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PROGRESS MADE IN THE IMPLEMENTATION
OF THE WORK PROGRAMME

Addendum

Executive Summaries

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CONTENTS

	Page
IV. <u>Natural Resources</u>	
(1) The economies of oil and gas transport	1
(2) Skilled manpower needs in the mineral resources sector in the ECWA region	7
(3) Identification and promotion of investment in mineral resources development at the national & regional levels	15
(4) Survey of recent development in the mineral resources sector in the ECWA region	23
(5) Development of copper deposits in Yemen and Democratic Yemen and prospects for regional co-operation	33
(6) Guidelines for efficient water management in the ECWA region	43
(7) Waste-water reuse and applications in the ECWA region	65
V. <u>Transport & Communications</u>	
(1) Transport Harmonization and Standardization of documents	85
(2) Development of national merchant marines and promotion of multinational shipping enterprises in the ECWA region	99
(3) Improvement of road maintenance in the ECWA region	111
VI. <u>Planning Development</u>	
(1) The relevance of the code of conduct on Transnational Corporations to the countries of Western Asia	121

THE ECONOMIES OF OIL AND GAS TRANSPORT

1. The integration of the oil industry in the national economies of the ECWA member States is conceived as a vehicle for economic development, the importance of which is underscored by the depletion of hydrocarbon resources. Downstream oil integration, such as establishing export refineries, transportation of crude-oil products, liquified petroleum gas (LPG) and liquified natural gas (LNG) and marketing these products internationally, are therefore, a complementary function to upstream oil control.

2. The study summarized herein critically examines the oil scene and the tanker situation since the early 1970s with a view to explaining ECWA's activities in the areas of oil and gas transport. Concentrating on crude oil transport, liquified natural gas, petroleum gases and to a certain extent refined products and their transportation requirements the study comprises the subjects discussed below.

A. The properties of each type of petroleum product which impose limitations on its flow and its transport

3. In this context, the cost advantages, disadvantages and economies of using pipelines vs. tankers for hydrocarbon resources are discussed. The cost of interregional transport of oil, owing to its properties as a liquid capable of being transported at normal temperature without special containers or handling equipment, is lower than other conventional energy sources of the same heat content (i.e. coal, LNG or LPG). This has led to the dominance of the oil trade in the world energy market, where the proportion of world oil consumption met by interregional imports rose from 44 per cent in 1961 to 60 per cent in 1974 and declined to 48 per cent in 1982. However, there is not much interregional trade in natural gas, since its major consumers are also the major producers, and the demand centres are in proximity to producing areas. The study differentiates between various kinds of pipelines emphasizing the ones which substitute for, or which complement, tanker transportation. In this regard, various comparative cost analyses of different tanker sizes are shown to arrive at the unit transportation cost.

B. The comparative advantage of various modes of transport including pipelines

4. According to the study, the cost per ton/kilometer of pipeline transportation is lower than that by rail or road. However, pipelines are not as economical as large tankers over the same distance. They can only compete with tankers if the pipelines are considerably shorter than the tanker route or if the sea transport is subject to political or exceptionally high charges such as heavy canal or port dues. The unit cost of

shipping one ton of oil in a full capacity very large crude carrier of (VLCC) would be three to four times cheaper than transporting it in a 30,000 dead-weight tonnage (dwt) tanker. Thus, the effect of size, volume and complexity in the oil industry has had an immense impact on the development of its transport sector. However, an important aspect of oil transport has been that crude oil is always carried from the producing fields to the refinery sites and is thus dependent on the location of refineries vis-a-vis oil fields. The transportation of products, on the other hand, is usually carried from the location of the refineries to the consuming areas, and is thus dependent on the location of refineries vis-a-vis the market location for refined products. Therefore, the location of the processing units for oil or gas in relation to the markets and to the oil/gas fields determines the role to be played by each type of carrier. Other factors that have contributed to structural change in oil transport are the build-up of pipelines that can replace tankers, and the opening of the Suez Canal and its deepening to allow VLCCs to transit southbound, thereby decreasing the length of the average voyage.

5. The Saudi pipeline that transports oil from the major eastern oil fields to the Yanbu terminal on the Red Sea was considered an important new element in the logistics and economics of Middle East crude oil transport which altered the crude oil transport options. Other substitutions for sea trade include the (Sumed) trans-Egypt Suez-Mediterranean pipeline that carries oil from the Red Sea to the Mediterranean, and the switch in Iraqi oil exports from the Gulf terminals to the Mediterranean via the Dortyol pipeline across Turkey. Collectively, these factors can reduce tanker demand by an estimated 20 million dwt, most of which is concentrated in VLCCs. Moreover, there are plans to build new transnational pipelines in the ECWA region such as the one that transports Iraqi crude to the Red Sea across Saudi Arabia and the projected pipeline across Jordan to the Red Sea.

6. On a region-by-region basis, it is foreseen that despite the vast decline in its oil imports since 1976, West Europe will remain a major importing area for ECWA countries. Regarding Japan, refined products are expected to be imported from emerging refinery centres in South-East Asia which, in turn, import their crude from the ECWA region.

C. The tanker situation in the light of new economic circumstances

7. According to the study, the unemployed tankers in 1982 represented 54 per cent of the total 304 million dwt fleet; The cost of a laid-up tanker of 250,000 dwt capacity was estimated at \$ 840,000 annually at the end of 1980. As such, the tanker

situation is still in a stage of disequilibrium created by the changing patterns of oil supply and demand. What seems to be taking place is a structural shift towards a new equilibrium where the dominant parameters are related to the shift in refinery locations, the development of new oil sources closer to the markets, the development of oil pipelines competing with tankers and the role of oil as a source of energy vis-a-vis alternative energy sources.

D. The secondary oil transport modes, including the Suez Canal and various oil pipelines in the ECWA region.

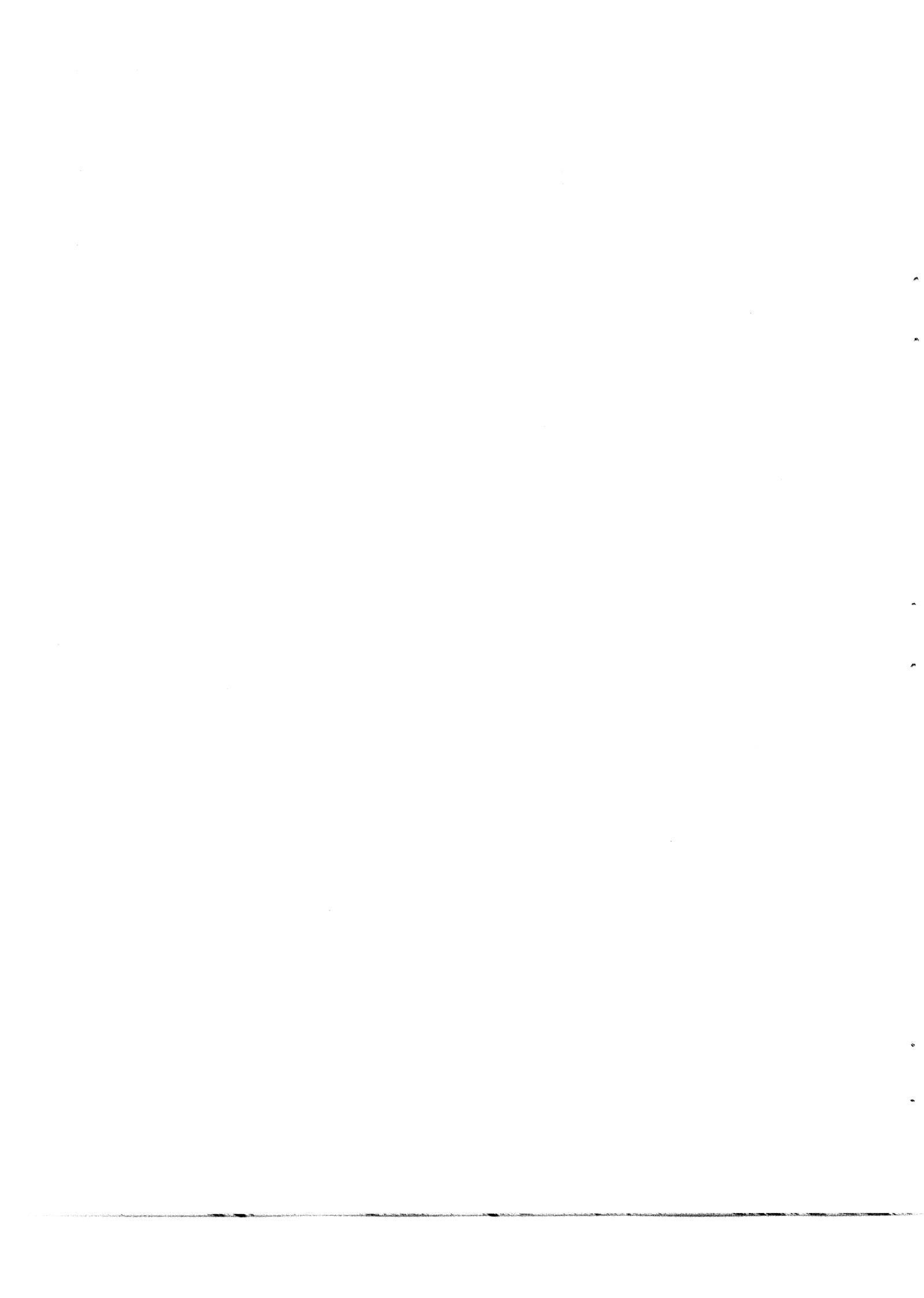
8. The study discusses the existing and planned pipelines in the ECWA region and their effect on tanker demand, with particular reference to the economics of using the Suez Canal for northbound crude oil movements. As such, the total volume of oil that can be moved by the secondary oil transport modes from the ECWA region to the Mediterranean could be estimated as the total capacity of the regions pipelines excluding the Sumed line. Total exports to Europe from the Middle East amounted to 5.7 million barrels per day (b/d) in 1981; thus, the pipelines could have accommodated 79 per cent of that. The Suez Canal further reduced the demand for tankers in an already depressed tanker market. Therefore, the structure of the oil trade in the ECWA region is influenced, to a great extent, by the secondary mode of transport, namely the pipelines and the Suez Canal, which directly affected the total demand on tankers. But the extent to which the pipelines (particularly the Petroline and the Planned Iraqi Pipeline to Red Sea) would be used by oil traders depends on a number of factors including the price difference between oil available for loading at the Red Sea versus that available in the Arabian Gulf, the throughput charges of the Sumed line, Suez Canal transit fees and the tanker freight. All these factors vary over time, but the study makes it clear that the combination of the Petroline and the Suez Canal of the Sumed line would make a significant dent on tanker demand. As such, the future of oil transport would be based on pipelines, which implies that tanker usage for oil transport would be minimized. This flurry of pipeline construction has come at a time when the oil tanker market is severely depressed, thus speeding up the transitional period that the oil tanker market is currently undergoing. However LPG transport is expected to increase as a result of the output of new refineries, with the main outlet being Japan. Thus, a high demand on LPG tankers is expected in the longrun. The same is foreseen for product tankers, particularly those with capacities of up to 150,000 dwt.

E. ECWA country policies on the acquisition of oil, gas and product tankers as a whole and on a country-by-country basis

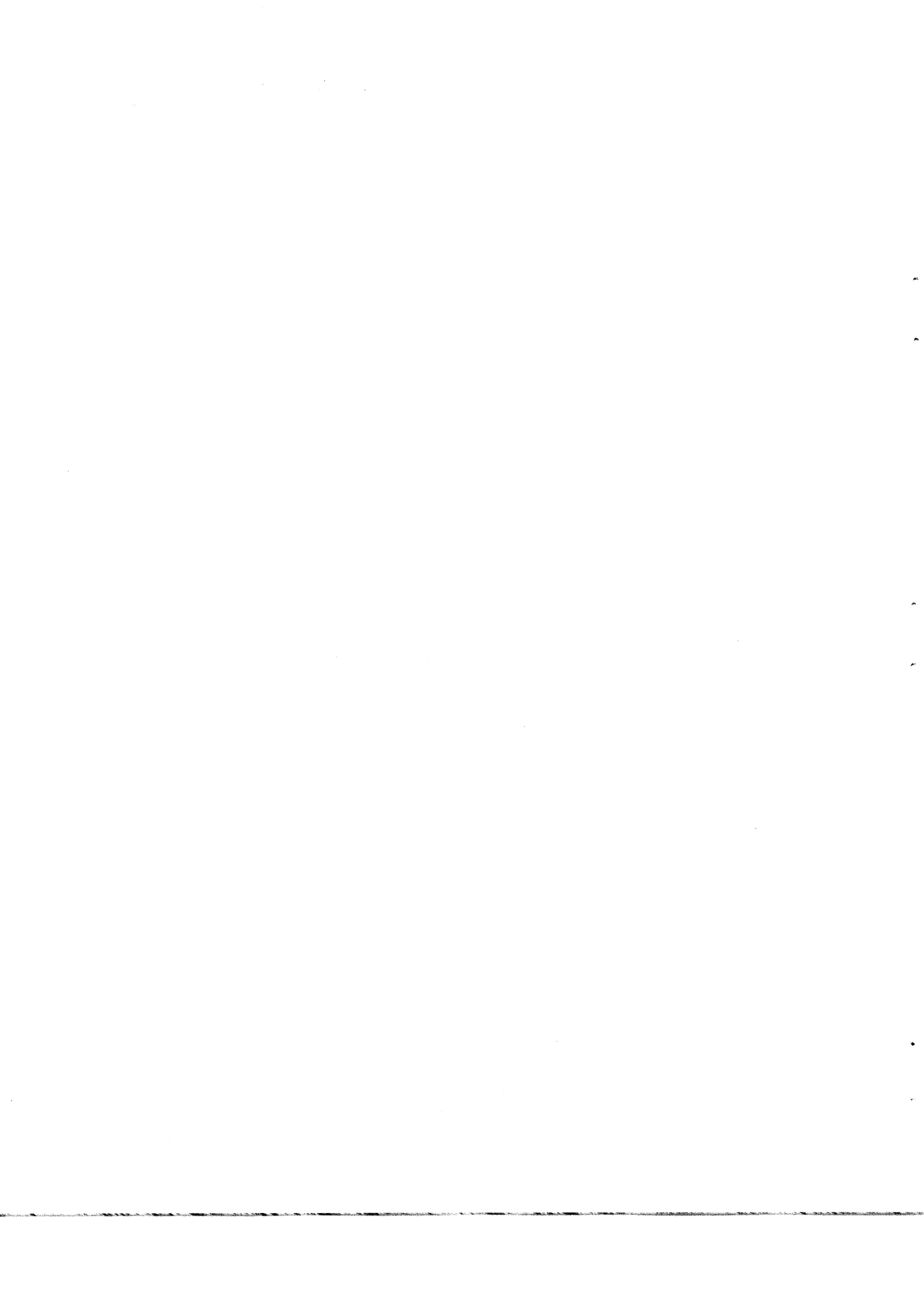
9. In the first half of the 1970s, when ECWA oil-exporting countries nationalized their oil sector, the economic disadvantages of owning tankers did not exist and it was quite profitable to transport oil. Accordingly, most such countries had ambitious fleet expansion programmes as an additional step toward controlling their downstream oil industries. However, the deep prolonged recession in the tanker market caused their fleet growth to be much below the initial expectations. The situation was aggravated by the fact that most of the tanker orders were placed at a time of inflated costs and delivered to an unforeseen depressed market. Thus there was little chance of recovering the investment. Moreover, it was not easy for new shipowners, whether state or private, to compete on equal grounds with a network of already established transnational shipowners that used to manipulate the industry. Other problems that rendered these operations less competitive in the short- to the medium-run were the inadequate number of qualified crew, the lack of management expertise and oil marketing skills for the new entrants, the lack of co-ordination etc. These factors kept the implementation of planned fleet expansion to a minimum, and by the end of 1983, ECWA oil-exporting countries controlled a meagre 3.8 per cent of the world fleet. This low participation of the ECWA region in fleet ownership is also attributed to the fact that importers were buying on free on board (f.o.b.) terms which rendered the oil exporters as mere suppliers of raw materials. Kuwait, however, is currently reversing this trend by negotiating oil sales on a cost, insurance, freight (c.i.f.) basis. The success of Kuwait in achieving such an agreement might prompt other ECWA oil exporters to take similar actions. Against these pros and cons, some ECWA countries have decided to invest directly in oil and product tankers, such as Iraq, Kuwait, Saudi Arabia and the United Arab Emirates (Abu Dhabi) while other ECWA countries, such as Qatar and Bahrain have preferred to invest in the pan Arab joint venture, namely the Arab Maritime Petroleum Transportation Company (AMPTC), and not to own their own fleet.

10. In conclusion, the study points out that as a result of the overcapacity in VLCC and ULCC tonnage, the freight cost component of transporting a barrel of crude oil has dropped dramatically from approximately 50 per cent of the cost of landing it in 1973, to around 5 per cent at present. The report also shows that accompanying the expansion in the VLCC and ultra-large crude carrier (ULCC) tanker fleets there has been a striking increase in refining capacity in the industrialized countries of Western Europe, the United States of America and Japan. Hence, one concludes that under the prevailing circumstances, an investment in tanker ownership may involve a risky venture. Although the present tanker market situation may represent a negative investment opportunity for the ECWA oil exporters, it is worth remembering that about 35 per cent of the region's oil

exports are concluded on State-to-State sales agreements. Therefore, the economic sense of the ECWA countries ownership of tankers depends on the economic merits of exporting crude or refined products. The export of hydrocarbons by ECWA oil-exporters would benefit such countries in their drive to diversify and industrialize their economies. The oil industry itself is more sensitive to vertical integration and particularly to the refining and transportation sectors. Hence, the nationalization of oil which took place in the ECWA region in the first half of the 1970s, in which the upstream phase is currently under direct State control, should be complemented vertically by national control of the transportation sector. So far, ECWA oil exporters have been confined to exporting raw materials without a commensurate benefit accruing to them through value added by transporting large quantities of this commodity in their national fleet. Hence, a greater control of the transportation sector would add to their national income, and in addition, they would retain a degree of control over the destination of their oil exports. Of particular interest to the ECWA region is the question of employment and training. A national tanker fleet provides opportunities for managerial, organizational and technical know-how for the ECWA countries which are particularly suited to invest in the oil industry and for training their manpower. It goes without saying that diversification of markets and the political risks involved in not owning a national tanker should encourage ECWA oil exporters to own their national fleet and to enhance their regional co-ordination in transporting hydrocarbons to maximize their interest, since crude oil trade is essentially a transport industry.



**SKILLED MANPOWER NEEDS IN THE MINERAL RESOURCES SECTOR
IN THE ECWA REGION**



1. Most discussions on economic development centre on monetary and financial issues. It is to be recognized, however, that it is the quality, sophistication and level of skills that determine the development, productivity and economic growth of developing countries and their capacity to respond to changing requirements. Indeed, lack of adequately trained manpower constitutes a major obstacle to social development and economic growth.

2. This issue has been seriously considered in several gatherings at national and regional levels in the Arab world. At the Fourth Arab Mineral Resources Conference held in Amman from 25 to 30 April 1981 it was recognized that the availability of a technical labour force and skilled manpower was one of the most important factors for the development of mineral resources and in that regard the Arab world had a considerable potential. However, a considerable effort was needed to put to better use the services of the currently employed technical manpower and to provide the required facilities for the formation of new cadres and an adequate technical labour force.

3. With a view to contributing to such an effort, the ECWA secretariat has completed a study on short and long-term staffing requirements for more efficient operation in the mineral resources sector.

A. Outline of the study

4. The study consists of five chapters.

5. In the introductory chapter, regional efforts in this field are outlined with an emphasis on the recommendations issued by the successive Arab Mineral Conferences.

6. Chapter II consists of three sections, the first of which attempts to provide a review of the methodologies and consecutive stages of mineral deposit development, from basic geological investigations to mining operations. The second section deals with the standard performance of skilled manpower in this field. It specifies, by specializations, the typical composition of field teams for particular types of stages of investigations, and expected performance quotas classified by degrees of geological complexity. The third section includes a classification of specializations and occupations required in the mineral sector. In fact, this section is a revised and expanded version of the "international standard classification of occupations" issued by the International Labour Office.

7. The first section of Chapter III includes a country-by-country review of the present employment status of skilled manpower in the mineral sector. The second section contains a review of national development programmes for national education and training facilities. In the third section of this chapter the basic considerations of education and training facilities at the regional level are discussed.

8. Chapter IV contains an outline of projections of future requirements for skilled manpower by target years. But, owing to the lack of adequate information at ECWA in this field, only a limited number of member countries are covered.

9. In Chapter V the issue of the brain drain is discussed. This chapter is intended to focus on the economic and social dimensions of the brain drain in relation to both the out-flow to non-Arab countries and to inter-Arab movements. It is to be noted, here, that discussion of high-level manpower movements is based on incomplete sources because many member countries do not publish official statistics on the flows of high-level manpower.

10. The study is concluded by a summary of findings and a number of recommendations for the consideration of national and regional policy-making bodies and for follow-up action with a view to improving the current status of institutions dealing with mineral resources and strengthening training facilities.

B. Conclusions of the study

11. The main findings of the study are as follows:

(a) There will be a substantial surplus in the number of university graduates during the next five years. This surplus could reach 200 per cent of the actual requirements in the middle eastern arab countries. The percentage of surplus is expected to be in the vicinity of 12 per cent in the Arab Maghreb (Libya, Tunisia, Algeria and Morocco);

(b) There is a shortage of intermediate cadres estimated at 40 per cent of the actual needs in the Middle Eastern Arab countries. The Arab Maghreb however, is expected to be in a better position in this respect;

(c) There is an acute shortage of trained manpower in most of the Arab countries resulting from a lack or inadequacy of training centres;

(d) Different scientific and technical terminology is used in the Arab countries of the Middle East and the Arab

Maghreb. As a result there are great difficulties in exchanging information and experience in the field of mineral resources development;

(e) There is a need for comprehensive surveys including estimations of university graduates and the requirements for high-level manpower in the field of mineral resources development;

(f) Financial support is needed to enable the arab universities and other institutions to be involved in research relating to various aspects of mineral resources development;

(g) In terms of high-level manpower resources, the number of universities, the size of research and development, and the number of Ph.Ds., the Arab world seems to be at a considerable advantage. However, figures published in this respect are often misleading. About half of the Arabs who have earned doctorate degrees in science and engineering have left the Arab region. The issue of the brain drain has been discussed in several national and regional meetings and a number of studies have been prepared with the objective of reducing the outflow of high-level manpower from the Arab region. Various explanations of the brain drain phenomenon have been discussed and a number of measures have been suggested. Several countries of the region have taken measures to regulate the outflow of high-level manpower. But it seems that these measures have not been as effective as some Governments in the region had expected and even economic sanctions could not prevent the actual departure of high-level manpower from certain countries of the Arab region;

(h) A serious drain of the region's scientific resources is found in management inefficiency. This problem is aggravated by the fact that in many cases, highly qualified technical personnel and specialists are heavily involved in administrative and bureaucratic tasks.

