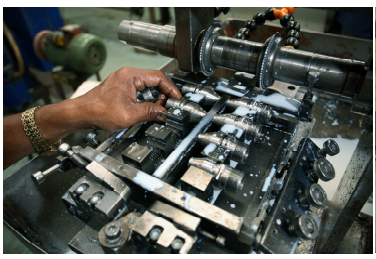
UNIDO EVALUATION GROUP

Independent Mid-term Evaluation

ICAMT

International Centre for the Advancement of Manufacturing Technology (ICAMT) India



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO EVALUATION GROUP

ICAMT

International Centre for the Advancement of Manufacturing Technology (ICAMT)

India

(UNIDO project number: US/GLO/08/010; SF/GLO/08/009)

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna, 2011

Distr. GENERAL

ODG/EVA/11/R.55

November 2011

Original: English

Table of contents

Acknowledgements

The evaluators acknowledge with thanks the information provided by numerous individuals interviewed in India and at UNIDO Headquarters.

Abbreviations

AIPMA	All India Plastics Manufactures Association
CAGR	Compound Annual Growth Rate
CIPET	Central Institute of Plastic Engineering and Technology
CMTI	Central Manufacturing Technology Institute
COINDIA	Coimbatore Industrial Infrastructure Association
DIPP	Department of Industrial Policy and Promotion
EGM	Expert Group Meeting
GoI	Government of India
ICAMT	International Centre for Advancement of Manufacturing Technology
IDB	Industrial Development Board
IDF	Industrial Development Fund
IMTMA	Indian Machine Tool Manufactures Association
IPR	Intellectual Property Rights
ITC	International Technology Centre
KPI	Key Performance Indicator
LARPM	Laboratory for Advanced Research in Polymeric Material
LCH	Low Cost Housing
MCI	Ministry of Commerce and Industry
SME	Small and Medium Enterprise
MT	Machine Tools
NCR	National Capital Region
ProDoc	Project Document
UCSSIC	UNIDO Centre for South-South Industrial Cooperation
UNIDO	United Nations Industrial Development Organization
UR	UNIDO Representative

Glossary of evaluation related terms

Term	Definition
Baseline	The situation, prior to an intervention, against which progress can be assessed.
Effect	Intended or unintended change due directly or indirectly to an intervention.
Effectiveness	The extent to which the objectives of a development intervention were or are expected to be achieved.
Efficiency	A measure of how economically inputs (through activities) are converted into outputs.
Impact	Positive and negative, intended and non-intended, directly and indirectly, long term effects produced by a development intervention.
Indicator	Quantitative or qualitative factors that provide a means to measure the changes caused by an intervention.
Intervention	An external action to assist a national effort to achieve specific development goals.
Lessons learned	Generalizations based on evaluation experiences that abstract from specific to broader circumstances.
Logframe (logical framework approach)	Management tool used to guide the planning, implementation and evaluation of an intervention. System based on MBO (management by objectives) also called RBM (results based management) principles.
Outcomes	The achieved or likely effects of an intervention's outputs.
Outputs	The products in terms of physical and human capacities that result from an intervention.
Relevance	The extent to which the objectives of a development intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donor's policies.
Risks	Factors, normally outside the scope of an intervention, which may affect the achievement of an intervention's objectives.
Sustainability	The continuation of benefits from an intervention, after the development assistance has been completed
Target groups	The specific individuals or organizations for whose benefit an intervention is undertaken.

Executive Summary

Background

The International Centre for Advancement of Manufacturing Technology (ICAMT) is one of several International Technology Centres (ITCs) of UNIDO and operates within UNIDO's ITC network. The pilot phase of ICAMT was formally launched in October 1999. Two operational phases followed, starting in August 2002 and in May 2008. The Government of India (GoI) finances the Centre through contributions to the Industrial Development Fund (IDF) of UNIDO. The Indian counterpart is the Department of Industrial Policy and Promotion (DIPP) of the Ministry of Commerce and Industry (MCI). The hosting institution for ICAMT in Bangalore is CMTI (Central Manufacturing Technology Institute, promoted by the central government).

The second operational phase of ICAMT was planned to start in May 2008 and was to last until April 2013. However, the regular project staff members were appointed only in December 2009. Total phase budget is $ 2.5m, including $ 400,000 to be mobilised from other organisations and institutions.

The ICAMT phase II immediate objectives read as follows:

- To develop and implement sectoral projects and programmes aimed at enhancing the productivity and export growth of small- and medium sized enterprises in manufacturing industry of developing countries or countries with economies in transition and India (as the hosting country) through technology-led interventions;
- To strengthen technical capacity and manufacturing capability in recipient countries through facilitating transfer and adaptation of new and relevant technologies and innovations;
- To cater to the needs of enterprises in selected manufacturing sectors by providing assistance on technology sourcing, assessment, transfers and absorption, project execution, technical consultancy and technology information services;
- To increase awareness and impact of Intellectual Property Rights (IPRs) on the manufacturing sector from a development perspective. Conduct training programs on IPR, for different types of IPR stakeholders (business, industry, academic institutions, etc.).

Independent Mid-term Evaluation

The independent mid-term evaluation was conducted between September and December 2011, in parallel to the evaluation of the UNIDO Centre for South-South Industrial Cooperation in India (UCSSIC). The purpose of the ICAMT mid-term evaluation was to provide up-to-date information on the performance of ICAMT and to enable mid-course correction. The evaluation was to produce a set of recommendations to UNIDO, the Indian Government and other stakeholders with a view to improve, if called for, relevance,

performance and sustainability. It had to identify lessons learned and good practices, applicable to other UNIDO interventions, in particular international technology centres.

Current Status of ICAMT Sectors and Activities

The ICAMT Project Document sets the target of 10 sectoral projects and programmes to be developed and related funding resources to be mobilised; 5 of which are to be implemented and finalised during this second phase. Currently, three sector projects are operational in India: (1) Machine Tools, since December 2009; (2) Plastics, since October 2010; (3) Foundry, since December 2011. Proposal have been submitted for projects in Bicycle and Bicycle Parts and Pre-fabricated Housing Technologies; further projects are planned in Stone Sector; Tool, Die and Mould Industry; Food Processing Industries; Pump, Motor & Allied Hydraulic Industries; Sheet Metal Fabrication and Manufacture of Iron Works.

The most advanced international technical assistance projects are two low-cost housing projects (LCH) in Sierra Leone and Afghanistan, though implementation has not started yet. Other projects are in various stages of planning, like brick and potteries in the Philippines, ICT applications for manufacturing industries in BRIC countries, and technology modernization of machine tool manufacturing in South Africa.

Machine Tool Sector Project in India

Currently, a total of 110 MT units are organised in 6 clusters and each cluster is managed and monitored by a separate ICAMT Technical Expert. Action plans were developed for each individual company after situational and gap analyses. Sample visits by the evaluators as well as the results of an on-line survey of the ICAMT MT project participants shows that: (i) client companies are satisfied with the support received; (ii) units were exposed to new manufacturing processes and improved designs, and owners changed their production processes and made substantial technology investments. Furthermore, (iv) inter- and intra-cluster dissemination of best practices takes place and good practices are exchanged between the clusters. Finally, participants in international fairs praised, next to the fairs proper, the fact that due to the UNIDO 'label', ICAMT was able to organise visits to machine tool companies in the country, which served as eye openers for the Indian producers.

Remaining challenges before starting to withdraw from the MT venture are: (i) concentration on intra-cluster spreading to cover more units; (ii) grooming of national and regional MT associations for the task of continuing the sector development activities post-project; and (iii) to link the international programme to existing partners and clusters.

Plastic Sector Project in India

The plastic industry sectoral project was started August 2011. So far, awareness programmes were conducted in five clusters and 100 participating SMEs were identified. Technology mapping and gap assessment of the units is under progress but developing and implementing the action plan for each company is still pending. In relation to the second

objective, introduction of eco-friendly and biodegradable plastics, preparatory activities have started.

Foundry sector Project in India

The project for the foundry industry has experienced delays and received final clearance only in December 2011. Fifty units have been identified in two clusters. It is essential that work on this project commences immediately; otherwise commitment from the private sector may be lost.

Intellectual Property Rights

The IPR Advisory Cell has been developed as part of the ICAMT web portal and the contents of the web portal have been uploaded. IPR modules have been developed and IPR training programmes were conducted at six locations for Machine Tools and at five locations for Plastic sector companies.

International South-South Projects

International activities are of equal importance to ICAMT's mandate as those directly focused on sectors of the Indian manufacturing industry – after all, the claim is to be an international and not an Indian centre.

Up to the time of the mid-term evaluation, progress with international (i.e. south-south) activities has been very limited and no genuine technical cooperation project had started yet. Looking at the present project portfolio, it is particularly surprising that only one pipeline project (in South Africa) is linked to the main ICAMT sector, i.e. the machine tools' industry. The staffing of ICAMT does not include strong international development expertise, something of a must for such challenging ventures. Furthermore, the budgets are small, especially if compared to the Indian manufacturing sector project budgets.

Project designs need, next to the purely technical components (building demo sites, purchasing machinery and train people to operate, etc.), more solid considerations in terms of economic analysis, financial viability of operations, institutional anchoring, exit and post-project arrangements, as well as up-scaling strategies.

ICAMT Relevance

The importance of the manufacturing sector for developing economies has increased over the years and a structured approach is required to choose sectors and technologies that generate a maximum of socio-economic development effects such as employment generation, technology spill overs, back- and forward linkages, etc.

ICAMT is very relevant for the identified manufacturing sectors in India and the selected sectors are relevant as they are characterised by small companies with good growth potentials. Given the increased importance for manufacturing in the Indian Competitiveness

Policy and the National Manufacturing Strategy, the ICAMT initiatives are well aligned with the strategic framework of the host country.

The international south-south technology transfer activities lag seriously behind and the relevance of the projects in the pipeline is still to be proven. Statements in this respect will only be possible once pilot projects have been conducted and, in particular, will have been up-scaled and mainstreamed by the recipient countries.

Design and Programmatic Coherence

The Centre's activities are de facto split into two components, one addressing north-south technology transfer to Indian manufacturing sectors, and the second, much smaller component, focusing on south-south technology transfer projects. The ProDoc remains ambiguous in relation to the international south-south activities: outputs and related activities in the Log Frame focus almost exclusively on Indian industrial development. This deficit should have been addressed before approving the ProDoc.

Three core achievements that promote programmatic coherence merit particular attention: (i) introduction of solid KPIs with corresponding baselines for the Indian industry interventions (but not yet for the international activities); (ii) ISO-9001:2008 certification with the full range of standardised processes and procedures; as well as (iii) design and operation of the state-of-the-art and user-friendly website.

Coordination and Management

ICAMT has a small but qualified and very motivated core team. The day-to-day management of operations in the Indian clusters is done by a current total of 16 experienced and carefully selected national industry experts. However, professional expertise for international south-south cooperation is lacking in the team.

An important open issue to be clarified is the exact nature of responsibilities and communication between ICAMT, the UNIDO Representative in Delhi and the UNIDO allotment holder in Vienna. This refers in particular to physical and financial progress reporting. As such, reporting is comprehensive, but UNIDO needs to receive progress reports on a regular basis. Also, the mission recommends less descriptive reports with more result-oriented analytical and conceptual elements.

The Steering Committee of ICAMT meets every six months in order to monitor the activities of ICAMT and provide strategic guidance. Given the importance of the SC meetings, it is advisable that the Project Manager from Vienna does regularly participate.

Efficiency

Despite delays, the evaluation assesses the efficiency of ICAMT in its Indian operations as good. Roping-in of additional funding was very efficient and the phase target of $ 400,000 has already been surpassed.

It is evident that the future core challenge will be to simultaneously manage several projects with the same efficiency and quality standards. However, the question does arise whether the small team will be able to manage the much larger workload, with new projects coming up and, in particular, as the international activities will require considerable more specialised resources.

Effectiveness

After a little less than two years of operation, overall effectiveness – in relation to the activities in the Indian industry sector projects – is assessed as good. Provided current effectiveness is kept up, the targets in India seem achievable until the end of the phase. In particular in the most advanced MT sector project, the changes in participating companies are tangible and owners have made substantial investments in new machinery and processes.

In its international activities, however, effectiveness cannot be assessed as satisfactory so far and much rests to be done in the remaining phase period.

Sustainability

In relation to the sustainability of the introduced changes and innovations in the Indian industries, directly involved companies can be expected to continue to thrive. The crucial challenge will be the further spreading of the introduced innovations beyond the first clients to the wider circle of companies within a given cluster.

In relation to the sustainability of ICAMT as an organisation, the present evaluation can but repeat the statements of the 2006 evaluation in that the issue of the long-term sustainability of ICAMT as an UNIDO ITC still remains open.

Impact

Given that the evaluation is at mid-term, it is too early for statements on final impact. The visible impact in the MT project, both with companies and associations, has been duly acknowledged. The ultimate impact-related challenge will be to ensure up-scaling and dissemination of induced innovations to non-ICMAT units in the industry clusters. The stated willingness of the participating MT companies, as evident from the on-line survey results, is certainly a strong asset in this context that should be further tapped.

Conclusions and Lessons

The main conclusion that the evaluation has arrived at is that mid-term progress on national level has been very good, but is not satisfactory on international level; the latter will require substantial additional efforts and expertise.

Main lessons learnt from the Indian industry projects, in particular the machines tool sector, are that standardised processes like ISO and 'hard' KPIs facilitate efficient and effective

implementation of parallel sector projects and that active industry associations are pivotal for both implementation and post-project sustainability of sector projects.

Main lessons learnt so far in relation to the international activities are that human resources and international expertise in the core team as well as budgets will have to be commensurate to the growing size of the portfolio. Finally, frequent change of project manager can lead to loss of institutional memory at headquarters.

Main Recommendations

Related to ICAMT operations, it is recommended to already now consider a no-cost extension to make up for long delay in starting the project; alternatively the targets to be achieved should be reduced proportionally.

The exact and detailed responsibilities and communication system should be clarified between ICAMT, on the one hand, and the UNIDO representative in Delhi and the UNIDO allotment holder in Vienna, on the other hand.

Consolidated financial information, combining expenditures from different funding sources of ICAMT, should be readily made available to all partners in order to improve mutual transparency and ease of comparison. Also, it is advised to perform an audit of the ICAMT accounts, as this apparently has not been done so far, despite the fact that the project is now operational since some 10 years.

