned, as the exchange of information and experience would usually reinforce skills and capabilities in this complex exercise.

(c) *Co-operation consultancy and design engineering*

Many consultant and design engineering organizations have come into being in the countries of the region. Since consultancy and design engineering play a key linking role between research and development activities related to technology generation and acquisition, and the production system, sharing of experience in this field would be crucial. Exchange of information and documentation, and of personnel, joint work on specific projects and training of manpower in such institutions would help considerably in the growth of an appropriate type of technological human resources.

(d) *Co-operation in management development*

Management of technology systems, research and development institutions, production enterprises, and infrastructural institutions is of much importance. Co-operation between institutions engaged in the development of managers and training institutions has to increase; institutions of excellence in this field have to be identified; and exchange of faculty and students encouraged. It would also be useful to arrange for apprenticeship or training opportunities for management students with successful managers in various enterprises. The area of education management is often neglected. Training of educational managers and designing of useful management practices for the functioning of educational systems are matters of priority.

(e) *Co-operation in entrepreneurial development*

The availability of facilities for entrepreneurial development and formal programmes and schemes in this field is somewhat limited. It would be of great help if information could be exchanged in this area and facilities and programmes shared to accelerate and to promote the development of entrepreneurs, who act as catalysts in the technology-using entreprises.

(f) *Co-operation for district- or country-level technology and training centres*

In the rural areas, the institutional training and other arrangements for skill and technical capability development are either deficient or different. Technology and skill requirements in the rural areas are primarily geared to local needs and requirements. Such technology is usually in the areas of improvements in mechanical efficiency, electro-motive power, marketing technology and so on. Production process know-how and production-oriented technologies are more important than mere research findings on prototypes. Training courses and curricula of normal technical training institutions have generally failed to provide the rural youth with product- or production-oriented training based on local needs. Absence of an effective technological extension system has exacerbated the situation.

Considering all these, district- and country-level rural training and technology centres can fulfil important requirements in rural areas and provide an impetus for the spread of technology-related activities on the basis of observed and felt deficiencies and lacunae. These centres can play an important role in the districts or countries in regard to (i) technology education and training (ii) consultancy and project preparation activities, and (iii) creation of a favourable technology climate in the rural areas. They can also provide important inputs for technology, production processes, raw materials, finance, marketing skills and human resources training. The district or county technology and training centres have to be backed by national-level technology institutions, which in turn will have to be linked to regional-level technology inputs and training programmes where necessary. This is an area of importance in which results can be achieved through co-operative activities in the region.

(g) *Exchange of experience and co-operation in fostering reversal of the "brain drain" from developing countries*

The flight of scientists, technologists and skilled manpower has assumed serious proportions in several countries of the region. Measures for attracting them back and providing suitable recognition, remuneration and work environment have assumed added importance. Some countries in the region have initiated extremely successful measures in this regard, as a result of which their

nationals, returning after valuable work and technical experience abroad, have proved to be a useful resource in technological development. Studies of these experiences and exchange of knowledge on relevant policies and practices to reverse the brain drain would be an important area for regional co-operative effort.

(h) *Co-operation for diffusion of technological innovations*

Technology diffusion, or the promotional activities facilitating dissemination of new technologies, remains a relatively weak area in most ESCAP member countries. It is known that many technological innovations, despite their obvious advantages, are either very difficult to diffuse or require a lengthy period before becoming popular among the majority of people. The diffusion process of many income- and welfare-generating technological innovations are neither autonomous nor follow the simple trickle-down procedure from the elite to the lowest socio-economic segments of population. The importance of dissemination strategies has therefore been emphasized in recent years to speed up the diffusion process of various technological innovations. Such strategies, mainly based on mass and interpersonal channels of communication, require more attention than has been given in the past, with alternative approaches suitable to the various particular situations, circumstances and groups, namely, the technological innovations that are to be promoted, the structure of the society decision-making hierarchies and the available resources.

Technology diffusion mechanisms and delivery systems in the countries of the ESCAP region have to be strengthened, to bring about the type of supportive environment required for technologies. From a long-range perspective, the creation and propagation of a more technologically-minded climate among the people are essential. A few popular technology movements, either sponsored by Governments or initiated by non-governmental agencies, have done pioneering and useful work in technology diffusion and popularization of science and technology. Put a great deal of information and knowledge pertaining to methodologies, channels of communications and techniques of technological diffusion require to be analysed, collected and shared among interested ESCAP member countries.

Therefore, regional studies and skill development practices, diffusion mechanisms, activities to demystify technology and enhance its accessbility to the target groups would be valuable in supporting the efforts in these aspects undertaken at the national level.

(i) *Dialogue on development leadership*

Political leadership and development administration are of crucial importance. Considerable potential for co-operation exists in this area through

exchange of experience and discussions among the leaders of various countries in the region. Sensitization would be one way of stimulating dialogue and exchange of experience in this field.

3. Sharing of facilities and personnel

(a) *Teachers and trainers*

Teachers and trainers, especially in the field of technical education, are in short supply in the developing countries of Asia and the Pacific. It would be useful if the reach of teachers and trainers were expanded to cover more students and trainees from other countries as well. Development of joint co-operative programmes of training and sharing of technical personnel and facilities would be useful. In this respect, the training of trainers is also of great importance.

(b) *Joint training of technologists and engineers on a co-operative basis*

Training of technologists and engineers can be undertaken on a co-operative basis jointly in institutions or in companies that provide teaching and training, with faculty and facilities provided by more than one country in the region.

(c) *Consultancy, design engineering and technical services*

Consultancy, design engineering and technical services are areas in which co-operation would be useful and would take the form of on-the-job training by the undertaking of joint projects by two or more enterprises in different countries.

(d) *Seed money for venture ideas*

The overburden of tradition as well as formally learned bookish scientific knowledge prevent the emergence of innovative ideas in science and technology in the ESCAP region. The person who has such ideas is often isolated, unable to communicate and not properly understood. For growth of science-based technology, such innovative ideas should be supported by an injection of minimal seed money backing such "venture ideas" (in the manner that venture capital backs new products). Such seed money should also be used to bring together scattered persons working around similar themes and to support their initial development. It would also help link *ad hoc* groups working on similar themes in different countries.

4. Co-operation on special needs of least developed countries and island developing countries

In view of the crucial importance of technological human resources in the least developed and island developing countries in the region, and the

paucity of availability of such skills, it is imperative to give special attention to the development of technological human resources in these countries. An effective way would be for regional, subregional and bilateral programmes of co-operation to be developed and implemented expeditiously. The specific areas of co-operation would be broadly similar to those identified for other developing countries, but with special emphasis on urgency and relevance. It will also be necessary to determine the specific needs and identify programmes of action quickly through a series of studies for least developed and small island economies in the region, explore avenues of co-operation and help in setting up programmes of activities in this field.

IV. THE ROLE OF ESCAP

The scope and opportunities for fruitful regional co-operation in human resources development are immense. In spite of the diversities in the region, there is a great deal of commonality in the perspective of the problems of human resources development and their possible solutions. The financial and other relevant resources available for developing member countries in the region are limited and unequal to their needs or expectations. Therefore, co-operation and sharing of the physical and infrastructural resources as well as expertise would enable the countries in the region to deal with the challenges of human resources development in a more efficient and optimal manner. Regional activities could contribute significantly to the optimal utilization of national institutions of quality and maintain their viability in support and encouragement of the ongoing national efforts. The essential criteria in formulating regional activities to be undertaken by ESCAP in the development of knowledge and skills are selectivity and effectiveness.

ESCAP can play an important role in bringing to the attention of member countries the priorities for national-level action and the specific areas for regional co-operation enumerated in the foregoing chapters, and increase the awareness of policy and decision makers in developing countries of the region of the necessity for the formulation of strategies and plans for technological human resources and the co-ordination and monitoring of national programmes for the development of these human resources.

ESCAP has already gained valuable experience in promoting regional co-operation in human resources development. ESCAP has been promoting these activities through the organization of workshops, seminars, information systems, networking of institutions, publications, provision of advisory services, and so on. The promotion of human resources development for technological progress could be further strengthened through all these mechanisms in the ongoing activities and programmes of ESCAP in different sectors.

ESCAP could initiate research, training and learning methodologies, information exchange, development and introduction of innovative training methods and provision of training and educational experts, all of which have a direct bearing on the development of human resources for technological progress. It could assist in the wider diffusion of the institutional and other human resources development potential available in the region with a view to strengthening and using it to the fullest extent possible. While attempting regional co-operative activities in this area, ESCAP should provide for evaluation of its projects and activities relevant to human resources development in order to assess the results achieved so far and the lessons learned, which could improve the formulation and implementation of future programmes and activities.

As a regional nodal agency of the United Nations system, ESCAP could play an effective role in co-ordinating the activities related to human resources development being implemented in the region by the relevant United Nations organizations. To achieve this purpose, the setting up of an interagency task force on human resources development under the aegis of ESCAP would be a desirable measure. ESCAP could also promote tripartite co-operative arrangements between ESCAP and developed and developing countries, and between ESCAP and developing countries, in furtherance of the benefits of co-operation in the field of human resources development.

Specifically, ESCAP could play a leading role in the development of co-operative activities, including utilizing and strengthening existing national and regional institutions in the field of technological human resources development, by implementing and encouraging the following regional co-operative activities:

(1) Promote information exchange and dissemination through (a) exchange of experiences, meetings and seminars, focused on one or more of the specific topics discussed in chapter III of the Plan of Action; (b) the setting up of an information system and documentation service on the technological aspects of human resources development; (c) publication of monographs, manuals, evaluation of methodologies, research material, case studies, and so on, in the field of human resources development; (d) networking of national and regional institutions and organizations of scientists and technologists with a view to strengthening them for regional co-operative activities.

(2) Provide advisory services, particularly to least developed and island developing countries, to assist in the formulation of policies, strategies, mechanisms and training programmes for technological human resources development.

(3) Facilitate travel and provide fellowships for exchange of trainers, experts in new and emerging technologies, and trainees.

(4) Provide opportunities for workshops and seminars among policy makers and planners in the field of technological human resources, which would enable exchanges of views on methodologies for the development of scientific and technological manpower and of appropriate methodologies.

(5) Implement regional training and skill development programmes on a priority basis in the area of:

(i) Training in policy formulation and implementation;

(ii) Training of trainers;

(iii) Training in technological forecasting and assessment;

(iv) Training in technological manpower forecasting, planning and management;

(v) Training in core technical and paraprofessional skills.

It could also assist in the organization of country-level training activities through the provision of advisory services and expertise.

Finally, the emphasis and priority given to technology transfer and human resources development in the ensuing UNDP programming cycle (1987-1991) and the greater priority accorded by the relevant United Nations agencies, especially ILO, UNESCO and UNIDO, to the regional activities in this important area, would enable greater co-operation and channelling of appropriate resources into regional activities and projects, in direct support of national endeavours towards the development of human resources for technological progress.

4. QUALITY-OF-LIFE ASPECTS OF HUMAN RESOURCES DEVELOPMENT*

I. HUMAN RESOURCES DEVELOPMENT AND THE QUALITY OF LIFE

A. Quality of life as an aspect of human resources development

The quality of life and the means of enhancing it and ensuring its diffusion among all sections of society have been matters of serious concern in developing countries of Asia and the Pacific since the inception of development planning. Recent years, however, have been renewed interest in the subject in the light of the recognition that quality-of-life issues are not simply a matter of humanitarian concern but are also immediately relevant to the achievement of other critical development goals. Development planners and policy makers in the region have become convinced that high-quality human resources are an essential input for economic growth, without which the development of their countries would be seriously, if not fatally, hampered.

Even when economic growth is given priority, policy makers and planners in the region are increasingly taking into account the broader social parameters of development and not seeing economic growth as an end in itself. Growth with equity, for example, is desirable not only as a means of ensuring socio-political stability, without which the achievements of economic growth would be undermined, but also for stimulating and accelerating economic growth as a result of the release of the energies of large masses of the people. Growth with social justice is not just a rhetocial phrase; it recognizes that the full participation of disadvantaged groups, including social and ethnic minorities, is crucial not only to attain individual well-being but also to ensure national security and economic survival. Within this broad context of human resources development, heightened consideration must be given to the quality-of-life aspects.

It is possible to distinguish between two approaches to quality-of-life aspects of human resources development. One approach seeks to separate material and non-material needs and arrange them in hierarchical order, with

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* This chapter was prepared by the secretariat with the assistance of Prof. Lim Teck Ghee, Institute of Advanced Studies, University of Malaya, Pantai Valley, Kuala Lumpur, Malaysia.

non-material needs coming after material ones have been satisfied.[1] This approach can be equated with the conventional "basic needs' approach, which focuses on the fulfilment of certain minimum material requirements with little or no consideration of the non-material values of human life.[2] The other approach sees the individual and the larger society as more complex entities and posits a strong interaction between man's material and non-material needs. Food, housing, clothing and other material needs are so intricately related to such non-material needs as identity, self-fulfilment and aesthetic satisfaction that there would be no justification in establishing priorities among non-material and material needs.[3]

Recurring debates on the validity of these alternative approaches to development[4] have been resolved in recent years to the extent of a degree of consensus, at least among various international development agencies, on the concept of development and its relation to the quality of life. This consensus sees development as a "multi-dimensional process involving all sectors of human activity – social, economic, technical and cultural. It involves reorganization and re-orientation of entire economic and social systems with the aim of improving the quality of life of the society".[5] In another formulation, quality-of-life issues relate to the satisfaction of an all-inclusive set of human needs covering "all aspects of life including material satisfaction of vital needs as

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[1] See A. Maslow, "Synergy in the society and the individual", *Journal of Individual Psychology*, 20, 1964, pp. 153-164. This article ranks five categories of human needs in ascending order: survival, safety and security (all connected to material needs) and belongingness, esteem and self-actualization (non-material needs).

[2] This approach is exemplified by the conceptualization of two distinct stages in development: the first devoted to the problem of survival (i.e., the satisfaction of physical needs) and the second to the achievement of a certain quality of life, encompassing physical and non-physical needs. See S.C. Seth, "Futures research and technology assessment: the Indian dilemma". Paper presented at the International Workshops on Technology Assessment, Bombay, 17-22 April 1978.

[3] C.A. Mallmann, "The quality of life and development alternatives", in P. Bisagno and A. Forti, eds., *Research and Human Needs* (Paris, UNESCO, 1976).

[4] See, for example, the discussion on a critical needs approach as against a basic needs one in Asian and Pacific Centre for Women and Development, "Report of the Expert Group Meeting on the Identification of the Basic Needs of Women of Asia and the Pacific and on the Formulation of a Programme of Work", Tehran, 4-10 December 1977, pp. 3-6. A recent view of the issue of basic needs has pointed out how, by their very nature, "new ideas, however relevant, pass into and out of fashion. At the end of the 1970's almost no World Bank country economic report was regarded as complete without a section on meeting basic needs . . . Nowadays references to meeting basic needs would be the exception rather than the rule". International Monetary Fund, *Finance and Development*, vol. 22, No. 4, December 1985, p. 58.

[5] UNESCO, *Planning Integrated Development: Methods Used in Asia*, Socio-Economic Studies, No. 11 (Paris, 1986).

well as more transcendental aspects of life such as personal development, self-realization and healthy eco-system".[6]

At the national level, too, there is an increasing recognition of the need for a policy framework that does not unduly restrict the definition and scope of development and quality-of-life concerns to a narrowly specified set of material or economic objectives. The trend to incorporate such aspects of life as social security, public safety, socio-cultural and environmental concerns as intrinsic aspects of development planning is evident in declarations of national intent, such as in Thailand, which indicate that development plans will:

> "emphasize the development of human quality so as to enable progress in social development . . . [and that social] development will be consistent with and support the overall development process of the country, together with preserving traditional values and cultural life while improving the urban and rural physical quality of life to meet the standards for basic necessities".[7]

Similar examples can be cited from the development plans of many other Asian and Pacific countries.[8]

In 1985 the Indian Government, for instance, established the Ministry of Human Resource Development, incorporating the Departments of Education, Culture, Women and Child Development, Youth Affairs and Sports and Physical Education. Strategies, plans and programmes could thereby focus on culture, attitudes, health, skills and abilities as part of individual development in keeping with cultural traditions and humanistic values.[9]

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[6] UNESCO, *UNESCO's Policy Relevant Quality of Life Research Programme* (Paris, 1977).

[7] Thailand, National Economic and Social Development Board, Office of the Prime Minister, *Summary, The Sixth National Economic and Social Development Plan (1987-1991)* (Bangkok, 1987), p. 3.

[8] In India, the coverage and the inclusion of non-economic variables "with welfare connotations" was increased significantly in the sixth plan (1980-1984), while in the seventh plan (1985-1990) the planners have provided more institutions and social factors relating to the quality of life of the people. See UNESCO, *Planning Integrated Development: Methods Used in Asia,* pp. 15 and 28.

In Pakistan the strategy of the current plan (1983-1988) is based on the premise that economic growth is a necessary, but not a sufficient, condition for improving the quality of life of the people. Equally strong social sectoral programmes have been considered as prerequisites to achieve this condition. Government of Pakistan, *The Sixth Five-Year Plan, 1983-1988* (Islamabad, 1983), p. 9.

[9] J. Veera Raghavan, "Human resource development in relation to science and technology in India", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development, Tokyo, 7-10 December 1987.

In the Islamic Republic of Iran, the Ministry of Plan and Budget is also responsible for human resources development prospects based on self-reliance for financial resources.[10] Poverty eradication is the main development priority in Malaysia, and the quality-of-life elements embodied in development strategies and plans include education, health, housing, environmental protection and identification of specific target groups for government assistance.[11] The general aim behind all development plans in Pakistan has been declared to be poverty eradication, with the goal of improved welfare for the maximum number of people, more equitable distribution of wealth and general improvement in the people's quality of life.[12] The Philippine medium-term development plan (1987-1990) underscores the urgent need to focus on the quality-of-life dimension of human resources development in an effort to overcome structural weaknesses in the previous development pattern, in general, and to help especially disadvantaged groups, in particular.[13]

Quality-of-life issues thus encompass a wide range of goals and concerns in the development process incorporating economic, social, cultural and political dimensions, with all being equally important. Given this perspective, the particular set of goals and concerns with which any people or Government will be preoccupied will necessarily vary from place to place and from time to time. In this paper, the quality-of-life goals in five key sectors, namely, education, health and nutrition, population, urbanization and the environment, are the focus of attention. These sectors deserve attention because they form the foundations of human resources development in most, if not all, of the countries in the Asia-Pacific region today and for the foreseeable future.

B. Emerging challenges to the attainment of quality-of-life goals

It is generally recognized that, among the various developing regions of the world, Asia and the Pacific has weathered the trying international eco-

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[10] Paridokht Vahidi, "Guidelines for a plan of action on human resources development: a view from the Islamic Republic of Iran", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[11] Tham Ah Fun, "Quality of life in Malaysia", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Huan Resources Development.

[12] Zulekha Zar, "Country paper on Pakistan", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[13] Rosita L. Fondevilla and Marcial Salvatierra, "The quality of life dimension of human resources development: a Philippine context", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

nomic environment of the past decade most successfully, although there have been considerable differences in the economic performances of individual countries within the region. Average rates of growth of output in South, South-East and East Asia, estimated by the World Bank at 6.1 per cent for 1976-1980 and 4.9 per cent for 1981-1985, have far exceeded those in Latin America and Africa. The relatively strong economic performance of many countries in the region has enabled increasing investment in human resources development. Both qualitative and quantitative improvements have been recorded.

People in most countries of the region are enjoying better health and longer lives, and gross enrolment ratios in education at all levels have increased, in some countries very sharply.

While these changes hold promise for continued development, they have in turn generated difficult new challenges. The nature of these new challenges – including explosive urbanization, burgeoning secondary- and tertiary-level student numbers, rising social pathologies such as drug addiction and street crime, and new work and leisure patterns – will make the attainment of quality-of-life goals in the region more difficult. The policy options available to meet the challenges will form a major topic of this paper.

At the same time, it is important not to lose sight to the fact that, whatever improvements have been recorded, the quality of life of the majority of the region's people remains inadequate despite the region's economic achievements.[14] In Bangladesh it was reported that four fifths of the population live below the poverty line. The quality of these people's lives is further adversely affected by external pressures such as international oil price fluctuations, commodity price deterioration and borrowing restrictions, as well as by such national calamities as floods, droughts and cyclones. The people's inadequate quality of life is recognizable in terms of their low levels of health, nutrition, education and productivity.[15] Extreme poverty and malnutrition have been less visible in Pakistan recently, but it is reported that poverty levels remain significantly high. In 1979, almost 40 per cent of households belonged to the category of the "poor" and about 26 per cent were in the "very poor" category.[16] The recent economic crisis has exacerbated the problem of poverty

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[14] A number of reports have pointed out that the proportion and number of the world's people in absolute poverty (i.e., unable to afford a diet with the minimum acceptable number of calories) went up in the 1980s and that three fifths of the total undernourished in the world are in Asia. See ESCAP, *Economic and Social Survey of Asia and the Pacific, 1986* (United Nations publication, Sales No. E/87/II.F.1), pp. 119-120.

[15] Nur Ahmad Siddique, "Employment and manpower development in Bangladesh: current and prospective trends, policy options and plans and programmes", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[16] Zulekha Zar, *loc. cit.*, pp. 8-9.

in the Philippines. The number of families below the poverty line increased to about 6 million in 1985, about 59 per cent of all families. In 1971, only 49 per cent of all families had been below the poverty line.[17] More than 75 per cent of the people in Asia and the Pacific live in countries where the per capita income is on average only about one twentieth of that found in the developed countries. Many Governments must continue to struggle with the chronic problems of poverty alleviation, low levels of literacy, income inequalities, slow growth in income and employment and a variety of long-standing socio-cultural constraints, which constitute the unfinished agenda of action to live up to promises made in the past.

Both the challenges of the new agenda and the unfinished agenda for attaining quality-of-life goals are likely to become more formidable in the coming years if the signals of a further slow-down in the international economy persist. The recession in the industrialized countries during the early 1980s and the subsequent dampened growth of the mid-1980s have already severely affected the commodity export earnings on which many countries in the region are dependent for their prosperity. By 1982 the prices of commodity exports of developing countries had fallen by about one quarter from the 1980 levels, and despite some recovery in 1983-1984, prices in 1985 were even lower, bringing about sharply reduced incomes for hundreds of millions of agricultural workers and smallholders and drastic falls in government revenues that might otherwise have been used to support these people.

Other adverse economic trends that can be expected in the coming years include the increase in the debt burden of a number of ESCAP countries and the diminishing flow of the capital vital to finance infrastructure and development projects. As many as one third of a total of 83 capital-importing developing countries suffered a negative net resource transfer on the balance of payments in 1984, including many low-income and several middle-income economies of the ESCAP region. The 1986 edition of the ESCAP annual *Economic and Social Survey* indicates that the proportion of such countries is "likely to have risen further in view of the considerable worsening of the external economic environment in 1985-1986".[18]

It also shows that the impact of recent adverse international economic trends has been felt in the domestic economies of many Asian and Pacific countries. In addition to the need to create jobs for millions of new entrants into the labour markets, Governments have also had to contend with rising unemployment. The severely indebted countries have been compelled to adopt restrictive policies of economic management, necessitating postponement

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[17] Rosita L. Fondevilla and Marcial Salvatierra, *loc. cit.*, p. 3.

[18] P. 16.

or cancellation of important development projects, which is bound to have adverse repercussions on the future quality of life. In particular, adjustment policies aimed at reducing balance-of-payments deficits, honouring debt repayment schedules through cuts in government expenditure, credit restriction, etc. have had an obvious adverse effect on the quality of life.[19] The Philippines offers clear evidence that the brunt of the economic crisis and subsequent structural adjustment hits the disadvantaged sections of society hardest. Real income, consumption and welfare have decreased in recent years, and the effects have been increased malnutrition, increased maternal and child mortality and decreased school enrolment. The recognition that humen capital can be the most important factor in production has unfortunately not prevented Governments from regarding unused (i.e., unemployed) human capital as a current burden, particularly when dealing with the harsh realities of current account deficits, declining export earnings and low growth.

Another important factor that human resources planners and policy makers should take into account is that the rise in income and living standards in many developing ESCAP countries in the past two decades, despite the unevenness of distribution, has created widespread expectations of a better quality of life among all social groups, especially the young. These expectations have been reinforced (and at the same time confused) by the spread of international consumerism, images of a modern life-style transmitted by the mass media, career expectations promoted by heavily subsidized and credentials-focused secondary and tertiary educational structures and, to some extent, political rhetoric that has promised people more than can be delivered. Should these expectations be thwarted, should Governments not be able, on the one hand, to demystify high-cost life-styles and, on the other, provide the young with the practical skills needed to earn a living and improve their living conditions, the countries of the region will in all likelihood be faced with increasingly serious destabilizing influences.

II. SUBSTANTIVE ISSUES

Specific priorities concerning the quality-of-life aspects of human resources development must be set in the light of national conditions. The larger issues regarding the attainment of quality-of-life goals as an aspect of human resources development are, however, of common relevance to all countries in the region. It is thus useful to discuss the variety of policy options available to Governments and to evaluate them with a view to offering practical policy guidance. While, in the following exploration of issues and options, it has been necessary to adopt a general perspective in order to discuss a very diverse region,

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this is not intended to devalue the importance of unique local or national experiences that might offer insights to enrich the means of dealing with quality-of-life aspects of human resources development.

