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UNIDO - Czech Republic Joint Programme,  
Pilsen, Czech Republic

# ANNUAL REPORT

## 1999

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# ANNUAL REPORT

## 1999

### ACTIVITIES IN 1999

The UNIDO-Czech Republic Joint Programme, Pilsen presents the Annual Report reviewing the activities from October 1999 to January 2000 under the Contract No. 99/229 between the United Nations Industrial Development Organization (UNIDO) Vienna and company IDEA Ltd., Pilsen.

The Joint Programme, Pilsen have carried on its activities in 1999 with the total staff of eight employees. The items specified by the terms of reference of the Contract for the reported period were successfully accomplished including "ad hoc" services of the Joint Programme.

The close cooperation of the Joint Programme, Pilsen with many research, development and production plants and enterprises in the Czech Republic contributed significantly to the overall performance in 1999. This support is reflected mainly in the 649 training man/days which were spent by 20 trainees and experts during their study tours, individual trainings and technical training courses organized by the Joint Programme, Pilsen in the Czech Republic. This activity was perfectly backed by all the enterprises as well as by research and development bodies so that all the specialists from developing countries could extend their knowledge by practical in-plant trainings. The volume of requests raised by developing countries for participation in the study tours and in the training courses organized by the Joint Programme, Pilsen, exceeded the project capacity. The same trend is expected also for the years to come.

Organization of technical workshops and meetings together with active participation of the Joint Programme staff represents an important part of the overall activity. Although all the training activities are organized on cost-sharing basis - the Joint Programme covers the local expenses of the participants in the Czech Republic and the participants pay for the international transport costs - interest of developing countries in participation of their specialists was very high. Experts of the Joint Programme participated actively in two conferences abroad (Zambia, India) and in four seminars and workshops in the Czech Republic.

The Joint Programme organized three practical training courses:

- *Small Scale Production of Ceramics*
- *Waste and Wastewater Management*
- *Processing and Laboratory Testing of Non-metallic Raw Materials and Products*

The courses represent very successful type of the technical assistance within the activities of the Joint Programme. They are organized as intensive practical training programmes, which give the participants quite a broad practical knowledge about the respective area. Interest of developing countries in participation is constantly very high, always higher than the Joint Programme capacity and highly above financial possibilities of the Project.

Nine lectures were delivered by the Joint Programme experts during technical workshops and conferences on different topics including sectors of ceramics, raw material testing and beneficiation, energy auditing, energy management, environmental protection etc. during the year 1999.

The interest of developing countries in their industrial minerals is evident from requests for preliminary testing of the samples delivered to the Joint Programme. Altogether 9 samples of different raw materials from 2 developing countries were tested by the Joint Programme. A distinguishable feature of the testing was the concern of developing countries in an upgrading of industrial minerals to enhance their market value. All the raw materials were tested from the point of view of their integrated utilization and applicability in all sectors of industry, agriculture and ecology.

The services in technical information dissemination were requested by developing countries in a stable manner in 1999. 340 particular Joint Programme publications were sent to 41 countries following their requests.

Six titles of technical publications and papers were newly edited during the year 1999. Fourteen technological inquiries were responded.

The energy management component of the Project - reflecting the priorities of UNIDO - was revitalized and modified. New software for energy auditing calculations was developed on the basis of components that will be constantly completed and updated. The new software version consists of 13 algorithms covering all basic calculation requirements of energy auditing team. The application represents an open system that can be gradually completed by further calculation blocks depending on particular needs of individual types of industries and energy audits. The updated Energy Auditing Kit was developed to be used for energy auditing in the industries of developing countries.

The UNIDO-Czech Republic Joint Programme, Pilsen continued its programme for the protection of environment. The topics involved testing of non-metallic sorbents from developing countries which are suitable for purification of waste waters, dissemination of technical publications and information as well as meetings with experts from all over the world within technical workshops and courses organized. The Joint Programme, Pilsen organized the practical training course on "Waste and Wastewater Management". The course was of great interest of developing countries. The objectives of the training programme were to provide the participating developing countries with relevant information on basic principles, methods and technologies of waste management and to give explanations and promote discussions on problems of solid wastes (municipal and industrial) and wastewaters (also both municipal and industrial).

Visits from developing countries, UNIDO and other international institutions as well as participation of the Joint Programme experts in international events constitute an important element that gives both incentives and guideline for the activities of the Joint Programme. They are used for programming the activities in the future. Very active relationships were established with Jordan, Egypt, Argentina, Romania, Lithuania and India during the year 1999.