Next to continuing to properly plan and implement the industry sector projects in India, albeit with slight adjustments, substantially more emphasis is required on south-south international activities in the remaining phase period; to this end, it is proposed to seek additional qualified and experienced expertise in designing and negotiating such projects, and considerably increase the budgets for these south-south ventures.

For the medium-term future of ICAMT, the core issue to be addressed is its overall orientation and place within the wider UNIDO ITC network. The decision to be taken is whether ICAMT is to become a 'full-fledged' UNIDO ITC, controlled and managed by UNIDO or, alternatively, a UNIDO Partner ITC that only maintains a "mutually beneficial relationship" with UNIDO and is controlled and managed by its host institution.

Related decisions to be taken are (i) whether ICAMT's modus operandi can be changed from the present phase-based and project-type financing to a long-term institutional funding structure, as well as (i) the exact nature of its collaboration and task distribution with the 'sister' organisation UCSSIC.

I.

Introduction and background

ICAMT background

Efforts to establish the International Centre for Advancement of Manufacturing Technology (ICAMT) started with a comprehensive feasibility study carried out in 1997/1998. At that time the vision for ICAMT was that of an international centre at the service of developing countries as “Global Centre of Excellence” within the UNIDO framework.

The pilot phase of ICAMT was launched in October 1999 and was followed by two operational phases, starting in August 2002 and, officially, in May 2008. The Government of India (GoI) finances the Centre through contributions to the Industrial Development Fund (IDF) of UNIDO. The Indian counterpart is the Department of Industrial Policy and Promotion (DIPP) of the Ministry of Commerce and Industry (MCI). The hosting institution in Bangalore is CMTI (Central Manufacturing Technology Institute, promoted by the central government).

ICAMT is one of several International Technology Centres (ITCs) of UNIDO and operates within UNIDO’s ITC network. It is headquartered in Bangalore, on the premises of the Central Manufacturing Technology Institute (CMTI), and has an extension office for interaction with government and business delegations in New Delhi. The small core team consists of a Director and a National Programme Officer, as well as supporting staff. For field operations, ICAMT engages qualified national industry experts, usually one expert per cluster in each of the sectors.

ICAMT was created to assist developing and transition countries in enhancing the technological performance and productivity of manufacturing industry, quality of goods and competitive position at global markets. ICAMT basically caters to the needs of small and medium sized companies and institutions and is active in the fields of technical assistance, technology upgrading and productivity enhancement as well as market development. In a range of manufacturing sectors, ICAMT conducts technology assessments and provides technical assistance and advisory services to individual enterprises. It also engages in business partnership development through the organization of visits of Indian producers to national and international trade fairs or companies and provides training on manufacturing technology related topics.

ICAMT Phase II

Based on the results of an independent external evaluation of phase I in 2006, a revised framework for phase II of ICAMT was prepared by DIPP and UNIDO, originally with a time frame of 5 years. The second operational phase was planned for an official start in May 2008

and was to last until April 2013. However, the regular project staff members (Project Director and National Programme Officer) were appointed only in December 2009, giving the project a de facto operational phase of only 3 years and four months. It has therefore been proposed to consider a no-cost extension, as far as the budget allows.

The second phase is funded from two UNIDO budget lines: (1) SF/GLO/02/004 with $600,000 (being an uncommitted balance from phase I) as well as (2) US/GLO/08/010 with $ 1.5m. In addition, $ 400,000 is to be mobilised from other organisations and institutions, resulting in a total ICAMT phase II budget of $ 2.5m.

The phase II immediate objectives read as follows:

- To develop and implement sectoral projects and programmes aimed at enhancing the productivity and export growth of small- and medium sized enterprises in manufacturing industry of developing countries or countries with economies in transition and India (as the hosting country) through technology-led interventions;
- To strengthen technical capacity and manufacturing capability in recipient countries through facilitating transfer and adaptation of new and relevant technologies and innovations;
- To cater to the needs of enterprises in selected manufacturing sectors by providing assistance on technology sourcing, assessment, transfers and absorption, project execution, technical consultancy and technology information services;
- To increase awareness and impact of Intellectual Property Rights (IPRs) on the manufacturing sector from a development perspective. Conduct training programs on IPR, for different types of IPR stakeholders (business, industry, academic institutions, etc.).

The ProDoc defines the expected phase II outcomes as follows:

- Around 50 model units in each identified manufacturing sector are to be created through firm level interventions with main emphasises on technology upgradation.
- Over 150 Expert Group Meetings (EGM), workshops, seminars and training courses are to be organised and conducted for policy makers, entrepreneurs, managers of R&D institutes and technology centres and other specialists from participating countries dealing with different issues of transfer of new technologies in manufacturing sectors.
- Over 3,000 specialists are to be trained on advancement in this area and other aspects related to new technology promotion, as a result of these activities, transfer and application, policy and strategy formulation and implication.

Based on a Steering Committee decision, key performance indicators (KPIs) were to be formulated; at this stage, KPIs are available for the Machine Tools (MT) and Plastics' sectors.

II.

Independent mid-term Evaluation

The mid-term evaluation was included in the Work Programme of the UNIDO Evaluation Group for 2011 and approved by the Executive Board and agreed by the Steering Committee in January 2011. The evaluation was conducted between September and December 2011, in parallel to the independent evaluation of the UNIDO Centre for South-South Industrial Cooperation in India (UCSSIC). The team for both evaluations consisted of Andreas Tarnutzer (international consultant and team leader) and Krish Rangarajan (national consultant).

Rationale and purpose

The purpose of the independent ICAMT mid-term evaluation was to provide up-to-date information on the performance of ICAMT and to enable mid-course correction. In line with the UNIDO Evaluation Policy Paragraph 8, the evaluation aimed at determining the relevance, impact, effectiveness, efficiency and sustainability of the project.

More specifically the mid-term evaluation was to:

(a) assess the past and continuous relevance of ICAMT, of the activities promoted, outputs produced and outcomes achieved;

(b) assess the past and continuous relevance of UNIDO's support to ICAMT;

(c) suggest mid-term course corrections/improvement in the areas of project strategy, implementation, policies, approach, etc., which ICAMT should pursue during the remaining period of the project;

(d) assess the extent to which the revised framework and new strategy of ICAMT have improved its performance;

(e) assess the efficiency of implementation: quantity, quality, cost and utilization of resources, timeliness of UNIDO/counterpart inputs and activities, and ICAMT management and coordination, including the roles of the Steering Committee;

(f) assess the extent to which outputs have been produced and outcomes achieved, as compared to those planned (effectiveness);

(g) assess the impact and sustainability of results, effects and benefits.

The mid-term evaluation was to produce a set of recommendations to UNIDO, the Indian Government and other stakeholders with a view to improve, if called for, relevance,

performance and sustainability. It had to identify lessons learned and good practices, applicable to other UNIDO interventions, in particular international technology centres.

As per September 2011, the ICAMT project in Machine Tools was fully operational and operations in Plastics had commenced. Recently, the Foundry project has also been approved in December 2011. Other sector projects are either in advanced stages of proposal submission or still in development stage. Consequently, the mid-term evaluation focused foremost on host country based activities in Machine Tools and Plastics, where field level observations could be made and key performance indicators (KPIs) have been developed. As implementation of international technical cooperation activities has yet to start, these could only be assessed based on available documentation and related discussions.

Approach and methodology

The evaluation was conducted in compliance with UNIDO's Evaluation Policy and its Technical Cooperation Guidelines. It assessed the achievements of ICAMT against its objectives, as established in the Project Document (ProDoc) and other relevant documents, including a re-examination of the relevance of the objectives and of the design. As far as possible, relevant factors were identified that have facilitated or impeded the achievement of the objectives.

In terms of data collection, the evaluation team made use of a range of different methods. An extensive desk review was undertaken focusing foremost on the Centre and available progress reports. A wide range of additional documents was consulted, including Back to Office Reports, Agendas and Minutes of Steering Committee meetings, etc.

Ahead of the mission, the team leader conducted individual interviews with UNIDO headquarter staff. These took place in Vienna on 20 and 21 September 2011. Actual fieldwork in India was conducted from 30 September to 13 October 2011. Main locations visited were Bangalore, Delhi National Capital Region (NCR) as well as Coimbatore and Chennai.

During the mission, extensive discussions were held with DIPP representatives, the UR and other UNIDO staff in Delhi, as well as ICAMT staff. In-depth interviews were held with six Technical ICAMT Experts and representatives of four partner Associations, as well as 12 beneficiary machine tool and plastic companies that were randomly selected in the clusters visited.

In parallel, an Internet-based survey was conducted, where 105 of the 110 Machine Tools company clients of ICAMT were contacted. 97 companies, or 92% of those addressed, responded in time. The complete results of the survey are provided as Annex 1.

A presentation of preliminary findings was given to representatives of DIPP, UNIDO and ICAMT in Bangalore on 13 October 2011. A presentation at UNIDO headquarters in Vienna was arranged on 12 December 2011; on the same date a representative of the Permanent Mission of India in Vienna was also briefed.

The evaluation team would like to gratefully acknowledge the valuable contributions made in meetings and during visits to production and field sites by beneficiaries, clients, government officials, project management as well as officials from DIPP and UNIDO, including the staff of ICAMT. Special thanks are due to Ms S. Lederer, a UNIDO consultant who assisted with the Internet survey and very capably managed the technicalities of the on-line study. Without their valuable inputs, the present report would not have been possible. Any errors or omissions are of course the sole responsibility of the authors.

The mission's TOR is provided as Annex 2. Annex 3 lists organisations and people met during the mission; Annex 4 specifies the main planning documents consulted.

III.

Status of ICAMT Sectors and Activities

ICAMT portfolio development

The ICAMT ProDoc sets the target of 10 sectoral projects and programmes to be developed and related funding resources to be mobilised; 5 of which are to be implemented and finalised during this phase.

Currently, ICAMT is working in or planning to work in 11 sectors. After less than two operational years of the current phase, the situation is as follows:

A) Operational in India

1. Since December 2009: Machine Tools (organised in six clusters with a total of 105 participating enterprises)
2. Since October 2010: Plastics (organised in five clusters with a total of 100 participating enterprises)
3. Since December 2011: Foundry (organised in two clusters with a total of 50 participating enterprises)

B) Advanced stage in India (proposal submitted)

4. Bicycle and Bicycle Parts Industry
5. Pre-fabricated Housing Technologies

C) Planning stage in India

6. Stone Sector
7. Tool, Die and Mould Industry
8. Food Processing Industries
9. Compendium of Appropriate Indian Technologies, suitable for transfer to LDCs (joint project with UCSSIC)
10. Pump, Motor & Allied Hydraulic Industries
11. Sheet Metal Fabrication and Manufacture of Iron Works International Technology Providers

D) Pipeline of international technical assistance projects of the current phase

1. Sierra Leone: Demonstration cum production centre for low cost building materials using locally available resources
2. Afghanistan: Post-conflict Rehabilitation of the Housing Sector; Existing Production Capacity in Stone Sector and Technology Upgradation Programme
3. Philippines: Programme for Development of Brick and Potteries Industry
4. BRIC countries: Joint initiative with SITPC, China, for Promoting ICT Applications for Manufacturing Industries
5. South-Africa: Technical services to ‘Trade and Investment House' for Technology Modernization of Manufacturing Clusters

IV.

Machine Tool Sector Project in India

Project design and implementation mechanism

Based on an earlier programme started in 2002, the phase II activities in the machine tool (MT) industry started in December 2009, immediately after ICAMT became re-operational. The sector has by far made the best progress; in fact, it is the only sector where substantial headway has been made on the ground. The objective of the ICAMT MT project is to strengthen the competitiveness of the Indian machine tool industry and enhance cost effective production of high quality machine tools through technology upgradation, which should lead to growth and enhanced share of the Indian machine tool industry in the global market.

The total budget for the MT sector project is $ 2.5m. The IDF contribution is $ 1m; $ 0.75m each is made available by the Ministry of Small and Medium Enterprises and, as industry contribution, by the Indian Machine Tool Manufactures Association (IMTMA), respectively.

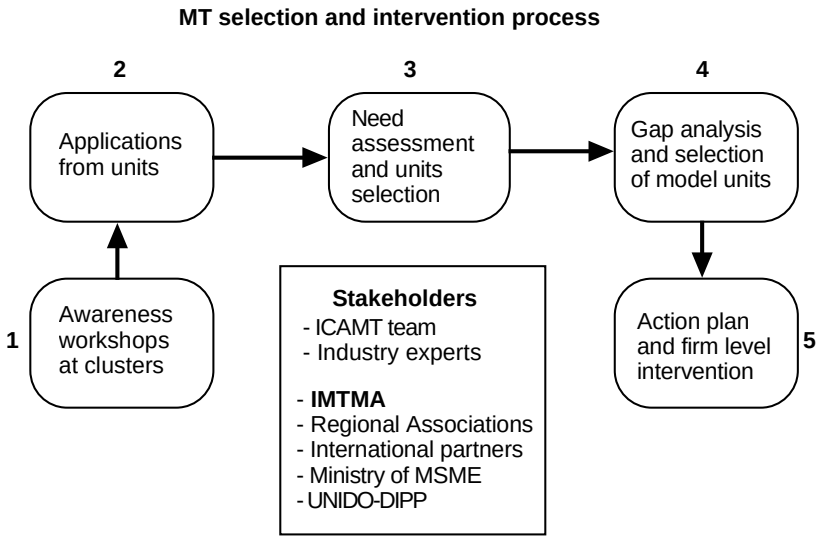
Around 2000 small and medium MT enterprises are spread across nine identified clusters in India. IMTMA is the leading national industry association and the ‘anchor’ association and co-financier for ICAMT. The respective Regional Associations are equally involved, wherever ICAMT supports a cluster. However, firms can participate irrespective of their membership with industry associations. The selection criteria for the individual companies or units have been set as follows:

1. Unit should be an SME located in and around the target cluster area/region
2. Unit should be in the business of manufacturing and marketing relevant product groups, components and subsystems as per sector specific definitions of respective counterpart industry associations.
3. Unit Chief Executive / Proprietor should be
    - Willing to fully participate in UNIDO ICAMT programme
    - Committed to implement the study findings and initiatives
    - Amenable to reorient and expand their operations
4. Concurrence of local counterpart organisations
5. Willingness to share company specific data for monitoring KPI parameters

6. Units should represent major range of products in industry

The following flow chart illustrates the five main steps from first awareness workshops in a cluster to the final firm-level intervention in the selected units, involving different stakeholders during the process.

Figure 1: selection and intervention process



Currently, a total of 110 MT units are organised in 6 clusters and each cluster is managed and monitored by a separate ICAMT Technical Expert.

