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UNITED NATIONS INDUSTRIAL
DEVELOPMENT ORGANIZATION

EXPLORATORY MISSION TO
THE ASBESTOS CEMENT FACTORY IN DAMASCUS
AND DISCUSSION OF BUILDING MATERIALS INDUSTRIES DEVELOPMENT,^{1/}

SYRIA

UNDP Ref. SYR/74/002

UNIDO Ref. TS/SYR/75/001

Report prepared for the Government of the Syrian Arab Republic

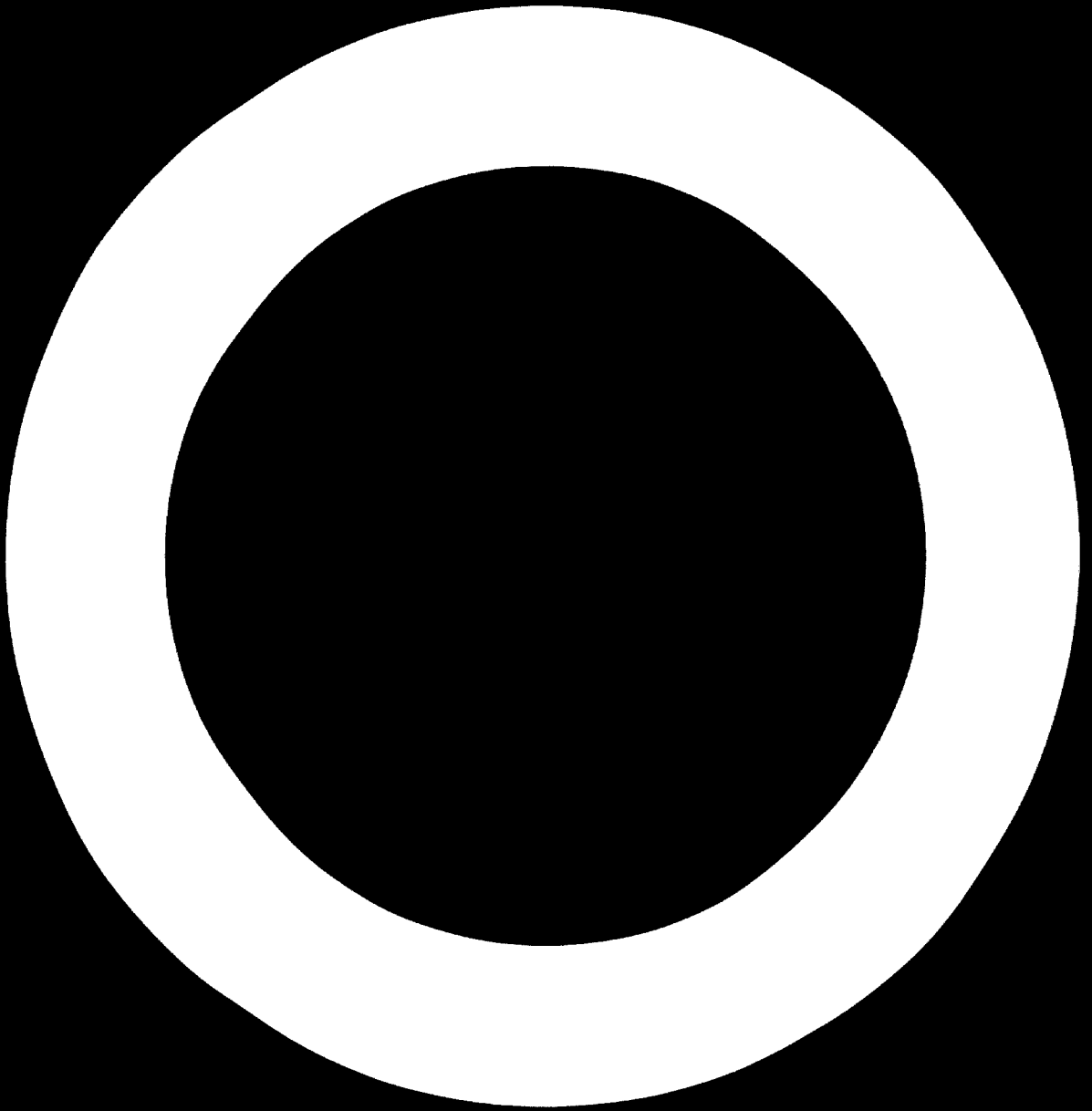
by

C.E. Rydeng, expert of the
United Nations Industrial Development Organisation
acting as Executing Agency for the
United Nations Development Programme

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id.75-6573

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I. SUMMARY

The expert examined the situation in the Asbestos Cement Factory keeping in mind the previous UNIDO assistance realized in 1970. It appeared that full use was not yet made of the expertise. This would only be possible if an asbestos cement factory expert was available to help in evaluating the report. At the same time, he should also help in introducing good work routines in the process control laboratory as well as planning and establishing a process simulation laboratory.