It is evident that the budget of the Joint Programme, Pilsen was effectively utilized within all activities which are further reviewed in the following Annexes:

Annex A	Review of Accomplished Activities in 1999
Annex B	List of Countries that have received Joint Programme publications and papers in 1999
Annex C	Programmes of the practical training courses organized during the year 1999
Annex D	Terms of Reference for Technical and Training Services UNIDO-Czech Republic Joint Programme, Pilsen.

# REVIEW OF ACCOMPLISHED ACTIVITIES IN 1999

(October 1999 – January 2000)

UNIDO-Czech Republic Joint Programme, Pilsen

## I. TRAINING ACTIVITIES

### 1. PRACTICAL TRAINING COURSES

#### a) *WASTE AND WASTEWATER MANAGEMENT*

*Date:* 29<sup>th</sup> November – 21<sup>st</sup> December 1999  
*Venue:* Pilsen, Czech Republic  
*Participation:* 6 participants from 5 countries (Egypt, Jordan, Romania, Argentina, Lithuania-2)  
138 m/days  
*Conclusion:* All the activities of the course as specified in the Work Programme and Course Programme were completed (see Annex C).

#### b) *SMALL SCALE PRODUCTION OF CERAMICS*

*Date:* 31<sup>st</sup> October – 12<sup>th</sup> December 1999  
*Venue:* Pilsen - Malesice, Czech Republic  
*Participation:* 7 participants from 6 countries (India, Lithuania, Cyprus, Egypt, Jordan, Latvia-2)  
301 m/days  
*Conclusion:* All the activities of the course as specified in the Work Programme and Course Programme were completed (see Annex C).

**d) PROCESSING AND LABORATORY TESTING OF MATERIALS AND PRODUCTS**

**Date:** 30<sup>th</sup> October – 28<sup>th</sup> November 1999  
**Venue:** Pilsen, Czech Republic  
**Participation:** 7 participants from 6 countries (Egypt, India, Jordan, Latvia-2, Lithuania, Cyprus)  
210 m/days  
**Conclusion:** The programme of the course was completed successfully  
(see Annex C).

**2. TECHNICAL WORKSHOPS**

**a) REGIONAL WORKSHOP ON ENTREPRENEURSHIP DEVELOPMENT AMONG WOMEN IN MINING IN SADC**

**Date:** 18<sup>th</sup> - 20<sup>th</sup> October 1999  
**Venue:** Lusaka, Zambia  
**Participation:** 80 participants from 7 countries (Zambia, South Africa, Angola, Botswana, Namibia, Mozambique, Tanzania)  
**Conclusion:** Four lectures were presented by the Joint Programme experts:

- Ceramic Production Technologies
- Brickmaking
- Possibilities of the UNIDO-Czech Republic Joint Programme Assistance to Developing Countries
- Energy Management and Environmental Impacts on Non-metallic Based Industries.

**b) ENERGY AUDITING AND ENERGY MANAGEMENT IN GLASS INDUSTRY**

**Date:** 16<sup>th</sup> – 18<sup>th</sup> November 1999  
**Venue:** Firozabad, India  
**Participation:** 15 participants from India

**Conclusion:** Four lectures completed by practical in-plant demonstrations were presented:

- Energy Management in Silicate Industries
- Energy Auditing in Glass Industries
- Improvement of Glass Furnaces in Firozabad
- Instrumentation and Calculations in Energy Auditing

c) **WORKSHOP ON INDUSTRIAL ENERGY AUDITING AND CONSERVATION IN GHANA**

This workshop had to be postponed due to lack of funds to cover the costs of local organizers – The institute of Industrial Research, Legon, Ghana. The workshop will be organized as soon as the problem with funding will be solved.

### 3. INDIVIDUAL AND GROUP STUDY TOURS

**Study tour on glass production**

**Venue:** Czech Republic, different production plants  
**Dates:** 26<sup>th</sup> – 29<sup>th</sup> September 1999  
**Participation:** 5 participants from India  
 20 m/days

**Programme:**

- Ruckl and Sons, Nizbor - production of traditional crystal glass, hand blowing, hand cutting
- Bohemia Glassworks, Podebrady - utility crystal glass production, machine shaping and cutting
- Technical High School for Glass, Novy Bor
- AJETO Ltd., Ceska Lipa – pressed and hollow glass production
- Alexandra Glass Studio, Kamenicky Senov – art and utility glass
- Sklarske formy a zarizeni, Novy Bor – glass moulds and equipment for glass productions
- Bohemia Machine, Svetla nad Sazavou – machines for preparation of glass batch, glass refining, tools
- Hut Princ Ltd., Zdar nad Sazavou – household glass, hand-shaped metallurgical glass
- Sklopece Olomouc Ltd., Olomouc – technical advisory, design, engineering and mounting services

**Conclusion:** All the aims of the study tour were successfully attained and the possibility to see modern technological lines in production plants was appreciated by the group. The study tour was financed by UNIDO Vienna.



