

CLUSTER TWINNING

Understanding the Dynamics and Methodological Issues

Technical Paper



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



CLUSTER TWINNING

Understanding the Dynamics and Methodological Issues

TECHNICAL PAPER

**CONSOLIDATED PROJECT FOR SME DEVELOPMENT IN INDIA
CLUSTER TWINNING (TFIND04A01) AND RELATED COMPONENTS**



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Vienna, 2013

DISCLAIMER

This document has been produced without formal United Nations editing.

The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

The purpose of this study was to identify the key methodological issues that can promote cluster development through cluster to cluster learning. The report prepared is largely based on the facts provided by the stakeholders (interviews), the various Cluster Development Agents (CDAs) and the inputs and materials provided by the UNIDO Cluster Twinning Export Team. The opinions, figures and estimates set forth are thus the sole responsibility of the authors and should not necessarily be considered as reflecting the views or carrying the endorsement of UNIDO.

ACKNOWLEDGEMENTS

This report was prepared by Dr. Tamal Sarkar of the Foundation for MSME Clusters (FMC), India, and Ms. Natascha Weisert, Industrial Development Officer, Clusters and Business Linkages Unit, UNIDO. The help and support of the following experts and UNIDO colleagues is gratefully acknowledged: Mr. Hemant Verma, UNIDO Cluster Twinning Senior Expert; Mr. Viswanathan Munusamy, Cluster Development Agent for Footwear and Leather Sectors; Mr. Srinivasan Ramanujam Malayankulam, Cluster Business Advisor for Auto-component Sector; Mr. Ramesh Venkatachari, Cluster Coordinator for Auto-component Sector; Dr. James Daniel Paul, Senior Expert for Investment and Technology Promotion (ITP); Mr. Bruno Valanzuolo, former Chief Technical Adviser of the Consolidated Project for SME Development; Ms. Sangeeta Agasty, FMC; Helpful comments and suggestions were also received from Mr. Michele Clara, Coordinator, Research and Policy Advisory Unit and Mr. Nima Bahramalian, Intern, Clusters and Business Linkages Unit.

Acknowledgements are also due to the Italian Cooperation for funding this initiative and the Ministry of Micro, Small and Medium Enterprises (MSME) of India, the national counterpart institution.

LIST OF ACRONYMS

BELAZ	– Belarusian Automobile Plant (Zhodino)	HRD	– Human Resource Development
AIEMA	– Ambattur Industrial Estate Manufacturers' Association	HQ	– Headquarters
ANCI	– Associazione Nazionale Calzaturifici Italiani	HVLP	– High Volume Low Pressure
AP	– Action Plan	IFLMEA	– Indian Finished Leather Manufacturers and Exporters Association
AOBO	– Analysis of Business Operation	IILF	– India International Leather Fair
ASSOMAC	– Association of Machinery Manufacturers	IILP	– Institute of Leather Products
ATC	– AIEMA Technical Centre	ILIFO	– Indian Leather Industry Foundation
B2B	– Business to Business	ISF	– Indian Shoe Federation
BDS	– Business Development Services	ITP	– Investment and Technology Promotion
BDSP	– Business Development Service Provider	ITPO	– Investment and Technology Promotion Offices
BHEL	– Bharat Heavy Electricals Ltd.	JV	– Joint Ventures
BMO	– Business Member Organizations	MCGF	– Mutual Credit Guarantee Fund
C2B	– Consumer to Business	MoU	– Memorandum of Understanding
C2C	– Developed Cluster to Developing Cluster	MSME	– Micro, Small and Medium Enterprises
CA	– Cooperation Agreement	NCR	– National Capital Region
CAD/CAM	– Computer Aided Design/ Computer Aided Manufacturing	NID	– National Institute of Design
CDA	– Cluster Development Agent	NIFT	– National Institute of Fashion Technology
CDP	– Cluster Development Programme	NLDP	– Neighbourhood Leadership Development Programme
CEO	– Chief Executive Officer	OEM	– Original Equipment Manufacturers
CETP	– Common Effluent Treatment Plant	PISIE	– International Polytechnic for the Industrial and Economical Development
CFTI	– Central Footwear Training Institutes	QCC	– Quality Control Circles
CII	– Confederation of Indian Industry	SC	– Steering Committee
CLE	– Council of Leather Exports	SDP	– Staff Development Programme
CLRI	– Central Leather Research Institutes	SIDBI	– Small Industries Development Bank of India
CMS	– Content Management System	SME	– Small and Medium Enterprises
COMFAR	– Computer Model for Feasibility Analysis and Reporting	SPC	– Statistical Process Control
CPP	– Company Project Proposal	SPX	– Subcontracting and Partnership Exchange
CNC	– Computer Numeric Control	TAFE	– Tractors and Farm Equipment Ltd
CSR	– Corporate Social Responsibility	TPM	– Total productive maintenance
CT	– Cluster Twinning	UNIDO	– United Nations Industrial Development Organization
CTA	– Chief Technical Advisor	VTT	– Visual Training Tool
DIPP	– Department of Industrial Policy and Promotion	ZLD	– Zero Liquid Discharge
EGA	– Excellence Gap Analysis		
FICCI	– Federation of Indian Chambers of Commerce and Industry		

TABLE OF CONTENTS

Executive Summary	viii
Chapter 1: introduction.....	1
1. Background	1
2. Objectives.....	2
3. Selection of Clusters	2
4. Cluster Coverage	2
5. Management Structure	3
6. Nature of CT Activities	3
6.1 Chennai Leather Cluster	3
6.2 Chennai Footwear Cluster	4
6.3 Chennai Auto Components Cluster	5
Chapter 2: Chennai Leather Cluster.....	7
1. Selection of Twinning Partners	7
1.1 Selection of Indian Association	7
1.2 Selection of Italian Association	7
2. Major Problems	7
3. Implementation	8
3.1 Signing of Cooperation Agreement.....	8
3.2 Promotional Trust-building Activities	8
3.3 Training and Technology Need Assessment	9
3.4 Technical Training	10
3.5 Interactive Session with Italian Leather Experts on Sustainability – The Challenge in Leather Manufacturing	12
3.6 Technical Seminar/Workshop on Cleaner Technology, Energy Conservation, Benchmarking of Business Operation	12
3.7 Visualized Training Tool (VTT) on tannery effluent treatment and Seminar on Benchmarking in the tanning industry and interactive session on VTT and cleaner tanning technologies	13
4. Cluster Twinning – Key Issues and Methodological Implications.....	13
Chapter 3: Chennai Leather Footwear Cluster	15
1. Selection of the Twinning Partners	15
1.1 Selection of Indian Association	15
1.2 Selection of Italian Association	15
2. Major Problems	16
3. Implementation	16
3.1 Trust-Building	16
3.2 Role of Associations and CDAs	17
3.3 Training Need Assessment and Module Design	17
3.4 Training Programmes	19
4. Cluster Twinning – Key Issues and Methodological Implications.....	20

Chapter 4: Chennai Auto Components Cluster	22
1. Selection of Twinning Partners	22
1.1 Selection of Indian Association	22
1.2 Selection of Italian Association	23
2. Cluster Level Challenges	24
3. Implementation	24
3.1 Vision Building and Strategy Development.....	24
3.2 Website Development	25
3.3 Skills Development Programme (SDP).....	25
4. Cluster Twinning – Key Issues and Methodological Implications.....	27
 Chapter 5: Twinning in a Cluster Development Programme (CDP) – Methodological Issues	29
Step 1: Selection of Emerging Cluster	29
Step 2: Selection of Cluster Development Agents	30
Step 3: Diagnostic study of the Emerging Cluster	30
Step 4: Diagnostic Study of Advanced Cluster(s).....	31
Step 5: Trust-building between and within Clusters.....	32
Step 6: Action Plan Preparation	32
Step 7: Implementation	33
Step 8: Monitoring and Evaluation	35
 ANNEXES	36
Annex 1: Leather Activity Status July 2011	36
Annex 2: Footwear activity status July 2011.....	37
Annex 3: Automotive component activity status July 2011	38

EXECUTIVE SUMMARY

As part of the “Consolidated Project for SME Development in India – Twinning and Related Components”, which was initiated in 2006 and funded by the Italian Development Cooperation, a component focused on “Cluster Twinning” was implemented that aimed at optimal process for the linking two clusters across different countries at different levels of development, i.e. a developed or mature and a developing or emerging cluster that were nevertheless producing similar products.

More specifically, cluster twinning was meant to enhance the competitiveness and sustainability of existing but currently underachieving and not yet fully developed SME cluster. This objective was to be achieved by forging twinning arrangements between Indian and foreign clusters, by strengthening the capacities of firms within clusters through linkages among the internal cluster firms and between the firms and their support institutions.

The first chapter describes the overall project set-up and the component objectives. It also describes the selection of target clusters, including the Chennai leather and footwear clusters as well as the Pune automotive component cluster, reviews the overall management structure of the project, and introduces the various types of twinning activities that were conducted in the clusters. Chapters 2, 3 and 4 describe the activities undertaken and the dynamics experienced at the level of each cluster.

Finally, Chapter 5 proposes, based on the project’s experience in India, a step-by-step approach for the implementation of cluster twinning activities. In line with the key elements of the generic UNIDO Cluster Development approach¹, cluster twinning requires:

1. The careful **selection of the emerging cluster** to be developed (based on given project objectives),
2. The selection and training of **Cluster Development Agents (CDAs)**,
3. The undertaking of a **cluster diagnostic study of the emerging cluster**

4. The **replication of these steps at the level of the mature cluster**, based on the diagnostics of the emerging cluster
5. The undertaking of **trust-building activities** between and within clusters
6. **Action plan preparation**
7. **Implementation** of the planned activities
8. **Monitoring & Evaluation** activities to monitor progress and confirm results.

Based on these steps condensing the India project experience and lessons learned, UNIDO would like to facilitate the implementation of well-structured and results-oriented cluster twinning projects and initiatives in the future and stands ready to engage with cluster twinning practitioners to further enhance its approach and exchange best practices, project ideas and concepts.

¹ For more information, please refer to <http://www.clustersfordevelopment.org>.

1 INTRODUCTION

1. BACKGROUND

UNIDO has initiated cluster development programmes in several countries across Asia, Africa and Latin America. This included not only cluster and network development-related approaches, but also a number of specialized approaches such as promoting CSR, poverty alleviation, etc. through a cluster approach. In pursuit of this process of specialization and experimentation with newer concepts, this Cluster Twinning Project (Project) or rather project component was aimed at developing an optimal process for the linking two clusters across different countries – one developed and the other not so developed, but producing near similar products.

It should be noted that the Cluster Twinning component was a project component of the “Consolidated Project for SME Development in India –Twinning and Related Components”. The “Consolidated Project” overall consisted of three basic components structured into two broad areas: Mutual Credit Guarantee Fund (MCGF) on the one side, and Cluster Twinning (CT) and Investment and Technology Promotion (ITP), on the other. The following were the major components of the sub-components of the Consolidated Project:

- **Cluster Twinning (CT):** This was aimed at enhancing the competitiveness and sustainability of existing but currently underachieving SME clusters. This objective will be achieved by forging twinning arrangements between Indian and foreign clusters, to strengthen the capacities of firms within clusters through linkages among the firms, between the firms and the other cluster level institutions and between specific clusters in India and abroad. The component builds upon some of the work already undertaken within the framework of the UNIDO/ITALY Programme for SME Development in India (Project US/

GLO/95/144) and it is linked to recent initiatives taken by the Indian Ministry of Small Scale Industries.²

- **Investment and Technology Promotion (ITP):** Here, the activities were aimed at increased international competitiveness of Indian SMEs, through acquisition of foreign technology and investment.

- **Mutual Credit Guarantee Fund (MCGF):** Institutional capacity building towards the establishment and the operation of a Mutual Credit Guarantee Fund in India, as an important institutional mechanism for mobilizing financial support to SMEs. Moreover, a recent Agreement between the Ministers of the Italian and Indian Governments to promote establishment of mutual credit guarantee schemes in India reinforced the relevance and the timeliness of this issue.

This paper primarily tries to capture the journey for the CT component. It also considers the ITP component to the extent that it has influenced the CT component.

In this Chapter, we describe the overall objective of the Project, the process of cluster selection and the set-up of the project’s management structure. We also provide a basic introduction to the types of twinning activities that were conducted in the clusters. Chapters 2, 3 and 4 describe the dynamics of activities for the various clusters that were worked upon under the Project. Based on what was learned, Chapter 5 suggests some methodological issues related to twinning of clusters.

2. OBJECTIVES

As already noted, CT was targeted at enhancing the competitiveness of underachieving SME clusters by forging twinning arrangements between Indian and foreign clusters, to strengthen the capacities of firms within clusters through cooperative linkages among the firms, between the firms and the other cluster level institutions and between specific clusters in India

² Now known as the Ministry of Micro, Small and Medium Enterprises

and abroad. Twinning between two clusters constitutes likely areas of business cooperation between a range of stakeholders of the clusters. A set of clusters for twinning generally consists of an emerging (developing) and a mature (developed) cluster.

Thus CT can be termed as “CDP Plus”, wherein, apart from standard CDP³ within clusters, special efforts will be made relating to the needs of the clusters to twin with appropriate Italian clusters. The ITP component would further enhance the process by providing scope for acquisition of foreign technology and investment. MCGF was aimed towards mobilizing financial support for the SMEs. It was particularly “...stressed that the three components will be strictly integrated...”

3. SELECTION OF CLUSTERS

The Project initially envisaged picking up “...at most two Indian and foreign clusters in a selected industrial sector (e.g. glass manufacturing). However, although originally conceived in the year 2002, discussions on the project among different partners and stakeholders were only finalized in 2006, when project implementation was initiated⁴. Here it was decided that “...all the involved parties would review the project document again and provide their inputs on the necessary changes. The consolidated paper ... will be treated as an annex and integral part of the approved/signed project document.” Also both the donor and the counterparts agreed that the Project should cover several clusters in different sectors for CT to enhance Project relevance and maximize potential of ITP and MCGF. At this stage, the then UNIDO Project Manager for the CT component highlighted the fact that this increase in sectors and clusters would spread the available funds more than envisaged.

It was agreed that the cluster selection process would be finalized by March 2006. The Indian clusters will be finalized by the Indian counterpart and the Italian

clusters by ITPO. The selected Italian clusters should be potentially willing to twin with Indian clusters.

4. CLUSTER COVERAGE

Nine Indian clusters were selected from three sectors for detailed study. These included the following:

Leather and Leather Products – Chennai, Shantiniketan and Agra: Shantiniketan was not selected to start with. Chennai got preference over Agra on two counts. Firstly, the corresponding footwear cluster in Italy was producing men’s footwear, an item mostly being produced in Chennai, and secondly, Agra had no leather cluster. Also, having selected the Chennai footwear cluster, it makes sense in selecting the Chennai leather cluster to better utilize Project resources. Also, the cluster had some existing JV and technical collaboration with Italy.

Auto Components – Chennai, Gurgaon and Jamshedpur: Here Jamshedpur was not selected as the units were mostly linked to the TATA Motors, with very little scope for CT. Similarly, although Gurgaon had a large number of JVs, there was no Italian linkage. The same applied to Chennai where the majority of firms were of small size. Chennai probably scored over Gurgaon because of economies of MCGF and ITP implementation. However Gurgaon was also selected for its ITP component. However, by early 2008 it was found that Turin in Italy was not interested in twinning as it was also going through a rough phase. Instead it was decided to take up Gurgaon and Pune for ITP and standard CDP (e.g. supplier development Programme) for all the three (Pune, Chennai, Gurgaon) clusters.

Light Engineering – Belgaum, Jaipur and Baraipur: This sector was not selected as, probably, the idea was to optimize the number of clusters to suit the Project resources.

So ultimately two sectors and six clusters were chosen for the following purposes. Also the convergence phenomenon of ITP, MCGF and CT was diluted to some extent.