Although much of the following analysis is organized along sectoral lines, it must be stressed that complex linkages relate the issues in each area to all the others. Educational issues, for instance, cannot be considered adequately in isolation from issues concerning population growth or changes in its intergenerational and age cohort structure. Nor can these issue areas be isolated from the topics of employment and manpower and science and technology, which are addressed in accompanying papers. Similarly, science and technology management has a crucial impact on health, urbanization and environmental issues.

A. Education

Improvement in any aspect of the quality of life, be it related to population, health, urbanization or the environment, must be anchored in education. Education of parents, especially mothers, has been found to be positively correlated with fertility decline, the health and nutrition of the family, the maintenance of a biologically and culturally supportive environment and social responsibility and sound attitudes to education and work among the young.[20]

The formal educational sector has traditionally received great attention in developing countries throughout the region as a means to solve manpower development and employment problems. More recently, education has also been regarded increasingly as a key means of equalizing development opportunities for disadvantaged groups. The national education policy adopted by India in 1986 provides the foundation for a programme of action that includes the goal of providing equal opportunity to all in terms of access to and conditions for success in the national educational system. The programme is being designed to remove disparities through special educational programmes for women and backward groups.[21] In the Islamic Republic of Iran, the Council for Fundamental Educational System Reform has been established to develop an educational system which emphasizes a solid, basic education for all and integrates theoretical and technical courses in all secondary schools.[22] Malaysia's national education policy emphasizes greater access to education, especially for pupils in rural areas. The policy is also designed to enable *bumiputera* workers to become part of the skilled and professional labour force. This educational emphasis is intended to meet the long-term objective

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[20] P.E. Mandl, "Literacy, health, nutrition and income: four basic aspects of development", *Assignment Children*, UNICEF, 63/64, 1983, pp. 9-16.

[21] J. Veera Raghavan, *loc. cit.*, pp. 4-5.

[22] Paridokht Vahidi, *op. cit.*, p. 4.

of a racially balanced employment structure.[23] Thus, the quantity, content and accessibility of education are foremost concerns in the minds of policy makers and planners. Achieving increases in the number of enrollees and expanding physical facilities at all levels of the educational system, as well as matching subject-matter to forecast or expected labour market demands, have become goals for educational systems in virtually all developing countries of the region. But establishing such simple quantitative goals for education as a contribution to improving the quality of life avoids the basic question: Does quantitative change necessarily provide qualitatively equivalent results? Several member countries of ESCAP have already determined that the answer is no and that national educational systems must be reformed. In addition to the three countries mentioned above, in Sri Lanka questions about the quality of the educational system have focused on uniformity of curricula, shortage of qualified teachers and inadequate supervision and monitoring.[24] Problems of educated unemployment in Thailand have directed Thai policy makers away from quantitative solutions and towards emphasis on the quality of knowledge and the intelligence and ethics of school graduates.[25]

To make education available not only to the élite but to the great mass of the people is a task that the existing formal, non-formal and informal systems of learning have not always been able to cope with adequately in many countries of the region. While educational policies that attack deeply embedded patterns of economic and social inequality through "positive" discrimination in favour of disadvantaged groups have helped to bring about more balanced participation, much more needs to be done before the educational component of the quality of life of all social groups in the region can be said to be satisfactory.

There are other important questions about the educational system as a whole that need urgent resolution. In fact, the education crisis of the late 1960s, far from diminishing or disappearing, has actually gathered momentum in many countries.[26] The signs are that some developing countries will experience and intensification of this crisis in the coming decade, mainly because of the inappropriateness of their imported educational systems, especially in rural areas. The burden of increasing financial stringency and deeply embedded

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[23] Tham Ah Fun, *loc. cit.*, pp. 12-13.

[24] S.M.L. Marikar, "The physical quality of life dimension of human resources development in Sri Lanka", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[25] Phayap Phyormyont, "Employment and manpower development in Thailand", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[26] Philip H. Coombs, *The World Educational Crisis: A Systems Analysis* (New York, Oxford University Press, 1986).

patterns of socio-economic inequality will reinforce this trend. The case of the least developed and small island countries is of special concern; most of them lack tertiary educational institutions; yet the Western-style traditionalist curricula of their secondary systems are geared to the preparation of students for further study.[27] The best students thus ultimately go abroad. The consequent inappropriateness of their degrees and lack of opportunities for suitable employment in the home country labour market contribute to alarming rates of brain drain.[28]

Apart from the rural-urban, working class-élite and other educational disparities that are common to many countries of the region, a number of other critical issues may be identified in the education crisis. Among these issues, the most relevant for developing countries of Asia and the Pacific are the following:[29]

(a) Meeting rapidly expanding educational demand, both formal and non-formal, especially owing to population growth and in connection with anti-poverty policies, and arising from growing demand for pre-school and adult education;

(b) Increasing the relevance of educational curricula to current specific economic and social conditions and the anticipated future situation in each country;

(c) Relating education to employment needs, especially during a period of rapid economic and technological change through education "tracking" and improved means of channelling student interests and abilities;

(d) Linking formal and non-formal education into a lifelong learning process;

(e) Resolving the issues arising out of the impact of education on culture and politics, including language problems, the corrosive impact of modern education on traditional cultural values and the issue of political intrusions on intellectual freedom;[30]

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[27] Helen Hughes, Dennis Ahlburg and Sun-Hee Lee, "Human resources development in the Pacific island developing countries", in ESCAP, *Human Resources Development in Asia and the Pacific: Its Social Dimension* (SD/ESCAP/472), 1986, pp. 97-104.

[28] *Ibid.*, pp. 104-105.

[29] Derived from Coombs, *op. cit.* See also UNESCO, Principal Regional Office for Asia and the Pacific, "Reflections on policies, plans, achievements and prospects: education, science, culture and communication in South Asia", Regional Research Seminar on Perspectives on Asia's Future, Bangkok, 20-23 July 1987, pp. 16-87.

[30] These concerns have been identified as among the main issues in education for the future. See UNESCO, "Advisory Committee on Regional Co-operation in Education in Asia and the Pacific, Fourth Session, Final Report", Bangkok, 12-16 May 1987.

(f) Increasing the effectiveness and efficiency of educational planning and management in the context of rapid social and economic change and increasing constraints on resources, including such questions as who should do the planning, how to achieve greater local adaptability, participation and support, how to evaluate a continuous process and how to build vital non-formal educational components into development programmes.[31]

Some of the implications of these issues for quality-of-life aspects of human resources development are examined in the following sections. Various policy options that Governments should consider in dealing with these issues are also discussed.

1. Primary versus post-primary education

For many developing ESCAP countries encountering low levels of enrolment in primary education, concern has been expressed regarding the wisdom of moving rapidly towards universal primary education, given the resources required to accomplish this end. Although the available evidence shows that investment in primary education provides the highest private and social rates of return in education, doubts continue to be expressed in some countries. Beyond the results of narrow investment yield analysis, with its problematic methodology and uncertain data, however, it is generally accepted that primary education is the basis of functional and numeral literacy as well as a basic source of non-cognitive values and attitudes essential for human resources development.

Studies also show that primary education, especially of girls, is closely associated with family health. Developing countries with universal primary education tend to have the lowest infant mortality and highest life expectancy.

Universalized primary education, effectively organized and consistently pursued, can also provide a relatively cheap and practicable way of benefiting the poor. Universality is a necessary condition for ensuring that the poor – all the poor – will have the potential to participate in development. Anything short of universality does not directly affect the rich; it is the poor who are left out. The achievement of universality, however, is contingent on so many other factors that a simple decision or declaration will not suffice; nor are financial allocations, no matter how large, sufficient to address the need.

In moving towards universal primary education as an essentially distributive goal (in addition to its obvious contribution to manpower development), elements of subsidization should be built into public programmes to ensure

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[31] For a fuller discussion see "Education and community self-reliance", *Assignment Children*, UNICEF, 51/52, Autumn 1980.

that the poorest segments of society are reached. Government-subsidized textbooks, transportation, school meals, etc. are costly items. When effectively administered through needs tests, community participation and other monitoring mechanisms, however, various subsidies can help substantially to reduce the high drop-out rates that are prevalent among poor children in most developing countries of the region. The long-term return on such educational investments in terms of upgrading the quality-of-life aspects of human resources development should be considerable. The State's ability to subsidize, however, would depend largely on restructuring public investment in the social and economic sectors, an action not easily achieved by the poorer countries of the region. Furthermore, availability of universal primary education is no guarantee of access when socio-cultural status differences prevent some groups from access to their entitlements.

The important role of the family in establishing a home environment inculcating values, attitudes and motivations towards formal education, the role of the community in decision-making regarding literacy and primary education, the necessity of innovation and relevance, the desirability of decentralization and the value of networking and co-operation with other sectors are among the continuing issues which have to be acknowledged and dealt with in considering any strategy for universalization of primary education.[32]

In developing countries where high rates of primary school attendance have already been attained, qualitative improvements in primary education could be the next focus of public policy towards improving the quality-of-life aspects of human resources development. These could centre on improvements in facilities, pupil/teacher ratios and curricula. Such improvements have been neglected in some developing ESCAP countries where specific admission targets have been met, thereby not preparing students adequately for secondary schooling and so lessening its benefits.

2. Tertiary education: too much or too little?

In a number of Asian and Pacific countries, a recent phenomenon has been the spectacular increase in the demand for tertiary education. In the presence of strong political pressures, Governments have been quick to respond. Many additional universities and colleges have been opened in the region in the past few years; yet demand for post-secondary education continues in most cases to outstrip by far the supply of places. For Malaysia, in 1985 it was estimated that about 60,000 students (in a country of 15 million people) were studying abroad. These students were mostly studying at the tertiary level,

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[32] UNESCO, Fourth Regional Consultation Meeting on the Asia-Pacific Programme of Educational Innovation for Development, *Report* (Bangkok, May 1986), pp. 18-19.

partly owing to the shortage of places at home country institutions and partly because the courses or fields of study were not offered domestically.[33]

There have been recent reversals of previous liberal educational policies towards non-nationals in some recipient countries in the West through such measures as increases in fees and quotas for admission. Moreover, long-standing problems relating to the brain-drain phenomenon and inappropriate curricula and methods in relation to local needs have resulted in calls to review national tertiary education policies in many developing ESCAP countries. But if external constraints on tertiary education work in one direction, then various internal developments in some countries caution against simplistic expansion of the tertiary education infrastructure. This has been recognized in several countries in South Asia, where job opportunities are limited for graduates, standards are declining and there is a mismatch between formally inculcated skills and job opportunities. Increased government investment in tertiary education may only aggrevate these problems. This phenomenon has occurred in Pakistan for doctors and engineers, mostly as a result of a sharp expansion of tertiary education for these professionals without a corresponding increase in demand. Unemployed degree-holders and post-graduates (M.A. and Ph.D. levels) number approximately 20,000 according to a 1987 report, and the number is expected to increase to 100,000 by 1990.[34]

Governments are also becoming increasingly concerned about the problem of "screening credentialism", i.e., the possibility that at higher levels of education the rate of return to educational investment tends to be more a rate of return to a particular occupational selection mechanism than the yield on improving labour force quality. The result of this process is that government subsidies may effectively be serving the interests of specific industries, firms and even occupations. That amounts to an internalization to recipients of what should have been a social rate of return on properly structured educational investment.

One way to resolve this tertiary education policy dilemma has been to induce increasing private sector investment in tertiary education, especially in fields deemed important to national manpower needs. Full cost recovery systems under government sponsorship are another option because of their equity implications. By relating these options to manpower supply and demand forecasts, it might be possible to reduce the present mismatch problem in tertiary education and thus utilize education more effectively in national human resources development strategies. Another way to resolve the dilemma is to provide some central direction to human resources development which en-

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[33] Tham Ah Fun, *loc. cit.*, p. 16.

[34] Zulekha Zar, *loc. cit.*, p. 7.

compasses the educational system. Sri Lanka and India have done so; the Sri Lankan Cabinet has approved the establishment of a Human Resources Development Advisory Council, and in 1985 the Indian Government established a Ministry of Human Resources Development.[35]

3. Alternatives to conventional formal education

While universal primary education is essential to equip all citizens with the basic skills and knowledge required to secure a reasonable life and to contribute to the general welfare of society, the impulse towards universal formal schooling must be tempered by considerations regarding its financial costs and affordability.

Projections on the basis of recent population growth trends show that between 1975 and 2000, school enrolment in the three major developing regions of the world will have to increase by 418 million students to match in proportional terms the actual increase of 252 million from 1950 to 1976.[36] On the basis of existing educational system capabilities, this proportional growth by the year 2000 would leave at least 27 per cent of primary school-age children out of school in South Asia. For the secondary school-age group, the proportion out of school in South Asia in the year 200 would be about 61 per cent.

The impact of increased enrolment on national public expenditure allocated to education is likely to be dramatic, as economies of scale do not apply to many aspects of formal educational systems. In fact, the reverse appears to be the case, as there has been a trend in the region for expenditure per student to increase as total enrolment has risen. Moreover, as school systems reach larger proportions of primary and secondary school-age children, costs of vocational and technical education at the secondary and post-secondary levels will tend to rise even more. In almost all countries of the region, many alternatives are being experimented with to overcome these problems.

A number of countries have set goals or targets, especially for vocational and technical education, which now appear to be widely accepted as the priority area of national educational systems. Beyond universal primary education in Bangladesh, the emphasis is on low-cost, non-formal vocational training in rural areas, with *Madrasah* (parochial) education playing a role.[37] In China, one goal of the five-year plan is to make the volume of recruitment into tech-

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[35] S.M.L. Marikar, *loc. cit.*, p. 10; J. Veera Raghavan, *loc. cit.*, p. 20.

[36] Unpublished projections by the International Council for Educational Development based on data contained in UNESCO, *Statistical Yearbook*, various issues.

[37] Nur Ahmad Siddique, *loc. cit.*, p. 13.

nical and vocational education equal to recruitment into secondary schools by 1990.[38] India is launching a large, systematic programme of non-formal education which can include flexible, need-based vocational programmes. Vocational courses will also be increased in secondary schools, where the aim is to cover 10 per cent of upper-secondary students by 1990 and 25 per cent by 1995.[39] The Philippines plans to expand enrolment in post-secondary technical-vocational courses. One element of the plan is to make such education affordable and available to about 2.8 million young people whom the formal school system has not absorbed.[40]

There is an urgent need to investigate the full range of alternatives to the formal school system in providing skills and learning experiences to the rapidly increasing numbers of young people. At the same time, the literacy and educational needs of adults, especially women, should not be ignored.[41] The failure to achieve universal primary education, coupled with early drop-outs and the backlog in enrolment, has already led to a huge problem of adult illiteracy in many countries. It is estimated, in this connection, that between 1980 and 1985 the number of adult illiterates in the region rose by about 80 million to over 640 million, with about 370 million located in South Asia and 270 million in East and South-East Asia, despite the fact that many countries have adult education programmes.[42]

However, a number of major obstacles stand in the way of effective implementation of adult education. First, there is a chronic alleged lack of motivation among women, induced by their socio-cultural position, which hampers their successful participation in literacy programmes. About two thirds of adult illiterates in the region are women.[43] Second, there is a dearth of people's participation and inadequate mobilization of community resources for the planning and implementation of literacy programmes, especially in rural areas, where the great preponderance of adult illiterates are located. Third, literacy programmes in many countries do not receive adequate financial and

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[38] Liansan Ruan, "People's Republic of China: country paper", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[39] J. Veera Raghavan, *loc. cit.*, pp. 5 and 7.

[40] Rosita L. Fondevilla and Marcial Salvatierra, *loc. cit.*, p. 10.

[41] Even if women never enter the formal labour market, ensuring that they are literate and receive some basic education may be one of the best investments a country can make. Not only do women play a key role as producers and consumers but their central position in the family profoundly affects attitudes and decisions on education, nutrition, health, family size and other important issues. This matter is discussed further in the accompanying paper on the integration of women's concerns into human resources development.

[42] ESCAP, *Economic and Social Survey, 1986*, p. 150.

[43] This point is discussed in greater detail in the accompanying paper on "Integration of Women's Concerns".

technical support, leading to shortages of expertise in planning, management, training and curriculum and materials development.[44]

A fourth obstacle is that post-literacy and continuing education are generally not properly planned and developed, resulting in lost opportunities and wasted resources. Experimentation with such new approaches as non-formal education, part-time abridged programmes, distance learning and combined learning and production programmes should be expanded, and the results should be analysed.[45] In adult education, literacy programmes require vast networks of learning centres which can be attached to existing schools, community centres, factories, clubs, co-operatives and other local institutions. At the same time, such networks cannot be effective or productive unless students are convinced that literacy programmes are relevant to the enhancement of their quality of life. The unique conditions of each country are likely to determine which particular educational alternatives are most appropriate for enhancing the quality of life. Meanwhile, there is a great need for Governments in the region to gain a comprehensive awareness of each alternative's principles and methods in order to make a practicable selection. In Bangladesh, *Madrasah* schools complement secondary schools, especially in rural areas. Any form of education requires teachers, so Bangladesh has also emphasized teacher-training institutes and colleges, in addition to the Bangladesh Institute of Distance Learning.[46] China's State Education Commission has advocated making vocational-technical education a main goal of the seventh plan. In terms of practical training, programmes of the labour services companies, especially for youth, have made an important contribution. It has been reported that by the end of 1985, 1.6 million people received training under the labour service companies.[47] Some methods used in Malaysia include establishments of parent and teacher associations to make schools community institutions, amalgamation of small schools in rural areas into more effective units and creation of two streams (vocational and skill) of vocational education at the secondary level. Expansion of vocational education is being given greater priority in Malaysia in order to help school-leavers to acquire employable skills.[48]

B. Health

The attainment of good health is clearly a prerequisite for an acceptable quality of life. An adequate standard of nutrition, including access to food

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[44] ESCAP, *Economic and Social Survey, 1986.*

[45] Mansoor Ahmad, "Mobilising human resources: the role of non-formal education", paper presented at the Eighth Commonwealth Education Conference, Colombo, August 1980.

[46] Nur Ahmad Siddique, *loc. cit.*, p. 13.

[47] Liansan Ruan, *loc. cit.*, pp. 6-8.

[48] Tham Ah Fun, *loc. cit.*, p. 17.

in sufficient quantity and quality, is an essential aspect of this basic human right. Notwithstanding substantial improvements in the health and nutritional status of most developing countries of Asia and the Pacific over the past four decades, as indicated by increased life expectancy, reduced infant mortality and reduced incidence of various debilitating diseases, the state of health and nutrition in the region remains far from satisfactory. One important consideration, often overlooked, is that the sizeable statistical gains of recent decades are averages. In many cases the poorest sections of society have shared only marginally, if at all, in the recorded gains. Furthermore, while the national improvements have been remarkable in many cases, this has been in large measure due to the very low initial levels on which they are based. The remaining problem areas pose more formidable challenges, and thus it may be expected that trends regarding health and nutrition will not be as positive in the coming decade as in the past several decades for much of the region.

The root cause of the region's health and nutrition problems is, of course, poverty. Although there are diseases of affluence, there is an inseparable link between poverty and malnutrition, unsafe water supply, exposure to vector-borne diseases, lack of access to health care and pharmaceuticals, etc. At birth, the poor suffer higher rates of prematurity, malformation and still birth, while children with a background of poverty tend to suffer from high rates of morbidity and mortality and tend to be physically less fit and smaller and often have their intellectual and sensory abilities stunted by poor nutrition.

The vicious circle of poor health and poverty must ultimately be broken by measures which alleviate poverty directly, such as fair returns to labour and increased access to land and capital. More immediately, there is a need for Asian and Pacific government administrators, policy makers and planners, local leaders and the public at large to ask some hard questions about the health delivery systems that are currently in place. How appropriate and effective are these systems? To what extent do they reach all segments of the population, especially the disadvantaged groups such as the rural and urban poor, women and children, the aged and the disabled? Is the system of medical delivery with public and private elements that is in place in most countries of the region providing optimum social benefits? Should curative medicine, oriented towards hospital-based, high-technology and specialized services, be allowed to dominate over community-oriented preventive medicine?

One country which has begun to ask such questions is Sri Lanka, where vigorous government action in health services had formerly given the country an excellent record. It has been observed that qualitative deterioration in government health services has been accompanied by increased incidence of low birth weight of new-borns, the return of diarrhoeal diseases as a cause of mortality and morbidity in infants and young children and a resurgence of malaria. Of course, environmental factors such as unsafe drinking water supplies

and movement to new settlements in areas not treated for malaria help to cause the health problems mentioned. However, an adequate health system is needed to battle such health problems when they appear.[49] Malaysia is addressing unresolved issues concerning the social aspects of its health and medical delivery system. Malaysian health programmes cover promotive, preventive, curative and rehabilitative services, and priority is given to services to rural areas. Services to rural areas, in fact, are part of a package which may be delivered by various means. Very remote areas are served by mobile clinics. Health subcentres with paramedical personnel are also in place, as are health centres and district hospitals with doctors and nurses.[50] The social problems associated with this health infrastructure relate to its utilization by all sections of society. In addressing these questions and reviewing the range of policy options required to provide better health and nutrition, Governments could consider the following approaches.[51]

1. Basic community health care

With careful planning, it has been found possible to mobilize and organize communities for self-reliant, participatory and multisectoral action to meet local health concerns. The concept is closely related to primary health care, as advocated by the World Health Organization, and has six major features: access to services for everyone, with the poor receiving priority attention; relevant and effective services to meet the health needs of the poor in a manner socially and culturally acceptable to them; functional integration with higher technical levels of the health system; cost-effectiveness through improved efficiency in resource allocation; intersectoral collaboration involving close contact with agricultural services, nutrition cadres, educational entities and other personnel and agencies similarly oriented towards the needs of the poor; and community participation in the planning, management and evaluation of health services at all levels.

In operationalizing this concept, Governments might focus on simple, low-cost and manageable activities in order to make an effective start, with the understanding that the other elements of action within a broad strategy would be added sequentially.[52] Investment in drinking-water and sanitation facilities by households (centring on roof run-off and water storage), communities (village wells and water pumps and communal latrines) and Govern-

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[49] S.M.L. Marikar, *loc. cit.*, p. 4.

[50] Tham Ah Fun, *loc. cit.*, p. 19.

[51] For a more detailed examination of some of these issues, see ESCAP, *Health and Development in Asia and the Pacific: Two Studies* (forthcoming).

[52] UNICEF, *Current Views on Nutrition Strategies*, report of an informal consultation at UNICEF headquarters, New York, 25-26 September 1982, p. 6.

ments (major water reservoirs, sewerage works and garbage disposal facilities) could significantly improve the health conditions of population groups that have traditionally been neglected. It has been suggested that such a mix of activities for the Pacific island developing countries[53] would have a great child-saving impact in view of the fact that the majority of deaths among young people are due to inadequate basic health and sanitation.

Whatever programmes are decided on by individual countries, the real test of their effectiveness will depend on actual delivery performance and ability to encourage popular participation and such other activities as nutritional education and surveillance. Success with the community health approach requires that the programme be treated as a package, with each component reinforcing the other, and that communities adjacent to one another implement the programme concurrently. Thus, it requires substantial commitment, resources and management capacity. Lessons learned from the implementation of this approach in a number of countries have also indicated the need for monitoring and evaluation, in both the short and long terms.

2. Development of health manpower

In addition to involvement of the community at large, a more specialized and specific form of health intervention involves developing cadres of health workers to work within a three-tiered system. The successful experience in China with this group of key personnel merits further study, not least because it illustrates the importance of developing manpower capable of delivering services in any field of social development, be it health, nutrition or education.

Basically, the Chinese health manpower system has evolved in line with the country's overall socio-political system and is structured at three levels.[54] First, voluntary part-time health workers are trained and utilized at the production team level, i.e., at the periphery. Second, rural health personnel, notably barefoot doctors, are trained by the country and commune (on the basic of local needs) and utilized at the brigade level. This category of health personnel is highly localized and cannot be transferred from one brigade to another. Third, medical and health personnel at the medical college and "middle" medical school levels are trained by the State in accordance with national plans and assigned to all medical and health institutions at the commune level and above.

The Chinese system is an integral part of overall national policies and strategies for manpower development as well as an internally coherent system designed to meet the special conditions in the Chinese context. Thus, new

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[53] Helen Hughes and others, *loc. cit.*, p. 103.

[54] World Health Organization, *Primary Health Care: The Chinese Experience* (Geneva, 1983).

categories of health manpower, such as barefoot doctors, have been introduced to ensure that the basic needs of the population are satisfied. At the same time, a diversified and flexible approach enables emphasis to shift to upgrading both the status and the professional competence of each category of personnel after basic coverage is achieved. Finally, there seem to be adequate facilities for continuing education and meaningful supervision through linkages among the various levels of health service, each level being supervised by the next-higher level.

Obviously, each country must devise its own options for health manpower development according to its particular socio-political context. However, the acknowledged success of the Chinese case is reflected in the basic health indicators, and despite the scale and complexity of the country's health problems the success is evident. Many health development programmes have become bogged down simply because planners and administrators have failed to devote sufficient attention to the total health manpower hierarchy from the lowest level to the most sophisticated level. Some programmes have failed to generate the kind of dynamic internal cohesion needed among the various health cadres in order to motivate and sustain what are, in effect, fairly long-term programmes. The Chinese approach seems to have dealt with this problem effectively.