## **II. RAW MATERIAL TESTING**

Totally 9 samples of different raw materials from 2 developing countries were tested. Developing countries have expressed their interest in the complex utilization of non-metals as well as for various methods of their upgrading which will make their raw materials more valuable and marketable. There is a stable interest of developing countries in an assistance in traditional industrial branches of the Czech Republic - glass and structural ceramics productions, brickmaking, refractory production and industrial minerals upgrading.

The following preliminary testings of non-metallic raw materials have been already accomplished and Final Reports sent to the counterparts and to UNIDO.

**1. LITHUANIA** Six samples of raw materials for brickmaking were tested from the standpoint of their suitability for production of roofing tiles and facing bricks. Evaluation of technology and machinery is a part of the Report, together with recommendations for improvement.

6 samples

**2. BOLIVIA** Three diatomite samples were tested from the mineralogical, chemical and technological points of view. All samples were classified as good quality raw materials with a wide range of application possibilities. Utilization of the diatomites without upgrading in building materials industry was recommended. After upgrading (wet or dry process) the raw materials can be used also for more demanding applications (filter material, paint filler, carrier of catalysts, polishing material etc.). Further bench or pilot tests were recommended.

## **III. MISSIONS TO DEVELOPING COUNTRIES BASED ON UNIDO REQUEST**

### **Mission to Zambia**

The mission focused on lecturing in the Regional Workshop "Entrepreneurship Development among Women in Mining in SADC" organized by the SADC Women in Mining Trust. Four lectures were presented at the Workshop during the mission in October 1999.

### **Mission to India**

One-month assignment on energy auditing was completed as a part of UNIDO project DP/IND/90/010 "Programme for the Improvement of the Glass Industry, Firozabad". It aimed in providing consultancy on energy auditing in production units of Firozabad glass industry and in explaining the concept of energy auditing. Four lectures were presented during the mission.

#### **IV. INDUSTRIAL INQUIRY SERVICE**

The following technical inquiries were answered during the year 1999:

- Egypt – Casting body preparation
- Cyprus – Raku ceramics
- Bolivia – Natural sorbents for wastewater treatment
- Egypt – Electroporcelain production
- Lithuania – Thermo-insulating properties of brick products
- Uzbekistan – Gravel sand mining and upgrading
- Argentina – Bentonite properties for various applications
- Zambia – Limestone applications in agriculture
- Romania – Energy auditing of production kilns in brickmaking industry
- Latvia – Glaze and body relations in ceramics
- Uzbekistan – Production of concrete construction prefabricates
- India – X-ray diffractometry
- Jordan – Diatomite upgrading (removal of clayey minerals)
- India – Fly ash utilization and processing

#### **V. PUBLISHING**

JP/702/99	Energy Management in Non-metallic Based Industries and Environmental Impacts
JP/703/99	Report on Small Scale Production of Ceramics
JP/705/99	Waste Management
JP/706/99	Relation of Chemical Composition of Glass to Lead Leaching
JP/708/99	Insight into Boron Oxide and Lead Migration
JP/709/99	Changing Definition of Crystal Glass
JP/710/99	Brickmaking Clays Testing - Lithuania
JP/711/99	Raw Materials from Bolivia

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## **VI. WORKSHOPS IN WHICH THE JOINT PROGRAMME PARTICIPATED**

### ***a) Participation in the Czech Republic***

International Conference – Glass Science and Technology for the 21 <sup>st</sup> Century	held in Prague, 21.-24.6.1999
Technical Conference on Glass Production Machinery	held in Liberec, 21.-22.9.1999
Technical Workshop on Pigments in Ceramic Bodies	held in Prague, 18.11.1999
Seminar on Glass Sands	held in Novy Bor, 10.11.1999
Technical Workshop on Energy Conservation and Sustainable Development (lecture Energy Management and Industrial Energy Auditing)	held in Prague, 6.-16.12.1999

### ***b) Participation abroad***

Regional Workshop on “Entrepreneurship Development among Women in Mining in SADC”	Lusaka, Zambia from 18 <sup>th</sup> through 20 <sup>th</sup> October, 1999
Technical Workshop on “Energy Auditing and Energy Management in Glass Industry”	Firozabad, India from 16 <sup>th</sup> through 18 <sup>th</sup> November, 1999