- Pune cluster: 20 units
- Bangalore cluster: 15 units
- Rajkot cluster: 25 units
- Ludhiana cluster: 30 units
- Hyderabad cluster: 10 units
- Delhi NCR: 10 units

A strong point of ICAMT's operation is the fact that key performance indicators (KPI) have been developed for the MT sector and are being closely monitored. These KPIs were taken into account and verification with the sample units visited by the evaluation team validated achievement of targets.

Five of the seven KPIs relate directly to the performance of the client units and their sector and are 'hard' in that they address the core parameters of industrial development (and it is an

achievement that companies are willing to open their books to outsiders, a fact that is certainly influenced by the perceived 'neutrality' of ICAMT/UNIDO):

1. Percentage growth in production (units participating)
2. Percentage increase in number of CNC machines produced (units participating)
3. Percentage export growth (units participating)
4. New products developed
5. Percentage increase in share of Indian machine tools industry vs. domestic consumption

The remaining two KPIs relate to direct ICAMT outputs:

6. Specialised training on design, technology productivity quality, etc. (in man days)
7. Number of specialists (participants from machine tool units) trained on design, technology, productivity, quality, etc.

A comprehensive database on each of the participating units has been established after a baseline survey was conducted in 2009. The database is regularly updated and the results are provided as quarterly progress assessments by ICAMT. The Centre is thus in a position to provide fact-based information on the KPIs for each company that measures the core elements of their industrial performance.

The actual evaluation of companies in relation to the KPIs is being measured in terms of industry Compound Annual Growth Rate (CAGR) versus the individual firm's CAGR. These are published on the ICAMT internal website for comparison by stakeholders.

Currently, ICAMT runs a design cell, which caters to the industry for training on CMC programming for turning and machining centre. It is basically a backhand support for designers to validate their designs.

Progress so far

In terms of ICAMT interventions, the central element is the action plans developed for each individual company after the responsible ICAMT national industry expert – employed on a time-bound contract – has made a situational and gap analysis. In most of the companies visited, the action plans committed the owners to substantial investments in new machinery, etc. It is again the task of the expert to coach the units in implementing the action plan as well as to monitor and report on progress made.

Expert group meetings were held and, jointly for the cluster units, different training programmes were organised and workshops conducted on latest technologies, cost-cutting processes, IPR related issues, etc. With IT support, ICAMT has trained in the design cell the workforce of the units on machine tool components and machining processes.

In terms of targets for expert meetings, workshops, seminars and trainings (outputs 2.1 and 2.2), ICAMT has not yet delivered 50% at this stage. 28 meetings, seminars and workshops were conducted so far, as compared with the target of 150; 600 specialists were trained

against a target of 3000. Though only at mid-term, it is evident that ICAMT has to catch up to meet the outputs expected during the phase.

The mission visited eight units in the Delhi, Bangalore and Coimbatore clusters in order to receive first-hand and in-depth accounts from a sample of client firms. A summary of main findings of these visits is as follows:

- First and foremost, company owners were satisfied with the support received; some mentioned in particular the huge difference in flexibility and professionalism of ICAMT, if compared to standard government support programmes.
- Units were exposed to (i) new manufacturing processes, and (ii) improved designs of specific MT elements. Subsequently, they made deep reaching changes to their production processes and the interventions motivated them to make more investments in technology for expansion in the coming years.
- Inter- and intra-cluster dissemination of best practices takes place. Model units under the project interact with other firms on best practices adopted and, for instance, allow other units to use their machines for design testing. Good practices are exchanged between the clusters through the regular meetings between the Cluster Industry Experts.
- Participants in international fairs in USA and Germany, organised by ICAMT but self-financed by the companies, particularly praised, next to the fairs proper, the fact that due to the UNIDO 'label', ICAMT was able to organise visits to machine tool companies in the country, which served as eye openers for the Indian producers.

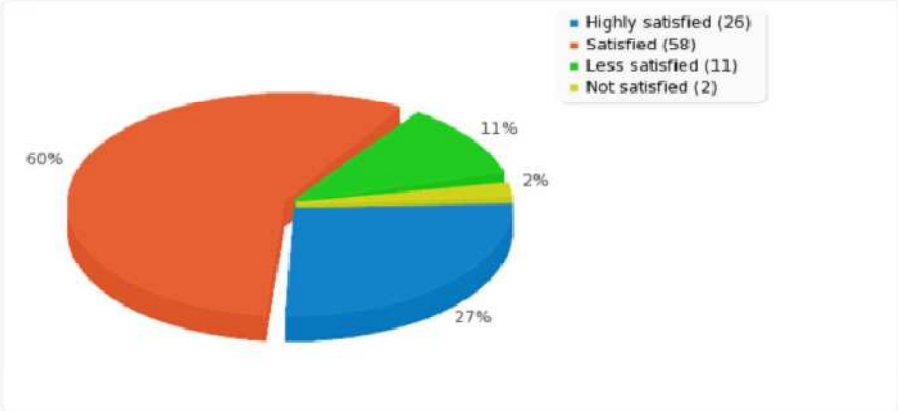
This positive but still anecdotal evidence resulting from the unit visits by the evaluation team is strongly confirmed by the results of the on-line survey of the ICAMT MT project participants, as can be seen from the responses to the question on overall satisfaction with the ICAMT intervention:

Figure 2: Customer satisfaction in MT sector

Field summary for q3

Are you satisfied with your involvement in this project?

Answer	Count	Percentage
Highly satisfied (1)	26	26.80%
Satisfied (2)	58	59.79%
Less satisfied (3)	11	11.34%
Not satisfied (4)	2	2.06%
No answer	0	0.00%



Out of 97 respondents, 87% are either highly satisfied or satisfied; only 11% are less satisfied and 2% not satisfied.

Conclusions and recommendations on the Machine Tool sector project

ICAMT has given an excellent start to the machine tool sector project by involving committed firms, industry associations and qualified national and international experts, and the results are clearly visible. For the participating companies the intervention has made a real difference and they are more motivated and better positioned for future growth. This positive assessment was fully corroborated by the results of the on-line survey.

It can be concluded that the MT sector project will soon have reached its mature stage. Consequently, for this sector, four main challenges remain for ICAMT before starting to withdraw from the venture:

- Ensure that the learnings made when implementing the MT sector programme are well analysed and fully applied to the new sectors that recently started or will start soon;
- ICAMT should now concentrate foremost on intra-cluster spread of the work for covering more units and replication of the learnings to the entire cluster;
- In order to prepare for the post-project period, the national and regional MT associations are uniquely placed to take over; consequently, emphasis should be put on grooming them for the task of continuing the sector development activities, at least as far as their resources permit.
- The international programme of ICAMT must now be linked to the existing partners and clusters, with an orientation to promote export of successful technology packages to other countries where demand exists to improve the machine tool industry. The planned collaboration with the South-African ‘Trade and Investment House' for technology modernization of manufacturing clusters should therefore receive priority.

V.

Plastic Sector Project in India

Project design

The plastic industry is the second sectoral project, which should have started in October 2010 but experienced a delay of 8 months up to August 2011. The main objective is to strengthen national competitiveness of the plastic industry in India and also to create awareness on innovative, eco-friendly, biodegradable plastics.

Its basic modus operandi follows the pattern of the MT project, i.e. operates with clusters, cluster industry experts as well as with the same identification and analysis process described in fig. 1.

Total project budget is $ 1.1m. $ 400,000 derives from the IDF; the Department of Chemicals and Petrochemicals contributes $ 400,000 and the industry contribution is $ 300,000. The Central Institute of Plastic Engineering and Technology (CIPET), an autonomous institution under the Ministry of Chemicals and Fertilisers, is involved as technical partner through its Laboratory for Advanced Research in Polymeric Material (LARPM). The All India Plastics Manufactures Association (AIPMA), a national industry association, is designated for implementation of different initiatives at company level.

The project targets 100 SMEs across five plastic clusters in the country:

- Ahmedabad cluster: 20 units
- Delhi NCR cluster: 20 units
- Bhubaneswar cluster: 20 units
- Chennai cluster: 20 units
- Mumbai cluster: 20 units

The following KPIs were developed for this project:

1. Percentage growth in production (units participating)
2. Percentage export growth (units participating)
3. Percentage quality improvements (reduction of waste/rejections)
4. Number of specialists trained on processing technology, GMP, QMS
5. Implementation of quality management system & best practices

6. Percentage growth in productivity (employee productivity)
7. Capacity of CIPET and LARPM enhanced on Biodegradable Plastics

Progress so far

So far progress is still limited as field operations started only in August 2011. Related to the standard ICAMT selection and intervention process (see Figure 1), steps 1 to 3 have been completed. The awareness programmes were conducted in the five clusters and 100 units were identified as planned. Step 4, the technology mapping and gap assessment of the units is under progress with the support of the industry associations and the ICAMT national industry experts.

Other activities already completed include a technology mission to China, with visits to six plastic factories in which fourteen units participated. Also, five training programmes on IPR were organised for the plastic clusters.

The evaluation mission visited the technical partner CIPET and LARPM in Bhubaneswar, as well as a plastic manufacturer in Delhi. CIPET is committed to work even without resource support. This technical partner is a well-established and renowned technical institution in the sector and ready to support firms in productivity improvement, quality management and technical training.

The crucial step 5 (develop and implement the action plan per company) is still pending. Consequently, the interaction with the Delhi units suggests, on the one hand, a high level of interest and but also expectations and a certain eagerness for 'real' action to happen soon.

Conclusions and recommendations

The evaluation team is of the view that though presently the activities are progressing as planned, the real challenge will begin once the technology mapping of units is completed. Addressing the gaps identified, initiating the specific technology improvements required, bringing synergy among the units within and outside the clusters, etc., will require substantial resources to repeat the same success as has been seen in the machine tool sector.

In relation to the second objective, introduction of eco-friendly and biodegradable plastics for sustainable development of the industry, preparatory activities have started. A study has been commissioned in August 2011 and an operational plan on manufacturing, promotion and use of biodegradable plastics drafted. This plan will now have to be implemented jointly with CIPET, ICAMT's well-qualified technical partner, and full cooperation has to be ensured of participating firms in order to achieve tangible impact in the form of wide application of the new products.

VI.

Foundry Sector Project in India

The project for the foundry industry has experienced more than 18 months delay and received final clearance only after the fieldwork of the evaluation team in December 2011. Total budget is US$ 1.75m. The project addresses the problems of poor process capability, quality and productivity of small and medium enterprises. It supports adoption of latest appropriate technologies by the foundry units through training, expert guidance, handholding and other support to attract investments for high quality castings. The required "divided blast copula" technology has been identified.

The project targets fifty units located in two clusters in Coimbatore and Belgaum. The tie-up with Coimbatore Industrial Infrastructure Association (COINDIA) is negotiated and the units have committed to be part of the initiative.

The mission visited COINDIA and met some of its members. Due to the enormous delay in starting activities, the association is slowly losing interest in being part of the venture. It is therefore essential that now, after the final clearance has been obtained, work on this project commences immediately; otherwise the essential support of the private sector may be lost.

VII.

Intellectual Property Rights

The fourth ICAMT objective specifically relates to IPR: "to increase awareness and impact of Intellectual Property Rights (IPRs) on the manufacturing sector from a development perspective. Conduct training programs on IPR, for different types of IPR stakeholders (business, industry, academic institutions, etc.)."

The IPR activities can be categorized as an essential transversal topic that is increasingly relevant for all segments of the manufacturing sector. As current knowledge levels are rather low among SMEs, which up to now have largely produced for the confined domestic markets, this line of activities is well justified.

So far, an IPR Advisory Cell has been developed as part of the ICAMT web portal and the contents of the web portal – for dissemination of IPR knowledge – have been uploaded. These include the following:

- Links to IPR Databases
- Frequently Asked Questions
- Links to IPR Case studies
- An IPR Blog

IPR modules have been developed and IPR training programmes were conducted at six locations for Machine Tools and at five locations for Plastic sector companies. Also, a 5-day international training programme on IPR in manufacturing and enhancing technology driven export competitiveness was conducted in Mauritius during February 2009.

VIII.

International Projects

The first specific objective of the ProDoc reads as "to strengthen the institutional and technical capacity in manufacturing industry of India, being the hosting country, other developing countries and the countries with economy in transition (initially; in Mozambique, Republic of South Africa, Ghana and Sudan in Africa, Bolivia and Peru in Latin America, Bangladesh and Malaysia in Asia) through enhancing and transfer of new manufacturing technologies and interventions and assisting in their absorption and diffusion".

International south-south activities are thus of equal importance to ICAMT's mandate as those directly focused on sectors of the Indian manufacturing industry – after all, the claim is to be an international and not an Indian centre.

During the first phase, from 2004 onwards, ICAMT was internationally active foremost with an Inter-regional Programme on energy-efficient, eco friendly and local material based low cost housing (LCH) that was extended up to December 2010. After some seven years of operation, the extensive end-of-project report from March 2011 lists a range of impacts, however underpinned with only few hard facts: these include export of more than 100 Indian machines and training of some 90 trainers from 10 African countries. Unfortunately, fact-based impact information is neither available on the magnitude of LCH technology adoption in the different countries nor on the sustainability of the demonstration centres set up in Mozambique, Venezuela and Bhutan.

Related to **Phase II of ICAMT**, progress with the international project portfolio was as follows in October 2011:

A) Status submitted for approval

- Compendium of appropriate Indian technologies and Best Practices in the Manufacturing, Agro-Industries and Renewable Energy sectors, suitable for transfer to Least Developed Countries (LDCs) under the South-South Cooperation framework, in collaboration with UCSSIC.

B) Status developed project report/concept report/technical report

- Sierra Leone: Setting up of Technology Demonstration/Production/Training Centre on Cost Effective Housing Technologies
- Afghanistan: Post Conflict Rehabilitation of the Housing Sector: Existing Production Capacity in Stone sector and Technology Upgradation Programme
- Philippines: Programme for Development of Brick and Potteries Industry

C) Pipeline projects

- Joint initiative with SITPC, China for promoting ICT applications for manufacturing industries with main focus on BRICS countries
- Technical services requested by 'Trade and Investment House, South Africa' for technology modernization of manufacturing clusters (machine tools)

D) International training programmes and workshops

- International Training Programme on Advanced Manufacturing Technology; 3 programmes for 60 participants from 10 African countries (Ethiopia, Kenya, Ghana, Egypt, Sudan, Uganda, Botswana, Cameroon, Lesotho, Zambia);
- Assistance in setting up Technology Promotion/Transfer Centre in Peru (delegation sent in October 2009)
- International Programme on IPR in Manufacturing and Enhancing Technology Driven Export Competitiveness, Mauritius (February 2009)
- Technology Competence Programme on Precision and Ultra-Precision Machining and Machines; with Steinbeis Centre for Technology Transfer, Germany

So far no project is being implemented. The mission has therefore restricted its analysis on the available documentation on the two most advanced LCH projects in Sierra Leone and Afghanistan and came to the following assessments:

LCH Sierra Leone

The Draft Project Document (undated) provides a good needs assessment, but also a very ambitious objective: "to realize affordable housing using environment friendly and sustainable manufacturing technologies that can be easily absorbed by the local building materials and construction industry in Sierra Leone."

