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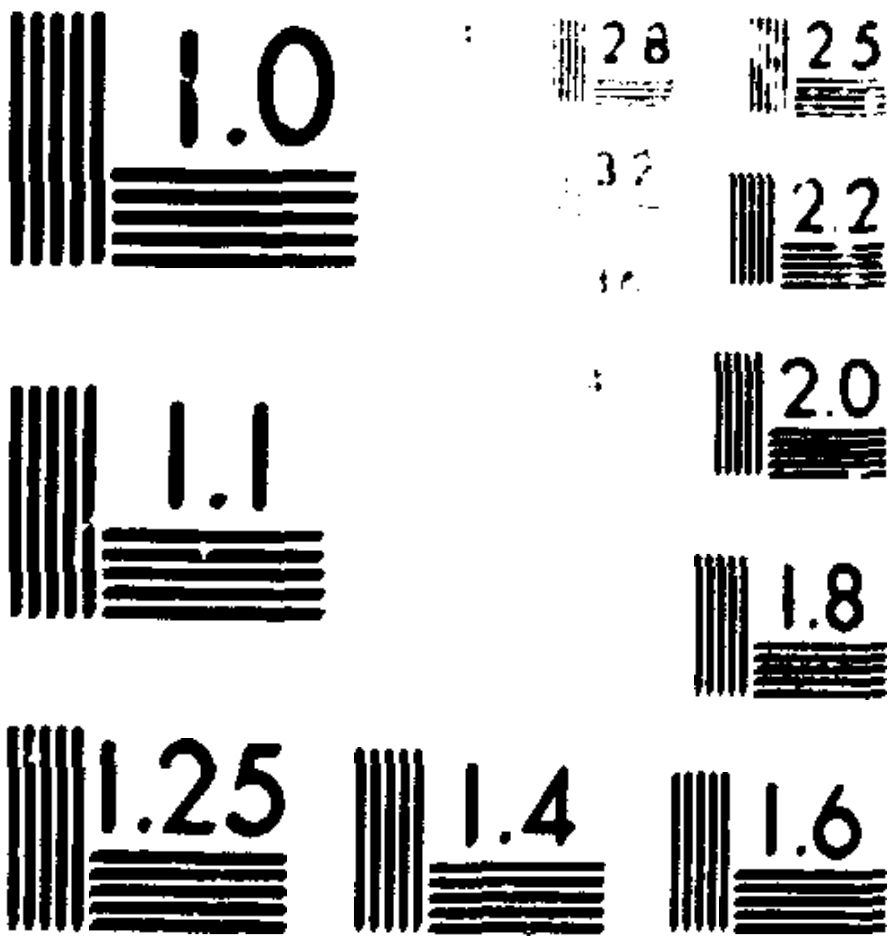

11743

Distr.
LIMITED

UNIDO/IS.342
20 September 1982

ENGLISH

UNITED NATIONS INDUSTRIAL
DEVELOPMENT ORGANIZATION

ANALYTICAL NOTES ON

THE SECOND ARAB ENERGY CONFERENCE
(6 to 11 March 1982, in Doha, Qatar)

Regional and Country Studies Branch
Division for Industrial Studies

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V.82-30522

Within the framework of Regional and Country Studies Branch's in-depth studies, energy appears as one of the crucial issues of development in the Arab countries. In March 1982, the League of Arab States, the Organization of Arab Petroleum Exporting Countries and the Arab Fund for Economic and Social Development, organized the Second Arab Energy Conference. At this Conference, a thorough analysis was made of the energy resource availability to the Arab countries, the present and future energy. A special emphasis was put on the energy impact on industrial and economic development in those countries. The purpose of this paper is to highlight the thinking and policy orientations which prevail and the problems that are assessed in the Arab region in connexion with the energy issue.

TABLE OF CONTENTS

PART I

BACKGROUND AND GEO-ECONOMICS

The Second Arab Energy Conference was held in Doba, Qatar, from 6 to 11 March 1982 at the invitation of the State of Qatar. The Conference was sponsored by His Highness Sheikh Khalifa Bin Hamed Al Thani, who gave its inaugural address. The Secretary General of the Arab League, Mr Al-Chazli Al-Qulaibi, took part in the inaugural ceremony by an address on behalf of the organizations sponsoring the Conference. He was followed by H.E. Sheikh Abel Al-Aziz Bin Khalifa Al Thani, Minister of Finance and Petroleum of the State of Qatar who took over the chairmanship of the Conference from his predecessor, H.E. Dr Mani Saeed Al-Utaiba, Minister of Petroleum and Mineral Resources in the UAE, who was the Chairman of the First Arab Energy Conference. The heads of delegations of Arab States were elected as vice-chairmen.