## ANNEX B

### List of Countries that Have Received Joint Programme Publications and Papers in 1999:

Albania	Lesotho
Algeria	Lithuania
Argentina	Malawi
Bolivia	Malaysia
Botswana	Mongolia
Brazil	Morocco
Cameroon	Namibia
Cyprus	Nepal
Czech Republic	South Africa
Egypt	Romania
Ethiopia	Senegal
Georgia	Seychelles
Ghana	Sri Lanka
Guatemala	Tanzania
Guyana	The Philippines
Chile	Tunisia
India	Turkey
Indonesia	Uganda
Kenya	Venezuela
Laos	Vietnam
Latvia	

**Programmes of the practical training courses**

**organized during the year 1999**

UNIDO - Czech Republic Joint Programme, Pilsen

PRACTICAL TRAINING COURSE

"PROCESSING AND LABORATORY TESTING OF NON-METALLIC  
RAW MATERIALS AND PRODUCTS"

PROGRAMME

<u>Saturday-Sunday</u> 30/10 - 31/10	Arrivals of participants Accommodation
<u>Monday</u> 1/11	UNIDO-Czech Republic Joint Programme, Pilsen <ul style="list-style-type: none"><li>◆ assistance to developing countries</li><li>◆ technical discussions</li><li>◆ organizational matters</li><li>◆ programme of the training</li></ul>
<u>Tuesday</u> 2/11	Mining, processing and upgrading of non-metallic raw materials <ul style="list-style-type: none"><li>◆ technical discussions</li></ul>
<u>Wednesday</u> 3/11	Keramo Kožlany <ul style="list-style-type: none"><li>◆ medium scale tableware cooperative, methods of body mix preparation</li></ul> Acidic lake, Žichlice <ul style="list-style-type: none"><li>◆ residue after mining of sulphitic slates, traditional technologies of non-metallics mining and processing</li></ul>
<u>Thursday</u> 4/11	Ruckl and Sons Ltd., Nižbor <ul style="list-style-type: none"><li>◆ crystal glass production, traditional Bohemian crystal (24 % PbO hand blowing, hand cutting )</li></ul>
<u>Friday</u> 5/11	Perlite, Prague <ul style="list-style-type: none"><li>◆ production of expanded perlite, hydrophobized perlite, applications</li></ul>
<u>Saturday</u> 6/11	Study of technical publications of the Joint Programme
<u>Sunday</u> 7/11	Free time

Monday 8/11

Keramika, Horní Bříza - Kaolin Washing Plant Kaznějov

- ◆ the biggest kaolin washing plant in the Central Europe, production of filling and coating kaolins

Best Ltd., Kaznějov

- ◆ production of concrete pavement blocks, decorative items, construction materials

Tuesday 9/11

LIAS Vintřov

- ◆ expanded clay and prefabricated insulating blocks (panels) production

Wednesday 10/11

Keramika Horní Bříza, Kaolin Washing Plant

- ◆ medium scale kaolin washing plant, kaolin for ceramic industry
- ◆ Wall tile Plant, Horní Bříza
- ◆ production of wall tiles, utilization and processing of raw materials

Thursday 11/11

Calofrig, Borovany

- ◆ diatomite mining and upgrading
- ◆ feldspatic sand classification and grinding

Friday 12/11

Kaolin Hlubany Ltd.

- ◆ medium scale production of high quality kaolins for ceramic productions (chinaware, tableware, electroporcelain) and glaze and enamels manufacture

Saturday - Sunday  
13/11 - 14/11

Study of technical literature and free time

Monday 15/11

Prionord Klatovy

- ◆ decorative stones mining, cutting and polishing

Tuesday 16/11

Chlumčany Ceramic Works Ltd., Chlumčany - Feldspar Plant, Meclov

- ◆ mining and processing of feldspar
- ◆ production of carbonate fillers

Wednesday - Friday  
17/11 - 19/11

Chlumčany Ceramic Works, Chlumčany - Central Laboratory

- ◆ atomic absorption spectrophotometry
- ◆ DTA, TGA
- ◆ bending strength, flatness measurement, abrasion resistance
- ◆ absorption capacity /methylene blue/
- ◆ rotary viscometer
- ◆ microwave decomposition and analysis

Saturday - Sunday  
20/11 - 21/11

Study of technical literature and free time

Monday - Friday  
22/11 - 26/11

Westbohemian Ceramic Works, Horní Břiza - Central Laboratory

- ◆ X-ray goniometry (samples preparation, measurement)
- ◆ dilatometry
- ◆ technological tests (water content, granulometry, Bigot curve, drying and firing shrinkage, porosity, frost resistance, refractoriness, bending strength etc.)
- ◆ analytical methods for wastewater evaluation
- ◆ whiteness, abrasivity, viscosity, SEDIGRAPH

Saturday - Sunday  
27/11 - 28/11

Study of technical literature and free time

Monday - Tuesday  
29/11 - 30/11

Technical and Testing Institute of Ceramic and Building Materials, Pilsen

- ◆ complete testing of building materials, structural ceramics, refractories, raw materials etc.