A proposal for assistance to the factory is attached to the report.

Also the situation in the building materials industry was examined and it was found that good prospects for further development existed. A nation wide balanced development of building materials industry would be beneficial to the country and the report suggests a UNIDO expert be fielded for a detailed evaluation of the situation. The expert is expected to consider the need for building materials over the next five or ten years and make proposals for establishment and expansion of industry utilizing local resources for production of building materials. A proposal for the above preparatory work is attached to the report and will, if used, facilitate the elaboration of a complete development plan for building materials industry in Syria for further Government consideration.

II. INTRODUCTION

The Asbestos Cement Factory in Dummar near Damascus is part of a big Cement Company which started cement production already before the Second World War. The Asbestos Cement Factory was erected in 1947/48 by an Italian Company and the production was based on imported asbestos and cement from Dummar Cement Factory.

Soon after the Asbestos Cement Factory had been started by the Italian specialists and handed over to the Syrian Company, technical difficulties occurred and the Government of the Syrian Arab Republic requested UNIDO assistance to analyse the problems and give recommendations for improvements. UNIDO fielded a Consulting Company which worked some time in the factory in 1970. During their stay, they advised about work procedures and they also produced a technical report.

The report from the Consulting Company, which includes numerous recommendations for improvements, was sent to the Government through UNDP in 1970 and UNIDO had good reason to believe that no further assistance would be needed for the asbestos cement factory.

The Industrial Technology Division of UNIDO was therefore surprised to receive in 1974 another request for assistance to the asbestos cement plant and decided after some correspondence with UNDP to organize a fact-finding mission to examine the situation and give proposals for follow-up assistance, if such action was found necessary.

The expert selected for the fact-finding mission has long experience from the development of projects for establishment and expansion of all branches of the Building Materials Industry and it was natural, besides looking into the problems of the Asbestos Cement Factory, to discuss the national situation for building materials in order to identify if UNIDO assistance would be needed in this important sector.

The conclusion of the present report is that UNIDO assistance is needed both for a nation wide development of the building materials industry as well as for the asbestos cement factory.

The above conclusion is further explained in other chapters of this report.

III. TIMING OF THE MISSION

The expert arrived on 11 June and departed 29 June 1975.

The work in the factory started the 12 June and continued 13-16 June, as well as 21-26 June. Meetings were held in the Union of Engineering and Chemical Industries on 17, 18, 19 and 26 June.

IV. OFFICIALS MET DURING THE MISSION

UNDP/UNIDO: Mr. Danisman,
UNDP Resident Representative
Dr. Yalva Kasab,
Programme Officer
Dr. Ahmed Shukri Salem,
Senior Industrial Development Field Adviser
Mr. André de Crombrughe,
Assistant Development Field Adviser

Government Organisations
and Companies:

Dr. Adib Hammania,
Union of Engineering and Chemical Industry (UNICHEM)
Mr. K. Dalloul,
Union of Engineering and Chemical Industry (UNICHEM)
Dr. Seifuddin Atfeh,
Consultant to the Ministry of Industry for Geological
Investigations and Raw Materials.
Union of Engineering and Chemical Industry (UNICHEM)
General Organisation for Executing Industrial Projects (GEOPE)
Dr. Hassan Zeno, Geologist
Union of Engineering and Chemical Industry (UNICHEM)
Mr. Yousef Hadid
General Director of National Corporation of Cement
(Cement and Asbestos Cement Plant)
Mr. Wasseim Keilani,
Technical Director of Cement Plant
Mr. Hassan Sakka,
Chief Chemist, Cement Plant
Mr. Mohamed Arwal,
Factory Manager, Asbestos Cement Plant
Mr. Ajil Jadaan,
Laboratory Chief, Asbestos Cement Plant.
Mr. Abou Rached,
Production Chief, Asbestos Cement Plant.
Mr. Ali Ismael,
Commercial Assistant
Mr. Ghaleb Koujane,
Technical Secretary