³ A Cluster Development Programme (CDP) identifies issues of common concerns and opportunities for cluster stakeholders and addresses those for groups of stakeholders involved in each of those issues. For further details, please see Chapter 5 on methodological issues.

⁴ 1st SC Meeting held on February 6, 2006. Prior to that in a letter dated July 2, 2004, UNIDO suggested that on the basis of a preliminary survey of Treviso-Textiles, Modena-Machine Tools, Parma-Food Processing, Sassuolo-tiles and ceramics and Marano-Glass, the textiles cluster of Treviso was the best case for intervention.

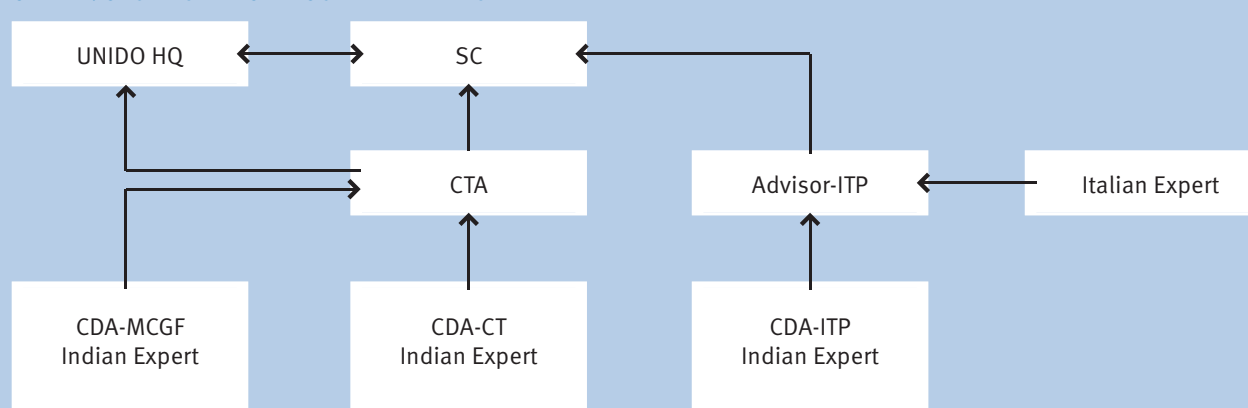
TABLE 1: SELECTED CLUSTERS

	AUTO COMPONENTS			LEATHER	LEATHER PRODUCTS	
	CHENNAI (2007)	PUNE (2008)	GURGAON (2008)	CHENNAI (2007)	CHENNAI (2007)	SHANTINIKETAN (2007 – SELECTIVE INTERVENTIONS)
CT	✓			✓	✓	✓
ITP	✓	✓	✓	✓	✓	
MCGF	✓	✓				

5. MANAGEMENT STRUCTURE

The organigram for programme management was as follows:

CHART 1: ORGANIGRAM OF PROGRAMME MANAGEMENT



HQ: Headquarters, CDA: Cluster Development Agent, SC: Steering Committee, CTA: Chief Technical Advisor

6. NATURE OF CT ACTIVITIES

6.1 Chennai Leather Cluster

The leather cluster of Chennai has around 650 units (including three large ones, the rest being MSMEs). The major issues facing the cluster where there were twinning possibilities were (a) training needs in machinery and processing for wet-blue⁵ tanning; (b) access to latest technology and (c) new product development. Here, barring creation of new products, twinning activities were done both with regard to training as well as to access to the latest technology. The creation of new products was an area that was very high on the agenda of the Indian association, but very low on the agenda of the Italian counterpart.

Selection of the Chennai leather cluster was confirmed in the 2nd SC Meeting on 26th February 2007. By September 2007, IFLMEA was identified as the corresponding association and CLRI as the corresponding technical consultant. However, the determination and confirmation of the Italian association took some time⁶. After several intense efforts the agreement was ultimately signed in June 2008 (see Chapter 3, Section 3.1). Thereafter several trust-building activities started with the Indian cluster (see activity⁷ 5 to 12).

As envisaged in the original project document, several training activities followed in the twinning zone. These activities were selected on the basis of the diagnostic study and the various rounds of discussion that were subsequently conducted by the Project

⁵ "Wet Blue" is the tanning process where chromes are used to process the leather from raw hide to finished leathers. In the raw state chrome tanned skins are blue in colour and therefore referred to as "wet blue."

⁶ Informed by IFLMEA and secondary data provided by the project team.

⁷ See Annex 1 "Leather Activity Status June 2011".

Team with the stakeholders of the Indian cluster. These include the following:

- The first significant twinning activity took place in March-April 2009, wherein an Italian expert did a baseline survey of the training needs of the leather sector for all three components – tanning, machinery and finishing for a cross-section of 14 firms (activity 13).
- The inputs were discussed internally by IFLMEA and the second twinning activity of selection of 20 firms by IFLMEA and their class room training on inputs from Italian experts was provided in April 2009 (activity 15).
- As a third twinning activity intensive factory level training was conducted by two Italian experts during December 2009 to February 2010 for 22 firms (activity 17).
- The fourth twinning activity was intensive factory level handholding for 11 firms in finishing during June-July 2010 (activity 21).
- The fifth twinning activity was an interactive session of CLRI and tanning units with Italian expert in February 2011 (activity no. 27).
- The sixth twinning activity was launch of VTT and benchmarking in the tanning industry in December 2011 (activity 32).

These training programmes saw continuous involvement of CLRI. While IFLMEA played an important role in this process, the role of Associazione Conciatori needs to be better understood. A number of dissemination activities followed, too (see activity numbers 16, 18, 19, 22, 23, 26, 33). Also as a result of these activities IFLMEA, along with UNIDO, came up with a possible service package for tanning units. The most potential activity in the offing is taking forward learning by CLRI (activity 30).

As envisaged in the original project document the following types of activities did take place:

- Assessment of training needs
- Training of trainers, including factory level supervisors, technical staff of technical institutes

- Training of Indian firms and handholding for implementation
- Visit to Italian clusters, having typical comparative advantages, by Indian association

6.2 Chennai Footwear Cluster

The footwear cluster of Chennai has around 400 units (including three large ones, the rest being MSMEs). The major issues facing the cluster where there were twinning possibilities were (a) training needs manufacturing and design and (b) access to latest technology. Twinning activities were carried out for both.

The Chennai Footwear cluster was finalized in the 2nd SC Meeting on 26th February 2007. By September 2007, ISF was identified as the corresponding Indian association and both CFTI (mostly for footwear technology) and CFTI (mostly for design as well as manufacturing) as the corresponding technical organizations. Three clusters were short-listed in Italy. These include – Marche (60% of the footwear companies of Italy mainly produce men's footwear), Rive Del Brenta (mostly women's footwear, e.g. in Agra) and Firenze (very small). Accordingly Marche, which also produces men's shoes, was selected by June 2007.

The Italian association for the period October 2007 to October 2008 was Unioncamere. This is a national level organization and the signing authority was the Marche chapter. This MoU was not renewed. Instead a second MoU was signed with another association, Confindustria in October 2008 and was valid till October 2009⁸. This was signed during a visit of an ISF delegation to Italy as a part of the study tour. The Italian technical agency PISIE was identified in December 2007. However, no MoU was signed, though there was attempt, between the corresponding technical agencies, i.e. between CLRI and CFTI with PISIE (promoted by ASSOMAC). Thereafter a few trust-building activities started with the Indian cluster (see activity numbers 5, 6, 8 in Annex 2) which continued with implementation (see activity numbers 11, 14 in Annex 2).

As envisaged in the original project document, several training activities followed in the twinning zone. These include the following⁹:

⁸ See Chapter 3 on Footwear for further details.

⁹ See Annex "Footwear Activity Status June 2011"

- The first significant twinning activity took place in February 2008, wherein an Italian expert did a baseline survey of the training needs of the footwear sector by taking a sample of 14 firms and suggested mainly classroom training (activity 9).

- The second twinning activity consisted of ISF selecting 20 firms, with classroom training on inputs from Italian experts provided in March-April 2008 (activity 10).

- As a third twinning activity intensive factory-level training was conducted by two Italian experts for two to four days per firm for 20 firms during April to June 2008 (activity 10).

- The fourth twinning activity was selection of the 14 best performing firms by ISF and their visit to Italy for training in footwear technology in September 2008 (activity 9).

- The fifth twinning activity was organization of training in Italy in September 2008 (activity 15).

- The sixth twinning activity was training in design practices and trend forecasting in October 2009, when nine firms and three institutes participated (activity 20).

- The seventh twinning activity was training of a faculty member of CLRI in CAD/CAM in Italy in December 2010 (activity 28)

These training programmes saw continuous involvement of CLRI and CFTI. ISF performed an important role in this process. A number of dissemination activities followed, too (see activity numbers 16, 23, 24, 28, 29, 30, 31). As a result of these training and exposure visits, the Indian technical organizations came up with various training activities. These include the following¹⁰:

- Repeat training based on training conducted in India by international experts and training in Italy - two days per company training by CLRI and CFTI through ISF (activity 18)

- Training Circles in Cluster SMEs – follow up of the best practices in training and dissemination of

solutions to common problems – essentially two one-day workshops

- First 2 weeks design training programme by CLRI in November 2009 (activity 21)

- Second two- weeks design training programme by CLRI in December 2010 (activity 22)

- Training on footwear design by CLRI and CFTI trainers in January-March 2011 (activity 30).

Also as a result of these activities, ISF, along with UNIDO, came up with a possible service package for tanning units. The most potential activity in the offing is taking forward the learning by CLRI (activity 30). Also a lean manufacturing network has been created (activity 19) and another is in the offing (activity 27).

As envisaged in the original project document the following types of activities took place:

- Assessment of training needs

- Training of trainers, including factory level supervisors, technical staff of technical institutes

- Training of Indian firms and handholding during implementation

- Presentation of foreign clusters to Indian associations

- Training through exposure to Italy and training thereof.

6.3 Chennai Auto Components Cluster

The auto components cluster of Chennai has around 3,000 units spread over various industrial belts. The major issues facing the cluster where there were twinning possibilities were technology (and maybe associated training) in the areas of mould designing, low pressure die casting, CNC machining, testing equipment, etc.

The Chennai auto components cluster was finalized in the 2nd SC Meeting on 26th February 2007. By 2007, AIEMA Technology Centre was identified as the corresponding association of the Indian counterpart. The process of identification of an Italian counterpart presented technical difficulties. Ultimately (as

¹⁰ See Annex 2 “Footwear Activity Status June 2011”

described in the third Steering Committee meeting) in early 2008, it was stated that identification of a suitable Italian cluster was difficult under conditions of global recession and unwillingness to enter into a framework of cooperation. Instead, firm-level upgrading activities were initiated in few clusters.

However, in the meanwhile the CT component had initiated several trust-building activities in the cluster. These included creation of cluster-level network of 45 micro units (activity¹¹ 2, 5), trust-building/action-plan-oriented activities (activities 3, 7, 8) and specific ITP activities such as profiling and related knowledge-building (activities 1, 4). Subsequently the Steering Committee suggested picking up full-fledged ITP and training activities in two more clusters along with Chennai. Subsequently the CT component of Chennai started working on somewhat different issues – upgrading and some cluster-development-related activities.

The CDP component covered the following major types of activities¹²:

- Gap assessment for the development of firm-level visions and strategic goals during April-November 2008 (activity 9, 19)
- Implementation of gap assessment tools for vision-building at firm level during August – October 2009 (activity 20)
- Exposure to benchmarks within India (activities 13, 15)
- Various AP-oriented activities (activities 11, 12, 29)
- Creation of websites in 2009 (activities 17, 18, 21)
- Supplier Development Programme (activities 24, 28, 30-33)
- Lean manufacturing (activities 34,36)
- New knowledge generation in social accountability, theory of constraints, waste minimization (activities 36, 37, 41)
- A number of ITP activities, e.g. meeting consultants and experts with cluster firms (activities 10, 14,

16, 39), interaction with international experts (activities 25, 26)

- Creation of Project Report for CFC through COMFAR (ITP supported).

¹¹ See Annex 3, Auto Component Activity Status June 2011.

¹² See Annex 3, Auto Component Activity Status June 2011.

2 CHENNAI LEATHER CLUSTER

1. SELECTION OF TWINNING PARTNERS

To promote the process of twinning between India and Italy the entry points were identified as concerned associations and technical institutions.

1.1 Selection of Indian Association

The extended Chennai leather cluster consists of over 650 different sized small tanneries and integrated as well as finished leather manufacturing units, spread over a wide area including Chennai and the surrounding places of Ambur, Ranipet, Vellore and Vaniyambadi. The smaller tanneries process rawhide and skin up to wet-blue/EL leather stage. The relatively larger and integrated units produce shoe-upper leather, garment, gloves articles, linings both of goat and sheep skins and bovine or buffalo hides. The latter also have an additional supply of semi-finished raw material mostly as wet-blue processed goat/sheep skin from Ethiopia. About 40 percent of the finished leather exported by India originates from this cluster.

The Indian Finished Leather Manufacturers and Exporters Association (IFLMEA) is the lead association of finished leather manufacturers and exporters based in Chennai. It has a membership of 110 finished leather units¹³ as well as integrated units spread over the entire area. This suits the requirement of cluster to cluster learning from the Italian association. IFLMEA plays important roles in (a) promoting the technological frontier of its members and (b) promoting the cause of its members in overcoming procedural and policy bottlenecks. IFLMEA also takes initiatives to liaise members' interest with leather goods, leather garments and the shoe industry, thereby acting as a vital link in the leather industry value chain. Hence IFLMEA was an appropriate choice for value transfer from the entire range of cluster stakeholders.

1.2 Selection of Italian Association

The Santa Croce tannery cluster has around four hundred tanneries and four hundred third party companies, employing over ten thousand employees. It has a turnover of over two billion Euros. With 35 percent of the total Italian production of skins and 98 percent of sole leather and, more importantly, purifying over 98 percent of the total pollution load produced by the companies in the district, Santa Croce is a lead cluster in leather¹⁴.

The Associazione Conciatori is an industry association of Santa Croce of tanning companies specialized in chrome tanning, vegetable tanning, and manufacturing of leather soles, all located in the municipalities of Santa Croce sull'Arno and Castelfranco di Sotto, in the province of Pisa, and Fucecchio, in the province of Florence. It is a pro-active association which provides its members with a wide range of services, including exploration of foreign markets. Accordingly, Associazione Conciatori was selected as the corresponding Italian association.

2. MAJOR PROBLEMS

The major issues facing the cluster, where there were twinning possibilities, were:

(a) Training needs for the latest technology for finished leather, machinery and processing

The Indian industry mainly relies on local raw material, such as rawhides and skins. As hides of Indian origin come with lot of surface defects, which makes the appearance/quality inferior and thereby less valuable, there is a need for technologies or new products that can camouflage the defects and provide greater added value. Often there are special chemicals and techniques for this. Such and similar leads are the need of the hour.

(b) New product development

¹³ Discussion with IFLMEA.

¹⁴ Secondary data received from UNIDO CT Programme

The Indian leather industries largely cater to export markets. These export markets are highly fashion-conscious and the fashion changes at least twice every year. Indian companies, having less direct access to these markets, cannot forecast the trends and colours in advance; thereby, they are not able to get good value for products. Whereas, Italian manufacturers have greater accessibility to the Italian/ European and other leather markets and therefore have a better understanding of market needs/preferences. This causes the dependency of the Indian companies on the Italians to understand the market demand and this is why they are more willing to learn new technologies and products, items not on the agenda of Italian companies.

Development of new fashionable products in Italy is naturally a business secret, as the major Italian competitors derive their advantage from this specialty. Hence there is always a fear that development of new products by Indian 'competitor' companies may further tighten the competition between Italian companies. Thus, barring creation of new products, twinning activities were done both for training as well as access to the latest technology. Creation of new products is an area that was very high on the agenda of the Indian associations, but very low on the agenda of the Italian associations.