The Sierra Leone project has been developed along the lines of the earlier LCH demonstration pilots in Mozambique and Venezuela. Unfortunately, however, ICAMT does not know the current status of these pilots and could therefore draw no lessons for the new projects.

The project is to last only 12 months, with a modest budget of $ 81,000, to be used for setting up a technology demonstration/training-cum-production centre as well as two demonstration houses. Training of staff and other interested parties is to be given by Indian specialists. The contribution of the Government of Sierra Leone consists of making available ready-made plots for the demonstration buildings.

While the draft ProDoc as such is well written, it still is vague in core aspects. This refers in particular to the issues of institutional anchoring and post-project financing, where the documents simply states: "The Ministry of Works, Housing & Infrastructure, Government of Sierra Leone will ensure the support of other counterpart agencies. These agencies will co-

operate with each other through appointed project authorities." The only reference to the post-pilot period is given as: "it will be a starting point for a wider programme tentatively called Shelter Support Technology Diffusion Programme (SSTDP)."

At this still early stage of the project, it is first recommended to have more specific discussions on the role and tasks of the Sierra Leone partners beyond making the plot of land available. This refers in particular to commitments for long-term financing of the running costs of the centre, staffing, etc. (in GoI terminology: ensure a non-plan budget line). Secondly, further concretisation of the envisaged SSTDP should be taken up as soon as possible to gauge interest of potential funding agencies for upscaling of the pilot after its short 12-month initial phase.

LCH Afghanistan

The existing Technical Report (undated, no author) is the result of a scoping mission that has analysed the current situation in Afghanistan regarding availability of building materials like stones, etc., for low cost housing in the country. However, it provides little information in terms of realistic development plans, as can be seen, for instance, from the first three major recommendations made in the report:

1. "Intensive survey of the geological reserves of dimensional stones especially marble, granite, sandstone etc. needs to be undertaken in public / private partnerships with international agencies in the field like British Geological Survey, Geological Survey of India, USGS, Norwegian Geo Technical Institute etc. to identify and estimate potentially exploitable reserves of dimensional stones.
2. Comprehensive Mining Regulations needs to be framed immediately under the Mining Law of Afghanistan enacted in the year 2006 to facilitate exploration and exploitation of the identified reserves.
3. Advanced technologies and modern machines and tools in mining, processing, value addition of stones and utilization of stone waste needs to be adopted immediately."

As such, these recommendations are probably sound, but certainly not very realistic given the current situation in Afghanistan: how exactly would an intensive geological survey be made?; who would ensure the implementation of the comprehensive mining regulations, even if they would be immediately drafted?; who exactly is to immediately adopt advanced technologies and machines? And, finally, who would pay for these major undertakings?

Given the very instable and insecure current situation in Afghanistan, it is certainly too early to talk of a post-conflict intervention. It may therefore be advisable to put the project on hold and postpone it until a transition from the current emergency to a future development stage has been achieved in the country, i.e. to wait until the preconditions for a successful implementation have emerged and then re-discuss and re-design a more realistic project.

Conclusions and recommendations on international ICAMT activities

Up to the time of the mid-term evaluation, progress with international activities has been limited and no real technical cooperation project could be started so far. The situation is largely unchanged from what was already stated by the 2006 ICAMT evaluation: "while the original plans foresaw the establishment of a fully fledged international institution, the ICAMT today still […] basically caters to the needs of Indian small and medium sized companies and institutions […], while the international activities of the ICAMT are still at an incipient stage."[1]

Partly, the delays in international activities were said to be caused by procedural complications in getting projects approved; examples cited are the low cost housing (LCH) projects for Sierra Leone and Afghanistan, as well as the bricks and potteries project in the Philippines. However, of equal importance seems certainly to be that now a comprehensive, clear and binding procedure is developed and mutually agreed for designing and approving international activities. Also – and similar to observations made in the parallel evaluation of the UCSSIC projects – the mission sees a clear imbalance between the ambitious project objectives and the small budgets allocated (especially if compared to the Indian manufacturing sector budgets) and the limited time frames planned to achieve them.

Looking at the present portfolio of planned and pipeline projects, it is particularly surprising that only one pipeline project (in South Africa) is linked to the current main ICAMT sector, i.e. the machine tools' industry.

Obviously, major efforts are required by ICAMT to progress with its international activities. This, however, may not be an easy task due to the limited human resources available, as well as the need for comprehensive context specific knowledge that is difficult to establish through short technical missions. While the Programme Manager at UNIDO headquarters constitutes an important asset in this respect, it still is evident that full-time and specialised expertise is required in the core team to ensure that the quality of the international project designs and their implementation improves as required.

Consequently, ICAMT at this stage can be given the following main recommendations for its international activities:

- In order to ensure that the international south-south activities are placed on a sounder footing in future, the ICAMT core team in Bangalore needs to be strengthened with international development expertise and, in particular, the budgets for the international south-south ventures have to be considerably increased to achieve a certain minimum leverage in the recipient countries.
- The projects urgently need, next to the purely technical components (building demo sites, purchasing machinery and train people to operate, etc.), more solid considerations of crucial sustainability aspects, in particular in terms of economic analysis, financial viability

[1] Final Report of the Independent Evaluation Team (2006, p.8)

of operations, institutional anchoring, exit and post-project arrangements, as well as up-scaling strategies.

- Projects should concentrate on sectors where ICAMT has already developed substantive expertise (currently foremost LCH, machine tools, IPR).
- Projects should focus on countries where UNIDO has a strong presence. What still lacks at present is a mechanism that automatically transmits requests from 3rd countries through the respective UNIDO country offices to ICAMT. Also, it has to be ensured that UNIDO country offices can spare sufficient resources for close management of the projects.
- Finally, and as originally conceived, UCSSIC should have played a core role in identifying and implementing international ICAMT activities. For this to materialise, however, past experience has shown that a compulsory and binding cooperation mechanism has to be made part and parcel of both project designs and implementation plans.

IX.

ICAMT Relevance

The importance of the manufacturing sector for developing economies has increased over the years due to more possibilities for systematic technology diffusion, provision of value addition and value creation possibilities. However, imbalances continue in terms of benefits accruing out of systematic technology diffusion between countries as well as within countries.

This situation necessitates a structured approach to assist developing countries in choosing sectors and technologies that generate a maximum of socio-economic development effects such as employment generation, technology spill-overs, back- and forward linkages, etc. UNIDO intends to contribute to addressing the existing imbalances through its International Technology Centres (ITC) network, of which ICAMT is part.

ICAMT is currently very relevant for the identified manufacturing sectors in India and the selected sectors are relevant as they are characterised by small companies with good growth potentials. The Centre has identified technology gaps in the sectors and clusters and addresses the gaps through infusion of more advanced and suitable technologies.

The bottom-up approach followed by ICAMT makes its efforts more relevant than standard top-down interventions as they address real needs of the industries. The on-line survey has confirmed this with 94% of respondents stating that the ICAMT inputs were highly relevant or relevant for the development of their firm.

Also, given the increased importance for manufacturing in the Indian Competitiveness Policy and the National Manufacturing Strategy, the ICAMT initiatives are well aligned with the strategic framework of the host country. This is shown by the good integration with the focus areas of different ministries, like the Ministry of Commerce, Ministry of MSME, Ministry of Science and Technology, proven by their willingness to provide co-financing for the sectoral projects.

To ensure appropriate and advanced technology and production process transfers, the Centre has successfully linked with reputed international technology providers, like Steinbeis Centre for Technology Transfer, Fraunhofer Institute, Senior Expert Service, PTC-USA, and the International Centre for Materials and Technology Promotion, Beijing. The inputs by these international providers are highly appreciated by the industry associations and firms.

However, while the north-south technology transfer is well underway, the international south-south technology transfer activities lag behind and the relevance of the projects in the pipeline is still to be proven. Statements in this respect will only be possible once pilot

projects have been conducted and, in particular, will have been upscaled and mainstreamed by the recipient countries.

Again, the external evaluation of 2006 (p. 15) can be cited: "Summing up, it can be said that while the ICAMT is a relevant partner for Indian manufacturing companies, so far it has not established itself as an internationally recognized technology centre with a clear competence in the area of manufacturing technology."

X.

Design and Programmatic Coherence

As such, the ProDoc for the second phase of ICAMT is well designed and provides a detailed logframe with specific objectives, expected outcomes, outputs and quantified results. Later, on an initiative of the Steering Committee, specific KPIs were developed, first for the MT and Plastic sectors. However, basic recommendations from the independent evaluation carried out in 2006 were not addressed, especially relating to turning ICAMT into a full-fledged institution with longer-term instead of phase-by-phase orientation and corresponding longer-term financing. So far, the survival of ICAMT will have to be negotiated at the end of every phase, a situation that is not conducive for ICAMT to become a full-fledged member of the UNIDO ITC network (and also not for building up a core group of experienced staff).

The Centre's activities are de facto split into two components, one addressing north-south technology transfer to Indian manufacturing sectors, and the second, much smaller component focusing on south-south technology transfer projects. As stated above, the north-south component successfully improves work processes and has identified appropriate technologies sourced from developed countries. Progress in the south-south activities is much less impressive.

This finding can be directly attributed to the core deficit of the ProDoc. At outcome level, the logframe mentions interventions in other developing countries; however, the outputs almost exclusively focus on north-south exchange related activities. Only outputs 2.2 and 3.1 make passing reference to other developing countries. Also, one of the purposes of UNIDO while establishing UCSSIC and ICAMT was to bring complementarity to their activities, in order to boost south-south cooperation. However, the ICAMT ProDoc mentions UCSSIC only briefly in two text paragraphs but not in the logframe. Given the importance that the 2006 evaluation and UNIDO have placed on international south-south activities, these two shortcomings should have been vetted properly before approving the ProDoc and its logframe.

Three core achievements of ICAMT merit particular attention:

1. Introduction of solid KPIs with corresponding baselines for the Indian industry interventions (but not yet for the international activities);
2. ISO-9001: 2008 certification (obtained in July 2011) with the full range of related standardised processes and procedures, not just for the Centre itself but in particular also for project design and implementation, including a quality policy and quality manual;

3. Design and operation of the state-of-the-art and user-friendly website: (www.unidoicamt.org) along with a regular ICAMT Newsletter.

An open issue to be clarified is the exact nature of responsibilities and communication between ICAMT, the UNIDO Representative in Delhi and the UNIDO allotment holder in Vienna. The present ProDoc is not very specific in this respect: ICAMT would "closely coordinate" with the regional office, while the regional office would "facilitate services" and "provide continuous guidance and support". The specifics of these general terms were not further operationalized and fixed as binding procedures.

The main point of the current discussion is the idea to place the allotment holder directly in the UR's office in Delhi (in order for the allotment holder to be closer to actual decision making and enable more efficient management and monitoring), while ICAMT insists on the need to have direct access to northern technology specialists, which would only be ensured through the direct link with UNIDO headquarters. Given that the arguments for both positions have their respective merits, and as this is ultimately a UNIDO decision, the mission has refrained from making a recommendation.

Finally, if the international activities are to achieve the prominence that was assigned to them, the required specialised expertise needs to be incorporated in the team and the respective budget share be made commensurate.

XI.

Coordination and Management

From May 2008 to December 2009, i.e. during 20 months, ICAMT had to be operated on something like an emergency footing until finally the Centre became fully operational with the appointment of the Director and core staff. In retrospect, this time lag seems hard to justify and, as a consequence, the new team had in many aspects to start again from square one.

ICAMT has today a small but qualified and very motivated core team. The day-to-day management of the operations in the Indian clusters is done by a current total of 16 national industry experts. Most of these experts are very qualified senior industry figures (some already retired) and were selected following an elaborate process from initial long-lists to personal interviews and final engagement.

The hosting institution for ICAMT in Bangalore is CMTI (Central Manufacturing Technology Institute, promoted by the central government); its director is member of the ICAMT Steering Committee. In general, it can be said that CMTI, with its more than 50 highly qualified engineers, mainly focuses on high-level technologies and caters to large industries (aerospace industry etc.). ICAMT, on the other side, focuses on small and medium sized companies, and is involved in technical upgrading and coaching, including aspects like financial administration, marketing, etc.

CMTI and ICAMT collaborate on various activities. The ICAMT design cell is using the facilities of CMTI for hands-on training and CMTI has participated in advanced level workshops of ICAMT, like innovative manufacturing processes, precision and ultra-precision machines, motion controllers and machine automation.

ICAMT is embedded in a network of national and international partner institutions. Coordination is also good with the Industry Associations; foremost with IMTMA, the leading national machine tools industry association and the ‘anchor’ association and co-financier for ICAMT. Certainly positive is the fact that ICAMT was able for both the MT and Plastics projects to obtain substantial co-financing from the respective Central Government Ministries in charge.

The Steering Committee (SC) of ICAMT meets every 6 months in order to monitor the activities of ICAMT and provide strategic guidance. The first three Steering Committees were held in April 2010, January 2011, and August 2011, respectively. Given the importance of the SC meetings, it is advisable that the Project Manager/Allotment Holder from Vienna regularly participates. Finally, the fact that the Project Manager has changed five times during the current phase does not really foster the development of an institutional memory at headquarters.

Unfortunately, considerable delays have occurred in project approvals, with the Foundry project being the most prominent case, where it took 18 months until final clearance could be obtained in December 2011. An unintended consequence of this delay has been the above-mentioned slow waning of the initial high enthusiasm and commitment of the foundry companies who, as private sector actors, are accustomed to move fast.

In terms of reporting, ICAMT regularly sends monthly progress reports to the involved Ministries and GOI/DIPP for review but has not sent them to UNIDO, both in Delhi and Vienna, on a regular basis, as should be the case. Quarterly review meetings are held with counterpart organisations. Expert group meetings are also held regularly to review progress of implementation of project deliverables, such as conducting diagnostic studies, implementation of action plans, etc.