V. FINDINGS, CONCLUSIONS AND RECOMMENDATIONS FOR THE ASBESTOS CEMENT FACTORY

A) Findings

The report prepared in 1970 for the Government of the Syrian Arab Republic was in accordance with existing routines produced only in English by UNIDO. Although English is understood by some of the factory officials, these are few and seldomly sufficiently familiar with technical questions to facilitate a direct use of the report. It was therefore decided to have the report translated into Arabic. The translation of the report, however, must have been more difficult than originally anticipated, because it did not appear in the factory before around January 1975. A comparison between the Arabic and the English version made during the present mission indicate that important details have been omitted in the translation and that an early distribution of the report in Arabic would not have promoted immediate improvements. It could have been expected, especially if research and development minded engineers or scientists had had the occasion to participate in the rehabilitation programme, that the irregularities found in the Arabic version, would have led to a new study of the English version with a consequent initiation of some corrective work. Although the report was available in the factory around January 1975, it was only distributed to production chiefs and other selected personnel 22 June 1975.

It is clear that the Asbestos Cement Factory could not stop production because a report was under preparation or translation.

The Consulting Company had worked for some time in the factory and made improvements where it was possible. After the Consulting Company left, the factory simply continued the same work of making improvements to the best of their capability. Some experimentations with new grades of asbestos took place in full production scale at high costs and also modifications of the process were organized. The rehabilitation work was handicapped by several factors with negative impact on the production. The most important appears to be:

- a) the factory had no research and development minded engineers to analyze the production and give advice on production failures.
- b) the factory had an unusual turnover in the labor force involved in production and maintenance in the factory.

c) the process control laboratory had no or 100% of the production personnel and work routines or instructions were inadequate.

The above handicaps have not prevented the factory from making improvements and full utilization of the production capacity of 12000 tons corrugated sheets and 12000 tons pipes, is expected in 1975 with a reject percentage not exceeding 5%.

The above executed rehabilitation work has put a distance between the report and the factory it describes; further improvements can only be made if the old findings and recommendations are evaluated in relation to the modified factory and adapted to the new situation.

B. Conclusions

Lasting improvements and better production economy can only be expected if production control and research are used as a tool in the production to secure the best possible utilization of the existing facilities.

Research is needed for the scientific production development and planning which among other should enable the use of less costly types of asbestos fibres. Production control should be used to control the flow of materials in the process from their origin to the finished product with a minimum loss in the process.

The above should be considered instituted with UNIDO assistance in an assistance programme for transfer of know-how and some laboratory equipment.

C. Recommendations

The assistance to the asbestos cement factory should be established as soon as possible and should focus on instituting good work routines in the process control laboratory and establishment of a process simulation laboratory for development of mixes utilizing lower grades of asbestos fibres without excessive changes in the quality. The attached draft Project Data Sheet and Job Description for assistance to the asbestos cement factory give further details and should be considered and finalized for use by the Government for an official request (Annex I)

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VI. FINDINGS, CONCLUSIONS AND RECOMMENDATIONS
BUILDING MATERIALS INDUSTRY

A) Findings

Historical monuments and fragments from for instance the Roman period indicate that four basic building materials were used and satisfied all needs in the region between the Mediterranean and Euphrates, as well as outside that region.

The materials were: Lime for lime mortar and plastering, Natural Stone and Clay for bricks, and Wood together with other materials for doors and windows.

The last two thousand years have not changed much except maybe by replacing the use of lime with the use of cement, as well as the use of local wood resources with imported species.

The building technique has changed especially during the recent years and a much broader spectrum of building materials is now in use in the construction industry. The new building techniques have also made it possible to build faster and better than before and judging from the building activity in the capital area, it appears that a high priority is put by the Government on providing adequate shelters to the inhabitants in Syria. The building activity has however been kept artificially at a low level because the supply of building materials has not been able to keep up with the demand. Sometimes shortage of only one type of material has stopped the construction activity. It would therefore be beneficial for the establishment of a continuous development of housing and employment to have a well-balanced development of the building materials industry instituted.

Beside the basic materials already mentioned also other products should be considered in a nation wide development programme.