3. IMPLEMENTATION¹⁵

A number of classical twinning activities were carried out in this cluster. The following sections will explain these activities in more detail.

3.1 Signing of Cooperation Agreement

Need for this activity was generated from the supply side's wish to create a backdrop of cooperation activities to follow and address the major problems. Accordingly, the objective of this activity was to create a broader understanding of the two selected associations and thereafter enter into a cooperation agreement in various areas, to be followed up during the Project period.

Although the Indian association was willing to enter into such an agreement, the process took more time on the Italian side. The primary reason was that at the product level, in some sense, the countries are competing with each other. Both the Italian and the Indian firms are supplying finished leather to the branded product manufacturers. In fact, while the Indian firms do have a relative labour cost advantage, the Italian firms enjoy the dual advantage of (a) advanced techniques and technology and (b) forecasting techniques and creation of new products in advance. Therefore finding a common agenda for collaboration was a difficult task.

The Project therefore took the views of an Italian consultant to an Italian association of machinery manufacturers (ASSOMAC). The consultant had previous links with the Indian organization of Council of Leather Exports (CLE) and understood the Indian ground necessities. He provided some leads to the CTA. Thereafter, IFLMEA got an opportunity to interact with Associazione Conciatori, during the Bologna Fair in April 2008 and initial dialogue on possible collaboration commenced. Soon after, both sides agreed to sign a Cooperation Agreement (CA).

The CA was signed in June 2008. The CA aimed at creating institutionalized and long-term relationships between the two associations and, as a result, between the Italian and the Indian finished leather manufacturers dealing in the Santa Croce and in Chennai for promoting industrial and commercial relations between Italian and Indian companies. This CA envisaged (a) dissemination of the Santa Croce Regional Cluster Model within Chennai finished leather cluster, (b) transfer of techniques from the Italian finished leather industry in respect of environmental protection and safety in workplace issues, and (c) exchange of information pertaining to members of both the associations.

3.2 Promotional Trust-building Activities

The process of trust-building takes place through activities and results thereof once the Programme is in motion. As an organization UNIDO already had trust with IFLMEA derived from a previous NLDP programme. However to set the ball rolling on the

¹⁵ See Annex 1 Leather Activity Status July 2011.

twinning agenda, various “trust-building” type activities were initiated. Some of these are listed below:

IFLMEA, along with the project team, participated in the 23rd edition of the India International Leather Fair (IILF¹⁶), to give greater visibility to twinning initiatives undertaken in collaboration with Italian associations and also to organize a need-based seminar to be held by international experts. Brochures explaining the Subcontracting and Partnership Exchange (SPX) were distributed explaining the process of SPX, its benefits and how to approach. SPX forms were also distributed to the interested companies. Visitors from industries were also explained the use of Company/Project Profile and COMFAR III Expert software.

IFLMEA organized a seminar for the leather industry during the IILF. The Director of the Consortio Aquarno, Santa Croce sull’Arno, the consortium that is operating the common effluent treatment plant in Santa Croce for the tanneries and municipal wastewater, was invited by the project to make a technical presentation on “modern environmental practices and reduction of waste in the tanning industry” with objective to explain the technological advances in Italy. He explained the functioning of Aquarno Consortio, the common wastewater treatment plant in Santa Croce sull’Arno. The forum created an opportunity to exchange news on happenings in the Indian as well as the Italian tanning industry in the environmental area.

After the seminar, Director of Consortio Aquarno, Santa Croce sull’Arno, visited three common effluent treatment plants and also interacted with the Managing Director of Pallavaram CETP and the Chairman of Ranitec CETP. The visit was organized by the Indian Leather Industry Foundation (ILIFO), an organization engaged in treatment of wastewater from tanneries, in association with IFLMEA.

Another seminar was organized where a technology and training needs assessment expert from England delivered a session on ‘Life in a frugal world’. Following this, a meeting was organized between IFLMEA

and the expert to understand the objectives of the technological assessment and plan the activities.

These events not only provided scope for creating visibility of the twinning initiatives by IFLMEA, it also helped interacting with many international experts to determine the future scope of collaboration. Moreover, the seminars with the technological partners created awareness of new technological innovations and also provided an opportunity to plan for training interventions for IFLMEA members with institutes.

3.3 Training and Technology Need Assessment

Low productivity, especially for high-end products is a major concern for the cluster. The need for the activity was to understand and suggest measures to address issues of low productivity and low-value products in the Chennai leather cluster. In contrast, Italy is known both for its high value and higher productivity. Hence the objective of this activity was to understand with the support of an Italian expert the scope for technology/technical up-grading to address these issues.

The activity was implemented with direct involvement of Italian and Indian associations. To start with, IFLMEA and CLRI conducted a quick assessment of the technical training needs and shared the same with Associazione Conciatori in Italy. At the suggestion of Associazione Conciatori, the Project selected an Italian expert, whose credibility in turn was vetted by Associazione Conciatori. The methodology for identification of issues was through firm-level visits and interaction with the management. Fourteen units were selected by IFLMEA for a technology audit. The selection of tanneries was based on criteria such as types of raw material used, end-products and processes as well as size and investment likelihood of tanneries. This would give an appropriate product mix and also the likelihood of ITP at a later stage.

The expert visited the units and came out with the following inputs with respect to quality, productivity and yield. On the quality front it was pointed out that scope exists for improvement in poor dyeing levelness, wet-backing of wet-blue stock, consistency of production, loose grain, low selections of hides or skins, difficulty to reach the desired softness of articles, mechanical resistances, light and dry-wet rub-fastness, etc. On productivity it was suggested to

¹⁶ IILF is a global meet of entire leather and allied industries comprising of manufacturers, exporters, importers, suppliers, agents, distributors, service providers, etc., and therefore gives sufficient scope of interaction to promote business, design, technology and knowledge transfer.

upgrade the drums, which strongly hamper productivity, whilst automation is another way to improve it. Training on automation through audio-visual aids and also on fleshing, splitting, shaving, setting out, vacuum, automatic spraying operations were suggested during the assessment. On yield, inputs on chemical processes, mechanical operations and optimum trimming operations were given by the expert.

Accordingly the first step for skill transfer as a part of the twinning exercise was identified in training of human resources on the following issues – leather technology, machine work practice, leather finishing practice.

Also, dissemination of the findings and recommendations through workshop and one-to-one interactions not only helped the industries realize their technical gaps and learn better practices but also created ground for further twinning possibilities between IFLMEA and Associazione Conciatori to organize various need-based training in the cluster. The expert also suggested different areas for training along with the contents to be delivered.

3.4 Technical Training

The need for such training is a requirement for technical upgrading by the Chennai cluster. From the demand side, the objective was not only to understand the know-how but also to have sufficient handholding to get a grip over the do-how¹⁷ for making a real difference. Accordingly two types of training were designed under the project. One was classroom training giving theoretical inputs and pictorial demonstration – know-how, and the other one was on-site training focusing on finding out the problems and then training through demonstration – do-how. Trainee units were selected by IFLMEA from among its members, concentrating on those who showed interest in improving productivity, quality, yield of finished leather, and introducing cleaner leather processing technologies in their tanneries. Moreover technical experts from CLRI were also trained under the classroom training to enable up-scaling the programme in future. CLRI

scientists were also involved during the factory level demonstration, too.

Managerial Training (Technical): This training was organized for the CEOs and top executives along with technical managers of the tanneries. Experts from CLRI also participated in the training so that they can upscale such training in future. The training was carried out by one Italian expert in Chennai. Twenty-one technical experts from tanneries; two experts from CLRI and one executive of IFLMEA were trained.

On-site Training: This on-site training was given by visiting experts consisting of one finishing expert and one wet-end-process expert. The training was designed to help the underperforming small and medium enterprises to enhance productivity, sharpening the capability, and moreover to know what and where to act. IFLMEA selected 20 units to include a range of tanneries which are (a) deficient in equipment and technical skills; (b) planning to modernize, (c) cover a range of raw materials used and (d) produce a range of finished articles.

The on-site training was given to the technical heads of the tanneries who further gave training to their subordinates, namely, technicians, supervisors and machine operators of their respective units. An Italian expert and an expert from CLRI and executive secretary of IFLEMA visited the units, studied their operation systems and then the experts gave their suggestions and recommendations to the technical head of the units. Twenty tanneries were given on-site training on wet-end leather processing for around 40 days, 1 to 3 days in each unit. Another 31 tanneries were given training on leather finishing techniques for around 30 days.

A number of technical suggestions were made by the experts. Yet, the training got moderate response. Even with the factory level training, barring issues related to machine organization, practical demonstrations – rigorous ‘do-how’ was expected by the participants. Once the latter happens it needs to be followed with rigorous spread mechanism relating to the do-how. As a result, trainees expressed the need for frequent and intensive training, with on-site handholding.

There could be some limitation in addressing such intensive training in a large group of companies (as the

¹⁷ Do-how is a handholding process by an expert with a novice as to how to implement a technology practically while using a new technique or a new machine. Without this even with all explanations, a newcomer to a technology or machine operates at a sub-optimal level and is devoid of full advantages of the same.

TABLE 2: DETAILS OF ON-SITE TRAINING

Details of On-site Training	Number of Participants	Start date	End date
Wet-end leather processing (on-site training)	20 tanneries	12-12-2009	22-12-2009
		09-02-2010	12-03-2010
Leather finishing techniques	31 tanneries	22-06-2010	10-07-2010
		25-08-2010	09-09-2010

training programme was provided to about 30 companies); hence deeper intervention in a small group of companies may be emphasized, with further dissemination of the results to a larger group.

Again, a few tanneries which were mainly handling sheep/goat leather were of the view that the experts were mostly concerned with tough (buffalo) leather and not of much use for them. This shows that the units are heterogeneous when it comes to implementation and exact matchmaking is needed for linkage of units. At times it may so happen that such specialized units and experts may come from a different cluster. For example, while the Santa Croce shoe cluster mostly deals in bovine leather, the Solofra leather cluster deals mostly in sheep/goat leather.

Training on Leather Finishing Technique: The objective of this activity was to provide on-site training to the production managers of different tanneries on leather finishing techniques so as to improve the quality and yield of finished leather. In addition, this activity also envisaged training the units on the application of cleaner technologies.

The expert pointed out the use of obsolete machines in a few tanneries and recommended going in for advanced ones. He also gave suggestions on simple managerial techniques and shop floor management, especially proper machine placement so as to reduce time lost and improve the product quality. He also emphasized on the need to smooth the uneven floors and use forklift trucks and HVLP guns. He recommended discarding dangerous machines such as Slocomb staking¹⁸ and installing safety equipment wherever needed.

The Italian expert recommended that a “Fashion Task Force” should be established by IFLMEA or the CLRI

to channel the latest novelties to the tanneries, since Santa Croce tanneries, being the competitors of the Chennai leather cluster, may not be willing to pass on

BOX 1: IMPACT OF TRAINING THROUGH TWINNING

VAS Noorullah & Co. of Vaniyambadi participated in the training programmes on wet processing and leather finishing. *“We have definitely benefitted from knowledge of how to better utilize the machinery features, processing techniques which improves quality, minimizing variety of chemicals, bringing uniformity in colour within the skin and minimize variations from skin to skin and from batches to batches. Previously the in-process rejection was about 4 to 5 percent and now the same is between 3 to 4 percent.”* says Mr. Idris, Managing Partner, VAS Noorullah & Co. They look forward to collaboration with product specific experts, new chemical suppliers and technology, particularly machinery. *“...The expert in wet end leather processing was extremely useful and the expert has made about 5 sample developments on the above mentioned area. Nearly 4 methods are now currently adopted in this tannery. However, since we are in manufacturing of glove leathers and garment leathers and the finishing expert being specialized in upper; this has yielded only a few benefits...”*, adds Mr Idris.

On a similar note, Mr. Sayeed of Pakkar Leather Exports mentioned that apart from various technical benefits, *“... we have benefitted from the expert advice on positioning the machines as this tannery was under revamp during the visit of the expert... We are still in contact with the expert, Mr. Giuseppe Telara...”*

“Waste minimization by using advanced spray guns in finishing area and use of appropriate chemical and proper layout of machinery to allow easier and logical movement of materials are some of the positives. The future scope for collaboration can be fashionable leathers, new types of finishes, technicians and use of specialty chemicals”, says Mr John Sunder of CLRI.

¹⁸ Slocomb staking is a machine used for softening leather.

such information. However, consultants can be approached directly for the same.

Though this activity reached out to many units, further intensive on-site training with appropriate duration could have generated visible outcomes and branding of the activity would have been possible for easy scaling up. Moreover, trainees suggested that the selection of experts/ trainers needs to match the need of the cluster, especially when one is giving unit-level training.

3.5 Interactive Session with Italian Leather Experts on Sustainability – The Challenge in Leather Manufacturing

The Project in association with CLRI and CLE and AS-SOMAC organized an interactive session with five international experts on the sidelines of the India International Leather Fair 2011. The objective of the interaction was to introduce the latest developments in the field of cleaner technology and latest production technologies to Indian experts from CLRI and a few from the industry. About 40 participants from CLRI, industry and associations attended the programme.

Application of recycling vegetable tanning was explained by the expert from Silvateam. Three variants of semi-rapid tannage systems were elaborated. Following this, application of a metal-free tanning process was explained by the expert from LEDOGA Srl. He briefed participants on chrome-free tanning methods which use two hybrid syntans developed by the SODA chemical company. An expert from VANDONI explained the advantage of a wet white tanning application. This was followed by the presentation by the expert from Erretre on optimizing the use of chemicals. He explained the process of “chemical milling”, an innovation in dry milling of crust leather. He showed that the following properties can be imparted or adjusted by using the chemical milling: water-proofing, stain resistance/proofing, colour enhancing/fixing and touch modifications. The process will yield the following advantages: environmental (no wastewater), economic benefit (smaller quantities of chemicals are sufficient), improved quality of finished leather (chemical applications on both sides), optimizing of spray equipment.

The application of process control in the wet department was explained by a technical expert of ITALPRO-GETTI. He explained the upgraded technologies in the wet processing department. The control mechanisms were timer-controlled drum operations, easy facilities for drum operation, and mechanisms for control of temperature while the process is proceeding. The expert also explained the steps for controlling the quantum of water and liquid chemicals. The innovations developed recently were weight control of the drum and its contents, i.e. material, chemicals and water.

These interactive sessions with international experts and by representatives from technical institutions such as CLRI and the cluster stakeholders gave an opportunity to learn best technology and practices in various areas. These initiatives opened up possible future twinning opportunities by the firm to institution, institution to institution and institution to international sector experts.

3.6 Technical Seminar/Workshop on Cleaner Technology, Energy Conservation, Benchmarking of Business Operation

The Project also identified a few areas of importance which have scope for technical improvements for the tanneries. One such issue was a CLRI patented technology for reduction of salt from tannery effluent and also reducing the chemical costs. Although the technology was demonstrated and the firms showed interest, the issue did not move forward as there is a need for some venture fund to do full-scale batch production, which requires substantial investment. CLRI is willing to charge Rs 50,000 per firm to do a technology transfer, provided at least ten firms are willing. Also the units need to invest in raw materials depending on the batch size. UNIDO is willing to bear the logistic cost of the trainers.

Energy is another major concern area in tanneries. A workshop on “Energy Conservation in the Tanning Industry” was organized. The workshop was particularly aimed at creating awareness on the energy conservation possibilities in tanneries and application of the solar heating in tanneries. The workshop was attended by about 60 companies; most of them were tanneries located in and around Ranipet.

ILIFO, which gives technical services to the leather and allied industries mainly focusing on environment related issues, talked about “Rationalized Energy Use in Tanneries and ETPs”. The results were presented consequent to several energy audit and improvement measures undertaken by a group of tanneries in Palavaram with the support of another project on BDS Development by SIDBI.