The approaches of several other countries can also be examined. Bangladesh has focused on strengthening training programmes for the so-called lower tiers in the health services system. In a report on training targets for 1989-1990, it appears that emphasis is on substantial increases in personnel who are traditional birth attendants, family welfare assistants, family planning assistants and health assistants.[55] The Indian Government proposes to strengthen the connections between education and health planning/health service management. Thus, health education at the primary and middle school levels will emphasize the role of the individual in family and community health. Subsequently, there will be health-related vocational courses at the higher secondary levels.[56] Malaysia has organized health services into various levels, especially for rural health delivery. Mobile clinics are staffed by auxiliary personnel (midwives, rural nurses), health subcentres are staffed by paramedical personnel and health centres are staffed by professional personnel.[57] From 1986 to 1990 the Pakistan Government plans to create 1,180 additional basic health units and 151 additional rural health centres. Part of the Prime Minister's five-point programme includes job creation for the rural health programme: 4,000 doctors, 10,000 paramedical staff and 7,850 ancillary and supporting

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[55] Nur Ahmad Siddique, *loc. cit.*, p. 20.

[56] J. Veera Raghavan, *loc. cit.*, p. 6.

[57] Tham Ah Fun, *loc. cit.*, p. 19.

staff. These programmes could be complemented by another element of the Prime Minister's programme whereby the Small Business Finance Corporation can lend funds enabling doctors to become self-employed. From July to November 1986, almost 90 per cent of the total value of loans sanctioned was for doctors.[58]

3. Integration of the health, food and poverty fronts

An integrated approach has much potential in addressing the health and nutrition problems of the bottom 20 per cent of income earners, or those called the "ultra poor" in the developing countries of Asia and the Pacific, who are particularly difficult to reach.[59] Health has been found to be an effective entry point for integrated anti-poverty programmes because, while the poor feel helpless to alleviate their economic situation, they can experience the results of health care concretely and immediately as a relief. The initial relief, such as care of easily treated ailments or provision of meals to school children, could be used to motivate people to engage energetically in further collective action to relieve the poverty which is the ultimate cause of their ill health and misery.

Interesting exercises in the community-based poverty-oriented approach have recently been carried out in Nepal.[60] In these projects, increased income and improved food availability have been obtained through institutional credit, effective communication and participation of small farmers and women. This has set the stage for communities to address health issues. Such projects would have greater effectiveness over the longer term if they were part of a wider approach that attempted to provide food security at the subnational levels where food security is a central concern.

C. Population

1. Coping with the population explosion

As of 1985 the total population of the ESCAP region was about 2.7 billion people, or 56.4 per cent of all the people in the world. This was about 1 billion more than the number in 1965. Whether this trend should be viewed with alarm or with a more benign attitude is an issue of considerable controversy. In the broad human resources development perspective and over the

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[58] Zulekha Zar, *loc. cit.*, p. 16.

[59] UNICEF, *Current Views on Nutrition Strategies.*

[60] *Ibid.*, pp. 19-21; also see ESCAP, "Health aspects of development planning at the local level, with special reference to children", in *Health and Development in Asia and the Pacific: Two Studies* (forthcoming).

longer term, the issue can be seen in a relatively positive light.[61] There is no doubt, however, that the rapid growth of population in some countries of Asia and the Pacific has absorbed a sizeable part of development gains in recent decades. Further rapid expansion may be a major factor in exacerbating the immediate problems of many countries in the region.[62]

Despite the widespread adoption of comprehensive approaches to population planning, few Asian-Pacific countries have reached the replacement level, where the total fertility rate would be 2.1 to 2.2 per cent. If present trends continue, it is estimated that total fertility in the region will decline to 2.6 per cent by the year 2000, which would imply a doubling of the region's population within 35 years. Total fertility rates are especially high in South and South-East Asia (averaging 4.3 and 3.8, respectively). As a result, the population in some countries could double in 30 years or less.

A slower rate of population growth would help to make the alleviation of poverty, the key quality-of-life concern in the region, a less formidable task. A rapid fall in fertility in Asia (excluding China, where the fertility rate has already been reduced dramatically) could reduce poverty by as much as 40 per cent.[63] At the same time, as fertility rates are usually highest among the poorest, the potential benefits from reduced fertility, when complemented by improved maternal health, child care and access to basic education, are greater for the poor than for most other social groups. Slower population growth would help to ensure that countries do not have to compromise their quality-of-life objectives unduly in sectors such as health, education, housing or the environment simply on account of the large numbers of people to be served.

Governments must continue to play a central role through family planning programmes in any effort to keep population levels commensurate with available financial and physical resources, if the quality of life is to be enhanced to the fullest extent possible. While family planning norms might not be effectively changed by coercive or draconian methods, it would be a development disaster if Governments in developing countries adopted a "hands-off" policy on population planning.

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[61] For example, the supply-side view of demographic trends contends that natural resources are not fixed but are dependent on human ingenuity and that all the evidence of history shows "natural resources to be getting more available even as population has multiplied". See Jonathan Lieberson, "The population explosion", *Development Dialogue*, No. 76, 1987, p. 43.

[62] A small number of ESCAP countries perceive their population sizes to be too low and have taken steps to increase their population. They include Mongolia, Malaysia and Burma. For a further discussion of the various national approaches to population size, see ESCAP, *Economic and Social Survey, 1986*, pp. 108-109.

[63] World Bank, *World Development Report, 1984* (Washington, DC, 1984), p. 83.

On the contrary, the uneven performance record in attaining family planning targets means that Governments should strive to provide greater assistance to families by making family planning services freely available and more widely known. One option would be greater public sector resource allocations. Bangladesh, for instance, is the only case in a sample of nine Asian countries to have spent more than 1 per cent of the government budget of family planning in the early 1980s. Other options would include subsidized family planning services for the poor, increasing the efficiency and effectiveness of services provided by Government and encouraging the private sector to provide services wherever feasible.

Linkage of family planning to larger development programmes or service delivery systems is often more successful than narrowly focused efforts. In Bangladesh, where rural/urban disparities in contraceptive use have been marked, special training programmes have aimed at creating awareness about the population problem among rural co-operatives leaders, who are opinion leaders in rural communities. In addition to enlisting the support of local leaders, these programmes utilize rural co-operative societies to promote family welfare activities, including family planning, distribution of contraceptives and referral to clinical services. Such grass-roots organizations are also used as link agents in the Government's field-based population programmes.[64] Similarly, community-based family planning programmes are being linked more explicitly to development programmes in Nepal by giving priority to the provision of certain social and economic services and the construction of certain physical infrastructure as incentives to communities to reduce their total fertility rates. At the same time, in order to improve the implementation of development plans at the grass-roots level, the Government has encouraged village councils, local non-governmental organizations and even traditional healers to be involved in service delivery and population education programmes.[65]

Thus, there has been no shortage of ideas on how to extend family planning services. Nevertheless, despite many claims to success, "the contribution of family planning to fertility decline is widely disputed".[66] In the final analysis, it is generally agreed that fertility is likely to fall more in response to social and economic progress than to family planning campaigns. To the extent that economic and social progress results from human resources development, the quality-of-life implications of population planning are themselves bound up in the broader issue examined here.

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[64] ESCAP, *Inventory of Selected Local Family Planning Experiences in Countries of the ESCAP Region*, No. 8, Bangkok, 1986, p. 3.

[65] *Ibid.*, p. 4.

[66] M. Hardiman and I. Midgley, *The Social Dimensions of Development* (New York, 1982), pp. 86-87.

2. Changing age structure and the intergenerational competition for resources

The number of aged people (defined as the 60+ age group) is expected to increase in Asia and the Pacific by over 55.4 per cent between 1985 and 2000. Apart from the fiscal implications involved in the social services required to maintain this largely dependent population group, the aging of the population has many other human resources development implications that have yet to be fully assessed. For example, as the relative size of the aged population increases, there is a shift of dependency from the young to the elderly. Since the consumption requirements of the elderly are typically double those of children, this change in the composition of dependency would increase the burden of support.[67] At the same time, many people over 65 years are capable of productive work and continue to be interested in social and recreational activities. New arrangements to accommodate the human resources development of the elderly would be required to meet their educational and training/retraining needs, arrangements that would transcend the issue of the division of responsibility between the public and private sectors.[68]

Arrangements currently being worked out in Japan may offer a pertinent example. Older age groups in Japan have relatively high labour force participation rates in comparison with most other countries; people in these age groups expect to remain employed at least until age 65. As average life expectancy reaches 80, more people will expect to work beyond 65. Japanese planners must therefore be concerned about helping this group to adjust to technological change in the economy, solving morale problems relating to career and promotion and adjusting education, health, welfare and leisure services accordingly.[69]

At the same time as Asian-Pacific societies contain more aged people than ever before, thanks to improved health and related social conditions, the number of young people to be planned for is also growing, albeit at a much lower rate. Among this group, the below 6 age group is expected to increase by 8.5 per cent between 1985 and 2000. While this percentage increase is

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[67] It could be argued that expenditures on children constitute in large part investments in human capital compared with expenditures on the elderly, which are primarily consumption-oriented. Strengthening the participation of the elderly in the economy and society would, of course, increase the investment component of expenditures incurred on their behalf.

[68] The problem of the potentially lower lifetime return on investment in the elderly as distinct from other age cohorts, arising from their shorter remaining life span, raises serious issues in this regard.

[69] Tamiko Iguchi, "Employment and manpower development in Japan", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

considered small, it nevertheless represents an enormous increase in absolute numbers. Given the magnitudes, it has been suggested that human resources development strategies directed at the poor may be well advised to concentrate primarily on the children of the poor, especially since child-focused programming may offer an effective way of gaining access to parents.[70]

One unfortunate aspect of the currently changing age structures in the region, especially in relation to human resources development, is that formerly co-operative and supportive relationships within communities are becoming more competitive and biased towards selfishness. This emerging bias is in contrast to older intergenerational relationships which were a part of the means by which societies produced the human resources needed by the production systems which were typical of them – generally, agricultural production based upon labour-intensive techniques.

Family cohesiveness has to be given a sense of social purpose, and so the family has been maintained partly by its productive function. Each generation has had a role in the maintenance of the productive viability of the family. The most basic, continuing aspect of this maintenance process has been the socialization of children. Children have had to be continuously prepared to assume their "proper" productive role in society, including their reproductive role as parents.

Virtually all aspects of this structural-functional process have changed in the process of "modernization". The human resources requirements of the new technologies are radically different.[71] Some new requirements can no longer be met by family or local-level training; new kinds of organization for social reproduction of human resources are required. Vast new educational systems have been established in an attempt to meet this need.

Population growth has greatly changed the *de facto* "role pattern" of families. In effect, so far as both family capabilities and local production structures are concerned, there are too many of the aging and too many of the young (including some who have been inappropriately educated for jobs which do not exist). These inappropriate "role patterns" are a major quality-of-life issue, and a major source also of practical difficulties in improving the quality of life in the region.

A vicious circle is implicit in these processes. If human resources development depends in part on the quality of life, then it is also clear that the

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[70] Lorraine Corner, "Human resources development for developing countries: a survey of the major theoretical issues", in ESCAP, *Human Resources Development in Asia and the Pacific: Its Social Dimension*, p. 20.

[71] See the discussion in the accompanying paper on science and technology aspects of human resources development.

same population and technological changes which require new kinds of human resources also reduce the quality of life in ways which lessen societies' capacities to generate human resources of the kinds needed.

Whatever the positions adopted by Asian and Pacific Governments on the question of how priorities are accorded to the various generations in allocating scarce resources, there is a need for careful planning in order to relate the demographic restructuring anticipated for the remainder of the present century more explicitly to development expenditures. This is required not only to ensure that the distribution of human capital is optimized along intergenerational lines, but also so that the quality of life of all age cohorts is taken into consideration in all policy decisions.

D. Urbanization

The spatial distribution of population influences the quality-of-life aspects of human resources development most directly in terms of the pressures placed public services and facilities. Urban population growth gives rise to substantial economies of scale in housing, sanitation and health care, though not necessarily education. This, in turn, generates improvements in the quality of life. Overrapid or uncontrolled urban growth, however, can produce severe unemployment, unhealthy living conditions, social disorganization and other problems. The emergence and spread of urban slums is a highly visible manifestation of such social and environmental ills.

Development policy makers have long accepted the assumption that the vast majority of Asian and Pacific populations live in the rural sector and that eradication of differentials in income levels and access to services between the urban and rural populations therefore forms an important priority in development planning. Recent trends challenge this truism.

The growth of the urban population is accelerating so quickly that, by the year 2000, 44 per cent of the population in the world's developing countries (and a higher percentage in the ESCAP region) will be living in urban areas; 50 per cent of these city dwellers will be struggling for survival in slums and shanty towns.[72] In East Asia (excluding China), the urban population is expected to increase from 53 per cent of the total population in 1975 to 73 per cent by the year 2000. For the period 1975-2000, it is estimated that the average annual urban growth rate will be almost nine times the rural rate.

Translated into quality-of-life terms, these figures imply increasingly critical times ahead for the urban poor. Not only will most of them fail to

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[72] John H. Dohohue, "Some facts and figures on urbanization in the developing world", *Assignment Children*, UNICEF, 57/58, 1982, pp. 21-42.

benefit from the already limited amenities, services and economic opportunities that urban areas are widely believed to offer, but they will be hard pressed to survive even at the most marginal levels. Not only the poor, but all urban dwellers, are increasingly affected by air and noise pollution, rising land and housing costs, ineffective transport systems, inadequate sanitation facilities and other problems that undermine the higher quality of life popularly associated with urban life.

It is expected that by the year 2000 Asia will contain 11 urban areas with populations in excess of 10 million each. This growth of megacities is a cause of serious concern. Few metropolitan centres in the region have been able to devise urban management systems that can sustain populations of 200,000 per square mile in the inner core; yet such densities are increasingly familiar.[73] Major departures from established urban strategies, plans, policies, programmes and management systems will have to be undertaken to meet the challenge. In addition to the unemployment, squalor and hardship that will continue to thrive in the presence of uncontrolled urban crowding, there are serious political dangers, as the region's cities are the meeting place for people of diverse ethnic origins and cultural and religious traditions and are therefore potential cauldrons of social tension and unrest.

A number of Governments in the region have attempted to contain the problems posed by urbanization by trying to slow or reverse rural-to-urban migration, which is the main cause of rapid urban growth. However, few rural growth centres and resettlement, redistribution or residence restriction programmes have achieved their objectives, while their social and financial costs have been severe.[74] In Malaysia, for example, the failure of rural growth centres has prompted the Government to embark on an entirely new strategy to stem rural-urban migration focusing on job creation for the rural unemployed in their villages, or a "taking jobs to the people" approach.[75]

Continued stress on rural education, community development and decentralized industrialization could eventually help rural areas to capture the perceived greater development benefits that currently attract rural migrants to urban areas. Nevertheless, the statistics indicate that, despite the most optimistic rural growth projections, urban growth trends will continue to pre-

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[73] If Bombay, for example, continues to grow by 4 per cent a year, it will have a shortage of 2.5 million houses by the year 2000, with 75 per cent of the projected population of 616 million plus residents living in huts or on the pavement. It will have 2 million unemployed and a daily water shortage of 350 million gallons. ESCAP, *Urbanization in Asia and the Pacific*, Population Bibliographic Series, No. 5 (Bangkok 1985), p. 78.

[74] ESCAP, *Economic and Social Survey, 1986*, p. 98.

[75] ESCAP, *Rural Centre and Settlement Planning in Asia and Pacific*, Report of the International Seminars on Rural Centre and Settlement Planning, New Delhi, 1985, and Hangzhou, 1986, p. 11.

sent a considerable quality-of-life challenge. In this regard, housing and public services are among the key priority issues and pose the most difficult policy options. The Malaysian Government instituted a village regrouping programme in 1984 to provide housing and basic infrastructure in rural areas. This generally has followed past patterns, where the public sector concentrated on low-cost housing in rural areas. At the same time, especially in the 1970s, the private sector concentrated on medium- and high-cost housing mainly in urban areas. This was done with the help of government incentives and guidelines. During the current plan period (1986-1990), housing will be provided in the context of a human settlement concept designed to provide low-cost, affordable housing. Furthermore, housing development will be diverted to suburban areas and away from congested urban areas. The housing development programme will include establishment of a revolving fund, promotion of the use of prefabricated units, training of construction workers, establishment of a one-step approval agency for housing development and review and updating of housing legislation and regulations.[76] The Prime Minister's five-point programme in Pakistan aims at rural housing development as well as job creation in housing (and related infrastructure) construction. The House Building Finance Corporation was allocated 1,413 million rupees in 1986-1987, in addition to 250 million rupees from the Prime Minister's programme, to help to create 5,000 jobs for unskilled workers and 625 jobs for skilled workers in housing construction.[77] The limited nature of most existing housing investment means that settlement programmes should be as comprehensive as possible and draw upon every potential source of low-cost housing, whether conventional or non-conventional. In view of the existing inequalities, housing supplies should be scaled to meet the needs of the poorest groups, to be within their technical and financial capabilities and to employ local resources to the fullest extent possible. Slum upgrading, in particular, provides viable social and financial ways of improving the housing of the poor. Public services such as transportation, water and electricity supply and waste disposal have not been maintained to work efficiently and remain affordable to the masses, except in a few megacities in the region. As a result, paying for these services has become a rising cost in household budgets, especially for the poor.[78] Traffic congestion and accidents, water and electricity shortages and uncollected rubbish and sewage will become increasingly commonplace under such conditions for many Asian-Pacific cities in the years ahead.

In retrospect, rapidly growing problems of urban growth in the region may not be wholly avoidable, given competing demands and the limited re-

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[76] Tham Ah Fun, *loc. cit.*, pp. 22-25.

[77] Zulekha Zar, *loc. cit.*, p. 18.

[78] Low-income groups in New Delhi, for example, have to devote as much as 15 per cent of their household income to transportation. Alan Armstrong Wright, "Urban transport in LDC's", *Finance and Development*, vol. 23, No. 3, September 1985, p. 45.

sources of Governments, but their severity can be reduced if appropriate policy initiatives are implemented immediately. Various initiatives can be considered. First, intermediate-sized cities can be developed as countermagnets to attract migrants away from the large cities and provide viable alternative urban destinations for migrants from the rural sector.[79] Second, urban planning can be integrated with other levels of local, regional and national planning. At the same time, urban planning must be complemented by policies concerning population, industrialization, land use and the like. Such planning implies the need for local authorities to have a greater role in decision-making through decentralization of certain functions and by promoting public participation in local government.

A third initiative for improved urban management is the introduction of innovative measures that are relatively low-cost and easy to implement. In solving urban transport problems, for example, measures such as area licensing, road pricing, bus lanes, heavy vehicle exclusion during peak traffic flows considerably in some Asian cities without the need to impose a heavy burden on public expenditure.[80]

Furthermore, the private sector can under competitive conditions assist in providing urban public services. Bureaucratic inertia, political interference and restrictions on competition have made it difficult for public service systems to function efficiently in certain cases. Allowing private sector participation in the provision of public services could offer a counterweight and thereby induce improvements in the quality of service delivery. The public sector, however, must continue to assume ultimate responsibility for many tasks that cannot be assigned to private firms. Unfortunately, many of these exclusively public responsibilities have been neglected in many countries of the region.

It has been suggested that "perhaps the most significant but still inadequately encouraged strategy for relieving the basic insecurities experienced by

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[79] The experience of developed countries suggests that this objective requires active promotion by policy makers and incentives in the form of improved transportation and communication systems, channelling of resources to the smaller cities, etc. If successful, these efforts in the Asia-Pacific region could have important positive regional (i.e., spatial) income distribution implications, countering a persistent source of concern to many Governments. See H. Hansen, "A review and evaluation of attempts to direct migrants to smaller and intermediate-sized cities", in *Population Distribution Policies in Development Planning* (United Nations publication, Sales No. E.81.XIII.5), pp. 113-127.

[80] Area licensing, introduced in Singapore in 1975 to regulate the use of private cars in the inner city, has been credited with considerably reducing road congestion. In Bangkok, the provision of 145 kilometres of traffic lanes for exclusive use by buses cost less than $1.5 million; yet it has provided substantial benefits to a majority of Bangkok's road users. After a year of operation, bus travel time on important bus lanes was said to have "been reduced by 38 per cent and car travel by 20 per cent". See Alan Armstrong Wright, *loc. cit.*, p. 47.

the urban poor is the strengthening of the community's capacity to plan and carry out its own development".[81] The underlying notion behind this suggestion is that the urban poor cannot possibly advance without mobilizing and exercising their civic power to share in decision-making. Since some of the major issues affecting the urban poor are political-economic in nature, mobilization of civic power is especially necessary *vis-à-vis* special interest groups such as land owners, commercial developers and employers, who may already have a direct influence on decision-making. There can be considerable variation when operationalizing this strategy, however.

In this regard, the basis for a community's capacity to organize frequently lies in the informal networks of personalized ties that abound in poor urban neighbourhoods.[82] Given sufficient motivation and training, groups could emerge from these networks as formal associations with legal standing and the power to generate real improvements in the quality of life through community action programmes. However Governments might decide to approach the question of promoting urban community participation in quality-of-life programmes, it would be unduly optimistic to expect that the working power, ingenuity and spirit of enterprise of the people alone can resolve problems. In self-help housing, for example, community participation is an essential ingredient for successful implementation, but there is also a need for training activities to be conducted in "one-site" situations. Furthermore, within the housing bureaucracy it would be necessary to sanction simple and appropriate building techniques and designs, simplify building procedures and approval processes, guarantee tenure and provide infrastructure and services which the community cannot readily provide, however resourceful the people in the community may be.

E. Environment

The quality-of-life implications of environmental changes, including depletion of natural resources, are manifold and not yet well understood in the region. Environmental concerns, however, have emerged and will be of increasing importance in Asia and the Pacific as the twenty-first century approaches. Ironically, industrialization, technological advance, economic growth and other key aspects of "development" (in the narrow sense of the word) increase the region's environmental problems and pose a threat to the quality of life in the form of environmental deterioration. While economic expansion raises the demand for natural resources, the supply cannot be expected to

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[81] Mary R. Hollnsteiner, "Government strategies for urban areas and community participation", *Assignment Children*, UNICEF, 57/58, 1982, p. 58.

[82] *Ibid.*

increase appreciably, even for renewable resources, and may even decrease in some countries over the foreseeable future. The economic consequences of decreases in the natural resource base occur not only with petroleum and mineral deposits. The economic consequences of natural resource depletion are even more devastating in the washing away of soil and leeching of soil nutrients, the destruction of watersheds and ground-water sources and the loss of entire species of fauna and flora. The negative effects on the environment and quality of life are bound to be dire. Managing the region's natural resource base and the living environment is therefore a crucial prerequisite for improving or even preserving the present quality of life.

Proper management of the environment is especially important in developing countries because these countries can least afford the irreversible loss of their non-renewable natural resources or the costs involved in remedying environmental damage. Such losses inevitably have the greatest impact on the poor and the unskilled. Primary sector employment is destroyed and production costs are raised, as are all other development costs. Despite increased attention to environmental management, many developing countries of the region still do not deal effectively with the serious nature of envvironmental problems. Among these problems is the need to preserve and manage renewable natural resources, including forest lands, grasslands, croplands, mangrove swamps and marine and fresh-water fisheries. Another problem is how to have effective control of industrial air, water and land pollution, especially in urban areas. Related public health aspects of environmental degradation and pollution must also be dealt with effectively.

Malaysian development planning contains a recognition of the need to balance development objectives with environmental conservation. The exploitation of natural resources has already affected natural forest habitats as well as contributing to perennial flooding. Legislation and engineering works are expected to help to solve these problems. Industrial pollution has not created serious or widespread problems, partly owing to the nature of most Malaysian industries. However, sewage and household wastes, effluents from agro-industries and silt from mining and road construction have caused serious water pollution. Prevention and conservation receive the greatest emphasis in Malaysia's environmental management strategy. Both the public and the private sectors have made heavy investments in environmental research and development, particularly for the palm oil and rubber processing industries.[83] The Philippine medium-term development plan aims at poverty eradication in rural areas and has natural resources management as an important qualify-of-life component. Rural development is premised on removing constraints which the poor encounter when trying to gain access to and control over such natural

[83] Tham Ah Fun, *loc. cit.*, pp. 26-29.

resource support systems as forestry, fishing and mining. Natural resources must be exploited within a framework of protection, conservation and efficient utilization that is community-based and participatory.[84] Thai strategies for the sixth plan period are designed to remedy environmental problems related to the agricultural sector. Reforestation and afforestation are the main components of rural environmental management. The programmes are expected to create 40,000 jobs per year in afforestation and related activities, with most replanting to be done by the private sector. Thus, the environment can be restored and non-farming jobs can be created as well.[85]

The region's environment is projected to have the following characteristics by the turn of the century,[86] assuming significant changes in current environmental policies and programmes. About 94 million hectares of closed forest will be lost by the year 2000. Desertification will intensify as a result of drought, soil erosion, salinity, waterlogging and overgrazing. Water pollution will be widespread, with severe side-effects for fisheries. Mangrove shorelines will disappear and coral reefs will be degraded and destroyed. There will be general deterioration in urban environmental quality, and problems will be severe for drinking water quality and air and sanitation conditions, in particular.

The full impact of this prediction is that the quality of life is likely to be traumatic since many environmental losses are either completely irreversible, or reversible only over a very long time span. Furthermore, the pernicious effects of environmental degradation fall most heavily on the poor. Sound environmental management must therefore be recognized as a vital element of any strategy to raise the living standards of the most disadvantaged groups in society.[87]

Unfortunately, admitting what needs to be done is much easier than taking action in the case of natural resource conservation and environmental management, because the social groups most immediately affected are also, generally, the least powerful in decision-making. Moreover, those who are in a position to make and act on policy decisions have difficult choices. The developed countries have only recently become more aware of the damage to the quality of life that modernization, industrialization and even advancement of science can generate. But even in the developed world the clash of social and economic interests has rendered environmental conservation measures ineffective in many cases. In this regard, developing countries can learn

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[84] Rosita L. Fondevilla and Marcial Salvatierra, *loc. cit.*, pp. 11-12.