The Danascus region should for instance develop the lime industry so that cement can be saved for other purposes. By lime industry we mean production of quick lime and hydrated lime, lime mortar and sand-lime bricks. Other industries to be developed in the same region are the clay based industries producing bricks, tiles, refractories and other ceramic products. Also prefabrication based on cement, natural aggregates, pumice and other materials should be considered.

The Coastal regions should among other develop cement and lime based building materials industry as well as the clay industry.

The Aleppo region should besides the earlier mentioned industries, develop the Natural Stone industry and the asphalt industry if technically and economically feasible.

The Jazira region should develop building materials industries based on volcanic materials, Clay, Lime and Gypsum.

The above is a preliminary indication of the possibilities and further work might reveal additional types of raw materials that can diversify the development beyond our imagination.

B) Conclusions

Syria is very rich in natural resources but slow development of industry has encouraged engineers and skilled personnel to seek employment outside the country. A gradual and well-balanced development of industry and agriculture could not only create employment for new generations of Syrians but could also offer alternative and meaningful employment for experienced Syrians working abroad. Special emphasis should be placed on the establishment of a rural development which can help in reducing the migration towards the population centres.

The rural development should aim at keeping the skilled personnel in the rural areas so both industrial and agricultural development can benefit from their presence at the same time as the families are benefiting from not being broken up by untimely movement to the population centres. A first step to counteract the movement to the big cities would be to start a development of industry based on known natural resources. Building materials industry is such an industry and a coordinated development of this industry sector would have a favorable impact on both housing and employment. Employment would benefit twice because both the production and the use of the building materials require an input in manpower and engineering. It is therefore proposed that UNIDO/NDP assistance to development of the building materials industry is seriously considered for request.

C) Recommendations

The writer would suggest the assistance to start with a six months survey and planning mission for evaluation of known raw material resources and for evaluation of future needs in building materials with a consequent formulation

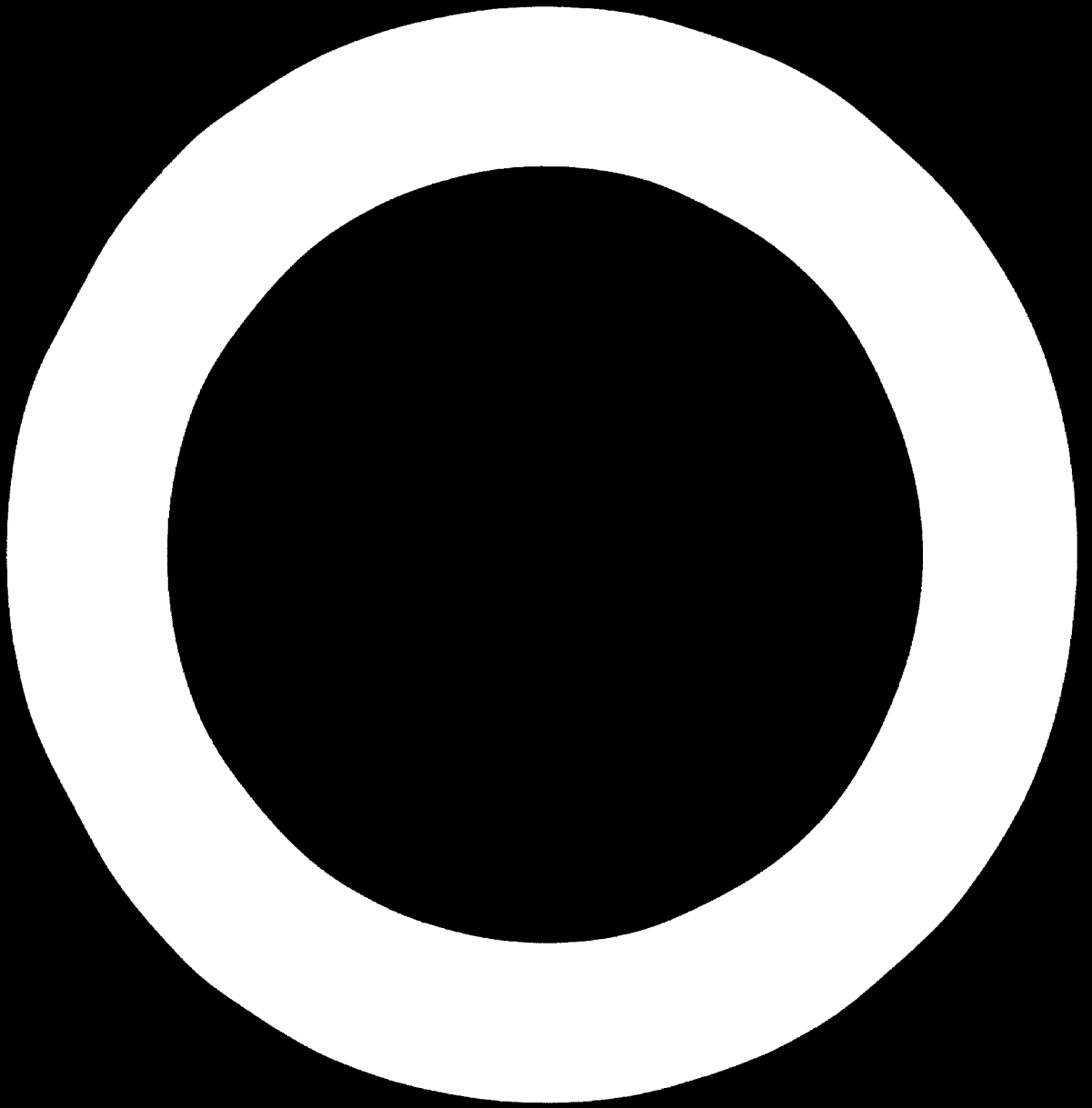
of a development plan in the form of a UNIDO/UNDP Project Document.