C. Recommendations of the study

12. The study makes the following recommendations:

(a) A specialized training centre for intermediate-level technicians should be established in one of the countries of the Arabian Peninsula. In this regard, emphasis should be placed on drilling, mining operations and processing of mineral raw materials;

(b) A technical mining centre for an intermediate-level labour force in the field of phosphate mining should be established in one of the north-eastern countries of the Arab world in order to meet the requirements of phosphate mining operations in that area;

(c) More attention should be paid to vocational training in countries of the Middle East where substantial mining activities are carried out. Two centres one to serve the Arab countries of North-eastern Africa; the other for the Arab countries of the Middle East, could, at present, reasonably meet the needs of the Arab world;

(d) In order to eliminate obstacles resulting from using different terminologies, Arabic should be used in dealing with matters related to any aspect of geological and mining activities. However, a foreign language should be included in high school curricula in order to enable the future working force in the mineral sector to benefit from foreign scientific and technical contributions;

(e) More emphasis should be placed on geological studies and mining engineering in the Arab universities. This should be done within the framework of national plans specifying the requirements for high-level manpower;

(f) A system should be established for the exchange of technical, economic and statistical information among the Arab countries;

(g) The Arab world should benefit from the expertise and scientific achievements of geologists, mining engineers and mineral economists of Arab origin living abroad. This can be achieved by organizing visits or missions to the Arab world or in accordance with special service contracts with eminent specialists of Arab origin who could serve as consultants in the various fields of mineral resources development;

(h) Special attention should be paid to the formation of a teaching and training staff in the various fields of earth sciences. The importance of geological studies and mineral resources for economic development at the national and regional levels should be stressed;

(i) A special department should be established within the Arab Organization for Mineral Resources. Activities to be carried out by this department should focus on;

(i) Undertaking studies and following up on the recommendations adopted by regional authorities;

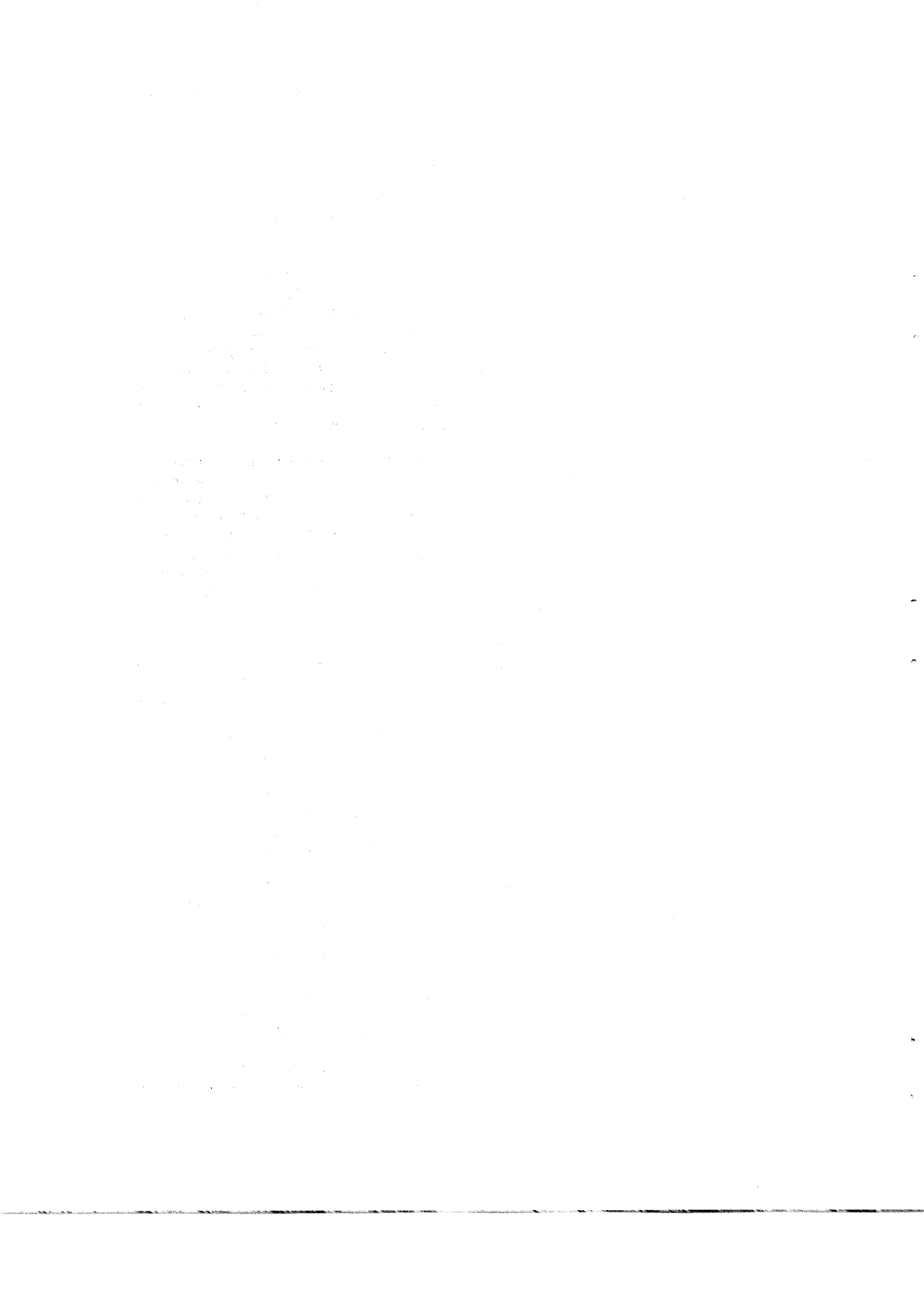
(ii) Specifying the problems facing each Arab country in the field of manpower training and technical formation;

(iii) Formulating an Arab policy for manpower training and technical formation in the various fields of mining activities. The activities of the Arab Organization for Mineral Resources are expected to include practical proposals to co-ordinate the national policies in the field of manpower training and technical information and to prevent the brain drain from the Arab region;

(j) Arab countries should co-ordinate efforts to establish a system of exchange of information in mineral resources. It is to be noted that although several meetings and discussions have been held under the aegis of the concerned bodies of the Arab League, co-ordination of efforts deployed by several Arab countries for providing the required high-level and skilled manpower is still limited and very little has been done to implement the numerous recommendations in this field. It has been indicated that a number of Arab countries have achieved a remarkable progress in providing qualified high level and skilled manpower for running their mining activities. Furthermore, some of these countries are planning to be major sources of professionals and skilled manpower for those countries which are still heavily dependent on expatriates. But it is to be recognized that some sort of co-ordination among the Arab countries should be established in order to avoid the negative repercussions of disorganized movements of manpower in the Arab region. Furthermore in stressing the importance of a system of exchange of information, it should be pointed out that such a step would not only facilitate the implementation of regional mineral development projects and joint ventures, but could also be an important source of data on the various aspects of mineral resources situation at the national, regional and international levels. In addition, such a system could contribute considerably to the improvement of knowledge and experience of geologists, engineers, economists and technicians of the Arab countries.

(k) Special attention should be paid to on-the-job training and measures should be taken to encourage the private sector to be involved in manpower training;

(l) Special attention should be paid to the problem of educational practices and examinations which encourage merely rote learning.



**IDENTIFICATION AND PROMOTION OF INVESTMENT IN MINERAL RESOURCES
DEVELOPMENT AT THE NATIONAL AND REGIONAL LEVELS**



1. This study is prepared to provide a comprehensive evaluation and promotion of investment in mineral resources development at the national and regional levels for the ECWA region. The study comprises an introductory chapter and four other chapters.

2. In the introductory chapter, the importance of mineral resources development in the economic growth and social progress of the region is discussed. A review is presented of the latest investment projects for promoting the development of the mineral sector with an emphasis on its importance in national development plans and the role of the financial institutions in the development of mineral resources.

3. Chapter two consists of an analysis of the regional prospects for the development of selected minerals, specifically iron and copper ore and their related industries. Exploration, prospection and mining activities in this field at national and regional levels are evaluated with the objective of identifying mineral projects of economic value. A number of relevant projects are discussed, and investment requirements for the development of copper and iron ore are studied in the light of the specific financial and technological situation in each member country.

4. Chapter three focuses on co-operation among ECWA member countries in the field of metallic minerals development and a comprehensive evaluation of the present status of regional and sub-regional co-operation with respect to financial and technological requirements.

5. Chapter four provides a summary of findings and recommendations.

A. Summary of main findings

6. Among the noticeable facts about mineral resources in the ECWA member countries is the increasing importance which most of these countries have been giving, during the past few years, to exploration for various mineral resources, and the programmes included in the development plans for the implementation of these activities. However, the extent of progress has varied from one country to another owing to the disparities among member countries regarding mineral potential, supply of capital and technological capabilities as well as adequacy of the infrastructure needed for mining operations. In many areas of the ECWA region the scope of geological surveys and mineral exploration has been adequate. Hence, the evaluation of the region's mineral potentialities is still incomplete and several ore deposits either are still unassessed or need more investigation. Only

about 28 per cent of the total ECWA area has been included in the airborne geophysical survey for oil and mineral exploration purposes, out of which less than 50 per cent has been devoted to mineral exploration.

7. It is well known, that in order to identify and evaluate mineral resources, a series of complex and integrated operations need to be carried-out. Such operations are time- and capital-consuming and require, in most cases, sophisticated equipment and advanced technology. Several countries of the ECWA region, especially those that are not oil-producers, lack the capital for undertaking significant exploration and exploitation activities. On the other hand, the ECWA oil-producing countries have a favourable supply of capital, large amounts of which are being invested in Europe and the United States and the rest of which is being engaged in real-estate speculation and commercial activities. Investment of these financial resources in the development of mineral resources in the region would result in creating great strides in this field.

8. Efforts undertaken by some countries in the ECWA region to investigate their metallic minerals potential (iron ore and copper ore) have resulted in the discovery of enough iron ore supplies to meet the existing and planned demand of metallurgical industries which at present rely on imported iron ore and pellets. On the other hand, ECWA regional market's minimum demand for copper in 1990 is expected to amount to 518,000 tons; thus, if all the region's reserves of copper ore are utilized, they will only secure 14 per cent of the total demand. Therefore efforts to meet the demand for copper ore should proceed along different lines from those to meet the demand for iron ore.

9. Accordingly, there should be a separate industry for the development of iron ore and another industry for the development of copper ore. This would require:

(a) Establishment of plants to produce finished iron and steel and copper products based on iron ore and copper ore existing in the ECWA member countries and other Arab countries;

(b) Complementing the industry cycle in both industries i.e. from ore to finished products according to the demand both quantitatively and qualitatively;

(c) Establishment of Arab strategic iron and copper stocks;

(d) Establishment of an efficient framework of co-operation and co-ordination both in the manpower contribution and financial backing from all parties concerned according to their individual abilities;

(e) Joint Arab co-operation in executing geological survey programmes aimed at mineral exploitation since these are the first practical steps for evaluating such mineral wealth as may exist in a sound manner;

(f) Attracting Arab investing bodies to invest in mining and related activities; towards this end Arab Governments should be encouraged to formulate favourable investment laws;

(g) Establishing reliable and easy data acquisition through data banks and information and documentation centres which contain all necessary surveys of both Arab and international markets. Such an information network is important for developing self-reliance in the mining industry;

(h) Developing local know-how through rehabilitation and upgrading of Arab expertise and manpower in the field of mining and related industries. Although some ECWA member countries are relatively advanced in this respect, most of the countries of the region still lack the technical know-how required in the field of mining and related industries although each year they have hundreds of university graduates from various universities and institutions all over the world as mining engineers, geological engineers, geologists, metallurgists, etc. these graduates need the practical training;

(i) Many ECWA member countries lack the necessary infrastructure and the high cost of providing it has been a hindrance to developing mineral resources especially iron ore and copper ore. Although some of the regional funds and financial institutions have been contributing to the financing of such infrastructure their role in this respect has been limited, or loans provided for such purposes have been an additional burden for the total cost of the projects;

(j) Most of the ECWA member countries have been trying to develop their mineral resources on a country-by-country basis. However, convinced of the necessity for joint projects and of their importance in realizing economic co-operation and integration among the Arab countries, all the Arab Mineral Resources Conferences (held in Baghdad, 1972, in Jeddah 1975, in Rabat 1977 and in Amman 1981) recommended the establishment of joint venture projects, and decided to establish a new organization (Arab Mineral Resources Organization). The objective of this organization is to co-ordinate the various geological activities of the different Arab countries and to facilitate the exchange of information and experience gained, as well as to develop training research facilities in the fields of geology and mining;

(k) Implementation of joint venture projects in mining industries and combined efforts and plans to meet all local

requirements necessary for such implementation from project start-up to production control.

B. Recommendations

10. In order to accelerate the geological and mineral investigation projects, and to evaluate the mineral potential of the ECWA member countries, it is recommended that a special organization should be set up by the concerned ECWA member authorities to be supported by the Arab Mining Company, the Organization of Arab Petroleum Exporting Countries, the Arab Organization for Mineral Resources, the Arab Organization for Industrial Development, and the Arab Company for Investment. This organization will take the initiative in planning and establishing the following bodies;

(a) Mining research institute. To perform the necessary follow-up for the geological exploration and mineral prospection for the purpose of evaluating mineral wealth and strengthening regional research and development activities in this field;

(b) Arab consulting firm. Consultancy constitutes one of the main requisites in the development of mineral resources and related industries in the ECWA member countries. In this vast market for consultancy and expertise, the few local consulting firms suffer from the competition of foreign firms and from a more severe factor, which lies in the discouraging local attitude which hinders the establishment of strong self-reliant regional consulting firms that could carry out and implement required projects. There is an urgent need for such an organization to conduct project studies and implementation;

(c) Documentation and information centre. Information is the lifeblood of the development of the technology-intensive mineral resources industry. An efficient and modern information and documentation service to disseminate the latest information on mineral resources technology at a regional level is of basic importance for the successful development of mineral resources and related industries. While efforts are being made by various authorities and bodies to collect and publish such information from time-to-time, the importance of such information will still depend on its correctness, accuracy and updating, since the unavailability of such correct information will result either in delay in taking decisions, or in taking wrong decisions, all these facts necessitate paying more attention to this vital subject. In this connection it is recommended that a Documentation and Information Centre in the Arab Mining Company should be established with the full co-operation of the concerned bodies to collect all available information which will be an important asset in establishing the computerized data-bank, which the Arab

Mining Company is planning to establish in the near future. The information available in this bank can be used for planning and decision-making in the mining sector in the region;

(d) Regional training institute. Manpower development in mineral resources industries is a task which needs serious and immediate attention and action in the ECWA region on a co-operative basis; some of the steps that should be taken include:

(i) Establishment of a regional manpower development board for metallic mineral exploitation and for the industry in order to assess the precise needs of manpower, to plan for manpower development in co-operation with the industry, and to programme and monitor the plan, including the plans for short-term employment of expatriate manpower, on a regional basis;

(ii) Establishment of regional and plant-level training centres for metallic mineral and metal-working industries to train a cadre of specialized technicians;

(iii) Establishment of a planned programme of in-plant training in developed countries;

(iv) Establishment of a regional institute to train senior managerial personnel and to organize periodical seminars and refresher training programmes on the technical management of the metallic mineral exploration, investigation, exploitation and related industries.

(e) Revolving Fund. As a basic step in creating the financial support for the metallic mineral exploration and exploitation and related industries, an Arab Metallic Mineral Fund could be created through contributions from ECWA member countries, some of the regional banks, and regional financial institutions including the Arab Mining Company, the Arab Company for Investment, and the Arab Organization for Petroleum Exporting Countries. This Fund would develop in the future to establish a holding company for iron and copper exploration, exploitation and related industries with the following objectives:

(i) To stimulate, monitor, and support the co-ordinated development of the iron and copper ore exploitation and related industries in the ECWA member countries;

(ii) To promote and support companies and service institutions on a regional basis, in order to provide centralized services to the iron and copper exploitation industries, and to financially participate in iron and copper ore projects in the region. The holding company may

progressively establish subsidiary companies and institutions for regional co-operation for the exploration and exploitation of iron ore and copper ore in the following areas: Raw materials development including iron ore, copper ore and manganese ore; exploration and investigations of mineral resources in the least developed ECWA countries or other Arab countries lacking capital to invest in the mineral resources sector; project design, construction and consultancy services; design research and development; computerized data bank and information services, and training and manpower development.

11. It is strongly urged that this Holding company should be established in order to start the big Red Sea project at Aqaba in Jordan for a copper smelter complex since the area surrounding the Red Sea in the ECWA region is very rich in copper ore, and there are many positive factors which make the project feasible.

**SURVEY OF RECENT DEVELOPMENTS IN THE
MINERAL RESOURCES SECTOR IN THE ECWA REGION**

12. In the Second National Development Plan (1981-1985), provision was made for a qualitative geological and mineral survey covering the whole territory of Jordan at 1:50,000 scale.

13. Prospects for copper development appear to be promising. During the last few years copper mineralization has been discovered in several areas in Wadi Araba. Copper deposits in Jordan have been the subject of an extensive feasibility study to evaluate the various metallurgical routes for recovering copper from the known deposits.

14. At the present time efforts are mostly oriented towards the development of industrial minerals. Jordan mines and produces phosphates, potash and salts, gypsum, kaolin, marble, travertine, foundry sand, dolomite, aggregates and building stones. Several other minerals are still not exploited, but plans have been drawn up for their development in the near future.

15. In 1982 Jordan phosphate exports represented around 9.56 per cent of the world exports, making Jordan the third largest exporter of phosphate. In 1983 the country announced the discovery of significant phosphate deposits.

16. Asia is the largest market for Jordanian phosphate. In 1983 the amount of Jordanian phosphate exported to Asia totalled 1,285 million tons. India was the single biggest Asian purchaser from Jordan, accounting for 798,000 tons in 1982. With purchases amounting to 230,000 tons, Japan was the second largest Asian importer of Jordanian phosphate, followed by Pakistan, Indonesia, Taiwan, Turkey, Malaysia, China, Bangladesh and Sri Lanka. Eastern Europe imported about 1,500,000 tons in 1982. The other purchasers were: Italy, Greece, France and Australia.

17. It is to be noted that Jordan exports about 99 per cent of its phosphate production; only about 112,000 tons its phosphate production is destined for use in Jordan. This portion is used in producing phosphoric acid.

The first phase of a potash project was inaugurated in Jordan in 1982. The Arab Potash Company plans to produce enough potassium sulphate fertilizer to serve local needs as well as those of nearby countries with excess chloride in their soils.

About 12,000 tons per year of table salt is produced, at present, by the Arab Potash Company. Unrefined salt is also produced in the Al-Zarqa area. The present production is estimated at 30,000 tons per year. On the other hand, the Arab Potash Company plans to utilize about 7 million tons of NaCl from the main salt pan each year for table salt.

3. Egypt

In Egypt figures relating to the investment budget for 1979-1989 reveal that about Pound E 51 million are required for carrying out various activities planned in the field of geological studies and mineral exploration. The Egyptian Geological Survey and Mining Authority has recently completed several geological maps including geochemical prospecting and airborne magnetic and radiometric surveys. The most important industrial minerals recently discovered and evaluated include the Abu Tartur phosphate deposit in the Western Desert, Hamrawein phosphate deposit, Kalabsha kaolin deposit, south-east of Aswan, gypsum deposits at Al-Omaiyed and Gharbaniat, west of Alexandria, and limestone at Beni Khalid area in upper Egypt. In addition, the Egyptian Geological Survey and Mining Authority has been involved in exploring and assessing raw materials for cement, and for building and ornamental stones and in undertaking various laboratory tests in the field of dressing and extraction.

20. Apart from oil, natural gas and bulk construction raw materials, at least 15 minerals have been produced in Egypt during the last few years, contributing to about 3 per cent of the GDP.

21. Reserves of iron ore in Egypt (Aswan and Al-Bahriya areas) have been estimated at 154 million tons. Production of iron from Bahriya, used for the Helwan iron and steel factory, is currently between one and 1.5 million tons per year.

22. New developments in phosphate production and fertilizer industries are expected to raise production of phosphates in Egypt to 9 million tons per year by 1986. Several other minerals have been the subject of detailed studies; among these have been studies of uranium reserves which are estimated at 128,000 tons.

4. Iraq

23. Iraq still ranks first in native sulphur production in the ECWA region. The major source is the Mishraq Frasch mine which produced 450,000 tons in 1980. During the period 1981-1985 annual production is planned to reach 900,000 tons.

24. In 1982 Iraq emerged as one of the five major producers of phosphate in the Middle East. Phosphate reserves in Iraq have been estimated at 1,760 million tons. In 1981, the Akashat phosphate mine was inaugurated and production was expected to start at a level of 3.4 million tons. In fact, this phosphate mine is part of a large project which includes a chemical complex and various facilities.

25. Several raw materials for construction are produced in Iraq. Production of marble and mosaic has increased considerably. In 1982 the capacity of lime factories reportedly reached 260,000 tons per year. Attention has also been paid to the development of gypsum, clay, sand, gravel and several other raw materials.

26. Basic geology and mineral exploration programmes have also been carried out during the last few years.

5. Syrian Arab Republic

27. In the Syrian Arab Republic low-grade phosphate rock is currently the only hard industrial mineral exploited for the export market. Expansion of the phosphate industry is not only aimed at the increase of export sales, but also at providing domestic deliveries of phosphate for the new fertilizer facility at Homs. The Syrian Arab Republics also produces salts, natural asphalt and substantial proportions of construction raw materials. In addition, iron ore reserves and other metallic minerals have been evaluated and technical studies on mineral resources development have been carried out.

6. Yemen

28. Geological studies have been carried out in Yemen with the objective of assessing the mineral potential of the country. Among the main metallic minerals so far studied in this country are copper and nickel deposits. However, mineral production in Yemen is still limited to salt and some construction materials.

7. Democratic Yemen

29. In Democratic Yemen a number of geological surveys and technical studies have been undertaken during the last few years. Some mettalic mineral occurences such as copper and titanium have been located. But the most important mining activities in this country are still confined to salt production and extraction of certain raw materials for construction.

8. Oman

30. In Oman the main development was the start-up of the Sohar copper projects, a mine-contractor-smelter-refinery operation, in January 1983. The Omani Mining Company is expected to produce 16,000 tons of refined copper per year. But, at present, the production is confined to 6,700 tons.

31. Several other metallic minerals have been recently located in Oman and various technical studies are being carried out to

assess their reserves and ore grade. A variety of raw materials for construction are produced in Oman to meet the increasing local demand.

9. United Arab Emirates

32. In the United Arab Emirates mapping surveys have been finalized and several technical studies have been carried out. Occurrences of iron, copper, manganese and talc and other minerals have been located. In addition, significant progress has been achieved in promoting the development of several raw materials for construction.

10. Other member countries

33. In the other member countries, mineral potential is limited to a number of raw materials for construction of which sand, gravel, gypsum, clay and dolomite are the most significant. In some areas rock salt deposits are also available. Some research has been undertaken in Qatar on the possibilities of exploiting asbestos deposits and iron ore has been discovered in the Hal-houl area.

B. Obstacles Facing the Development of Mineral Resources Development and Regional and Sub-regional Co-operation and Co-ordination

34. Authorities in the region are faced with a variety of problems in their efforts to promote the development of mineral resources. Some of these difficulties are common to all the countries of the region while others are specific problems generated by particular local factors affecting the economic development in each country.

35. In some countries of the region a shortage of financial resources hinders projects to develop mineral resources. For example, in both Democratic Yemen and Yemen the internal potential supply of capital is so limited and external debt and debt service payments are reaching such large proportions that any significant addition to the amount of funds allocated to the development of mineral resources may lead to a drastic change in the financial priorities.

36. A second problem results from the shortage of a qualified technical labour force and skilled manpower. It is to be recognized that significant progress has been made in this field in Egypt, Iraq, the Syrian Arab Republic and Jordan. In other countries, such as Saudi Arabia, intensive efforts are being made to develop their own technical cadres and skilled manpower.

However, several countries of the region are heavily dependent on expatriates for running their mining activities.

37. Infrastructural requirements and adequate facilities are still lacking in many countries of the region. In Democratic Yemen and Yemen, for example, these facilities are so limited that heavy investments are needed to establish the required structures for undertaking projects in the field of mineral exploration and prospecting. In Egypt huge amounts of capital are required for improving and expanding roads, railways, communications, and many other infrastructural facilities.

38. In many countries of the region little significance has been attached to the role of mining legislation in promoting the development of mineral resources and few countries have recognized the urgent need for up-dating mining legislation.

39. It should be recognized that most of the above-mentioned obstacles could be alleviated through a regional mining strategy to be adopted and adhered to by all countries of the region. The necessity for such a strategy results from the following considerations:

(a) The huge financial resources required for mineral development. Capital requirements for mineral resources are so large that according to recent estimates the cost of a mineral project exceed US \$1 billion. In several countries of the region, particularly those that are not endowed with substantial oil resources, external debt and debt service payments have reached such high proportions that no significant mineral projects can be undertaken, without outside assistance. But oil-producing countries have abundant financial resources of which significant amounts are being engaged in estate speculation and commercial activities. Assigning a role to these abundant financial resources, in the development of mineral resources at the regional and sub-regional levels would result in creating great opportunities for productive investment;

(b) The need for sophisticated technology and adequate infrastructure. Although, in some cases mineral projects can be undertaken with uncomplicated technology which may be handled by a professional staff, many other mineral projects require very sophisticated technology. Obtaining such advanced technology is certainly beyond the means of most of the non-oil-producing countries. On the other hand, using sophisticated equipment and laboratories at only the national level would result in wasting substantial financial resources. In addition, large investments are needed for the water and power supply, pipeline transmission and communications and transport facilities. This may include the construction of dams, railways, port facilities, aircraft landing strips as well as hospitals, schools and other social facilities. Again the least-developed and a number of

other countries in the region cannot provide the requirements for establishing such facilities. However, many of such facilities could be established and used jointly by North Yemen, South Yemen, Saudi Arabia, Jordan, the Syrian Arab Republic and Iraq;

(c) Facing the multinational corporations. Exploration and exploitation of minerals require that the countries of the region deal with giant companies with international experience. The countries of the region rely on these companies for both execution and such basic requirements as capital, technology and even management. Even with a well-defined mineral policy and mining legislation, maintaining the sovereignty of the countries of the region over their mineral resources requires a minimum of regional co-operation and co-ordination of mining activities.

**DEVELOPMENT OF COPPER DEPOSITS IN YEMEN AND
DEMOCRATIC YEMEN AND PROSPECTS FOR REGIONAL
CO-OPERATION**



1. The main objective of this study is to investigate the prospects for the development of copper deposits in both Yemen and Democratic Yemen, with an emphasis on a subregional approach. It is stressed that member countries in which geological configuration and other indications suggest the presence of promising mineral resources can take advantage of geographical and historical factors for promoting the development of their natural resources.

2. The introductory chapter presents a geological profile of the two countries, describes the current status of mapping and other relevant data, and gives an outline of mineral survey projects so far carried out with special reference to the investigations and geological studies related to copper occurrences. Chapter II presents an inventory of copper deposits. Chapter III includes information and suggestion aimed at providing the required basic data for a reliable assessment of copper deposits. Chapter IV focuses on subregional co-operation in the fields of geological surveys, exploration activities and potential of copper ore. In this chapter various forms of co-operation, including joint projects, between Yemen and Democratic Yemen are discussed. The importance of co-operation with other member States with significant copper potential is also stressed. Chapter V provides a summary of findings and recommendations.

A. Summary of findings

3. Yemen and Democratic Yemen with a combined population of about 8 million and a combined area of 500,000 square kilometers, constitute a geographically contiguous and economically poor subregion. Unlike their peninsular neighbours, they do not produce crude oil although there is a custom refinery in Aden.

4. Apart from salt, which is produced in both countries for export and local use, mineral output is still confined mostly to raw materials for cement manufacturing and building purposes.

5. Both countries show particular interest in undertaking projects of mineral exploration and prospection at larger scales. Investigations and technical studies so far carried out in both countries indicate that copper occurrences have been located in the Hifan area (Al-Hamoura deposit, and Shakkat copper occurrences), Al-Beida, Sa'ada, Wadi Beihan, and Maabir-Ghabar area.

6. The Wadi Beihan - Al-Beida region is important for copper occurrences along a major geologic structural belt which extends from Beihan in Democratic Yemen to beyond Al Beida in Yemen. The presence of this copper belt between Beihan and Al-Beida and

other copper occurrences in Al Khadra is one of the most important justifications for undertaking an inter-Yemen model mineral project in this region. The two countries have now become aware of the need to co-ordinate their development and important initiatives have been taken for undertaking joint mineral activities.