[85] Phayap Phyormyont, *loc. cit., pp. 8-9.*

[86] See ESCAP, *State of the Environment in Asia and the Pacific, vol. I: Summary,* (ECU/OES/MCEA/PM/4), 1985.

[87] See UNEP, "Report of the Conference on the Human Environment in the South Pacific", Rarotonga, 8-11 March 1982.

from the examples provided by the developed countries. They can thus strive to avoid or remedy environmental problems and clashes of interest emerging from developmental "success" before these problems are transformed into disasters.

The worst aspects of the gloomy scenario outlined above can be avoided if careful and prompt advantage is taken of available opportunities to conserve the region's national resource base and manage it for sustained productivity and a better quality of life. These opportunities require heightened consciousness of the fragile nature of the regional, not to mention global, natural resource bases. The need for new levels of co-operation among Governments, the scientific community, business, international bodies and agencies and non-governmental organizations seems clear. Government delay in correcting environmental problems in order not to disturb the current profits arising out of natural resource exploitation will result in future adjustments being more costly, if not entirely unfeasible. The mounting list of examples in the region readily attests to this fact.

Among the national human resources development strategies that aim to protect and improve the environment are the strengthening of local and national organizations that have environmental responsibilities, broadening of public information and participation programmes and improvement of environmental education and training programmes.[88] These measures would obviously be dependent in the first instance on the adoption of national policies on sustainable development and national legislation to protect and enhance environmental quality. Unfortunately, however, even when policy and legislation are introduced, the knowledge concerning environmental conditions and trends that is a necessary foundation for such action remains little understood. Consequently, all Asian and Pacific countries should strengthen their environmental and natural resource assessments and accounting within the larger framework of macro and sectoral economic and social policy analysis.

Additionally, to create a counterbalance to private and public group interests and activities which are detrimental to management of the natural resource base and the environment, citizens' groups should be formed to monitor and advocate. Public interest groups set up to act in a consultative status with Government and private business would provide a forum for consultation and decisions which would not be eschewed in favour of specific interest groups.

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[88] C.C. Par, "Problems, priorities and prospects in environmental education", *Environmental Conservation*, vol. 10, No. 2, 1983, pp. 133-139; UNESCO, "Environmental education in Asia and the Pacific", *Bulletin of the UNESCO Regional Office for Education in Asia and the Pacific*, No. 22, June 1981.

Movements to promote culturally and physically more appropriate shelter, urban and rural planning, technology, use of indigenous materials, biological control of pests, reduced use of environmentally dangerous substances, etc. are other measures that, if properly evaluated, supported and encouraged, will have lasting effects on the quality of life of people throughout the region.

III. STRATEGIC RESPONSES

Perhaps the largest medium- and long-term payoff potential in the pursuit of integrated approaches to human resources development relates to improvements in the quality of life. Quality-of-life concerns have usually been called "social" factors, often in order to rationalize the relatively low priority accorded to them in development programmes. If, however, these concerns are given heightened priority in integrated programmes for human resources development, enormous human potential can be unleashed and turned to productive ends. Such potential has been vividly demonstrated in several Asian and Pacific countries in recent generations, and there is no reason to suppose that the experience cannot now be repeated in virtually every country in the region. The productive potential of strongly motivated human beings is awesome; this is no longer an issue. What is needed is programmes aimed at substantially improving the quality of life of the great masses of the region's people so that this potential may be liberated and harnessed to development processes.

Lasting improvement in the quality of life requires a comprehensive, multisectoral strategy. This has repeatedly been shown to require programmes that respond to particular national circumstances. No model or approach can be transferred piecemeal from one country to another. To fit a proven model or approach to a specific situation, three distinct efforts need to be undertaken. First, situational surveys and analysis are necessary to develop a clear and comprehensive picture of the current quality-of-life situation, to identify ways of moving from this situation towards the achievement of a higher quality of life and to devise means of monitoring the process. Second, organizations which have critical roles to play in enhancing the quality of life should be identified, strengthened and linked to harness them to a unified effort. Third, policy and planning processes to enhance the quality of life should be structured and oriented to a more considered focus on all factors bearing on the issue, in accordance with the findings of research and analysis, in order to mobilize all relevant organizations in such a way as to promote and sustain a strategic response which is consistent with national circumstances and development goals.

A. Survey and analysis

The central focus of surveys and analysis of the issue at hand would be to examine alternative approaches to integrating quality-of-life concerns into

human resources development strategies, policies, plans and programmes. It would subsequently be necessary to monitor the implementation process to ensure that a mutually supportive relationship between quality-of-life issues and human resources development is achieved.

The exploration of integrated approaches and techniques could proceed along several lines. First, successful cases could be identified and examined with a view to exploring the means of replicating or adapting them in other countries of the region. Certain successful examples are well known in the region. A number of efforts at replication of these success stories have been less successful because of the difficulties inherent in adapting to differing social conditions. Such unsuccessful efforts should be studied to identify the specific reasons for failure and to provide a basis on which to undertake revised approaches with a greater chance of success.

Two types of studies are needed to bring past experience to bear on future possibilities. First, where quality-of-life programmes have been successful in enhancing human resources, such key factors as health, education, family planning and other social service delivery systems should be isolated and their basis for success expressed in operational and potentially replicable terms. Second, where human resources development problems are particularly severe, bottle-necks related to the improvement of the quality of life should be identified and the possible means to overcome them should be examined.

These types of research would inevitably raise the twin issues of identifying the critical components of quality of life and specifying measurable relationships between quality of life and human resources development. Some countries in the region have achieved some success in this; these examples should be examined and the specific factors and methods should be clarified to make them usable elsewhere. Ongoing national research efforts in this area should be surveyed, and they should be linked to develop common criteria and analytical frameworks.

At a more basic level, the human resources development implications of conventional quality-of-life policies, plans and programmes should be analysed. Are the formal educational systems in developing Asia-Pacific countries producing trainable people or just marginally literate manual labourers and poorly prepared secondary- and tertiary-level students? Are health resources being widely distributed among the people or are they being concentrated in expensive, urban, curative services focusing on privileged groups while large-scale preventable health problems continue to sap the vitality of the potentially productive poor? Are national policies which reinforce indigenous cultures and traditional social conventions supporting status systems which perpetuate inequitable distributive structures and thereby inhibit human resources develop-

ment? Are major disadvantaged social groups being bound to life-styles which conflict with the measures needed to achieve a higher quality of life? Openness to such considerations must be a major concern in promoting the adaptation of successful human resources development efforts to different socio-cultural environments. Surveys and analysis of the regional situation will be necessary in resolving these issues.

B. Monitoring and evaluation

Monitoring and evaluation are important in proportion to the unpredictability of the process that is being planned and executed. Experience with planning over the past several decades has shown that unanticipated events and consequences have tended to render plans irrelevant before they have been completed. A response has been to turn more to indicative rather than directive planning to incorporate the unanticipated into unified processes. Once it is accepted that directive planning is an inadequate guide in an uncertain situation, it becomes imperative to devote increased resources to monitoring and evaluation. Monotoring should be less a process for determining conformance to plan directives and more a source of information for determining future action in the face of changing circumstances. This is especially true of quality-of-life activities because they involve efforts to extend humanity's conscious control over new areas of behaviour, behaviour which has until very recently been dictated almost exclusively by social mechanisms of an entirely unplanned sort.

A minimum condition for effective monitoring and evaluation of quality-of-life concerns would be a series of indicators which provide timely feedback and which can be used to adjust policies, plans and programmes in accordance with results. Indicators should be developed which are suited to an indicative approach. They should be simple, rough-and-ready tools which can be used locally but which will also yield information to be fed back quickly to those who need it at the higher policy levels. They will necessarily be tailored to local circumstances, but it would be useful to develop, both regionally and nationally, procedures for their development, refinement and use.

The development of monitoring and evaluation indicators and procedures ought to be a regional effort. It could be set in the context of the formulation of a regional social development strategy. Ultimately, this process should lead to a greater capacity to compare quality-of-life situations between countries, assess the effectiveness of alternative policy, planning and programming approaches to their enhancement and adapt effective techniques more quickly and effectively to meet the requirements of specific situations.

C. Policy and planning

1. General orientation of national policy and planning regarding quality-of-life issues

Recent history is replete with evidence of the disruptive impact of unpredicted circumstances on the implementation of development policies and plans, and there is certainly no reason to suppose that this will change in the future. The incorporation of larger numbers of variables into integrated approaches to human resources development further reduces the feasibility of deterministic planning. If, however, development programmes that focus on quality-of-life considerations are implemented energetically, goal achievement can be improved even in the presence of low degrees of predictability. This is because quality-of-life policies and programmes themselves promote flexibility and "capacitation" in the human resources base, and thus the the capability of coping successfully with the unexpected.

A policy orientation which accepts this view will emphasize such matters as universal literacy and the general education of the entire population, the maximization of labour absorption in production, equalization of the distribution of income, wealth and opportunities among all social groups and the responsiveness of policy and planning systems to changing external conditions. Such a policy orientation will generate indicative, not directive, policies and plans. Even programmes formulated at the national level will be indicative in the sense of being adjustable to varying local circumstances. Such an approach will utilize information from a broad range of sources and will do so as often to adjust itself as to adjust its environment. Specific goal-related activities will emerge at low levels in the system as a result of the application of indicative criteria at the macro level.

The localization of programme implementation implicit in this orientation requires the development of policy frameworks for the integrated delivery of social services. Clear policy guidelines need to be developed to promote such systems at the local level. These guidelines would constitute a basis for the development, in accordance with local circumstances, of integrated sets of basic community services. Among the local services for which integrated delivery systems could be considered are improved means of nutrition and health care; care for children, the disabled and the aging; income maintenance; income earning and employment services; personal and property security; legal information and services; sanitation; local transport; and recreation.

It is commonly considered that labour in the developing Asia-Pacific countries is used in accordance with criteria of relative factor efficiency. However, this probably should be qualified by the view that capital is frequently

applied inefficiently, i.e., in excess of its real productivity. The characteristics of organizational decision-making concerning social investment too often lead to a substitution of capital for labour. National-level policy and planning mechanisms should establish more rational guidelines in this regard. Policy guidelines should deal more effectively with such problems as fiscal and other incentives which cause excessive capital use, the programmed shortage of critical skills, which blocks the use of relatively labour-intensive technologies, and the development of capital-intensive productive complexes, which have the same effect.

Maldistribution in the delivery of social services distorts the development, mobility and adaptability of human resources. Where social services are not widely available, people tend to opt for low-productivity occupations which allow them to remain within local village and family security networks. If employment information is not readily available, it will be difficult for people to move. Guidelines and criteria should be developed for locating and correcting service delivery imbalances.

The effectiveness of an indicative approach to the integration of quality-of-life considerations into overall development policy and planning requires effective mechanisms for the translation of general guidelines into specific local activities. Among the things which are required are local organizational standards, modalities for interfacing participative organizations and local government representatives and legal forms for the melding of local and government resources.

Many if not all of the policy responses suggested above can be given substantive content by drawing on existing experience in the region. The development of a regional strategy for the creation of integrated social services delivery systems could provide the developing Asia-Pacific countries with a useful framework for the formulation and effective execution of policies, plans and programmes fitted to their varying national circumstances.

2. Co-ordination of quality-of-life and human resources development goals and activities

Many of the programmes required for successful human resources development are being carried out in the developing Asia-Pacific countries on a piecemeal, sectorally specific basis. Greater attention should be given to the co-ordination of these programmes on an intersectoral, integrated basis so that their mutually enhancing potential can be achieved. This is the case particularly with respect to quality-of-life programmes, partly because continuing co-ordination has been difficult to achieve with the directive approaches typically applied by planners and policy makers in the social sector. Indicative approaches appear to be better suited to the achievement of the neded co-

ordination. In fact, reliance on indicative co-ordination of bottom-up mechanisms, or local execution and policy participation, would attune social planning well to local participation in quality-of-life-related activities.

Social development policy and planning in the Asia-Pacific region are typically highly structured, and implementation is bureaucratized in a complex of competing ministries and agencies. This appears to be one reason for the limited success in achieving quality-of-life improvements at the local level. In this context, it would seem practical to seek greater co-ordination through enhanced community participation. Greater emphasis on the local delivery of integrated social services provides a potentially effective approach to co-ordinating local activities and linking them to human resources development. In this manner, social services delivery could be co-ordinated among the various social sector agencies currently operating largely independently.

New modalities will need to be found to ensure the effective orchestration of such local-level social services co-ordination. In this connection, a number of tasks will be required. The translation of general guidelines into local action will require the strengthening of local organizational structures. Broadly participative, multisectoral local service organizations will need to be developed which play a role in needs assessment, activity design and implementation and feedback of results both locally and to more centralized policy and planning institutions. Appropriate organizational designs will need to be developed, along with operating procedures.

Ways must also be found to improve the co-ordination of social services at the centre and at each significant intervening level (province/state/district) between the centre and localities. A joint planning/implementation body would appear to be called for, and this would require the development of specific structures, legislation, implementing modalities, common accounting systems and perhaps a unified approach to resource allocation.

A common technical understanding of the requirements for an integrated approach to local social services delivery systems should be generated to enable such co-ordination to be effective. Personnel from different organizations should be provided with a basic capability to operate in a multisectoral environment to achieve such an understanding. The preparation of a core training curriculum for officials at all levels would contribute significantly to the possibility of achieving integrated efforts at all levels.

Integrated social services delivery systems should not be run exclusively by government bodies. Inevitably, this would relegate local participation to a residual role as a merely tolerated activity. It will be necessary to ensure that non-governmental interests are fully represented at all levels. Both institutionalized lobbying and direct participation at all levels would be essential aspects of such a system.

D. Target groups and enablers

Disadvantaged groups in society require priority attention in integrated quality-of-life programmes, as they form the great majority of the population in most developing ESCAP countries and have the greatest human resources development potential. Competition for resources among different sectoral programmes has not served these groups well in the past. To meet the particular needs of each group, approaches which do not suffer from counter-productive competition should be identified. It should be recognized in this regard that, if there is interaction between improvement in the quality of life and the development of human resources, the multiplicative effects of integrated efforts work both upwards and downwards.

To avoid counter-productive competition among service delivery systems, the development of integrated social services delivery systems should include attempts to identify and develop positive interdependencies among target groups. Such relationships can be developed so that, rather than competing for resources, target groups will co-operate to realize multiplier effects in resource use. Examples of this possibility include combining the care and participation needs of the aging with child care, youth guidance and adult education, and combining these in turn with the freeing of women for work outside the home.

It does not appear to be particularly useful to think in terms of national models of inter-group co-operation for integrated social services delivery systems. This is because the realities of co-operation touch on the essence of what "community" means. At the same time, current concern regarding the breakdown of traditional community structures throughout the region stems from their increasing inability to perform time-honoured functions in a modern economic and administrative context. This calls for a careful re-examination of the means of community revival and the strengthening of community-based social services.

The integration of external resources with local co-operative potential can be fostered through adherence to appropriate guidelines formulated by policy makers at the national level. Adherence to such guidelines, for example, concerning the establishment of local social services organizations, might qualify local communities to receive financial and advisory resources. Such guidelines might well be proposed as part of a regional social development strategy. This might begin with a regional effort to reformulate needs and delineate possibilities for their integrated satisfaction within the context of community participation.

Organizations and other enabler groups which are directly engaged in developing human resources for social development need to be accorded special

attention. Education and training institutions and special programmes are especially important resources for the capabilities of all such enabler groups. They need better capability for research, especially participatory action research, curriculum reform and development of effective pedagogy.

Related to capability building are the development of indigenous, situationally relevant training materials. Most such training materials currently used in developing ESCAP countries are imported, culturally alien transplants grafted onto local conditions. Often the materials are outdated and obsolete.

Technical and financial assistance should be provided to training institutions to establish research units, carry out staff development activities, establish publishing facilities and information dissemination units, reorient curricula to local situations and develop indigenous information materials incorporating national and regional data, experiences and information.

The limited capabilities of higher training institutions for social service personnel have necessitated the establishment of supplementary institutes and programmes for social service manpower development in many countries of this region. These have had better access to financial aid and expertise and more freedom to experiment with new ideas and approaches.

Such institutes need, however, to be assisted in the evaluation and documentation of their experiences for the direct use of enablers in the field. The materials, techniques and training strategies which they have developed need to be consolidated and disseminated to formal institutions, governmental bodies, non-governmental organizations and local groups involved in various social development efforts.

5. INTEGRATION OF WOMEN'S CONCERNS INTO HUMAN RESOURCES DEVELOPMENT*

INTRODUCTION

The development record shows that women's human capital potential is not being fully utilized as an input into the development process and that women also participate unequally in the human resources development that should be the main product of development. The creation and utilization of human resources in the wider sense are not separable: human resources cannot be improved unless opportunities for broad participation in society are also provided, while increased participation cannot be achieved except in association with increasing capacity to do productive work. Recognition of this duality is particularly important for the incorporation of women's human resources into development.

That half of the population of developing ESCAP countries are not able to contribute their full potential to development is unfortunate. That half the population is systematically excluded from an equal share in the outcome of development is disastrous. It is disastrous not only for the women concerned, but for the societies in which they live. The costs of low levels of human resources development among women are, among others, high infant mortality and high birth rates, low life expectancy for both males and females, low levels of literacy and education for society as a whole, persistent poverty and low rates of economic growth. These hardships are borne by men, women and children alike. No nation seeking development can afford such a heavy and unnecessary burden.

Human resources development, like all development initiatives, carries a cost. This is currently being incurred primarily to benefit men. The additional costs that would be required to ensure the equivalent human resources development of women are not great, particularly when balanced against the substantial benefits that would result for both men and women. The remedies for low levels of female human resources development lie more in changing the ways in which existing programmes are implemented than in creating new ones, and in consciously and deliberatly manipulating the institutional arrangements – the social, political, economic and legal rules and structures – of society to facilitate women's access and participation. Although this may be difficult, the capital costs are not large.

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The task of raising women's human resources development from the currently low levels prevailing in most countries of the ESCAP region will not be easy. It demands political commitment and determination, combined with skilled social engineering. Such political will can be generated through the realization, by both Government and society at large, of the heavy costs of inaction, in contrast to the immense gains to be secured for all through a successful strategy to develop women's human resources.

I. AN ANALYTICAL FRAME OF REFERENCE

A. The need for a demand-oriented strategy[1]

The distressingly low levels of human resources development among women in the ESCAP region might suggest that Governments have neglected this aspect of development policy. It must be stressed, however, that in recent years this has not been the case. A recent ESCAP survey presents an impressive record of policy initiatives and programmes in human resources development intended specifically for women during the decade 1976-1985.[2] Much remains to be done, and the effort continues. However, the fact that lack of progress is no longer attributable simply to official neglect underlines the importance of the question: Why have these policies and programmes failed to produce the anticipated results?

Human resources development is a complex process that, even with large inputs of financial and physical resources and time, is not easily achieved. A review of programmes undertaken on behalf of women suggests that the conventional supply-side orientation of past efforts in human resources development may be at fault. It is becoming increasingly clear that this emphasis on the supply of instruments for human resources development – on personnel, schools, medical facilities, training programmes, etc. – is inadequate. The mere provision of facilities is no guarantee that they will be used, and even less that they will be used by those for whom they are intended. It has been found, for example, that the availability of primary schools in Nepalese villages has had no perceptible effect on participation in schooling.[3] Similarly, a common

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[1] See Lorraine Corner, "Human resources development for developing countries: a survey of the major theoretical issues", in ESCAP, *Human Resources Development in Asia and the Pacific: Its Social Dimension* (ST/ESCAP/472), 1986, p. 23.

[2] ESCAP, *Achievements of the United Nations Decade for Women in Asia and the Pacific* (ST/ESCAP/434).

[3] Dean T. Jamison and Marlaine Lockheed, "Participation in schooling: determinants and learning outcomes in Nepal", *Economic Development and Cultural Change*, 1987, p. 280.

experience in primary health care programmes in the region is that services are grossly under-utilized, especially in the rural areas, where they appear to be most needed.

The poor are often unable to take advantage of opportunities to develop their human resources precisely because of the inadequacy of their human capital.[4] This vicious circle applies particularly to women. Illiteracy, ignorance, isolation and conservatism are powerful obstacles to women's participation in development programmes, especially when combined with poverty and physical hardship.[5] Construction of schools or health centres alone is unlikely, in the absence of supporting programmes, to result in extensive use by women or their children. What is required is a more demand-centred approach in which specific efforts are devoted to stimulating women's opportunities and capacities to utilize the services and facilities being provided.

B. The importance of the institutional context[6]

The structure of labour markets and wages, work patterns, trade union activities, access to employment (physical and social) and social conventions about women's work and women's roles are key aspects of the institutional context that account in large measure for the low level of utilization of human resources development opportunities among women.[7] A demand-creation approach will inevitably lead to a more explicit consideration of this institutional context within which human resources development takes place. This is an essential step in the successful implementation of human resources development programmes – one which, until now, has too often been overlooked. It is particularly important for women.

In economic theory, effective demand for human resources development is a function of its perceived utility, its market price and a resource constraint which, in modern demand theory, is comprised of both income and time.

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[4] Corner, *loc. cit.*, p. 20.

[5] See, for example, the experiences of women leaders in villages in the Republic of Korea and the Philippines in developing small-scale income-generation projects for women (ESCAP, *Learning from Rural Women: Village-level Success Cases of Rural Women's Group Income-raising Activities*, April 1983, pp. 1-26).

[6] The term "institutional context" is used here in the broad sociological sense to describe the established laws, customs, practices and conventions through which a society organizes and structures its economic, social and political relations. Laws and practices can conflict.

[7] Four aspects of women's situation that are particularly detrimental to women's participation in development are: women's life pattern, the socialization process for both sexes, changing patterns of family life and the structure of the labour market. See Amaryllis T. Torres and Lyodelia O. Fernandez, *Mobilizing Women for Development: Case Experiences in the Integration of Family Planning in Livelihood Projects* (Manila, Population Center Foundation, 1985), p. 1.

Although this theory is limited in its capacity to incorporate the institutional context into its analysis,[8] in developing countries the institutional context of consumer choice is often a critical factor. Two aspects of the institutional context that are especially important in understanding women's levels of utilization of human resources development facilities are time and knowledge. The so-called "double burden" of housework and market activity on many women imposes severe demands on their time (not to mention their energy). Human resources development is typically time-consuming, so the opportunity cost of time is often a critical factor in women's decisions to forgo human resources development.

Knowledge is another medium through which the impact of the institutional context may be transmitted to the calculus of consumer choice.[9] Consumers cannot demand something if they do not know of its existence or usefulness. However, knowledge is a complex function of, among other things, attitudes. Knowledge may change attitudes, but certain attitudes (for example, fear) can affect the extent to which exposure to information results in its being adopted and used effectively. Attitudes are determined by value systems in combination with other elements of the institutional context, such as power structures and reward systems. Efforts to create a demand among women for the development of their own human resources and those of their children must confront these institutional barriers if they are to succeed.

The demand for human resources development may also be regarded as the demand for an investment good. The elements of the decision-making process for investment in human capital comprise the cost of making the investment, including the opportunity cost, compared with the expected returns to be obtained. The expected returns reflect a macro level of demand for human resources as inputs into production and depend on employment,[10] in constrast to the micro level of the individual's demand for human resources development.

C. The special situation of women

What makes women's situation different from men's, apart from biological considerations, is the institutional context within which women function. Gender-neutral policies and programmes have failed to reach women because, in neglecting to consider explicitly the constraints imposed by women's institutional context, they automatically and inevitably freed up the context in

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[8] It is often subsumed under a *ceteris paribus* condition.

[9] Conventional economic theory avoids the issue by assuming that all consumers have "perfect knowledge".

[10] This stands in contrast to the micro level of the individual's demand for human resources development.

which males operate, thus automatically creating a bias in favour of men. Successful human resources development for women demands that the unique economic and social setting in which women function should be acknowledged and incorporated into human resources development programmes.

What are the unique features of women's institutional context? The fundamental characteristic is that so much of what women do is kept formally invisible. Women's activities are consistently obscured from the public gaze, dismissed as unimportant in public commentary, often unrecognized – even by women themselves – in public scrutinies of contributions to development and thus not incorporated into government plans or programmes. A number of factors conspire to conceal women's work and women's roles from the attention of the community and of those who determine policy. In addition to being regarded as non-economic and difficult to quantify, the household location of many women's activities leads to their being automatically classified into the private rather than the public arena, an area of social affairs into which policy makers hesitate to venture. In societies with strong traditions protecting the privacy of the family unit, women's household-based activities are physically screened and even more likely to be entirely ignored.

Related to the household focus of women's activities is the non-market orientation of women's traditional work. Women's contributions to household income, especially in the subsistence economy and during the early stages of development, tend to be in kind, rather than in cash. Policy makers, however, are primarily concerned with the relatively new, rapidly growing and increasingly critical cash economy. One of the ironies of development is that traditional women's activities – such as the provision of food, fuel, water and domestic services – are increasingly pushed from the household subsistence economy into the market, forcing increasing numbers of women into the monetized economy in order to obtain cash to meet indirectly the needs they were formerly able to meet directly. However, women's participation in the cash economy tends to be residual. The prior demands of home and family (and for rural women, of the family farm) cause women to gravitate into part-time and "informal" activities, which are less conspicuous. The community has also become accustomed to regarding the market as a largely male domain. Women's growing presence in the new cash economy and their "double burden" tend to be overlooked.

