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Non-metallic Industries  
Pilsen, Czechoslovakia

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**TECHNICAL WORKSHOP**

**ON**

**ENERGY MANAGEMENT IN NON-METALLIC INDUSTRIES**

organized by UNIDO and the UNIDO-Czechoslovakia  
Joint Programme, Non-metallic Industries, Pilsen  
from 1 through 8 November, 1989 in Pilsen,  
Czechoslovakia

**FINAL REPORT**

This report has been prepared by:

Board of Participants in the Technical Workshop  
UNIDO-Czechoslovakia Joint Programme,  
Non-metallic Industries, Pilsen

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LIST OF ABBREVIATIONS

1. RICRRMP ..... Research Institute for Ceramics, Refractories and Non-metallic Raw Materials, Pilsen
2. INTIB ..... Industrial and Technological Information Bank
3. DSA ..... Daily Subsistence Allowance
4. SIDFA ..... Senior Industrial Development Field Adviser
5. UCJP ..... UNIDO-Czechoslovakia Joint Programme, Pilsen

## I. INTRODUCTION

The Technical Workshop on Energy Management in Non-metallic Industries was organized by UNIDO Vienna and by the UNIDO-Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen, Czechoslovakia in co-operation with the Research Institute for Ceramics, Refractories and Non-metallic Raw Materials in Pilsen.

The objectives of the Workshop were to provide the participating countries with relevant information on modern systems of energy management in the energy intensive industrial sectors and to upgrade knowledge of participants of energy auditing methods suitable for the conditions in developing countries, such as by means of mobile or portable equipment. This was carried out through lectures and in-plant training courses.

Non-metallic industries belong to energy intensive ones. Expenditures on energy form a considerable part of total production costs. Prevailing number of non-metallic productions involve thermal treatment of final products to obtain their final properties. Those are for example ceramic materials, glass, refractories, red bricks, roofing tiles and others. Moreover, final kg-price of these materials is comparatively low (with some exceptions such as for example high-tech ceramics). Profitability of these productions is therefore largely dependent on an efficient use of energy. It results in the efforts of producers to lower energy consumptions or to diversify the existing production in order to obtain maximum value of final products from a unit of energy input.

Energy Management helps the entrepreneurs to achieve this goal through a sophisticated system of technical and organizational measures.

The UNIDO-Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen has a large experience in the application of Energy Management in production plants of non-metallic industries. The experts of the Joint Programme in co-operation

with the experts of the Research Institute for Ceramics, Refractories and Non-metallic Raw Materials in Pilsen elaborated a system of energy management for silicate industries. They helped to introduce it in industrial plants of numerous developing countries. Extremely successful is the programme of energy auditing which represents an integrated part of energy management. It already achieved practical results in Brazil, Sri Lanka, Vietnam and China.

Mobile diagnostic Unit of the Research Institute became also a model for the countries, participating in the UNDP/UNIDO regional project on industrial energy conservation.

The Joint Programme provides assistance to developing countries in fostering twinning arrangements between the appropriate Czechoslovak organizations and similar ones in the developing countries in carrying out individual training programmes and in organizing workshops, in testing raw materials together with the related technological research and pilot investigations leading to the selection of appropriate industrial technology. Its staff provides technical assistance to the developing countries during technical assistance missions that regard all technological issues of the development of ceramics, advanced ceramics, building materials and non-metallic minerals based industries. The Joint Programme also renders technical assistance to developing countries within its programme of energy conservation and management in the application of non-metallic minerals and rocks in agriculture and environmental engineering.

Transfer of technical and scientific information has taken up a very important place in the overall activity of the Joint Programme. The information and publications are distributed through a node of INTIB specialized in non-metallic minerals and energy conservation which is equipped for contacts with external databanks.

## II. PARTICIPANTS

17 high-qualified governmental nominees from 10 developing countries took part in the Workshop. Annex 1 to this Report presents their names, addresses and fields of their specialization.

The Workshop was of great concern for many developing countries. The participants were invited to come under the arrangement of their respective governments and institutions covering the round trip travel expenses and the Joint Programme covering their DSA for the training purposes.

Due to the schedule of departure of participants and according to their individual requests those who were in Czechoslovakia after termination of the Workshop were provided individual training programmes.

## III. LANGUAGE

The programme was conducted in English and the lectures and country reports were typed in English, too.