7. In Yemen economic structures are very weak. Agriculture is the main economic activity. But the agricultural sector is deteriorating owing to the lack of adequate investment, the shortage of water resources, the emigration of the working force and unfavourable environmental conditions. Industry is also weak and no significant progress has so far been achieved in this field owing to the lack of significant financial sources, the shortage of skills and the lack of infrastructural facilities.

8. Resources in Democratic Yemen are also very limited. They are based mainly on a poor agricultural economy that includes no major cash crop. The other main sources of income are provided by fishing and by the oil refinery in Aden.

9. Significant efforts have been made in both Yemen and Democratic Yemen in the field of oil exploration. However, no commercial quantities of oil have been located in either country. Preliminary results, however, of onshore exploration in the Mar'eb region seem to be favourable. In addition, financial assistance has been provided for undertaking a detailed technical study on the petroleum geology of the Yemeni Red Sea Basin.

10. The two countries have been engaged in ambitious development plans aimed at achieving high growth rates, promoting the development of the economic and social structures, and improving the living standard in both countries. In Yemen's first five-year plan the main objectives in the field of mineral resources development were to exert greater effort in vocational training and in mapping. The second five-year plan has also shown interest in promoting the development of the mining and quarrying sector. This plan, as was the case with the first one, is expected to be largely financed by foreign loans and grants. One of the main objectives in the field of mineral resources of the first three-year development plan of Democratic Yemen was to establish a legislative framework for mining. During the period of the following five-year plan, a number of surveys were carried out with assistance from foreign countries and international agencies. The recent five-year plan of Democratic Yemen stresses the importance of industrial development in the country. Over US\$ 78 million of the total allocation to the industrial development (US\$ 432 million) is expected to be spent in oil exploration, geological laboratory facilities, geological research and mineral exploration. Expansion of salt

production and development of the metal industry are also among the priorities of this plan.

11. A great deal of attention has been paid during the last 15 years to the importance of a regional strategy for the development of the mineral potential of the Arab World. This has reflected the growing belief of many Arab countries that, from an economic standpoint, no substantial mineral activities, especially in the field of mineral exploration, can be undertaken without a minimum of regional co-operation and co-ordination of national mineral policies. As a result, some progress has been achieved in laying the foundations of a global Arab mineral strategy. Four pan-Arab conferences have been organized so far with the objective of investigating the mineral potential of the Arab world and co-ordinating the various policies in the field of mineral resources development.

12. Apart from these conferences, two regional bodies exist which have advanced the cause of mineral exploration and exploitation. These are the Arab Mining Company and the Arab Organization for Mineral Resources.

13. The United Nations has played a significant role in promoting the development of mineral resources in the developing countries. During the last 25 years the United Nations through its agencies, has provided expertise and some US\$ 200 million for over 200 mineral projects in 75 countries. However, it has been a matter of deep concern for the General Assembly to find out that more than two years after the adoption of the Immediate Action Programme, 1979-1981 (see UNCTAD resolution 122(V) very limited progress has been made towards its implementation. The General Assembly stressed the need of an expanded programme to meet the critical needs of the least developed countries and to help them promote more rapid socio-economic development. The ECWA region itself, includes countries which are in a position to provide important financial support for implementing development projects in the least developed countries such as Yemen and Democratic Yemen.

14. In the development of mineral resources in the two Yemens, the numerous financial institutions established after 1974 with the accumulation of large profits by the OPEC countries, could play a major role in financing numerous projects. These institutions are:

- (a) The OPEC Fund;
- (b) The Arab Investment Company;
- (c) Arab Fund for Economic and Social Development;
- (d) The Islamic Development Bank;
- (e) The Saudi Fund for Development;
- (f) The Kuwait Fund for Arab Economic Development;
- (g) Abu Dhabi Fund for Arab Economic Development;

(h) The Arab Bank for Economic Development in Africa.

However, the contribution of these institutions to the development of mineral resources in the region has been restricted to a limited number of projects. This can perhaps be explained by the fact that most of the financial organizations in the region are relatively new to economic development activities and are, therefore, rather cautious in undertaking activities involving high degrees of risk or unfamiliar technologies.

B. Conclusion and recommendation

15. The salient issues of mineral resources development in both Yemen and Democratic Yemen can be summarized as follows:

(a) Lack of financing sources. Both countries are in a critical financial situation and it is very unlikely that they can meet the financing requirements for the various stages of mineral resources development. At the present time, they rely heavily on foreign assistance for carrying out their mineral development projects. Outside funding comes from official as well as private sources. The problem is complicated by certain recent practices of the banks which require that loans should be guaranteed by the mining companies and the host Governments and not merely secured by the expected cash flow from the mining project. As geological, geophysical and other technical studies at present consist of general surveys and some geological mappings, large amounts of capital still have to be invested in mineral exploration and evaluation studies. Financial assistance has been provided by some regional financial institutions. But the contribution of these institutions has been confined to a limited number of projects and the financial assistance so far provided is far behind the financing requirements.

(b) Lack of adequate infrastructure. Both countries lack adequate facilities in regard to their water and power supply, roads, communications and several other infrastructural requirements.

(c) Both countries rely on foreign participation for execution of mineral projects and for such basic requirements as technology and expertise in various fields of mineral resources development. The shortage of qualified and trained personnel is still one of the main difficulties facing the development of mineral resources in the two Yemens. Some technical assistance has been provided by the United Nations through direct participation or through technical and economic studies presented for each country's consideration. Regional Arab conferences were

organized with the objective of discussing various issues of mineral resources development.

16. It may be of interest to note that copper occurrences have been located in a number of other member countries. In Egypt copper deposits have been located in several areas of the country. Several technical studies have been carried out to assess Egypt's copper potential, but more detailed investigations are needed.

17. Prospects for copper development in Jordan seem to be promising. Copper mineralization has been located in a number of areas in Wadi Araba. An extensive feasibility study has been carried out for recovering copper from known deposits.

18. Hundreds of copper occurrences have been located in Saudi Arabia. At present, investigation of copper potential in Saudi Arabia is included in large-scale programmes of mineral exploration being implemented in the country.

19. A mineral study carried out in the northern part of the United Arab Emirates concluded that there were 27 localities where further exploration for copper resources could be warranted. Copper mineralization has been located in several areas in the Syrian Arab Republic. But the most significant progress in the field of copper development in the region has been achieved in Oman. The Sohar copper project has already started operation. The Omani Mining Company is expected to produce 16,000 tons of refined copper per year. The present production is, however, limited to 6,700 tons per year. Copper mineralization has also been located in other areas of the Omani territory.

20. At present, each country undertakes its own copper development project and makes its own foreign technical and/or financial arrangements without significant regional co-operation or co-ordination of activities.

21. In summing up the above-mentioned considerations, a number of remarks can be formulated:

(a) A specific programme of action in favour of Yemen and Democratic Yemen should be envisaged. As indicated at preceding points in this report, significant efforts are being deployed with the objective of tackling the payments deficit and of coping with lower remittances from migrant workers and a decline in expectations of foreign aid. Important steps have been taken to channel local funds away from imports into productive investment. But, as the internal sources are already limited, not much can be spared for meeting the requirements of large-scale programmes of mineral exploration and development. Such a programme of action may consist of preparing techno-economic

studies, providing advisory services and direct participation in certain development projects. The task of preparing this programme of action could be assigned to the Arab Organization for Mineral Resources. In the first place, the Ministerial Council of AOMR in its capacity as a policy-making body can play an important role in drawing the attention of the member countries to the necessity of adopting a programme of action in favour of the two Yemens. In the second place, experts in the AOMR can provide the least developed countries of the region with important advisory services;

(b) There is an evident and urgent need in both Yemens to compile and co-ordinate the existing geological data so as to facilitate the planning and execution of systematic mineral resources exploration and development activities;

(c) It has been indicated by several foreign missions that government survey organizations in both Yemens require strengthening and training to enable them to participate in and control the development of their mineral resources. It should be stressed, however, that highly-qualified Yemeni personnel and technical staff, although limited in number, are involved in various fields of mineral resources development.

(d) There is an evident need for close technical and economic co-operation between the official authorities responsible for the development of mineral resources. Close sub-regional co-operation in this field could be achieved in a number of ways:

- (i) The two Yemeni bodies responsible for mineral resources development could be merged into one large organization; the headquarters of the United Organization could be in the city of Taiz.
- (ii) Joint programming of exploration and exploitation of mineral resources in the two Yemens could be initiated through a permanent committee responsible for co-ordination of activities as well as implementation of mineral projects. The geology on both sides of the common border, for example, is relatively unknown and there is a need for sound geological correlation, requiring systematic geological mapping in order to provide the necessary basis for the exploration and development of mineral resources on both sides of the border. Joint work in such programme has obvious mineral advantages.
- (iii) Sub-regional co-operation and co-ordination could be initiated through a system of information exchange in mineral resources. The establishment

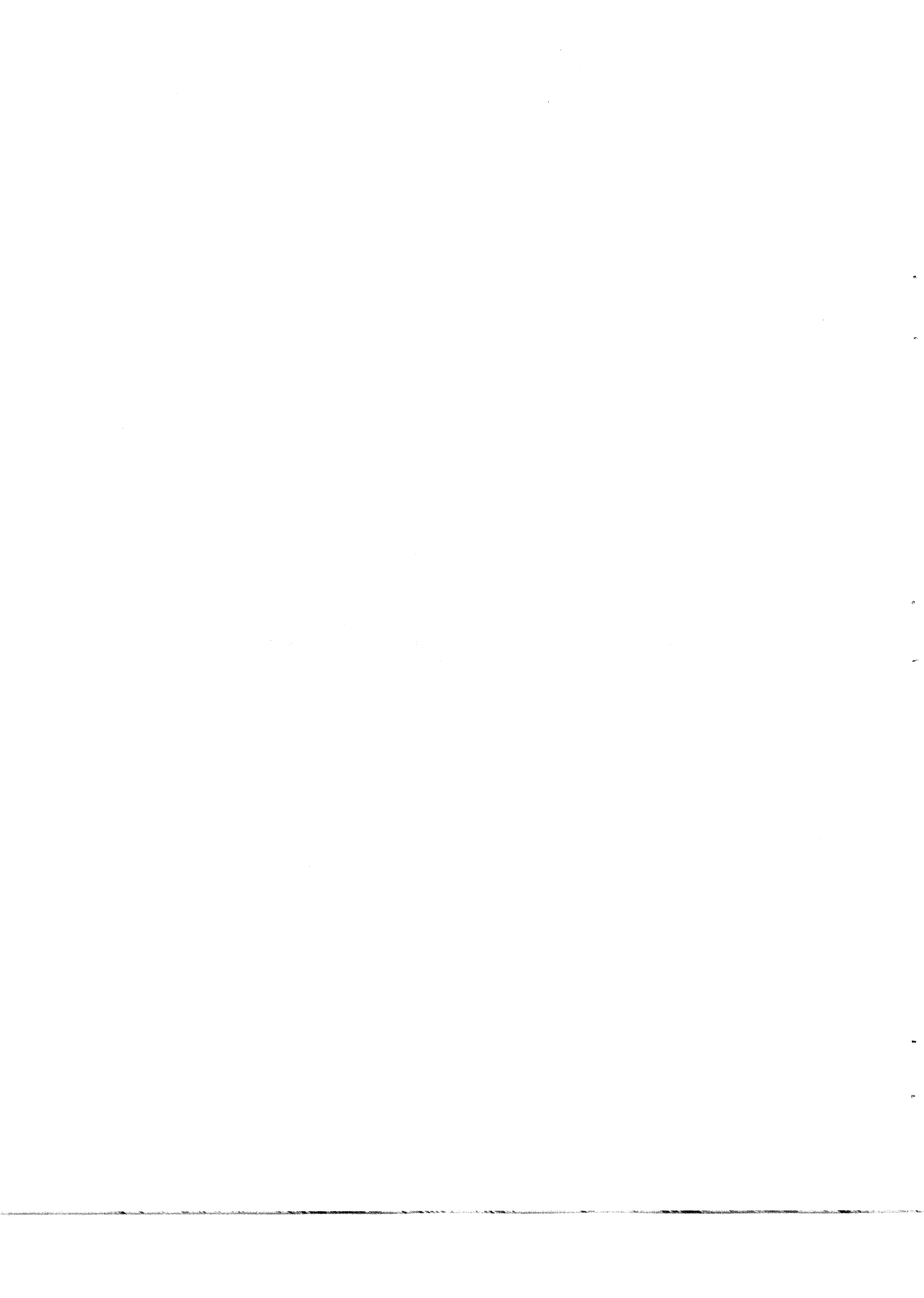
of a system for the exchange of technical, economic, and statistical information between the two Yemens would have significant advantages such as providing the authorities of both Yemens and specialists involved in various fields of mineral resources development with information on aspects pertaining to the situation in mineral resources and facilitating the establishment of direct contacts and exchange of experience. It is evident that mining engineers and geologists in either country can enrich their experience and update their information and knowledge by being brought into direct contact with their colleagues. Such contacts and exchange of experience are essential for increasing knowledge of the geological setting and other fields related to mineral resources development as well as for providing the two Yemens with a unified geological map.

(e) Despite the presence of several regional financial institutions, financial assistance for the development of mineral resources in the least developed countries of the region is still limited. More attention should be paid to the financial needs of these countries for undertaking mineral exploration and development projects. Since the financing issue is so crucial for the least developed and several other countries of the region and because of the limited role of the existing regional financial institutions in promoting the development of mineral resources, ECWA maintains its suggestion to establish a regional specialized financial institution. The feasibility of establishing a regional fund for mineral resources development can be studied by the Arab Mining company in close collaboration with the existing regional financial institutions and the Governments.

(f) Close co-operation in the field of mineral exploration and co-ordination of mining activities should be established between the two Yemens, Saudi Arabia, Oman and Jordan. According to the available information, it is in these five countries of the region that the most promising copper potential is located and in one of them (Oman) actual production has already been started. In this area too, the contribution of the Arab Organization for Mineral resources could be of the utmost importance, particularly in formulating specific joint projects.



**GUIDELINES FOR EFFICIENT WATER MANAGEMENT
IN THE ECWA REGION**



1. Water resources continue to be an important component of national development in today's world, especially in the ECWA region. Water resource projects constitute a significant part of development activities, drawing unilateral, bilateral or international financing, and employing improved and more sophisticated technologies every day. With the growth of population, conventional water supplies are being exploited to the point of exhaustion and new sources are being explored to meet human needs. Until recently, the response to water shortages was the expansion of water supplies and management of demand and supply was not given much importance. However, the increasing cost of supplies all over the world is drawing attention to management and administration as well as to planning aspects of water resource development. The growth of the population and industrial development in the ECWA member States both impose greater demands on limited but renewable water resources which need to be managed under efficient operational systems within a broad context encompassing various interests.

2. In many countries of the ECWA region, water is being used inefficiently or in excess of actual needs. Therefore, instead of developing new resources it might be feasible to increase efficiency in the utilization of existing supplies by improving planning, management, and administration of water resources.

3. Water should be used efficiently, especially in the arid and semi-arid countries of the region; losses must be reduced and pricing of water for various uses must be scheduled on a rational basis. Until recently, in many countries, the structure of water pricing actually encouraged the usage of larger quantities of water. However, ever-increasing demand has necessitated the restructuring of water pricing to facilitate meeting competitive requirements with limited supplies. Since development of new sources is expensive new concepts in augmenting the available supplies, namely by desalination of sea water, and by increasing usage efficiency through reuse and recycling of waste water, should be developed and applied in areas of very limited conventional water supplies. The main aim of planning, management and administration of water resources should be to ensure that the supply of this resource is adequate to meet the overall development needs of the country in such areas as the water supply, irrigation, hydro-power, inland navigation, fisheries, wildlife, tourism and recreation, etc.

4. The objectives of the study on which this summary report is based are to evaluate the prevailing planning, management, administration and legislation of water resources of the member States of ECWA and to provide assistance in formulating measures aimed at establishing or strengthening their institutional

arrangements for water with a view to preventing water resources from becoming a factor limiting overall development in the region. The study offers recommendations for rational and comprehensive utilization of water resources by several water consumers. Guidelines or plans of action for effective and comprehensive water resources legislation, conservation and administration are included. Water management practices in the ECWA member States and in some of the other countries of the world, which are governed by different political systems, are also presented.

I. GUIDELINES FOR EFFICIENT WATER MANAGEMENT IN THE ECWA REGION

A. WATER POLICIES

5. Available information indicates that many of the ECWA member States still do not have established water policies.

6. Water policies should be formulated by all Governments; They should be based on sectoral policies linked to the different activities in respect of use, conservation, and development of water resources or applied to different geographical areas.

7. Alternative strategies on water management should be applied according to the characteristics and demands of the situation. Water resource situations are classified according to the following factors (1):

- (a) The value of water;
- (b) The seasonal pattern of water values and costs of storage;
- (c) Considerations that make the transfer of water among regions and countries difficult;
- (d) Importance of water quality;
- (e) Flooding and drainage problems;
- (f) Inter-relations between surface and ground water.

8. The main objectives of water policies should be to satisfy present and future requirements for all purposes; optimum utilization, conservation and management of available water resources; valuation of water; and maximization of the benefits from water utilization and conservation.

9. Since the objectives of water policies vary widely, each country in the region should formulate its own water policy. When a national water policy is developed and enunciated, the division of responsibilities is defined, broad priorities are established, sources of funds are identified and secured, and distribution of benefits is planned.

B. WATER LEGISLATION

10. Water legislation in the ECWA region is generally complex and diversified. It usually lags behind modern water management practices and techniques; Furthermore, the provisions which regulate water resources development and management are often embodied in different laws and regulations. In some countries of the region, efforts have been made to evaluate and administer the available resources; however, a comprehensive management of the total water resources has not yet been achieved.

11. In many countries of the region there is a need for co-ordination and consolidation of the existing sectoral legislation on water resources development and utilization. Legislation should include provisions for assimilation of pre-existing water rights into the new legal regime within the shortest period of time without causing undue hardship in the transition. Implementation and enforcement of water resources policies can be achieved only through water law and legislation.

12. Water legislation could cover the following subjects: (2)

- (a) Definition of water policy objectives;
- (b) Ownership or other judicial status of water resources;
- (c) Mode of acquisition of the right to use water and limitation thereof;
- (d) Order of priorities between uses, users and areas;
- (e) terms and conditions for the various uses;
- (f) Provision for preventing, controlling and mitigating water hazards (i.e. floods, salinization);
- (g) Provision for water quality control and prevention of pollution;
- (h) Measures to protect waterworks and structures;
- (i) Setting-up water rates and fees and financial contributions;

(j) Provisions for regulating surface, ground and atmospheric waters;

(k) Provisions for declaring special water resources development or conservation zones or areas, and for setting-up special water development agencies;

(l) Implementation and enforcement of water legislation;

(m) Assignment of respective responsibilities and powers of government ministries, agencies and institutions;

(n) Establishment and definition of the role of users' associations in the administration of water.

C. INSTITUTIONAL FRAMEWORK FOR WATER MANAGEMENT

13. In each country, the institutional framework for water planning and management is shaped by political and administrative organizations and by the water policy. In the ECWA region, an institutional framework for water development and management activities has not yet been consolidated in many countries.

14. It is necessary to establish an institutional framework in line with the general water policy so that it will be immediately applicable and effective at all levels. To this end the following guidelines should be taken into consideration: (3)

(a) The institutional structure should make it possible to consider a broad range of alternatives to solve the problems that arise, including those that may fall outside the immediate terms of reference of the planning body;

(b) This structure should combine efficiency and fairness in water administration, in a manner consistent with the national policy;

(c) The institutional structure should permit and encourage the adaptation of plans to changing local, regional and national priorities, maintaining continuity despite such changes in priorities;

(d) The institutional structure should permit and encourage the representation of the interests of all parties affected by specific development and management plans;

(e) The institutions should possess the capacity to learn from their experiences through analysis of ongoing and completed projects.

(f) There should be sufficient authority within the institutional structure to insure concordance with construction and operational plans once they have been drawn up. Planning should be in line with resource allocation;

(g) The implementation stage should include the provisions necessary to ensure an adequate quantity and quality of services needed, such as operation, repairs and maintenance;

(h) The institutional structure should be itself capable of evolving in accordance with changing national and regional conditions.

D. DEVELOPMENT OF MANPOWER AND SKILLS FOR WATER MANAGEMENT

15. For realization of successful economic development, adequate manpower resources are as important as the material resources required. Therefore, in the ECWA region, development of manpower must be planned together with, or in advance of economic development in order to produce professionals at all levels of training who will be required to perform various functions of planning, design, construction, operation and maintenance, and administration.

16. The following aspects of the manpower, and education and training required to carry out the overall water development activities planned by the countries in the region need to be dealt with:

(a) Estimating the manpower required for undertaken various water development and management activities;

(b) Classification of the total manpower according to the required levels of training;

(c) Establishing a framework for the education and training system required within the context of the general education pattern, considering also the geographic distribution of education centres;

(d) Establishing the amount and quality of expertise necessary to undertake the functions of various posts, and modification of the curricula accordingly.

(e) Identifying the educational and training requirements at the post-graduate level and setting-up a system to meet those requirements;

(f) Deriving the most benefit from international co-operation in education and training in water development and management fields;

(g) Educating the public.

17. National policy on manpower development for water-related activities should establish the desirable level of university and other types of education and training on the water sector, considering the necessity of having on-going programmes for different types of activities and the optimum level of investment in education, training and research. Furthermore, the policy should reflect more than the needs of certain mission-oriented agencies so that the manpower would be capable of conducting important long-range research and other work.

II. CONCLUSIONS AND RECOMMENDATIONS

18. Recommendations are presented in this chapter to enable ECWA member States to improve strengthen and consolidate their water management capabilities. The conditions and requirements of each country are different; however, the recommendations included here are intended to cover broad areas in a concise, but comprehensive manner. The aim of this study is not to analyse separately the situation in each member state, but rather to present guidelines and recommendations that can have broad applications.

19. Some of the guidelines, solutions, and recommendations included here have appeared in other United Nations documents, particularly in those related to the United Nations Water Conference held in 1977; however, they are still very relevant, valid and applicable.

A. WATER POLICY AND MANAGEMENT PLANNING

20. Each country should formulate and keep under review a national water policy regarding exploration, utilization and conservation of water, within the framework and consistent with the overall national economic and social development plan. In this regard it is recommended that:

(a) The water policy should aim at ensuring the socially and ecologically most beneficial and optimum use and conservation of available water resources considering the supplies and present and projected future demands. The water policy may vary according to the existing conditions in each country;

(b) The water policy should identify goals, problems and alternative solutions;

(c) The water policy should establish priorities among various users and should assign different quality waters according to the requirements of various user.

(d) Water master plans should be formulated for the whole country or on a regional or river basin basis;

(e) There should be integrated water management planning on a short-term basis over a period of one year, medium-term planning over a period of four to seven years, and long-term plan-

ning over a period of 15-30 years, all compatible with the master plans;

(f) Water plans should be prepared by multi-disciplinary teams and be reviewed and updated periodically; the targets should be adjusted accordingly;

(g) Systematic evaluation of the projects already carried out should be undertaken so that benefits can be gained from those experiences;

(h) The water policy should define goals and assign targets for different sectors of water use, particularly for the provision of safe drinking water supply;

(i) National water policy should also evaluate water tariff policies and direct any necessary restructuring or adjustments;

(j) When formulating any national water policies and a national water plan, a balance should be achieved between national, regional and sectoral aims and priorities;

(k) Water planning should follow an inter-disciplinary approach which is oriented to specific objectives so that a wide spectrum of structural and non-structural solutions can be evaluated for a particular situation;

(l) Water policies should be geared towards promoting water-saving and loss-minimizing practices and techniques in agriculture, industry and municipal use. In planning, also, rational utilization of water should be considered together with alternative and multipurpose uses. Water management strategies should be equally concerned with the management of demand and supply;

(m) In the water policy emphasis should be placed on the application of pollution control and all aspects related to the protection of the human environment;

(n) The national water policy should contain planning and management activities based upon assessment of water resources, projections of demand, efficient water use, environmental control, and prevention of natural hazards. Institutional and legislative arrangements should be made to improve the existing systems and to adopt the best available techniques for planning, implementation, operation and maintenance of water resources projects.