The factors that make women invisible to planners and policy makers also bar women from benefiting from the opportunities created by what are formally considered to be gender-neutral development programmes. Women have been socialized to reject opportunity, even when they hear it knocking. In India it was reported that parental attitudes towards education and the subsequent employment opportunities for women have a strong influence on

daughters' access to education and employment opportunities.[11] The few who might be more receptive find that the final barrier is their lack of access to, and control over, the resources needed to exploit the opportunity.

Perhaps the most influential factors responsible for the invisibility of women are conventional social values. These reflect ideals about what women should do, in an ideal world, rather than what real women actually do. Social values are intrinsically conservative forces and, in a rapidly changing world, are inevitably based on outmoded social realities. Furthermore, they typically reflect middle class or élite ideals, often as interpreted by middle class or élite males who, either directly or indirectly through patronage, control the media and other channels through which norms and attitudes are transmitted and disseminated.

The impact of development-induced changes (such as declining infant mortality, smaller families, widespread primary schooling and the transfer to the market of tasks formerly carried out in the household) on women's traditional activities of child-bearing, child-rearing and domestic production has profoundly changed the lives of women. For example, the age at first marriage in Indonesia was reported to be rising; from 20 years on average in 1980 to 21.2 years in 1985. At the same time, labour force participation rates for women increased from 32 per cent to 38 per cent.[12] The impact of development on women's roles and activities has been much greater than on men. In many countries the most far-reaching changes have been felt by poor women.[13] Conventional values tend to restrict and control women's behaviour more rigidly than men's because of the social, economic and political consequences of women's fertility. Thus, the lag between economic and social development and changes in conventional values has a great impact on women.

II. AN OVERVIEW OF THE ISSUES

A. Women's lower levels of human resources development

Human resources levels for women, especially rural women, in the ESCAP region remain low, and generally lower than for men. As shown in table 1, female illiteracy is higher than male illiteracy throughout the region; in most

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[11] J. Veera Raghavan, "Human resource development in relation to science and technology in India", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development, Tokyo, 7-10 December 1987.

[12] Sayuti Hasibuan, "Labour force growth and employment in the Indonesian economy", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[13] Women from more affluent households are to some extent cushioned by the element of choice that is not available to the poor.

Table 1. Selected ESCAP countries: female illiteracy, 1985

Country or area[a]	*Female illiteracy (percentage)*	*Ratio of female to male illiteracy*
Afghanistan	92.2	1.5
Nepal	88.1	1.4
Pakistan	81.4	1.4
Bangladesh	77.8	1.4
India	71.1	1.7
Papua New Guinea	64.7	1.4
Islamic Republic of Iran	61.0	1.6
Vanuatu	52.0	1.2
China	44.5	2.5
Burma	43.0	2.9
Indonesia	34.6	2.0
Malaysia	34.0	1.8
Brunei Darussalam	31.0	2.1
Lao People's Democratic Republic	24.2	3.0
Singapore	21.4	3.2
Fiji	19.1	2.0
Hong Kong	19.1	3.6
Sri Lanka	17.3	2.0
Philippines	14.6	1.0
Mongolia	14.0	2.0
Thailand	12.2	2.1
Republic of Korea	12.0	3.0

Sources: UNESCO, *Statistical Yearbook, 1985* (Paris, 1985), table 1.3; UNICEF, *The State of the World's Children, 1987* (New York, 1987), table 4.

a In descending order of female illiteracy.

cases it is at least one and a half times the male level. Only in the Philippines are gender literacy ratios roughly equal. Table 2 shows that, despite considerable gains in literacy in the last generation, at least six countries of the region continue to lag seriously in female literacy, resulting in higher ratios of male to female literacy for the younger, compared with the older, age groups. Part of the reason for this is suggested by the data in table 3, which reveal that female enrolment rates for both the first and second levels of education are, with few exceptions, considerably lower than male rates. In at least six countries of the region, female enrolment rates for the first level are less than 80 per cent of male rates, while for the second level of education data for 11 countries show that female rates are less than 80 per cent of male rates. Data from the Islamic Republic of Iran for 1985 showed that 43 per cent of total enrolment in general education was female but at the higher education level, comprising students aged 18 to 24 years, only 26 per cent was female.[14] The overall female literacy rate in Pakistan was 16 per cent, but in rural areas it was as low as 7 per cent. The overall primary school enrolment rate for females was 33 per cent, but only 21 per cent for rural areas.[15] The year referred to appears to be 1986.

The physical quality of female human resources is also low, as reflected in women's high morbidity rates, high death rates and low life expectancy. Numerous studies in the region, particularly in South Asia, document the fact that women and female children suffer from higher levels of malnutrition and are more prone to illness; yet they are less likely than men to receive medical treatment, particularly modern medical treatment.[16] Table 4 includes six ESCAP countries in which female life expectancy at birth is less than 50 years, while in no less than seven countries the natural sex differential favouring females has been completely eliminated, dramatically highlighting the extent to which women's health improvement has lagged behind that of men.[17]

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[14] Paridokht Vahidi, "Guidelines for a plan of action on human resources development: a view from the Islamic Republic of Iran", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[15] Zulekha Zar, "Country paper on Pakistan", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[16] See, for example, Bina Agarwal, "Women, poverty and agricultural growth in India", *Journal of Peasant Studies*, vol. 13, No. 4, 1987, pp. 166-182, and William U. Chandler, "Child health, education and development", *Prospects*, 59, 1987, p. 293.

[17] Females typically have lower mortality and higher life expectancy than males. This difference increases with the level of development, being on average 2.2 years in less developed countries and 7.2 years in more developed countries (David Yaukey, *Demography: The Study of Human Population* (New York, 1985), p. 130. In India lower life expectancy for women is said to have first emerged in the decade 1921-1930. It has been increasing steadily ever since (Agarwal, *loc. cit.*, p. 172 and table 3).

Table 2. Selected ESCAP countries: female illiteracy by age group, latest year available

Country or area[a]	*Year*	*Ages 10-24*		*Ages 25 and over*	
		Female illiteracy (percentage)	*Female/ male illiteracy ratio*	*Female illiteracy (percentage)*	*Female/ male illiteracy ratio*
China	1982	14.5[b]	3.1	38.4	1.8
Islamic Republic of Iran	1976	50.4	2.2	85.4	1.4
Afghanistan	1979	86.6	1.8	97.6	1.3
India	1971	64.4[c]	1.7	86.2[d]	1.5
Nepal	1981	81.4	1.6	93.4	1.3
Indonesia	1980	15.6	1.6	54.2	1.9
Republic of Korea	1975	1.1	1.6	26.5	3.4
Thailand	1980	3.7	1.4	22.9	2.1
Malaysia	1980	11.8	1.3	50.1	2.2
Pakistan	1981	79.9	1.2	91.3	1.3
Bangladesh	1981	74.5	1.2	86.7	1.4
Brunei Darussalam	1981	6.4	1.1	45.4	2.3
Sri Lanka	1981	10.6	1.1	22.9	2.4
Philippines	1970	8.9	0.9	29.9	1.5
Singapore	1980	4.8	0.9	36.8	3.4
Maldives	1977	18.1	0.8	21.0	1.1

Source: United Nations, Department of International Economic and Social Affairs, *Selected Demographic and Social Characteristics of the World's Children and Youth*, ST/ESA/SER.R/60 (New York, 1986), table 17.

a In descending order of the female/male illiteracy ratio for ages 10-24.

b 12-24 years.

c 10-29 years.

d 30 years and over.

Table 3. Selected ESCAP countries: female enrolment rates, first and second levels of education, latest year available (percentages)

Country or area[a]	*Year*	*First level*		*Second level*	
		Female rate	*Percentage of male rate*	*Female rate*	*Percentage of male rate*
Afghanistan	1982	9	47.4	5	45.4
Bhutan	1984	17	53.1	1	16.7
Pakistan	1981	30	53.6	8	40.0
Nepal	1983	43	43.0	10	29.4
Bangladesh	1984	55	82.1	11	42.3
Papua New Guinea	1982	55	80.9	8	53.3
India	1982	68	68.0	24	54.5
Burma	1975	80	93.0	19	82.6
Lao People's Democratic Republic	1981	80	85.1	13	65.0
Islamic Republic of Iran	1983	88	77.9	33	70.2
China	1983	93	80.2	27	65.9
Thailand	1980	97	96.0	28	96.6
Malaysia	1983	98	98.0	49	98.0
Sri Lanka	1984	99	96.1	58	107.4
Japan	1983	100	100.0	95	102.2
New Zealand	1983	101	98.1	88	102.3
Republic of Korea	1984	102	98.1	86	93.5
Australia	1983	104	99.1	93	102.2
Hong Kong	1983	104	97.2	70	107.7
Viet Nam	1980	105	87.5	43	81.1
Mongolia	1982	107	101.9	90	109.8
Fiji	1981	109	98.2	75	104.2
Singapore	1983	111	96.5	69	101.5
Indonesia	1983	112	94.9	31	73.8
Philippines	1982	113	98.3	66	108.2

Source: UNESCO, *Statistical Yearbook, 1985* (Paris, 1985), table 3.2.

a In ascending order of female enrolment rate at the first level of education.

Table 4. Selected ESCAP countries: female life expectancy at birth, latest year available

Country or area[a]	*Year*	*Life expectancy (years)*	*Difference from male life expectancy (years)*
Afghanistan	1985	38.4	0.8
Bhutan	1985	46.1	-1.5
Nepal	1985	46.1	-1.5
Democratic Kampuchea	1985	47.4	2.9
Bangladesh	1985	48.2	-1.0
Maldives	1982	49.5	-3.9
Pakistan	1985	50.2	-1.8
Lao People's Democratic Republic	1985	52.4	3.0
Vanuatu	1984	53.7	-2.5
Papua New Guinea	1985	53.8	1.6
Burma	1985	54.3	3.1
Indonesia	1985	56.2	2.8
India	1985	56.6	-0.1
Islamic Republic of Iran	1985	58.3	0.3
Kiribati	1958-1962	59.0	2.1
Tonga	1981	61.0	1.0
Viet Nam	1985	62.1	4.4
Philippines	1985	64.6	3.6
Mongolia	1985	65.4	4.1
Samoa	1985	65.5	3.3
Thailand	1985	66.9	5.9
Malaysia[b]	1985	69.8	4.0
China	1985	69.9	2.5
Cook Islands	1981	70.0	6.0
Sri Lanka	1985	70.9	3.3
Republic of Korea	1985	71.9	6.5
Fiji	1985	71.9	4.3
Brunei Darussalam	1981	72.7	2.6
Singapore	1985	75.2	5.5
New Zealand	1984	77.7	6.5
Hong Kong	1985	78.6	5.6
Australia	1984	79.1	6.5
Japan	1984	80.2	5.6

Sources: United Nations, *Demographic Yearbook, 1985* (United Nations publication, Sales No. E/F.86.XIII.1), table 4; ESCAP, *1985 ESCAP Population Data Sheet.*

a In ascending order of life expectancy.

b Peninsular Malaysia.

B. Under-utilization of female human capital

There is no doubt that female human capital is under-utilized, but the extent of under-utilization is considerably less than official labour force statistics suggest. Contrast, for example, the low levels of female labour force participation typical of South Asia, as shown in table 5, with the following statement:

> Women account for between one-third and one-half of the agricultural labour force in South Asian countries. There are also substantial numbers of women in the rural non-farm sector; it was recently estimated, for example, that women made up more than one-third of the rural industrial labour force in Bangladesh.[18]

The reasons for under-enumeration of the female labour force are directly related to the institutional context of women's work. The low official rates are partly a reflection of the fact that women's work tends to be confined to non-monetized, traditional food and handicraft production while definitions of labour force participation tend to neglect these subsectors of the economy.[19] It also occurs partly because many women's activities tend to be invisible, as explained in a later section of this paper, partly owing to the use of explicit definitions that exclude part-time and non-monetary activities[20] and partly because of data collection procedures.[21]

while there is ample evidence that women's economic contribution is under-enumerated and poorly recognized, women's human capital is also under-utilized. It is under-utilized in two senses: many women do not participate at all in formally productive work, as defined by the societies in which they

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[18] Iftikhar Ahmed, "Technology, production linkages and women's employment in South Asia", *International Labour Review*, vol. 126, No. 1, January-February 1987, p. 21.

[19] In the Pacific island economies, low official rates of female labour force participation are contrary to the evidence of authropolitical studies and even conflict with other official sources. (Carol B. Hetler and Siew-Ean Khoo, "Women's participation in the South Pacific economies", in ESCAP, *Women's Economic Participation in Asia and the Pacific* (ST/ESCAP/510), pp. 38-42.

[20] For instance, the number of women in the Indian labour force declined by almost half between the censuses of 1961 and 1971 largely owing to the replacement of a broad definition of labour force activity by a definition restricted to paid activities (ESCAP, *Achievements of the United Nations Decade for Women in Asia and the Pacific*, p. 19).

[21] Pacific island countries that specifically include traditional subsistence activities in the definition of economic activity show higher rates of female labour force participation than those that do not (Carol B. Hetler and Siew-Ean Khoo, *loc. cit.*). Data collection procedures are also significant in determining the enumerated level of female economic activity. It has often been maintained that male respondents in some countries tend to underreport the levels of economic activity of women in their households (Nadia Youssef, "Women and agricultural production in Muslim societies", *Studies in Comparative International Development* 12:1977, pp. 41-58).

Table 5. Selected ESCAP countries: female labour force participation, latest year available[a]
(percentages)

Country or area[b]	*Year*	*Female labour force participation rate*	*Percentage of male rate*
Pakistan	1984	7.2	14.0
Tonga	1976	7.6	19.3
Fiji	1980	8.0	15.1
Samoa	1981	8.3	19.1
Bangladesh	1981	12.6	22.1
Afghanistan	1980	12.8	24.1
Sri Lanka	1980	17.4	34.2
Brunei Darussalam	1981	18.7	35.8
India	1981	19.8	37.6
Cook Islands	1981	21.1	46.3
Philippines	1980	23.2	48.7
Indonesia	1980	23.3	48.6
Malaysia	1980	25.3	51.0
Republic of Korea	1980	25.8	54.4
Burma	1980	28.3	55.0
New Zealand	1981	28.5	51.4
Singapore	1980	32.6	55.0
Australia	1981	34.5	60.1
China	1980	35.5	63.0
Japan	1980	36.3	58.6
Hong Kong	1981	37.2	59.9
Thailand	1980	44.2	86.2
Nepal[c]	1981	46.2	55.5
Maldives[d]	1977	62.2	69.4

Source: ILO, *Yearbook of Labour Statistics, 1984* (Geneva, 1984), table 1.

a Based on census data, except for Pakistan, where labour force survey data are used.

b In ascending order of female labour force participation rate.

c Rates for Nepal are based on the population aged 10 years and above.

d Rates for the Maldives are based on the population aged 15 to 74 years.

live, while others who do work are confined to activities in which their roles and rewards are significantly lower than those available to men with the same human capital endowment. Table 5 shows that female to male labour force participation in the ESCAP region ranges from as low as 14 per cent in Pakistan to a high of 86 per cent in Thailand. In at least 12 countries the ratio is less than 50 per cent. Aside from the problem of under-enumeration, this is partly because younger women leave the formal labour force on marriage or child-bearing and do not return.[22] Furthermore, in many countries women with intermediate levels of education have lower participation rates than women with little or no education. This is a particularly serious waste in those developing countries where skilled and educated labour is scarce.

C. Women's unequal participation in the broader aspects of human resources development

Education and health – and, many would add, employment – are not merely elements of human capital. They are, more importantly, principal means by which the quality of life is enhanced and enriched. Although various social and other institutional factors can explain, although not justify, women's invisibility as producers, there are few *a priori* grounds to excuse the failure of development to benefit women equally with men. Yet women in the ESCAP region consistently lag behind men as beneficiaries of development.

Intertwined with their other disadvantages in a complex web of cause and effect, women in most developing ESCAP countries are also less economically independent, are ascribed lower social status and play a less active role in politics and decision-making. Women are also most affected by the absence of basic infrastructure for human resources development in the form of safe water, sanitary facilities, health services and a pollution-free and sustainable natural environment. More than half the population in at least 11 ESCAP countries did not have access to safe drinking water in 1983,[23] while more than half of the population in another group of 11 countries did not have adequate sanitary facilities.[24] Women and children are more closely confined to domestic surroundings, where contaminated water and poor sanitation pose greater threats to health while environmental deterioration often exacerbates the difficulties of fetching water and gathering domestic fuel, tasks typically reserved for women.[25]

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[22] Linda Y.C. Lim, *Women in the Economy: Employment*, Status of Women in Asia and the Pacific Region Series, (ST/ESCAP/417), pp. 1-8.

[23] UNICEF, *The State of the World's Children, 1987* (New York, 1987), table 4.

[24] World Health Organization, *Health Statistics Annual* (Geneva, 1986), table 3.

[25] Elizabeth Cecelski, "Energy and rural women's work: crisis, response and policy alternatives", *International Labour Review*, vol. 126, No. 1, January-February 1987, pp. 41-64; and Agarwal, *loc. cit.*, pp. 180-181.

Part of the problem lies in the way in which women's development roles have been dichotomized by planners. Development plans differentiate between women's participation in "economic" development as producers, a role that is often overlooked or undervalued, and their participation as beneficiaries of "social" development in terms of improved health, family welfare, etc. Men's participation is implicitly integrated between the "economic" and "social" elements, as is the process of development itself. It is, in fact, not possible to separate active participation in production from participation in the benefits of development without creating conditions of repression and impoverishment. Access to the benefits of development through opportunities for rewarding work is a necessary pre-condition for a positive attitude to investment in human capital and an awakening of the individual's demand for improvement in her/his human capital. But improved human capital is a condition of active participation as a beneficiary in development programmes. The emphasis which development planning places on only one aspect of women's role in development virtually precludes women's attainment of equal participation in either.

D. Some dilemmas

1. The conflict between males and females for limited employment opportunities

A number of developing ESCAP countries, experiencing increasing numbers of new entrants into the labour force in the face of high and in some cases rising levels of open unemployment and underemployment, are likely to query a call to expand employment opportunities for women. There can be no doubt that any significant increase in the numbers of women entering the work force, especially at the lower levels, will put pressure on male employment. However, there are two major reasons why the present effective exclusion of women from many areas of paid employment must not be allowed to continue.

The first and most basic reason is that the implicit human resources development costs of employment discrimination against women are too high, not only for women but also for men and children and for overall national development. Employment, or at least the option of employment, is an important element of human resources development. In modern society, employment not only provides income but also status and social recognition, opportunities for other forms of social and economic participation, the means of attaining self-awareness and self-confidence and, perhaps most important of all, the incentive for further human resources development. While some of these attributes of human resources development can be obtained in other activities, employment or the possibility of employment seems to offer the most effective incentive for human resources development. Women must therefore be given the option to work.

The second major factor is that large numbers of women, especially rural women, are already in the work force, whether their participation is statistically recorded or not, and are making an important contribution to the incomes of their households. Many of these women are likely to be displaced from their current employment within the foreseeable future as new technologies are introduced, industrial restructuring proceeds and rural-urban migration disrupts established gender work relationships, among other reasons. For example, rural women in Pakistan are actively engaged in productive activities in the household and on the farm, although their contribution is often unrecognized, overlooked or ignored. Agricultural mechanization threatens the productive activities of rural women but urban jobs are generally unavailable for women.[26] If alternative employment or substitutes for their earnings are not found, the social and human costs will be high. Since many women currently work in semi-"invisible" occupations in agriculture and the informal sector, it will be necessary for Governments to make a deliberate and determined effort to provide them with access to alternative employment.

2. The conflict between women's employment and the need for child care

In developing ESCAP countries, as in most of the world, women not only bear children but must also serve as the primary source of child care. Although alternative sources of child care may be provided by some employers and may be available for more affluent households, they are not a viable option for the majority of women. The availability of traditional sources of child care offered by the extended family, older siblings and neighbourhood and kin networks is likely to decrease. At the same time, as women gain access to more formal and visible forms of employment, their work will become increasingly incompatible with caring for young children. In countries with successful family planning programmes and declining birth rates, the problem is somewhat reduced by the decrease in the average duration of women's time spent in child-bearing and child-raising. However, the potential conflict remains and implies that the majority of women in the developing countries of the region will spend their child-bearing and child-rearing years out of the work force.

This has important implications for women's human resources development. It emphasizes the need for developing ESCAP countries to establish retraining programmes for older women wishing to re-enter the work force after a period of family rearing. Female labour force participation trends for Japan show that many middle-aged women are returning to the work force after raising their children. In response, it has been suggested that Japanese

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[26] Zulekha Zar, *loc. cit.*, p. 12.

policies for retraining and continuing education, as well as for promoting "learning companies" to give on-the-job training, need to be strengthened.[27] At the same time it offers an opportunity for creative human resources development programmes to focus on both women and their children. Unlike many that have been implemented in the past, such programmes should look both at women's current role as house-wives and mothers and at their probable future re-entry into the labour force. Lastly, it raises the issue of how developing ESCAP countries might begin to consider the redefinition of gender roles with respect to child-rearing in order to strengthen men's participation in this traditional female responsibility.

E. The consequences

It is not only women who suffer from women's low levels of human resources development. The disadvantages imposed on mothers are visited upon their children, especially their daughters. In poor households, where the economic contribution of women is often critical, all members suffer. Women's low levels of human resources development thus directly threaten the success of national anti-poverty strategies. Indeed, the very success of the development effort in many Asian and Pacific countries is imperilled by their failure to develop the human resources of their women.

A relatively high proportion of household income in poor households is generated by women's work.[28] Women's earnings are even more important for poor households than their recorded share of total household income might suggest, because it has been found that women devote more of their earnings than men to meeting family needs.[29] Furthermore, female-headed households, which comprise up to one fifth of all households in India, are particularly prone to poverty.[30] A number of observers share the conclusion that "anti-poverty strategies can be successful only if they effectively promote female employment and income".[31]

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[27] Tamiko Iguchi, "Employment and manpower development in Japan", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[28] Martha F. Loutfi, "Development with women: action, not alibis", *International Labour Review*, vol. 126, No. 1, January-February 1987, p. 113; and Ahmed, *loc. cit.*, citing studies in India and Bangladesh.

[29] Loutfi, *loc. cit.*, p. 113; also Agarwal, *loc. cit.*, p. 182, citing P. Mencher and K. Sarodini, "Muddy feet and dirty hands: rice production and female agricultural labour", *Economic and Political Weekly*, 25 December 1982, pp. A-149-196.

[30] Mayra Buvinic and Nadia Youssef, *Women-Headed Households: The Ignored Factor in Development Planning* (Washington, DC, International Center for Research on Women, 1978).

[31] Iftikhar Ahmed, *loc. cit.*, p. 21.

A nation's failure to realize the potential of its female human resources necessarily impedes the expression of much male human resources development capacity. This effect is most pronounced in poor countries. The main responsibility for human reproduction and much of the socialization of children rests with women. Thus, they have the basic responsibility for the quality of all of a nation's human resources, both male and female, on which the national development programme must build. It is becoming increasingly clear that illiterate, uneducated women who are in poor health themselves are unable to fulfil this responsibility adequately or efficiently.

It is obvious that women suffering from poor health and malnutrition are less likely to give birth to and successfully raise healthy children. Infants born to illiterate and uneducated women are seriously disadvantaged in the struggle for life and health. Table 6 shows a clear association between national levels of female illiteracy and infant mortality in the ESCAP region. Only those countries and areas with female illiteracy levels above 70 per cent have infant mortality levels above 100 deaths per 1,000. Many empirical studies have found a link between education and lower infant mortality.[32] This link has been recognized by a number of Governments in the region. It is evident in the demographic perspective of the Indian Government's long-term development strategy to the year 2000.[33]

The human resources development of the children of illiterate mothers is also at risk in other ways.[34] Studies in Nepal show that child nutritional status is positively related to school enrolment and grade attainment.[35] In Thailand it has been found that parents who attended school have higher educational aspirations for their children.[36] Studies also show consistently that education affects modernity of outlook. Recent data from Nepal suggest that parental schooling and modern attitudes are strongly related to school participation.[37] Other studies show that parental attitudes, especially conservatism, have a particularly important influence on female enrolment in rural

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[32] For example, see Susan Hill Cochrane, "The effects of education on health", World Bank Staff Working Paper No. 405, July 1980; and Zeba A. Sather, "Seeking explanations for high levels of infant mortality in Pakistan", *Pakistan Development Review*, vol. 26, No. 1, 1987, p. 66.

[33] J. Veera Raghavan, *loc. cit.*, p. 2.

[34] It should be noted that not all illiterate women are poor. Thus, it is not only the children of the poor who are affected by this problem.

[35] Peter Moock and Joanne Leslie, "Childhood malnutrition and schooling in the Terai region of Nepal", *Journal of Development Economics*, 30, 1986, pp. 33-52.

[36] Susan Cochrane and Dean T. Jamison, "Educational attainment and achievement in rural Thailand", in A. Summers, ed., *New Directions for Testing and Measurement: Productivity Assessment in Education* (San Francisco, 1982), pp. 43-49.

[37] Dean T. Jamison and Marlaine Lockheed, *loc. cit.*

areas. Women's illiteracy and lack of education, by increasing their children's chances of suffering ill-health and poor nutrition, indirectly reduce their chances of attending and succeeding in school. Compounding this is the direct effect of their probably less modern attitudes on the school attendance of their children, an effect that is likely to be more critical for daughters than for sons.