The Agendas for the Steering Committee meetings serve as de facto semi-annual progress reports and the SC Minutes as semi-annual operational plans.

The Key Performance Indicators are used to quantitatively monitor progress of each participating company and the project as a whole. The unit monitoring module on the website has relevant information on the KPIs for each unit, which is exclusively accessible to the participating firms through their respective login interface.

While the reporting is therefore comprehensive, the mission still recommends in future to have less activity-oriented and purely descriptive reports and include more result-oriented analytical and conceptual elements, in other words to 'tell the stories' so that achievements are duly highlighted also for readers who are not intimately familiar with the projects.

XII.

Efficiency

Delays have hampered efficiency, both in the national projects (Foundry) as well as in the international ones (LCH, potteries). Nevertheless, the evaluation assesses the efficiency of ICAMT in its Indian operations as good. The small core team is successfully implementing the MT project and has started the Plastic project on a sound footing. Foundry activities can now commence after the final clearance has been obtained.

The good efficiency of operations is being duly acknowledged by the beneficiaries: 86% of the respondents in the on-line survey of the machine tools companies rated the provision of support by ICAMT as highly efficient or efficient.

The successful roping-in of additional funding for the MT and Plastics projects from the concerned Ministries was very efficient and the current phase target of $ 400,000 has already been easily surpassed with these two sector projects alone. On the other hand, as mentioned, cooperation with UCSSIC did not really materialise so far, apart from independently contributing to a common technology compendium.

The ISO certification and the related process structuring should ensure further efficiency gains for new sector projects in future. In addition, the good electronic company database and the ICAMT website should also contribute to further improvements in efficiency.

It is evident that the future core challenge will be to simultaneously manage several projects with the same efficiency and quality standards. As said above, the ISO procedures will certainly be a big asset in this respect.

However, the question does arise whether the small team will be able to manage a much larger workload with new projects and, in particular, if the international activities will require considerable more specialised resources, as can safely be predicted.

The mission is not in a position to assess the efficiency-related question of whether the least costly resources and processes were used in order to achieve the objectives. Financial summary information compiled from the UNIDO imprest A/c in India shows total expenses of $ 332,082 for 2010 and $ 478,740 for 2011[2]. However, according to the UR office in Delhi, the figures do not paint the full picture, as they do not include transactions to ICAMT directly from partner ministries and industry associations. ICAMT figures provided during the mission show current expenditures of $ 1,094,649 drawn from the two main accounts (IDF and TF), mostly incurred in 2010 and 2011.

[2] Based on URO records and MODs/IVOs authorized by the project and processed through the URO imprest account.

In any case, the mission did neither have the time nor the resources to perform an in-depth analysis of the overall expenditures patterns. Still, URO imprest account figures show that just under one third of the 2010 and 2011 payments were spent on sub-contracting, followed by national experts, in-country travel and equipment purchases, respectively. The international ("outside of country") budgets are dominated by the visits of Indian delegations to China, Taiwan, USA and Germany.

Given the dearth of readily available and consolidated financial information, the mission is of the opinion that, in order to improve mutual transparency and ease of comparison, the different components of the financial administration and accounting system should be combined in a way that allows in future assessing the overall financial efficiency of ICAMT's operations that are being funded from different sources.

In addition, the time has come where it seems advisable to perform an audit of the ICAMT accounts, as this apparently has not been done so far, despite the fact that the organisation is now operational since almost 10 years.

XIII.

Effectiveness

After a little less than two years of operation, overall effectiveness – in relation to the activities in the Indian industry sector projects – is assessed as good. The MT project is up and running and will soon have reached its mature stage; Plastics was successfully started, and Foundry conceptualised and submitted already in mid 2010. The projects for Bicycle and Bicycle Parts as well as Pre-fabricated Housing Technologies have been designed and are currently going through the approval process.

In the most advanced MT sector project, the changes in participating companies are tangible and owners have made substantial investments in new machinery and processes. Clusters have developed an identity and interaction among cluster members is good. Exchange between clusters, organised by ICMAT, is functioning. Consequently, 80% of the respondents in the on-line survey of the machine tools companies rated ICAMT as fully effective or effective in bringing changes to their industry.

The website is well on the way to become an effective communication and advisory tool as is evident from the good initial visitor rates. Through the introduction of standardised processes and procedures, the ISO certification has laid a sound basis to ensure future effectiveness of operations.

Cooperation with UCSSIC, as envisaged in both ProDocs, was also not effective. Cooperation was sought on the low cost housing projects, but did not materialise as UCSSIC's budget apparently had already been spent or allocated at that time. During the current phase of UCSSIC, therefore, the only formal collaboration will be on the planned Compendium of Appropriate Indian Technologies, which is more of a preparatory step than a real south-south collaboration.

Summarising the situation in relation to the immediate phase objectives, mid-term progress is as follows:

Three sectoral projects are being implemented in the host country as opposed to the phase target of 10 projects designed and 5 implemented. Provided current effectiveness is kept up, the targets seem achievable until the end of the phase. However, international activities seriously lag behind. Technical capacities and manufacturing capabilities have certainly been strengthened, but again only in the host country India and not yet in other recipient countries. Consequently, ICAMT is indeed catering to the needs of enterprises in three manufacturing sectors but so far only in India. Finally, awareness of the importance of IPR has increased with the companies that participated in the related training events.

XIV.

Sustainability

Sustainability can be discussed on two levels, first the sustainability of the introduced changes and innovations in the industry sectors and, secondly, the sustainability of ICAMT as an organisation and international technology centre as part of the UNIDO ITC network.

In relation to the sustainability of the introduced changes and innovations in the Indian industries, the core question is what will happen after a sector project has come to an end. While the directly involved companies can be expected to continue to thrive, the crucial challenge will be the further spreading of the introduced innovations beyond the first clients to the wider circle of companies within a given cluster.

In this context, the present inclusion of the national and regional industry associations is clearly a major asset and the best bet to ensure sustainability and further spread of introduced changes. It is therefore proposed to include, as explicit phase objective (along with specific KPIs), the task to built-up the associations during the remaining part of the phase to enable them, as far as possible, to take over and continue activities in the post-project phase.

The issue of the long-term sustainability of ICAMT as an UNIDO ITC still remains an open question, despite that this was already pointed out in the 2006 evaluation: " […] the financial structure of the ICAMT should be changed. The financing should contain both long-term institutional funding as well as project funding. The institutional funding should be provided by the Indian government, and if possible, in the long run also by other stakeholder governments." (p. 10/11)

The present evaluation can but repeat that the issue needs to be addressed by the core decision makers and brought to a conclusion, as it directly impacts on the future of ICAMT. In this context, it is important that, within UNIDO, discussions are on-going on developing different concepts for 'full fledged' UNIDO ITCs or was is tentatively named UNIDO Partner ITCs.

Finally, the sustainability of the international projects cannot be assessed at this stage. However, as mentioned, doubts persist, as the present documentation on the most advanced projects remains vague in terms of future institutional anchoring, financial viability, funding, upscaling, etc.

XV.

Impact

Given that the evaluation is at mid-term, it is too early for statements on final impact. The visible impact in the MT project, both with companies and associations, has been duly acknowledged in the respective chapter.

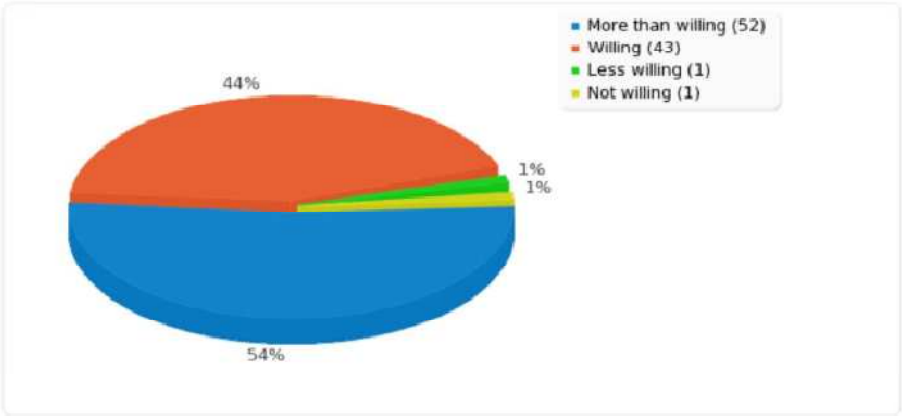
Again, it is repeated that the ultimate impact-related challenge will be to ensure upscaling and dissemination of induced innovations to non-ICMAT units in the industry clusters. The best way to achieve this is through preparing the national and regional industry associations for this task in the post-project period.

The stated willingness of the participating MT companies, as evident from the on-line survey results given below, is certainly another strong asset in this context that should be further tapped.

Field summary for q8

Are you willing to carry forward the initiative of UNIDO-ICAMT to other units in your industry?

Answer	Count	Percentage
More than willing (1)	52	53.61%
Willing (2)	43	44.33%
Less willing (3)	1	1.03%
Not willing (4)	1	1.03%
No answer	0	0.00%



XVI.

Conclusions and Lessons

The main conclusion that the evaluation has arrived at is that mid-term progress on national level has been very good, but is not satisfactory on international level; the latter will require substantial additional inputs and expertise. Also, the current concepts and designs of the most advanced international projects are not convincing.

The ProDoc is comprehensive as far the Indian activities are concerned but remains ambiguous in relation to the international activities: while the textual part on the expected end-of-project situation has a strong international orientation and makes frequent references to "participating countries", the concrete lists of outputs and related activities in the logframe is almost exclusively focused on Indian industrial development. This deficit should have been addressed before approving the ProDoc.

Main lessons learnt from the Indian industry **sector projects**, in particular the machines tool sector are:

- Standardised processes, as introduced through the ISO certification, as well as clear and 'hard' KPIs, facilitate efficient and effective implementation of parallel sector projects;
- Active industry associations are pivotal for both implementation and post-project sustainability of sector projects;
- Continuous involvement of key stakeholders is essential for project success (rather than compartmentalized task based roles).

Main lessons learnt so far in relation to the **international activities** are:

- South-south projects are complex and not “quick fixes”, careful planning is essential for which substantial and specialised resources are required, also in the recipient country;
- Next to purely technical considerations, due care needs to be given to firm demand orientation, institutional anchoring, financial viability as well as sustainability and upscaling concepts in project designs, in order to ensure successful adoption of promoted technologies.

Main lessons learnt in relation to **ICAMT operations**:

- Human resources in the core team will have to be commensurate to the growing size of the portfolio to ensure continuous quality of interventions;
- Frequent change of allotment holder/project manager can lead to loss of institutional memory at headquarters and does not foster smooth project implementation;

- Administrative delays in project approval cause field-level inaction and can reduce industry motivation.

XVII.

Recommendations

Recommendations related to the Indian industry **sector projects** of ICAMT:

- Machine tools:
    - Concentrate foremost on intra-cluster spread of the work for covering more units and replication of the learnings to the entire cluster; develop clear dissemination strategy to non-ICAMT units, include dissemination obligation in the contracts of client units;
    - Strengthen the current pilot testing of sending representative units to other clusters for dissemination and institutionalise through the national and regional industry associations;
    - Develop specific KPI for tapping into the potential of grooming the industry associations for taking over in the post-project period.
- Plastics: focus attention to second important objective, i.e. introduction of eco-friendly and bio-degradable plastics.
- Foundry: it is essential than field level work on this project commences immediately to recover lost ground and revitalise commitment of participating companies.

Recommendations related to the **international activities** of ICAMT:

- Substantial more emphasis on international activities is required in the remaining phase period; to this end, it is proposed to seek additional qualified and experienced expertise in designing international projects;
- Budgets for the international ventures should be considerably increased in order to achieve a certain minimum leverage and the currently very short implementation periods should be expanded to properly set-up and run the projects in the recipient countries and sectors.
- The international programme of ICAMT has to be linked to the existing partners and clusters, with an orientation to promote export of successful technology packages to other countries where demand for these exists. International activities should concentrate on what is mastered nationally (as of now, LCH, MT, IPR).

Recommendations related to **ICAMT operations**:

- It is proposed to already now consider a no-cost extension to make up for long delay in starting the project; alternatively the targets to be achieved should be reduced proportionally;
- It is further proposed to set-up a comprehensive financial administration and accounting system that provides overall and up-to-date information about fund utilisation from the different sources (IDF, ministries, UNIDO); in addition, an audit of the ICAMT accounts is proposed, given that this apparently has not been done so far since the start of ICAMT operations some 10 years ago.
- The exact and detailed responsibilities and communication system should be clarified between ICAMT on the one hand, and the UNIDO representative in Delhi and the UNIDO allotment holder in Vienna on the other hand, to ensure better interaction and future speedier project approvals; also progress reports should be sent to UNIDO on a regular basis;
- To ensure closer collaboration with UCSSIC (and other ITCs), a compulsory and binding cooperation mechanism has to be made part and parcel of both project designs and implementation plans, along with related KPIs;
- The issue of medium- and long-term sustainable institutional financing of ICAMT needs to be addressed by the core decision makers and brought to a conclusion, as it directly impacts on the future of the organisation;
- Reduce quantity of reports (UNIDO guidelines call for 6-monthly progress reports only) and improve their quality by being more analytical ("tell the stories").

In terms of the **medium-term future** of ICAMT, i.e. for a potential new phase, the core question of overall orientation of ICAMT and its place within the wider UNIDO ITC network should be clarified during the remaining approximately three years (provided the proposed no-cost extension is granted).

The core issue is the respective weight of national level industry interventions as opposed to international south-south projects. It can be argued that ICAMT currently remains, as stated in the 2006 evaluation, still more of an Indian than an International Institute for the Advancement of Manufacturing Technology.

The future of ICAMT has to be seen in the wider context of the presently on going discussion within UNIDO on its future ITC strategy. In 2011, the Thematic Evaluation of UNIDO's International Technology Centres made the following main recommendation:

"For future ITC support, UNIDO should establish a clear distinction between a) setting up a new UNIDO ITC, b) establishing partnerships with existing ITC ("UNIDO Partner ITC") and c) providing assistance to an existing institution in its efforts to internationalize" (Feb. 2011, p. xii). More specifically, it is proposed that 'full-fledged' UNIDO ITCs should be controlled and managed by UNIDO and a strong thematic relationship has to exist with existing UNIDO programmes. UNIDO Partner ITCs, on the other hand, would only maintain a "mutually

beneficial relationship" with UNIDO and can be controlled and managed by their host institutions; the exact terms of the partnership would be defined in a standard agreement that is still to be developed.