The above preparatory action should also permit development work in selected sectors and should, provided financing is available, continue directly into the project activities the first survey has helped to define.

The expert selected for the preparatory work should work in close cooperation with the Union of Engineering and Chemical Industries as well as UNDP. To facilitate his work, which will cover all regions of Syria and benefit from studies already made in the Euphrates region. The expert will need a suitable project vehicle, which will continue with the project as long as it is operational.

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Project Data Sheet and Job Descriptions covering the first six months assistance to development of building materials industry are attached in Annex II.

Introductory notes for Development of Building Materials Industry are attached as Annex III.



ANNEX I (A)

DRAFT

Request from the Government of the Syrian Arab Republic
for

TECHNICAL ASSISTANCE

PROJECT DATA SHEET

1. Reference Data:

- Country: Syrian Arab Republic
- Project Title: Assistance to the Asbestos Cement Factory in Damascus
- Project No.: UNDP Ref.
UNIDO Ref.
- Date and Origin of request:
- Purpose of the Assistance: to assist in the establishment of good working routines in the process control laboratory and in the introduction of routines for testing and development of alternative asbestos and asbestos cement mixes.

2. Background Information:

The Asbestos Cement Factory in Dummar near Damascus is part of a big cement company producing both Portland cement and asbestos cement pipes and sheets. The Asbestos Cement Factory started production in 1969 and experienced, soon after the plant had been taken over by the Syrian Company, technical difficulties in the production. The Syrian Government therefore requested and obtained UNIDO/UNDP assistance to examine the problems and give recommendations for improvements. The report from the Consulting Company was delivered in 1970 and sent for translation into Arabic. The translation appeared more difficult than originally anticipated and the factory had to improvise while they waited for the report. Many improvements were introduced in the factory in the interim period and the changes have put a distance between the report produced in 1970 and the factory as it stands today. It is therefore necessary to evaluate the old findings in relation to the modified factory and make new recommendations adapted to the new situation. Especially needed is an expert to help in instituting good work routines in the process control laboratory as well as the establishment of a process simulation laboratory for development of mixes utilizing lower grades of asbestos.

3. Description of the Project

The expert will be assigned to the Government of the Syrian Arab Republic to advise and assist the management of the Asbestos Cement Factory in Dummar near Damascus in the introduction of good work routines in the process control laboratory. Especially he will be expected to:

- evaluate the present work routines and give recommendations for improvements;
- advise on planning and establishment of a process simulation laboratory for development of new asbestos cement mixtures.