III. SCENARIOS FOR WOMEN'S HUMAN RESOURCES DEVELOPMENT TO THE YEAR 2000

A. Women's issues in employment and manpower development

1. The supply of labour

The accompanying paper on the employment and manpower development aspects of human resources development depicts a rather gloomy outlook for labour markets in the developing ESCAP countries for the remainder of this century. As a result of the relatively youthful age structures of most ESCAP countries, the numbers of new entrants of both sexes into the labour market will continue to increase rapidly, despite the success of several countries of the region in sharply curtailing birth rates. Male labour force participation rates have generally fallen owing to increasing school retention rates and earlier retirement and have stabilized in most countries in recent years. Thus, most of the increase in the male labour force is due to demographic factors and can be predicted.

In contrast, female participation rates, particularly in countries with relatively low levels, are likely to be more volatile and less predictable.[38] Increasing numbers of better educated young women are entering the region's labour markets, especially for jobs in the formal sector.[39] At the same time, women, especially those from poorer families with lower levels of education, are under increasing pressure to move into the labour market to obtain cash with which to purchase goods and services they were formerly able to obtain directly within the subsistence sector. The success of planners and policy makers in integrating women into development is most likely to find expression in increasing rates of female labour force participation. Indeed, a major contention of this paper is that increased labour force activity is an essential element of human resources development for women.

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[38] Rashid Amjad, "Human resources development: the Asian experience in employment and manpower planning – an overview", in Rashid Amjad, ed., *Human Resource Planning: The Asian Experience* (New Delhi, ILO/ARTEP, 1987), pp. 9-10.

[39] *Ibid.*, p. 10.

Table 6. Selected ESCAP countries: infant mortality and adult female illiteracy, latest year available

Country or area[a]	*Adult female illiteracy (percentage)*	*Infant mortality (deaths per 1,000)*
Afghanistan	92	189
Nepal	88	134
Pakistan	81	115
Bangladesh	78	124
India	71	105
Papua New Guinea	65	68
China	45	36
Burma	43	66
Indonesia	35	79
Malaysia	34	28
Brunei Darussalam	31	12
Viet Nam	22	72
Singapore	21	9
Fiji	19	29
Hong Kong	19	9
Sri Lanka	17	36
Philippines	15	48
Thailand	12	44
Republic of Korea	12	27
New Zealand	–	12
Australia	–	9

Source: UNICEF, *The State of the World's Children, 1987* (New York, 1987).

Note: A dash (–) indicates that the amount is zero or negligible.

a In descending order of female illiteracy.

However, it should be recognized that some countries in the region face very special problems related to female labour force participation. For example, in Bangladesh child labour (age 10-14 years) has increased to about 40 per cent, with higher rates among female children. This high incidence of female child labour occurs in a society where females generally account for only 5.5 per cent of total employment outside the home.[40] In the case of Pakistan, it has been observed that years, even decades, may be needed to provide employment opportunities for women, given the traditional neglect and deprivation of Pakistani women.[41]

Labour is not a homogeneous commodity. It is important to know not only how many women are likely to enter the labour force in the remaining years of the present century, but also what kinds of skills and qualifications they will offer. If current trends continue, female labour in many countries of the region is likely to be concentrated in two areas of the skills spectrum: the majority of working women will crowd into the lowest levels of uneducated and unskilled labour, while increasing – although still absolutely small – numbers will move into the middle and upper ranks of tertiary-educated and professional labour. This is partly the result of a persistent gender gap in secondary and vocational schooling, despite considerable narrowing at higher levels.[42] It is also partly due to the serious economic and social barriers to education for female children from poor families that cause the gender gap to narrow much more slowly among the poor.[43]

The quality of female job seekers in the coming decade will depend on women's willingness to invest in their own and their daughters' human capital. This in turn will depend to a large extent on their opportunities to participate in production and on the returns they are likely to obtain on their investment. The vicious circle of low-wage, low-productivity female employment or even unemployment leading to lack of incentives to invest in education or training and its obverse, poor-quality female human capital employed in low-paying, low-productivity jobs, will not be easily broken. However, with strong political commitment arising out of a recognition of the costs of female

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[40] Nur Ahmad Siddique, "Employment and manpower development in Bangladesh: Current and prospective trends, policy options and plans and programmes", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

[41] Zulekha Zar, *loc. cit.*, p. 26.

[42] Kalpana Bardhan, "Women workers in South Asia, employment problems and policies in the context of the poverty target groups approach", ILO/ARTEP Working Paper, June 1987, p. 40. Bardhan notes that the combination of modernization, job segregation and the culture of female exclusion in South Asia has helped middle-class educated women to move into salaried jobs.

[43] *Ibid.*, pp. 50 and 52.

capital wastage and a clear understanding of its causes the cycle can be breached, as it must be if the countries in the ESCAP region are to achieve their development objectives.

2. The demand for labour

Indications for the remainder of the present century are that the demand for labour with low levels of skill will not expand commensurate with the probable numbers of job seekers, both male and female. In developing countries, in contrast to the experience of the now-developed countries at an equivalent stage of development, changing technologies have reduced the capacity of the manufacturing sector to absorb labour, particularly unskilled labour. Recent trends in industrial technology have resulted in decreasing labour intensity in manufacturing production. The resultant elimination of many assembly line jobs is particularly serious for women who, because of their low levels of human capital, are typically able to perform only unskilled and semi-skilled labour. The vast majority of economically active women in developing ESCAP countries work in the agricultural sector, where they provide relatively unskilled labour. Their continued employment in this sector is also threatened by technological developments that have been more labour-saving than labour-using. As a result of these trends in industry and agriculture, the service sector is becoming correspondingly more important in the overall structure of employment. The Japanese experience suggests future trends for other developing countries. In Japan tertiary industry, including government and service industries, accounted for 36.9 per cent of total employment in 1985.[44]

To some extent the service sector appears to be taking on the role of residual employer of unskilled and semi-skilled labour, particularly in the more informal activities. Earnings in this sector are often low, providing neither incentive nor capacity for human resources development. In several countries of the region there is little prospect of improvement in this regard in the foreseeable future. The areas of service sector employment with higher growth potential tend to require higher levels of education and skill than the majority of women workers possess, particularly those displaced from agriculture. Thus, the possibilities offered by this growth area are also largely beyond women's reach.

There is a paradox in the choices facing the developing ESCAP countries during the closing decades of the twentieth century. On the one hand, their

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[44] Tamiko Iguchi, *loc. cit.*, p. 5, table 1.

rural populations, both male and female, are among the most over-worked and least productive in the world. This reality point to a clear-cut remedy:

> The facts of this hard life of drudgery – too much work for too little income – point to the need for labour-saving technologies to reduce the burden of working-hours and/or to achieve greater productivity per working-hour.[45]

Yet in most developing countries these new labour-saving technologies reduce employment opportunities that have not been replaced by development in other sectors, leading to increasing unemployment and underemployment.

Economic development requires greater productivity and more income for less work in a given activity, for women no less than for men. Human resources development, on the other hand, requires increased employment in order to incorporate into the wider development process both those women and men displaced by technological change and the large numbers of women formerly largely excluded. The implications of the projected employment trends in the developing countries of the ESCAP region are thus very serious for the further development of women's human resources.

B. Women's human resources development with respect to science and technology

1. The impact of science and technology on women

The impact of science and technology on many women in the developing countries of the ESCAP region, especially those in the agricultural sector, has not been positive. This is largely because technological change has tended to bypass women. Numerous observers have noted that women's work is often heavy and time-consuming, tedious and repetitious, and also frequently injurious to health. Much of it could be readily eased by the introduction of modern technologies which would be beneficial to women and their families,[46] but women continue to labour largely unassisted by modern technology. It has been shown that women's tasks in agriculture are actually heavier than the apparently heavy but mechanized tasks reserved for men[47] and that energy

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[45] Benjamin White, "Women and the modernization of rice agriculture: some general issues and a Javanese case study", in International Rice Research Institute, *Women in Rice Farming*, Proceedings of a Conference on Rice Farming Systems, Manila, 26-30 September 1983 (Gower, 1985), p. 121.

[46] For example, women in developing countries have particular needs for new technologies to provide alternative sources of domestic energy and fuels and to supply clean domestic water (Elizabeth Cecelski, *loc. cit.*).

[47] Iftikhar Ahmed, *loc. cit.*, p. 23.

expenditures on domestic work are even higher than on agricultural work.[48] This reflects the fact that in agriculture the technologies used by men are based on non-human sources of energy (hydraulic, animal, mechanical, chemical and electrical), whereas the efficiency of most tools used by women in many development contexts depends on their own physical energy.

In addition to this lack of direct access to technological assistance in female work, technology has also caused women to be displaced by male workers in some industries in developing ESCAP countries as new technologies have been introduced into formerly female occupations. It has been estimated that in Bangladesh between 3.5 and 5 million days of female labour per year have been displaced by mechanized milling. In India 125 million days of work and $US55 million of income per year have been lost to women (mainly from poor households) while men have gained an additional $US5 million per year in wages in rice milling.[49] As one commentator has observed,

> [W]hen the scale of production is increased or women's traditional activities are mechanized (with consequent commercialization of their output), the men tend to take over mainly because they possess or can acquire the necessary skills, training, knowledge and fixed and working capital, while women are excluded from the new opportunities, often because of institutionalized sexual biases;[50]

Displacement is particularly serious for women because their employment opportunities are limited and because they are less mobile and are unable to move easily to alternative employment that is often located elsewhere.

Although women have tended to be bypassed by technology, women's increased consumption of science and technology could be of great importance in female human resources development in the ESCAP region. An example is energy use, which is a basic determinant of productivity. Women's productivity is typically lower than men's partly because of their lack of access to non-human energy sources. Energy technology is thus a key to improving women's productivity and the demand for their labour. Higher labour demand will tend to induce higher wages, and higher incomes will provide an incentive for female human capital formation. However, the means of achieving this

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[48] Elizabeth Cecelski, *loc. cit.*, p. 47.

[49] Iftikhar Ahmed, *loc. cit.*, pp. 24-25. See also Kalpana Bardhan, *loc. cit.*, p. 40.

[50] Iftikhar Ahmed, *loc. cit.*, p. 36.

desired technological development for women are not obvious. Women in many ESCAP developing countries are trapped in a vicious cycle:

> Time- and labour-saving technologies are crucial for improving women's productivity, income and health, but, ironically, in order to purchase such technologies women must first earn income or have access to credit.[51]

The problem is that the level of demand for technologies for women in developing countries is low. This is not merely a function of women's lack of access to income and credit but also of the low opportunity cost of their time that leads households, and women themselves, to use what cash and credit they have on alternative purchases. The opportunity cost of female time is low because of the low incomes women could earn in any alternative employment that might be undertaken, for example, with the time saved by a given technology.

The system for supplying technology tailored to the needs of women in developing countries is similarly under-developed. Private firms are unlikely to develop new technologies suited to women's needs because limited demand will not generate attractive profits. Government research institutes have also shown little interest in developing technologies for women's activities unless spurred by an additional motivation, such as energy conservation or environmental preservation. Efforts by Governments and international agencies to develop appropriate technologies for women have often been disappointing because, by omitting women from the process of technology generation, they have produced impractical technologies that have been rejected or found difficult to implement by the women they were intended to assist.[52]

As potential suppliers of technology, women are also in a disadvantaged position because their current levels of participation in science and technology development are low, owing in part to their low levels of participation in higher education, particularly in technical and vocational areas. In higher education the gender gap has narrowed, but women continue to be concentrated in particular "feminine" fields of study. A recent UNESCO study shows that, in 25 Asian countries in 1982, 53 per cent of students in education, 36 per cent in medical sciences (primarily nursing) and 31 per cent in social sciences were women, compared with 16 per cent in natural sciences and 14 per cent in agriculture.[53] These trends seem unlikely to change in the near future. Although the Indian Government's educational policy specifically aims to en-

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[51] Elizabeth Cecelski, *loc. cit.*, p. 61.

[52] *Ibid.*, p. 58.

[53] Jan Harding, "Girls and women in secondary and higher education: science for only a few", *Prospects*, 56, 1985, figure 4.

courage female participation in higher-level technical and professional courses, it also gives girls preferential treatment in certain trades and occupations "for which they are particularly well suited, e.g., teaching and nursing".[54]

2. Prospects to the year 2000

Absorptive capacity for labour in both the agricultural and manufacturing sectors of most ESCAP countries has been declining at the margin. Technological change has been characterized by the substitution of capital for labour, the substitution of skilled for unskilled labour and the substitution of "high-tech" goods and services for material-intensive products and processes. These trends are reducing the demand for certain forms of labour, both within industrial production itself and within industries supplying raw materials. They are likely to continue and are becoming especially serious obstacles to the employment of new entrants into the labour force, many of whom will be women.

It can be expected that the potential capacity of the agricultural sector (which is still the largest employer of labour, and especially female labour, in most of the developing ESCAP countries) to absorb labour will also be reduced by continued under-investment in research and development of labour-using technologies. Labour-saving technologies will continue to be promoted by private producers of agricultural inputs such as machinery and chemicals because of the profit potential. The more labour-using technologies, such as new seed varieties, are at present public goods, so research to develop them is being carried out primarily by government and international agencies. On the whole, however, budgetary restraints and other factors will in all likelihood continue to result in rather low levels of government investment in agricultural research.[55] Market imperfections favouring capital-intensive investments, even where factor endowments appear to favour labour-intensive technologies, will also restrict the growth of new agricultural employment and threaten the jobs of the hired labour force in the agricultural sector, which is becoming increasingly dominated by women, especially in South Asia.[56]

On the more positive side, the importance of the relatively labour-intensive service sector will likely increase.[57] Social barriers to women's participation in many service occupations tend to be less intense because em-

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[54] J. Veera Raghavan, *loc. cit.*, p. 13.

[55] L.J. Unnevehr and M.L. Stanford, "Technology and the demand for women's labour in Asian rice farming", in International Rice Research Institute, *op. cit.*, p. 12.

[56] Kalpana Bardhan, *loc. cit.*, p. 29.

[57] ESCAP, *Technology for Development: Study by the ESCAP Secretariat for the Fortieth Session of the Commission*, 17-27 April 1984, Tokyo.

ployment in such fields as personal services, travel and tourism, entertainment and retailing fit many societies' image of appropriate activities for women. Rapid development of the information and financial services subsectors, where social attitudes might be less of an obstacle to women's employment and where part-time and home-based work is feasible, offer employment potential particularly suited to women's situation in many countries.

Although the social obstacles to such employment may be fewer, a larger barrier to women's participation in the service sector will continue to be their poor human capital endowment. The information industries, particularly, will demand higher levels of education and training. Although opportunities have opened up for women with medium levels of education (for example, as book-keepers or computer operators), even these moderate levels are far beyond the reach of the vast majority of women in the developing ESCAP countries at present. In the short term, relatively few women, mainly from the middle and upper classes, are likely to benefit from the expanding employment opportunities created by technology in these fields.

An important motivation of private enterprise in introducing a new technology is to increase profits by reducing costs. Since women work in the lowest-paid jobs there will be less incentive for firms to develop or introduce improved technologies into these jobs. As new technologies are introduced, women will often be displaced by male workers because of their lower levels of human capital. The displacement may be the result of real limitations in women's ability to handle the new technologies. For example, literacy or education may be required for training even if they are not necessary to operate the technology. However, displacement may also be the result of perceived limitations that do not have a factual basis. These misperceptions are often shared by the women themselves and reflect another aspect of women's human capital. There are numerous examples of women disqualifying themselves, or being barred by social conventions, from particular technologies that they are physically quite capable of operating, simply because such jobs would not be "suitable" for women. Such problems will likely persist over the coming decade.

Perhaps the most important factor in the exclusion of the majority of women from technology in the developing ESCAP countries will continue to be the extent to which they are denied access to agricultural extension services designed to introduce and implement new technologies. Even in countries where women's active participation in agriculture is officially recognized, almost no extension services are provided specifically for women, and women are effectively denied access to virtually all formally gender-neutral extension

services.[58] This will not only deny women access to technology, it will also reduce the importance of their roles in farming.[59]

C. Quality-of-life aspects of women's human resources development

Many quality-of-life issues in human resources development are conventionally regarded as women's issues. Family planning, health and nutrition and child care are primarily the responsibility of women in most societies. Since formal education begins in early childhood, decisions about schooling are often made by women. Environmental issues often affect women more directly than men: in rural areas women's traditional activities of fuel gathering and water carrying are affected by deterioration of the natural environment. In both rural and urban communities women spend more of their time in the domestic environment and are thus more affected by such issues as household sanitation, overcrowding and the quality of housing. Women's officially recognized participation in development in a number of ESCAP countries has been largely confined to quality-of-life aspects.

Large amounts of financial and other resources have been invested in quality-of-life development in the ESCAP region by both national Governments and international agencies. Some Governments that benefited from the oil booms of the mid-1970s and early 1980s have been particularly active in social investments in health and education. More recently, environmental and urbanization problems have attracted growing attention, although less funding. As reviewed in this paper, the results for women have often been disappointing, and there is little evidence that this situation will change much over the remainder of the twentieth century.

The end of the oil boom and increasingly straitened budgetary conditions in most countries of the region suggest that social investment for the remainder of the century is likely to diminish, at least in per capita terms. International agencies are also coming under increasing pressure from donor countries and some have had contributions from certain countries halted, reduced or withheld. Pressures for privatization and introduction of the benefit ("user pays") principle in budgetary policies are also being felt in the ESCAP region. Privati-

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[58] See M. Manzor Ali, Qazi Tauqir Azam and Ikram Saeed, "The invisible farmer: the profile of Pakistani rural women" and Mimosa C. Ocampo, "Appropriate farming technology for rural women: the Philippines case", in Continuing Education Centrer, Asian Institute of Technology, *Identification of Appropriate Technologies and Methods of Technology Transfer to Rural Women* (Bangkok, 1985), pp. 105 and 107; see also Iftikhar Ahmed, *loc. cit.*, p. 34.

[59] L.J. Unnevehr and M.L. Stanford, *loc. cit.*, p. 14, cite studies in Nepal showing that women's roles in farm management declined after new technologies were introduced by extension programmes directed to men.

zation has become a catchword in a number of developing countries, although it has not yet been widely extended into quality-of-life areas.

Some countries have begun to encourage more private sector participation in health and education. In Malaysia the private sector has participated in the establishment of about 250 training institutions offering courses in commerce, agriculture and engineering.[60] The tight financial position of the Government has also resulted in consideration of the leasing of public hospitals wholly or partially to the private sector and allowing private doctors to practise in government hospitals.[61] In Thailand the need for greater integration and co-operation between public and private educational institutions has been emphasized in the sixth development plan.[62]

It is clear that the climate for public investment in social areas of human resources development is changing. Conditions are likely to be especially unfavourable for investments that are not regarded as directly productive. Women's human resources development is thus particularly vulnerable because women's activities continue to be regarded as marginal to production. To counter the threat, it will be increasingly important to emphasize the human capital aspects of human resources development in the broader quality-of-life arena and in all aspects of human resources development for women.

IV. STRATEGIES FOR WOMEN'S HUMAN RESOURCES DEVELOPMENT

A. Women's lifelong education and training

The key to women's human resources development lies in education, but not only or even primarily in formal schooling. The majority of women with low levels of human resources development have passed school age, will not attend school or will become early drop-outs. To cope with this situation, developing ESCAP countries need to apply a broader concept of education that is confined neither to school-age children and formal educational institutions nor to conventional curricula. Recent trends in developed countries suggest that such an approach to lifelong education may be necessary to meet the human resources development needs of both men and women in a context of rapid social and economic change.

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[60] Tham Ah Fun, *loc. cit.*, p. 16.

[61] *Ibid.*, p. 21.

[62] Phayap Phyormyont, "Employment and manpower development in Thailand", paper presented at the Expert Group Meeting to Formulate Guidelines for an ESCAP Integrated Plan of Action on Human Resources Development.

As a result of increasing pressure on government budgets and privatization trends in some countries, the extent of which Governments can be expected to involve themselves directly in this process is limited. Governments should increasingly play a facilitating, rather than largely an executing, role. The role of community organizations, including Government-sponsored women's groups and non-governmental organizations should be increased correspondingly.

Women's learning networks under the auspices of existing semi-official women's organizations and/or non-governmental organizations might be an effective way of extending both education and specific training to the majority of women, particularly those not currently in the work-force. A primary focus should be basic literacy and numeric skills. In countries where large numbers of women are not fluent in the official language in which most official business is conducted, the national language should also be an important focus of such an education network. Such networks should not confine their efforts to traditional female domestic-oriented activities but should deliberately broaden their focus to include vocational training, aspects of modern science and technology and participation in community affairs. Less effort, for instance, should be put into sewing and cooking classes and in the urban context more into such skills as typing, elementary book-keeping and even elementary word-processing. In the rural context more emphasis should be given to the development of skills in areas such as maintenance, tractor operation, animal husbandry and agricultural extension.

At the same time, particular attention should be paid to formal education for girls who reach school. In many countries curricula need to be radically revised to provide a stronger general education foundation for girls and to incorporate a more positive approach to their access to science and technology. The rapid rate of technology development anticipated for the future implies a need to teach both the "know-how" of using existing technology and the "know-why" that will allow skills to be extended into new areas. It is therefore essential that a sound foundation of basic technical education be created on which future training may build. The experience of developed countries suggests that the existence of negative social attitudes towards women's participation in mathematics and science will require especially strong efforts in these fields.

The effect of social conventions and norms in many countries of the region confines women to narrowly circumscribed roles. Much of the process of socializing both boys and girls in these attitudes and values, although begun in the home, is reinforced in the schools. School curricula and teaching materials in all developing ESCAP countries need to be carefully examined and revised to eliminate gender bias and inappropriate stereotyping of sex roles.

Women's technological environment is an important element of education for human resources development in science and technology. Particular government agencies have an important role in, and obligation towards, women's human resources development in this respect. For instance, agricultural extension for women should become a high priority for Governments throughout the ESCAP region. It is important that such services be provided through the same channels as are currently available to men. This does not preclude extension courses in women's learning networks, but these must not be regarded as a substitute for formal agricultural extension and an excuse for the continued marginalization of women.

In many countries in the region, pressure on existing school resources has caused Governments to place age restrictions on access to formal educational institutions. Where possible, these should be relaxed as they tend to restrict women more than men in practice. The use of mass media for public education based on both formal and informal vocationally-oriented curricula should be developed, with special provision for women's participation. Programmes to encourage and publicize women's education through these channels might be sponsored by existing non-governmental and semi-official women's organizations. Recent school drop-outs and young rural women should be particular targets of this strategy. To ensure adequate incentives for women's participation, government and other examination and accreditation bodies should accept private candidates from non-formal educational backgrounds so that those with appropriate knowledge and skills can gain formal recognition. The implications for women's human resources development of such initiatives as the open universities that have been introduced in several countries should be fully explored and appropriate policies and plans devised.

While the full range of educational opportunities should be available to both men and women, special encouragement through women's organizations, mass media publicity and promotional campaigns should be provided to enhance women's participation. This should reflect the demand orientation of all educational programmes for women's 'human resources development.

Although considerable reliance must necessarily be placed on the formal educational apparatus and the informal advocacy role of women's groups, particularly in the early stages of the upgrading of educational opportunities for women, the aim should be to involve entire communities in such activities, without losing the special focus on women. This is particularly important because many of the obstacles to women's access to educational opportunities, both formal and informal, lie in community attitudes and the marginalized condition of women at the local level.

B. Creating demand for women's human resources development

The most critical element of any proposed strategy for women's human resources development must be a focus on demand. Programmes must first identify the reasons for, and then devise ways of increasing, women's low levels of demand for the improvement of their own condition. Two important factors are knowledge about the usefulness and availability of particular elements of human resources development such as education or health services, for example, and the amount of time that will be consumed in utilizing them.

Knowledge and information are prerequisites for the creation of demand. Past programmes have paid some attention to providing women with information about human resources development, its usefulness and the means of acquiring it. However, they have typically underestimated the role of attitudes, both of women and of their families and communities, in the transformation of information into effective demand.

Values and attitudes concerning women's "proper" role are created during early childhood socialization and reinforced or modified by social process during an individual's lifetime. It is ironic that women, through their responsibility for children's initial socialization, are one of the major sources of the very attitudes that obstruct their own human resources development. Strategies to change social values and create more positive attitudes towards women's participation in all aspects of development must necessarily begin with women themselves. Existing programmes for raising consciousness and women's awareness of their capacities and potential role in development must be strengthened. New programmes should also be initiated. Training programmes in community participation and leadership for women at the local level need to be expanded. However, these must be explicitly focused on areas relevant to both men and women rather than concentrating largely on domestic or "family" concerns as has been the tendency in the past.

The media, both modern mass media and (especially in the less developed ESCAP countries with lower levels of modern media penetration) more traditional forms of communication, can play a critical role in transmitting information on women's human resources development. In the past, the mass media have been utilized in a number of human resources development programmes in the region to transmit information to the public. However, their potential to affect the transmission of knowledge through value and attitudinal changes has been underestimated. Their impact in this regard can be both positive and negative. The potential for positive impact should be developed and exploited. The negative impact through gender bias and inappropriate sex role stereotypes in mass media programming in many countries in the region needs to be carefully examined and, where necessary, reformed.

The second important factor in women's demand for human resources development is time. The amount of time used in travelling to service delivery points, in waiting and in actual delivery are often important determinants of women's demand. Both the time required to utilize a service and the time lost for other activities are important. Human resources development programmes need to become more responsive to the time constraints facing potential female consumers. In this connection, transport and communication systems in the region should be organized to given greater consideration to means of reducing the time that women spend in gaining access to human resources development services.