## IV. ORGANIZATION OF THE WORKSHOP

Organization was ensured by the Organizing Committee:

Director of the Technical Workshop	Mr. A. Lošák, Guarant of the Joint Programme, Pilsen and Member of the ČSSR/UNIDO Joint Committee for Co-operation
Programme Director	Mr. Z. A. Engelthaler, Chief Executive of the UNIDO-Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen and Director of the Research Institute for Ceramics, Refractories and Non-metallic Raw Materials, Pilsen

Technical Secretary	Mr. P. Duchek, Deputy Senior Expert of the UNIDO-Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen
Co-operators	Mr. S. Hora, Technical Director, Research Institute for Ceramics, Refractories and Non-metallic Raw Materials, Pilsen Mr. O. Řehořovský, Director for Economics and Development, Research Institute for Ceramics, Refractories and Non-metallic Raw Materials, Pilsen
General Rapporteurs	Mr. M. Nový, Expert, UNIDO-Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen Mr. F. Pecháček, Expert, UNIDO-Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen
Organization, Financing	Ms. E. Engelthalerová, Chief of Administration of the UNIDO-Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen
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Passport Arrangements, Travel	Ms. I. Hlaváčová, Clerk, Research Institute for Ceramics, Refractories and Non-metallic Raw Materials, Pilsen

Reporting, INTIB- -node co-operation	Mr. J. Žaloudek, Chief, INTIB node, UNIDO-Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen
	Mr. M. Jaraus, Expert, INTIB node, UNIDO-Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen

### Board of Participants

Chairman	Mr. Befekadu Balcha (Ethiopia)
Members	Ms. Dalila Ammar (Tunisia) Mr. Sri P. Trivikram (India)

### 1. Programme of the Workshop

The Workshop concentrated on the energy management in non-metallic industries and energy auditing. Seven planned and two ad-hoc lectures were presented by experts and professionals from research institutions and industry. They focused on energy management, technological aspects of energy conservation, energy auditing, energy saving opportunities in production of building materials, etc. The lectures took into account practical aspects of research implementation in the industry. The information provided by lectures was supported by case studies to demonstrate possibilities of energy conservation in non-metallic industries.

The lectures were completed with training video films on energy auditing. The programme of the workshop comprehended visits to research and industrial organizations, practical demonstration for the Mobile Diagnostic Unit and its equipment and practical training in energy audit on ceramic tunnel kiln.

Different Ad-hoc activities and alterations in the programme were arranged to meet the specialized demands of some participants.



The lectures and industrial study visits were completed by round-table discussions giving the participants opportunity to exchange their opinions and experience with lecturers, managers and technical staff in the organizations visited as well as among themselves.

Extensive discussions and presentation of country reports continued in the UNIDO-Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen.

The Workshop was co-chaired by the Board of Participants who elected the representative of Ethiopia as their chairman. They collaborated with the Joint Programme staff to prepare the Final Report.

## 2. Discussions

The participants enriched their scope of knowledge during the discussions with the representatives who are mentioned in the Annex 2.

## 3. Documentation and Aids

Technical Workshop Schedule

Complete set of 7 lectures

Bulletins and Booklets of the UNIDO-Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen

Publication and folder on the Research Institute for Ceramics, Refractories and Non-metallic Raw Materials, Pilsen

Technical Leaflets and Cumulative List of UNIDO-Czechoslovakia Joint Programme publications

Multilingual vocabulary for ceramic industry and non-metallic raw materials

English-Czech Practical Handbook

Writing material and handbag, protective helmet

Whenever requested, participants were presented samples of products.

4. Lectures Delivered

1. Mr. A. Lošťák: Energy Management in Czechoslovak Ceramic Works
2. Mr. Z. A. Engelthaler: Technological Aspects of Energy Conservation in Non-metallic Industries
3. Mr. J. Mueller: Role of Non-metallics in Industrial Development
4. Mr. M. Nový: Energy Auditing in Production Plants
5. Mr. P. Duchek: Energy Saving Opportunities in Production of Building Materials
6. Mr. F. Pecháček: Advanced Ceramics for Energy Conservation
7. Mr. V. Nový: Demonstration of Energy Auditing Portable Kit

Ad-hoc lectures:

- Mr. Z. A. Engelthaler: Presentation of the UNIDO-CSSR Joint Programme, Pilsen
- Mr. F. Plecháč: Activities of the Czech State Energy Authority

5. List of Locations of In-plant Trainings

Presentation of the Mobile Diagnostic Unit, Ceramic Research for Energy Conservation