Industries learnt that the main losses of energy occur in drum operations, compressed air systems and thermal systems in tanneries. The main reasons for energy loss in drums are due to wooden V block bearings, eccentricity in gear wheel and star shaft, cast gear teeth and belt slip. Modifications to improve the situation in existing drums make it possible to reduce the electricity consumption, quantifying and eliminating air leaks; efficient line size and optimal pressure setting improves the compressed air system and thus reduces electricity consumption. Proper storage of firewood, firewood quality monitoring, firewood feeding frequency, insulation and correct sizing of piping improves the efficiency of thermic fluid heaters. T-5 tubes for lighting which has a colour rendering index of 75 – 98 are most suitable for industrial lighting. Pumps need to be operated close to their best efficiency point. Reducing the number of washing and combining unit processes reduces energy consumption.

The CEO of Planters Energy Network explained the “use of solar heating – air and water for reducing leather processing cost”. He opined that possible areas for application of solar heating in tanneries are the generation of hot water for leather processing, the drying of leather after dyeing, and the drying of leathers after spraying and coating. The payback period of an industrial water heating installation is about 1.5 years. He also mentioned that the solar hot air unit in one tannery called MA Khizar Hussain and Sons provides annual firewood savings of about 610 tons. A similar solar unit set for an autospray can save 26 litres of diesel per day. The payback period for a solar air heating system is 2.2 years on average.

3.7 Visualized Training Tool (VTT) on tannery effluent treatment and Seminar on Benchmarking in the tanning industry and interactive session on VTT and cleaner tanning technologies

To make the replication of best practices easier and faster, the Project developed a video-based training tool on tannery effluent treatment. This training tool is based on animated videos, photos, flowcharts and presentations. This tool is primarily meant for the organizations and experts who train the technical employees involved in tannery effluent treatment.

The tool was launched during the seminar on benchmarking in the tanning industry, where 65 participants, comprising representatives from industry, institutions, training partners, promoters of common effluent treatment plant and associations participated. CLRI being a technical institute, ILIFO as a technical expert agency and IFLMEA as an industry association, are the three agencies with whom the tool was shared.

After explaining the concept of benchmarking, the expert provided about eight suggestions to the industry for consideration in benchmarking. Different checklists pertaining to benchmarking, developed by UNIDO, were shared. It was emphasized that benchmarking can be a very effective tool to find out the gaps in the value chain and make possible strategies to overcome the same.

4. Cluster Twinning – Key Issues and Methodological Implications

Twinning activities such as classroom training, factory level training, knowledge transfer to local institutions (CLRI), etc. took place on various fronts in the leather cluster. This was made possible because of the branding of leather cluster in Italy and the trust of the local cluster that packets of knowledge exist in the target cluster. The previous firm level and institution level interactions helped this cause.

Twinning may be defined as joint action between two stakeholders and/or two stakeholder types with equal probability of each gaining from the same. Thus scope for twinning between principal firms of two countries will arise provided each has something to gain from this deal. As it appears, with both the Indian and Italian firms looking for business from the branded producers, with the Italian firms specializing in technology superlative and the Indian firms specializing in low costing there was hardly any commonality of mutual business to business (B2B) gain.

Thus there were lot of challenges in entering into a CA even at a broader level between the two associations and when it did happen there was stress on cooperation on the environment front rather than on finished leather. Here usage of existing trust in making the initial linkages between associations does help.

While a cluster is a concentration of similar firms, when looked at with the lens of intense specialization, even the most homogeneous clusters have a high level of heterogeneity. This is especially true for firm level intervention. Thus, while the Santa Croce cluster specialized in buffalo leather, some of the firms needed inputs in goat/sheep leather, mostly found in the Solofra cluster. Thus selection of a unique cluster as a partner can yield sub-optimal results.

On a similar note, CLRI has created a twinning arrangement with Ethiopia, which is supplying rawhide (goat and sheep skin) to India and is a possible twinning destination. Such demand-side views for the identification of twinning partners may also be explored.

Scope for twinning also exists between Indian firms and backward linkage providers from the Italian clusters. This was adequately reflected in the interest shown by the Indian firms in the chemical suppliers and machinery suppliers. Thus CA with ASSOMAC or, say, a chemical suppliers association would have been useful.

Similarly, scope also exists for creating linkage with Italian consultants, some of whom, introduced by the programme, are still in touch with the Indian firms. The selection of such experts/trainers needs to be matched with the need of the firms in particular and not the cluster in general, to an extent that even a technical expert who is handling very small units may not meet the needs of a unit having similar technology but with a very large size.

The demand-side expectation was do-how, required at the firm level. This needed a package of detailed unit-specific study and implementation thereof. Instead, while the project attempted to understand the industry needs, the delivery was relatively heavy on “know-how” as sufficient time was not given for detailed handholding.

Detailed handholding by Italian experts is expensive. Hence a model for Italian and Indian experts

spending more time in each unit would have been more beneficial.

The process of twinning proposes linking existing solutions to existing issues, by facilitating knowledge flow. Such knowledge flow can also happen from within a cluster, too. Thus the twinning process may also map such possible knowledge flow packets also from within the cluster and promote the same.

3 CHENNAI LEATHER FOOTWEAR CLUSTER

1. SELECTION OF THE TWINNING PARTNERS

In order to promote the process of twinning between India and Italy, the entry points were identified as concerned associations and technical institutions.

1.1 Selection of Indian Association

Having identified footwear as a possible sector for twinning, the Chennai footwear cluster, which has around 400 MSMEs and employs directly about 100,000 people at various levels of work¹⁹, was selected for the project. Of the total workforce, 75% are women. The main production centres in the cluster are Chennai, Ranipet and Ambur. Around 79 percent of footwear exports of the cluster goes to the EU and 8% goes to the USA, with the balance to other countries. Only a small portion is sold in India.

The products are sold to buyers through agents and some portions also go to big companies. Most buyers are wholesale dealers and brand owners in importing countries. The very small and tiny firms in the cluster sell their products to the exporters. In most of the cases, these small and tiny companies work on a job work basis, mainly footwear upper production, and supply the same after finishing the job to the exporters. Some firms exporting footwear and footwear components do not have their own factories. These firms provide raw materials to the small firms to complete the operations. In some cases, the exporting firms sponsor the cost of machines installed in the job worker's factory.

ISF was identified as the Indian association. ISF is a well organized association focusing purely on the interest of the footwear and footwear components manufacturers, especially in Tamil Nadu. ISF organizes various activities to help its members improve their level of production, exploring and developing markets all over the world. It also plays an important role in facilitating dialogue between the sector and

the Government in overcoming procedural and policy bottlenecks.

CLRI (mostly for manufacturing and designing technology) and CFTI (mostly for manufacturing) were identified as corresponding technical organizations for the project.

1.2 Selection of Italian Association²⁰

Identification of the Italian cluster for a possible twinning agreement started towards the end of 2006 and beginning of 2007. The initial scouting operation was conducted by UNIDO ITPO Italy (Office in Rome) in coordination with the Project. The Marche Region Shoe Cluster was selected as the most suitable industrial counterpart for the twinning operations because of the following aspects:

1. Average dimension of SMEs located within it and the supply chain matched Indian conditions
2. Strong sense of joint action
3. International experience
4. Already established business relationship with the Indian and in particular the Tamil Nadu manufacturers

Also the Marche region has graduated from conditions similar to India. It was known for exporting dozens of wagons of beautiful and inexpensive cheap Italian shoes to the former USSR and other Eastern Europe Countries. The export was made in clearing (such as that from the Agra shoe cluster). The shoes were manufactured in the basements of the houses of the companies' owners. The labour conditions were similar. But at that time awareness about the protection of the labourers was very low.

The Italian National Shoe Association – Associazione Nazionale Calzaturifici Italiani (ANCI) had a very weak

¹⁹ Secondary data received from UNIDO CT.

²⁰ This section draws heavily on an interview with ex-CTA of UNIDO CT Project.

presence in the Marche cluster. Accordingly, the Project had initially identified Unioncamere Marche as the partner for the twinning agreement with ISF. But later Confindustria Marche also took high level of interest in getting involved in the Project. After long discussion with both of them, UNIDO and ISF agreed to indicate in the Twinning Agreement that Confindustria Marche would contribute to its implementation.

Thereafter, when Unioncamere and Confindustria went back to Marche and organized a press conference to present the agreement of “international co-operation” reactions of some cluster members and some local associations were not positive. They perceived the Project and the Agreement as an initiative financed with Italian tax-payer funds to help the Indian competitors to become even more competitive by improving their skills through transfer of know-how.

The misleading interpretation of this cooperation agreement probably lies with the fact that the twinning concept was elaborated by the Italian Cooperation at the end of the 90s when the shoe industry was still flourishing. The actual implementation took place only in 2007 when competition from China and Vietnam had already dented the Italian (and European) manufacturers’ competitiveness.

2. MAJOR PROBLEMS

The major issues facing the cluster with twinning possibilities were (a) training needs in manufacturing and design and (b) access to the latest technology. Twinning activities were done for both. Moreover, the capacity of the training institutions in Tamil Nadu was not in line with the technological innovations

happening in the sector. In addition, the cluster was lacking the services of experts who could provide advice on factory standards.

3. IMPLEMENTATION²¹

At the end of 2007, the Marche associations, UNIDO Italy and PISIE (a reputed leather and shoe training institution) met in Italy to discuss the implementation of the twinning agreement. Marche admitted that the local training institutes did not have international experience and therefore asked PISIE to identify and recommend some trainers from its roster of experts. However, no MoU was signed, though there was attempt, between the corresponding technical agencies i.e. between CLRI and CFTI with PISIE.

In general the following training areas were identified during the visit of the representative of the Italian association to Tamil Nadu: Design and development; Manufacturing – upper making, full shoe making; Quality and compliance; Management – production, marketing, costing and HRD and Equipment – machine maintenance.

3.1 Trust-Building

Trust between the stakeholders of the two clusters was relatively easy (as compared to leather) in this case of footwear twinning as there was a well felt need of cooperation between the clusters and both were optimistic that they would gain from the twinning initiative. However, to facilitate this, various trust-building activities were conducted in the Indian cluster. These include, among others the following:

TABLE 3: TRUST BUILDING ACTIVITIES CONDUCTED IN INDIAN CLUSTERS

First diagnostic study of the cluster training needs	Oct-07
ISF Brainstorming on training needs	Dec-07
Participated in IILF 2008	Jan-Feb 08
Firm mapping for SPX	Jun-08
Awareness Programme on schemes of Ministry of MSME	Sep-08

²¹ See Annex 2 Footwear Activity Status July 2011.

3.2 Role of Associations and CDAs

On the Indian side, ISF facilitated the process by organizing various need-based workshop and seminars, such as workshop on lean manufacturing, participation in trade fairs, exhibitions, etc. It played an important role in identifying the felt needs, creating trust of the firms in the Project because of its sheer presence, selecting the appropriate firms on the Indian side (appropriate candidates), information sharing and follow-up with companies, etc. It also shared office space for organizing meetings, workshops and also shared space for opening a project office in the cluster. The coordination of the activities and also the logistics of Italian/other experts to the cluster were also organized by ISF. While ISF did have an important role in this process, these activities saw continuous involvement of CLRI and CFTI, too. Needless to say, this entire process was facilitated by the presence of Indian CDAs, who were strategically stationed at the ISF office only.

However, while there was a continuous support in the form of a CDA in the Indian clusters, there was a continuous problem of communicating the exact needs and pressing the Italian associations to go full force in the twinning activities. In any cluster development programme the bottom line of gains of cluster principal firms is a must for meaningful and sustainable co-operation. This process could not be pursued in the absence of similar professional support with the Italian association. The presence of such a person could have not only facilitated the trust-building process, but would have facilitated the entire twinning activity by making the Italian associations see further business gains, e.g. through (a) sale of machinery and (b) manufacturing subcontracting, etc.

3.3 Training Need Assessment and Module Design

Training Need Articulation by Indian Units: The twinning agreement included specific actions in the areas of training and technology up-grading of the Chennai footwear units, aimed at sustaining the development and consolidation of the local entrepreneurship by enhancing the competitiveness and sustainability of the existing but underperforming companies. Towards this, the first step was the quick training need assessment made during the visit of the Unioncamere

President to Chennai for signing of the cooperation agreement. This was followed by a brainstorming session steered by ISF with its members for discussing training needs and best possible methodology. The outcome of this brainstorming workshop was then made available to the project team and to ISF as well as the Italian counterpart association.

During brainstorming, the units expressed their need for training at an “advanced” level mainly focusing on best practices and on “do-how” aspects of shoe design and manufacturing processes; and therefore suggested the trainees to be sent for training should be at least at supervisor level or above. The location for the training should be in India; however, trainees will also be exposed to factory level work in Italy. The training programme was repeated in the footwear clusters of Chennai and Ambur. Moreover, units suggested that trainers with demonstrated experience and English language skills needed to be contacted for the proposed training.

These basic requirements were further complemented by a detailed list of “training topics” considered by the companies to be relevant and necessary to improve their competitiveness. Seven basic “modules”, as mentioned below, were indicated by the Indian companies:

Module 1: Design Development and Pattern Engineering.

This first module focuses on the design process of the shoe; both the basic aspects of the traditional design methodologies and of product development, as well as the more technical pattern engineering activities were demanded. Particular attention to CAD design and development methodologies was requested.

Module 2: Production Planning and Control.

This deals more strictly with production issues, focusing in particular aspects related to work organization, optimization of work processing, planning and control of the manufacturing activities.

Module 3: Upper Stitching and Closing.

In this case again the emphasis is on the manufacturing process and in particular on the stitching and closing phases, including also cutting activities. Work methods and process technologies are considered to be key elements in this training module; special

attention to modern automated (dieless) cutting technologies was requested and on “how to tackle frequent style change, short production runs and best industry practice”.

Module 4: Shoe Making and Shoe Finishing.

This module pairs with the one above, covering the downstream phases of shoe production, making and finishing; the key topics indicated by the companies in this modules were again work organization and shop floor layouts, as well as production equipment and the related technologies. Particular interest was indicated in the topic of finishing and on the related practices aimed at producing high quality and accurately finished shoes (in relation to the different materials adopted).

Module 5: Standard and Quality Control.

This module covers the issues of tests, test methodologies and compliance with international quality standards as well as all aspects related to the implementation and management of quality in shoe manufacturing processes.

Module 6: HRD and Training of Personnel.

The demand outlined in this module relates to the topic of human resource development and to the enhancement of professionalism; specific needs are felt in the area of training and training methodologies.

Module 7: Machine Maintenance.

This last training module specifically deals with the topic of machine maintenance and aims at educating companies' technicians who could see to the necessary pre-emptive, regular and extraordinary maintenance of the machines on the shop floor.

On the basis of these needs, a draft proposal for a suitable training programme was formulated and submitted to ISF and subsequently to the Italian association.

Technology cum Training Audit by Italian expert: In order to ascertain the relevance and specific requirements to build competencies of SMEs participating in the twinning programme, Mr. Giovanni Risso, an Italian expert, conducted technology cum training audits in ten SMEs in Chennai, Ranipet and Ambur. This expert was identified by the Project and subsequently vetted by the Italian association. This was the first significant twinning activity wherein an Italian expert

not only did a baseline survey of the training needs of the footwear sector and but also suggested classroom training and prescribed a training module relating to the technical need of the sector.

The expert also interacted with relevant institutions and associations dealing with the footwear sector. Based on his observations, implementation of the training was modulated to yield maximum benefit under the programme. In addition, the companies were given recommendations on improvements in the technological area, including the latest technological innovations.

Following this, as a second step in implementing the twinning agreement, training for the member MSMEs of ISF was organized to impart the latest techniques through classroom lectures supplemented by on-site training at unit level by Italian experts.