Closely linked to this discussion on the future of ICAMT as UNIDO ITC, is the still open issue of whether ICAMT's modus operandi can be changed from the present phase-based and project-type financing to a long-term institutional funding structure.

Finally, the parallel external evaluation of UCSSIC has proposed, as one of two options, a merger of ICAMT and UCSSIC. In this scenario, ICAMT would focus on promoting technology advancement in selected industrial sectors in India, while UCSSIC would be in charge of international operations related to south-south cooperation. This would carry the additional advantage that Indian industry could play a core role in the south-south collaborations, as the ICAMT sector interventions to be disseminated to third countries focus on Indian private sector companies and industry clusters.

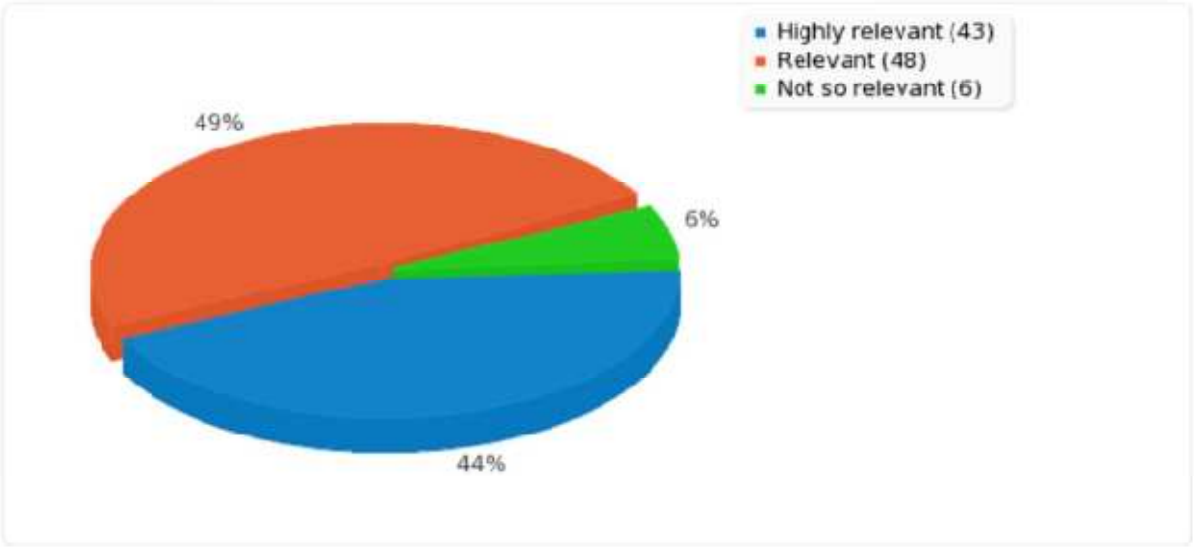
Annex A: On-line Survey Results of Machine Tools Client Companies

Results	
Number of records in this query:	97
Total records in survey:	97
Percentage of total:	100.00%

Field summary for q1

How relevant were the inputs given through UNIDO-ICAMT for the development of your firm?

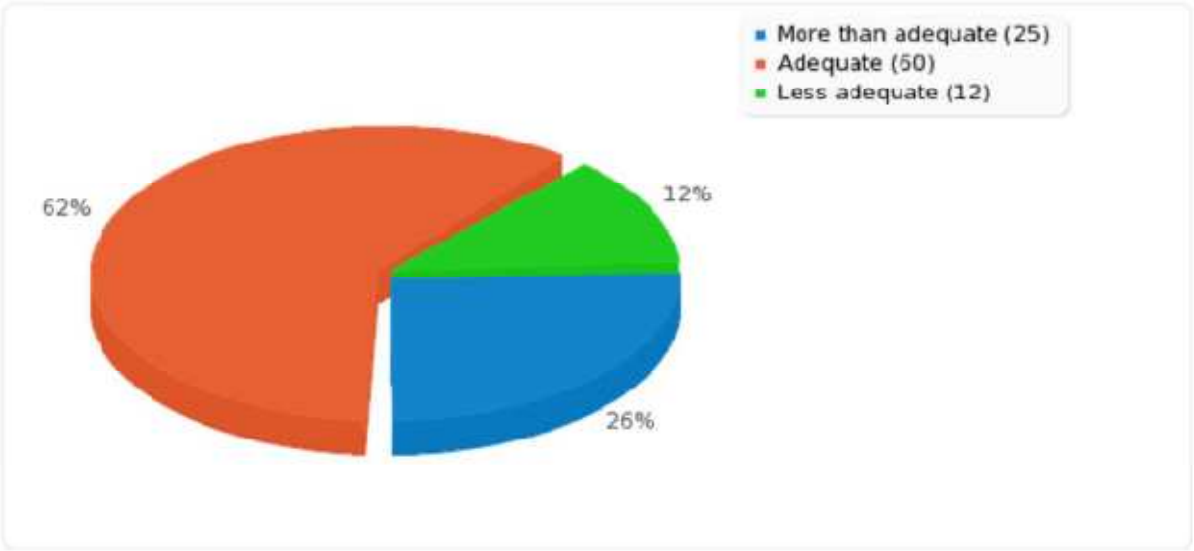
Answer	Count	Percentage
Highly relevant (1)	43	44.33%
Relevant (2)	48	49.48%
Not so relevant (3)	6	6.19%
Rather irrelevant (4)	0	0.00%
No answer	0	0.00%



Field summary for q2

How adequate was the support provided by UNIDO-ICAMT?

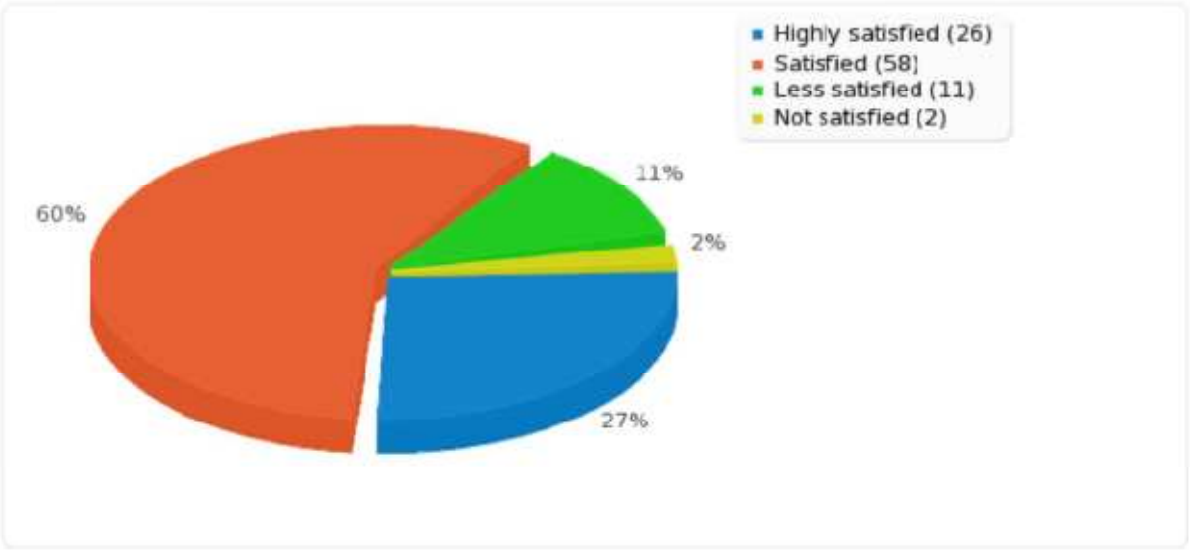
Answer	Count	Percentage
More than adequate (1)	25	25.77%
Adequate (2)	60	61.86%
Less adequate (3)	12	12.37%
Inadequate (4)	0	0.00%
No answer	0	0.00%



Field summary for q3

Are you satisfied with your involvement in this project?

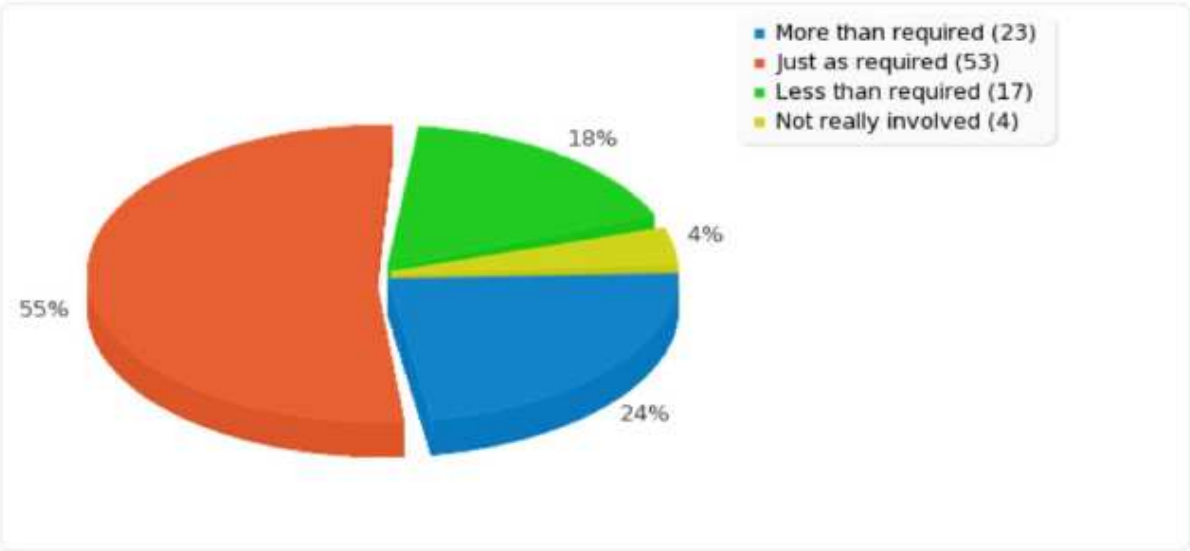
Answer	Count	Percentage
Highly satisfied (1)	26	26.80%
Satisfied (2)	58	59.79%
Less satisfied (3)	11	11.34%
Not satisfied (4)	2	2.06%
No answer	0	0.00%



Field summary for q4

How do you rate the involvement of your regional and national industry associations in this project?

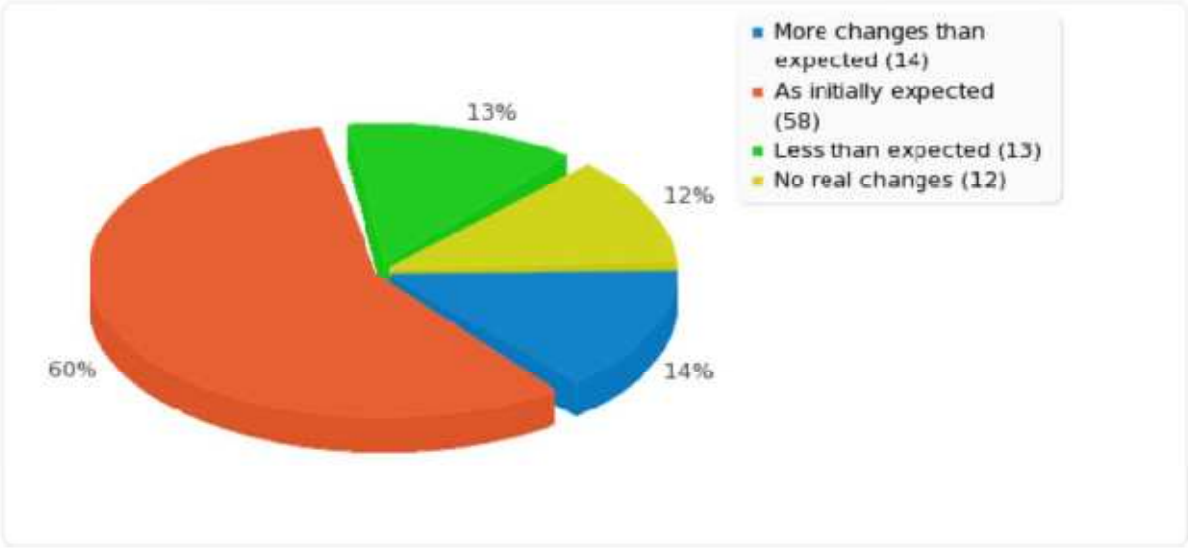
Answer	Count	Percentage
More than required (1)	23	23.71%
Just as required (2)	53	54.64%
Less than required (3)	17	17.53%
Not really involved (4)	4	4.12%
No answer	0	0.00%



Field summary for q5

How big are the changes you have already implemented due to the support of ICAMT?

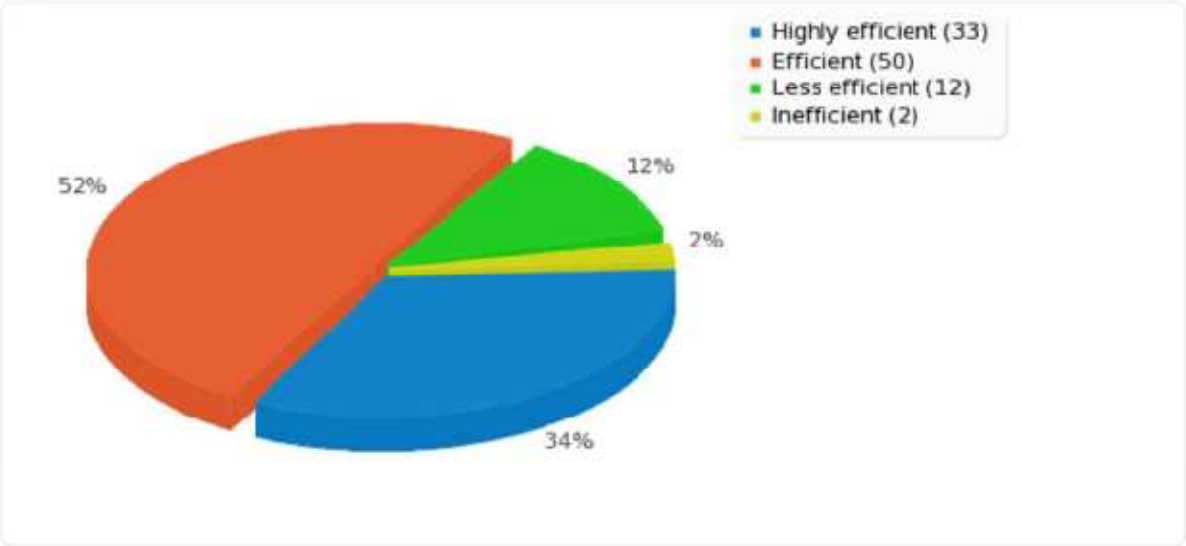
Answer	Count	Percentage
More changes than expected (1)	14	14.43%
As initially expected (2)	58	59.79%
Less than expected (3)	13	13.40%
No real changes (4)	12	12.37%
No answer	0	0.00%



Field summary for q6

Do you think UNIDO-ICAMT has provided their support in an efficient way?