B. ASSESSMENT OF WATER RESOURCES AND DEMAND FOR WATER

21. In the ECWA region, there is a shortage of data on water resources and demand. In order to accurately assess these factors the following measures should be taken:

(a) Networks for gathering hydrometeorological, hydrological and hydrogeological data should be improved. Data should be collected and processed regularly for various statistical analyses in assessment of the available water resources. The assessment should be updated periodically. In order to undertake these activities a national body should be established with comprehensive responsibility for the collection and analysis of water resources data;

(b) Measurement techniques and equipment should be standardized in each country, and modern technologies, such as remote sensing, nuclear methods, geophysical techniques etc. should be employed wherever feasible. Training of personnel should parallel the development and extension of the networks;

(c) An inventory of the country's water resources should be prepared as soon as adequate data become available;

(d) Projections for future demands must be based on factual and realistic data, and revised and updated periodically. Projections should be prepared on a short-term, medium-term, and a long-term basis. In planning of future demand any possible effect of control policy measures, economic incentives etc. should also be considered. This activity can only be undertaken after establishing a water-use data-gathering programme. Therefore, each country should also establish systematic procedures for collecting, compiling and publishing social and demographic data to enable projections of urban and rural water use;

(e) The quality of different water sources must be assessed and water should be assigned to different users according to the quality demanded. The standard of the United Nations World Health Organization should be adhered to for the quality of drinking water;

(f) A national body should be established with comprehensive responsibilities of water resources data gathering. If there is such an establishment it should be reoriented and strengthened to undertake these activities;

(g) Specific national characteristics and conditions should be taken into account in different countries in assessing water quality and establishing water quality criteria for purposes other than drinking. In considering the interrelationships of

water quality and quantity and related land-use, the diseases associated with water should also be included;

(h) In assessing total water resources, non-conventional sources, i.e. desalination, water reuse and other water augmentation methods should also be considered;

C. LEGISLATION FOR WATER RESOURCES DEVELOPMENT AND MANAGEMENT

22. An inventory and examination of rules, regulations, decrees, acts, ordinances and legal and legislative measures in this field should be undertaken in order to accomplish the following:

(a) Existing legislation should be reviewed to assess its scope and ability to cover all subjects related to water development and management including licensing, abstraction, ownership, prevention of pollution, penalties for undesirable effluent discharge, protection of quality, etc;

(b) Modernization of water laws should be undertaken in order to reflect the juridical, administrative and institutional structure for water development and management in the country;

(c) Legislation should be comprehensive yet simple and consistent with the requirements of the government agencies;

(d) Legislation should facilitate easy implementation of policy decisions, while conferring on individuals the right to use water and protecting their reasonable interests;

(e) Legislation should define the rules and regulations for public ownership of water projects as well as the functions of public bodies at various administrative levels;

(f) Legislation should be oriented towards ensuring the rational use, management and conservation of water resources in order to satisfy the present and future demands. Priorities must be given to regulations encouraging rational utilization of water;

(g) In the ECWA region the traditional water rights, local customs etc. may make the application of a new legislation rather difficult. However, changing patterns of water use and the increasing scarcity of water imply that use of a broad and flexible type of legislation may be an acceptable solution towards gaining more efficient utilization of water. The use of legal measures and policy instruments would differ from country

to country, depending on the economic and social conditions. In any case, water fees and charges, penalties and fines, grants, subsidies, tax relief, and exemptions, low interest loans may be applicable depending on the level of water resources development and on the economic, social, and historical conditions;

(h) Water has a real economic value which should be reflected in a differential water tariff system, geared towards encouraging conservation of water and reduction of wastage. Similarly, charges based on the quality of effluent should be established to minimize pollution;

(i) In today's legislation collective water rights supercede individual water rights and the property concept of water with or without attachment to land should be discontinued;

(j) Special problems related to water, such as drought management, flood control, salinization, erosion control etc. should be covered in specific regulations;

(k) A basic water code or act should include provisions with respect to: availability of water resources in the country or region; knowledge of existing uses and amounts of water utilized by whom and for what purpose; ownership of water; right to use water; present and future water requirements; water rights administration and water authorities; water conservation; water rates and charges; water quality and pollution control; health preservation; specific clauses for ground water, including licensing of drillers, exploration or prospecting licenses, utilization or abstraction licenses; permits and metering of abstractions; and special clauses for water-related hazards and special problems;

(l) Efficient enforcement of water legislation must be ensured so that the laws and regulations will be effective. Disputes among users, and between users and the administration should be settled efficiently and justly.

D. INSTITUTIONAL FRAMEWORK FOR WATER RESOURCES DEVELOPMENT AND MANAGEMENT

23. Institutional arrangements should be made to ensure real co-ordination between all bodies responsible for water resources development and management, in line with overall national policies and planning. Such arrangements should include the following:

(a) A central body or co-ordinating mechanism should be established to co-ordinate the water-related activities of the countries in the region;

(b) The most important activities of such a centralized authority should include, but not be limited to: water planning and management; follow-up activities if there is a master plan; preparing proposals for water legislation; co-ordination of activities of attached bodies; implementation, operation and maintenance of water development projects; establishing a central national information system; management of education and training activities and international relations;

(c) An Adequate institutional infrastructure should be created and the existing institutions strengthened to enable them to cope with the problems related to different sectoral uses. For instance it may be desirable to have separate organizations for rural and urban water supply affairs. However, all the data on surface and sub-surface water resources should be collected or handled by a central agency;

(d) The central body should ensure adequate co-ordination among all bodies responsible for water resources development and management while keeping such institutional arrangements under constant review to ensure their efficiency. The central body should also be responsible for systematic programming of the activities of the water sector, for water resource project definition, and for establishment of priorities;

(e) The central body can make an inventory and critical examination of rules, regulations, decrees, ordinances, and other legal and legislative measures in the water sector, and depending upon the particular requirement of the country may propose new legislation;

(f) If there are any basin authorities they should be strengthened and extended in order to make them more effective in the integrated planning and development of water resources;

(g) The institutional framework should take into consideration the use of proper technologies in efficient planning and implementation of water projects;

(h) There should be a proper linkage between the water administration and the decision-makers of the country;

(i) The central water administration or the co-ordinating mechanism should be effective at the national, regional and sub-regional levels, as well as at the project level and the users level. In order to achieve this, a thorough and detailed analysis of the situation, considering all the relevant facts and factors, should be undertaken. No single system can be copied

or applied exactly from one country to the others even if the countries have many characteristics in common;

(j) Institutional arrangements should be directed towards strengthening existing regional and subregional organizations, according to their individual needs and in consultation with them;

(k) In order to have an efficient institutional framework, an adequate number of qualified personnel is required to undertake all the water development and management activities. In order to achieve this, the central body should make all the necessary arrangements including establishing quota systems for university and technical school enrolment and for training abroad;

(l) Finally, the institutional framework should serve as a medium through which the various interests or present and future users can be channeled and reconciled, while facilitating the correct implementation of the policies and programmes that the country wishes to carry out concerning its water resources.

E. Efficiency and appropriate technology in water development and management

24. Measures should be taken in almost all of the ECWA countries to increase efficiency in the fields of municipal, industrial and agricultural water use. Such measures should include the following:

(a) Municipal water metering, scales of charges and proper maintenance of conveyance and distribution systems should be under strict application;

(b) In arid and semi-arid countries, various techniques should be applied or taken into consideration for improving the water situation. These include:

(i) Technologies for exploration of water resources: remote sensing, isotope techniques for ground-water investigations, etc;

(ii) Technologies for increasing the water supply: desalination, rainfall harvesting, reuse of water, the usage of saline water, irrigation, artificial recharge of ground water, weather modification, water transportation, interbasin transfers;

(iii) Technologies for water conservation: evaporation control, and seepage and percolation control;

(c) Industrial users should be encouraged, if necessary by a water tariff system, to improve their technologies and to use lesser amounts of water or to recycle it;

(d) Water-use efficiency in agriculture should be increased by minimizing evaporation and seepage losses in reservoirs and leakage in the delivery systems through well-designed and-maintained conveyance systems, as well as through adopting improved water application techniques in irrigation;

(e) Possibilities of using treated municipal waste water in agriculture, landscape irrigation, for some industrial purposes, and for other uses should be investigated. This is a practice which is finding wider use in the ECWA region;

(f) It should be ensured that waters of different qualities should be used commensurate with the purposes for which they are needed. For example, watering gardens or washing cars with desalinated water should not be allowed;

(g) Development of local and appropriate technologies related to water resource development and management should be encouraged, expanded and given financial and institutional support;

(h) Standardization of equipment should be promoted in order to help solve operational problems resulting from shortages of spare parts;

(i) Specifications, designs and plans of hydraulic works and equipment should be standardized for increased efficiency in application;

(j) Adequate facilities should be developed for servicing and maintenance of installed equipment and for manufacturing of some of the spare parts.

F. SPECIAL MANAGEMENT ACTIVITIES AGAINST NATURAL HAZARDS

25. In order to minimize or prevent the adverse consequences of natural hazards, the following measures are recommended:

(a) Effective flood protection by structural and non-structural measures should be planned and provided well in advance;

(b) Structural measures may include construction of dams, reservoirs, river-banks, dikes and levees. Non-structural measures include flood-plain regulations, flood zoning, and upstream watershed management.

(c) Flood forecasting and warning systems as well as flood-fighting and evacuation measures to minimize loss of lives should be organized, and hydrologic models as a basis for flood forecasting and river system management should be developed;

(d) In order to alleviate losses, flood-zoning, preparation of flood-risk maps, flood insurance, and disaster assistance should be included in management activities;

(e) Improved planning for land and water management is required in order to make optimum use of land and water resources in areas subject to drought. An inventory of all the available water resources and studies on climate, hydrometeorology and agronomy should be among the first drought management activities;

(f) All possibilities for augmenting available water sources should be considered and drought-resistant plant species developed;

(g) Systems for the observation and control of the processes of desertification and for carrying out research should be established;

(h) Contingency plans to deal with emergency situations in drought-affected areas should be developed well in advance;

(i) Transfer of population from drought-prone areas to other suitable regions should not be ruled out.

G. MANPOWER TRAINING, EDUCATION AND RESEARCH

26. Training of manpower at all levels is an urgent and critical matter in the ECWA region in the field of water development and management. Top priority should be given to programmes dealing with education, training and research in each country of the region. In this regard, the study makes the following recommendations:

(a) The present and future needs for trained manpower should be assessed for all levels;

(b) ECWA could conduct a survey of facilities and the curricula of existing higher educational institutions for the pro-

professional level, with a view towards determining the extent of coverage given to water-related subjects, and proposals could be made to establish new programmes or upgrade the standards of existing courses;

(c) A regional training centre for training of personnel in all areas of water resources development and management could be established to serve all the member countries of the ECWA region;

(d) In each country consultants and qualified personnel in the water field could offer full-time training, vocational training, refresher courses, and on-the-job training; in addition, there should be an exchange of technicians between countries in order to disseminate new developments in methods and techniques;

(e) In addition to upgrading and expanding university programmes, the countries may make scholarships available at home and abroad for professional level training. Professors and experts may be exchanged under bilateral, regional and international programmes;

(f) Incentives must be introduced to induce staff to remain in work areas where their training and skills are relevant;

(g) Technical manuals and other guidance material in water development and management subjects should be published with particular reference to the local conditions;

(h) Existing technical organizations can be selected to act as clearing-houses on a national, regional and international basis, to make available recent case studies and reports;

(i) Manpower training and education should not be limited only to activities which are directly related to water, but should include supporting disciplines and associated subjects as well as development of interdisciplinary skills;

(j) A particular policy for research work in water development and management subjects should be established within the framework of national science policies;

(k) Research work is needed in various fields of water development, but in particular, in reduction of water demand in agriculture; water reuse and recycling; use of low quality (brackish water or drainage water) in irrigation; application of solar energy in desalination and pumping; and various aspects of water augmentation. Other research needs at the national level should be identified and assessed;

(l) Institutional forms should be developed in order to promote co-operation between water administration and research.

(m) Research work could be co-ordinated from an overall regional standpoint to avoid duplication and the research results and findings could be disseminated throughout the region;

(n) The graduate study programmes at the universities can be reorganized to conduct the required research work in the field of water development and management.

H. PUBLIC INFORMATION AND PARTICIPATION

27. The extent of public participation in all phases of water development and management activities should be reviewed, and well-co-ordinated. Among the steps which could be taken to ensure a greater level of participation are the following:

(a) National information campaigns should be directed to all people concerning more efficient use of water, elimination of waste and conservation of quality. Such campaigns should employ various media, including broadcasting, television, exhibitions, special information programmes, studies, papers, posters, etc;

(b) Such information should be provided in a simple manner and adapted to local conditions and should take into consideration such factors as traditions and customs, climate, land-use, geology and infrastructure;

(c) Deliberate administrative policies could be followed to emphasize the scarcity and value of water; such policies might include measuring of supplies, charging for water, and penalizing waste and pollution of water. The people should also be informed of the negative hydrological, sanitary and ecological consequences of the misuse of water;

(d) The public, through users associations, should be represented and allowed to participate in formulating construction plans and projects for water development and management. The users might also co-operate in water management planning, in the levying of base fees, and in taking decisions on grants and subsidies.

I. REGIONAL CO-OPERATION IN WATER DEVELOPMENT AND MANAGEMENT

28. Exchange of information, personnel, experts, consultants, and professors should be promoted and organized on a periodic basis with respect to water resources planning, training and related institutional arrangements and approaches. In this respect the study draws attention to the following:

(a) The United Nations could provide assistance and advice on co-ordination of water resources planning activities at the national, subregional and regional levels. Areas of co-operation might include increasing public awareness, water conservation, water-use efficiency, and environmental and financial subjects;

(b) The Mar del Plata Action Plan of the 1977 United Nations Water Conference "... RECOMMENDED THAT THERE BE FORMED A WATER RESOURCES COUNCIL FOR WESTERN ASIA.....(4)".

(c) The Mar del Plata Action Plan also suggested setting-up the following regional committees (5):

- (i) Board for a water resources fund;
- (ii) Task force for the establishment of the water resources technical training centre;
- (iii) Task force on data collection networks;
- (iv) Committee for professional assistance;
- (v) Committee for applied research;
- (vi) Committee on subregional streams and underground aquifers;
- (vii) Committee for environmental and health aspects of water resource development;
- (VIII) Committee on higher education at the professional level in water-related fields.

These topics have not lost their importance and can be tackled by regional co-operation.

(d) At the request of member countries, the United Nations, particularly ECWA, can be of assistance in establishing a regional operation in the field of water development and management.

NOTES

(1) United Nations, "Efficiency and distributional equity in the use and treatment of water: guidelines for pricing and regulations," Natural Resources/Water Series No. 8, pp. 15-18.

(2) United Nations Water Conference, "Policy options," (E/CONF.70/CBP.3), pp. 27-28.

(3) United Nations, "Water resources planning experience in a national and regional context," (TCD/SEM.80/1), p.29.

(4) United Nations, Report of the United Nations Water Conference, (E/CONF.70/29), p.63.

(5) Ibid. pp. 63-65.

WASTE-WATER REUSE AND APPLICATIONS IN THE ECWA REGION



1. In view of the limited water resources of some of the member States of the ECWA region, augmenting the conventional water supplies by non-conventional water development techniques has become a concern in the area. In addition, the idea of reuse of water by renovating and recycling waste water from municipal, agricultural and industrial effluents is gaining increasing support in many other countries in the world. Although most people have objections to the prospect of getting treated waste water through their taps, very little aversion has been listed against the use of treated effluents in industry and agriculture. The present technology has made it possible, with a few exceptions, to treat the waste water to a level, equaling that of high-quality natural water resources.

2. This summary report is based on the study conducted to review the state-of-the-art for augmentation of water supplies through recycling of waste water, and its applications in the ECWA member countries.

3. The potential for waste water reuse is high in the arid and semi-arid countries that make up the ECWA region, especially where municipal water supply problems exist due to long distances to surface sources, or to depletion, contamination or total lack of ground-water resources or alternative sources. Use of treated effluent for purposes that do not require high-quality water would make available more high-standard fresh water for purposes that do require such quality; recycling of half of the waste waters, in effect, would double the total available water supply.

4. The major sources of waste water for reuse after treatment are:

(a) Municipal sewage effluent that can be used, after adequate treatment in street cleaning; fire-fighting; industry; watering municipal gardens, road sides, divides, golf courses etc.; ground-water recharge; prevention of salt-water intrusion into aquifers; irrigation; fish-ponds; recreational impoundments; and stream-flow augmentation.

(b) Industrial waste water can be treated for recycling to be used in various processes of cooling, mining, manufacturing, and actual processing.

(c) Agricultural waste water, mainly drainage water, is either directly reclaimed for further irrigation or abstracted downstream from the surface stream to where it is discharged for agricultural, industrial, municipal or other uses.

5. The most important aspect of waste-water reuse is related to the treatment required by and provided for the effluent, according to the established quality criteria for the final pro-

duct. The major constituents of waste water that need to be considered in selection of treatment processes for a reuse scheme are:

(a) Biological

Pathogenic bacteria and viruses
Parasite eggs
Worms and helminths

(b) Chemical

Nitrates and phosphates
Salts
Toxic chemicals (including heavy metals)

6. Processes required for treatment of waste water will depend on the required product water standards, topography and site consideration, ability to operate and maintain the equipment and choices between capital and operating cost combinations. Waste water must usually undergo primary and secondary treatment, and then tertiary treatment is applied as required. Processes are available for removing ammonia, nitrates and phosphates and for reduction of residual, potentially toxic compounds and dissolved organic substances to very low levels. Dissolved minerals can also be reduced to acceptable levels by ion exchange, electro-dialysis or reverse osmosis methods. Disinfection can be provided by chlorination, ozonation and ultraviolet ray application or by a combination of these.

7. Parasite eggs, worms and helminths can be largely removed by the primary and secondary treatment stages and the pathogenic bacteria can be killed by chlorine disinfection, but the remaining hazard from viruses after advanced waste treatment is not well known. Though this is one of the reasons for reluctance to use treated waste water for potable purposes, it should not hinder its use for less critical purposes.

8. A good management and good understanding of the user's requirements are necessary for water reuse so as not to cause environmental disasters.

I. WASTE-WATER REUSE IN THE ECWA REGION

9. Indirect reuse of waste water has been in practice for thousands of years in many parts of the world. The waste discharged upstream is abstracted downstream along the course of a river to be utilized for a number of purposes. Direct reuse after treatment is relatively new; however, it is widely practiced in many parts of the world, particularly in agriculture. Naturally, when faced with expensive alternatives, the arid

regions with limited water resources have resorted to application of treated sewage effluent (TSE) for a number of purposes. The following paragraphs of this report gives a brief account of the practices of waste-water reuse in the ECWA region.

A. Waste-water reclamation experience in Saudi Arabia

10. Saudi Arabia is one of the driest areas of the world with very little rain and practically negligible surface-water resources. In order to cope with the shortage of water, the Government has taken steps to develop new sources of water supply as well as to recycle part of the present waste water in some areas. Three projects of special interest are for Jeddah, Mecca and Jubail. The new industrial city of Jubail was planned from zero to full development, whereas Jeddah and Mecca have been traditional centres since ancient times.

1. Jeddah project

11. The city of Jeddah, located on the Red Sea, has been short of water throughout history. Camel trains brought potable water there until about thirty years ago when the water supply was augmented by a small sea-water distillation plant. However, by installation of pipeline supplies from wadis in the region and later by increasing the number of desalination plants, the water shortage was greatly relieved. In Jeddah the water supply had to be expanded to meet the demands of a growing population. In the late 1970s when the population was about 1,200,000, the average per capita use was only slightly more than 100 litres per day, but was expected eventually to reach 400-500 litres per day, the general average in highly developed societies. It was estimated that by the year 2000 the population would reach 2.25 million, consuming 1,000,000 cubic metres per day.

12. In order to cope with the projected future demand, it was planned to construct a number of waste-water treatment plants with a capacity to treat 50,000 cubic metres per day inflow and with possible extension facilities to handle up to 100,000 cubic metres per day. The standards were established based on the guidelines laid down by the convention of Moslem leaders who met in 1979. Accordingly, in order to meet the requirements "clear, odourless, colourless and tasteless water", the drinking water criteria of the World Health Organization (WHO) were used as the basis of the process design. The product water will be regarded as non-potable supply; yet it is noteworthy that this is the first project in the Middle East in which sewage is to be treated to meet such high standards. In order to bring the waste water up to the drinking standards specified by WHO, the process plant has been planned to provide complete tertiary treatment which consists of the reverse osmosis desalination stage in con-

junction with inlet flow balancing tanks, chemical-handling equipment, clarifier, softeners, rapid gravity sand filters and a final disinfection stage. (1) Osmosis desalination units will provide for demineralization from over 5,000 milligrams per litre total dissolved solids (TDS) to less than 600 milligrams per litre, and are expected to produce about 60 per cent product water and 40 per cent reject. A storage reservoir to hold 50,000 cubic metres will be provided at an elevated position outside the city in order to secure adequate head for gravity flow with a minimum of 20 metres of head.

13. Each plant will be providing 30,000 cubic metres per day of water of high quality suitable for municipal, industrial, agricultural and a number of domestic purposes, thus, relieving the demand on the city's potable water supply.

14. A preliminary estimate of the total cost of the treatment plant and reservoir is SRL 150 million.

2. Mecca project

15. The city of Mecca has also traditionally suffered from a lack of potable drinking water owing to the absence of readily available surface and ground-water resources. Much of the present water comes via pipelines from outlying basins. Although there are plans to augment the present supplies, shortages of water for non-potable uses are expected to continue. Therefore, the study for the Jeddah waste-water reclamation project incorporated a parallel study for Mecca.

16. Each unit plant is planned to have the same capacity as for Jeddah (50,000 cubic metres per day), with the same main treatment elements. The process system designed for Mecca is simpler than Jeddah's and the reverse osmosis desalination plant has been totally eliminated since it is not necessary to provide for demineralization. In the system, the same flow equalization, softening, recarbonation, recalcination, and filtration processes are included along with the same size storage reservoir. The overall capital costs are estimated to be SRL 83 million.

2. Jubail industrial city

17. In the new industrial city of Jubail there are extensive plans for a green landscaped city where demand for non-potable water will be excessive if the planting targets are reached. Plans indicate that all domestic effluent would be treated to be used in amenity irrigation and for municipal purposes. In order to avoid using potable water, industrial waste water may also be treated for use in irrigation after employing advanced treatment methods.

18. At present, there is no population at the proposed city site, which is planned to have 400,000 people by 1992. The treatment works will be designed for flows of 115,000 cubic metres per day, the primary treatment is planned to be of the sedimentation type, although the secondary and tertiary treatment works have not yet been specified.(2)

B. Waste-water reclamation experience in Kuwait

19. The use of effluent in agricultural and forestry schemes has been in practice in Kuwait for many years. Substantial amounts of septic tank contents are collected by tankers and used on government-controlled enclosed afforestation areas where there is no public access. Although Kuwait has been able to develop slightly brackish water sources for irrigation of landscaped areas and private and public gardens, effluent is being increasingly used on restricted areas since the cost of brackish water and the desalinated potable water is four to six times higher than tertiary treated effluent.

20. In 1977, an irrigation scheme with a projected total area of 920 hectares was put into operation, utilizing the 24,000 cubic metres per day available to the project, irrigating namely: alfalfa, winter forage crops, barley, and a small amount of different vegetables.(3)

21. The agricultural development programme of the Government of Kuwait started experimental studies on the use of clarified sewage effluent for irrigated agriculture in the 1960s, and the Food and Agriculture Organization of the United Nations (FAO) provided the State of Kuwait with a consultant on microbiology in 1970, who investigated the nitrification of ammonium-N from sewage effluents after soil treatment, and the influences of sewage chlorination on nitrification processes, and presented a report on the subject.(4)

22. At present, over 7 million cubic metres of effluent a year is utilized from the Ardiyah treatment works and it is planned ultimately to make use of 125 million cubic metres of treated sewage each year. This largest reuse scheme in the Middle East will provide treated water with a much lower dissolved solids content than ground water, thus, making it suitable for a wide range of plants.

1. The Kuwait effluent utilization project

23. The planning horizon for this project extends to the year 2010, for an estimated population of 700,000 people. The project, which is presently under construction, will produce

380,000 cubic metres per day of treated waste water in three mainland plants and one island treatment plant. The civil engineering works on tertiary treatment elements for the effluent from the three mainland plants were completed in 1981. The primary and secondary treatment processes are sedimentation and activated sludge, respectively. For tertiary treatment, the facilities provided are rapid gravity sand filtration with disinfection by chlorine before and after filtration. The effluent standards to be met are those for fodder crops and forestry.(5) The project includes four 170,000 cubic metre reinforced concrete reservoirs, seven smaller reservoirs, and eight pumping stations.(6)

24. It is planned that, following three days treated effluent storage and pumped conveyance, applications will mainly be via side-roll sprinklers for fodder crops, drip-emitters for forestry, and trickle-strips for vegetables.

25. The present policy in Kuwait restricts the utilization of treated effluent to irrigating forestry, fodder crops and certain horticultural products, and therefore, its use for irrigating public parks or for other municipal purposes, or for private garden watering and toilet flushing, are not included in the plan for the future. It is expected that there will be controlled distribution for forestry and agriculture and the vegetables will be only those not eaten raw.(7) It is planned to develop 2,500 hectares for agriculture and 9,328 hectares for forestry in various areas in Kuwait by the year 2010.

C. Waste-water reclamation experience in Qatar

26. Qatar has a long history of effluent reuse, with some municipal areas of Doha being irrigated with treated effluent since the 1950s. Water demand in the domestic and commercial sectors of the country has increased sharply from 4 million cubic metres per year in 1964 to 48 million cubic metres per year in 1980. Growth has been particularly rapid since 1975, consumption having risen by a factor of over 3. There are no permanent surface watercourses in Qatar, and the water supply has traditionally come from ground-water abstraction. However, because of the rapid depletion of the northern aquifer, abstraction from these well fields was stopped in 1978, and the water supplies to Greater Doha for domestic, industrial and commercial purposes have almost completely been met by desalinated water.(8) Under these circumstances, water available for agricultural purposes has been very limited, and reuse of waste water has gained increasing acceptance over the years.

27. In the earlier years, the treated sewage was pumped to a number of elevated water storage tanks from where it was collected by road tankers and was used to irrigate municipal gar-

dens and other areas in the city; later pipelines were laid in order to avoid traffic delays. There is an extensive trunk sewerage system installed in the City of Doha; however, after a rapid increase in sewage flows, connection of houses and properties to this system was restricted owing to the deficiencies in sewage treatment capacity of the works located to the south of the city at Al-Naijah. At the treatment works, sewage receives primary sedimentation and a portion gets biological treatment by percolating filters, but the works is biologically overloaded, and as a result the effluent is of poor quality. Of the flow receiving biological treatment about 2,000 cubic metres per day is chlorinated and returned to Doha for municipal irrigation in some parts of the city where a distribution system for treated sewage effluent exists. The surplus effluent, thought to be in excess of 30,000 cubic metres per day is discharged to a remote area of desert where it has created a heavily vegetated lake.