Training was conducted at two sites simultaneously by two Italian at Ranipet and Ambur. As the need of the industry was to learn “do-how” than “know-how”, it involved the latest techniques and processes of Italian technology. ISF selected 22 growth-oriented SMEs to participate in the training programme. The first phase of training was a ‘Manufacturing Module’ of eight weeks duration at each place. Apart from 22 companies, training was also provided to three institutions, namely, the Central Leather Research Institute (CLRI), the Central Footwear Training Institute (CFTI) and the Indian Institute of Leather Products (IILP), so that these institutes became the knowledge hub for replication.

In addition, as international footwear technologist from Italy, assessed the participating SMEs (on a sample basis) of their technological levels as well as skills of the personnel employed in the companies. He visited about ten sample companies in 15 days in Chennai, Ranipet and Ambur. During the assessment, he made several interesting observations on improvements and building competencies in SMEs in the cluster.

An interactive session was then organized in collaboration with ISF to provide the preliminary findings obtained during the mission. The expert in his findings mentioned that the technological level in the cutting and stitching area is generally good, and the technical

people in the factories are aware of the good practices. However, productivity is one of the main problem areas. The main reasons for low productivity are poor work organization, inefficient production management and poor coordination with different areas of operations. For example, in the lasting line, the companies produce 350 to 450 pairs of standard cemented construction for men's shoes per day (eight hours) with 55 to 60 workers, whereas, comparing with other countries such as Mexico, Spain, Romania, the output is about 800 pairs per day with 30 workers.

Though quality is another problem area, depending on the buyers' requirement and price, the existing quality level of the products may be accepted. In order to improve the quality of the products, components and workmanship need to be addressed. Though it is possible to improve the quality of the products by training, simultaneously, the components used also need to be of good quality.

3.4 Training Programmes

Training on best practices in footwear manufacturing: This was conducted by three international experts. The training was imparted in classrooms as well as on-site at the factories of the participating companies in the presence of local institutes. Methods for improving quality and productivity were the focus of the training. Most of the participating companies have reported that the productivity and quality of final product were improved by implementing what was learned.

Successful candidates were also trained in Italian factories. In total, 23 participants were trained over a period of seven months. Replicating the learning, 20 persons from ten companies were trained by the ISF with experts from CLRI and CFTI. New technology such as the dieless cutting machine and the computerized lasting machine was introduced by the experts. Two units installed dieless cutting and three more units installed a computerized lasting machine. In addition, units also learnt a new layout modification and reorientation process in the product line from Italian experts and some of them implemented their learning in their units. Best manufacturing practices suggested by the experts were also shared with the units and technical institutions in India.

The chronology of the training along with the duration can be seen in the following table.

TABLE 4: CHRONOLOGY OF THE TRAINING

Training	Duration
Classroom session in Ranipet	31-03-2008 to 03-04-2008
Classroom session in Ambur	31-03-2008 to 31-03-2008
Classroom session in Chennai	01-06-2008 to 03-06-2008
On-site training (11 companies)	04-04-2008 to 27-04-2008
On-site training (11 companies)	18-05-2008 to 11-05-2008
Training in Italy (14 companies)	28-10-2008 to 08-11-2008

Replication of Best Practices in footwear manufacturing (re-training): Following the training by the Italian experts, further scaling up of the training programmes on best practices in footwear manufacturing was done by two trained experts from CLRI and two trained experts from CFTI by replicating the training inputs provided by the Italian experts and the practical knowledge gathered during the training in Italy. The focus of training was mainly on improving quality and productivity. These training sessions were of two to four days each in ten companies. It was stated by CFTI experts that recommendations given by Italian experts have been taken seriously by most of the factories and were successfully implemented. Thereby the production and quality of work, process, product and maintenance of machines have significantly improved. One of the best practices suggested by the experts is the use of checklist and job cards while manufacturing; this minimizes even a small possibility of error.

Training by Italian experts and then retraining by the trained experts of Indian institutions was one of the most successful cases in the cluster twinning project. Technology transfer to institutions which was immediately followed up in the regular curriculum of CLRI and CFTI, with availability of expertise to replicate the training services which has been successfully initiated and is still continuing. CLRI assisted ISF in developing a curriculum for design training; CLRI started a new shoe design course based on the syllabus followed in the UNIDO supported design training in Italy.

CFTI utilized this training module to further train personnel in footwear companies.

Design and trend forecasting training: This was conducted in Polimoda, Florence, Italy. The programme aimed at enhancing the skills of Indian designers through sharing knowledge with Italian associations. During the 12 days of classroom training, eight trainees from different footwear companies identified by ISF and two technical experts from CLRI and CFTI were briefed on the concept of shoe styling and creating new designs based on inspiration from culture, history, social habits, etc., which was a step ahead of conventional design training courses focused on the engineering part of designing.

Soon after the training, three companies developed 12 new designs of which two were immediately approved by the buyers, while the others were appreciated. The impact of this training at the institutional level was tremendous. Soon after the training in Italy, CLRI launched a course on 'Understanding Shoe Design – 3D way' for the designers from the industries as well as freelance designers. A first batch training for four students was organized on campus. Another, training for the industries, is planned where the institute is planning to charge a nominal fee for the training. Here, ISF is playing an important role in identifying the right candidates for the training.

Similarly, training courses in CFTI have also incorporated learning through training by Polimoda in Italy and to date more than 200 students in CFTI have benefitted from this initiative. CFTI is also planning a Diploma course on shoe design.

3-D designing of footwear components: 3-D designing is a new and innovative concept of making designing faster and getting quicker design inputs for prototyping of components. In order to introduce this concept, representatives of CLRI and ISF were trained by an Italian expert in a 16 day intensive training programme. The training was focused on 3-D designing of footwear components, sole, heel, insole, footbed and last²².

CLRI has purchased and installed the software and hardware required for 3-D designing. CLRI is also in the process of developing a mechanism for formal

engagement of ISF with CLRI for implementing the re-training agenda for a greater coverage of cluster units and also to provide 3-D design services in the cluster.

Impact: The impact of these training programmes was observed as (a) case studies at firm level, but more importantly at (b) meso Level, as detailed below:

- Both CLRI and CFTI repeated training in best practices for cluster firms
- CLRI launched a course on 'Understanding Shoe Design – 3-D way'
- CLRI is in the process of developing a mechanism for formal engagement of ISF to provide 3-D design services in the cluster.

4. Cluster Twinning – Key Issues and Methodological Implications

Cluster Dimension: The twinning activities were preceded by various cluster-level activities. These include organizing need-specific diagnosis, trust-building activities, motivating the Indian association to take a lead, etc. During implementation the role of external private BDS providers (technical consultants) as well as local public BDS providers such as CLRI and CFTI were also involved.

Although a cluster appears to be made up of homogeneous firms, in practice the principal firms are heterogeneous. This may be due to their size and also product variations. Hence, while selecting a consultant, product details and/or capacities of the target firms need to be kept in mind.

In footwear, there is clear value chain linkage between the Indian and Italian firms. While Italians have technology and quality advantages, Indian firms have labour cost and raw material advantages. Moreover, Italian firms enjoy a better brand image and therefore fetch better prices for their products. Given this, common areas for collaborations between the clusters are clearly visible and therefore twinning initiatives were successful and sustainable.

Selection of the right clusters having value chain linkages, and strategic involvement of institutions for technology, design and manufacturing practices in India (CLRI and CFTI) as well as Italy (Polimoda and PISIE) brought quicker and better results to the project as

²² "Last" is a solid structure around which a shoe is moulded.

compared with the leather and auto component clusters. Experts from Indian institutions were involved in the entire process of training and exposure to Italian firms. Scaling up of such training with reasonable fees could be done through these trained Indian trainers.

CRLI is trying to form a consortium of expert/ technical institutions who are working for the leather sector, e.g. NID, NIFT, DIPPI, CSIR, CLRI, etc. A similar consortium can also be formed in Italy and then linked to an Indian consortium. This would bring greater scope for twinning in areas such as technology, quality, skill, design and marketing. Thus cooperation is possible between networks of service providers too.

While technology is one area where twinning was successful, managing technology and manufacturing process is another area where Chennai manufacturers can learn from Italian units. Italian firms also stand ready to provide component manufacturing machines to India and there are of course many other ways in which entrepreneurship development could be promoted.

Multi-skill training processes need to be shown to the units. The capacity of the technical institutions needs to be developed to deliver such training to the industries.

Indian units were shown a new range of stylish footwear designs and also exposed to the process of designing and manufacturing.

CHENNAI AUTO COMPONENTS CLUSTER

1. SELECTION OF TWINNING PARTNERS

To promote the process of twinning between India and Italy, the entry points were identified as concerned associations and technical institutions.

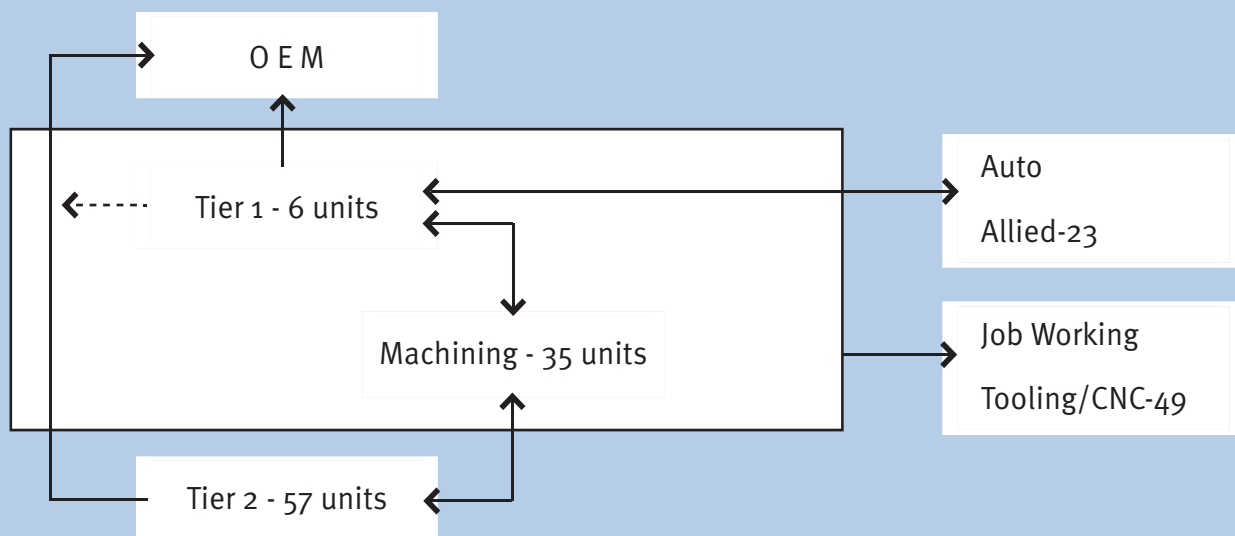
1.1 Selection of Indian Association

Chennai is estimated to have around 3000 auto component manufacturers distributed over various industrial belts, with the presence of various OEMs and tier I of foreign OEMs. Of these, Ambattur has around 600 units, with the presence of vehicle manufacturers such as Ashok Leyland, Hyundai, etc. Sri Preambatur Belt has another 600 units, with the presence of Hyundai, 20 tier-1 units of Hyundai, Delphi, etc. Tiruvallur has around 300 units and the vehicle manufacturer Caterpillar. Others are in the industrial estates of Guindy, Perungudi, Maraimalainagar, Gummidipoondi, Thirumudivakkam, Thirumazhisai and Thirumullai-vayil with SMEs with various product ranges.

Of these, 600 units in Ambattur, AIEMA has around 180 auto component manufacturers webbed around 6 tier-1 enterprises. As shown in the chart-2, of the 180, about 57 SMEs are tier-2 manufacturers of various components supplying to tier 1 and also directly to vehicle manufacturers through tier-1 with prior approval such as Leyland, TELCO, TAFE, etc. in conformity with their system of self-certification and supplier compliance procedures. There are 35 subcontracting and machining units working both with tier-1 and tier-2 (direct subcontracting). About 49 SMEs are providing job work/tooling/CNC machining services. About 23 units are manufacturing auto allied products in the areas of rubber, electrical, interiors, etc. In addition, there are about 16 SMEs producing partial auto components but also having a major product share in the non-auto sector. The average turnover of these units ranges from INR 40 to 50 million.

These units being well linked to an existing association, UNIDO approached AIEMA to be the Indian

CHART 2: DISTRIBUTION OF AUTO COMPONENT MANUFACTURERS OF AIEMA



OEM: Original Equipment Manufacturers, CNC: Computer Numerically Controlled.

Source: CT UNIDO Team Research.

association. Although, being a multi-product organization, there were initial hesitations, AIEMA later agreed to implement the programme, which was done through AIEMA Technical Centre (ATC), a technical arm of AIEMA. The agreement was signed in November 2007.

After the MoU was signed with AIEMA, information of the cluster programme was sent through AIEMA office and initially around 50²³ firms of the around 180 automotive component manufacturers that were members of AIEMA showed interest. They are all tier-2 or tier-3 suppliers to companies such as TVS, Hyundai, Ford, Ashok Leyland, Delhi, TAFE, Tata Motors, LandT, Komatsu, Caterpillar, Maruti and Ilgin.

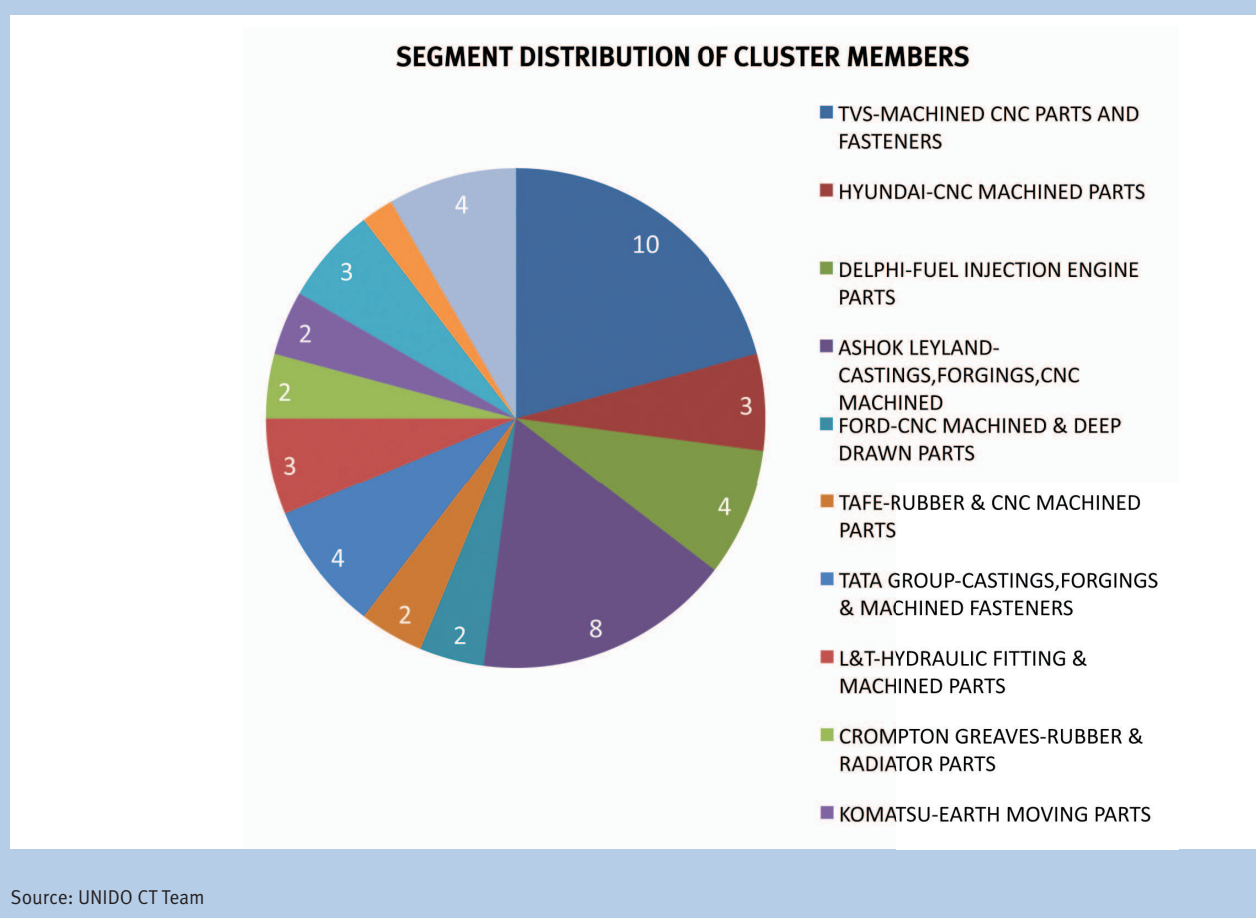
These units had shown progressive growth rate of 15-20% for the last three years and average turnover

ranges from 55-60 million INR. Most of the units are supplying to local tier-1 companies and about 8 units are in to exports as well.