Delegations from all Arab countries at ministerial level participated in the Conference, including most heads of Arab institutions dealing with energy, as well as a great number of experts and specialists. They took effective part in the debates and enriched the results in the Conference by presenting or discussing studies and papers. A great number of journalists and the public media from the Arab countries and elsewhere also attended the Conference.

1. BACKGROUND

The convening of the Conference came as a continuous of the First Arab Energy Conference which met in March 1979 in Abu Dhabi (UAE). It was then decided that Arab Energy Conference be held once every three years. The first conference passed a number of recommendations, most important of which were the necessity to conserve energy in the Arab World, the need to set up regional committees to carry on the task of setting up a joint Arab Energy Committee, to broaden the data base of energy information and the training of manpower in the field of energy.

Positive steps have been taken towards implementing these recommendations, especially with respect to setting up national energy committees, rationalizing energy consumption and conservation and deepening Arab's awareness in respect of energy problems.

In the light of subsequent contacts to the First Arab Energy Conference, it was agreed to merge the Arab Petroleum Conference which had been convened periodically by the Arab League, with the Arab Energy Conference in order to avoid duplication and to concentrate on joint Arab endeavours in the field of energy and oil industry. Thus, each of the Arab League, the Arab Industrial Development Organisation (AIDO), the Arab Fund for Economic and Social Development (AFEASD) and the Organisation of Arab Oil Exporting Countries (OAPEC) became co-sponsors and supervisors of this Energy Conference.

2. THE GENERAL THEME AND TOPICS

The Second Conference, in its new perspective, was held under the theme "Energy for Development and Arab Economic Integration". The main topics discussed within this framework included:

1. Energy sources
2. Energy demand
3. Petroleum-related industries
4. Manpower development
5. The creation of institutional formats for joint Arab efforts in the area of energy
6. Investments required for the development of the energy source

In his concluding speech, the Secretary General of OAPEC pointed out that the First Arab Energy Conference was devoted to energy and the Arab World and co-sponsored by two Arab institutions. Fourteen ministers and two hundred and fifty participants took part at that Conference where thirty-five papers were presented and discussed during three days. In comparison, twenty-two Arab ministers attended the

Second Conference at which five hundred persons took part out of whom there were eighty lectures and one hundred and thirty-one papers were submitted.

3. MAIN INAUGURAL STATEMENTS

The Emir of Qatar urged the industrial countries to co-operate with Arab Oil Exporting Countries especially in the field of technology transfer. He drew attention to the danager of the present maldistribution of wealths in the world where fifteen per cent of the population who live in the industrial countries account for sixty-five percent of the world GNP in 1980. He also referred to the capability of oil producing countries to control their petroleum wealth.

As for aid granted by the Arab Oil Exporting Countries to the Third World, relative to their national income, the Emir noted that they amounted to six times the amount offered by the industrial countries.

The significance of oil in achieving the aspects of progress in the world was referred to by the Emir of Qatar in his inaugural address to the Conference. This point was further emphasized by the Secretary General of the Arab League when he highlighted that the availability of cheap oil and the easy access to it led the industrial countries that possess technological capabilities to depend mainly on this conventional source and to ignore developing other sources and possible alternatives.

He then discussed the problem of oil prices pointing out the impossibility of treating it in isolation from the prices of other goods, products and alternatives. He added that the present world crisis cannot be solved by freezing oil prices. There is a crucial need for short and long term solutions that concentrate on energy alternatives, especially new and renewable sources, as well as for rationalizing energy consumption and conservation.

The Secretary General of the Arab League pointed out that the Conference had been convened at a critical time thereby emphasizing the

inevitability of joint Arab endeavour, as defined by the Amman Summit Conference, in one of its most important fields, namely energy. Mr Al-Qulaibi pointed out that the subject of energy cannot be discussed in isolation from other economic sectors; further, it should be tackled within the framework of the strategy of the joint economic endeavour for the welfare of the Arab nation as a whole.

At the end of his speech, Mr Qulaibi emphasized the necessity of concentrating on joint endeavour in the field of massive investments needed for energy projects such as establishing an institution to undertake exploration in the Arab and developing countries on lines similar to those of major oil companies. He emphasized the need for fruitful co-operation in developing new and renewable energy sources and obtaining the necessary technology. This view was equally expressed by Sheikh Abel Al-Aziz Ben Khalifa Al Thani, the Minister of Finance and Petroleum in Qatar, who called for intensifying Arab efforts to obtain the technology needed for developing new and renewable sources and allot a greater portion of national income to technical and applied research in this field.