Wednesday - Thursday BIJO Ltd., Pilsen  
1/12 - 2/12

- ◆ laboratories for wastes and wastewaters:
- ◆ laboratory methods used in environmental engineering and waste management

Friday  
3/12

Closing and evaluation of the course

- ◆ round table discussion

Saturday - Sunday  
4/12 - 5/12

Departure of participants



UNIDO-Czech Republic Joint Programme, Pilsen

Practical Training Course on

**"SMALL SCALE PRODUCTION OF CERAMICS"**

*Programme of the Course*

1. WEEK

Sunday - Tuesday  
31/10 - 2/11 Arrivals of participants and accommodation  
Registration of participants  
Organizational matters  
Introduction

Tuesday - Friday  
2/11 - 5/11 Practical training: Raw materials evaluation and simple methods  
of upgrading, body composition, properties of different ceramic ware,  
throwing on potter's wheel.

2. WEEK

8/11 - 12/11 Practical training: Throwing on potter's wheel, casting, model preparation,  
ceramics molding and shaping.

3. WEEK

15/11 - 19/11 Practical training: Throwing on potter's wheel, casting, surface finishing,  
mold making.

4. WEEK

22/11 - 26/11 Practical training: Mould making and finishing, glazing by brush and  
dipping, drying, kiln loading and firing.

5. WEEK

29/11 - 3/12 Practical training: Jiggering, finishing, glazing by spraying, decoration  
techniques, mold preparation.

6. WEEK

6/12 - 9/12 Practical training: Firing techniques, surface decoration.

Friday  
10/12 Evaluation of the Course  
Official Closing of the Course

Saturday - Sunday  
11/12 - 12/12 Departure of participants

### List of excursions and in-plant trainings

1. STEATIT Ltd., Klenčí pod Čerchovem  
Electrotechnical ceramics
2. West-Bohemian Ceramic Works, Horní Bříza  
Production of wall tiles, washed kaolin, stoneware pipes, refractories.
3. Chlumčany Ceramic Works, Staňkov  
Production of floor tiles, polishing of tiles.
4. Chodovia Cooperative, Klenčí pod Čerchovem  
Production of decorative hand-painted tableware.
5. Starorolský porcelán Morits Zdekauer a.s.  
Production of hard porcelain.
6. Keramo Kožlany Cooperative, Kožlany  
Production of tableware and artware.
7. Zahradní keramika, Horní Lukavice  
Production of garden pottery.
8. Mrs. Ulčová, Pilsen  
Hand decoration of tableware.
9. Mr. I. Hostaša, Starý Plzenec  
Art ceramics workshop.
10. Mr. Volf, Koloveč  
One-man company producing decorative tableware.

## PROGRAMME OF THE COURSE ON „WASTE AND WASTE WATER MANAGEMENT“

**Term of the Course:** 30.11.1999 - 21.12.1999

**Course place:** Plzeň

**Course forms:** lectures, excursions (visit of technologies), discussion

**Programme:**

**29.11.1999 (MON)** UNIDO-Czech Republic Joint Programme, Pilsen  
- opening of the Course  
- discussion of the programme  
- technical discussions  
- publications of the Joint Programme

**30.11.1999 (TUE)** Welcome, opening of the Course, programme of the Course

**Lectures:** waste, waste legislation,  
waste classification, waste categorization,  
waste management  
discussion

**1.12.1999 (WED)**

**Lectures:** waste collection, waste sorting, waste transport,  
waste dumping,  
waste incineration (combustion)  
discussion

**2.12.1999 (THU)**

**Practice:** visit of waste incineration plant (Plzeň)  
visit of waste dumping site (Vysoká, cca 10 km by Plzeň)  
visit of waste recycling technology (Stod, cca 20 km by Plzeň)

**3.12.1999 (FRI)**

**Lectures:** waste thermal treatment, waste chemical treatment,  
waste biodegradation,  
waste composting,  
discussion

**4.-5.12.1999  
(SAT-SUN)** Study of technical literature, free time

**6.12.1999 (MON)**

Lectures: waste stabilization (pretreatment),  
waste recycling, waste utilization,  
discussion

**7.12.1999 (TUE)**

Practice: visit of biodegradation company and biodegradation site (Prague),  
visit of toxic waste dumping site (cca 100 km by Plzeň)  
visit of sanitation area

**8.12.1999 (WED)**

Lectures: waste properties,  
waste vs. environment (basic types of contaminants),  
discussion

**9.12.1999 (THU)**

Lectures: waste sampling, waste testing

Practice: excursion to the analytical labs (Plzeň)

Discussion, conclusion of the first part of training programme.