1.2 Selection of Italian Association

However the selection of Italian association was a challenge and efforts continued till March 2009. Thereafter, at the third Meeting of the Steering Committee, the Chief Technical Advisor (CTA) of the Project clarified that the recession had affected Italian auto companies which were operating at a capacity utilization of 25% and hence entering into a cooperation agreement with India would be difficult. Accordingly the CTA proposed a new set of activities including “... (i) a tailored CDP towards the associations involved in Pune and NCR and (ii) a supplier development programme...” of the companies.

CHART 3: DISTRIBUTION OF ACMA MEMBERS WHO SHOWED INTEREST IN THE PROGRAMME



²³ Around 35 of these firms showed keen interest in participating on a regular basis. (Source UNIDO CT Team)

2. CLUSTER LEVEL CHALLENGES

On selecting the target cluster area of AIEMA members, it was felt that a gap analysis of these units be carried out, based on the interest shown by the 50 members. Accordingly an Excellence Gap Analysis (EGA) was carried out for 25 interested units. The study suggested the following major issues for intervention:

1. Absence of vision and policy, strategy in line with vision
2. Absence of marketing strategy
3. Human resource development: Inadequate efforts in employee development, absence of confidence in communication skills Inability to retain employees and succession planning (in some cases)
4. Technical capability: Lack of effort towards next level changes (5S, TPM, Lean, SPC) missing, productivity issues, lack of product design capability, lack of strong product technology/ collaboration to break into the demanding auto segment (as a tier-1 supplier).

The strategy was to (a) create interest among the units through visits/workshops/classroom training; (b) unit level handholding in training and (c) review progress and take corrective steps.

Accordingly the following interventions were identified by the Project:

TABLE 5: LIST OF INTERVENTIONS IDENTIFIED BY THE PROJECT

		Workshop/ Training	Unit Level handholding	Re-view
1	Vision building, policy and strategy development	Yes	Yes	Yes
2	Marketing and market development	Yes	Yes	Yes
3	HRD	Yes	Yes	
4	5S, Layout, TPM, Simple Lean, SPC	Yes	Yes	
5	SPX		Yes	

A special skills development programme which was introduced by the Project was also considered by the stakeholders. This was later ratified by the stakeholders as shown in table below:

TABLE 6: COMPONENTS OF THE SPECIAL SKILL DEVELOPMENT PROGRAMME

		Workshop/ Training	Unit Level handholding	Re-view
1	Vision building, policy and strategy development	Yes	Yes	
2	Marketing and market development		Yes (brochure, web)	
3	HRD			
4	5S, Layout, TPM, Simple Lean, SPC	Yes	Yes	
5	SPX		Yes	
6	SPX-Skills Development Programme	Yes	Yes	

3. IMPLEMENTATION

3.1 Vision Building and Strategy Development

The need for this activity was rooted in the “Excellence Gap Analysis” carried out at the beginning of the programme. Here it was suggested that succession plan, vision, road plan for future growth and strategy and action plan for the same are generally missing from the radar of the small auto component manufacturers. Accordingly, the objective of this programme was to start the process of creating a vision statement and support plan for the next five years for the units and budgeting for the same.

The process of implementation was broken down into three phases – creating initial acceptance, identifying the more interested recipients and providing unit-level handholding for them for actual delivery. Since the issue largely originated from the supply side, the process of acceptance and demand generation was promoted by organizing a workshop by inviting the entire population of 180 AIEMA units. Twenty-five units participated. The workshop enabled initial trust-building

with the vision consultant and also cleared the process as well as the management involvement in the same and its likely deliverables. Later, AIEMA was involved in selection of would-be participants. Twenty-three units were selected from the cross-section of auto components, including precision-machined components, forgings, assemblies, moulded parts, fasteners, etc. Thereafter unit level visits for two days each were conducted and detailed discussion was held with the top management. Factory level visits were also conducted to identify elements of importance to achieve the vision statement.

All the units drew their vision statement and also worked out their action plan. The process definitely started off the trust-building process that led to lot of internal thinking, and several new ideas came out in the process. Clearly some companies that were working in niche areas and having a reliable customer base wanted to create new partnerships with technology leaders for acquiring technology in areas of their specialization. Others, especially in general precision and CNC machined components and having a wider range, wanted to diversify their markets.

The Vision Statements²⁴, created and displayed, impressed buyers of many of tier-2 units who are supplying through the respective tier-I units to the auto manufacturers, including Sri KVS Industries: supplier to Leyland Hosur and Ennore and Caterpillar, New Oil Engineering: supplier to BHEL, Leyland Hosur and Ennore and Caterpillar, Alkraft Technologies: supplier to Leyland, TATA Motors, Elchem: supplier to UCAL. Many of these units were motivated and later went for SDP and got TS 16949 (Precision and Elchem) and are preparing for TS 16949 (Newall).

3.2 Website Development

The need for promoting avenues for new markets was identified as an area of importance. One of the identified strategies was to create a professional website for creating a firm-level brand image, as was identified during the Enterprise Gap Analysis. The issues included the selection of an appropriate name, matching buyers' requirements, design standardization, and use of CMS concepts to edit website contents. Accordingly, the objective of the intervention was to

create professional web sites adhering to international standards for a better identity and easy communication with buyers.

The process of implementation was broken down into two phases – creating initial acceptance and providing unit level handholding for actual delivery. The process of vision building had created the requisite trust and all the firms who went through the vision building exercise took interest in the process. The activity was promoted by first organizing a workshop where the entire process was detailed and interest confirmation was received. Thereafter unit-level visits for two days each were conducted and a detailed discussion was held with the top management. An Italian expert on auto components provided technical inputs with respect to buyer needs.

BOX 2: IMMEDIATE UNIT LEVEL CHANGES

- Practicing Tool Life Monitoring – 4 units
- Practicing 100 ppm Quality – 7 units
- Practicing Die Exchange practices – 4 units
- New Floor Laid out – 1 unit
- Stores Improvement – 1 unit
- Material handling improvement – 1 unit

Source: Discussion with CTA and UNIDO CT Compilation

Special technical inputs including domain registration with a top end company, appropriate title and meta description tag, unique key words, easy loading facility, relevant site name, etc. were suggested. Of the 23 firms supported, around 15 firms are maintaining websites. Some firms also registered with Alibaba²⁵.

3.3 Skills Development Programme (SDP)

Most of the AIEMA auto-cluster units are either tier-II or tier-III companies who wish to supply tier-I companies of car manufactures. Excellence Gap Analysis and Vision and Strategy interventions demonstrated the potential, readiness and market placement for getting into the value chain of reputed manufacturers.

²⁴ Discussion with CDA and UNIDO CT reports.

²⁵ Discussion with CDA and UNIDO CT papers.

The need arose as the units were of the view that the training inputs so far have not touched their core business operations and a lot needs to be done at this stage to promote the inner strength of the units, which in turn will add value to their previous engagements, including Vision and Strategy and Websites. At this stage the Project put before them a simplified version of the SPX SDP Programme, which was successfully implemented at the Pune auto manufacturing cluster. This, being a demand-driven activity, was immediately picked up by the units.

The objective of this exercise was to improve the shop floor practices through total employee involvement and strengthening their core to a best practices platform from where they could meet the expectations of OEM or tier-I suppliers.

The initiative was implemented through six simple steps/modules including (a) employee involvement through suggestion schemes, Kaizens, QCC, etc., thereby laying the foundation for change, (b) creating an enthusiastic improvement through 5S, 3M, my machine campaign, thereby leading to improved work culture, (c) creation of 100 ppm quality through appropriate documentation, setting of standards, poka yoke, improved process capability thereby leading to quality excellence, (d) improved material and tool management through appropriate planning, monitoring, containerization and management, (e) layout improvement and (f) continual improvement. Some of these changes appear in Box 2.

The process was spread over a period of six months and involved 28 units and 181 employees. One firm each was chosen as brand ambassador of each module and was motivated to excel in that area. This would give improved replication effect. Classroom training was conducted with the employees of each firm in their units. Visits were organized into tier-I units for learning of best practices. A programme monitoring committee was also created and monthly review meetings were held. This gave rise to a lot of competitive spirit and was also a source for pursuing excellence²⁶. This is adequately reflected in the comments of unit owners (Box 3).

BOX 3: OPINION OF FIRM OWNERS/MANAGERS

“The epoxy flooring of almost all factory shop floor areas helped us to keep the floor neat and clean and improved the aesthetics... and we got valuable suggestions after we started recognizing the employee giving suggestions...”, says Mr. A. N. Gireeshan, Managing Director, AVON Seals Pvt., Ltd. *We have improved our storage, material handling facilities and the layout of our shop floor and office area, providing a smooth flow of product and personnel...*, says Mr. Ashis Kumar Chakraborty, CEO, ELCHEM. *“We gained confidence and trebled our investment in CNC and VMC machinery and profitability has increased substantially”*, says Mr P Arumugam, Managing Partner, Precision Engineering.

Source: Discussion with CTA and UNIDO CT Compilation

SDP had significant impact on the work culture, productivity and quality pursuits of the units. The units feel that it is the beginning of a constant learning process. Some of the immediate outcomes included the following:

- Flooring change has helped keep the floor neat and clean and improve the aesthetics
- Valuable suggestions came once the employees started getting recognition
- There is improved commitment of each employee in keeping the factory and materials clean and organized.
- There is improved component retrieval and inventory taking
- Rejections and rectifications in house are gradually diminishing
- We have improved our storage and material handling facilities
- We have improved the layout of our shop floor and office area, providing a smooth flow of product and personnel
- We have started monitoring the safety aspect of our company

²⁶ Source: Discussion with CTA and UNIDO CT Compilation.

- We have started using some of the best practices learnt from the visits of some of our participating companies and Lucas TVS, Wabco TVS etc.
- After visiting other units we learnt the importance of “safety” in the area of material handling which is now well taken care of in our unit
- “Tool Life Monitoring” is in regular practice now, which saves us time and money
- The Line balancing module was very useful in improving productivity

The process had some important fall-outs. It started off with formation of a “lean manufacturing cluster” – a network of firms who create a legal entity and are then supported for promoting lean manufacturing under a central government scheme. The first such “cluster” was created out of the SDP auto component units and was named Ambattur Industrial Estate Metal Working Cluster. The firms feel that the benefits of SDP will be further improved through this process as there is a need for continual improvement. Two more “clusters” called ATC Lean Manufacturing Cluster and AIEMA Lean Manufacturing Cluster were also created as fall-outs.

While the role of ‘twinning’ per se was limited in the auto sector for various reasons (see Section 5 below), the ITP component played a major role in this area. ITP started with SPX. Presence of technical CDA enhanced the process.

Although the SPX process moved well, the initial CPPs received were very generalist and it was difficult to create scope for cooperation. As a result, the ITP initiative was stretched beyond the AIEMA frontier. This was mostly because of the low level/absence of vision and will/determination of the firms to act otherwise at that point of time, they being mostly small tier-II/tier-III units. Later, when the auto SPX was extended beyond AIEMA, the quality of CPPs improved, too.

Overall, a number of interesting outcomes have been compiled by the team on the basis of industry feedback on the cluster activities carried out. These include among others²⁷:

- 3 to 5% rise in profitability
- 5 to 7% energy savings
- 5 to 10% rise in productivity
- 15 to 20% new customers developed
- 30 to 50% retention of employees

4. CLUSTER TWINNING – KEY ISSUES AND METHODOLOGICAL IMPLICATIONS

Barring the SPX activities of interaction with visiting delegations, “twinning” did not have any significant impact in the cluster activities per se, although various suggestions for the methodological approach emerged during interaction.

It was felt that a cluster is a complex identity consisting of various types of firms and more often than not it is difficult to have the best of expertise in all fields in a superior cluster to twin with an upcoming cluster. Thus twinning need not be considered as a process between two clusters only.

Hence the sources of twinning, rather than coming fully from the supply side, may start with a supply side intervention and then need to diversify. Thus while the Italian cluster can be a lead country in the twinning process, one needs to go beyond in the light of the demand side agenda.

The twinning needs may vary. Going by the cluster philosophy, here one needs to find homogeneity within heterogeneity and needs to create twinning pockets in the less developed cluster. For example, there is a small number of units concentrating only on wiper pumps and they are in search of technology to get linked to tier-I units in the foreign market. It is important that such a one-to-one process is promoted with pure technical and business inputs, leading to the success of one among the group of firms identified. In contrast there are groups of firms who can produce any quantity of precision parts and have invested heavily in that post-intervention and need market.

Thus while association level cooperation is a good beginning as an overall trust-building mechanism, one needs quickly to diversify into micro-level issues for a better outcome.

²⁷ Source: Discussion with CTA and UNIDO CT compilation

Again, as seen from the ITP experience, the smaller units are not always ready with meaningful CPPs to start with. It is here that the Project has made a difference in creating a difference in the thought process of the units through vision building and factory level interventions such as SDP, lean manufacturing promotion, etc. Hence units are now more forthcoming with concrete suggestions. Thus there is need for capacity-building of less endowed firms and other stakeholders for their meaningful role in the twinning process.

Also, the process of technology transfer needs lot of ground-level interactions. In particular one area of importance is the equity equilibrium. One of the firms in the Chennai cluster produces oil seals. One of the most critical components of an oil seal is a graphite ring. It is important to get this technology; else it is very difficult to break into the market of automobiles in a big way. The firm was in touch with an Italian firm for quite some time, before the collaboration broke down due to the lack of agreement on the equity front. While the Indian firm wanted either an outright purchase or a majority equity to safeguard its interest, the Italian counterpart wanted a majority equity with slow outright purchase, based on its Brazilian experience, where the Brazilian company lost all interest when an outright purchase was made and it was very difficult for the Italian firm to manage the operations.

The twinning process goes very well with a credit line. While MCGS is a difficult proposition given the availability of easy bank credit for SMEs (not the micro), it is very difficult to get loan for second-hand machinery. Yet some firms are using machinery of foreign origin which is over 50 years old and can easily run for another 50 years, but getting a loan for such machinery is difficult. Credit lines can help here. Also the transfer of technology in case of twinning need not always involve state-of-the-art technology. More often than not it will vary with the need and capability of the stakeholder in question of the emerging cluster.

There is a continuous input requirement for upgrading for the tier-II and tier-III units. They naturally cannot afford to have such in-house expertise on a continuous basis. However the number of available consultants was found to be too few (perhaps 15 good consultants) for a conglomeration of 3000 units in the whole of Chennai cluster. Hence scope exists for

promotion of such BDSPs. It is here that technical experts of technologically superior firms may be twined to create this human resource.

It appeared that the firms which were looking for technical partners were the ones with a vision (built by the project), and understand the need for continuous upgrading (through a skill development programme) and are with technical specialization, only manufacturing e.g. oil seals or wiper pump covers, etc. Technology transfer in twinning may look for such specialized units as the prime movers of the process.