1. Future sewerage and sewage treatment facilities

28. Construction has already begun on the extension works to the sewage treatment facilities at Al-Naijah which will be serving a population of 180,000 when completed. The total capacity will be 44,000 cubic metres per day; primary treatment will be by sedimentation and secondary treatment will be provided by a new activated sludge plant. Tertiary treatment will be provided by rapid gravity sand filtration. The tertiary effluent may then be chlorinated for use in agriculture and horticulture. In addition, there are plans to construct a second treatment plant to the north of the city. All the treated effluent is to be used in agriculture, horticulture, and public amenities since the discharge of even tertiary effluent into the sea is understood to be unacceptable.

29. By international standards, the treated sewage effluent (TSE) would be suitable for irrigation of fodder crops and for crops which must be cooked before human consumption. Therefore, it has been recommended that the use of TSE be restricted to irrigation of crops in these two categories. Furthermore, there are plans to extend the present municipal use of TSE for landscaping. The municipal demand was estimated at 0.8 million cubic metres in 1980 and it was calculated that this figure would rise to 11 million cubic metres in the year 2000.(9)

30. As mentioned earlier, the bulk of the TSE will be employed in agriculture. Part of the TSE will be pumped by a pipeline over 40 kilometres in length to an area where it is proposed to gradually develop a total of 1000 hectares for various crops by the year 2000. Although the internal rate of return of such a project was estimated to be relatively low, nevertheless, the project has been recommended because of the non-monetary benefits which would arise from it in the form of food security.

feed for expansion of Qatar's livestock industry, and as a model for agricultural development. It has also been recommended that irrigation applications should be by self-propelled sprinkler jet-guns.(10) The remaining part of the TSE will be pumped backed to Doha and used for irrigating trees and in landscaping.

D. Waste-water reclamation experience in the United Arab Emirates

31. The United Arab Emirates (UAE), located on the southwestern shore of the Gulf, has very limited surface-water resources, with some intermittent streams in the mountains in the southern part of the country near Oman. The average annual rainfall of the UAE does not exceed 75 millimetres and the country has resorted to non-conventional sources of water in order to augment the inadequate supplies. In some parts of the country the use of treated sewage effluent (TSE) for watering of public parks and for landscaping has been in practice for a number of years.

1. Use of treated sewage effluent in Abu Dhabi

32. Abu Dhabi has a very extensive scheme which has been in operation for a quite number of years for using TSE in irrigating municipal areas. The Government of Abu Dhabi has been following a policy of improving the amenities of the island city by providing public gardens and trees, shrubs and grassed areas along the main roads, the latter watered with TSE. Parklands and playgrounds are irrigated with potable water. The project of using TSE for irrigating amenities started in 1976, and the system was designed to accommodate use of treated effluent from a population of 665,000, eventually providing 70 million cubic metres a year. For public health reasons this use has been restricted to areas where the public have limited access, i.e. in central reservations in highways.(11) The sophisticated treatment plant provides primary treatment by sedimentation, and secondary treatment by the activated sludge system. Tertiary treatment is by rapid gravity sand filtration and disinfection by chlorination and ozonation to ensure adequate measures against virus-borne diseases.

33. The TSE is supplied by pumping from storage and balancing tanks to a distribution system of local ground storage tanks and towers. The use of road tankers in hauling the TSE to irrigation sites is being phased out in order to avoid disruption of the traffic flow.(12) The TSE distribution system is clearly marked to differentiate it from the potable water, in order to avoid any possible confusion.

2. Use of treated sewage effluent in Al-Ain (13)

34. Al-Ain is within the limits of the Government of Abu Dhabi in the UAE. The population of Al-Ain was only 50,000 in 1975,

but has grown more rapidly than envisaged, reaching 140,000 in 1982; it is forecast to increase to 250,000 persons by the year 2000.

35. The treatment works were designed with the view of using the treated sewage effluent for selected irrigation purposes in the city. The main features are the use of the extended aeration process for biological treatment, thus eliminating primary sedimentation and primary sludge handling and treatment facilities, and the employment of dual-media rapid gravity sand filters in final polishing of the effluent and disinfection.

36. The treated sewage effluent is pumped from the last effluent reservoir at the sewage treatment works to an elevated tower about 12 kilometres from the city, and small reservoirs and pumping stations in the city provide a network for distribution of the TSE and for irrigation of allowable areas. Irrigation of crops that are likely to be eaten raw or partially cooked is not allowed.

37. In mid-1982, the sewage treatment works treated an average daily flow of about 7000 cubic metres from an estimated population of 40,000.

3. Use of treated sewage effluent in Dubai

38. The existing sewage treatment plant in Dubai is not adequately equipped for production of appropriate TSE for reuse, and the product, which is of rather poor quality is used in the watering of some parks by means of water hoses. There are efforts for equipping this plant to produce TSE at better levels. However, this is only a temporary measure, since there are plans for setting up a completely new sewage treatment plant.

39. The design work on the new plant was complete and tenders were out at the beginning of 1983. According to the design, the treatment works are planned to produce 130,000 cubic metres per day of TSE by 1984 and 200,000 cubic metres per day by 2005.

40. The treatment process will consist of preliminary (mechanical) treatment followed by primary settlement, and then activated sludge aeration and secondary treatment. There will be a two-stage biological treatment, and finally rapid sand filtration and disinfection. There will also be a sewage treatment plant processing the surplus by sludge digestion, conditioning and thermal drying suitable without restriction for agricultural and market garden uses.

41. It is estimated that in 1981 the total demand for non-potable water was of the order of 36,400 cubic metres per day and about 37.6 per cent of the total water production. By 1984 it was expected that these figures would rise to 80,000

cubic metres per day and 49.5 per cent, respectively. These figures are a good indication for potential demand and possible use for TSE in Dubai.

E. Waste water reclamation experience in Egypt

42. Cairo, the capital city of Egypt is the largest city in Africa and one of the fastest growing. The population, less than 2 million in 1950, reached almost 8 million by the beginning of this decade and it is predicted that it will grow to 15 million by the end of this century. This rapid increase in population has caused problems during a period of economic stringency. It has been reported that sewers in many parts of the city are grossly overloaded and that they cannot be efficiently maintained, and flooding of the streets with sewage occurs regularly. A large amount of the 1,500,000 cubic metres of the city's daily sewage receives little or no treatment and passes along open drains through populated areas.(14)

43. A report prepared in 1977 on Cairo waste water recommended the use of treated effluent for desert reclamation schemes outside the city by using treated sewage effluent (TSE) for agricultural development. Proposals included sprinkler and drip irrigation systems for growing citrus fruit, cereals and vegetables. There were also studies on the use of the nutrients in the sewage for fish farming, based on the likely levels of nutrients in the effluent.(15) This use of sewage has been in practice for centuries in the Far East, and the unsatisfied demand for protein could very well make this a complementary and economic alternate.

1. Greater Cairo waste water project

44. The Government of Egypt commissioned a master plan and feasibility study in 1977, to be followed by the design phase, which is presently under way. The whole project comprises about 40 kilometres of rock tunneling for main and subsidiary sewers, related lift stations, conveyance culverts, force mains, four sewage treatment works each to provide full treatment for flows varying from 400,000 cubic metres per day to over 1,000,000 cubic metres per day and sludge treatment facilities for 33,000 cubic metres of sludge per day. The project also includes provision of sewerage facilities for substantial residential areas on both banks of the river.

45. In the treatment works the primary treatment will be by sedimentation and the secondary by activated sludge. Tertiary treatment will be dependent on final use. Disinfection will be done by maturation or chlorination (and storage).

46. The TSE will be employed in agriculture and aquaculture, and it is envisaged to develop initially up to 40,000 feddans of

land under irrigation. The system cannot be connected to the Nile irrigation system owing to a law passed in 1972 banning any discharge into the system.(16)

2. Reuse of drainage water for irrigation purposes (17)

47. The use of drainage water has long been in practice in Egypt. Records indicate that drainage water used for irrigation in both the Delta and Upper Egypt has been above 5 billion cubic metres, and the average annual total available drainage water has been estimated to be between 14-16 billion cubic metres in the Delta. The amount of drainage water discharging to the Nile in Upper Egypt is about 2.3 billion cubic metres per year, and this amount is on the increase owing to extension of the public drainage systems.

48. Reuse of drainage water is practiced by direct pumping from the drains to the feeding canals delivery of the total discharge of the drainage pumping stations into the canals, and indirect reuse of the drainage water by discharging the drainage water to the main course of the Nile or its branches, to be used downstream.

49. It has been determined that the drainage waters in Egypt generally have a low sodium hazard potential throughout the year and a mostly medium to high salinity hazard, which make them safe for use on the heavy textured soil predominant in the Nile Valley and Delta. However, the Ministry of Agriculture has been studying the possibility of using drainage water on soils of different characteristics under various irrigation and leaching practices, crops and agronomic techniques. The Ministry of Irrigation has been conducting a large programme for field monitoring of the quantity and quality of drainage water on a large network of drainage canals and the branches of the Nile.

E. Water reuse activities in Bahrain

50. It appears that there are plans for purification of waste waters for subsequent use in limited agriculture and landscaping in Bahrain; however, the details are not available.

F. Water reuse activities in Yemen

51. There are plans to construct a sewage treatment plant with a capacity to serve a population equivalent of 150,000 at the capital city of Sana'a. The treated sewage effluent is planned to be fit for irrigation or aquifer recharge purposes.

G. Water reuse activities in the Syrian Arab Republic

52. It appears that a waste water reuse scheme has been considered for utilizing the municipal sewage of the city of Damascus

after treatment for irrigation purposes; however this project has not been put into implementation so far.

H. Water reuse activities in Jordan

53. It has been reported that waste-water reuse has recently been put into practice on a small-scale in Jordan; however, the details are not available.

II. ECONOMICS OF WATER RE-USE

54. Water reuse in a community depends primarily upon economic factors. Although the technology for waste-water reclamation is available, economic considerations limit its use to special locations or particular purposes. As demands for existing resources in water-scarce areas become greater, water reuse may gain more potential in certain uses and may release natural sources of water for potable supplies. Pollution control measures are becoming stricter all over the world and such regulations are also being set up by the ECWA member countries. The regulations require the contaminants to be kept out of systems whenever possible and the remaining contaminants to be properly treated and disposed of in a way to ensure that the environment does not get polluted. Therefore, an increasing number of sewage treatment plants are being established where the effluent is treated to certain levels that will not cause pollution and will allow some direct use or, after additional treatment, almost any use.

55. Water reclamation for increased supplies depends upon the availability, reliability and cost of development of conventional ground and surface sources of water, upon the costs of rain-water harvesting, upon the availability of brackish or sea water and the cost of desalination, and upon the practicability and costs of weather modification and other water augmentation techniques. If water at any desired quality can be supplied by the other methods at costs less than that for water for advanced treatment of secondary effluent, then advanced treatment facilities will not be built for water reuse. Furthermore, since the purified effluent is not to be used for drinking and its use is limited to certain purposes in the ECWA region, the cost of treatment will vary according to the purification processes required to meet certain quality levels required by the users. However, the treatment costs are usually not more than a quarter of the total cost of the system.

56. The reported cost of water purification by desalination in the United Arab Emirates varied between 3.65-5.30 UAE dirhams (\$1.00-1.45) per cubic metre in 1982, whereas the cost of purified effluent was estimated to be 1.1-1.9 UAE dirhams per cubic metre (\$0.30-0.41). (18) The desalination cost is not to be con-

sidered as excessive as in the Gulf region. It has been reported that the cost of distilled sea water in Qatar varied between 4.15-4.25 Qatar riyals (QR) (\$1.14-1.16) per cubic metre at zero energy cost, and 5.30-6.00 QR (\$1.45-1.65) per cubic metre with energy at world market prices in 1980.(19) The unit cost of desalination by distillation was

estimated* as \$0.87 per cubic metre in the United States of America in 1980, where the cost of purified effluent varied between US\$0.13-0.32 per cubic metre.(20) Costs, adjusted* to 1980 in South Africa would point to minimum and average figures of US\$0.13-0.27 per cubic metre.(21) In Southwest Africa, at Windhoek, where the effluent is treated up to drinking standards and forms about one third of the city's potable water supply, the cost is similarly estimated* to be \$US0.31 per cubic metre.(22)

57. In Kuwait, the total cost of the complete tertiary level treatment plant, together with distribution system and appurtenant structure costs was estimated to be 110 million (\$US225.50 million) in 1980/81. This plant is planned to produce a total of 342,500 cubic metres per day for use in 2,500 hectares of intensive agriculture and 9000 hectares of environmental forestry.(23) Assuming capital recovery and operation and maintenance cost rates varying between 6-12 per cent, the unit cost of treated effluent is estimated to vary between \$US0.18-0.31 per cubic metre.

58. Therefore, it can be concluded that in the early 1980s the cost of complete advance treatment of municipal waste water for reuse was not above \$US0.40 per cubic metre in the ECWA region. This is a very favourable unit cost compared with that of distillation of sea water, though the latter produces a drinking-water-level product, and reclamation for reuse should be considered when water is not to be used for potable, domestic or close contact purposes. Other desalination techniques produce fresh water at lower costs than distillation in the region, especially if brackish water is available instead of sea water. Notably, reverse osmosis type membrane processes produce fresh supplies at 35 per cent of the cost of distillation, and become competitive with effluent purification when unlimited supplies of brackish water are available.

* Adjustments were made assuming a 10 per cent inflation rate.

IV. CONCLUSIONS AND RECOMMENDATIONS

59. The cost of treated municipal waste water has been established as \$US0.40 per cubic metre in the ECWA region. In planning for augmenting of the present water resources for industrial, agricultural and non-domestic municipal purposes, if the cost of additional supplies are estimated to go higher than this unit cost, then waste water reuse should be seriously considered as a possible alternative.

60. However, a policy for the use of treated waste water must be clearly established prior to any development activity in this field. Policy on water reuse should generally include the following aspects:

- (a) Identification of the potential sources;
- (b) Identification of the possible uses and users;
- (c) Establishment of the criteria for treatment for various uses;
- (d) Establishment of safety levels and measures to maintain them;
- (e) Establishment of the systems for control of water quality and its applications;
- (f) Educating people on the uses and potential hazards;
- (g) Establishment of a legislation on water reuse;
- (h) Organizing an institutional set up for development, operation and maintenance of reuse systems, and for undertaking of research activities.

61. Use of treated effluent for potable and domestic purposes is not recommended, considering the social structure and habits in the ECWA region. However, the quality of the end product should be close to those established for drinking water in order to avoid possible hazards.

62. Treated waste water can be suitable for many municipal uses, such as the cleaning of streets and the watering of road divides, public gardens and golf courses. However, the quality of the waste water should be such as to cause no health hazards to the persons handling it. Similarly, in agriculture, the quality of treated waste water is particularly important for the health of the workers in contact with it and for the health of the consumers of the crops produced. The workers and others

likely to go on the land must be warned and the application of the treated waste water carefully controlled. Treated waste water should not be used in raising crops that are eaten raw or those that may contaminate kitchen utensils. The fertility of the irrigated area may also be affected by the use of treated effluent.

63. Drainage waters from irrigated land may also be recycled either by pumping to the head of the system or by abstracting downstream for further irrigation. In this case salinization of the drainage water and increased concentration of chemicals may cause salinity and toxicity hazard to the soil; therefore, it must be carefully monitored. Industrial waste water may also be used for irrigation, but it may cause similar problems and before application it requires special treatment to remove the chemicals that industrial processes add.

64. Treated effluent is often suitable for use in the ECWA region by certain heavy industries, for cooling, ore separation, and other purposes that do not have strict water quality requirements. When industries recycle their own waste water the microbiological hazards are not so critical.

65. The main public health precaution required in waste water reuse is to prevent cross-connections between pipes carrying the treated sewage effluents and those conveying potable water. It is recommended that the two systems' pipelines should be painted different colours.

66. The artificial recharge of aquifers with treated effluent is another example of water reuse which is increasingly practiced and could have possible applications in the Gulf countries. The treatment should be adequate not to cause pollution of the ground water, which would, otherwise, be very difficult and costly to purify once contaminated.

67. Treated waste water may also be used for aquaculture and in fishponds and prawnponds; and it has been used for development of artificial lakes for recreational purposes, such as boating, fishing and even swimming as well. However, this practice is not recommended for the ECWA region considering the possible health hazards. In order to minimize potential danger to public health, the necessary precautions to be taken on the reuse of effluents must be presented to the public through the information media.

68. The contaminants in the waste water must be removed by various methods in order to purify the effluent and make it suitable for various uses. Decisions as to which treatment processes to adopt should be reached after considering various factors, including:

- (a) Need to reuse and conserve renovated water;
- (b) Quality requirements of particular uses and users;
- (c) Requirements for conservation of public health and the environment;
- (d) Disposal or use of sludge as a fertilizer or soil conditioner;
- (e) Capital cost;
- (f) Operating costs;
- (g) Local facilities and skills for maintenance of mechanical and electrical plants;
- (h) Desirability of providing employment for unskilled labour;
- (i) Availability or possibility of obtaining spare parts;
- (j) Source and reliability of electrical power;
- (k) Need to conserve energy resources;
- (l) Size of the required treatment plant;
- (m) Area of land available;
- (n) Topography of land available;
- (o) Climatic conditions.

69. Research is needed on ways to reduce the cost of treatment processes and to find answers to virological hazards; however such activities can only commence after establishment of wide use of treated waste water in the ECWA region.

Notes

- (1) J.E. Singley and others, "Waste-water reclamation at Jeddah and Mecca, Saudi Arabia", Proceedings of the Water Reuse Symposium (Washington, D.C., August 1981) pp. 369-407.
- (2) John Taylor & Sons Consulting Civil Engineers "Reuse of sewage effluent", internal publication (London).
- (3) A. Arar, Soil and Water Resources and Agricultural Potential in Kuwait (Cairo, Food and Agriculture Organization of the United Nations, 1978) p. 5.
- (4) Food and Agriculture Organization of the United Nations (FAO), Use of Sewage Effluents for Irrigation, report to the Government of Kuwait (Rome, 1972).
- (5) P.A. Banks, "Effluent utilization projects in the Middle East", Seminar on Health Aspects of Treated Sewage Reuse (Algiers, June 1980), pp. 6-7.
- (6) John Taylor & Sons, "Reuse of sewage effluent", internal publication (London).
- (7) J.P. Cowan and R.B. Beynon, "Utilization of treated waste water in Kuwait: future plan", Arab Water World (September/October 1981), pp. 99-101.
- (8) Balfour-Halcrow, Consulting Engineers "Potable water sector", Master Water Resources and Agricultural Development Plan (Qatar, Ministry of Industry and Agriculture, 1981), p. 3.
- (9) Ibid., p. 7.
- (10) FAO, "Feasibility study of the agricultural use of treated sewage effluent water", Technical Note 12 (Qatar, 1980) p. iii.
- (11) John Taylor & Sons, op. cit.
- (12) P.A. Banks, loc. cit., pp. 2-5.
- (13) A.N. Deane and others, "Sewage treatment and effluent reuse in arid regions: a case study, Al-Ain, United Arab Emirates", presented at the Arab Water Technology Conference (Dubai, March 1983) p. 2.
- (14) John Taylor & Sons, op. cit.

(15) John Taylor & Sons with Binnie & Partners and Dr. Abdel Warith, Greater Cairo Waste Water Project: Final master plan report, vol. 4 (1977).

(16) John Taylor & Sons, op. cit.

(17) S. El-Gendi and D. El-Ghamry, "Reuse of drainage water for irrigation purposes", United Nations Water Conference (E/CONF/70/TP.21) (Argentina, 1977) pp. 1-10.

(18) GWE Consulting Engineers, "New Dubai sewage treatment plant feasibility study", May 1982.

(19) Balfour-Halcrow, op. cit. p. A-7.

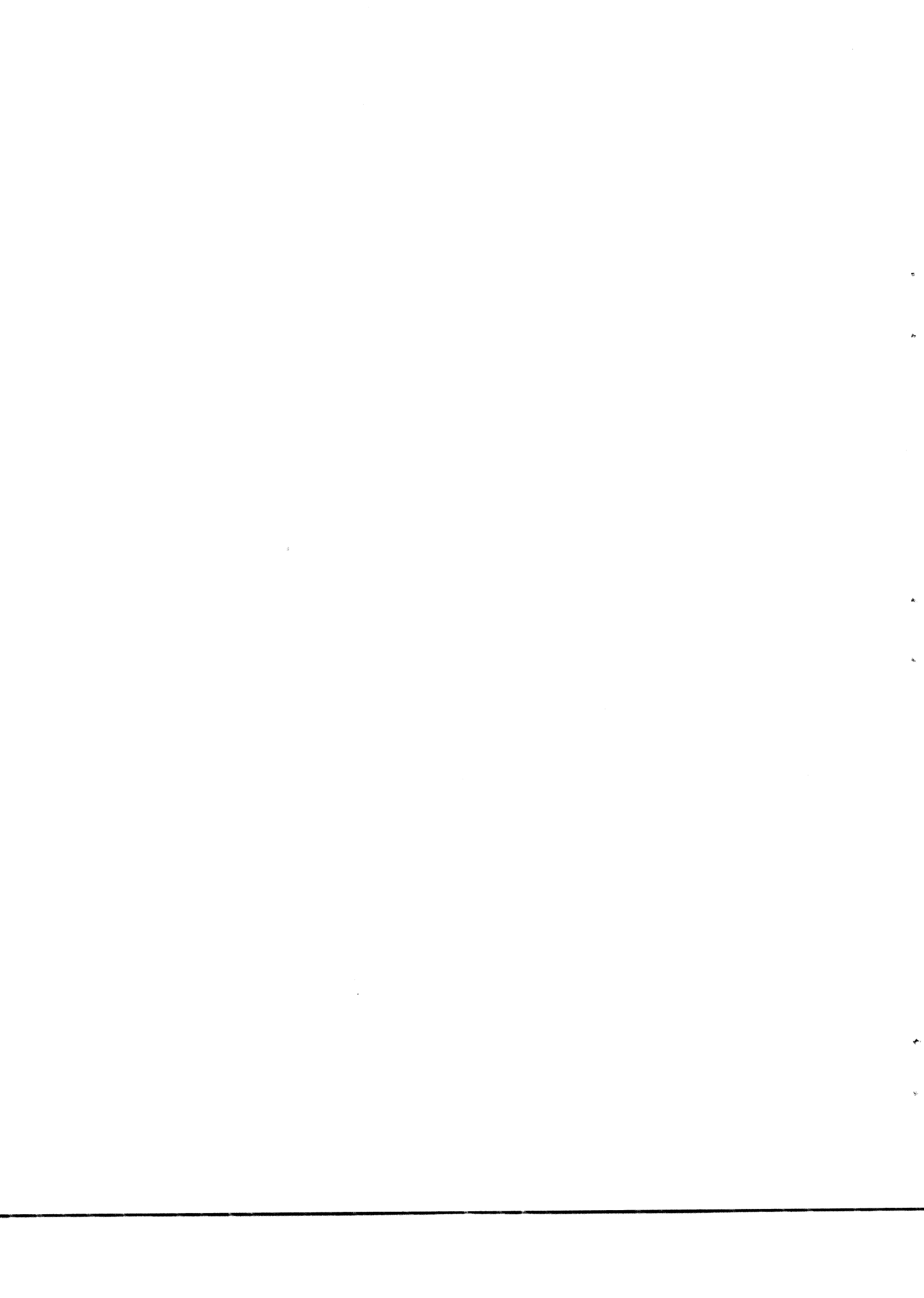
(20) J.G. Milliken and G.C. Taylor, "Metropolitan water management", AGU Water Resources Monograph 6 (Washington, D.C., 1981) pp. 102, 110.

(21) United Nations Water Conference (E/CONF.70/TP 225) December 1976, p. 11.

(22) United Nations Water Conference (E/CONF.70/TP 221) December 1976, p. 8.

(23) John Taylor & Sons, op. cit.

TRANSPORT HARMONIZATION AND STANDARDIZATION OF DOCUMENTS



1. The purpose of this note is to apprise member states of the position of the Commission with respect to the study on "Transport Harmonization and Standardization of Documents" and to seek further support and guidance. The note provides a summary of the study including: objectives; present flows and traffic volumes; existing border formalities; international and regional conventions, and conclusions and recommendations. It further outlines foreseen activities and required support to carry them out.

2. This study has been prepared by the secretariat of ECWA in the implementation of the work programme and priorities for the biennium (1982-1983).

3. For the accomplishment of this study a questionnaire on border formalities and customs procedures has been circulated in December 1982 to all member countries, and a field mission has been carried out to some member states, namely: Iraq, Jordan, Kuwait, Saudi Arabia and Syria. Therefore, the study has been confined to the visited countries or to those which answered the questionnaire.

4. In this respect it has to be mentioned that a study on "the legal aspects of the simplification of border-crossings formalities in the ECWA region" has been prepared by a consultant and is presented separately. Both studies have been completed and distributed to member states early in 1984.

A. The Study

5. The study on "Transport Harmonization and Standardization of Documents" covers:

- a survey of existing flows and traffic volumes at borders in the ECWA region.
- existing control formalities at borders.
- international and regional conventions concerning border crossings.
- recommendations.

Objectives

6. Keeping in mind the ever increasing socio-economic needs of the region, governments of ECWA member countries have embarked

upon the development of road networks throughout the region. Particularly since 1973 development projects have been strongly boosted to meet the new requirements of the increasing road traffic resulting from the current economic and social development upsurge in all countries of the region.

7. To this end member countries have constructed modern highways extending to neighbouring countries so that the international, intercontinental and intraregional traffic can move smoothly and with minimum difficulties. The total length of the paved road network exceeded 100,000 km in 1981. Road transport made remarkable progress in the ECWA region. The total number of vehicles registered in the region which was only about 1,312,000 in 1974, increased to about 4.5 million vehicles in 1979 and by now has definitely exceeded 8 million.

8. Nevertheless, and despite the remarkable progress achieved on road construction and on road transport in the region, considerable work still remains to be done to cope with the growing national and international traffic of both passengers and goods. The growth of international road traffic does not depend solely on the construction of highways. Various other elements are relevant such as provision of road side facilities, uniformity of road traffic devices, uniformity of road design and last but never the least is the simplification of border-crossing and other administrative formalities. Special effort should be simultaneously secured for the improvement of these items.