PART II

WORKINGS OF THE CONFERENCE

1. ENERGY DEMAND SECTION

Eighteen papers were presented and discussed in the Energy Demand Section.

1.1 By-Country Demand Forecasts

Eight of these papers gave the energy demand forecasts for eight Arab countries, namely: Qatar, Kuwait, Socialist People's Libyan Arab Jamahiriya, Jordan, Egypt and Sudan, Iraq, the Syrian Arab Republic, and Tunisia.

The deamnd forecasts for the year 2000 for the first three countries,

all major oil exporters, showed that energy consumption is likely to grow in the future at a rate almost similar to the past in view of the increasing need of industry and, in particular, oil industries that are planned for the future. Oil and gas will remain the major source of energy, though the Arab world should start implementing a serious programme of diversification of its sources of energy.

Five other papers dealt with energy demand forecasts for five Arab countries which are either not importers, like Jordan and the Sudan[1/], or small oil importers, like Tunisia, Egypt, the Syrian Arab Republic, in addition to a major oil-exporting country, namely Iraq. Except for Tunizia, for which the analysis was mainly devoted to the methodology conceived and applied to measure the energy consumption in the country, all the other papers concentrated on the energy consumption forecasts till the year 2000. The point on which the authors of these five papers converged, was the rapid growth of consumption realized in the Arab world during the past decade. The low average consumption per capita, the possibilities of avoiding wasteful consumption, the limited possibilities of alternatives, the capital needs for atomic and hydro projects and the important role of a price policy which weighs carefully the opportunity costs to the economy, all call for more detailed studies of demand by sector and sub-sector.

1.2 The Sectoral Demand

Only five papers dealt with the sectoral pattern of energy demand in Arab countries.

One paper considered the use of energy in Arab agriculture. It showed that Arab food security problems together with need to boost agricultural production in the light of potentialiaties would require to triple or quadruple the use of oil products and derivatives by the year 2000.

The second paper which was presented[1/] and discussed, was the UNIDO paper which I wrote on energy consumption in industry, with emphasis being

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1/ presented in Arabic at the request of the organizers.

put on the industrial uses of energy in the Arab countries.

It was agreed, in this connection, that Arab industrial development priorities should take into account the internal and comparative intensity of energy consumption in the different industries. Furthermore, there are real possibilities of a further conservation of energy in these sectors which were identified and estimated as necessary.

In a third paper, demand on energy by the transportation sector was analysed through a case study devoted to Jordan. The conclusion which was drawn is that the consumption of energy in this sector is too high when compared to the total energy consumption.

A fourth paper provided the expectations for the year 2000 of energy consumption in the domestic and commercial sector. It showed that prices are necessarily inter-related with the consumption levels, as it was demonstrated in this sector.

Finally, the potential for energy conservation in buildings was illustrated in a fifth paper which considered the Kuwaiti case.

1.3 The Macro Economic Demand Forecasts

Two papers took a global view of the Arab world, "Energy Demand Forecasts for the Arab Countries" and "Energy Supply and Demand Balances within Arab World, 1985-2000".

The first paper accented the long term price effect on energy consumption and called for steps to nationalize energy consumption through implementation of gradual price adjustments.

The second paper attempted a design for an energy supply strategy for the Arab world, the energy balance which it presented showed that energy consumption will increasingly rely on non-hydrocarbons.

1.4 Products, Pricing, Consumption Costs, Investment Needs and Future Energy Demand

Three other papers presented dealt respectively with:

- the Pricing of Energy Products in the Arab Countries and its Impact on Consumption.

- Consumption Costs and Investment Needs in the Energy Sector in the Arab World.

- Factors Affecting Future Energy Demand in the Arab Countries.

It must be said that the problematic of products pricing referred specifically to Arab high energy-consuming oil-exporting countries. As to the factors affecting future energy demand, they were limited to only a few global indicators, namely, the population growth, the per capita income and energy consumption per capita while no use was made of the important sectoral energy consumption indicators, to forecast future demands on energy.

2. ENERGY SOURCES SECTION

2.1 Oil and Gas

One paper was presented on the Prospects of Oil and Gas Exploration in Arab Countries. Three other technical papers dealt with Modern Techniques in Oil Exploration, Deep Drilling Techniques and Problems, and A Review of Enhanced Oil Technology and Applications.

The papers reviewed the current situation with regard to exploration activities and production and advocated more concerted efforts amongst the Arab Countries to achieve higher efficiency in the field. The suggestion for establishing a Joint Arab Exploration Company and an Arab Centre for Research in the Field of Petroleum Exploration was intensively discussed and the meeting recommended that detailed studies for these projects be conducted.