Research Institute for Ceramics, Refractories and Non-metallic Raw Materials, Pilsen and its division in Horní Bříza

Practical Application of the Chlumčany Ceramic Works  
Mobile Diagnostic Unit in  
Industrial Plant

Waste Heat utilization Pilsen brewery

Institution visited on special request

Energy conservation in production of Westbohemian Ceramic  
stoneware Works Horní Bříza,  
Plant Třemošná

6. Presentation of Country Reports

Participants from Guinea Bissau, India, Yugoslavia, Nigeria, Portugal, Tunisia, Ethiopia, Egypt and Vietnam delivered their country reports which were focused on the actual and development situation in energy conservation and management and in building materials industries. The participants presented also important contributions dealing with problems in ecology linked to a fuel use (deforestation, gas imissions containing SO<sub>2</sub>, NO<sub>x</sub> etc.). Some country reports involved also a wish for closer contacts with the UNIDO/Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen or suggestions for a twinning arrangement between the Joint Programme and represented institutions from developing countries. All participants agreed that the Joint Programme Pilsen will edite the country reports as its official publications.

V. ADMINISTRATIVE ORGANIZATION OF THE PROGRAMME

1. Administrative Work

Administrative staff was engaged in organizing and arranging lectures, plant visits in factories and in the Research Institute, accommodation arrangements, local transport, social events, providing of visas and air tickets booking etc.

2. Secretariat and Audience Room

The Secretariat of the Workshop was established in the premises of the UNIDO-CSSR Joint Programme, the Audience Room in the URAL hotel in Pilsen.

## VI. EVALUATION BY THE PARTICIPANTS

The Technical Workshop on Energy Management in Non-metallic Industries offered the opportunity for the participants of 10 countries to share their experience and views together with Czechoslovak experts and to upgrade their knowledge in the field of energy management in building materials industry. This topic involved not only a sphere of energy auditing, possibilities of energy savings and conservation but also important problems in brick, cement and ceramic technologies and factors in economy linked to the energy as well as ecological impacts and possible solutions.

The contribution of Czechoslovak industries in this programme was very significant. The participants appreciated a high standard of research done in the sector of energy management and were able to recognize a practical exploitation of knowledge in ceramic industry. They discussed in institutions visited the problems related to their concern and home practice. The participants acknowledged that the information gained during visits, lectures, practical in-plant training and round-table discussions will help them in their further activities in their home countries.

Following visits to the UNIDO-Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen, to the Research Institute for Ceramics, Refractories and Non-metallic Raw Materials and ceramic plants and on the basis of fruitful discussions the participants expressed their wish to co-operate closer with the UNIDO-Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen in the future in the field of training, testing and evaluation of their indigenous non-metallic raw materials, energy auditing and management, further in assistance in establishing energy conservation programmes and centres in their home countries. They also desired to obtain published papers and technical information through the INTIB node Pilsen. All participants were also supplied with technical literature of the Joint Programme according to their special wish.

The participants in the workshop presented also some individual requests and recommendations related to the need of their respective countries.

The participants expressed their gratitude to UNIDO and the Joint Programme, Pilsen for arranging this workshop in Czechoslovakia where the authorities are very generous in sharing their knowledge and experience. They appreciated readiness extended by the organizers of the Workshop.

They were thankful to Dr. A. Lošťák, guarant of the Joint Programme, Pilsen and Director of the Workshop for his active part in the Programme.

They greatly appreciated the role of Mr. Z. A. Engelthaler, Director of the Research Institute for Ceramics, Refractories and Non-metallic Raw Materials and Chief Executive of the UNIDO-Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen for well prepared programme and his personal involvement in various activities. They further appreciated his part in the round-table discussions.

The participants expressed their gratitude to Mrs. E. Engelthalerová, Chief of Administration and to the other staff members of the UNIDO-Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen who were always helpful and contributed to the success of the workshop.

## III. CONCLUSIONS AND RECOMMENDATIONS

1. All the outlined aims of the Technical Workshop and Subnetwork Group Meeting were successfully attained. Participants appreciated very much simultaneous organization of the Technical Workshop and Subnetwork Group Meeting of the UNDP/UNIDO project (ENCONET). It brought about excellent opportunity for mutual exchange of views and experience and establishment of new professional contacts.

The participants therefore recommend to UNIDO to organize similar joint interregional events in the future, too.