9. Traffic facilitation of international transport whether it is through road, railway, sea, air or rivers, is meant to minimize the costs and procedures encountered by travellers, operators of transport services, exporters, importers and other parties concerned. These formalities, if excessive and cumbersome, in terms of regulations relating to customs, health, immigration, currency, etc., not only tend to delay, but hamper and discourage the movement of cargoes or persons from one country to another. Although it is not possible to do away with all such formalities, it is essential to apply uniform and simple measures required to ensure the proper economic controls, security measures and the protection of real interests of a country, without obstructing the smooth flow of international traffic.

Present flows and traffic volumes

10. International road traffic, especially that originating from Europe and coming via Syria and Iraq, has increasingly been used as an alternative to the traditional maritime trade route to avoid or by-pass port congestions. The freight transport on highways of the region is generally made of heavy trucks varying from 6 to 35 tons with two or more axles depending on the load. For the purpose of maximizing their benefit from economy of scale, truck operators have a great tendency to use heavier

vehicles. The most trucks crossing the borders are generally heavy lorries in order to decrease the transportation cost.

11. The considerable increase in the number of the automobiles, an overwhelming mode of personal transport in many countries, is creating congestions at some borders of the region. Transit traffic coming from Europe as well as from the region using roads to visit various countries of the region has also increased the number of vehicles at borders. The traditional pilgrimage to the holy places of Islam and the increased business travel to the oil producing countries in recent years are other causes of congestion at border crossings.

12. As far as general trade and transit are concerned, the road transport mode is one of the important modes in the general trade activities of the region particularly these originating from Europe. All transit goods coming by road are passing through Iraq and Syria.

13. According to a study made by the secretariat of ECWA (E/ECWA/DPD/83/4), the 70s was an eventful decade for the region external trade sector. The annual growth of total exports from the region averaged around 39% as compared to an average of less than 10% during the 60s. This was accompanied by an average growth rate of imports of 35% per annum, as compared to over 7% during the 60s. This unprecedented performance in the region's trade was largely a result of the upward adjustments in crude oil prices in 1973.

Existing border formalities

a) Goods

14. Since formalities at borders are almost similar in all Arab countries, a summary of the main requirements for goods crossing borders is presented.

15. All goods imported or exported by land shall be delivered to the nearest customs office and stored in its warehouse after the owner had submitted a manifest showing the number, weight and contents of these goods on a special form for this purpose. The submission of the manifest in respect of the goods is made by the owner and submitted to the nearest customs post to the frontier. The manifest shows the details of goods transported as well as the name of the sender, the names of persons to whom the goods are sent, the number, marks, kind of package, total weight, nature, source, value, quantity and volume of goods and when necessary the number of units of such goods. The manifest shall be signed by the transporter of the goods and endorsed by the customs office from which the goods are consigned or by the

first customs office in the country from which the goods have entered.

16. Every clearance of goods from the customs must be proceeded by the submission of a detailed customs declaration on the prescribed form in as many copies as required by the authority. The declaration form which must be filled according to the tariff shall be signed by the transporter. The declaration form shall contain in particular the nature, weight, quantity, value, country of origin and place of shipment of the goods as well as the number and marks of the packages, the description of the means of conveyance, the date of entry of the goods in the warehouse, the signature and the name of the transporter and the name of the consignee. When the duties imposed on these goods are paid or if the goods are free from duties, the customs personnel in charge has to give a licence showing that the duties on these goods are paid or that they are free of duties.

b) Transit

17. Goods of foreign origin may be dispatched by ordinary or international transit whether they enter the country from land or sea frontier in order to go out direct to another land or sea frontier or whether such goods are dispatched by land from an office, warehouse or a free zone on the frontiers or from the interior of the country to another office, warehouse or free zones.

18. Ordinary transit shall be effected by all means without distinction at the responsibility of the consigner, who signs the transit declaration form. The transit formalities with the detailed declaration form which should be supported by a guarantee undertakings shall be completed in the customs office through which the dispatch of goods in ordinary transit is effected.

19. International transit transport is carried out by the approved truck transport companies at the responsibility of the companies in accordance with the conditions and reservations laid down by the authority concerned. In principle goods dispatched by way of transit are exempted from the formalities concerning the detailed declaration and inspection. The customs authority, within the conditions and security requirements, permit the storing of goods passing by way of transit in a private or public warehouse for a period of 60 days. If the goods are not withdrawn after this period the necessary steps will be taken according to the regulations of each country.

c) Determination of the value of the goods

20. For the purpose of assessing the rates of duty on imported goods, their value at the place of shipping, plus freight, insurance, commission and any other expenses incurred on such goods upto their arrival shall be considered. The purchase price and the country of origin of the goods shall be proved by the submission of all original invoices and papers showing the price at the place where the goods are purchased. It is a condition also that the invoices showing the purchase price of the goods must be certified by the chamber of commerce or industry.

d) Inspection and examination of goods

21. Each customs employee is authorized to check any part of the truck and open any box. Parcels shall be opened and their contents taken out and replaced by the importer in the presence of the customs officer concerned who shall compare the contents with the declaration and other documents produced by the importer. Any discrepancy shall be endorsed on the reverse of the declaration form and any goods which are not mentioned in the declaration form shall be considered as smuggled and shall be confiscated and the importer shall be liable to the penalties stated in the law.

e) Technical and sanitary inspection

22. If the customs officer concerned suspects any decomposition or deterioration in any imported goods such as food stuffs, drinks, tobacco or anything else which might expose the public health to danger, he is entitled to send samples of such goods for examination by experts or by the departments concerned. If it is considered that such goods are unsuitable, they shall be destroyed in the presence of a committee. Expenses incurred on the analysis and the destruction of goods are to be paid by the importer.

f) Imported goods entering temporarily

23. Goods granted by the authorities concerned the right of entering the country temporarily shall be exempted from the payment of fees for some goods such as: equipment of works, research and experiment, goods to be exhibited and reexported, personal special articles and foreign cars imported for the purpose of repairing and refitting.

g) Car formalities

24. The car should be registered and driven by its owner or a driver. In the later case the driver should have permission from the owner to drive the car in the country of entry. For the entry of the car international triptych or arab triptych is needed. If there is no triptych, the customs office will prepare a manifest for the entry of the vehicle which will permit it to move within the country for a fixed term period.

25. "Carnet de passage" or triptych is a guarantee for customs authorities that a foreign vehicle entering a country's territory will only remain on a temporary basis not exceeding 12 months. For buses, the same procedures are applied.

h) Specific taxes and charges

26. They differ from one country to another. For example in Iraq they are:

- Iraqi manifest for each truck is 10 Dinars and for each taxi is 2.5 Dinars.

- for transit goods, declaration form and Iraqi manifest, 70 Dinars and the tax for each truck of goods equals 1 per thousand of the value of the goods.

- for the transit good in store, not exceeding 0.5% of the value of the goods as storage fees.

- transport tax for each car is 10 Dinars.

- for exported and imported goods, duties differ from item to item and are fixed according to the laws and regulations.

Passengers

27. Passengers entering the countries of the region or leaving them should submit a customs declaration if required on articles they carry with them. Failure to do renders them liable to the penalties prescribed by the law. The luggage and parcels belonging to passengers could be searched by the customs officer concerned, who is also entitled to search the passengers themselves. Customs fees in respect of goods belonging to passengers shall be collected according to the procedures laid down by the authorities concerned.

28. The visa and other formalities concerning passengers differ from one country to another, Iraq is given as an example. Regulations in some ECWA countries on passports and visas, customs

formalities and allowances, currency regulations and vehicles are discussed in this study.

International and regional conventions

29. Despite the tremendous progress made all over the world in international road transport, the international passengers and goods transport by road is still hampered by frequent obstacles linked to complicated and outdated regulations and procedures. Most of the time the transport of goods and passengers is delayed for many hours and even several days at frontiers. These delays always result from many administrative obstacles and the inadequate operation of inspection services, as well as from various disturbances affecting the international mobility of persons and goods.

30. For the harmonization of international transport of passengers and goods, the removal of divergencies and to eliminate unnecessary formalities at borders, many international and regional instrument have been drawn-up and implemented in various countries. The following instrument concerning particularly procedures and formalities at frontiers are discussed in this study: Customs Conventions on the International Transport of Goods under Cover of TIR Carnet (TIR Convention), International Convention on the Simplification and Harmonization of Customs Procedures (The Kyoto Convention), Customs Convention on the ATA Carnets for the Temporary Admission of Goods (ATA Convention), Customs Convention on the International Transit of Goods (ITI Convention), Regional Convention on the Regulation of Transit Traffic among the Arab League States.

Conclusions and recommendations

31. The complicated border crossings formalities and procedures, relating to customs health, immigration, currency restriction, not only tend to delay international traffic but also hamper and discourage the movement of cargoes or persons from one country to another. Although it is not possible to do away with all such formalities, it is essential to apply uniform measures required for ensuring the proper economic controls, security and the protection of the real interests of the country, without obstructing the smooth flow of international traffic.

32. Therefore, governments are expected to introduce and enforce rules and procedures for the movement of goods and people to prevent mishaps and to protect the national interest of their countries. Checks and controls at border crossing should not be allowed to create unnecessary delays and thereby defeat the main purpose of promoting the international traffic.

33. For the accomplishment of these objectives the following suggestions and recommendations deem to be necessary.

Simplification and reduction of transport documentation

a) One standard size of paper for all documents should be used in the international transport, possibly even in national transport of goods (210 X 297 mm).

b) Aligned series based on ECE layout key. This reduces the cost of production of various types of document and would be very easy for users to complete as they would be able to locate instantly any item (copy of ECE layout key is attached)

c) Language. all documents which are used by multinationals should preferably use one language, common to most of the countries, e.g. English.

34. Since the majority of documents will be within the UN/ECE layout key, an important step should be to ensure that all relevant documents fit this key. Also local customs import and export documents could be combined with the transport/transit document rather than having to complete extra forms at the beginning and end of each journey.

35. As far as other inspections such as fiscal, social, live-stock, health and phytosanitary certificates are concerned to avoid the goods being examined twice by the veterinary and health services and by the customs, they should perform their examinations at the same time.

36. For passengers, necessary measures should be considered and agreed upon by member countries to ensure the smooth flow of persons from one country to another. Controls carried out for travellers by the customs, police and other authorities at the time of crossing the frontier shall be carried out systematically in the following order: on entry, police control follows by customs control and then control of other authorities. On departure: customs controls followed by control of other authorities and finally the police control. The check point should be arranged to follow the same direction in one building and the various services should be separated.

Standardization of documents, by accession to international instrument

37. To simplify, standardize and streamline the customs administrative, fiscal, social, sanitary and other different controls documents, it is strongly recommended that the countries of the member States which have not yet acceded to international conventions pertaining to treatment of goods and customs procedures

should give serious consideration to the possibility of their adoption and implementation.

38. The advantage of these international instruments are considerable as summarized below.

TIR Convention

39. The system has advantages for customs administration for it reproduces the normal requirements of national transit procedures. At the same time it provides facilities for physical inspection in the countries of transit, operating national guarantee and national system of documentary control.

40. With TIR Carnet, goods may travel across national frontiers with a minimum of interference by customs administrations. By easing traditional impediments to the international movement of goods, the TIR system encourages the development of international trade. By reducing delay in transit, it enables significant economies to be made in transport cost.

Kyoto Convention

41. It facilitates trade. The provisions of the annexes call for simplified customs because it is recognised that customs formalities need not be complex in order to be efficient. With the application of the Kyoto Convention, the import and export and transit procedures involved in such trade are simplified. Furthermore, both the transport of passengers and goods between countries will be facilitated.

42. It improves customs management. It should not be overlooked that simpler formalities and procedures are also less costly to the customs since they are easier to administer.

43. It provides assistance to customs administration. Since the Convention is a comprehensive guide to the major customs procedures currently applied or recommended for application throughout the world, it is an invaluable source of assistance to administration involved in the review or modernization of national customs legislation.

Improvement of administrative measures

44. Working hours: for control service, for travellers and for customs transit of goods covered by an international transit document, the customs offices should be open 24 hours a day.

45. The inspection of goods: to prevent traffic congestion it is necessary:

- to assign qualified staff in sufficient numbers to the control operations of the vehicles.
- to arrange separate lanes and spaces for waiting cars and trucks.
- to make available more suitable equipment for the control of goods such as weighing and lifting gears etc.
- to provide necessary space for cars and trucks which are stopped and waiting for further action to be taken.
- to make available the necessary storage place for goods unloaded.

c) Mutual administration assistance: customs administrations of states which have a common frontier should afford each other mutual assistance for the prevention and investigation of customs offenses committed at importation or exportation in respect of goods crossing the common frontiers.

Improvement of terminal facilities

46. The movement of road vehicles creates the need for rest areas, restaurant and accomodation. Such facilities need not be of a high standard, but it is recommended that the following facilities be provided at border stations:

- First aid, telecommunications, money changing and information for tourists;
- Maintained public toilet;
- Cafeteria facilities;
- Accomodation for overnight stay, specially where border stations are only open in the day time;
- Gasoline stations and small scale repair facilities.

B. Activities foreseen

47. During the current biennium (1984-1985) the Secretariat will continue its activities in the field of transport harmonization by convening an ad hoc expert group meeting in November 1984 and by implementing the programme element 1.4 "Land transport and harmonization and standardization".

48. The ad hoc expert group meeting: The secretariat's study on "Transport harmonization and standardization of documents" as well as the consultant's report, "The legal aspect of the simplification of border-crossing formalities in the ECWA region", will be examined by the expert group and recommendations and findings will be further reviewed to formulate the framework for the draft procedures and/or a draft convention to facilitate border-crossings.

49. The secretariat on the basis of previous studies as well as according to the recommendations made by the ad hoc expert group meeting will prepare a report on the draft procedures and/or a draft convention on measures to facilitate border-crossings. The report will be completed early 1985 and will be presented to the Commission in first quarter of 1985.

50. Thus, the ECWA secretariat will fully implement its programme element on "Land transport harmonization and standardization" by proposing to ECWA member States a draft procedures and/or draft convention which would enable them to achieve optimum intraregional legislative co-operation in the field of land transport.

C. Support requested

51. The full implementation of the secretariat activities in the field of land transport harmonization could only be realized if the member States give their support and effectively participate in the secretariat activities. In this context, ECWA member countries may wish to give further guidance and support in following ways:

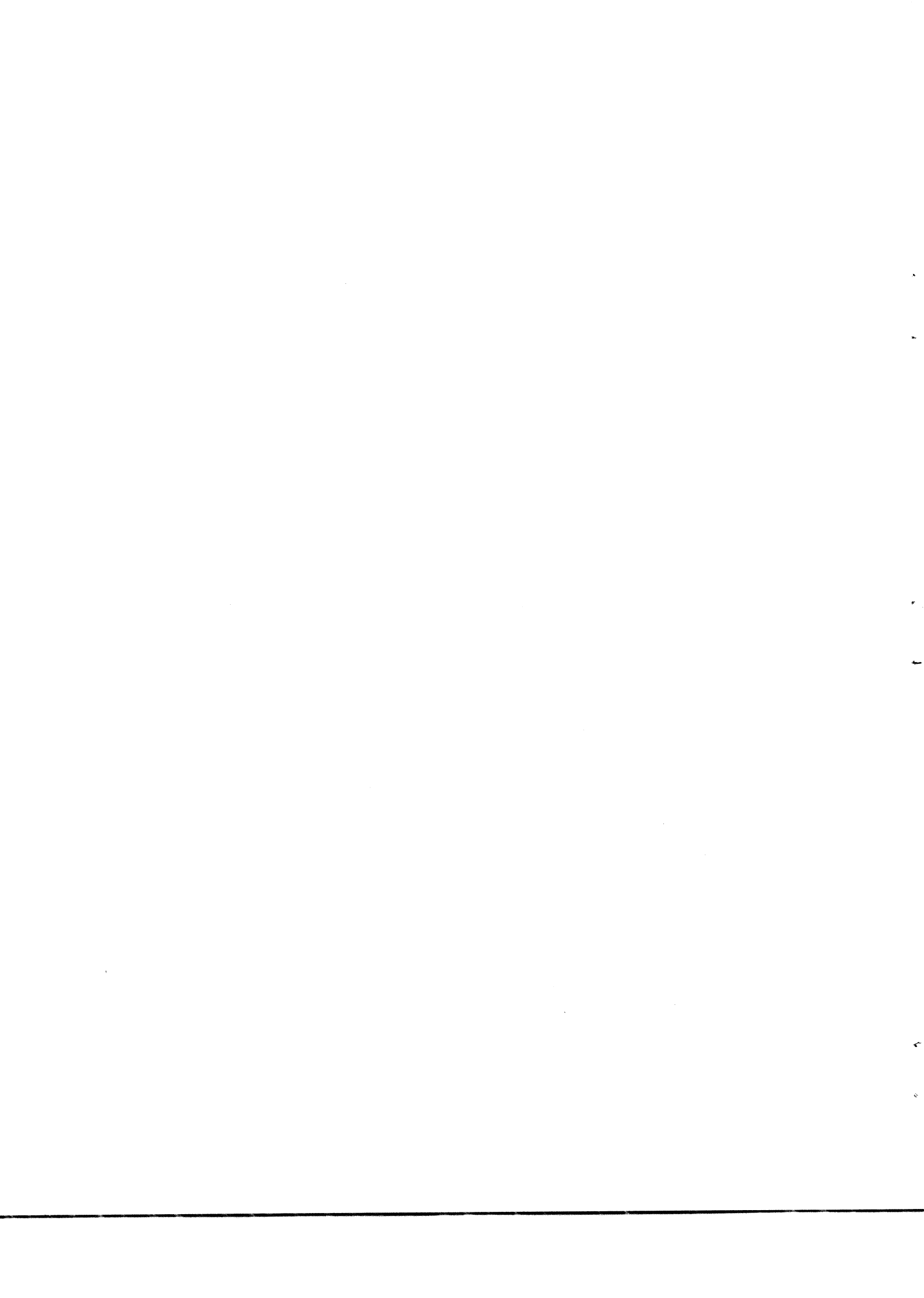
1) Effective and active participation of their transport authorities in the ad hoc expert meeting, scheduled to take place in November 1984.

2) To participate in the formulation of draft procedures and/or the draft convention on measures to facilitate border-crossings in the ECWA region, by providing appropriate data and information proposals and suggestions.

3) Implementation and follow-up of the findings and recommendations of the ECWA as well as other resolutions of the Commission in the field of transport harmonization.



DEVELOPMENT OF NATIONAL MERCHANT
MARINES AND PROMOTION OF MULTINATIONAL SHIPPING
ENTERPRISES IN THE ECWA REGION



1. The report is meant to apprise the member States of the position of the Commission with respect to the study on "title", and to seek further support and guidance. The report provides a summary of the study highlighting particularly the conclusions and recommendations.
2. It further outlines activities envisaged and support required in the field of merchant fleet development in the ECWA region.
3. The ECWA Secretariat, in accordance with its 1982-1983 programme of work, has completed a study on "Development of National Merchant Marine and Promotion of Multinational Shipping Enterprises" which will be distributed to member countries early 1984. The study deals with the regional position and addresses itself to the problems faced by ECWA countries in developing their national fleets and promoting regional multinational shipping enterprises.
4. The study consists of four chapters. The first examines the main features of ECWA countries sea-borne trade, the second describes the main characteristics and the existing potential for the development of national fleets, and the third chapter is looking into the possibilities of promoting intraregional co-operation in the development of multinational shipping enterprises. The last chapter of the study is devoted to recommendations suggested for developing national merchant fleets and promoting multinational shipping enterprises in the ECWA region.
5. The study has been carried out in line with the main objectives and goals defined for developing countries in the Third United Nations Development Decade, as adopted by the General Assembly of the United Nations and the resolutions adopted by UNCTAD V (1979) and UNCTAD VI (1983) conferences in the field of shipping.
6. For conducting the study two questionnaires were prepared and circulated to all members as well as to national and regional maritime organizations concerned on "Sea-borne trade in the ECWA region" and "Development of maritime transport in the ECWA region", dated 17 January 1983.
7. A field mission has been carried out to Kuwait and Egypt in 1982 and 1983 respectively. Some countries did not answer the questionnaires, and partial answers were received from others.
8. Consequently the study has been based on the limited information and data available.

A. THE STUDY

9. The study on "Development of National Merchant Marines and Promotion of Multinational Shipping Enterprises" after analysing the existing position of merchant fleets and the prospects for their development at the national and regional levels has yielded the following findings and recommendations.

Findings

10. International sea-borne trade has shown a dramatic growth worldwide after the second world war. Long term projections predict a further growth and an increasing share of the third world countries in the trade. Fleet development in the developing countries has been lagging behind and therefore requires increasing attention.

11. However the recent recession has caused a general decline in sea-borne trade and has resulted in strong set-backs in the shipping industry in particular in the sector of the tanker trade. There are indications that a recovery may be expected in the second half of the decade.

12. The main share of ECWA countries sea-borne trade consists of bulk trade, of which tanker trade comprises about 93% and the dry bulk trade about 2% of the total volume of ECWA countries sea-trade. The bulk cargo trade in ECWA region is carried mainly on the regular bulk movements basis between ECWA countries and groups of countries or individual countries overseas. The conditions of the bulk sea-trade in the ECWA region are to a great extent determined by foreign fleets of developed countries. These conditions are reflected in long-term charters, contracts of affreightments, arrangements with "closely related parties", etc.

13. The general cargo trade which includes conventional break-bulk cargo and containerization cargo has a tendency towards an increase mainly in container traffic reflecting an ongoing process of diversification of economic activities in the region. The share of break-bulk sea-trade presently comprises about 3% of the total ECWA countries sea-trade. The container traffic accounting to 2% is expected to increase by 3.5-4% by 1990. Containerized cargo as well as break-bulk cargo have been moved in the shipping lines which are operated mostly within the international liner conferences.

14. The UNCTAD Code of Conduct for Liner Conferences has been signed and ratified by some ECWA countries taking into account that participation in this convention will open the possibility for these countries to increase their participation up to 40% in liner shipping.

15. The present share (1982) of the merchant fleets of ECWA countries in terms of dwt amount to 2.29% only, however ECWA countries generate more than 12% of the world sea-borne trade and more than 22% of the world tanker trade turnover.

16. ECWA countries accelerated the expansion of their merchant fleets in terms of dwt in the world fleet by raising their share from 0.45% in 1972 to 2.29% in 1982. The rates of growth of the overall fleet of ECWA countries prevail considerably over the rates of growth of the world merchant fleets.

17. The third United Nations Development Decade has recommended the development of the merchant fleets of the developing countries to a share of 20% of the world fleets in terms of dwt by 1990. This recommendation approximately implies that the size of the fleets of the developing nations registered should be almost doubled by the end of this decade. According to this goal, ECWA countries have to raise their share in the world fleets to be 3.2-3.4% by 1990 compared with their share of 1.61% at the end of the second UN Development Decade in 1980.

18. ECWA countries as a whole increased considerably their national fleets during the last ten years (1972/1982) by 878.4% in terms of dwt. The most significant growth was recorded in the oil tanker fleet which had been raised by 1051.5% during this period.

19. However in the ECWA region like in the worldwide market there was a process of laying up and scrapping of part of tonnage, mainly in the tanker tonnage of VLCC/ULCCs group which has reduced the effective capacity of the fleet in the short term, and reflected the situation on shipping market as a result of the worldwide recession.

20. ECWA countries have currently a large shipbuilding programme comprising ship deliveries mainly till 1985.

21. This programme includes the following tonnage for delivery during 1983-1985: oil tankers, about 0.9 million dwt; bulk carriers, 0.47 million dwt; container ships, 0.48 million dwt; and general cargo ships, 0.06 million dwt.

22. However there is quite an imbalance in this respect within the ECWA region. While a few countries are leading in the effort to build their merchant fleet, other countries lay far behind and some even do not give any sign of fleet development. This aspect deserves the highest attention within the development effort.

23. In the ECWA region there are multinational shipping enterprises like the United Arab Shipping Company and others which

gives the possibilities for ECWA countries on its basis to draw up the common shipping policy to have a substantial shipbuilding programme and to carry out the training of manpower in shipping sector. Through the multinational shipping enterprises, ECWA countries have a substantial potential for the development of national and multinational merchant fleet in the region.

Recommendations

24. Taking into account the conclusions and findings of the study, it has been recommended the following.

25. ECWA countries should review and evaluate their relative position in international shipping in line with:

- The international strategy for the Third United Nations Development Decade (1981-1990), which envisages promoting the development of world sea-borne trade; an increase of the share of developing countries in the volume of the total world fleet in dead weight tonnage to 20% by 1990; the promotion of technical and economic co-operation among developing countries;

- the resolution adopted by "UNCTAD V (1979) and UNCTAD VI (1983)" in the field of shipping:

- a) in liner sector inviting to the ratification of the United Nations Convention on a Code of Conduct for Liner Conferences;
- b) in bulk sector, encouraging the equitable participation in the transport of bulk cargoes and expanding bulk fleets of developing countries;
- c) Promoting national and international measures to bring about and facilitate structural change in the world shipping industry in order to remove protectionist policies and monopolistic practises and to eliminate the controls exercised by transnational corporations.

26. ECWA countries should make efforts to secure equitable participation in transportation of their bulk trade and where possible promote transport of their sea-borne bulk cargo export on C.I.F. terms. In order to minimize dependency on the transnational shipowners, trade negotiations and contracts for sale or purchase of bulk cargoes should stipulate a substantial and increasing share of cargoes to be carried by the national vessels of ECWA countries or by vessels operated by them. It is necessary that where applicable, a mechanism be established in which trading partners can negotiate the most favourable trade conditions.

27. The national bulk sea-borne trade should be based on long-term shipping arrangements which will form the basis for long-term planning and financing.