On the gas side, two papers were presented. The first discussed

"Arab Natural Gas and its Role in Meeting Energy Needs". As to the second, it tackled the question of "Prices of LPG".

2.2 Electrical Energy, Co-Generation and Water Desalination

A third paper covered "Electrical Energy in the Arab World". It showed both the very rapid growth of the sector during the seventies and the low Arab consumption per capita by average world standards. It also showed that electricity consumption depends largely on crude oil, heavy fuel and gas, and that the share of hydro-electricity in total electricity production rated at sixteen per cent at present, would drop in the future because of limited Arab hydro potential.

Additionally, a working group dealt with the issue of "Co-generation of Electricity and Water Desalination" and three papers were presented.

The papers reviewed the performance and progress of projects in the field of co-generation of electricity and water desalination and called for the formation of an Arab Association for the producers and distributors of electricity energy. Targets set for this association were to strengthen joint efforts in promoting the efficiency of this important sector of energy.

2.3 Production Technology of Tar Sands, Bituminous Shale and Heavy Oils

One paper presented an overview of the current heavy oil production technology, oil shale development, field results, economics and general impact of production of hydrocarbons from unconventional resources. Attention will be given to the development of heavy oil resources in the Arab area. Coal resources were not considered in this paper. It pointed out that while most of the projects of synthetic fuel production from coal involve above-ground processing of coal, much renewed effort has been made to produce hydrocarbon gas and liquids from coal through underground gasification. The paper indicated that technological and environmental problems relating to the development of these energy sources.

A second paper on "Solid Energy Resources in the Arab World: Coal and Oil Shale", recalled that since 1973, efforts were directed towards searching for alternatives to oil and gas resources. Then it attempted to define the Arab land's resources of coal and oil shale, reviewed known Arab coal deposits in Algeria, Egypt and Morocco and examined possibilities of coal being available in other Arab countries. As for oil shale, the study discussed its availability in the world and reviewed studies and tests in the two Arab countries, namely Morocco and Jordan, to valuate deposits and their uses, whether for power generation and oil extraction*/.

To sum up, the study gave some of the conclusions and recommendations made by the Seminar of Solid Resources and the Fourth Arab Conference on Mineral Resources, which aims at developing these energy resources within a frame of Arab co-operation and co-ordination.

2.4 Conservation Regulations for Petroleum Resources

One paper tackled this question. It emphasized the special significance of conservation regulations to the Arab petroleum producing countries. Discussion covered the main topics of the historical development, the objectives and the coverage of conservation regulations, and showed the advantages of and constraints to their implementation. It then gave the factors of a country's success in implementing conservation regulations, stating that they lay in the country's control over its petroleum operations and in its national cadres cability to implement these regulations but, it added, that their full and national ownership should lead to an intensification of conservation and efficient exploitation efforts.

2.5 New and Renewable Energy in the Arab World

The paper recalled that four new and renewable sources of energy were identified in the ECWA region for in-depth investigation and evaluation. The paper attempted to synthetize four studies which had

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*/ through various pyrolysis methods.

been carried out in co-operation with OAPEC, on resource availaibility, state-of-the-act, economic, environmental and social aspects, ongoing programmes, utliziation and prospects in the Arab World. A strategy based on national efforts and action and co-operation at the Arab regional and global levels, was proposed for fostering the conditions required for the efficient development of the potential of new and renewable sources of energy in the Arab World.

Developing New and Renewable Sources in Morocco

Another paper indicated that Morocco imported morethan eighty per cent of its energy needs, thereby leading to an intensification of efforts aiming to develop domestic resources. Analysis was made of institutional aspects and research efforts. A comprehensive review was made of efforts to develop wind and biomass energy. In conclusion, the paper emphasized the necessity of Arab co-operation and complementary in the area of renewable sources development, and offered to transform Morocco's renewable sources development Centre into an all-Arab Centre so as to intensify the technical efforts being made to develop projects to the benefit of the whole Arab World.

2.6 Solar Energy in the Arab World : New Perspectives

The paper gives a general view on the new developments in solar energy research and applications in the Arab World since the First Arab Energy Conference in 1979. These new developments concern mostly solar energy availability and economic social aspects, as well as new developments in the ongoing programmes. The paper pointed out that the amount of solar energy which arrives every year to the Arab World is superior in calories to the world's total reserves (discovered, proven and others). The paper considered solar energy applications that are suitable for heating desalination, agriculture, etc in Arab cities and countrysides. Finally, the author emphasized the necessity to enter and thus control this energy source technology. He also emphasized another necessity, namely, to set up an all-Arab programme and to undertake research studies while distributing responsibilities among all Arab countries.