2. Participants from Guinea-Bissau (Mr. Da Silva) and Hungary (Mr. István Doba from world Bank Co-ordination Office) agreed on future bilateral co-operation between their organizations.
3. Energy management and conservation in industry helps to improve energy balance of economics of all countries. International and interregional co-operation and technical assistance to promote the application of energy management in developing countries is desirable. The Energy Management Programme for non-metallic industries developed by the UNIDO-Czechoslovakia Joint Programme, Pilsen in co-operation with the Research Institute in Pilsen proved its efficiency already in many countries. The facilities are available in the Joint Programme (UCJP) for training, high-level consultations, advisory missions, raw material testing and energy auditing execution to be utilized by the developing countries. The Assistance and co-operation with the UCJP will be asked for officially by some of the participating countries, such as Vietnam, Portugal, Ethiopia, Tunisia, Guinea-Bissau, D.P.R. of Korea, Nigeria and others.
4. UNIDO Vienna is kindly requested to seek a possibility for a transfer of software for energy auditing which was developed in the Research Institute (RICRRMP) and the UCJP to developing countries.

5. Participants appreciated training video programmes prepared and presented by the UCJP and the RICRRMP in Pilsen (their list is attached to the Report as Annex 4). They request the INTIB, UNIDO Vienna and the Joint Programme Pilsen kindly to investigate possibility for the supply of copies for local national training centres in developing countries.
6. Majority of country reports revealed that some relatively cheap energy sources (e. g. firewood, heavy fuel oil) are still largely used in many developing countries despite serious problems caused, such as extreme deforestation and environmental pollution. In this connection it is desirable to investigate possible use of alternative energy sources and reduction of energy consumptions through an application of energy management tailored to the specific local conditions and needs. Where necessary the organizations from developing countries will ask a UNIDO assistance, e. g. through technical assistance projects.

Chief Executive of the UCJP explained to all participants that project formulation procedure is a very important and responsible matter. Objectives, needs and aims must be known and clearly formulated (Annex 5). For more complicated projects it is possible and recommended to ask for a preparatory assistance of UNDP by inviting the UCJP (or other) experts for the formulation of projects (preparatory assistance mission).

7. The Special Industrial Services (SIS) mission can be requested for in case of troubleshooting and urgent assistance to organizations in DC's through appropriate SIDFA at local UNDP office. This assistance is available both for governmental and private organizations on conditions of relevant governmental approval (for guidelines see Annex 5).
8. Responding to the inquiries of participants as for technical and scientific information, its dissemination and obtaining computer software on energy auditing and technical

assistance they were informed on contact addresses attached as Annex 6.

9. The participants are of the opinion that 8 days are too short to reserve sufficient time for in-plant training. Therefore, future Workshop should be extended up to two weeks and extended time used for more in-plant training.
10. The participants evaluated positively the role and assistance of the UNIDO-Czechoslovakia Joint Programme, Non-metallic Industries, Pilsen in providing technical help to developing countries. That is why UNIDO and the UCJP should:
  - a) Continue editing technical publications focused on energy auditing, management and conservation and other issues as requested by developing countries. These publications will be distributed through the INTIB node, Pilsen which can also edit and distribute titles presented by the scientists, researchers and professionals from developing countries who may have concern. Participants requested Joint Programme publications in amounts of 5 - 55 titles each. They agreed that the country reports presented can be published and distributed by the Joint Programme.
  - b) Continue editing new audiovisual programmes focused on particular problems related to energy management, development of new technologies, environmental protection etc.



LIST OF PARTICIPANTS IN THE WORKSHOP

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LIST OF OFFICIALS AND TECHNICIANS  
MET DURING THE WORKSHOP PROGRAMME

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- Mr. István Doba, Expert of the World Bank Co-ordination Office and Energy Efficiency Office, Budapest
- Mr. Miklós Hilger, Senior Research Officer, Central Research and Design Institute for Silicate Industry (SZIKKTI), Budapest
- Mr. Dénes Bulkai, Energy Efficiency Officer, World Bank Co-ordination Office and Energy Efficiency Office, Budapest
- Mr. Kristóf Domszky, Director, Energy Engineering Research and Development Service, Ltd., Budapest

POLAND

- Mr. Maciej Broniarek, Chief Specialist, Ministry of Development and Implementation, Warsaw
- Mr. Zbigniew Polesinski, Director Institute of Glass and Ceramics, Warsaw