Discussion also revealed that the technology transfer part of the process will need more rigorous handholding both from Indian and the foreign viewpoint in so far as preparation of a firm dossier, identification of relevant units and negotiation. While such a process has both developmental and commercial angles, the development issues will cover activities such as creating trust through initial meetings, identification of partners, promoting institutional cooperation, etc.; while the commercial activities include the process of technology transfer. While the developmental part can be supported by the Project, the commercial part must be included in the programme and be done as a commercial venture beyond the programme. Hence commercial entities in the two clusters may be tied up for this purpose as a part of the Project.

TWINNING IN A CLUSTER DEVELOPMENT PROGRAMME (CDP) – METHODOLOGICAL ISSUES

Viewed from a global perspective, twinning of clusters may be defined as a set of business cooperation activities among various groups (formal/informal) or individual primary/secondary stakeholders of an advanced and an emerging cluster producing similar end-products. Thus the stakeholders who can get involved in this process are (a) primary firms, (b) sub-contractors, (c) other support firms, (d) technical and financial institutions, (e) interest groups, e.g. associations, etc.

The product of a cluster is often an outcome of value chain activities which have either differently able and/or different combinations of stakeholders, leading to products similar by name (or use), but completely different in terms of (a) price and (b) type of consumer/customer segment being addressed. A firm in a cluster which has a higher level of specialization adds value to products which have higher rates of return.

Accordingly, an advanced cluster is defined as one where the majority of the principal firms (a) perform in a value chain that involves a higher level of specialization and adds higher value to products, thereby ensuring higher rates of return; (b) is broad, i.e. having lots of specialized stakeholders and (c) is also deep, i.e. having sufficient numbers of stakeholders. In comparison with the advanced cluster, an emerging cluster (a) performs either in a value chain that involves a comparatively lower level of specialization or is a subcontractor to a relatively specialized value chain, and (b) has a smaller number of specialized stakeholders.

The concepts of advanced and emerging clusters may be treated as purely comparative. Thus while a pair of clusters, advanced and emerging, can be geographically cross-country and situated respectively in a “developed” and “developing” nation, such a pairing of an advanced and an emerging cluster can occur between (a) clusters of two developing nations and (b) also for two clusters within a developing country.

However, it may also happen whenever certain specialized factors of production in the value chain having a higher order of specialization are relatively sticky and do not move easily cross-cluster.

Again, during a cluster development project, we work for the development of the ‘principal firms’ and work with other support stakeholders, to the extent that their growth will propel the principal forms. However, in the case of twinning of clusters, we work for the development of not only the principal firms, but also that of the other support stakeholders, equally importantly, by twinning them with appropriate stakeholders of other cluster(s). Hence it is important to identify the ‘principal cluster’, i.e. the target cluster, whose stakeholders’ business interest we are trying to improve primarily. For the present analysis, it is assumed that the principal cluster is the emerging cluster.

The discussion that follows is based on the assumption that the target of the Project is to promote the cause of an emerging cluster. However, if this perspective shifts, the entire process will change. Let us assume that a network of principal firms of an advanced cluster wants to enhance their outsourcing and/or investment abroad. Here, as against finding other possible advanced clusters, one needs to find all possible emerging clusters, where tie-ups can be made for the target areas of the advanced cluster. Here a full time CDA for the advanced cluster will be a must and need-based CDAs may be picked up in the identified partner emerging clusters.

Based on the above, it may be stated that the process of twinning will take the following steps:

Step 1: Selection of Emerging Cluster

The selected emerging cluster must have significant linkage possibilities in the global value chain. Otherwise the possibility of finding a corresponding advanced cluster will be remote. For example it will be difficult to find twinning partners globally for

handloom products, while it will be easier to find partners for leather, footwear or auto components.

The above can be measured by observing the degree of presence of the following parameters in the principal firms of the emerging cluster:

- Degree of imports of technology, raw materials, designs, etc.
- Degree of exports of intermediary products
- Degree of exports of finished products to global brands
- Contribution to manufacturing turnover/GVA/employment/export depending on the priority of the country to which the emerging cluster belongs
- Presence of similar emerging clusters in the country
- Presence of current global value chain linkages, i.e. existing trust with advanced cluster(s)
- Previous experience in handling CDP
- Degree of willingness of stakeholders.

A composite index may be drawn from the above and other similar parameters and the selection of the emerging cluster can be made.

Since the twinning project goes for higher order implementation of CDP, it is good for the stakeholders to have had some previous experiences in CDPs of the emerging cluster. This will help them to better understand various uncertainty issues attached to the CDP exercise. For similar reasons, the willingness of the associations of cluster stakeholders (principal as well as support firms) and that of principal technical institutions to participate in a twinning project, may also be ascertained.

Step 2: Selection of Cluster Development Agents

Twinning depends a lot on understanding the technical issues. Hence the CDAs in the emerging cluster should preferably be technical persons. There is need to have technical CDAs in the advanced clusters, too, as the intensity of activity is in no way less on this front. It is the CDA who creates trust with local

stakeholders on behalf of the stakeholders in the other cluster. The process may include the following steps:

- a) Appointment of a technically qualified and trained CDA in the emerging cluster
- b) Identifying the corresponding advanced clusters and respective stakeholders in the advanced clusters
- c) Appointment of suitable full time/part time consultants in advanced clusters to manage the stakeholders in the advanced clusters. Such consultants should preferably be conversant with the conditions of the emerging clusters
- d) An overall Project coordinator, based in the emerging cluster, should manage the overall proceedings.

Step 3: Diagnostic study of the Emerging Cluster

Apart from the usual issues in a diagnostic study, special emphasis needs to be given in this study to identify various twinning issues for groups/networks of primary/secondary stakeholders. However, often due to lack of specialization, an emerging cluster produces multiple products with diverse challenges. Hence if the challenges of a cluster are deliberated from a macro (product group) angle it can suggest broader issues, which are good guiding principles but not very useful for twinning, where most activities are expected to come up with business equations between two distant stakeholders. Hence such studies need micro product level specificity.

For this purpose the selection of samples of primary stakeholders should be based on the different types of products the cluster makes. For example if the product is auto components, the sample firms may cover items such as oil seals, pumps, plastic interiors, etc. Or, if the product is leather, the products may cover items such as furniture leather, leather bags, leather jackets, industrial hand gloves, fashion hand gloves, etc. Samples of such diverse firms need to be included during the study and product-specific suggestions need to emerge from the same.

One must also remember that identifying and solving challenges are two different issues. In general, issues

for implementation are a subset of identified issues. Thus in a CDP we identify issues which are easily solvable, as the spirit of such interventions is to kindle a process of self-solving through demonstration of gains through the programme and is not equated to solving all problems, which is definitely impossible. Thus normal CDPs aim to solve issues mostly from (a) within the cluster or (b) from within the geographic boundary of the country; as such solutions are easily implementable.

These are issues of importance for a twinning project, too, but to do twinning, these must be supplemented with issues that can be addressed by stakeholders of the advanced cluster for the emerging cluster. Unless these are addressed, the CDP cannot be called twinning. The table below gives an example drawn from the three case studies, as to the types of items that need to be detailed in the analysis of business operations (AOBO) section of the diagnostic study.

The above may also be cross-checked by doing global value chain analysis with the support of techno-commercial experts, and additional activities may also be identified and less relevant activities may be done away with. Similar tables may be prepared for other products of the cluster. This should provide clues for selection of the advanced cluster and stakeholders thereof during project implementation. Thus selection of advanced clusters, given an emerging cluster, should not be predetermined. While one can have an advanced cluster in mind, the complete set of advanced clusters can be determined only after an informed analysis as described above in Table 7.

Step 4: Diagnostic Study of Advanced Cluster(s)

As mentioned above, unlike general cluster development programmes, that are usually heavy in finding solutions which are either within clusters or at best in known national locations, twinning essentially is looking for cooperation between cross-country clusters. Hence it is imperative to understand the business decisions of these likely clusters by taking clues from the diagnostic study of the emerging cluster. Such studies may be done for the likely advanced clusters pointed out in the diagnostic study of the emerging cluster. It may also involve supply-side inputs of global knowledge repositories (e.g. international consultants/institutions) for other likely advanced clusters. The process needs to identify, among others, the following issues in each of the identified advanced clusters:

- Identification of likely twinning stakeholders
- Identification of their business needs in the twinning process
- Identification of respective areas of business cooperation
- Gauging their willingness and conditions for support
- Identification of the most willing stakeholder partners
- Identification of likely intermediary organizations – association(s) and technical institution(s)

The advanced clusters to be studied will be selected based on the needs of the emerging cluster.

TABLE 7: LIKELY ITEMS OF ENTRY IN AOBO – TYPE OF PRINCIPAL FIRMS: LEATHER JACKET

AOBO Item	Major issues where twinning can help	Advanced cluster to twin with and relevant stakeholders	Likely entry points
Raw Material	Raw material for spot-less rectification of spots	Chemical suppliers in Italy and Germany	5 medium, 50 small. Some most interested units: M/s A, B, C, D, E Likely intermediary institution/ BMO: M/s X, Y, Z, etc.
Raw Material	Supply of goat leather	Ethiopian suppliers	
Technology	Appropriate usage of machinery	Italian machinery manufacturer (ASSOMAC)	
Technology	Appropriate processing	Technicians from Solofra Cluster	
Skill	Design prediction	Italian technocrats	
Skill	Multi-skilling	Italian units	

Step 5: Trust-building between and within Clusters

As in any CDP, the process of trust-building is an important step for twinning, too. Here, this needs to happen not only among the stakeholders of the emerging cluster, but also between the stakeholders of a set of advanced clusters and the emerging cluster in question. The richest packet of trust in a cluster is an association. Hence to start with, it is very important to have association level trust-building. Since an association is a cluster level body, such types of linkages and related activities can be termed as Advanced Cluster to Emerging Cluster (C2C) linkages or activities. Even institution to institution linkages and activities thereof can be termed as C2C.

While general CDPs think in terms of promotion of principal firms of the emerging cluster, for twinning of clusters one needs to work for promotion of the business interests of the stakeholders of both the clusters. Hence, the process of trust-building needs to be more elaborate. Thus workshops and seminars to identify scope for business cooperation need to be carried out not only in the emerging but also in the advanced cluster. This will entail a CDA-type support structure if the level of cooperation is sufficiently large or at least the presence of a part-time consultant to address the various information and implementation needs also in the advanced clusters.

This process of trust-building which starts with C2C linkages, must soon (the sooner the better) create ways for C2B or B2B linkages, which must either create sufficient scope or actually deliver outcomes related to strengthening of the bottom line of cluster firms in both the clusters. Needless to say, the trajectory of such developments will vary from cluster to cluster and for different types of stakeholders within the cluster.

Step 6: Action Plan Preparation

The action plan should start with trust-building activities such as workshops by technical personnel, exposure to each others' cluster, signing of cooperation agreement, etc. Such trust-building activities will be necessary not only in the emerging cluster but also selectively for at least the target stakeholders in the advanced clusters. Furthermore, it should:

- Follow-up with preparatory activities for twinning such as selection of interested firms, study the exact skill needs for selected firms, matchmaking of institutes, selection of local (emerging cluster) information and knowledge repository, etc.
- Also not all trust-building activities need to be twinning-oriented. The process of twinning will mostly involve medium and at times comparatively bigger small firms. To create confidence of the smaller firms and create a larger mass for involvement, non-twinning capability-enhancing activities need to be made a part of the action plan, too. These activities create necessary trust and confidence and will lead to higher coverage. Such activities include training, vision building, quality upgrading, etc., of the small firms, not geared up immediately for twinning. These activities are meant for the emerging cluster only.
- Take up “low hanging fruit” twinning activities such as skill development, technology transfer shows, visits to advanced clusters and learning from these, etc. These activities create the trust process for implementing “long run” result-producing activities.
- Organize “long-run twinning activities” such as broadening the scope of products jointly offered, joint development of new technology/products, technology transfer, investment promotion, institutionalization of knowledge in institutes in the emerging cluster, etc.

The scope for promotion of such activities among the various types of stakeholders will vary. Here, while scope for promotion of certain activities is faster, for others, it will be time-consuming and is subject to the cooperation framework created before, at the start of the twinning process. Scope for cooperation is high between associations and between an association and a technical institution. These are the building blocks of trust. In the absence of any cooperation here, scope for all other forms of cooperation is low, as evidenced in Table 8.

However as soon as a cooperation framework is established between these two entities, scope for cooperation becomes high between technical institutions. Based on these cooperation frameworks, scope for

TABLE 8: SCOPE FOR PROMOTION OF TWINNING ACTIVITIES AT THE BEGINNING OF THE TWINNING PROGRAMME

	Cluster Stakeholders	Advanced Cluster			
		Association	Technical Institution	Individual BDSP	Firm
Emerging Cluster	Association	High	High	-	-
	Technical Institution		Low	Low	-
	Individual BDSP			Low	Low
	Firm				Low

cooperation enhances between BDSPs linked to the associations and technical institutions. This in turn creates, higher scope for cooperation between firms and firms and individual BDSPs.

To continue the above list, furthermore it is important to incorporate the following activities into the action plan:

- Going beyond joint actions, direct firm-to-firm and firm-to-BDSP activities also need to be supported to create initial success;
- Such support may be given on a declining share/contribution basis to maintain a clear market-orientation and to make relevant support sustainable/realistic over the medium term.

Step 7: Implementation

The following text contains some guidelines for implementation:

- If the stakeholders of the clusters are pre-informed regarding each other's capabilities for business cooperation, then the process of C2C, C2B and even B2B cooperation is likely to take place faster. Even in such a case, association-level cooperation (C2C) is a good beginning as an overall trust-building mechanism. However, one needs quickly to diversify into micro stakeholder-level issues (B2C and C2C) for achieving the outcome.
- As compared to general CDP, twinning is a relatively high-investment activity for the stakeholders, as it involves cross-country travel of knowledge and expertise. Hence the process may start with medium-level firms who have (a) clear vision, (b) targets and (c) financial back-up. Hence firms which will generally seek

technical partners, to start with are the ones which are relatively bigger and have a vision for growth. For a better outcome, and also to create a demonstration effect, the Project may look for such evolved units as the prime movers of such a firm-level beneficiary, as mentioned above. This will raise the level of interest for other firms in the twinning process.

- However, if the concerned stakeholders of the clusters are not properly informed of the benefits, or capabilities of each other, then preliminary efforts should be towards advocacy, e.g. making the case, doing road shows, using promotional material, etc. primarily to create trust that the process has sufficient scope for strengthening the bottom line for stakeholders on both sides.

- Also, the Project can make a difference in the coverage of firms by sharpening the thought process of the relatively less well endowed smaller units through vision building and creating their capacity for international business cooperation so as to enable their participation in the twinning process as early as possible. Linkage to an appropriate credit line might also help here.

- The twinning process per se consists of specialized cross-cluster activities. These need not be limited to principal firms, and twinning of support stakeholders should also be considered. This is all the more so as support stakeholders of an advanced cluster not only possess the capacity to make the principal firms of the emerging cluster stronger, unlike at times when principal firms of two clusters may have some business rivalry, they have the least business rivalry and highest business complementarity with principal firms of the emerging cluster, e.g. machinery manufacturer/

raw material supplier/BDS provider of advanced cluster and principal firm of emerging cluster.

■ The process of twinning proposes to link to solutions by facilitating knowledge flow. Such knowledge flow can also happen from two clusters within a country too. Thus twinning process may also map such possible knowledge flow packet also between two clusters within a national boundary and promote the same. This may happen between an evolved a cluster and an emerging cluster in the same country.

■ Although broadly a cluster may seem to have similar firms, in practice their products are not uniform and vary. For example, a leather cluster produces both buffalo leather as well as goat leather. While the tougher buffalo leather is used for making shoes, the softer goat leather is used for furnishing. Hence, selection of global experts/trainers needs to match the exact need of the firms in particular and not the cluster in general. Such product level analysis needs to be carried out during the diagnostic study itself or at the very start of the process of implementation.