4. Project Budgets

Components

Duration

Costs

Asbestos Cement Factory Adviser

6 m/m

US\$ 18,000

5. Project Approved:

for UNIDO
date:

for UNDP
date:

ANNEX I (B)

DRAFT

Dr: C.W. Rydeng/ab

Dr: M.G. Watson

Request from the Government of the
Syrian Arab Republic
for

TECHNICAL ASSISTANCE

JOB DESCRIPTION

Post Title: Asbestos Cement Factory Adviser

Durations: Six months

Date required: As soon as possible

Duty station: Damascus

Duties: The expert will be assigned to the Government of the Syrian Arab Republic to advise and assist the management of the asbestos cement factory in Dummar near Damascus in the introduction of good work routines in the process control laboratory. Especially he will be expected to:

- evaluate the present work routines and give recommendations for improvements;
- advise on planning and establishment of a process simulation laboratory for development of new asbestos cement mixtures.

Language: English

Qualifications: Industrial Engineer with relevant experience from Asbestos Cement Industry

Background Information: The Asbestos Cement Factory in Dummar near Damascus is part of a big cement company producing both Portland cement and asbestos cement pipes and sheets. The Asbestos Cement Factory started production in 1969 and experienced, soon after the plant had been taken over by the Syrian Company, technical difficulties in the production. The Syrian Government therefore requested and obtained UNIDO/UNDP assistance to examine the problems and give recommendations for improvements. The report from the Consulting Company was delivered in 1970 and sent for translation into Arabic. The translation appeared more difficult than

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Background Information (contd)

originally anticipated and the factory had to improvise while they waited for the report. Fair improvements were introduced in the factory in the interim period and the changes have put a distance between the work produced in 1970 and the factory as it stands today. It is therefore necessary to evaluate the old findings in relation to the modified factory and make new recommendations adapted to the new situation. Especially needed is an expert to help in instituting good work routines in the process control laboratory as well as the establishment of a process simulation laboratory for development of mixes utilizing lower grades of asbestos.

ANNEX II (A)

Drafted: J.A. Rydang/ur

Cleared: Mr. T.G. Watson

D R A F T

Request from the Syrian Arab Republic
for
Technical Assistance
PROJECT DATA SHEET

1. Reference Data:

- Country: Syrian Arab Republic
- Project title: Assistance to development of building materials industry
- Project number: UNDP Ref.
UNIDO Ref.
- Origin and date of the request: Government letter of
- Purpose of the request: To assist in evaluating existing resources for the development of the building materials considering a progressive development of the construction activities in the Republic.

2. Background Information:

Natural resources, in one form or another, are evenly distributed in various regions of Syria and a potential for a balanced development of rural areas and population centres exist. It is therefore decided by the Government of the Syrian Arab Republic to promote a development of all regions and to create employment especially in rural areas in order to counteract the movement towards the population centres. The rural development in particular will aim at keeping the skilled people in rural areas so both industrial and agricultural development can benefit from their presence at the same time as the families benefit from not being broken up by an untimely movement to the population centres.

One contribution to the development of the rural areas is the development of the building materials industry which in itself is not wanted in the big cities for environmental reasons. The development of the building materials industry depends on the one side on the resources available and at the other side on the long term requirements for these materials. It is therefore decided by the Government as a first co-operation with UNIDO/UNDP in this field to request assistance to the elaboration of a plan for the establishment of building materials industry.

UNIDO/UNDP assistance will, through a well planned survey, lead to the formulation of a complete development idea in the form of a project document indicating and justifying the need for the development.

3. Description of the Project:

An expert will be assigned to the Government of the Syrian Arab Republic to assist in developing a complete plan for the development of building materials industry in all regions of Syria. The expert will in co-operation with Syrian colleagues examine the building traditions and make a forecast in quantity and quality for the building materials needed for the next five year period as well as he will examine the available resources and make a development proposal for building materials that should be produced in the country.

The above might be concentrated in the following duties for the expert:

- evaluate existing resources for development of building materials industries
- examine and report on present and future market prospects for building materials considering the available resources and assist in planning the required development in balance with existing resources and requirements
- assist Syrian officials in making a plan for the work co-ordination needed for making use of existing institutional facilities as well as in drafting a complete project document for UNIDO/UNDP assistance to a comprehensive development of building materials industry.