2.7 Nuclear Energy in the Arab Area and the Third World

Five papers were presented - two of these papers dealt with nuclear energy and the Third World, and these were: "Nuclear Energy in Developing Countries", and "The Significance of Nuclear Energy to the Third World".

The other three papers considered the issue of this energy for the Arab World. One of these papers entitled "Co-operative Development of Nuclear Energy in the Arab World". Another paper examined "Nuclear and other Sources of Energy for Arab Technological Development". As to the third paper, it dealt with "Nuclear Energy. Environmental Problems and Applications in Arab Countries".

In addition to these five papers on nuclear energy, a sixth paper reviewed "New and Renewable Sources of Energy in the Arab World".

A rich discussion was conducted with regard to Nuclear Energy. The main points raised were:

(a) Anti-proliferation Treaty has to be adhered to; but it should not constitute a hinderance to transfer of materials and technology for peaceful purposes.

(b) Arab Countries should attain maximum degree of co-operation in the development and promotion of nuclear experiments and application.

(c) Nuclear waste should not be dumped in non-populated areas in the Third World; nuclear producers should get rid of it within their own countries.

(d) Arab World should attain self-reliance in acquiring Nuclear Energy and Technology.

3. THE PETROLEUM INDUSTRIES SECTION

3.1 Chemical Refining and Gas Processing

Two papers were devoted to natural gas utilization and oil refining. The paper entitled "Ideal Utilization of Natural Gas in the Arab World" explored the potential for natural gas liquefaction and compared its advantages with those of converting the gas into petrochemicals, giving somehow preference to chemical conversion. The other paper contained a review of "Recent Trends in the Conversion of Heavy Residues", and urged for re-orienting Arab refining in order to improve its product yields.

3.2 Petrochemicals

Nine papers discussed the main petrochemical industries and considered their relevance for the Arab area.

3.2.1 Chemical Refining and Gas Processing and Utilization

Two of the papers dealt with the technical and economical aspects of petrochemical refining and petrochemicals. Thus, one of these papers considered the "Advantages of Building Petrochemical Refineries in the Arab World" calling for a fully integrated chemical refining industry. As to the other paper it offered the "Future Prospects of Petrochemicals in the Arab World".

3.2.2 Petrochemical Industries

Seven other papers were devoted to the production and exports of basic chemicals, methanol, allied chemicals (notably nitrogen fertilizers), petroleum coke, aromatics, synthetic rubber and Carbon Black, as well as plastics and synthetic fibres.

One paper analysed "Aromatics Production and Export in the Arab World". Another paper considered "The Prospects of Setting up Synthetic Rubber and Carbon Black Industries in the Arab World". The opportunity for

"Petroleum Coke Production and Treatment for Utilization in Arab Industry" was demonstrated in a third paper. A fourth paper dealt with "Methanol Prospects of Production and Utilization". Finally, one general paper considered the "Future Prospects of the Nitrogen Fertilizer Industry in the Arab Region".

Discussions focused on the absorbtive capacity in the Arab World for the Aromatic Products, Synthetic Rubber and Carbon Black, Petroleum Coke, Methanol and Nitrogen Fertilizers.

Some participants enquired about the possibilities of marketing those products outside the Arab World.

Two other papers were devoted to plastics and synthetic fibre industries:

Plastics Industries

The paper, entitled "Developing the Plastics Processing Industry in the Arab World" compared Arab and world production and consumption of plastics and recommended an Arab co-ordination in capacities, investments and location for the set up of new projects, the establishment of a joint Arab company for the marketing of plastics in Arab and world markets and, finally, the set up of a joint Arab Centre of Research on Plastics to carry out research and training required for expanding the substitution of plastics to conventional products such as paper, wood, met etc.

Synthetic Fibre Industry

Another paper suggested a "Strategy for Producing and Using Synthetic Fibres in the Arab World", recalled that synthetic fibres have balanced the deficit in natural fibres and succeeded in satisfying human and industrial needs for fibres. Figures on world output and Arab countries' requirements of synthetic fibres and of polyesters were given together with their future growth up to 1990. Accordingly, the paper recommended an immediate implementation of projects for the manufacture of glues needed in the Arab World for the production of those fibres, their

transformation into threads and fibres, simultaneously with the conversion and adaption of the existing textile plants of the Arab World to enable them to absorb those fibres, while preparing the technical staff needed for the running and maintenance of these plants through training inside and outside the Arab World.