■ Detailed handholding by global experts is expensive. Hence a model of international experts (short duration), duly supported by national experts (longer duration) may be adopted. Scope exists for promotion of such national BDSPs – strategic and/or intrinsic. For example, in leather, CLRI is an institutional BDSP. Or it may be an independent unorganized BDSP such as the lean manufacturing consultant in auto components (had he been involved in learning through a twinning process) or may be intrinsic, e.g. a machinery manufacturer or a specialty chemical supplier from Italy.

■ The process of technology transfer needs lot of ground-level interactions. A particular area of importance is to decide the optimum equity division between two firms in case such technology transfer is leading to creation of a new venture. Specialized technical support may be provided in these areas. This is new for MSMEs.

■ The technology transfer part of the twinning process will need more rigorous handholding from the points of view both of the emerging and the advanced cluster with regard to the preparation of firm dossiers, identification of relevant units and negotiation. Such

a process has both developmental and commercial angles. The development issues will cover activities such as creating trust through initial meetings, identification of partners, promoting institutional cooperation, etc.; while the commercial activities include the entire process of technology transfer, including creation of the commercial deal, preparation of dossiers and process completion. The commercial part of this activity is often a very firm central support. If the development organization involved in cluster development tries to do this job, it can easily get branded as a stakeholder and its trust base as a non-stakeholder can become diluted. Also, the firms themselves will shy away from sharing information with non-stakeholder type entities once they are entering into commercial deals. Besides, the process itself is time-consuming and may require rigorous handholding, not possible for a CDA. Hence, while the developmental part of this activity can be supported by the Project, the commercial part needs to be executed by a suitable commercial entity, as a commercial venture beyond the programme. Hence commercial entities in the two clusters may be tied up for this purpose as a part of the Project.

Accordingly the steps for implementation can be the following:

1. Association level interaction
2. Signing of MoU between associations, association and technical institution or between technical institutions
3. Identification of willing/winner firms, technical institutions and support firms who value the twinning concepts in the emerging cluster
4. Clearly specifying the requirements of the emerging cluster to the advanced cluster, e.g. need for learning, technology transfer requirement, etc., and vice versa from the advanced cluster to the emerging cluster, e.g. need for outsourcing, selling of machinery, etc.
5. Identifying corresponding business partners, i.e. firms/technical institutions/BDS providers – for activities such as training/firm level consultancy/technology transfer/investment, etc. in the corresponding advanced clusters

6. Organizing appropriate business linkages through exposure, training, services, technology transfer, investments, etc.

Step 8: Monitoring and Evaluation

The standard procedures for M & E may be followed. However the items for M & E will differ. In general the following can be a likely set of outputs and outcomes:

TABLE 9: LIKELY OUTPUTS

Output	Unit
Capacity-building programmes (workshops/ seminars done)	Number
Visit organized (participants)	Number
Technology transfer shows organized	Number
Letters of Intent signed between firms (across clusters)	Number
MoUs signed between associations/ institutions	Number
Participation in fairs/exhibitions	Number
New markets identified	Number
Persons (from firms) trained	Number

TABLE 10: LIKELY OUTCOMES

Outcome	Unit
Technology transfer agreements signed	Number/ Euro
Investment cases	Number/ Euro
Outsourcing agreements signed	Number/ Euro
Technological best practices adopted	Number
Skill development programmes introduced	Number
New service providers introduced	Number
Machinery sold from advanced clusters	Number/ Euro
Persons (from firms) trained	Number

**TABLE 11:
COMPARATIVE EVALUATION OF GENERAL AND TWINNING CDP**

STANDARD CDP	TWINNING CDP
1. Number of Clusters involved	
One (or a range of clusters – (the) emerging cluster(s)	One emerging and one or more advanced clusters
2. Selection of Cluster	
Development goals of the sponsoring organization	Emerging cluster should be selected based on scope for externalization and previous experience in CDP, followed by pairing with an advanced cluster, which should be selected on the basis of suitability to support the scope for externalization
3. Factors for Selection of CDAs	
One general CDA, nowadays a CDA team with a part-time technical expert is also being appointed	A technically (of cluster product) qualified CDA and part-time or full-time CDA in the advanced clusters, depending on the level of likely activities. Also a CDA needed for facilitating technology transfer and investment promotion in the emerging and the advanced cluster
4. Trust-building for Business Promotion	
Trust-building of principal firms of emerging cluster	Also trust-building of concerned stakeholders in the advanced clusters and between the clusters (cross-cluster activities)
Implementation of Activities	
Mostly joint activities within a cluster	Mostly joint activities across clusters
Monitoring and Evaluation of Outcomes	
Employment, wages, turnover, savings, etc. increased	Technology transfer, outsourcing, investment, technological best practices adopted, etc., from advanced cluster

ANNEX 1: LEATHER ACTIVITY STATUS JULY 2011

#	Activity	Activity Completed
1	Identification of the Cluster(s) in India	2007
2	Identification of the corresponding Cluster(s) in Italy	2007
3	Identified the cluster's stakeholders in India and in Italy. DC MSME, Govt of India-Mission to Italy	Sep-07
4	Forged and international cooperation agreement	Jun-08
5	Firm mapping for SPX	Jun-08
6	Short term training programme on cluster development in FMC	Sep-08
7	Awareness programme on schemes of Ministry of MSME, GoI	Sep-08
8	IFLMEA Interaction with Assoconciatori coinciding Bologna fair	Oct-08
9	First diagnostic study of the cluster training needs - brainstorming	Dec-08
10	Seminars conducted by Intl. expert during IILF 2009 on "Life in frugal world"	Feb-09
11	Seminar by Mr Nicola Andreanini, Director, Santa Croce CETP and interaction with Chennai cluster CETPs at IILF	Feb-09
12	Brainstorming for future actions of training assessment and training modules-preparedness of association and SMEs based on Samarco's report	Apr-09
13	Training cum technological assessment by international leather technologist	March-April 2009
14	Planning workshop with IFLMEA on training and plan for technological up gradation	Apr-09
15	Class room training on Managerial (Technical) training by Mr. Roberto Vago in Chennai	Jun-09
16	Workshop on Reduction of salt from tannery effluent in association with ILIFO, SITDA and 5 CETPs	Oct-09
17	On-site training on tannery wet end operations	Dec and Feb 2010
18	30-Jan-3Feb Joint Stand with partner associations (ISF & IFLMEA) at the IILF 2010. Seminar organized on "Technical intricacies of value addition in low grade leathers" by Mr Roberto Vago	Jan-Feb 2010
19	Dissemination workshop on Knowledge gap in tannery wet end operations in Vaniyambadi	Mar-10
20	Onsite training on leather finishing techniques	June - July 2010
21	Ambur Open 2010: Exhibition of leather and Footwear Components organized by ISF-IFCOMA in Ambur Participation to launch "Services Package" from ISF	Jul-10
22	Dissemination workshop in Pallavaram of Services Package from IFLMEA	Aug-10
23	Dissemination workshop on Knowledge gap in leather finishing in Vaniyambadi	Sep-10
24	Training programme on tannery waste management conducted by Engineering Staff College of India with the support of CLRI in Hyderabad	Oct-10
25	Impact assessment of training programmes	Dec-10
26	Project's Participation in the India International Leather Fair (IILF) with ISF & IFLMEA	Jan-Feb 2011
27	Interactive session between Italian Leather Experts & CLRI along with other Tannery Cluster Stakeholders	Feb-11
28	Showcasing, Documentation and Stakeholder Management	Ongoing
29	Reviving and Re-organizing cluster firms and stakeholders by share proposed workplan for 2011, gathering their concerns/input and getting them initiated	Ongoing
30	Developing a mechanism for formal engagement between IFLMEA and CLRI for implementing the retraining agenda for a greater coverage of cluster units with the best practices and sustainability	Ongoing
31	Tentative programme for workshop on "Energy Conservation in Tanning Industry"	Jul-11
32	Launch of VTT and Benchmarking in Tanning Industry and Interactive session in CLRI	Nov-11
33	Workshop on cleaner technologies and VTT	Dec-11

ANNEX 2: FOOTWEAR ACTIVITY STATUS JULY 2011

Activity	Completion Month
Identification of the Cluster(s) in India	Nov 06 - Feb 07
Identification of the corresponding Cluster(s) in Italy	Nov 06 - June 07
Identified the cluster's stakeholders in India and in Italy. DC MSME, Govt of India-Mission to Italy	June 07- Oct 09
Created and international cooperation agreement	2007-2008
First diagnostic study of the cluster training needs	Oct-07
ISF Brainstorming on training needs	Dec-07
identification of training agencies/institutes with the support of the Italian counterparts and Govt. of Italy	Dec-07
Participated in IILF 2008	Jan-Feb 08
Assessment (audit) if the training needs and technological gaps by an international expert. Redesigned the training programs	Feb-08
Training on best practices in footwear manufacturing by 2 international experts. Disseminating workshop with a large number of SMEs concluded the 1st Phase	March 31, 2008 to April 3, 2008 (class room training); Factory level (April 4 to 27 and then 18th May to 12 June) and concluding Workshop on June 12
Firm mapping for SPX	Jun-08
Assessment of 20 firms and selection of 14 SMEs by a panel composed by CFTI, CLRI and ISF (best performing the international expert recommendations) and 4 faculty for a study tour to Italy	Sep-08
Short term training programme on cluster development in FMC from 22-24 sep 2008	Sep-08
Awareness programme on schemes of Ministry of MSME, GoI	Sep-08
Conducted 2 weeks study tour cum 'On site' training for 14 SMEs and 4 faculty members, organized by Unioncamere and Confindustria Marche and supported by PISIE and ITPO	Oct-08
Seminars conducted by Intl. expert (who?) during IILF 2009 on "Technological Innovation in Footwear Manufacturing"	
April 2009: Realization of Second Cooperation agreement between ISF and CONFINDUSTRIA Marche	
Repeat training based on training conducted in India by international experts and training in Italy - 2 day per company training	August - November 2010
Training Circles in Cluster SMEs. Follow up of the Best Practices Training and dissemination of solutions to common problems	June 12, 2008 and November 2008
Design Practices and Trend Forecasting training 12th Oct 09 to 23rd Oct 09 in Polimoda, Florence, Italy	Oct-09
Design Programme by CLRI, 2 weeks' programme	Nov-09
Design Programme by CLRI, 2 weeks' programme	Dec-10
Joint Stand with partner associations (ISF & IFLMEA) at the IILF 2010. Seminar organized on "Design & Trends Forecasting in Footwear Industry"	30 Jan- 3 Feb 2010
Support to ISF in introducing Lean Manufacturing to its members and formation of SPV to utilize the MSME scheme (May-June) Ministry of MSME launched a scheme on supporting MSMEs for the lean manufacturing process. Since our cluster members completed best manufacturing, lean is the next achievement	Ongoing
Ambur Open 2010: Participation in ISF-IFCOMA exhibition in Ambur, to launch "Services Package" from ISF	Jul-10
Impact assessment of training programmes	August - November 2010
Dissemination workshop in Ambur of Services Package from ISF	Oct-10
Overseas Training on Advance 3D CAD/CAM practices of Mr Govindrajan of CLRI	October - November 2010
Dissemination Seminar on Advance 3D CAD/CAM practices of Govindrajan of CLRI	Dec-10
Training Replication by the CLRI and CFTI trainers on:-Footwear design conducted by CLRI trainers -Footwear Manufacturing Best Practices	Jan - Mar 2011
Project's participation in Ambur Open 2	Jul-11

ANNEX 3: AUTOMOTIVE COMPONENT ACTIVITY STATUS JULY 2011

#	Activity	Completion Date
1	Profiling of Auto units for ITP	Dec 07 - Feb 08
2	Formation of Auto sub cluster in AIEMA, Obtaining willingness from unit holders	Mar-08
3	MEETING review/actions.	Mar-08
4	Workshop on Private Equity in Auto Component SME sector	Mar-08
5	Interested unit holders formed in to core committee and started cluster meetings. Expression of interest obtained	Apr-08
6	Organized meetings for selection of interventions	Apr-08
7	Inter-firm Co-operation visit to Rane Madras Ltd. Chennai. Factory visit and familiarization of best mfg practices	Apr-08
8	Participation in ACMEE 2008-UNIDO Stall-prepared and monitored, Display of UNIDO Cluster activities and explaining to visitors	Jun-08
9	Excellence Gap Assessment (EGA) for auto cluster SMEs	April-November 2008
10	Interaction meeting with EGA-Consultant and UNIDO- SPX expert	Oct-08
11	CORE-COMMITTEE meeting for further intervention-plans/actions for auto cluster.	Nov-08
12	Auto cluster core committee meeting to plan for further interventions. Selection of WEB designing and vision building programs	Nov-08
13	Initiation of Institution-Industry linkages, Society of Automotive Engineers (SAE) India- Chennai, Exposure to SAE and programmes-BDS-knowledge sharing	Feb-09
14	CBI-NETHERLANDS –UNIDO PROGRAM FOR AUTOCLUSTER UNITS	January-review and 16/02/2009
15	Visit of AIEMA office bearers and auto cluster units to Auto Cluster Development & Research Institute (ACDRIL) Pune for Inter-cluster interaction with cluster and CFC. Exposure and familiarizing with Pune ACDRIL	Apr-09
16	Interactive participating program to WELLONIA-BELGIUM EXPORT Opportunities in European market-	4/21/2009
17	Workshop on Website development and Development of Individual Website for 25 SMEs in the cluster	May-09
18	Visit to units for web designing	June-July
19	2 Day workshop on Vision Building & Strategy Development. Vision building and strategy development for individual units done.	May-09
20	Workshop on Vision & Introduction to Marketing organization. Way forward after Vision and Exposure to common marketing set up for cluster units	August - October 2009
21	One day workshop in WEB development for cluster members. Dates allotted	9/5/2009
22	French Automotive –UBI France Trade commission office seminar on New Technologies for Indo-French Automotive Collaboration-Invitation. Visit by AIEMA AUTO Cluster organized.	1/12/2010
23	PE-VC Training Programs for SMEs -visit/discussions by Mr Toshiaki Ono with AIEMA-ATC O/Brrs.	1/18/2010
24	Calls for Expression of Interest and enrolment for the Supplier Development Program to align with value chain of auto components. Basic SDP proposed	Feb-10

#	Activity	Completion Date
25	Visit to AIEMA Auto cluster-5- units by UNIDO-Consultant Mr Charles Wilhelm for match-making/JV/Tie-up as per CPP details from UNIDO.	Mar-10
26	Visit to AIEMA Auto cluster-3 -units by UNIDO-Consultant Mr Charles Wilhelm for match-making/JV/Tie-up as per CPP details from UNIDO.	Mar-10
27	Deputy Director-MSME-VISIT TO AIEMA-Review of project and visit to cluster units.	Mar-10
28	Evaluation & Selection of relevant modules out of Supplier Development Programme by National Expert	Mar-10
29	Workshop –UNIDO	Apr-10
30	Workshop on Basic Supplier Development Programme	Apr-10
31	Training program of Basic SDP-6 Modules	May - November 2010
32	Organized KAIZEN Competition for the SDP participants	Sep-10
33	Certification and Valedictory Programme for award of SDP Participants	Nov-10
34	Formation of a Lean Manufacturing cluster under M/o MSME GoI Scheme	Dec-10
35	Session on Social Accountability for MSMEs and Collecting Expression of Interest on Social Aspects Intervention	Feb-11
36	Formation of Lean Cluster under NMCP Scheme	Jan-April 2011
37	Awareness session on “Waste identification & Elimination” for the cluster units	Apr-11
38	Reviving and Re-organizing cluster firms and stakeholders by share proposed workplan for 2011, gathering their concerns/inputs	
39	B2B Meeting with overseas delegates	May-11
40	Overview Session on SDP (Basic) for new set of SMEs in the cluster	Jun-11
41	Session on Theory of Constraints for SMEs	Jun-11



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria

Telephone: (+43-1) 26026-0, Fax: (+43-1) 26926-69

E-mail: unido@unido.org, Internet: <http://www.unido.org>