4. Project Budget:

<u>Components</u>	<u>Duration</u>	<u>Costs</u>
Building Materials Adviser	6 m/m	18.000 US\$
Project Vehicle		<u>5.000 US\$</u>
	Total	23.000 US\$

5. Project Approved:

.....
for UNIDO
Date:

.....
for UNDP
Date:

ANNEX II (B)

DRAFT

Dr: C.E. Fytton/eb
Cl: M.G. Watson

Request from the Syrian Arab Republic
for
TECHNICAL ASSISTANCE

JOB DESCRIPTION

Post Title: Building Materials Adviser

Duration: Six months

Date required: As soon as possible

Duty Stations: Damascus, with travel in the country

Duties: An expert will be assigned to the Government of the Syrian Arab Republic to assist in developing a complete plan for the development of building materials industry in all regions of Syria. The expert will in co-operation with Syrian colleagues examine the building traditions and make a forecast in quantity and quality for the building materials needed for the next five year period as well as he will examine the available resources and make a development proposal for building materials that should be produced in the country.

The above might be concentrated in the following duties for the expert:

- evaluate existing resources for development of building materials industries;
- examine and report on present and future market prospects for building materials considering the available resources and assist in planning the required development in balance with existing resources and requirements;
- assist Syrian officials in making a plan for the work co-ordination needed for making use of existing institutional facilities as well as in drafting a complete project document for UNIDO/UNDP assistance to a comprehensive development of building materials industry.

Language: English

Qualifications: Industrial Engineer with relevant experience from development of building materials industry.

Background Information: Natural resources, in the form of another, are evenly distributed in various regions of Syria and a potential for a balanced development of rural areas and population centres exist. It is the policy decided by the Government of the Syrian Arab Republic to promote a development of all regions and to create employment especially in rural areas in order to counteract the movement towards the population centres. The rural development in particular will aim at keeping the skilled people in rural areas so both industrial and agricultural development can benefit from their presence at the same time as the families benefit from not being broken up by an untimely movement to the population centres.

One contribution to the development of the rural areas is the development of the building materials industry which in itself is not wanted in the big cities for environmental reasons. The development of the building materials industry depends on the one side on the resources available and at the other side on the long term requirements for these materials. It is therefore decided by the Government as a first co-operation with UNIDO/UNDP in this field to request assistance to the elaboration of a plan for the establishment of building materials industry.

UNIDO/UNDP assistance will, through a well planned survey, lead to the formulation of a complete development idea in the form of a project document indicating and justifying priorities in the development.

ANNEX III

UNIDO ASSISTANCE TO DEVELOP BUILDING MATERIALS INDUSTRY

The slow development of industry in Syria has encouraged specialists, engineers and skilled personnel to seek employment outside the country because their home regions could not offer employment. In order to further industrial and agricultural development as well as a balanced development of the employment situation in the country, it is recommended that action is taken to develop all regions of Syria and to create employment especially in the rural areas. The rural development should aim at keeping the skilled personnel in the rural areas so both, industrial and agricultural development, can benefit from their presence at the same time as the families are benefitting from not being broken up by untimely movement to the population centres. Natural resources are evenly distributed over the country, in one form or another, and a first step to counteract the movement to the big cities would be to start a development of industry based on the existing natural resources.

We are not aware of exactly which industry should be established first because it depends on which products are deemed necessary first; and apart from sectorial studies concerning cement and other fundamental products no surveys have been made to determine long term development possibilities in the country. It is therefore our proposal that the Union of Engineering and Chemical Industries should undertake such a survey, on one side to make an inventory of all new materials available and the products that can be produced and at the other side make a forecast for which materials and which amounts would be needed in Syria over the next ten years. The survey should also give a proposal for a development plan for the same period proposing and justifying the order of priority given to various industries.

United Nations Industrial Development Organization (UNIDO) supported by United Nations Development Programme (UNDP) in Damascus can help in making such a survey covering all fields of industry provided they are officially requested by the Government of the Syrian Arab Republic to provide that assistance.