Discussions focussed on the volume of Arab demand on the various plastic and synthetic fibre products, as well as on the means to protect them against foreign competitors.

It must be noted, however, that the papers did not specifically consider neither the energy component of feedstock and products, nor the saving, conservation and management of energy in those industries.

3.3 Reduction of Sulphur and Metal Contents in Oil Products and its Environmental Consequences

Finally, two papers were presented on the reduction of sulphur and metals in the hydrocarbon industry and its environmental consequences.

The first paper on "The Hydrocarbon Industry and Impact on Environment" exposed the pollution problem and showed its gravity. It drew the attention to the fact that the Arab Gulf Basin is one of the world's most polluted areas, as a result both to the magnitude of oil being exported from there and the dumping of wastes, carrying oil and oil products, from the oil refineries, petrochemical complexes and gas liquefaction plants.

As to the second paper, it dealt with "The Reduction of Sulphur and Metals and its Environmental Effects". A review as made of the sulphur contained in oil and oil products with the effects on transportation means, industrial furnaces, turbines and containers' pipes. Dehydrogenation was then described and its advantages enumerated. Consequently, the paper recommended an expansion of these operations in the Arab refineries. Then it considered atmospheric pollution by local refineries and petrochemical plants. Finally, it recommended, in particular, the establishment of a regional Centre and specialized regional commissions for anti-pollution action

aimed to relay, and to serve as relays between the latter and the different Arab countries. It also recommended to impose the lay-out of anti-pollution equipments and instruments, probably to the licensing of all new factories.

3.4 Development of Manufacturing Capacities for Chemical Equipment

A paper was presented on this subject. It stated the absence of chemical processing equipment and technology - two ingredients necessary for self-sustaining industrial development in the region. The scope of the paper is limited to static equipment*/, which account for about forty per cent of the battery limit equipment costs in petro-based projects.

The paper identified the problems, discussed the prospects and suggests measures for creating manufacturing capacities for chemical process equipment. Estimation of market demand was carried out. Some basic requisites to ensure marketability of the products in the light of the role played by various parties to purchase such equipment. The paper discussed the experience of a number of developing countries. Economic analysis showed that the capacity for the ECWA region has to be created on regional co-operation bases.

3.5 Inspection and Preventive Maintenance of Equipment and Petroleum Complexes

This paper was devoted to three main subjects, mainly to the understanding of the concept of inspection and inspection services to be carried out in the oil installations and projects and to a proposal to establish an Arab Organization to carry out the task of inspection and survey of oil plant and equipment in the Arab World extending these activities to shop inspection of imported equipment from abroad. Shop inspection in some of the Arab countries is also anticipated.

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*/ like pressure vessels, heat exchangers, reactors, furnaces, storage vessels, etc.

3.6 Role of Arab Tanker Companies and essentials in managing a Tanker Company

A paper tackled the transportation of crude oil, LPG, LNG, petroleum and chemical products. The latter was broached in the context of the role of Arab tank owners. Then the discussion tackled the essentials of managing a tanker company and showed the pertinence of commercial setting and business cycle. Finally, the paper recalled the origin of the VLCC/ULCC vessels, identified the overhang in the tanker market and considered its disappearance in the eighties.

4. ROUND-TABLES

The Conference devoted three round-tables to discussing the basic and committant needs for developing the energy sector in the Arab World, with regard to:

(a) The institutional structure needed for joint Arab action in the case of energy.

(b) The energy sector's requirements of human cadres, training and research.

(c) The financial investments needed for developing energy sources in the Arab World, conserving them and ensuring their future requirements.

4.1 Selecting an Institutional Status of Energy in the Arab World

A working paper was presented. It fell into two parts; the first part dealt with the importance of energy for the Arab Countries and the necessity of joint Arab co-operation in this field.

In a second part, the paper discussed the selection of a suitable institutional framework for joint Arab energy activities. The range of alternatives identified included the three following options:

1. Establishing an Arab Energy Organization.

2. Merging Arab energy activities into an already existing organization, preferably OAPEC.

3. Forming a Joint Arab Energy Committee.

However, it was announced during the debate that the heads of delegations (of Arab States) had already discussed the issue and come to an agreement charging OAPEC with the institutional organization of energy activities. The director of the Arab Fund took the floor to support the decision by recalling the material support already provided by OAPEC to Arab-deficit countries, besides the Organization's scientific and technical means and longer experience. Finally, an appeal was launched to the Arab Countries which have not yet constituted national energy committees to procede with there establishment.