The low opportunity cost of women's time is a critical factor in female employment and manpower development and also explains in large part women's poor access to modern technology. Low opportunity cost of time arises from poor human capital endowments and from institutional barriers that allow the payment of unequal wages for equal work and discriminate against women in other ways in particular occupations and industries. Where opportunity costs are affected by outright discrimination, legislative action will be required. More subtle forms of discrimination must be addressed through public education and the media. The fundamental remedy lies in improving women's human resources and therefore rests with overall strategies for women's human resources development.

C. Target groups and enablers of women's human resources development

Because of the combination of limited resources and the vast numbers of women with poor human resources development and the heterogeneity of national situations in the ESCAP region, it is essential for policy makers and planners to identify specific target groups of women to which particular elements of a strategy should be directed. Table 7 identifies key target groups, the focus of programmes for each, and potential enablers. The key target groups are girls of school-age, young women, particularly those from disadvantaged groups, mothers and female leaders. Subsidiary target groups would include male leaders and service delivery personnel involved in implementing human resources development programmes aimed at women as a component of larger audiences.

It is important for programmes on women's human resources development to have clear-cut objectives. Since chronic poverty is a major obstacle to human resources development for many women, human resources development programmes should focus primarily and directly on improving women's capability and opportunity to improve their economic position. However, programmes such as income-generation schemes that focus only indirectly on human resources development have not proven particularly effective in im-

Table 7. Women's human resources development: target groups, programme foci and enablers

Target group	*Programme focus*	*Enablers*
School-age girls	. School enrolment . Basic education . Curriculum development in basic science and mathematics – primary and secondary levels . Curriculum development and materials monitoring for attitudinal development – all levels . Vocational education – secondary and tertiary levels	. Schools . Teachers . Educational media . International agencies
Young women – never attended school – all, especially early drop-outs	. Basic literacy and numeracy . Vocational training . Attitudinal development . Awareness training . Community participation . Youth leadership	. Women's learning networks . Women's organizations . NGOs . Government and other examination and accreditation bodies . Women leaders . Educated women . Youth leaders . Male community leaders . Media . International agencies
Mothers	. Attitudinal development . Awareness training, especially in relation to child-rearing . Community participation . Skills development, including vocational training and agricultural extension	. Women's learning networks . Women's organizations . NGOs . Health workers . Media . International agencies

Table 7 *(continued)*

Target group	*Programme focus*	*Enablers*
Women leaders	. Grass-roots development . Awareness training . Leadership training . Community development . Political awareness and lobbying skills . Building contacts into planning and political bodies	. NGOs . International agencies . Women's organizations . Media . Women leaders . International agencies
Male leaders and all service delivery personnel	. Attitudinal development . Awareness training	. NGOs . Women's organizations . Media . Women leaders . International agencies

proving women's participation on a sufficiently large scale or over the long term and may actually have diverted attention and resources from the more important objective of human resources development itself.

Clear recognition of the primary goal will allow strategies for women's human resources development to focus greater attention on the development of key enabler groups. The past tendency to focus on direct means of alleviating women's poverty might have reduced the attention given to training and development of female leaders who are active at the middle and upper levels of women's organizations and at similar levels in government and other agencies. As table 7 indicates, the enabling role of this group is critical in generating human resources development for women in the target groups. The disappointing results of programmes in many developing ESCAP countries suggest that a concerted effort is needed in this area.

The nature of the causes of women's poor access to the means of developing their human resources requires that men be included among the target groups in women's human resources development. Male policy makers and planners and men involved in the implementation of human resources development programmes at the government level and in all other organizations must be made more sensitive to the special disadvantages faced by women and their consequent special needs in development planning and programmes. These groups of men are particularly important target groups because of their potential subsequent role as enablers of women's human resources development.

* 6. STATISTICAL ANNEX

Table 1. ESCAP region: basic aggregate population data

2. ESCAP region: percentage distribution of population by age group, 1985 and 2000

3. ESCAP region: change of population by age group, 1985-2000

4. ESCAP region: change of female population by age group, 1985-2000

5. ESCAP region: percentage of population not economically active, male and female, ages 15-24 and 25-59, 1985 and 2000

6. ESCAP region: proportion of population living in urban areas, 1970, 1985 and 2000

7. ESCAP region: basic production indicators, 1985

8. Selected ESCAP countries and areas: sectoral distribution of labour force, 1965 and 1980

9. ESCAP region: percentage of population below absolute poverty line, latest year available (1977-1984)

10. ESCAP region: unemployment rates, 1984-1986

11. ESCAP region: labour force participation rates, latest year available

12. ESCAP region: informal sector employment, latest year available

13. Selected ESCAP countries and areas: status of science and technology manpower, latest year available

14. ESCAP region: illiteracy rate, latest year available

15. ESCAP region: gross school enrolment ratios, latest year available

16. Selected ESCAP countries and areas: estimates of additional enrolment at first level and consequent requirement of additional teachers, 2000

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* In the tables, two dots (. .) indicate that data are not available.

17. ESCAP region: male and female life expectancy and infant mortality rate, 1985

18. ESCAP region: daily per capita calorie supply as percentage of requirement, 1983

19. ESCAP region: percentage of population with safe water and adequate sanitary facilities, latest year available

20. ESCAP region: immunization coverage of infants, latest year available

21. ESCAP region: basic indicators of public information and communication, latest year available

Table 1. ESCAP region: basic aggregate population data

Country or area and region	*Population (thousands) (mid-1985)*	*Average annual growth rate (1985)*	*Crude birth rate (1985)*	*Crude death rate (1985)*	*Total fertility rate (1985)*	*Population projected to 2000 (thousands)*
ESCAP region	2 711 856	1.68	26.4	9.5	3.3	3 382 805
EAST ASIA	1 228 815	1.16	18.2	6.6	2.2	1 445 389
China	1 059 521	1.21	18.7	6.7	2.2	1 255 895
Hong Kong	5 417	0.99	14.4	4.8	1.6	6 350
Japan	120 760	0.62	12.3	6.1	1.8	129 725
Mongolia	1 908	2.75	35.3	8.0	5.0	2 837
Republic of Korea	41 209	1.53	23.0	6.2	2.4	50 852
SOUTH-EAST ASIA	399 934	2.01	30.8	10.6	3.9	521 077
Brunei Darussalam	232	4.10	27.9	3.3	..	354
Burma	37 699	1.96	33.2	13.7	4.5	49 749
Indonesia	166 440	1.85	30.4	12.0	3.8	211 367
Lao People's Democratic Republic	3 614	2.47	39.5	14.8	5.6	5 082
Malaysia	15 557	2.29	29.0	6.2	3.6	20 497
Philippines	54 498	2.33	32.1	8.0	4.2	74 057
Singapore	2 558	1.14	16.4	5.2	1.6	2 947
Thailand	51 705	1.88	26.4	7.6	3.2	64 543
Viet Nam	60 347	2.18	32.2	9.8	1.3	82 709
SOUTH ASIA	1 059 030	2.16	34.3	12.6	4.6	1 386 869
Afghanistan	16 519	2.26	48.2	25.6	6.8	26 035
Bangladesh	101 147	2.68	43.3	16.6	5.8	145 800
Bhutan	1 417	2.03	37.7	17.4	5.4	1 893
India	762 065	1.99	31.5	11.6	4.2	964 072
Islamic Republic of Iran	44 632	2.83	39.7	11.4	5.4	65 161
Maldives	183	3.70	46.3	9.3	6.6	279
Nepal	16 482	2.31	40.6	17.6	6.0	23 048
Pakistan	100 380	2.71	41.7	14.6	5.6	140 961
Sri Lanka	16 205	1.64	26.2	6.0	3.1	19 620
PACIFIC	24 077	1.30	19.2	7.9	2.4	29 470
Australia	15 721	1.13	15.5	7.1	1.9	18 718
Cook Islands	17	-1.70	23.8	7.4	4.1	17
Fiji	691	1.73	29.2	5.2	3.3	834
Guam	114	1.36	28.7	4.2	3.2	137
Kiribati	63	1.76	..	..	..	77
Nauru	8	0.00	..	..	..	8
New Zealand	3 261	0.79	15.7	7.8	1.9	3 730
Niue	3	-0.10	24.0	8.0	..	3
Papua New Guinea	3 362	2.24	35.0	12.5	5.3	4 753
Samoa	160	0.60	31.4	7.5	4.5	175
Solomon Islands	268	3.30	..	..	..	447
Tonga	109	2.12	37.9	9.0	..	139
Trust Territory of the Pacific Islands	154	2.39	..	..	..	204
Tuvalu	8	1.28	34.8	7.6	..	10
Vanuatu	138	3.20	45.0	12.0	6.5	218

Source: ESCAP, *Population Data Sheet*, 1985.

Table 2. ESCAP region: percentage distribution of population by age group, 1985 and 2000

Country or area and region	*1985*				*2000*			
	Below 6	*6-14*	*15-64*	*65+*	*Below 6*	*6-14*	*15-64*	*65+*
ESCAP region	13.8	20.9	60.6	4.6	12.1	17.0	65.2	5.8
EAST ASIA	10.8	19.3	64.3	5.6	10.2	14.2	68.1	7.4
China	11.1	19.9	63.8	5.2	10.5	14.6	68.2	6.7
Hong Kong	9.5	14.1	69.0	7.4	8.1	13.2	69.0	9.8
Japan	7.6	14.1	68.4	9.9	7.5	10.2	67.4	14.9
Mongolia	18.5	23.1	55.1	3.2	16.7	22.0	57.5	3.8
Republic of Korea	12.6	18.5	64.7	4.2	10.3	16.0	67.4	6.2
SOUTH-EAST ASIA	16.0	22.5	57.8	3.7	12.9	18.7	64.0	4.5
Burma	16.6	22.4	57.2	3.8	14.7	20.2	60.8	4.3
Indonesia	15.4	23.0	58.1	3.4	12.0	17.9	65.6	4.6
Lao People's Democratic Republic	19.2	23.3	54.4	3.1	16.3	22.2	58.0	3.5
Malaysia	15.4	21.6	59.2	3.8	12.0	18.5	64.9	4.6
Philippines	17.4	23.0	56.1	3.4	13.8	20.1	62.3	3.8
Singapore	9.6	14.8	70.4	5.2	7.9	13.2	71.8	7.0
Thailand	14.7	21.5	60.2	3.6	12.6	16.7	66.1	4.7
Viet Nam	16.8	23.1	55.6	4.5	13.7	19.7	62.0	4.6
SOUTH ASIA	16.7	22.4	57.2	3.8	13.8	19.3	62.5	4.4
Afghanistan	19.9	23.6	54.1	2.4	18.6	24.4	54.5	2.5
Bangladesh	20.9	24.9	51.2	3.1	17.3	23.2	56.7	2.8
Bhutan	18.0	22.5	56.3	3.3	16.4	21.5	58.5	3.6
India	15.3	21.9	58.7	4.0	12.6	17.9	64.6	5.0
Islamic Republic of Iran	19.3	23.5	53.9	3.3	15.5	21.9	59.1	3.5
Nepal	19.6	23.9	53.7	2.9	17.9	22.5	56.3	3.4
Pakistan	20.4	23.2	53.6	2.8	16.3	22.9	57.8	3.0
Sri Lanka	15.0	19.3	61.1	4.6	10.7	17.4	65.8	6.1
PACIFIC	10.9	16.0	64.3	8.8	10.0	14.7	65.7	9.6
Australia	9.3	14.3	66.4	10.1	8.5	13.0	67.3	11.1
Fiji	16.8	20.0	59.7	3.5	11.5	19.0	64.4	5.0
New Zealand	9.1	15.5	65.4	10.1	8.7	13.0	67.5	10.9
Papua New Guinea	18.8	23.2	54.7	3.3	16.5	21.6	58.3	3.7

Source: ESCAP, printouts of population projections and estimates as assessed in 1984, medium variant.

Table 3. ESCAP region: change of population by age group, 1985-2000

Country or area and region	Below 6		6-14		15-64		65+	
	Population in 1985 (thousands)	Percentage increase, 1985-2000	Population in 1985 (thousands)	Percentage increase, 1985-2000	Population in 1985 (thousands)	Percentage increase, 1985-2000	Population in 1985 (thousands)	Percentage increase, 1985-2000
ESCAP region	374 373	8.5	565 929	1.1	1 638 757	34.0	125 223	55.4
EAST ASIA	134 116	12.0	238 409	-12.2	795 820	25.8	69 210	57.6
China	118 849	13.1	212 593	-12.2	681 753	28.2	55 028	56.2
Hong Kong	528	3.8	781	14.3	3 821	22.4	410	62.4
Japan	9 192	4.5	16 980	-23.0	82 530	5.1	11 982	60.2
Mongolia	353	5.8	441	41.3	1 052	54.6	62	74.2
Republic of Korea	5 194	0.4	7 615	6.6	26 665	27.9	1 728	82.5
SOUTH-EAST ASIA	63 474	4.0	89 417	7.0	229 823	42.4	14 580	56.2
Burma	6 256	16.6	8 446	19.2	21 553	40.3	1 444	49.1
Indonesia	25 447	-3.7	37 960	-3.8	95 794	40.0	5 686	64.8
Lao People's Democratic Republic	792	18.8	957	34.5	2 240	49.9	127	59.0
Malaysia	2 370	2.5	3 320	13.1	9 106	44.6	588	58.7
Philippines	9 490	7.7	12 543	18.4	30 585	50.6	1 862	51.6
Singapore	246	-4.9	380	2.6	1 803	17.6	132	57.6
Thailand	7 574	8.6	11 051	-1.1	30 928	40.0	1 856	65.2
Viet Nam	9 931	8.6	13 671	13.4	32 961	48.2	2 686	36.4
SOUTH ASIA	174 121	7.4	234 196	12.2	597 591	41.9	39 335	52.4
Afghanistan	2 971	52.0	3 533	67.3	8 097	63.0	362	66.8
Bangladesh	21 098	19.3	25 159	34.2	51 770	59.8	3 119	33.2
Bhutan	256	23.4	320	29.1	801	40.3	47	48.9
India	115 052	2.2	164 286	1.9	440 216	37.4	30 279	53.8
Islamic Republic of Iran	8 609	17.1	10 480	35.6	24 083	59.5	1 496	52.5
Nepal	3 233	29.4	3 954	33.2	8 874	48.5	473	68.5
Pakistan	20 463	12.2	23 305	38.5	53 795	51.5	2 818	50.4
Sri Lanka	2 411	-13.1	3 118	9.6	9 854	31.1	735	63.3
PACIFIC	2 635	12.0	3 866	11.8	15 549	24.6	2 138	32.6
Australia	1 452	9.2	2 246	7.7	10 417	20.3	1 577	31.4
Fiji	117	17.1	138	15.2	414	30.4	24	75.0
New Zealand	297	8.4	504	-4.8	2 134	17.2	328	22.6
Papua New Guinea	654	22.9	808	30.2	1 903	49.4	115	56.5

Source: ESCAP, printouts of population projections and estimates as assessed in 1984, medium variant.

Table 4. ESCAP region: change of female population by age group, 1985-2000
(In millions)

Country or area	*Aged 15-34*		*Aged 35-49*		*Aged 15-49*		*All ages*		*Aged 15-49 (percentages of all ages)*	
	1985	*2000*	*1985*	*2000*	*1985*	*2000*	*1985*	*2000*	*1985*	*2000*
EAST ASIA										
China	199	213	77	133	276	346	514	612	53.7	56.5
Hong Kong	1	0.9	0.4	0.8	1.4	1.7	2.3	3	60.9	56.7
Japan	17	17	14	12	31	30	61	66	50.8	45.4
Mongolia	0.3	0.5	0.1	0.2	0.4	0.7	0.9	1.4	44.4	50.0
Republic of Korea	7.8	8	3	6	11	14	20	25	55.0	56.0
SOUTH-EAST ASIA										
Burma	6.6	8.8	2.6	4	9	13	19	25	47.4	52.0
Indonesia	29	39	12	19	41	58	84	106	48.8	54.7
Lao People's Democratic Republic	0.6	0.9	0.2	0.4	0.8	1.2	2	2.6	40.0	46.1
Malaysia	2.9	3.7	1.1	2.0	4	5.7	7.8	11	51.2	51.8
Philippines	9.8	13.5	3.2	6.5	13	20	27	38	48.1	52.6
Singapore	0.5	0.4	0.2	0.4	0.7	0.8	1.3	1.4	53.8	57.1
Thailand	9.7	12	3.3	6	13	18	26	33	50.0	54.5
Viet Nam	11	15	3	7	14	22	31	42	45.1	52.4
SOUTH ASIA										
Afghanistan	2.4	4.0	1.0	1.6	3	5.6	7	12	42.9	46.7
Bangladesh	16	26	6	10	22	36	49	71	45.0	50.7
Bhutan	0.2	0.3	0.1	0.2	0.3	0.5	0.7	0.9	42.6	55.5
India	124	170	56	80	180	250	365	470	49.3	53.2
Islamic Republic of Iran	8	12	3	5	11	17	23	32	47.8	53.1
Nepal	2.5	4	1.5	1	3.5	5	8	11	43.7	45.4
Pakistan	17	24	6	10	23	34	48	67	47.9	50.7
Sri Lanka	3.0	3.3	1	1.7	4	5	8	10	50.0	50.0
PACIFIC										
Australia	2.6	2.8	1.4	2.2	4	5	8	9	50.0	55.6
Fiji	0.1	0.1	0.05	0.08	0.2	0.2	0.3	0.4	66.6	50.0
New Zealand	0.5	0.6	0.3	0.4	0.8	1.0	1.6	1.8	50.0	55.6
Papua New Guinea	0.5	0.8	0.2	0.4	0.8	1.2	2	2.3	40.0	52.1

Source: ESCAP, *Population Research Leads*, various issues.

Table 5. ESCAP region: percentage of population not economically active, male and female, ages 15-24 and 25-59, 1985 and 2000

Country or area	*Age group*	*1985*			*2000*		
		Total	*Male*	*Female*	*Total*	*Male*	*Female*
EAST ASIA							
China	15-24	4.7	2.3	2.4	3.5	1.6	1.8
	25-59	6.3	0.9	5.4	6.7	1.1	5.6
Hong Kong	15-24	7.6	3.5	4.1	5.8	2.8	3.0
	25-59	13.1	1.0	12.1	14.2	1.1	13.1
Japan	15-24	9.0	4.6	4.5	7.5	3.8	3.7
	25-59	13.3	0.7	12.6	12.3	0.8	11.5
Mongolia	15-24	7.6	3.0	4.6	7.9	3.4	4.5
	25-59	5.3	0.7	4.6	5.1	0.9	4.3
Republic of Korea	15-24	13.9	6.5	7.4	10.3	5.1	5.2
	25-59	16.3	1.5	14.8	16.4	1.8	14.6
SOUTH-EAST ASIA							
Burma	15-24	9.5	3.4	6.2	9.4	3.4	6.1
	25-59	12.5	1.0	11.4	15.4	1.3	14.1
Indonesia	15-24	13.7	4.5	9.2	12.6	4.3	8.2
	25-59	15.4	1.0	14.4	16.6	1.2	15.4
Lao People's Democratic Republic	15-24	5.5	2.4	3.1	7.1	2.8	4.3
	25-59	5.7	0.7	5.0	8.4	0.8	7.6
Malaysia	15-24	12.6	4.8	7.8	11.1	4.7	6.4
	25-59	13.3	0.8	12.5	13.7	1.0	12.7
Philippines	15-24	14.3	5.4	8.9	13.6	5.3	8.3
	25-59	15.2	1.0	14.2	17.4	1.2	16.2
Singapore	15-24	7.4	3.4	4.0	5.2	2.4	2.7
	25-59	18.3	1.5	16.7	22.0	1.9	20.0
Thailand	15-24	7.3	3.5	7.4	11.9	3.5	8.4
	25-59	6.2	1.0	5.2	10.1	1.3	8.8
Viet Nam	15-24	7.6	3.4	4.2	6.8	3.0	3.8
	25-59	6.6	0.8	5.8	6.1	1.1	5.0
SOUTH ASIA							
Afghanistan	15-24	15.9	3.7	12.2	14.8	3.8	11.0
	25-59	22.6	1.0	21.5	22.7	1.2	21.5
Bangladesh	15-24	16.9	3.5	13.4	16.8	3.8	13.0
	25-59	20.0	0.9	19.9	21.8	1.0	20.7
Bhutan	15-24	8.9	2.4	6.6	9.5	2.4	7.0
	25-59	14.4	0.7	13.6	15.4	0.9	14.6
India	15-24	13.3	4.2	9.2	12.7	4.0	8.7
	25-59	16.2	1.0	15.2	18.6	1.1	17.5

Table 5 *(continued)*

Country or area	*Age group*	*1985*			*2000*		
		Total	*Male*	*Female*	*Total*	*Male*	*Female*
Islamic Republic of Iran	15-24	16.7	5.3	11.5	15.1	5.3	9.8
	25-59	20.3	1.2	19.1	20.8	1.4	19.4
Nepal	15-24	10.0	3.2	6.9	11.0	3.5	7.5
	25-59	14.4	1.2	13.2	15.3	1.3	14.0
Pakistan	15-24	16.8	3.8	13.1	15.9	4.1	11.8
	25-59	19.8	0.9	18.9	19.7	1.1	18.7
Sri Lanka	15-24	13.9	4.8	9.1	13.1	4.8	8.3
	25-59	18.0	1.1	16.9	19.5	1.3	18.3
PACIFIC							
Australia	15-24	6.6	2.8	3.8	5.4	2.4	3.1
	25-59	13.9	2.0	11.9	14.5	2.2	12.3
Fiji	15-24	14.4	3.9	10.5	13.1	4.2	8.6
	25-59	21.7	1.0	20.7	20.9	1.3	19.5
New Zealand	15-24	7.8	3.1	4.7	5.8	2.5	3.4
	25-59	14.8	1.2	13.6	16.1	1.4	14.6
Papua New Guinea	15-24	8.5	3.4	5.1	9.4	3.4	6.0
	25-59	9.0	1.0	8.0	11.2	1.0	10.1

Source: ILO, *Economically Active Population: Estimates 1950-1980; Projections 1985-2025* (Geneva, 1986).

Table 6. ESCAP region: proportion of population living in urban areas, 1970, 1985 and 2000

Country or area and region	*1970*	*1985*	*2000*
ESCAP region	23.1	27.2	34.2
EAST ASIA	25.9	28.3	33.4
China	19.3	21.0	26.6
Hong Kong	89.7	90.8	92.6
Japan	71.2	76.5	79.3
Mongolia	45.1	55.9	65.8
Republic of Korea	40.7	65.4	80.5
SOUTH-EAST ASIA	20.0	26.0	35.7
Brunei Darussalam	61.7	80.8	87.0
Burma	22.8	30.0	40.9
Indonesia	17.1	25.3	36.5
Lao People's Democratic Republic	9.6	15.9	25.1
Malaysia	27.0	31.5	41.6
Philippines	33.0	39.6	49.0
Singapore	75.3	74.2	78.5
Thailand	13.2	15.6	23.2
Viet Nam	18.3	20.3	37.1
SOUTH ASIA	19.6	25.4	33.7
Afghanistan	11.0	18.5	28.9
Bangladesh	7.6	11.9	18.3
Bhutan	3.1	4.5	7.8
India	19.8	25.5	34.2
Islamic Republic of Iran	41.0	55.0	66.3
Maldives	13.5	29.7	46.2
Nepal	3.9	5.8	9.8
Pakistan	24.9	29.8	37.8
Sri Lanka	21.9	21.1	24.2
PACIFIC	71.1	72.2	73.7
Australia	85.2	86.9	89.1
Cook Islands	29.9	31.2	40.4
Fiji	34.8	41.2	50.7
Guam	25.8	47.0	62.9
Kiribati	25.6	43.7	57.1
New Zealand	81.1	83.7	86.0
Niue	21.1	21.6	29.7
Papua New Guinea	9.8	14.3	20.2
Samoa	20.3	22.5	29.7
Salomon Islands	8.9	9.8	13.8
Tonga	24.4	35.9	48.1
Trust Territory of the Pacific Islands	40.5	55.6	66.3
Vanuatu	13.5	25.4	39.1

Sources: ESCAP, printouts of population projections and estimates as assessed in 1984; and United Nations, *Estimates and Projections of Urban, Rural and City Populations, 1950-2025: the 1982 Assessment* (ST/ESA/SER.R/58).

Table 7. ESCAP region: basic production indicators, 1985

Country or area	*GNP per capita (US dollars)*	*GDP*				
		Total (millions of US dollars)	*Percentage share*			
			Agriculture	*Industry*	*Manufac-turing*	*Services*
EAST ASIA						
China	310	265.530	33	47	37	20
Hong Kong	6 230	30.730	1	31	24	68
Japan	11 300	1 327.900	3	41	30	56
Republic of Korea	2 150	86.180	14	41	28	45
SOUTH-EAST ASIA						
Burma	190	7.070	48	13	10	39
Indonesia	530	86.470	24	36	14	41
Malaysia	2 000	31.270	..	..	..	..
Philippines	580	32.590	27	32	25	41
Singapore	7 420	17.470	1	37	24	62
Thailand	800	28.240	17	30	20	53
SOUTH ASIA						
Bangladesh	150	16.110	50	14	8	36
Bhutan	160	.180	50	18	4	32
India	270	175.710	31	27	17	41
Nepal	160	2.340	62	12	5	26
Pakistan	380	28.240	25	28	20	47
Sri Lanka	380	5.500	27	26	15	46
PACIFIC						
Australia	10 830	162.490	4	33	17	63
Fiji	1 710	..	..	..	..	..
Papua New Guinea	680	2.270	..	..	..	..
Samoa	660	..	..	..	..	..
Solomon Islands	510	..	..	..	..	..
Tonga	730	..	..	..	..	..
Vanuatu	880	..	..	..	..	..