28. ECWA countries which have not yet done so should ratify the United Nations Convention on a Code of Conduct for Liner Conferences in order to create the national legislative framework for the promotion and negotiation of an increasing share in the liner shipping by national flag fleets.

29. ECWA countries should develop and promote the "door-to-door" cargo transport system which secures time-saving and reduces the transport operations cost.

30. ECWA countries should open new shipping routes on the basis of traditional ECWA countries sea-borne trade flows. A special attention should be given to the development of feeder service in the Arabian Gulf and Red Sea as well as in the Mediterranean area. Feeder service can be based on the existing short sea and coastal routes.

31. ECWA countries should establish an adequate national maritime administration within the national ministries of transport as an instrument:

- to set up the national maritime legislation;
- to promote the development of national sea-borne trade;
- to support the development of national merchant fleets;
- to protect the interests vested in the maritime transport industry, such as the financial, the national economic and employment generation interests.

32. ECWA countries should establish a Maritime Transport Institute in the region.

- to advise the national governments and maritime authorities on new development in international maritime transport including: technology, practices, projections of trade volumes, international legislation, tariffs, multi-national co-operation;
- to undertake research relevant to maritime transport development in the region;
- to provide support for manpower development in the region.

33. ECWA countries should establish national shipowners associations in order to represent and support the mutual interests of the individual national shipowners. Such interests may include:

- maritime administration and legislation;
- capital investment incentives;
- training of personnel;
- shipowners liability;
- facilitation of multimodal transport;
- port facilities;
- ship maintenance and repair facilities.

34. A regional shipowners' mutual Protection and Indemnity Association should be established to meet the specific needs for maritime insurance and to participate in international associations concerned.

35. National shippers' Councils should be established in order to represent and to protect the specific interests of the shippers and consignees with regard to the shipping services in quality, regularity and frequency, the freight arrangements and freight tariffs, etc...

36. ECWA countries should give also consideration to the possibilities to develop and negotiate more extended transport package-arrangements in which inland and sea transport including storage and handling are integrated in a multimodal transport service. In this respect, the application of modern technology in continuous land transport facilities such as pipelines for liquid bulk as well as for liquified dry bulk, and conveyors have to be given full attention.

37. ECWA countries should develop their merchant fleets on the basis of long-term planning related to the projected cargo demand movements and long-term trade agreements.

38. Fleet and seaport developments should constitute an integral part of the National Development Plans.

39. Fleet developments should be phased in such a way that allows them to keep pace with the latest developments in shipping technology.

40. Top priority should be given to the training of operational and commercial managers of the national shipping sector, in

order to achieve and maintain the highest standards in a world-wide competitive maritime transport industry.

41. An optimum use should be made of longstanding expertise available in the international shipping industry for:

- designing the company policy and strategy for a balanced and beneficial merchant fleet development;
- choosing the appropriate ship type and sizes;
- designing the optimum capital financing arrangements;
- optimum routing of ships and determining of an adequate frequency of sailings;
- establishing and maintaining an adequate network of shipping agents;
- structuring of flexible tariff systems;
- introducing standardization of operational procedures and maintenance schemes;
- developing and maintaining an adequate marketing of services;
- training of personnel.

42. A masterplan should be prepared for national deep sea port development simultaneously with the plans for long term national fleet development.

43. ECWA countries consider the adoption of the target set forth in the Third United Nations Development Decade for doubling their dead-weight tonnage share in the total world tonnage from 1.61% in 1980 to 3.22% in 1990.

44. ECWA countries should modernize their traditional conventional general cargo fleet which is oversupplied in the region.

45. Development of general cargo fleet should be concentrated on the conversion into multi-purpose combined general cargo/container ships. Among "other" ships, attention should be given to the development of livestock carriers, taking into account the development of the livestock trade in the region.

46. ECWA countries should concentrate their attention mainly on the development of oil tanker fleet, taking into account that more than 93% of the national sea-trade consists of oil trade largely generated in the ECWA region.

47. An investigation on the optimum size for the acquisition of tanker fleet such as the medium size of 60,000 - 175,000 dwt size group as the most adequate tanker fleet for the ECWA region should be made taking into account the need of access to the wide range of world ports, the possible use of the Suez Canal, and the fact that the bulk of world tanker fleet which has been scrapped the last years were ships over 175,000 dwt (VLCC/ULCC).

48. In order to increase the productivity of tanker fleet and reduce the sailing in ballast, ECWA countries should investigate the possibility of using its capacity on the back routes in the transportation of suitable bulk cargoes;

49. ECWA countries should also investigate possibilities of developing the combine bulk/oil carriers as the adequate bulk carriers fleet for the ECWA region taking into account the structure of ECWA countries sea-borne trade.

50. ECWA countries should develop their ship-repairing and ship-building facilities to meet the requirements of a constantly growing fleet. ECWA countries should investigate the optimum distribution of their centres for ship-repairing and ship-building in the three main areas of the Arabian Gulf, in the Red Sea and the Mediterranean;

51. A considerable attention should also be given to the further development of the Suez Canal taking into account the fact that about 45% of ECWA countries seatriade is transported through the canal;

52. ECWA countries should design and construct a permanent merchant marine training centres in the Arabian Gulf and in Alexandria (Egypt). These centres should be provided with the necessary equipment and the training vessels for merchant marine studies. An attention should be given also to training the personnel for merchant activities on land. Such personnel could be trained at the university or pre-university level in the field of shipping business administration, marine economics, ship-building and repairing, port operations, etc...

53. ECWA countries should co-operate with each other in their efforts to unify their fleet operations and development programmes as well as to draw up the common shipping policy through the regional and inter-regional shipping organizations like the Arab Federation of Shipping, Islamic Shipowner Association, etc...

54. ECWA countries should develop the co-operation in the field of shipping through the formation of the regional multinational shipping enterprises.

55. ECWA countries should investigate the possibilities for pooling their financial, manpower and cargo resources within the framework of regional multi-national shipping enterprises in order to secure the national as well as the regional interests in the development of shipping.

56. ECWA countries should also promote standardization and harmonization in shipping within the regional multinational shipping enterprises. That harmonization should concern the joint shipping policy, registration of ships, maritime information legislation regarding tax, freight rates, manpower in shipping, acceding to international maritime conventions, training and exchange of personnel, scientific research and economic analysis.

57. ECWA countries should grant regional multinational shipping enterprises equal privileges and rights which the national flag companies enjoy. These may include the exemption from taxes, duties and all other financial incentives and facilities.

58. ECWA countries should amend the national legislation in such a way that multinational shipping enterprises be recognized as an enterprise in the interest of the national economy.

69. ECWA countries should investigate the possibilities and the needs for the development of multinational shipping enterprises in the Red Sea and utilizing the financial, cargo, tonnage and manpower resources of Saudi Arabia, Jordan, YAR, PDRY and Oman, and in the Mediterranean area combining Egypt, Lebanon, Syria and Jordan resources;

60. In order to stem the recession in world shipping the region multinational shipping enterprises should diversify their activities. The ECWA countries should investigate the possibilities and the needs for formation of multinational shipping enterprises which could be oriented on the dry bulk shipping, intra-regional liner service, oil transportation and livestock trade.

61. ECWA countries should investigate the possibilities to establish joint ventures with appropriate partners in international shipping; such joint ventures will help to gradually master all the problem areas of competition in a complex and sophisticated industry, while the benefits of participating in shipping will be built up.

B. ACTIVITIES FORESEEN DURING THE BIENNIUM 1984-1985

62. A specific and in-depth study addressing the possibilities for expanding the bulk fleets in Western Asia will be made and completed the third quarter of the year in accordance with programme element 1.1 "title" 1985. The study will provide a com-

prehensive investigation of the issue at regional level, complementary to the work of the secretariat of UNCTAD which deals with the subject at global level.

63. A short-term consultancy will be carried out for a quantitative analysis.

64. A provision for computer time allocation will be made. The secretariat of ECWA would arrange for a regional meeting of experts and/or authorised representatives of member countries to outline the activities required to follow-up on the recommendations of the study.

65. The secretariat of the Commission would appreciate more active, efficient and comprehensive participation and support in the preparation of forthcoming studies and the follow-up of the recommendations outlined in the present study; the allocation of resources that would enable the secretariat of ECWA to convene a meeting on the development of national and multinational merchant fleets in the region. The meeting could be held late 1984 or early 1985; the output will be brought to the attention of the Commission in the following session.

IMPROVEMENT OF ROAD MAINTENANCE
IN THE ECWA REGION

1. The purpose of this note is to apprise the Commission of the study "Improvement of road maintenance in the ECWA region", which comprises two parts. Part I contains a general review of road networks in Western Asia, road administration in the ECWA region, the road maintenance set-up in the countries under study, and basic factors of road maintenance. Part II presents suggestions, recommendations and guidelines.

2. For this study, a questionnaire on road maintenance was circulated in December 1982 to various authorities in member countries. A field mission was dispatched to some member States, namely Iraq, Jordan, Kuwait, Saudi Arabia and the Syrian Arab Republic during February and March 1983. Unfortunately, owing to budgetary constraints, it was not possible to visit all member countries. Therefore the study is confined to those countries which were visited or from whom answers to the questionnaire were received. Hence it can be considered a case study on road maintenance.

3. In a region like Western Asia, where waterways and railways are limited, road transport has become a major factor for socio-economic growth. A well-developed road network not only reduces the transportation cost and travel time but also helps in speeding up social development and in strengthening the political integration of the region.

4. Keeping in mind the ever increasing socio-economic needs of the region, ECWA's member States have embarked upon large schemes for road transport development within their respective countries. Within a short period of time the region has achieved a remarkable accomplishment in constructing and lengthening roads.

5. Considering the tremendous financial investment that has been allotted to construct the present road system, road maintenance has emerged as one of the main problems facing ECWA member countries. The development of an effective highway maintenance system has become a basic factor in the efficiency and development of the highway transport system in almost every country of the region. Recognizing this important fact, member States, in recent years have developed maintenance programmes and established highway maintenance organizations.

6. Despite this important fact and the progress that has been achieved, in many countries of the region actual road maintenance has been almost overlooked. Highway authorities in the region, like those in other developing countries, have the tendency to place high priority on expanding road networks and low priority on road maintenance. This tendency is causing tremendous damage to the serviceability of the road network systems. A moderately intensive maintenance programme, promptly started and carefully observed, would not only improve the general ser-

viceability of the existing road network but would also decrease the cost of maintenance and improvement.

7. Governments of ECWA member countries are fully aware of the economic, social and cultural benefits that could be obtained from adequate road transport facilities within their respective countries and consequently have given highest priority to highway construction and road transport.

A. The road maintenance set-up

8. The road maintenance organization and set-up differs from one country to another. According to the total kilometres of roads to be maintained and the area, each country is divided into many districts. District personnel are generally responsible for the maintenance of roads falling within the district.

B. Basic factors of road maintenance

9. Cost estimates: Comparatively the approximate average road maintenance (routine and periodic) cost of different categories of roads and different types of terrain per annum and per kilometre in US dollars at 1982 prices is:

<u>Country</u>	<u>US\$/km/year</u>
Iraq	1,784
Jordan	1,460
Kuwait	4,810
Saudi Arabia	4,956
Syrian Arab Republic	2,920
Yemen	4,500

10. The budget The budget allocations for road maintenance in millions of US dollars were:

<u>Country</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Iraq	41,100	51,100	46,129	-
Jordan	2,119	2,119	2,119	4,238
Kuwait	n.a.	n.a.	n.a.	n.a.
Saudi Arabia	111,953	102,040	138,484	-
Syrian Arab Republic	18,053	18,584	28,673	20,991
Yemen	6,000	6,000	7,254	-

11. Laboratory facilities: Jordan and Kuwait are the only two countries of the region that have well-equipped laboratory facilities.

12. Training: The need for training programmes in road construction and maintenance, at various levels, has been stressed and emphasized by almost all countries of the region:

(a) In Saudi Arabia, there is an acute problem in finding reliable and competent personnel for construction and road maintenance. The only training conducted consists of sending new engineers to the various departments in the Ministry to be trained in each department for two or three months.

(b) In the Syrian Arab Republic, the capacity to provide a qualified personnel for road maintenance during the next decade is uncertain. No provision for training and scholarships is included in the development projects. To overcome the shortage of transportation economists and traffic specialists the Government has taken two measures: to assign counterpart personnel throughout transportation projects and to organize training courses for transportation in the Planning Institute.

(c) In Yemen, training facilities have been envisaged by the Government in the five year plan. This includes programmes to secure training within and outside the country, to improve training methods, to introduce audiovisual aids, to establish sub-programmes in the various educational fields, and to increase the Yemeni role in supervising projects in order to decrease reliance on foreign experts in the near future. At present the highway authority is running a vocational training centre at Taiz to prepare its own manpower cadres. Courses are offered for road supervisors, plant mechanics, machinists, welders, auto electricians, plant operators, heavy-vehicle drivers, store-keepers and accountants.

13. Traffic data and information: Maintenance depends largely upon the effect of traffic, or more particularly, on the heavier traffic. The cost of road maintenance depends on the average daily traffic (ADT). Traffic data is one of the most important elements in any economic study for highway construction and maintenance. To have an idea concerning the magnitude of the road traffic and the number of vehicles in some countries of the region. The study provides a tabular summary of the findings on average daily traffics at different road sections in each of the studied countries.

14. The axle load: Since the damaging effect of vehicles on road pavements depends on both the magnitude of individual wheel loads and the number of times these loads are applied, some member States have given serious consideration to adopting a new axle load criterion for the design of roads.

C. Suggestions and recommendations

15. Development of effective road maintenance is essential to the efficiency of any road transport system. The operation of a road or highway transportation system is a function of its proper maintenance. Maintenance ensures that the investment of public funds is preserved. With this concept in view the following factors are to be seriously considered.

16. Design and construction: One of the main causes for rapid deterioration of roads is underdesign and faulty construction. A sound solid and highly-qualified construction will naturally last more than a poor structure. The most effective measure is to assure the adequacy of the design and the use of the specified materials and construction method according to the required norms and standards. Since most roads are constructed by contractors, the supervision of construction becomes one of the most important engineering tasks. The materials for the surface, base, sub-base, embankments and shoulders should be according to the norms and engineering specifications. All materials used in a project must be inspected for compliance with the specifications adopted for each type of work. Testing should frequently be made by the Government's testing laboratory. Therefore, a modern laboratory for testing materials in every country is a must. In addition, axle load control is a basic issue in the proper design and construction of roads. The life of any pavement structure of a road is directly related to the amount of the axle load and to its repetitions. It is recommended that efficient and effective measures should be applied to control the exact implementation of the maximum axle load enforced. The weighing stations should be made ready and used for checking. A suitable law should also be in force to punish offenders.

17. Budget: In ECWA countries the tendency to place low priority on road maintenance has reached a critical level in some countries of the region and some sections of the road surface are now in poor condition. Therefore, it is recommended that a certain sizeable portion of the funds available for roads should always be set aside for maintenance.

18. Organization: Although Governments of member States during the past few years have given relatively increased attention to road maintenance, nevertheless, in general, they have not been coping with the magnitude and considerable increase of highways and traffic flow. Maintenance organizations within or outside road departments takes rather a low position in the organizational chart of the authorities concerned. This situation has to be drastically changed. Road maintenance needs more attention and its importance should be considered equal to put that of road construction. A road maintenance department should have its own chain of command and responsibilities. Road maintenance must not be allowed to become a function of an isolated unit with very limited contact with other branches of the department or ministry responsible for roads and public works.

19. Planning and management: One of the most important factors that should be taken into consideration for effective road maintenance is management and planning. Managers of highway maintenance need, above all, to be practical and good organizers. Advanced engineering qualifications are not the only criterion. Managers should ensure that a simple road inventory is made and kept up-to-date. They should define the levels of maintenance required for each class of road, which should reflect the current traffic carried.

20. Inventory and data: At present, and in most countries of the ECWA region, the comprehensive inventory, information and necessary data for the planning of a road maintenance programme cannot be deemed adequate, and much has to be done in this respect. Highway agencies need information to formulate and evaluate policies, to plan and design highways, and to administer the construction, maintenance and operation of the highway facilities under their control. A proper information system has to serve these needs. The roadway inventory should be a part of the broad transport information system and should be prepared so that those physical elements of a highway which require maintenance are located and quantified.

21. Training: The scarcity of trained technicians, professionals and workers is a real handicap for road construction and road maintenance. Since 1973 with the increase of immense development projects in the ECWA region, there has been considerable demand for trained manpower. Technicians, professionals and labourers are looking for more pay and find working conditions to be better abroad. Many countries of the region have thus suffered a drain on their limited trained personnel. This detrimental situation has slowed down the implementation of

development projects, particularly for road construction and maintenance. To overcome the lack of adequately trained or experienced staff, it is necessary to organize comprehensive training from senior engineers and managers down to patrolmen and drivers. The training ought to be considered a continuing and ongoing function and institutionalized to give training sufficient weight in the formulation of overall departmental policy. If the road maintenance department is sufficiently large, the training unit should be accorded a reasonably higher status to be able to attract high quality professionals.

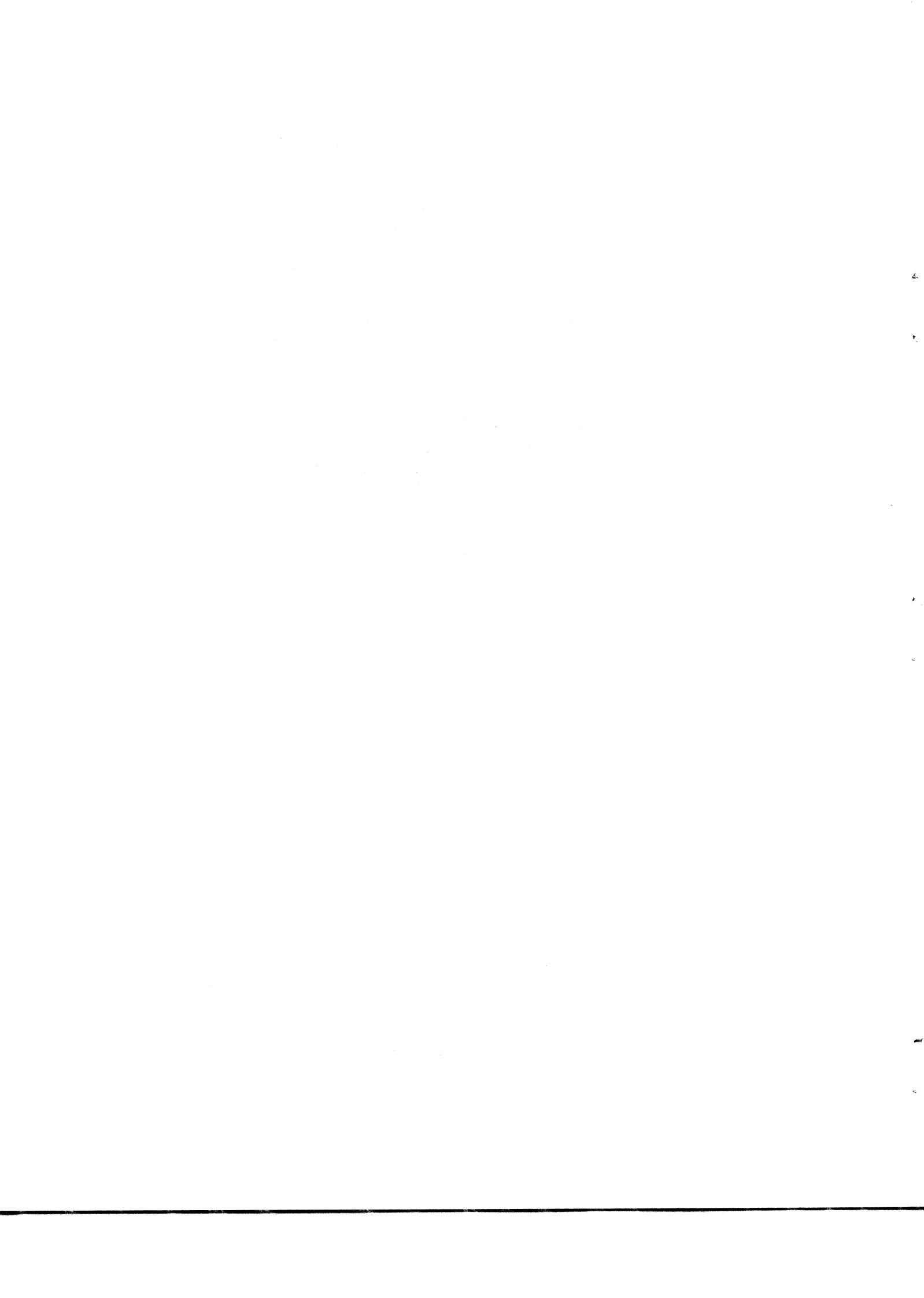
D. Activities foreseen

22. During the biennium 1984-1985 the secretariat will follow-up the implementation of the recommendations formulated in the study "Improvement of road maintenance in the ECWA region" and will provide assistance to member countries in the field of road maintenance policy and implementation, if and when required.

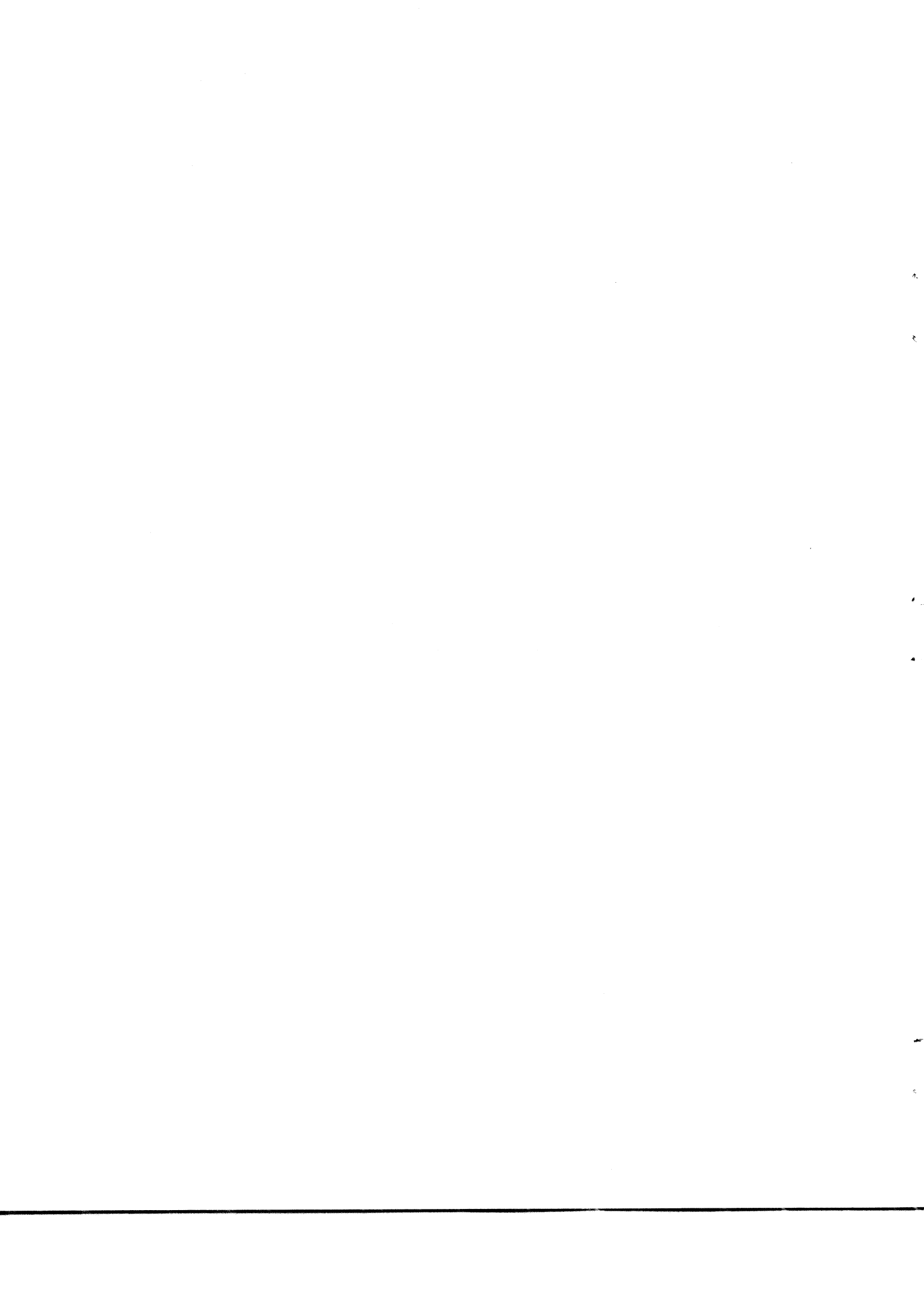
23. Furthermore, during the same biennium the secretariat, will take into consideration the findings and results of the study on road maintenance in the ECWA region and incorporate these into its report on land transport links.

24. The ECWA secretariat would appreciate if member countries could give their assistance and support by providing appropriate and up-to-date data and information for the implementation of the programme elements pertaining to land transport issues.

25. Moreover, facilitation of the secretariat's field mission aiming at collecting data and information as well as at contacting transport authorities in ECWA countries will also necessitate active support by ECWA member States.



THE RELEVANCE OF THE CODE OF CONDUCT ON TRANSNATIONAL
CORPORATIONS TO THE COUNTRIES OF WESTERN ASIA



I. TRANSNATIONAL CORPORATIONS: A CHALLENGE TO THE WORLD

1. Following the great surge of decolonization in the 1960's and after regaining their political sovereignty, the developing countries are becoming more and more aware of the inequality of the present order of international economic relations. The independence for which they have struggled is gradually being transformed into a kind of dependence having various aspects with distressing consequences. Independence with dependence and sovereignty with impotence were inevitably to lead to the rejection by the developing countries of the international economic order as conceived and imposed by economically powerful and monopolistic agencies, namely the transnational corporations (TNCs) and, through them, their home countries.