## WASTE WATER MANAGEMENT

- 10.12.1999 (FRI)** Basic principles for design of wastewater treatment plant  
Pollution limits for different types of waste waters
- 11.-12.12.1999 (SAT-SUN)** Study of technical literature, free time
- 13.12.1999 (MON)** Surface water classification, pollution limits  
Technologies of waste water treatment, types of treatment plants, equipment, machinery
- 14.12.1999 (TUE)** Field study:  
1. Waste water treatment plant Klatovy (50 000 inhabitants) - municipal waste water  
2. Small scale waste water treatment plants (Javorná, Hojsova Stráž)  
3. Water treatment plant Milence (30 000 inhabitants)
- 15.12.1999 (WED)** Plzeňský projektový ateliér - design of various types of waste water treatment plants (municipal, industrial, hospital, small scale)  
Field study:  
Municipal waste water treatment plant Plzeň (180 000 inhabitants) - mechanical and biological treatment
- 16.12.1999 (THU)** Industrial waste water - classification, technologies, limits  
Field study:  
Industrial waste water treatment plants:  
- Dairy Kralovice  
- Jean Washing Company Kralovice
- 17.12.1999 (FRI)** Waste water treatment plants for family houses - technologies, equipment  
Field Study:  
Small scale waste water treatment plants - examples  
Field analytical methods
- 18.-19.12.1999 (SAT-SUN)** Study of technical literature, free time

**20.12.1999 (MON)** Natural sorbents for waste water treatment

- water polluted by oil matters
- organic pollutants
- practical demonstrations in laboratory
- fats removal
- treatment of rain water from parking places and car washing stations

**21.12.1999 (TUE)** Field study:

1. Dopravní podniky Plzeň - oil matter pollution
2. Autoservis Plasy - car washing, parking places
3. Ejpovice - technological waste water from can production  
(bentonite and biological waste water treatment plant)

Closing of the course, technical discussions

**22.12.1999 (WED)** Departure of participants

**ANNEX D**

**Terms of Reference for Technical and Training Services**

**UNIDO-Czech Republic Joint Programme, Pilsen**



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# UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

## TERMS OF REFERENCE for Capacity Building Services

**Project Number:** xx/INT/99/xxx  
**Title:** Sectoral Capacity Building,  
UNIDO - Czech Republic Joint Programme, Pilsen

### 1. AIM OF THE PROJECT

The main goal of the UNIDO-Czech Republic Joint Programme, Pilsen is to assist the developing countries in their sectoral capacity building based on the Czech experience in industrial development and transition to market economy. The Joint Programme, Pilsen provides the framework for the transfer of know-how in many industrial sectors to meet the urgent needs of industrial development of developing countries. The programme is aimed to serve the requirements of sustainable development of the developing countries with regard to poverty alleviation, small and medium scale industries, restructuring and retraining, environmental aspects, energy and mineral resources utilization in the public sector and private industries of the developing countries.

### 2. BACKGROUND AND JUSTIFICATION

The UNIDO-Czech Republic Joint Programme (JP), Pilsen has been assisting developing countries since its establishment in 1978 in various fields of industries covering activities towards natural resources management, environmentally sustainable industrial development, environment management and waste minimization, raw materials testing, energy efficiency, quality control and small and medium enterprises. Major thrust of this project will be to provide services under the UNIDO Service Modules with the aim of supporting environmentally sustainable growth and self-sustainability of developing countries through transfer of Czech know-how based on group training programmes, workshops, study tours and fellowships. Consultancy services and trouble shooting missions will be also carried out in selected technical areas.