Source: World Bank, *World Development Report, 1987* (New York, Oxford University Press, 1987).

Table 8. Selected ESCAP countries and areas: sectoral distribution of labour force, 1965 and 1980

Country or area	*Agriculture*		*Industry*		*Services*	
	1965	*1980*	*1965*	*1980*	*1965*	*1980*
Afghanistan	69	..	11	..	20	..
Australia	10	7	38	32	52	61
Bangladesh	84	75	5	6	11	19
Bhutan	95	92	2	3	3	5
Burma	64	53	13	19	23	28
China	..	69	..	19	..	12
Hong Kong	6	2	53	51	41	47
India	73	70	12	13	15	17
Indonesia	71	57	9	13	20	30
Islamic Republic of Iran	49	36	26	33	25	31
Japan	26	11	32	34	42	55
Lao People's Democratic Republic	81	76	5	7	14	17
Malaysia	59	42	13	19	28	39
Mongolia	55	40	20	21	25	39
Nepal	94	93	2	1	4	6
New Zealand	13	11	36	33	51	56
Pakistan	60	55	18	16	22	30
Papua New Guinea	87	76	6	10	7	14
Philppines	58	52	16	16	26	33
Republic of Korea	56	36	14	27	30	37
Singapore	5	2	27	38	68	61
Sri Lanka	56	53	14	14	30	33
Thailand	82	70	5	10	13	20
Viet Nam	79	68	6	12	15	21

Source: World Bank, *World Development Report, 1987* (New Yord, Oxford University Press, 1987), pp. 264-265.

Table 9. ESCAP region: percentage of population below absolute poverty line, latest year available (1977-1984)

Country or area	*Urban*	*Rural*
EAST ASIA		
Republic of Korea	18	11
SOUTH-EAST ASIA		
Burma	40	40
Indonesia	26	44
Malaysia	21	59
Philippines	32	41
Thailand	15	34
SOUTH ASIA		
Afghanistan	18	36
Bangladesh	86	86
India	40	51
Nepal	55	65
Pakistan	32	29
PACIFIC		
Papua New Guinea	10	75

Source: UNICEF, *The State of the World's Children, 1987* (New York, 1987).

Note: Absolute poverty means that income level below which a minimum nutritionally adequate diet plus essential non-food requirements are not provided.

Table 10. ESCAP region: unemployment rates, 1984-1986

Country or area	*1984*	*1985*	*1986*
EAST ASIA			
China	0.5	0.5	..
Hong Kong	3.9	3.0	2.8
Japan	2.7	2.6	..
Republic of Korea	3.8	4.0	3.8
SOUTH-EAST ASIA			
Burma	4.8	5.0	..
Indonesia	..	2.1	..
Malaysia	6.2	7.6	8.7
Philippines	6.1	6.8	11.6
Singapore	2.7	4.2	6.5
Viet Nam	2.3	6.3	..
SOUTH ASIA			
Afghanistan	3.3	3.0	..
Bangladesh	26.0	25.0	..
Pakistan	3.9	3.9	3.7
PACIFIC			
Australia	8.6	7.9	..
Fiji	17.6	18.6	..
Guam	7.9	..	..
New Zealand	5.0	4.0	..
Tonga	4.5	..	..

Sources: ILO, *Yearbook of Labour Statistics, 1986* (Geneva, 1986); and ADB, *Key Indicators of Developing Member Countries of ADB* (Manila, 1987).

Table 11. ESCAP region: labour force participation rates, latest year available

Country or area	*Year*	*Labour force participation rate*	
		Female	*Male*
EAST ASIA			
China	1982	46.4	55.7
Hong Kong	1985	37.4	61.9
Japan	1985	38.6	60.5
Republic of Korea	1985	29.3	46.3
SOUTH-EAST ASIA			
Brunei Darussalam	1981	18.7	52.3
Indonesia	1980	23.2	48.0
Malaysia	1980	25.3	49.6
Philippines	1982	9.7	64.4
Singapore	1985	34.3	59.8
Thailand	1982	50.6	55.2
SOUTH ASIA			
Bangladesh	1983/84	5.4	53.5
India	1981	19.8	52.7
Islamic Republic of Iran	1982	7.2	47.1
Pakistan	1985	7.2	51.5
Sri Lanka	1980	21.2	53.1
PACIFIC			
Australia	1985	45.7	75.2
Fiji	1982	13.3	52.4
New Zealand	1981	28.8	56.1
Samoa	1981	8.3	43.5
Vanuatu	1979	42.5	49.0

Source: ILO, *Yearbook of Labour Statistics, 1986* (Geneva, 1986).

Table 12. ESCAP region: informal sector employment,[a] latest year available

Country or area	*Year*	*Total (thousands)*	*Informal sector share of total employment[b] (percentage)*	*Women's share of informal sector employment (percentage)*	*Women's share of formal sector employment[c] (percentage)*
A. Developing countries					
Bangladesh	1974	20 523	68.4	4.8	2.7
Brunei Darussalam	1981	71	7.0	21.2	22.7
Cook Islands	1981	6	14.3	19.6	33.7
India	1971	180 485	13.3	12.2	10.8
Indonesia	1978	53 097	60.1	37.7	34.4
Malaysia	1980	4 924	38.9	35.5	30.6
Nepal	1981	6 851	88.7	36.8	14.7
Pakistan	1981	22 241	70.2	3.0	4.9
Philippines	1978	17 362	57.3	36.4	36.8
Republic of Korea	1984	14 986	45.3	44.0	33.5
Samoa	1981	41	56.8	3.6	29.9
Sri Lanka	1981	5 015	28.1	12.4	24.9
Thailand	1982	25 749	72.3	49.9	38.5
B. Urbanized countries and areas					
Hong Kong	1984	2 644	11.8	21.8	39.1
Singapore	1984	1 207	15.2	22.0	39.0
C. Developed countries					
Australia	1985	7 250	14.1	30.5	39.5
Japan	1984	59 270	32.8	39.0	35.6
New Zealand	1981	1 333	13.3	20.4	36.0

Source: ILO, *Yearbook of Labour Statistics*, 1979, 1982, 1983, 1984 and 1985.

a As defined by "employers", "own-account workers" and "unpaid family workers".

b Economically active population.

c As defined by "paid employment" or "employees" category.

Table 13. Selected ESCAP countries and areas: status of science and technology manpower, latest year available

Country or area	Year	Population (millions)	Total stock of scientists, engineers and technicians (thousands)	Scientists and engineers						Technicians	
				Total (number)	Total million population	Distribution by field of science (percentage)					
						Natural sciences	Engineering and technology	Agriculture	Medical science	Social, humanities, other	Total stock (thousands)	Engaged in research and development
Bangladesh	1979	88.60	..	10 256	116	85.2	4.8	2.3	7.8	..	..	..
China	1979	970.00	4 705.10	1 996 200	2 058	11.1	42.1	5.6	15.6	25.5	2 708.90	2 495
India	1979	659.00	762.00	28 320	43	33.5	37.6	24.6	2.4	1.9	1 323.00	..
Indonesia	1982	145.00	..	15 576	107	29.2	17.8	22.7	7.0	23.2	..	..
Malaysia	1980	14.20	340.00	97 620	6 895	14.3	41.7	2.6	41.4	..	923.50	..
Nepal	1979	14.70	2.60	597	41	47.9	21.8	2.0	10.3	..	7.25	..
Pakistan	1979	77.86	117.00	4 900	..	..	..	..	..	..	..	..
Philippines	1979	47.71	128.90	40 433	847	7.2	46.5	8.5	6.9	30.9	..	..
Republic of Korea	1979	37.60	91.80	15 711	418	18.8	47.2	14.1	14.1	5.8	..	..
Sri Lanka	1977	13.94	648.80[a]	604	43	35.3	32.9	29.3	2.5	..	..	..
Thailand	1978	45.20	..	2 010	44	17.0	11.0	44.0	27.2	..	..	..
Australia	1977	13.90	185.00	20 264	1 484	31.9	32.7	13.1	6.6	15.8	..	12 446
Japan	1979	116.00	575.00	341 000	2 940	21.4	36.4	7.3	17.3	17.6	234.00	83 000
New Zealand	1979	3.14	22.01	3 998	1 273	30.7	28.2	27.1	9.9	4.0	20.12	2 468

Source: UNESCO, *Science and Technology Statistics in Asia and the Pacific* (CASTASIA II, Manila, 1982).

a Revised figure to eliminate apparent typographical error (figure in original table is 6,488.00).

Table 14. ESCAP region: illiteracy rate, latest year available

Country or area	*Year*	*Age group*	*Rate of illiteracy (percentage)*		
			Total	*Male*	*Female*
EAST ASIA					
China	1987	15+	31.9	19.2	45.3
Hong Kong	1971	15+	22.7	9.9	35.9
Republic of Korea	1970	15+	12.4	5.6	19.0
SOUTH-EAST ASIA					
Brunei Darussalam	1981	15+	22.2	14.8	31.0
Burma	1973	15+	29.0	15.9	41.7
Indonesia	1980	15+	32.7	22.5	42.3
Malaysia	1980	15+	30.4	20.4	40.3
Philippines	1980	15+	16.7	16.1	17.2
Singapore	1980	15+	17.1	7.6	26.0
Thailand	1980	15+	12.0	7.7	16.0
Viet Nam	1979	15+	16.0	9.5	21.7
SOUTH ASIA					
Afghanistan	1980	15+	80.0	66.8	94.2
Bangladesh	1981	15+	70.8	60.3	82.0
India	1981	15+	59.2	45.2	74.3
Islamic Republic of Iran	1976	15+	63.5	51.8	75.6
Maldives	1977	15+	17.6	17.5	17.7
Nepal	1981	15+	79.4	68.3	90.8
Sri Lanka	1981	15+	13.9	9.2	18.8
PACIFIC					
Fiji	1976	15+	21.0	16.0	26.0
Guam	1980	15+	3.6	3.6	3.5
Papua New Guinea	1971	10+	67.9	60.7	75.6
Samoa	1971	15+	2.2	2.2	2.1
Tonga	1976	15+	0.4	0.3	0.5
Vanuatu	1979	15+	47.1	42.7	52.2

Source: UNESCO, *Statistical Yearbook, 1986* (Paris, 1986).

Table 15. ESCAP region: gross school enrolment ratios, latest year available

Country or area	*Year*	*First-level*			*Second-level*			*Third-level*		
		Total	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*
EAST ASIA										
China	1984	118	129	107	37	43	31	1.4	1.9	0.8
Hong Kong	1984	105	106	104	69	66	72	12.8	16.0	9.3
Japan	1984	100	100	101	95	94	95	29.6	38.2	20.7
Mongolia	1984	105	104	106	88	84	92	..	..	..
Republic of Korea	1985	96	96	96	94	97	91	26.1	35.9	15.5
SOUTH-EAST ASIA										
Burma	1983	102	..	..	24	..	..	5.1	..	..
Indonesia	1984	118	121	116	39	45	34	6.5	8.9	4.2
Lao People's Democratic Republic	1983	90	103	77	19	22	15	1.4	..	..
Malaysia	1985	99	100	99	53	53	53	6.1	6.8	5.4
Philippines	1984	107	108	107	68	65	71	29.1	..	..
Singapore	1984	115	118	113	71	70	73	11.8	7.4	1.9
Thailand	1983	97	..	..	30	..	..	22.5	..	..
Viet Nam	1980	111	114	107	40	42	38	2.2	3.4	1.0
SOUTH ASIA										
Afghanistan	1984	16	22	10	8	10	5	1.4	..	..
Bangladesh	1985	60	70	50	18	26	10	4.9	7.9	1.8
Bhutan	1984	25	32	17	4	6	1	0.005	0.1	0.001
India	1983	90	105	73	34	44	23	8.6	12.7	4.2
Islamic Republic of Iran	1984	107	117	95	43	51	35	4.4	6.1	2.6
Nepal	1984	77	104	47	23	35	11	4.8	7.4	1.9
Pakistan	1983	42	54	29	15	..	..	2.0	2.8	1.1
Sri Lanka	1984	103	105	101	61	58	64	4.1	4.6	3.6
PACIFIC										
Australia	1984	107	107	106	94	92	95	27.1	28.3	25.3
Fiji	1984	110	111	109	78	74	78	3.3	..	..
New Zealand	1983	100	100	100	85	84	86	28.5	32.5	24.3
Papua New Guinea	1982	60	66	53	11	14	8	1.7	2.4	0.9

Source: UNESCO, *Statistical Yearbook, 1986* (Paris, 1986).

Table 16. Selected ESCAP countries and areas: estimates of additional enrolment at first level and consequent requirement of additional teachers, 2000

Country or area	*Age group*	*(Thousands)*				
		Population in age group in 2000	*Enrolment in base year*	*Additional enrolment*[a]	*Teachers in base year*	*Additional requirement for teachers in 2000*[b]
Afghanistan	7-14	5 227	450[c]	4 777	15[c]	159
Bangladesh	6-10	19 368	8 915[d]	10 453	190[d]	222
Bhutan	7-11	233	44[d]	189	1[d]	4
Burma	5-9	5 814	4 542[c]	1 272	95[c]	26
Hong Kong	6-11	592	540[e]	52	19[e]	2
India	6-11	119 121	77 039[c]	42 082	1 389[c]	978
Islamic Republic of Iran	6-10	8 073	5 994[e]	2 079	297[e]	104
Lao People's Democratic Republic	6-10	890	482[e]	408	18[e]	15
Malaysia	6-11	2 918	2 120[e]	798	82[e]	31
Nepal	6-10	3 081	1 626[c]	1 455	38[e]	34
Pakistan	5-9	18 601	6 412[e]	12 189	206[e]	393
Papua New Guinea	7-12	708	314[c]	394	10[c]	13
Philippines	7-12	9 957	8 591[c]	1 366	272[c]	43
Republic of Korea	6-11	5 436	5 041[d]	395	126[d]	10
Sri Lanka	5-10	2 186	2 145[d]	41	136[d]	1
Viet Nam	6-10	8 848	7 887[f]	961	204[f]	25

Source: ESCAP secretariat calculations based on UNESCO, *Statistical Yearbook, 1985* (Paris, 1985), table 3.4; and ESCAP, printouts of population projections and estimates.

a Additional enrolment is calculated as the difference between population in the age group shown and enrolment in base year.

b Additional requirement of teachers is calculated on the basis of additional enrolment and student/teacher ratio of the latest available year in the early 1980s.

c 1982.

d 1984.

e 1983.

f 1980.

Table 17. ESCAP region: male and female life expectancy and infant mortality rate, 1985

Country or area and region	*Male life expectancy at birth*	*Female life expectancy at birth*	*Infant mortality rate*	*Percentage aged 0-14*	*Percentage aged 65+*	*Dependency ratio*
ESCAP region	61.3	63.2	80	34.5	4.8	64.7
EAST ASIA	68.0	71.0	34	28.9	5.7	52.9
China	67.4	69.9	36	29.7	5.3	53.8
Hong Kong	72.9	78.5	10	23.6	7.5	45.1
Japan	74.5	80.2	6	21.6	10.2	46.6
Mongolia	61.3	65.4	49	41.6	3.2	81.2
Republic of Korea	65.4	71.9	27	31.2	4.0	54.3
SOUTH-EAST ASIA	56.3	59.9	74	38.7	3.6	73.3
Brunei Darussalam	70.1	72.7	12	38.1	2.9	69.5
Burma	51.2	54.3	106	39.0	3.8	74.8
Indonesia	53.4	56.2	79	38.7	3.5	73.0
Lao People's Democratic Republic	49.4	52.4	116	42.5	3.1	83.8
Malaysia	65.8	69.8	28	37.8	3.8	71.2
Philippines	61.0	64.6	56	40.4	3.4	77.9
Singapore	69.7	75.2	9	24.4	5.2	42.0
Thailand	61.0	66.9	53	36.6	3.6	67.2
Viet Nam	57.7	62.1	72	39.9	4.0	78.3
SOUTH ASIA	55.3	55.0	110	39.6	4.0	77.3
Afghanistan	37.6	38.4	189	41.8	2.7	80.2
Bangladesh	49.2	48.2	124	45.7	3.1	95.3
Bhutan	47.6	46.1	134	40.0	3.3	76.4
India	56.7	56.6	105	38.1	4.3	73.6
Islamic Republic of Iran	58.0	58.3	111	42.7	3.3	85.2
Maldives	57.0	58.0	68	46.3	2.7	96.1
Nepal	47.6	46.1	134	43.3	2.9	85.9
Pakistan	52.0	50.2	115	43.6	2.8	86.6
Sri Lanka	67.6	70.9	34	34.5	4.6	64.2
PACIFIC	68.8	74.7	28	27.7	8.7	57.2
Australia	72.0	79.0	10	23.9	10.3	52.0
Cook Islands	64.0	70.0	12	43.5	4.4	91.9
Fiji	67.6	71.9	29	37.2	3.5	68.6
Guam	..	..	8	34.9	2.8	60.5
New Zealand	71.3	77.5	12	24.7	10.3	53.8
Niue	–	–	–	46.1	6.6	111.4
Papua New Guinea	52.2	53.8	68	41.7	2.1	77.9
Samoa	62.2	65.5	42	48.2	3.0	104.9
Salomon Islands	..	..	..	48.4	3.3	107.0
Trust Territory of the Pacific Islands	..	..	..	46.8	3.6	101.6
Vanuatu	56.2	53.7	94	45.8	2.9	94.9

Source: ESCAP, *Population Data Sheet*, 1985.

Table 18 ESCAP region: daily per capita calorie supply as percentage of requirement, 1983

Country or area	
EAST ASIA	
China	111
Hong Kong	122
Japan	113
Mongolia	117
Republic of Korea	118
SOUTH-EAST ASIA	
Burma	117
Indonesia	110
Lao People's Democratic Republic	90
Malaysia	111
Philippines	104
Singapore	115
Thailand	105
Viet Nam	93
SOUTH ASIA	
Bangladesh	81
India	96
Islamic Republic of Iran	118
Nepal	93
Pakistan	96
Sri Lanka	106
PACIFIC	
Australia	115
New Zealand	132
Papua New Guinea	79

Source: UNICEF, *The State of World's Children, 1987* (New York, 1987).

Table 19. ESCAP region: percentage of population with safe water and adequate sanitary facilities, latest year available

Country or area	*Year*	*Safe water*[a]			*Sanitary facilities*[b]		
		Total	*Urban*	*Rural*	*Total*	*Urban*	*Rural*
EAST ASIA							
Mongolia	1983	100.0	100.0	100.0	50.0	..	..
Republic of Korea	1983	83.0	..	..	..	..	..
SOUTH-EAST ASIA							
Brunei Darussalam	1984	90.0	..	..	80.0	..	..
Burma	1983	25.0	36.0	21.0	20.0	34.0	15.0
Indonesia	1983/84	33.0	40.0	32.0	30.0	30.0	30.0
Malaysia	1983	71.0	..	..	75.4	..	..
Philippines	1985	64.5	..	..	56.5	..	..
Singapore	1982	100.0	..	..	85.0	..	..
Thailand	1983	70.0	70.0	70.0	45.0	50.0	44.0
Viet Nam	1983	..	90.0	30.0	30.0	..	..
SOUTH ASIA							
Afghanistan	1984	13.0	30.0	10.0	2.0	..	..
Bangladesh	1983	40.0	29.0	43.0	4.0	21.0	2.0
Bhutan	1983	..	40.0	14.0	..	..	..
India	1983	54.0	80.0	47.0	8.0	30.0	1.0
Islamic Republic of Iran	1985	71.0	90.0	52.0	69.0	100.0	15.0
Maldives	1983	17.0	53.0	8.0	15.0	69.0	1.0
Nepal	1983	16.0	71.0	11.0	2.0	16.0	1.0
Pakistan	1985	44.0	84.0	28.0	19.0	56.0	5.0
Sri Lanka	1983	37.0	76.0	26.0	66.0	..	..
PACIFIC							
Australia	1982	98.6	..	..	98.6	..	..
Cook Islands	1984	80.0[c]	..	..	..	..	..
Fiji	1983	83.3	..	..	..	..	..
New Zealand	1984	100.0	..	..	88.0	..	..
Papua New Guinea	1983	..	54.0	10.0	..	50.9	3.4
Samoa	1982	80.0	..	..	80.0	..	..
Solomon Islands	1984	..	90.9	..	..	86.4	..
Tonga	1984	95.0	..	..	40.0	..	..
Vanuatu	1981-1985	45.0	..	..	30.0	..	..

Source: WHO, *World Health Statistics Annual, 1986* (Geneva, 1986).

a Percentage of population with safe water at home or within 15 minutes' walking distance.

b Percentage of population with sanitary facilities at home or in the immediate vicinity.

c Rarotonga 99 per cent; other islands 80 per cent.

Table 20. ESCAP region: immunization coverage of infants, latest year available

Country or area	Year	Proportion of children immunized against			
		DPT (3 doses)	Measles	Polio (3 doses)	BCG
EAST ASIA					
Mongolia	1984	75.8	19.0[a]	75.7	51.3
Republic of Korea	1982	61.0	4.9	62.4	100.0
SOUTH-EAST ASIA					
Burma	1984	8.4	0.0	1.5	24.5
Indonesia	1983/84	6.5[b]	6.8	6.7[b]	56.9[b]
Malaysia	1983	58.0	..	54.6	94.3
Singapore	1983	84.0[c]	..	86.0	76.0
Thailand	1983/84	53.3	6.2	52.7	75.7
Viet Nam	1983	22.0	..	18.0	68.0
SOUTH ASIA					
Afghanistan	1984	16.0	13.0	16.0	11.0
Bangladesh	1983/84	1.5	0.8	1.2	1.6
Bhutan	1984	8.7	10.2	8.3	21.2
India	1983/84	51.7[d]	0.0	36.9[d]	65.8[d]
Islamic Republic of Iran	1984	68.0	69.0	65.0	10.0
Maldives	1984	23.0	0.0	9.0	25.0
Nepal	1983/84	26.4	23.9	5.3	23.2
Pakistan	1984	44.0	30.0	44.0	55.0
Sri Lanka	1984	66.4	2.3	65.4	66.8
PACIFIC					
Fiji	1983	80.4	24.6	81.1	98.8
New Zealand	1983	73.7	71.3	71.9	..
Papua New Guinea	1983	27.6	..	27.4	58.7
Samoa	1983	84.3	78.1	84.2	99.2
Vanuatu	1983	22.0	..	18.0	68.0

Source: WHO, *World Health Statistics Annual, 1986* (Geneva, 1986).

a 13-24 months.
b Under 15 months.
c DT only.
d Under 24 months.

Table 21. ESCAP region: basic indicators of public information and communication, latest year available

Country or area	*Radio receiver licences issued per 1,000 population (1983)*	*Television receiver licences issued per 1,000 population (1985)*	*Newspaper circulation per 1,000 population*	*Telephones in use per 1,000 population*
EAST ASIA				
China	67	7	29 (1984)	..
Hong Kong	510	221	554 (1985)	372 (1982)
Japan	712	549	561 (1984)	530 (1982)
Mongolia	108	41	85 (1984)	23 (1984)
Republic of Korea	451	170	146 (1984)	126 (1985)
SOUTH-EAST ASIA				
Brunei Darussalam	286	172	241 (1984)	153 (1984)
Burma	24	0.2	14 (1984)	1 (1979)
Indonesia	141	21	18 (1984)	5 (1985)
Lao People's Democratic Republic	117	..	1 (1975)	2 (1979)
Malaysia	437	91	236 (1983)	13 (1982)
Philippines	45	25	66 (1984)	13 (1982)
Singapore	42	181	279 (1985)	420 (1985)
Thailand	144	16	22 (1979)	13 (1983)
Viet Nam	..	..	9 (1984)	..
SOUTH ASIA				
Afghanistan	96	3	5 (1982)	2 (1980)
Bangladesh	7	2	5 (1985)	1 (1984)
Bhutan	9	..	..	..
India	62	3	20 (1979)	5 (1982)
Islamic Republic of Iran	178	52	25 (1981)	52 (1982)
Maldives	1 111	..	..	7 (1980)
Nepal	25	..	7 (1982)	1 (1979)
Pakistan	12	8	14 (1979)	5 (1984)
Sri Lanka	117	3	49 (1970)	7 (1981)
PACIFIC				
Australia	1 300	413	334 (1979)	535 (1984)
Cook Islands	574	..	115 (1982)	115 (1981)
Fiji	595	..	102 (1982)	76 (1982)
Guam	1 237	684	162 (1984)	..
Kiribati	213	..	..	17 (1981)
Nauru	740	..	..	260 (1979)
New Zealand	872	283	324 (1982)	615 (1983)
Niue	333	..	..	125 (1982)
Papua New Guinea	68	..	9 (1982)	16 (1981)
Samoa	443	22	135 (1979)	38 (1984)
Solomon Islands	95	..	..	12 (1982)
Tonga	..	..	..	31 (1982)
Trust Territory of the Pacific Islands	..	48	83 (1977)	..
Vanuatu	227	..	..	..

Source: ESCAP, *Statistical Yearbook for Asia and the Pacific, 1985* (Bangkok, 1987).