ROMANIA

- Mr. Sergiu Motateanu, General Inspector, Ministry of Wood and Building Materials, Bucharest
- Mr. Mircea Lipsa, Consulting Engineer, Ministry of Wood and Building Materials, Bucharest

YUGOSLAVIA

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and Member of the UNIDO-CSSR Joint Com-  
mittee
- Mr. Z. A. Engelthaler, Chief Executive of  
the UNIDO-Czechoslovakia Joint Program-  
me, Non-metallic Industries, Pilsen and  
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Ceramics, Refractories and Non-metallic  
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- Mr. J. Procházka, Head of the Division,  
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- Mr. J. Chvátal, Director  
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- Mr. Z. Pácal  
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Conclusions and recommendations from the Regional Workshop on Energy Conservation in Industry for African countries (organized by UNIDO in Cairo, 1-5 October 1989)

4. **PLACE VISITED:** Cairo, Egypt

5. **DATES:** 30 Sept. - 6 Oct. 1989

30 Sept. - 6 Oct. 1989

26 Sept. - 6 Oct. 1989

6. **PURPOSE OF MISSION:**

To hold the Regional Workshop on Energy Conservation in Industry for African countries (project XA/RAF/89/611), organized by UNIDO in co-operation with the Ministry of Industry/Tabin Institute for Metallurgical Studies, Egypt.

The objectives of the Workshop were to up-grade the skills and knowledge of the participants on the application of modern technical and technological achievements in the field of energy conservation, to provide sound advice to improve energy utilization through energy conservation in industry and also to identify means of the participating African countries in the field of efficient use of energy and to prepare recommendations on this matter.

7. **ACHIEVEMENTS:**

7.1 The Workshop was held from 1 to 5 October 1989 in the Arab League Conference Hall, Cairo. 22 participants and one observer from 10 African countries attended the meeting. The following countries were represented: Algeria, Cameroon, Egypt, Ethiopia, Ivory Coast, Morocco, Senegal, Tanzania, Tunisia, Zambia.

7.2 The Workshop was opened by Mr. M. Abd El-Wahab, Minister of Industry, Mr. M. M. Abbaza, Minister of Electricity and Energy and Mr. Vassiliev, Deputy Director-General, UNIDO, who delivered an opening speech on behalf of Mr. Siazon, Director-General of UNIDO. A number of Egyptian officials participated in the opening ceremony.

7.3 Five reports on various topics of energy conservation in industry were presented by international consultants, as well as four case studies on the results of UNIDO energy conservation projects in Egypt which have been prepared by Egyptian national consultants.

7.4 Two in-plant visits, to the El-Nasr Glass & Crystal Co. and the Tabin Institute for Metallurgical Studies, were organized where the participants were acquainted with the results of UNIDO projects on energy conservation and equipment necessary for carrying out energy auditing on the plant level.

during all five days of the Workshop.

On the basis of these discussions the following main conclusions and recommendations were prepared and approved by the Workshop:

### Conclusions:

The participants of the Workshop considered the following criteria would be of high importance to sound energy practices and use:

- Creation of an appropriate institutional infrastructure which would be responsible for the design and management of the national energy conservation programme, rendering of advisory and consultancy services to industrial enterprises in both the public and the private sector and training of personnel needed for the implementation of such a programme;
- Provision of additional financial resources by governments to industry to act as a tool for promoting lower energy consumption, including establishment of a legal framework for the energy conservation system, thus enabling more oversight and regulation of energy use and consumption;
- Promotion of research and development based in areas of energy auditing and management, taking into account the pattern of energy consumption and use by the various industrial sub-sectors. Such research and development should be carried out, in closer co-operation between concerned R&D institutions and industry;
- Establishment of national data banks and information systems which will be responsible for providing information on the state-of-the-art technologies developed in the field of energy conservation for industry.

Considering the far-reaching damage of forestry and wood resources in African countries caused by the high consumption of firewood and charcoal in African households and industries, and the threat that such a practice has on the ecological balance on the continent, the participants urged the governments concerned to undertake necessary measures to avoid further depletion of those natural resources and considered that the introduction of efficient energy conservation systems would constitute a vital step in this direction.

In order to intensify regional co-operation, results and experience gained through UNDP/UNIDO projects, particularly those in African countries, should be fully utilized in the development of future energy conservation systems within the region.