The main framework of the subject project is in conformity with the following UNIDO Service Modules:

MODULE 8	Energy efficiency
MODULE 10	Cleaner production
MODULE 11	Pollution control and waste management

Based on above, the framework of the subject project which has been defined by UNIDO covers the





following:

- To foster technical linkages between Czech Republic institutions and similar ones in developing countries, under UNIDO's guidance;
- To arrange for fellowships, study tours, workshops, seminars, practical training courses and group training programmes, on topics identified by UNIDO both in the Czech Republic and developing countries;
- To conduct investigations of raw materials including technological research and development focusing on cleaner production, sustainable development, quality improvement, energy efficiency and waste management;
- To field experts to conduct exploratory, advisory, trouble shooting and technical assistance missions;
- To introduce the energy-efficiency techniques to industry (comprising technical assistance missions and training programmes using a portable energy auditing kit) and research for alternative uses of non-metallic minerals for reduction of energy consumption and harmful environmental impacts as well as for product quality improvement;
- To support capacity development of small and medium scale enterprises in developing countries, which are end-issues of non-metallic minerals in ceramics, building materials and other industries, as well as in agriculture and environmental protection.
- To disseminate information on emerging clean and energy efficient technologies facilitating the performance of non-metallic mineral user industries.
- To support the development and application of low-waste/no-waste technologies in developing countries;

In making arrangements for the implementation of Contract activities ( listed below JPTOR99dr.doc) the Contractor should review the Project Document and use it as a reference document in order to comply with the set objectives of the project particularly during activities carried out in developing countries.

### 3. DESCRIPTION OF REQUIRED SERVICES

#### Basic considerations:

The activities of the Contractor should be based on its experience in human resource development technical advisory servicing; data acquisition and processing know-how as well as its knowledge and understanding of the specific features of Czech industrial enterprises, banking, investment and business institutions. Services concerned with group and individual training, industrial consultancy, technical information, investment and business promotion, etc., should be provided to institutions and industrial enterprises from developing countries according to the request, rules and procedures and management guidelines of UNIDO.

The Contractor should have at least ten years of experience in rendering services in the above fields, as well as thorough knowledge and awareness of the needs of the developing countries to enable both the project staff of the Contractor and the co-operating experts to work effectively.

The experience gained in the process of transition of centralized Czech economy towards market economy conditions should be made available throughout the provision of services related to privatization, enterprise development and industrial restructuring when required. Furthermore, identification of ecological problems and effective solution generation should be a specific focus area of all activities.

#### Special Considerations and Implementation Modalities:

The project is financed through the Trust Fund of the Czech Republic. It will be implemented in line with



UNIDO's rules and procedures under the guidance and monitoring of the Project Manager assigned by UNIDO. The Project Manager will take a leading role in determining the framework and objectives of the training programmes and consultancy services to be provided under the project. The Project Manager will approve the Aide Memoirs, the programmes of the workshops and study tours and take the final decision on the selection of participants of the various training programmes to be carried out under the project. The training programmes will be monitored by the assigned staff of UNIDO specialized in the respective field who will use this opportunity to interact with participants from developing countries and identify demand driven areas of interest in line with the priorities formulated in UNIDO's Business Plan. The consultancy services and fact-finding missions will be governed by UNIDO in order to complement UNIDO's approved activities in the respective sectors and countries.

All the activities of the sub-contractor will be thoroughly monitored by the appointed technical staff of UNIDO. The sub-contractor should work closely with the Project Manager of UNIDO, as UNIDO will review and approve all technical programmes and inputs, selection of training venues, participants to training programmes and thematic areas. UNIDO staff, with responsibility as project consultants, will monitor each phase of implementation and the invoices of the sub-contractor will be cleared only upon approval of the substantive inputs. In supervising the sub-contract arrangement/activities necessary additional technical expertise will be organized by UNIDO. The details of co-operation modality between UNIDO and the sub-contractor will be agreed upon award of a UNIDO contract to the sub-contractor.

#### **Scope of services:**

The Contractor is expected to provide permanent and locally recruited staff, premises and all other necessary facilities (i.e. classroom, computer equipment, copiers, communications, audio and video facilities, industrial visits, etc.) in the above outlined wide range of activities in multiple fields of industries.

The Contractor should organize workshops and training courses as outlined below. The offer for the organization of these events should include all staff cost, fees, accommodation (single rooms in at least two star hotels), meals, conference facilities, interpretation, secretarial and logistical support, preparation of training kits and manuals, documentation, report writing, reasonable pocket money, travel and all other costs arising within the Czech Republic. Cost of international travels and expenses of trainees of the Czech Republic should not be part of the offer. They have to be borne by the trainees or their employers. In particular, the following programmes and services should be provided:

#### **a) Practical Training Courses:**

18-20 specialists from developing countries will be trained by the Contractor, through technical training courses in cleaner and energy efficient technologies, including energy auditing, energy management, waste water purification and waste management covering also techniques of raw materials and product testing :