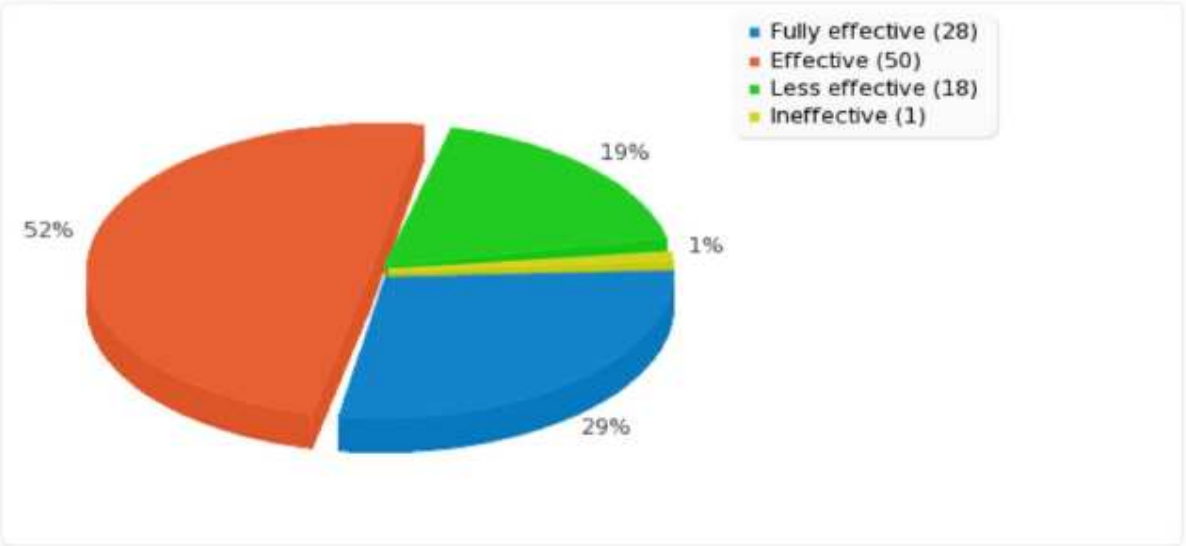
Answer	Count	Percentage
Highly efficient (1)	33	34.02%
Efficient (2)	50	51.55%
Less efficient (3)	12	12.37%
Inefficient (4)	2	2.06%
No answer	0	0.00%



Field summary for q7

Is the programme effective in bringing change(s) to your industry?

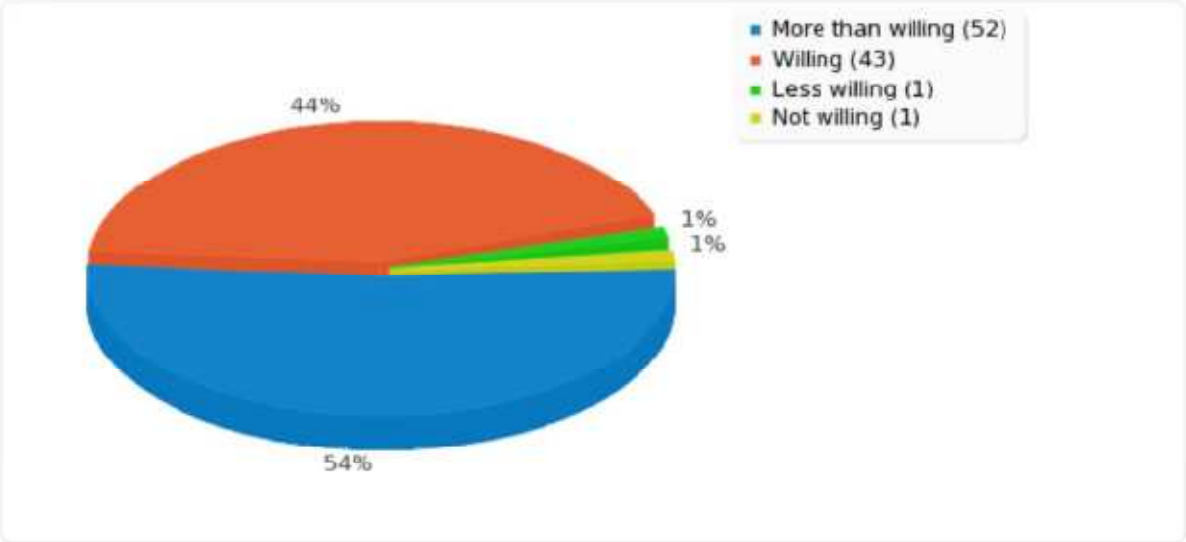
Answer	Count	Percentage
Fully effective (1)	28	28.87%
Effective (2)	50	51.55%
Less effective (3)	18	18.56%
Ineffective (4)	1	1.03%
No answer	0	0.00%



Field summary for q8

Are you willing to carry forward the initiative of UNIDO-ICAMT to other units in your industry?

Answer	Count	Percentage
More than willing (1)	52	53.61%
Willing (2)	43	44.33%
Less willing (3)	1	1.03%
Not willing (4)	1	1.03%
No answer	0	0.00%



Annex B: TOR of the independent evaluation

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

TERMS OF REFERENCE

Independent Mid-Term Evaluation of the UNIDO Project:

Operational phase of the International Centre for Advancement of Manufacturing Technology
US/GLO/08/010 and SF/GLO/08/009

I. BACKGROUND AND CONTEXT

Efforts to establish the International Centre for Advancement of Manufacturing Technology (ICAMT) started with a comprehensive feasibility study carried out in 1997/1998. At that time the vision for ICAMT was that of an international centre at the service of developing countries a sort of a "Global Centre of Excellence" within the UNIDO framework. The pilot phase of the ICAMT was launched in October 1999 and was followed by the two operational phases, starting in August 2002 and in May 2008 respectively. However, for the second operational phase, the regular project staff members (Project Director and National Programme Officer, were appointed only in December 2009.

The ICAMT is one of several International Technology Centres (ITCs) of UNIDO and operates within UNIDO's ITC network. Its Headquarters are located in Bangalore with an extension office for interaction with Government and business delegations in New Delhi.

The ICAMT was created to assist developing countries with economies in transition in enhancing the technological performance and productivity of manufacturing industry, quality of goods and competitive position at global markets.

The ICAMT basically caters to the needs of small and medium sized companies and institutions in the field of awareness raising, market development and technical assistance. It focuses on the promotion of manufacturing technology and has mainly served the machine tools, plastic manufacturing, foundry, light engineering and auto components industries. ICAMT conducts technology assessments and provides technical assistance and advisory services to individual enterprises. It also engages in business partnership development through the organization of visits of Indian producers to national and international trade fairs or companies. In the course of these activities, manufacturers from India get exposed to international markets and companies and can share knowledge and learn from each other. ICAMT also provides training in India on issues of manufacturing technology. Most of the

ICAMT activities have been taking place within India or for Indian clients (e.g. study tours abroad).

The pilot and first operational phase (TF/IND/95/001, XP/GLO/99?048, SF/GLO/99/005 and SF/GLO/02/004) of ICAMT were evaluated in 2006 and the main recommendations of the report were as follows:

- The ICAMT should not continue to operate in the current form but major changes in strategy have to be implemented
- Focus on sectors with a real technology need and/or an outward-bound technology-transfer potential
- Increase sustainability and capacity-building effects by turning the ICAMT into a fully-fledged institution (longer-term orientation instead of project-by-project implementation, long-term staff including a director)
- In order to ensure the long-term build-up of capacity through the ICAMT as an institution, the financial structure of the ICAMT should be changed. The financing should contain both long-term institutional funding as well as project funding. The institutional funding should be provided by the Indian government, and if possible, in the long run also by other stakeholder governments

Consequently a revised framework of ICAMT was prepared by the national counterpart, the Department of Industrial Policy and Promotion (DIPP) and UNIDO. In the Project Document of the second operational phase which started in 2008 with a planned duration of five years, the immediate objectives are described as follows:

- To develop and implement sectoral projects and programmes aimed at enhancing the productivity and export growth of small- and medium sized enterprises in manufacturing industry of developing countries or countries with economies in transition and India (as the hosting country) through technology-led interventions
- To strengthen technical capacity and manufacturing capability in the recipient countries through facilitating transfer and adaptation of new and relevant technologies and innovations
- To cater to the needs of enterprises in selected manufacturing sectors by providing assistance on technology sourcing, assessment, transfers and absorption, project execution, technical consultancy and technology information services
- Increase awareness and impact of Intellectual Property Rights (IPRs) on the manufacturing sector from a development perspective. Conduct training programs on IPR, for different types of IPR stakeholders (business, industry, academic institutions, etc.)

The second operational phase is implemented through the following projects and budgets (USD):

UNIDO projects	**Allotment**	**Expenditure**	**% implemented**
US/GLO/08/010	796,460	479,099	60.2 %
SF/GLO/08/009	600,000	368,674	61.4 %
Total	**1,396,460**	**847,773**	**60.7 %**

Source: UNIDO Intranet as of 24 February 2011.

At the ICAMT Steering Committee Meeting, held on 27 January 2011 it was agreed that a mid-term evaluation would be conducted in August 2011, in line with the provision in the Project Document.

II. RATIONALE AND PURPOSE

The purpose of the independent mid-term evaluation is to have up-to-date information on the performance of ICAMT and to enable mid-course correction. In line with the UNIDO Evaluation Policy Paragraph 8, the evaluation aims at determining the relevance, impact, effectiveness, efficiency and sustainability of the project.

More specifically the mid-term evaluation will;

(a) assess the past and continuous relevance of ICAMT, of the activities promoted, outputs produced and outcomes achieved;
(b) assess the past and continuous relevance of UNIDO's support to ICAMT
(c) suggest mid-term course corrections/improvement in the areas of project strategy, implementation, policies, approach etc. which ICAMT should pursue during the remaining period of the project
(d) assess the extent to which the revised framework and new strategy of ICAMT have improved its performance
(e) assess the efficiency of implementation: quantity, quality, cost and utilization of resources, timeliness of UNIDO/counterpart inputs and activities, and ICAMT management and coordination, including the roles of the Steering Committee
(f) assess the extent to which outputs have been produced and outcomes achieved, as compared to those planned (effectiveness);
(g) assess the impact and sustainability of results, effects and benefits.

The mid-term evaluation will produce a set of recommendations to UNIDO, the Indian Government and other stakeholders (if applicable) with a view to improved relevance, performance and sustainability. It will identify lessons learned and good practices, applicable to other UNIDO interventions, in particular international technology centres.

III. EVALUATION ISSUES AND KEY EVALUATION QUESTIONS

The mid-term evaluation will assess to what extent:

Relevance

- the ICAMT mandate, function and activities have been and are in line with the strategies and priorities of developing countries in general
- the ICAMT mandate, function and activities have been and are in line with the strategies and priorities of UNIDO (
- there is a clear thematic linkage to UNIDO's substantive programmes
- activities of ICAMT are relevant for the promotion of industrial development and for target beneficiaries;
- the manufacturing technologies promoted and transferred are being demanded, used and beneficial for developing countries;
- the ICAMT complements efforts of other national or international institutions, public as well as private

Design and programmatic coherence

- the design was based on a comprehensive process of consultations involving all relevant stakeholders and the incorporations of findings from the previous evaluation conducted in 2006
- a clear intervention logic exists, including a causal chain from activities to outcomes, explicit assumptions and risks, measurable indicators and means of verification;
- the ICAMT's organizational structure and administrative setup are appropriate with regard to the objectives of ICAMT;

Coordination and management

- coordination mechanisms have been established between ICAMT and the UNIDO Centre for South-South Industrial Cooperation in India (UCSSIC);
- UNIDO's back-stopping support has been appropriate and is in line with ICAMT requirements;
- the counterparts support the ICAMT
- UNIDO and DIPP roles and functions are clearly defined;
- the ICAMT uses a network of partner institution in academia and industry
- systems for monitoring (Advisory Committee), reporting and self-evaluation are in place and produce useful information, based on suitable indicators for outputs, outcomes and impact

Efficiency

- UNIDO and Government/counterpart inputs have been provided as planned and were adequate to meet requirements;
- there has been cooperation with other international technology centres and , programmes of the Government of India and UNIDO s ;
- synergies with the UNIDO Centre for South-South Industrial Cooperation in India (UCSSIC) and the UNIDO Regional Office (as envisaged in the Project Document) have been exploited
- the least costly resources and processes were used in order to achieve the objectives.

Effectiveness

The mid-term evaluation will assess to what extent:

- objectives established in the project document were achieved.
- the ICAMT's activities - such as development and implementation of projects, training, workshops, publications, establishment of model units and fellowships - are effective means to produce outcomes and contribute to impact
- the ICAMT's activities have an international outreach and ICAMT is effective at the international level

Sustainability

- there is a potential for the continuation of benefits after the project has been completed

Impact

- long term developmental changes or benefits (economic, environmental, social and developmental) are likely to occur as a result of the ICAMT's activities
- the ICAMT is likely to contribute to the achievement of the Millennium Development Goals, particularly MDG 1 (Eradicate extreme poverty and hunger), MDG 3 (Promote gender equality and empower women) and MDG 7 (Ensure environmental sustainability)

Cross cutting issues

Attention will be given to whether the ICAMT has been mainstreaming the following issues:

- gender equality
- environmental sustainability
- South-South cooperation

IV. EVALUATION APPROACH AND METHODOLOGY

The mid-term evaluation will be conducted in compliance with UNIDO's Evaluation Policy and its Technical Cooperation Guidelines. It will assess the achievements of the Centre against its objectives, as established in the project document and in annual Work Programmes and include a re-examination of the relevance of the objectives and of the design. It will also try to identify factors that have facilitated or impeded the achievement of the objectives.

The emphasis of the analysis will be on the period covering the start of the second operational phase until the midterm-evaluation (mid 2008 until mid 2011).