### Recommendations:

In view of the high energy consumption and the imbalance of payment for most of the participating countries, it was considered most appropriate that energy conservation be approached in an integrated manner. Towards this end, the participants strongly recommended that the regional project be initiated and funded through multilateral sources with the following objectives:

- a) building up necessary manpower resources in the area of energy conservation,

- b) design and implementation of pilot energy conservation systems at the plant level in one or two energy intensive industrial sub-sectors in the participating African countries;
- c) setting up of the African regional industrial energy conservation information network;

This will enable governments and industry to deal efficiently with the following issues:

a) at the policy level:

- strengthening of the institutional infrastructure through the establishment of national energy conservation management units in the participating countries;
- creation and operation of national energy conservation data bases and information services;

b) at the enterprise level:

- operation of tailor-made energy conservation system including energy auditing and management of energy use.

Such a regional project should be designed to utilize existing expertise and institutions in African countries which already have gained experience in this area, such as the Tabin Institute for Metallurgical Studies (Egypt), the Agence de Maitrise de l'Energie (Tunisia) and the Agence Nationale pour la Promotion et la Rationalisation de l'Utilisation de l'Energie (Algeria), all of which have accumulated experience in this field during the past few years.

UNIDO was requested to take the necessary steps for initiating the creation of such a project and to ensure adequate financial support for its implementation, both from participating African countries and multilateral sources, such as UNDP, the Industrial Development Fund (IDF) and other funding sources.

In order to improve the mode of operation of the recommended network, it is suggested that proper linkage be established between it and the UNIDO-INECA system and/or other related international networks.

7.6 A number of participants of the Workshop underlined that practically for the first time they had the opportunity to discuss and exchange views on their experience and needs in the field of industrial energy conservation with representatives of other African countries.

7.7 During Mr. Vassiliev's discussion with UNDP, Cairo, it was agreed that UNIDO would continue its activities aimed at strengthening the capabilities of the Energy Conservation Centre which was established on the basis of the Tabin Institute for Metallurgical Studies. For this purpose, a new project should be prepared with possible financing from UNDP umbrella project RAB/89/022 - Support to Euro-Arab Interregional Cooperation.

8. FOLLOW-UP ACTIVITIES:

8.1 On the basis of the Workshop's recommendations, a project formulation framework (PFF) for a regional project on industrial energy conservation should be submitted to AREA for consideration.

8.2 A new project aimed at strengthening the capabilities of the energy conservation centre in Egypt should be prepared in co-operation with IO/IS/IMR and IO/T/MET and submitted to the UNDP for consideration and following allocation of funds needed.

9. DETAILED SUBSTANTIVE REPORT WILL BE PREPARED BY:

Final report of the Regional Workshop on Energy Conservation in Industry will be prepared and issued as an UNIDO publication.

UNIDO-ČSSR JOINT PROGRAMME, NON-METALLIC INDUSTRIES  
PILSEN

LIST OF TRAINING VIDEO PROGRAMMES:

- 1) Bentonites
- 2) Live Water
- 3) Energy Management in the Silicate Industries
- 4) Application Research in Non-metallic Industries
- 5) Bentonite in Agriculture
- 6) Energy auditing  
(1 VHS video cassette)

Project Development (Main Guidelines)

1. Justification and Background Information
2. Objectives - Long term and development objectives  
- Immediate objectives
3. Inputs
  - a. National input, i. e. from Government, or Private enterprise or from co-operatives
  - b. UNIDO input
    - b 1. International consultants, need expressed in w/m (working months)
    - b 2. Training - domestic  
- abroad  
  
Content of training programme
      - what field
      - duration
      - cost of training with breakdown per person and per months
    - b 3. Equipment  
testing equipment or pilot plant
    - b 4. Miscellaneous
4. Outputs  
  
For each input what will be the output
5. Activities of the Project  
  
to be defined according to objectives, inputs and the real need. UN Authorities will select the best way and place for each country. If very specific request, as an exemption, will be submitted, it must be explained and justified.

6. Budget

Costs of different inputs are evaluated and covered by:

6.1. Governmental contribution

- in kind
- in US dollars contribution shows good will  
and interest, cost sharing

6.2. UNIDO contribution in US dollars

Project Development Administration

The project concept or proposal to be submitted  
through the Governmental contacting office,

original to UNDP

copies to UNIDO SIDFA (if established) and to UNIDO,

att. Mr. G. Latortue

Director

Project Review and Appraisal Division

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