#### **Technical Course on Waste and Waste Water Management**

Venue: International Training Centre of the Joint Programme, Pilsen

Date: August - September 1999 (max. 7 participants)

Duration: 4 weeks



**Technical Course on Small-scale Production of Ceramics**

Venue: International Training Centre of the Joint Programme, Pilsen

Date: September - October 1999 (max. 7 participants)

Duration: 6 weeks

**Technical Course on Processing and Laboratory Testing of Materials and Products**

Venue: International Training Centre of the Joint Programme, Pilsen

Date: September - October 1999 (max. 7 participants)

Duration: 6 weeks ( To be Integrated with the above training course)

**b) Three Technical Workshops on Energy Efficiency :**

The Workshops will be organized by the Contractor in three developing countries in Africa (e.g. Cameroon, Zambia, Ivory Coast, Malawi, Mozambique). In carrying the activity the Contractor will use an energy auditing kit including a user-friendly software to be used in monitoring of energy-efficiency of thermal units in the selected countries. In these workshops 40-50 specialists will be trained in energy auditing and energy management techniques.

Date: October - November 1999 (40-50 participants, 3 weeks)

**c) Individual/group study tours on the request of developing countries and/or UNIDO**

**d) Testing of raw material samples from developing countries:**

5 raw material samples received from developing countries will be tested and documented by the Contractor, by testing reports indicating upgrading possibilities, potential areas of application, and product quality specifications.

**e) Provision of consultancy/advisory and information services :**

**f) Information Services and Publications:**

Information leaflets on two topics selected by UNIDO will be prepared prepared and distributed (up to 500 copies) to the industry and institutions in developing countries. Furthermore the Contractor shall also prepare 6 technical or informative publications in areas to be cleared by UNIDO in the formats of

- A technical manual;
- Profiles for cleaner production;
- Techno-economic criteria for users;
- Training materials of workshops;
- Reports on testing procedures;
- Informative booklets on energy efficient technologies and processes;
- Joint Programme Bulletins.

**Promotion of UNIDO Joint Programme, Pilsen and its cooperating organizations/ companies at national and international levels.**

In carrying out his activities the Contractor shall use the know-how of Czech research institutions, universities and industries with the aim to meet specific requirements of UNIDO Contract and developing countries.



#### g) Trouble shooting, fact-finding and consultancy Services:

The consultant will organize minimum of 2 trouble shooting, fact-finding and consultancy missions to selected developing countries on request of UNIDO and developing countries. The aim will be to introduce information on new technologies, equipment and machinery for non-metallic mineral processing /user industries as well as to formulation of project proposals. All the missions should be well documented by submission of detailed back-to-office mission reports and project documents prepared as a result of the mission. The Contractor should provide the services of his consultants for these activities within the budget of the subcontract agreement.

#### 4. LANGUAGE AND REPORTING:

All the programmes should be conducted in English. All reports to be submitted by the Contractor to UNIDO will be in English. The reports will be submitted in five copies within 30 days after completion of each individual activity. The workshops should be conducted on the basis of specially prepared training handouts and programmes distributed to participants latest upon their arrival to the venue. These documents and list of participants including their addresses and full names should be annexed to the final report of each training programme. The raw material testing reports should be based on an outline to be defined by UNIDO. In the event of ad-hoc missions carried out by the staff of the Contractor, the mission reports should be submitted to UNIDO two weeks after completion of the mission according to a format to be provided by UNIDO prior to the mission together with its Terms of Reference. For the final versions of all documents which are already cleared by UNIDO should be provided to UNIDO in a diskette in Word or WP 6.

#### 5. PAYMENT TERMS:

The payments will be effected starting with down-payment and with instalments upon satisfactory completion of the various training activities and receipt and acceptance of the respective reports by UNIDO. The proposed payment schedule is as follows:

a	Upon UNIDO's receipt of the Contract duly countersigned and the acceptance of the programme for the first two training activities	20%
b	Upon UNIDO's acceptance and clearance of the training programmes to be organized during August-November 99, (3 courses, 3 workshops) and progress reports of the first two training courses	20%
c	Upon UNIDO's acceptance of the updated version of the energy auditing software and promotional materials and upon clearance of the Contractor's Back to Office reports after the trouble shooting and other activities in developing countries.	20%
d	Upon UNIDO's acceptance of manuscripts of publications to be disseminated and or published	10%
e	Upon UNIDO's acceptance of the progress reports on the remaining training programmes	20%
f	Upon UNIDO's acceptance of the Contractor's final report	10%

13-July-99