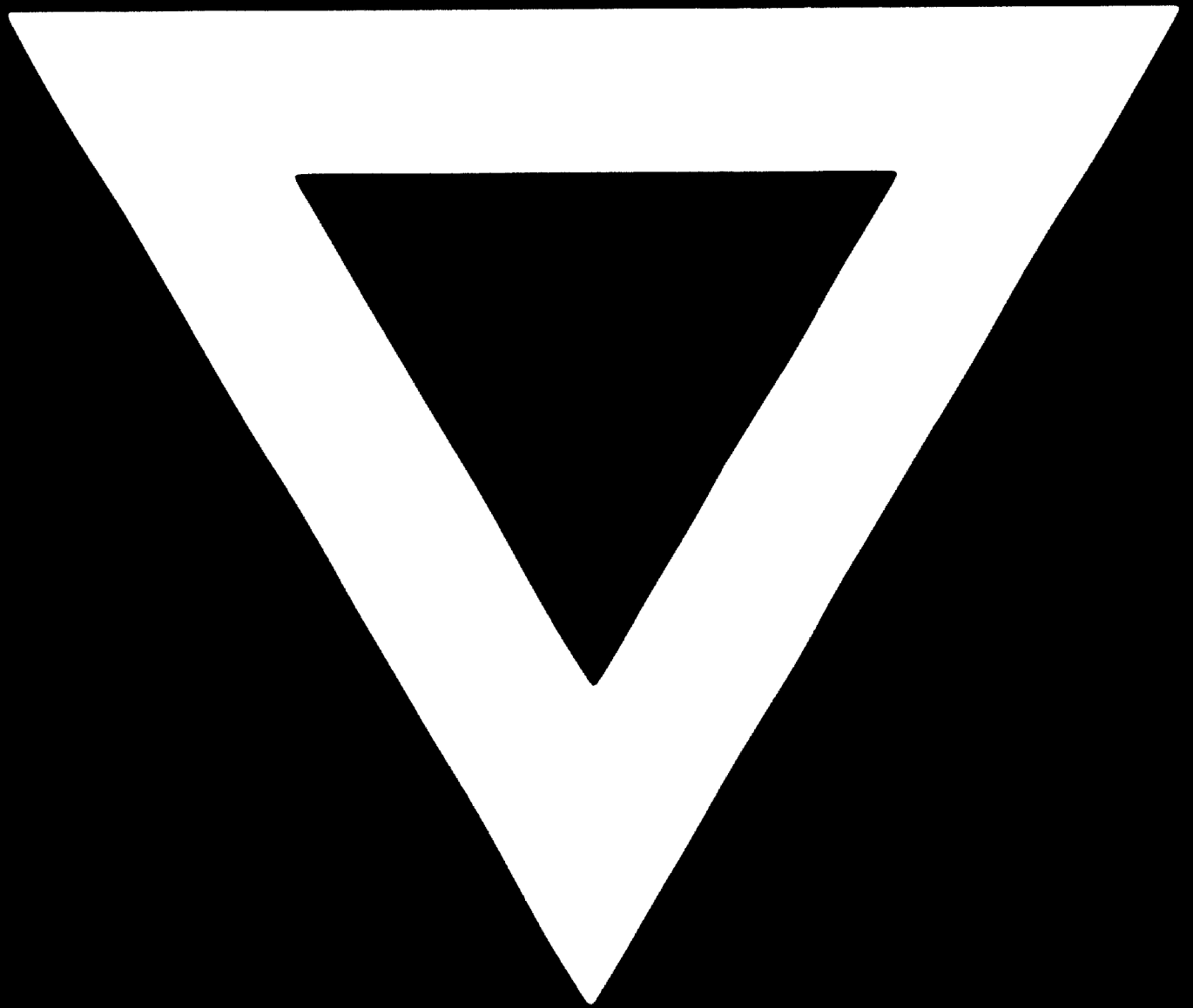
The above assistance, if materialized, is not expected to interfere with on-going bilateral or multilateral assistance, but it might supplement such assistance. It is therefore proposed to the highest authorities in the Republic by the Union of Engineering and Chemical Industries to consider the establishment of co-operation between UNIDO/UNDP and the Union to the realization of a series of industrial studies eventually leading to a series of industrial development proposals, which can be carried out with or without further United Nations assistance according to Government priorities.

It is further proposed that the first survey to be considered should be devoted to the building materials industry, because it has a multiplier effect on employment in the sense that employment is not only created in the production of the building materials; the use of the building materials usually employ a multiple of personnel. (Example: 200 men may produce 1,000 ton cement or burnt lime during 24 hours, but the use of the same quantity will employ maybe 2,000 people.)

It therefore is proposed that UNIDO/UNDP assistance to long and short term development of the building materials industry is requested. It is further proposed that the Union in co-operation with UNIDO/UNDP representatives available in the Republic prepare a draft request for the convenience of the Government of the Syrian Arab Republic indicating the magnitude and the aim of the first assistance.

A draft project document outlining the duties for one building materials expert to study the available raw materials resources in a production oriented survey as well as the need for building materials in Syria as attached to facilitate the finalization of the request. (Annex II)





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