In terms of **data collection** the evaluation team will use different methods ranging from a desk review (annual reports, progress reports, work programmes, ICAMT publications, self evaluation reports, survey data, reports of Expert Group Meetings, records and documents from workshops and training programmes, training material, feed-back forms of participants in workshops/seminars, minutes of meetings of the Steering Committee) and above all form discussions with beneficiaries,, individual interviews with key informants, focus group discussions, statistical analysis, literature research, survey and direct observation.

An internet **survey** will be conducted, targeting past beneficiaries of ICAMT activities.

The mid-term evaluation team will also visit beneficiary enterprises and partner institutions of the ICAMT in India (such as the UNIDO Centre for South-South Industrial Cooperation) in order to assess actual or potential interactions, benefits and synergies with these institutions and to draw from the experience gained by them.

The evaluation team should ensure that the findings are **evidence based**. This will be ensured though **triangulation** of sources, methods, data, and theories.

While maintaining independence, the evaluation will be carried out based on a **participatory approach**, which seeks the views and assessments of various stakeholders. These include government counterparts, private sector representatives, representatives of other UN organizations, multilateral organizations, bilateral donors, and beneficiaries as well as UNIDO- regular and project staff.

V. TIME SCHEDULE AND DELIVERABLES

The mid-term evaluation is scheduled to take place between August and October 2011, in conjunction with the evaluation of the UCSSIC. A two-week mission in India (for both Centres) is planned to take place in September.
The consultant will hold meetings with stakeholders in New Delhi and Bangalore. Visits to other stakeholders and beneficiaries in India are planned and will be decided during the inception phase.

The evaluation will include the following steps and deliverables (bold):

Activity	**Estimated date**
Contracting of consultants	August 2011
Collection of documentation by evaluation consultant at HQ	August/September 2011
Desk Review by members of evaluation team	August/September 2011
Briefing by ODG/EVA and initial interviews at HQ	August/September 2011
Inception report	
Design and launching of internet survey	
Mission to India (2 weeks, including the evaluation of UCSSIC)	September 2011
Presentation of preliminary findings in India	September 2011
Presentation of preliminary findings at HQ	September 2011
Preparation of **draft report**	September 2011
Collection of comments	September 2011
Incorporation of comments	October 2011
Issuance of **final report** and **evaluation brief**	October 2011

VI. EVALUATION TEAM COMPOSITION

The evaluation team will be composed of

- an international evaluation consultant with extensive experience in evaluation and industrial development
- a national evaluation consultant , familiar with evaluation techniques and industrial development issues
- an ODG/EVA staff member who will act as evaluation manager.

The international and national consultant will be contracted and selected by UNIDO. This is in accordance with the UNIDO Evaluation Policy, Paragraph 57, which stipulates that; “EVA prepares and manages the evaluation budget, drafts the job descriptions for consultants and selects and recruits the evaluation team”. The Indian Counterpart Agency has the possibility to propose independent national evaluation consultants. The tasks of the consultants are specified in the respective job descriptions, attached to this ToR (Annex A).

All members of the evaluation team must not have been involved in the design and/or implementation, supervision and coordination of ICAMT or any of its activities or outputs and/or have benefited from the project under evaluation.

The UNIDO Evaluation Group will be responsible for the quality control of the evaluation process and of the report.

VII. GOVERNANCE AND MANAGEMENT OF THE EVALUATION PROCESS

The evaluation of the ICAMT will be carried out in conjunction with the evaluation of the UNIDO Centre for South-South Industrial Cooperation by the same evaluation team. It will be managed by the UNIDO Evaluation Group, responsible for the independent evaluation function at UNIDO.

The evaluation team will use a participatory approach and involve various stakeholders in the evaluation process. The ICAMT, the DIPP, the UNIDO Regional Office as well as the Investment and Technology Unit at UNIDO Headquarters will provide support to the evaluation team.

The evaluation team will present its preliminary findings to the Government of India, to the UNIDO Representative, and ICAMT staff and to staff at UNIDO Headquarters.

A draft evaluation report will be circulated for comments. The reporting language will be English.

Review of the Draft Report: The draft report will be shared with UNIDO and the Government for initial review and consultation. They may provide feedback on any error or fact and may highlight the significance of such errors in conclusions. The evaluators will take comments into consideration when preparing the final version of the evaluation report.

The Final Report will be submitted 6 weeks after the field mission to the Government of India, the donors and to UNIDO.

VIII. QUALITY ASSURANCE

Quality Assessment of the Evaluation Report*:* All UNIDO evaluations are subject to quality assessments by UNIDO Evaluation Group. These apply evaluation quality assessment criteria and are used as a tool for providing structured feedback. The quality of the evaluation report will be assessed and rated against the criteria set forth in the Checklist on evaluation report quality (Annex 2).

ANNEX 1 – Job Descriptions of consultants

Independent Evaluation
International Centre for Advancement of Manufacturing Technology
US/GLO/08/010 and SF/GLO/08/009

JOB DESCRIPTION

Post title International evaluation consultant (Team leader)

Post number

Duration 20 days (spread over 2 months)

Date required August 2011

Duty station Home base, UNIDO HQ and India

Duties

The international evaluation consultant will conduct the independent evaluation of the International Centre for Advancement of Manufacturing Technology (ICAMT), located in India, according to the respective Terms of Reference attached. He/she will be the team leader of the evaluation and responsible for the evaluation report. In particular, he/she will be expected to perform the following duties:

Duties	Duration	Location	Outputs
Preparatory Phase Desk study of project documents, progress reports, self-evaluation reports, annual reports, etc.	3 days	Home base	Desk evaluation report , programme for the evaluation mission and interview guidelines
Briefing with Evaluation Group Interviews with project managers and key stakeholders. Design of survey instrument.	2 days	UNIDO HQ, Vienna	Key issues of evaluation identified; Scope of evaluation defined;
Field mission to India Carry out meetings, visits and interviews with stakeholders according to the evaluation programme Drafting the main conclusions	8 days (incl. travel)	Bangalore, New Delhi and travel in India	Information on issues specified in ToR; draft findings, conclusions and recommendations

and recommendations, and present them to stakeholders			
Debriefing in Vienna Present preliminary findings and recommendations to UNIDO staff members and the permanent mission, Discuss finalization of the report	1 day	Vienna, UNIDO HQ	Feedback on preliminary findings
Report writing Preparation of report; integrate parts of the report written by the national consultant; Integrate comments received and prepare final version according to UNIDO standards	6 days	Home base	Evaluation report
Total	**20 days**		

Qualifications:

- Advanced university degree in management and/or economics or a development related field;
- Extensive experience in the implementation, monitoring and evaluation of technical cooperation projects;
- Extensive knowledge and experience in the field of industrial development and technology transfer
- Experience from working in India desirable
- Preferably, knowledge of UNIDO or experience from working with the UN system.

Language: English

Background information:

- Terms of Reference
- UNIDO Evaluation Policy
- UNIDO template for evaluation reports
- ICAMT evaluation (2006)
- UNIDO Country Evaluation India 2011
- UNIDO Thematic Evaluation of International Technology Centres

Impartiality:
According to UNIDO rules, the consultant must not have been involved in the preparation, implementation or supervision of the programme/project under evaluation.

Independent Evaluation
International Centre for Advancement of Manufacturing Technology
US/GLO/08/010 and SF/GLO/08/009

JOB DESCRIPTION

Post title National evaluation consultant

Post number

Duration 20 days (spread over 2 months)

Date required August 2011

Duty station Home base and travel in India

Duties

As a member of the evaluation team and under the supervision of the Team Leader the consultant will participate in the independent evaluation of the independent evaluation of the International Centre for Advancement of Manufacturing Technology (ICAMT), located in India, according to the Terms of Reference attached. In particular, he/she will be expected to:

Duties	Duration	Location	Outputs
Preparatory Phase Desk study of project documents, progress reports, self-evaluation reports, annual reports, etc. Provision of inputs to survey and management of survey.	5 days	Home base	Desk evaluation report and programme for mission in India and interview guidelines
Field mission Carry out meetings, visits and interviews with stakeholders according to the evaluation programme together with the international consultant Participate in drafting the main conclusions and recommendations and present them to stakeholders	8 days (incl. travel)	Bangalore, New Delhi and travel around India	Information gathered on issues specified in ToR; draft findings, conclusions and recommendations
Analyse survey results and contribute to the evaluation report as agreed with the team leader	7 days	Home base	Evaluation report
Total	20 days		

Qualifications:

- Advanced university degree in management and/or economics or a development related field;
- Extensive experience in the implementation, monitoring and evaluation of technical cooperation projects;
- knowledge of industrial development issues, in particular in the field of technology promotion and the related institutional environment
- In-depth knowledge of the policy and institutional framework for industrial development in India.

Language: English

Background information:

- Terms of Reference
- UNIDO Evaluation Policy
- UNIDO template for evaluation reports
- ICAMT evaluation (2006)
- UNIDO Country Evaluation India 2011
- UNIDO Thematic Evaluation of International Technology Centres

Impartiality:

According to UNIDO rules, the consultant must not have been involved in the preparation, implementation or supervision of the programme/project under evaluation.

ANNEX 2 - Checklist on evaluation report quality

Report quality criteria	UNIDO Evaluation Group Assessment notes	Rating
A. Did the report present an assessment of relevant outcomes and achievement of project objectives?		
B. Were the report consistent and the evidence complete and convincing?		
C. Did the report present a sound assessment of sustainability of outcomes or did it explain why this is not (yet) possible?		
D. Did the evidence presented support the lessons and recommendations?		
E. Did the report include the actual project costs (total and per activity)?		
F. Quality of the lessons: Were lessons readily applicable in other contexts? Did they suggest prescriptive action?		
G. Quality of the recommendations: Did recommendations specify the actions necessary to correct existing conditions or improve operations ('who?' 'what?' 'where?' 'when?)'. Can they be implemented?		
H. Was the report well written? (Clear language and correct grammar)		
I. Were all evaluation aspects specified in the TOR adequately addressed?		
J. Was the report delivered in a timely manner?		
A number rating 1-6 is used for each criterion: Highly Satisfactory = 6, Satisfactory = 5, Moderately Satisfactory = 4, Moderately Unsatisfactory = 3, Unsatisfactory = 2, Highly Unsatisfactory = 1, and unable to assess = 0.		

Annex C: Organisations visited and people met

Government of India	
Chaitanya Prasad	Joint Secretary DIPP, MCI
Raj Srivastava	Counsellor (Eco/HoC), Embassy of India, Vienna
A. Lakshmanaswamy	Research Officer DIPP, MCI
UNIDO	
Anders Issakson	Industrial Development Officer, PTC/BIT/ITU
Antonios Levissianos	Deputy Representative South Asia
Ayumi Fujino	UR India and Regional Director South Asia
B.L. Gupta	National Consultant ICAMT
Deepak Ballani	National Programme Officer ICAMT
Fatou Haidara	Director ODG/PMO
Mahendra Singh Dhakad	Programme Director ICAMT
Margareta De Goys	Director Evaluation Group
Mihir Banerji	National Consultant ICAMT
Mohamed Lamine Dhaoui	Director PTC/BIT/OD
Peter Loewe	Senior Evaluation Officer, Evaluation Group
Philippe R. Scholtes	Director PTC Agro
Shailesh Sheth	Senior National Consultant ICAMT
Suman Lederer	Evaluation Consultant
Tonilyn Lim	Industrial Development Officer, Delhi
V.K. Subramanya	National Consultant ICAMT
Vinay Vij	National Programme Officer Delhi
Y. Kulur	Unit Chief and Deputy to the Director, PTC/BIT/ITU
Partners and clients	
B. Damodar	Dynatech Tools & Devices, Bangalore
B.R. Satyan	Director, Central Manufacturing Technology Institute
C. Muthuswami	President, Scientific & Indl. Testing & Res Center

C.S. Shiva Shankaraiah	MD, Trishul Machine Tools Pvt. Ltd., Bangalore
D. Balasundaram	Vice President, COINDIA, Coimbatore
Devendra Jain	PLUSS Polymers, Faridabad, NCR, Delhi
H.K. Sridhara	Chairman, PRECITEC Precision Machineries, Bangalore
H.S. Nikhila	MD, PRECITEC Precision Machineries, Bangalore
Indradev Babu	MD, UCAM, Bangalore
Jitendra Pareek	Eco-Vision Industries, Greater Noida
Mohan Ram	Senior Advisor Technology IMTMA
N. Visvanathan	CEO, Ammarun Foundries, Coimbatore
P.J. Mohanram	Indian Machine Tool Manufacturers' Association
P.S. Raghunathan	CFO, COINDIA, Coimbatore
R. Iyyadurai	Director, COINDIA, Coimbatore
R. Suresh	Klad On Design Pvt. Ltd., Bangalore
R.K. Singh	SRB Machines Ghaziabad, U.P.
S.K. Nayak	Director General, CIPET, Chennai
Santosh M. Prabhu	Tool Grinding Technologies Inc. Bangalore
Surendra Goel	SRB Machines Ghaziabad, U.P.

Annex D: Main documents consulted

Please note that, in addition to the below listed main planning and evaluation documents, the evaluation mission also perused operational documents, in particular agendas and minutes of Steering Committee meetings, sector project progress reports, as well as a comprehensive set of power point presentations prepared for the evaluation by the ICAMT team.

Planning Commission, Government of India: Eleventh Five Year Plan, 2007-12, Volume III, agriculture, rural development, industry, services, and physical Infrastructure
Republic of India: Country Programme of Cooperation between the Republic of India and UNIDO 2008-2012
UNIDO-ICAMT: Progress Report August 2011 (Annexure A-1)
UNIDO-ICAMT: Progress Report September 2011 (Annexure A-1)
UNIDO-ICAMT: Technical Report on Post Conflict Rehabilitation of The Housing Sector in Afghanistan: Existing Production Capacity in Stone Sector And Technology Upgradation Programme, n.d.
UNIDO: ICAMT, Final Report of the Independent Evaluation Team, 2006
UNIDO: Independent Evaluation Report Country Evaluation India, 2011
UNIDO: Independent Evaluation, India Country Service Framework, 2007
UNIDO: Independent Thematic Evaluation ITPO Network, 2010
UNIDO: Operational Phase of the International Centre for Advancement of Manufacturing Technology, 2008
UNIDO: Project Document (Draft), Establishment of Technology Demonstration Training cum Production Centre for Production of Building Components for Low Cost Housing in Sierra Leone, n.d.
UNIDO: Thematic Evaluation of UNIDO's International Technology Centres, 2011
www. unidoicamt.org