4.2 Manpower and Training in Energy

The second round-table discussed two papers one on "Manpower and Training in Energy", and another on, "Capital, Manpower and Training Requirements for Selected Projects on Non-Oil Sources of Energy".

The first paper outlined an estimation of the manpower needed till the end of this century, the problem of migration from and into the Arab World and the training of manpower in the field of oil industries. The paper warned of a deficit in the balances of labour market in 1985.

The second paper was a case study of non-oil resources in the United States. The paper concluded that the investment ratios for alternative energy technologies are higher than those for conventional hydrocarbons on an oil equivalent basis. Also, specialized training in the new technologies will be needed although a major part of the occupational skills required are presently available in the energy industries. Therefore, the authors expect that the major source of energy will remain oil and gas for the next decade.

4.3 Investment Needed to Develop and Conserve Arab Energy Sources and to Ensure Future Requirements

Three papers introduced this third round-table. The first paper on "The Role of Energy in Arab Development and Economic Integration", somewhat disarticulated, outlined the internal and external challenges confronting energy and the joint Arab achievements in the area of energy, in addition to some inquiries and proposals.

The second paper tackled with "Capital Requirements for Energy Development". It included rough estimates of capital investment requirements of the Arab Countries for developing their petroleum sector till the end of the Century.

As to the third paper, devoted to "Oil and Economic Integration", it threw light on the great impact of oil on national economies and showed the main characteristics of Arab oil economy. The author declared that oil will remain a commodity for export.

5. A SUMMARY

It appeared clear from the papers submitted to the Conference and the discussions they generated (in the Energy Demand Section) that energy exports form the main source of revenue in the Arab World, whereas energy requirements in the Arab Countries, in their capacity as developing countries, is growing rapidly. The continuation of the growth in energy demand in the Arab countries at this rate will result in a rapid increase in consumption in general. This fact lead the Conference to stress the necessity to rationalize energy consumption and its conservation.

The importance of developing new and renewable sources of energy in the Arab countries by new techniques for its exploration appeared clearly overcoming the financial and administrative obstacles delaying their development in various countries was also clarified. At the same time, attention should continue to be given to conventional sources of energy, i.e. oil and natural gas, by conserving them and by increasing their

discovery and raising the ratio of extraction from the reserves.

With regard to oil industries, the Conference deliberations showed that the oil and gas transformation industries form an important foundation for the Arab Industrial Sector. Papers and discussions, therefore, devoted particular attention to energy industrialization, namely refining and petrochemical industries. The prominence became clear of subjects related to the efficiency of operation, maintenance and definition of Arab investment priorities, within a scientific framework, for the progress of Arab oil industry in the coming two decades so that energy will become the basic grounds for joint Arab action aiming to lay down a sound Arab base for economic and social development.

PART III

1. RECOMMENDATIONS

Regarding the subject discussed by the Conference the following:

1. With Respect to Sources of Energy

1.1 Give special care to prolonging the life span of oil and gas reserves in the Arab Countries, conserving them, increasing the proportion extracted from reservoirs and intensifying exploration efforts.

1.2 Support exploration efforts in the Arab Countries technically and financially, including the requirement of establishing national exploration joint Arab companies.

1.3 Encouraging the wider use of solar energy for domestic purposes and working to develop its use in desalination and agriculture.

1.4 Develop close Arab co-operation in the field of nuclear energy to overcome its complicated technical problems and make us of economy of scale.

1.5 Intensify efforts to collect the sources of new and renewable energy available in Arab Countries, and define goals and co-ordinate policies and programmes relating thereto.

1.6 Give attention to solid energy sources such as liguite, oil rocks and uranium, explore for them, develop their refining and provide investments while developing the technologies.

1.7 Establish a working group of electric power producers and distributors in the Arab countries to co-operate in linking the electricity grids of the Arab World, in standardizing electricity measurements and exchanging expertise and know-how. The co-ordination of this group will be undertaken by the Arab Fund for Economic and Social Development in conjunction with the Arab Industrial Development Organisation.

2. With Respect to Demand for Energy

2.1 Establish policies and take the necessary steps, including those pertaining to pricing, in order to limit the spiralling of energy consumption by indentifying the areas of waste, keeping in mind the needs of development and the requirements of those with limited income.

2.2 Choose the industrial and technical patterns upon their efficiency in consuming energy provided that the current abundance of oil is not the sole criteria for selection.

2.3 Give sufficient attention to statistics and draw up data sheets to feed periodically with the information required, on a sectoral national and Arab levels.