2. The call for a new international economic order, the Colombo Declaration, the Lima Declaration and the impressive resolutions of the United Nations General Assembly, all reflect the grave concern shown by the developing countries with regard to the activities of the TNCs and the deterioration of international terms of trade. The most recent reaction to that effect came from the non-aligned countries at their Seventh Conference of Heads of State or Government, (1) held at New Delhi from 7 to 12 March 1983.

3. Reorganizing the established order by clearing up the disorder and confusion sown by the TNCs is therefore no more than a legitimate defence of the inalienable right of peoples to political and economic self-determination. This is all the more urgent since the transnational corporations, not content with the economic disruption, resulting from their operations, are not loath to interfere in the internal affairs of sovereign States (2).

II. TNC INVOLVEMENT IN THE ECWA REGION

A. Reaction of the Arab countries

4. Accordingly, it became necessary, at the regional as well as the international level, to put an end to a period of injustice and exploitation by exposing the previously disguised practices of the transnational corporations.

5. The most dramatic turn of events in the region of western Asia took place with the creation of OPEC, and ultimately of OAPEC, as a kind of counterbalance to the major oil companies.

Power henceforth reverted to the producing countries and the terms of trade were, in part, once again brought into balance.

6. Several ECWA member countries finally came to understand that without real, sovereign and responsible power in economic sectors, development, particularly regional economic integration, would only be a chimera.

7. That the Arab countries should wield such power - which is theirs to wield - could please neither the industrialized countries nor the TNCs. It was therefore necessary to contain that power within an amenable framework and it is for that reason that, following the 1973 Ramadan war and the partial adjustment of oil prices, attempts to include the Arab economies within the overall world economy became more energetic. The prelude to this, in part, consisted in side-tracking a number of Arab regional development objectives while at the same time encouraging the interest of certain countries in the global process. In the ECWA region, most of the industries in which the TNC's play an increasingly active role are involved in a system of integrated services built around oil (ports, gas pipelines, oil pipelines, fleets, etc.). These industries have been connected with others, such as the iron, steel and aluminium industries, which are all export-oriented. Clearly, the evolution of the petrochemical, iron and steel industries also meets the additional needs of the industrialized countries for high-grade steel and petrochemical goods. It would be of interest to know the degree of regional economic integration such industries would be capable of bringing about.

B. Foreign direct investment in the Arab world: an overview

8. Seen as a whole, foreign direct investment in developing countries is characterized by a persistent geographical concentration (3). The greater part of such investment takes place in relatively few developing countries, many of which have a comparatively high per capita gross national product. In 1978, this share was nearly 75 per cent. Between 1960 and 1979 the proportion invested in most regions increased, with the exception of the Middle East. This was because of the nationalizations taking place in most of the countries which are ECWA members.

9. Almost 60% of investment in the Middle East was received by two countries, the Islamic Republic of Iran and Israel, with the remainder being shared by about 13 others. The fact that a select number of developing countries account for the greater part of all direct investment in the third world is, at least partially, related to the pattern and purposes of investments by TNC's in different countries and the framework of host country

government policies on foreign direct investment. To the extent investments are made to satisfy local demand, they are concentrated in countries with a relatively high level of economic development and rather large domestic or regional markets.(4)

10. In contrast, in the ECWA region the purpose of most foreign direct investments is to take advantage of available raw materials while benefiting from relatively low factor costs, particularly that of energy.

11. In some countries of the region the aluminium and iron and steel industries depend on the consumption of enormous quantities of natural gas delivered free of charge at the well-head, making production costs less onerous than those of steel or aluminium produced anywhere else.

12. Thus, for the TNCs some Arab countries are, so to speak, stopping places for production with a view to exporting, that is to say for the production of an item within the context of the international manufacturing industry, since what is produced in the Arab countries is only a link in the chain of the technological cycle of production orchestrated by the TNCs. This places those countries in a state of structural dependence.

III. TOWARDS A CODE OF PROPER CONDUCT FOR TRANSNATIONAL CORPORATIONS

13. Action at the international level was, consequently, urgent and necessary in order to put an end to such developments or, at least, to redirect them. The channelling of foreign investment was to provide the developing countries with a legal basis for benefiting from external resources, developing their external trade, improving their management, requiring appropriate technology and strengthening internal, regional and international relations.

14. Several countries, particularly the developing countries, encountered difficulties in seeking to regulate the conduct of TNCs with a view to ensuring that their activities were compatible with development goals and objectives. Therefore, faced with the inadequacy of national regulatory mechanisms and means of control effectively to counter the international strategies of the TNCs, the adoption of an international framework became inevitable. Accordingly, the developing countries came to realize the need to adopt a multilateral approach. The industrialized countries, for their part, also acknowledged the advantage of adopting, at the multilateral level, common norms designed to regulate the conduct of TNCs.

15. Among many others, J. de Fauchier, Chairman and Director-General of Parisbas, one of the largest financial groupings in the world, was already asking in 1968 for concerted action by heads of State to elaborate a "code of proper conduct" to facilitate the internationalization of business, eliminating abuses so that the needful internationalization might develop in a harmonious manner.(5)

16. Some years later Mr. Henry Kissinger, the American Secretary of State, declared from the podium of the United Nations that, for its part, the United States was inclined to respond favourably to the legitimate concerns of Governments in whose territory transnational corporations carried out their activities. The United States therefore felt that the time had come for the international community to formulate principals governing the conduct of companies after the manner of the rules governing relations between Governments.(6)

17. As a result of these events, several regional and sub-regional attempts were made to establish legal rules to which TNCs were to submit and conform in order to limit to some extent the involvement and sphere of operations of such corporations.

18. In 1970, the Andean countries(7) adopted a foreign investment code with the aim of establishing a common system of treatment for foreign capital, registered trade marks, patents, licenses and royalties in response to the sub-regional integration requirements of the Andean Programme. This system seems to be compatible with the terms of the Cartagena Agreement, in as much as investment benefits accrue to domestic or joint enterprises.

19. The Governments of the DECD countries also reached agreement on a declaration on international investment and multinational enterprises. This led to the 1976 Declaration and Decisions on International Investment and Multinational Enterprises(8) comprising three instruments on international co-operation, among them the Guidelines for Multinational Enterprises.

20. The declaration stresses that, for member countries, co-operation could improve the climate for foreign investment, encourage the positive contribution of TNCs to economic and social progress and minimize or solve outright the difficulties to which their various operations might give rise.

21. The goal was to fill the gap in the field arising from the lack of a system of international rules and agreements relating to investment which were equally valid for and acceptable to host countries, home countries and investors.

22. At the Arab regional level, there is the Standard Convention on Inter-Arab Investment whose aim is to establish rules for inter-Arab investment within a clear, unified and stable framework. This would facilitate the movement of Arab capital and its use within those countries so as to contribute to development and economic growth. The Convention deals with non-discrimination with regard to the origin of Arab capital, grants privileges to capital, gives guarantees against nationalization and expropriation, guarantees compensation for non-commercial risks, deals with the right of abode in host countries, etc. For its implementation, the Convention provides for the establishment of a regional entity with representative offices in each State party. The settlement of disputes should, in the first instance, take place in an amicable manner either before an arbitral tribunal or the Arab Investment Court, whose judgement is final.

23. It should however be noted that most ECWA member countries, each in its proper context, have enacted domestic legislation on foreign direct investment. Obviously, such regulations will be subject to various influences according to the political, economic and ideological orientation chosen by each country.

IV. THE UNITED NATIONS CODE OF CONDUCT ON TRANSNATIONAL CORPORATIONS

24. Attempts to formulate rules governing the activities of TNCs, then, date from the 1960s when abuses were already evident. The best international forum for this purpose would seem to be the United Nations, a focal point of all trends and ideas. Accordingly, the Commission on Transnational Corporations and the Centre on Transnational Corporations were established to that end. Shortly thereafter an intergovernmental working group was established with a view to elaborating a code of conduct on TNCs. Negotiations on the Code have continued since 1975 and in the meantime about two-thirds of the 71 draft provisions have been completed.

25. In the course of the negotiations it has always been asserted by most delegations that the formulation, adoption and implementation of the United Nations Code of Conduct on Transnational Corporations was of great importance. That importance was stressed in the Programme of Action on the Establishment of a New International Economic Order and in the International Development Strategy for the Third United Nations Development Decade. Against this background, full support was expressed for the Commission and it benefited from general good will in expediting the negotiations and finally completing the Code.

26. There nevertheless remain some points of friction on a number of sensitive questions, particularly those associated with the definition of the term "transnational corporations", the general treatment of TNCs by the countries in which they operate, nationalization and compensation, etc.

A. Unsettled questions having a direct bearing on the ECWA region

27. Some of the unsettled questions have a direct bearing on foreign investment policy in the ECWA region.

1. Definition of the term "transnational corporation"

28. One of the principal unsettled questions is that of the definition the Code will give the term "transnational corporation". At the outset, two definitions are given under paragraph 1(a) of the draft code.⁽⁹⁾ The second of these is general in nature and wide in scope. It includes all TNCs of whatever kind of ownership. On the other hand, the two proposals have three points in common in defining and characterizing the TNC as an enterprise (i) comprising entities in two or more countries, regardless of the legal form and fields of activity of these entities; (ii) which operates under a system of decision-making, permitting coherent policies and a common strategy through one or more decision-making centres and, (iii) in which the entities are so linked, by ownership or otherwise, that one or more of them may be able to exercise a significant influence over the activities of others, and, in particular, to share knowledge, resources and responsibilities with the others.

29. The point of disagreement lies in the manner of ownership of the corporation. The socialist group of countries refuses to include public (State) enterprises in the definition since it considers that they are wholly controlled by the home State and do not belong to that category of corporations whose conduct motivated the establishment of the Commission on Transnational Corporations and the elaboration of a code of conduct. As against that, the capitalist countries reject this distinction and maintain that the nature of ownership is not a determining factor in defining and characterizing the TNC and that, consequently, all corporations have the necessary characteristics mentioned above.

30. It should nevertheless be noted that there are several TNCs based in the socialist countries which operate in the developing countries within the framework of bilateral co-operation and whose goal is not to maximize profit. Some of these TNCs are fairly active in some of the countries of the ECWA region. It is, however, also true that some socialist TNCs operate outside

the co-operation framework. Moreover, the activities of socialist TNCs under technical co-operation programmes seem to be carried out on terms which vary from one country to another.

31. A definition that would include private, semi-private and State TNCs equally does not seem to have the support of all parties to the negotiations.

2. Preamble and objectives of the Code

32. There is general agreement that the preamble to the Code should, inter alia, mention the effect of TNCs on the world economy and the concerns aroused by their activities which underlay measures taken of the national and international levels for their regulation.

33. With regard to the principles, goals and objectives of the Code, the version proposed by the rapporteur of the special session places particular emphasis on respect for the national sovereignty of States over their natural resources, wealth and economic activities, non-interference in internal and intergovernmental affairs and the right of States to regulate and control the activities of TNCs. The positive contributions of TNCs are also emphasized, in particular with regard to the social aspect of the Code, namely that concerning the work-force. Then, since it has been agreed that the provisions of the other codes of conduct having a bearing on different specialized aspects of TNC activities which have been elaborated by other organs of the United Nation system should be incorporated into the Code, an appropriate formula has been agreed upon for the incorporation into the Code of the Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy, adopted by the Governing Body of the International Labour Office.

34. Accordingly, the Intergovernmental Working Group of the Commission on Transnational Corporations has decided to place the following paragraph in one of the introductory parts of the Code:

"For the purposes of this Code, the principles set out in the Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy, adopted by the Governing Body of the International Labour Office, should apply in the field of employment, training, conditions of work and life and industrial relations."

No decision has yet been taken on the exact location of this paragraph. (10)

3. The ILO viewpoint incorporated into the Code

35. The goal of the ILO Declaration is to encourage transnational enterprises to make a positive contribution to economic and social development and to minimize or even resolve the difficulties caused by their operations. Particular attention is paid to the United Nations resolutions calling for the establishment of a new international economic order. According to the same instrument, transnational enterprises should pay most particular attention to the general policy objectives of the countries in which they operate and should see to it that their activities are not contrary to the development priorities, social objectives and structures of these countries. The Declaration also stipulates that the governments of the home countries should encourage proper social practices on the part of their transnational enterprises and urges them to respect the social and labour legislation of the host countries and to comply with the relevant international norms.

36. The ILO study on the impact of TNCs on employment and vocational training attempts, in spite of everything, to show the positive side of the TNCs in this field but does not, for all that, deny the fact that in 1970 the number of jobs created by TNCs in developing countries represented no more than 0.3 per cent of total employment in these countries. Some authors advance the proposition that the contribution of the TNCs to the indigenous creation of employment opportunities is slight or even marginal.

37. The insertion into the Code of the paragraph calling attention to the Tripartite Declaration of Principles would seem to be of particular importance to countries which are, in one way or another, victims of the labour policy generally adopted by TNCs and would be of particular benefit to the toiling masses in the developing countries where labour policy and working conditions leave something to be desired.

38. In most ECWA member countries the situation of the work-force is alarming. After the beginning of the oil boom, and in order to implement ambitious projects, the oil-producing countries had opened wide their doors to a large-scale immigration of workers of all levels and all races in the quantities that their indigenous populations were unable to supply. Thus, a large and heterogeneous mass of immigrants became installed in the region and gradually made its presence felt in different economic sectors, thereby posing potential problems with regard to their integration, assimilation or repatriation. According to some observers, the danger lies largely in the growing number of foreigners in relation to the indigenous population in general and in the preponderance of Asian immigrants over Arab immigrants in particular.

39. The growth of this mass of immigrants has had negative repercussions on social and economic planning, the most significant of them being the inability of the indigenous populations to provide a competitive work-force capable of replacing foreign workers in all economic activities.(11)

40. Moreover, while some countries of the ECWA region suffer from a lack of the capital necessary to implement their development plans and are teeming with unemployed, others, while enjoying a financial surplus, are deficient in the manpower required for the execution of their projects. In order to attain a degree of economic integration in the Arab region, an objective so strongly preached in so many bilateral and multilateral conventions, sustained efforts have been made over a number of years by several Arab countries with the aim of co-ordinating their policies in the field of migration and labour. The 1957 Arab Economic Unity Agreement was the outcome of these efforts. It mentions the establishment of Arab economic unity among the members of the League, while guaranteeing rights and freedoms. This Agreement, like so many others, has not had the desired results because of political differences and distortions among the Arab States. Some countries of the region prohibit university graduates from leaving their countries other than in cases of extreme need. This is justified on the grounds that the services of such personnel are essential for national development. Moreover, in some countries the laws relating to the domicile of foreigners give discretionary power to the Ministry of the Interior with regard to the residence members of the families of immigrant workers. It is often expressly forbidden. Clearly, such provisions only go to confirm arguments to the effect that such workers are generally considered "guest workers" rather than regular immigrants.(12)

41. There has, however, appeared in recent years in some countries of the region a most alarming phenomenon connected with employment and migration. Some countries seem no longer to want Arab workers and prefer to import Asian (particularly Korean) labour, ceding the authority to do so to TNCs specializing in the importation of labour in total contradiction with the spirit of Arab regional economic development objectives.

42. Moreover, the great majority of the workers engaged in construction projects carried out by TNCs are accommodated in camps or "compounds", which are a species of prefabricated ghetto. These thousands of Indians, Koreans, Filipinos and Arabs are considered as merely "on loan", accept poverty-level salaries and very difficult living conditions and remain socially and culturally apart.

43. For all of these reasons of fundamental human rights and principles, paragraphs 24 and 25 of the draft Code of Conduct (contained in the economic, financial and social section) and

paragraph 46 (under disclosure of information) are of very great importance for the present situation of immigrants employed by TNCs operating in the ECWA region. It should also not be forgotten that a humanitarian and non-discriminatory policy in the field of employment and immigration would be a beneficial and dynamic factor in the development process and in Arab economic integration.

4. Non-collaboration by TNCs with racist minority regimes in southern Africa

44. Since its inception, the minority regime in South Africa has continued to violate human rights and fundamental freedoms by condemning the majority black population to servitude. Consequently, the TNCs operating in this country provide political and economic support to the established regime.

45. The approach adopted by the Commission of the European Communities in its code of conduct for European TNCs operating in southern Africa(13) seems to be very flexible. The Commission requests TNCs to apply, while continuing their activities, the sanctions imposed by the United Nations and other international bodies against this racist State. They should also endeavour to do their best to encourage and promote human rights and fundamental freedoms. In contrast, the opposite approach would call upon all TNCs to abstain totally from engaging in economic or other activities in countries practising a racist policy or exercising a colonial policy in territories which do not belong to them.

46. Falling between these two outlooks is that of the United Nations, more flexible and more moderate in tone. Paragraph 14 of the draft Code, on which no final decision has been taken, requests TNCs to make no further investment in this country and progressively to reduce their present activities. They should at least refrain from collaborating with the racist minority regime in South Africa. The TNCs are also called upon to comply with Security Council decisions and to respect all of the relevant United Nations resolutions. Finally, they are urged to engage in appropriate activities with a view to eliminating all forms of racial discrimination and all other aspects of the system of apartheid. (14)

47. In spite of this flexibility and great caution, the Western countries do not wish to hear such facts and such direct and indirect accusations and will not, in any event, allow the political or economic isolation of South Africa.

48. The ECWA member countries have often expressed their desire to contribute to the elimination of apartheid, all other forms of racial discrimination and colonialism and to promote the

right to self determination and safeguard human rights and fundamental freedoms for all.

49. It is to be deplored, none the less, that the relevant provisions of the Code make no mention of the other racist regimes. Such a mention would be a source of satisfaction to the countries of the ECWA region. It should be recalled that the question was raised by the delegation of Saudi Arabia during the second part of the special session of the Commission on Transnational Corporations. There was however no apparant follow-up which might lead to the inclusion of Israel in this paragraph, the present tenor of which represents years of negotiation.

5. Treatment of transnational corporations

(a) General treatment of transnational corporations by the countries in which they operate

50. This, the fourth part of the Code, is the most controversial part. It raises very delicate questions given the divergent interests of different parties to the negotiations. These questions relate to the principles of universally recognized international law prescribing minimum standards for the treatment of foreign-based TNCs which should be resported in domestic legislation. They further raise the question of whether the concept of national sovereignty requires all aspects of such treatment to be governed by domestic legislation.

51. The economically powerful western countries wish to see the host countries, generally developing countries which, in a manner of speaking, go to make up the periphery of such economic power, accord equitable and non-discriminatory treatment to affiliates of TNCs in accordance with established laws, regulations and administrative practices. Thus, entities of TNCs would be given by the countries in which they operate the treatment accorded to domestic enterprises engaged in the same economic activities.

52. The risk incurred by a developing country in adopting such an attitude would be that of renouncing once and for all any chance of creating and developing domestic industries which would ultimately be able to meet national economic needs and demands.

53. From the same point of view, the host countries should offer precise and predictable terms for the setting up and operation of TNCs; in other words they should have a clear and openly declared economic policy, as has frequently been stated in the course of the negotiations.

54. In the view of the developing countries, TNCs should not claim preferential treatment or the incentives and concessions generally granted to domestic enterprises. Such "discrimination" is in a way essential given the inequality of capacities and powers of the two kinds of enterprise and the goals and objectives of collective autonomy and self-reliant development that the developing countries should, as a rule, attain.

55. During the negotiations, some delegations referred to the fair and equal treatment accorded to each other by the OECD countries in support of the argument that the TNCs of the developed countries should benefit from the "encouragements" accorded by developing countries to their own enterprises.

56. This attitude, which would be valid as between countries having attained more or less the same degree of development, is no longer so when the countries in question have different levels of development.

(b) Nationalization and compensation

57. Long years of struggle were necessary before the international community, and the developing countries in particular, managed to gain acceptance of the right of States to implement nationalization in the interests of their population.

58. For the developing countries, nationalization is no more than a legitimate concomitant of the sacrosanct principle of permanent sovereignty over natural resources and national wealth. Nationalization is thus an act carried out in the public interest aimed at retrieving national property and national rights. For some, it is a legal device for the redistribution of national wealth.

59. Generally speaking, international law recognizes the right of every State to expropriate foreign-owned private property as an expression of its sovereignty. In contrast, the traditional and outdated notions of international law often advanced by the Western countries have always sought to impose strict limitations on this sacrosanct right.

60. The traditional view of State responsibility with regard to nationalization is contested by another doctrine widely embraced by the Eastern countries and the developing countries. They assert that domestic law alone is competent to establish terms for the legality and legitimacy of nationalization and that the courts and tribunals of the nationalizing State alone have jurisdiction with regard to any claim that might arise. This derives from the concept of the equality of treatment under domestic law, according to which no foreign entity can be subject to a jurisdiction other than that of the country in which

it operates. No preferential treatment should therefore be accorded to foreigners in this field.

61. It has been unequivocally asserted that nationalization, as an expression of State sovereignty, takes place at the sole discretion of the State. It is embarked upon in the light of the circumstances the State considers relevant and in accordance with its national Constitution, laws and regulations, and not necessarily on the basis of an objectively established public interest.

62. The Western countries would like this sovereign right of nationalization to be applied without discrimination to domestic as well as foreign enterprises operating in the same branch of activity. The goal of this stipulation is to place additional constraints on the right to nationalization. Non-discrimination as a limiting factor has not been well received by the developing countries. In a situation where the strategic sectors of the domestic economy are dominated by foreign interests, nationalization, as a mechanism for transferring ownership to the local people and for retrieving resources and wealth, can certainly not be other than discriminatory. It can only be directed against the originators of this particular problem.

63. Equally controversial is the idea that the payment of compensation is an integral part of lawful nationalization. Most States consider that the absence of compensation does not render expropriation unlawful and that the measure remains legitimate for all matters, including the transfer of title. It is up to the nationalizing State to determine whether or not the payment of compensation is appropriate.

64. However, even where the principle of compensation is accepted, the manner of its payment is the thorny problem.

65. In a word, the right of every State to exercise permanent sovereignty over its natural resources and wealth gives rise to and accounts incontrovertibly for the right of nationalization. Moreover, the conditions affecting its legality fall uniquely within the competence of the internal legal system and entail no international responsibility other than in cases of denial of justice.

66. A dispute concerning compensation (its amount for example, or the reasonable scheduling of payments) is subject to the law of the nationalizing State and subject exclusively to the competent domestic courts or administrative authorities unless international arbitration or other settlement procedures have been mutually established by the parties concerned before or after the occurrence of the dispute.

67. The great majority of ECWA member countries have dealt with this question in their legislation. The region has for long been a bastion of nationalization, particularly in the exploitation of oil, as is evident from the Iraqi experience and the conflict between Saudi Arabia and Aramco.

V. FUTURE OF THE CODE

68. In the present state of negotiations, only one point of general concensus has been reached; that the Code should be effective. Once it is adopted (which seems problematical at the moment), its proper implementation at the national and international levels must be seen to. To that end, the Code lays down certain rules that States accepting it must follow in order to encourage and ensure its implementation at the national level. At the international level, the United Nations Commission on Transnational Corporations will be the institutional mechanism supervising implementation of the provisions of the Code. Some delegations have protested against the granting of such quasi-judicial power to the Commission and it will, in fact, have no meaning in the event that the Code is made voluntary.

69. The ultimate fate of this mechanism is, in effect, contingent on the legal nature and form of the Code. If it is voluntary, its implementation will be at the sole discretion of States which have the desire to implement it in their territory. If, on the other hand, it is compulsory, as an international instrument it will have executive force within the jurisdiction of States parties thereto. This question still remains as that most crucial to the future of the Code of Conduct and that which will determine the scope of application and the usefulness and effectiveness of the instrument.

70. On the other hand, whatever the legal nature of the Code, intergovernmental co-operation at the regional and international levels will be essential in order to ensure the attainment of the objectives of the Code. Failing this, each State, taken separately, will be isolated and weakened in confronting the TNCs operating in its territory. It is this isolation that the international community is seeking to prevent by formulating a universal code of conduct on transnational corporations.

Notes

(1) The Economic Declaration and Programme of Action for Economic Co-operation adopted on this occasion states the following:

See NAC/Conf.7/Doc.G/Rev.3 and NAC/Conf.7/Doc.7/Rev.2, both of 11 March 1983.

"The Heads of State or Government reviewed the operations of transnational corporations, particularly in the non-aligned and other developing countries. They expressed grave concern with respect to transnational corporations which carry out illegal and undesirable policies and engage in corrupt practices in developing countries, and when their motivation to maximize profits leads to distortions in the economies of those countries."

(2) In May 1972 the Foreign Affairs Committee of the United States Senate decided to inquire into the activities of International Telephone and Telegraph (ITT) in Chile and took the initiative of forming a sub-committee to study the role and impact of TNCs.

(3) UNCTC, Salient Features and Trends in Foreign Direct Investment (New York, 1983) (ST/CTC/14) (United Nations publication, Sales No. E.83.II.a.8), para.50, p.16.

(4) Ibid., para.54, p.17.

(5) Statement to the Association professionnelle des banques, a summary of which appears in Usine Nouvelle (Paris, 10 October 1968).

(6) Inaugural meeting of the seventh extraordinary session of the United Nations General Assembly, 1 September 1975.

(7) Namely Bolivia, Chile, Colombia, Ecuador, Peru and Venezuela.

(8) OECD, International Investment and Multinational Enterprises (Paris, 1979).

(9) See E/1983/17/Rev.1, Annex II.

(10) Ibid., Annex V.

(11) Ministry of Labour and Social Affairs, Bahrain/ILO, API, Working paper (Kuwait, December 1978), p.287.

(12) See Kingsley Davis in Population Bulletin of ECWA, No.21, December 1981.

(13) Adopted by the Council of Ministers of the EEC in September 1977.

(14) Position adopted by the group of African States at the 13th meeting of the Intergovernmental Working Group.