3. With Respect to Petroleum Industries

3.1 Enhance the role of oil in Arab development and integration, process oil into petroleum and petrochemical products by establishing utilities which correspond to Arab requirements in conjunction with the achievement of strengthened complementarity among Arab Countries in this field.

3.2 Charge the Arab Industrial Development Organisation with a study on the prospects of establishing an applied research centre to expand research in petrochemical products, particularly with respect to the use of synthetic fibres, plastics, synthetic rubber, industrial detergents, oil paints and solvents.

3.3 Recognize the necessity to give special attention to environmental problems and pollution prevention and to set suitable national standards to protect water, air and soil.

3.4 Recognize the necessity to develop Arab refineries in a way that corresponds to Arab and international markets' requirements, while raising the profitability and complementarity of downstream industries.

3.5 Study the possibility of manufacturing some necessary equipment for oil industries so that they may form the foundations for metallurgical industries needed for the construction of oil projects. Also recommend urging the Arab investment companies to establish a company for this purpose.

4. With Respect to the Institutional Status of Energy

4.1 Charge the Organisation of Arab Petroleum Exporting Countries (OAPEC) with the task of undertaking energy activity in the area of joint Arab action, including joint national, regional and Arab actions.

4.2 Establish an Arab Scientific Centre and attach it to the Organisation of Arab Petroleum Exporting Countries (OAPEC), to develop energy sources, collect data and study energy-related projects.

4.3 Form a Follow-Up Committee from the four co-sponsoring organizations of the Conference in addition to the Arab Organisation of Mineral Wealth. OAPEC shall be charged with convening the meetings of the said Committee and with running it. This Committee is entrusted with the following tasks:

(a) Present alternative formats for the participation of the Arab Countries, other than the OAPEC members, together with that of the aforementioned organizations as parties in the

organizational instrument of the joint Arab action in the area of energy.

(b) Prepare for the Third Arab Energy Conference.

5. With Respect to Energy Investment Requirements

5.1 Orient investment to oil and gas exploration and development, electricity generation, transportation and distribution projects, as well as to new and renewable energy industries.

5.2 Increase the volume of investment in general and intensify them in the sectors mentioned in the previous recommendation.

5.3 Call on the Development Funds and the Arab financial institutions to give priority to financing investment in energy industries in countries with poor energy sources.

5.4 Call on the above-mentioned financing institutions to give special care to joint projects necessary for energy, taking into consideration the Arab national interest in establishing strategic projects.

6. With Respect to Manpower Development

6.1 Call on the Arab Petroleum Training Institute to undertake a field survey of the energy sector requirements of power in collaboration with the concerned authorities.

6.2 Form a committee from among the Arab authorities dealing with manpower development to set job description of employees in the various energy sectors.

6.3 Endeavour to develop the participation of Arab manpower in energy industries while increasing productivity and by supplying the specialized Arab cadres needed in this industry and laying down future necessary programmes.

The Conference finally decided to accept the kind invitation of the Algerian Government to have the Third Conference held in the city of Algiers in June 1985.

2. APPRAISAL AND PROPOSALS

The Conference has been characterized by the main following trends:

1. A further "officialization" through enlarged role and participation both by Arab specialized organizations and Arab national states. This was noticeable in the material organization, scientific contribution, formal attendence, running of the Conference and the making of its decisions*/. OAPEC has strikingly extended its prerogatives to the whole energy area.

2. A net improvement of the scientific content of the Arab Energy Conference, both through horizontal expansion (to embrace oil and non-oil sources) energy technologies, energy production and consumption energy forecasts and oil-based and oil-related industrialization. We estimate that some thirty of the papers presented were of a remarkable quality.

Furthermore, the debates showed that there is already a very big number of energy specialists in the Arab Countries who are as much competent as aware of the energy "art" and challenges.

3. The main opening to the outside world is still limited to the developed countries. Despite the presence of an official OLADE representative at the Conference, it was an EMI official, not the representative of the Regional Latin American energy organization who was invited to contribute to the institutional round-table and to present a western case of institutional energy-oriented arrangements.

4. The Conference has come out with several decisions to organize

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*/ This was contested by some participants, especially during debates.

and develop Arab energy development co-operation and integration, which are relevant to UNIDO and important for its ongoing co-operation with the Arab organizations and states. These decisions are listed in Conference Recommendations presented in part of this report. A close examination of these Recommendations may help to update and intensify UNIDO's future energy-related activities in the Arab area.

5. Consequently, UNIDO may take initiatives so as to support the new Arab energy programme on the one hand and stimulate exchange of informations and experiences as well as co-operation between the Arab area and the other developing region in a way to sustain their respective energy strategies and efforts.

A N N E X

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