Business Partnership Programme for the Development of Selected Industrial Sectors
Food Processing Component
Focus on Fruit and Vegetable Sector

Selected clusters

Agro and Food Processing:

Phase One

Banana - Jalgoan, Maharashtra

Apple - Shimla, Himachal Pradesh

Project Objectives

- Identification of processed products in Apple & Banana through exhaustive & extensive Study for commercial exploitation(Banana Chips, Apple Chips) and
- Supporting the SMEs in these clusters with know how on Technology, quality management, standards Conformation and most importantly making available testing facilities in their vicinity.

Specific Deliverables Proposed

- Identify gaps and their workable solutions in the system through extensive survey based study in each cluster
- Build up Database of Units in Apple and Banana Processing and the status of operations in them
- Prepare complete dossier on status of these industries globally vis-a-vis India, the relevant technologies in processing, marketing techniques etc. and suggest adoptable avenues to policy makers and entrepreneurs
- Establish links with at least 5 progressive entrepreneurs in each cluster, understand their technological & training needs and address them
- Support them in meeting today's quality standards like GMP, GHP & HACCP

Survey On Apple and Apple Processing

Survey conducted with support from Apple expert Mr Pischler identified by UNIDO

Major Findings

In Apple sector - gaps are very basic and related more to farming techniques than processing. The Processing technologies remain traditional

- Huge wastage out of total Production in Himachal (528 thousand Tons) (2004-05)
- Total Amount Processed - only 4478 Tonnes. Rest at times sold at throw away prices due to lack of modern storage facilities
- Quality of fresh apple very good but due to low productivity and wastage price is high.
- Productivity low due to very old orchards- need to develop new high yielding processing varieties - import of internationally acceptable plantation material has started though
- Major market in India for Fresh but transport logistics main issue

Survey On Apple and Apple Processing

- Major Processed Items- Apple Juice, Jams, Preserves and some trial production on Cider
- Processed products show positive demand growth but units in small scale sector lack knowledge on modern hygienic and safety practices
- No Laboratory testing facilities in whole of Himachal -All processed items go to Chandigarh for testing conformity to standards
- Major intervention required in form of upgrading storage and transport logistics
- Fresh apple should continue to be The Major Focus
- Investment in Cold chain the Immediate Need
- Acvtive Marketing required for export markets. A vigorous drive like those of California apple and Australia Apple should be undertaken promoting "Himachal Apple" as a brand on a public private part

Survey On Banana Processing…contd.

Major Findings

- India-The world's largest producer of Banana – 13.3 million tonnes
  - Maharashtra produces 3.92 million tonnes
  - Jalgaon – 3.12 million Tonnes
- Unlike Apple, Banana processing is a major industry and efforts are on both at small and large scale
- Banana chips – The most common processed item using
  - 1020 tonnes in Lean Season
  - 3720 tonnes in Peak season
- One large unit has been successful in making Jalgaon a major processing hub of the country - Extensive Backward and Forward Linkages established
- Also many small units in apple chips and various other cottage scale products from Banana
- On an average about 30 thousand tonnes of banana from Jalg area is used for chips. Utilization is only 20% of the raw mate rest wastage

Survey On Banana Processing…contd.

Major Findings

- In Maharashtra, variety of chips in various tastes, flavors and shapes are made from banana - sourced from Jalgaon,these products are very popular
- Most units in small scale – but they see good opportunity - confident of market growth at least by 20% in next two/three years
- International market – USA and Europe – only about 80-100 tonnes
- Initiatives need to be taken in utilizing the wastes- all bio ingredients – The project could extend its activities -organise training and support in this area
- Bank finance the major issue for smaller units – Great expectations built up through interactions with the project team - Looking up for immediate intervention in this area
- Poor Quality Management – limited testing facility in Jalgaon
- Smaller units need extensive training and support in modern quality systems

Activities Proposed on Basis of the Survey Reports

- Arrange Study Trips of processors and farmers to European Apple orchards and farms to learn the modern technologies of post harvest management, Processing, Cost effective Cool Chain etc.
- Since apple processing today is at a very low level, effort to be on supporting with new technologies for newer products like Apple chips, Apple wine, Apple paste & sauces etc. and identify the markets for these
- Undertake pilot level research and production in one or two of these new products – Apple chips to start with
- Arrange visit to Apple chips manufacturing units in other countries - for the R&D institute and the entrepreneurs.
- Work with Banks to prepare Bankable Projects both for Apple and Banana Processing

Activities Proposed on Basis of the Survey Reports Contd.....

- Assist in providing testing facilities by setting up nodal laboratory in identified clusters through
  - Technical consultancy
  - Identification of facilities
  - Training of Personnel
  - Some basic Training Equipment

- Capacity building in form of
  - Facilities to provide hands on training in QA/QC aspects of processed agro products
  - Assistance in setting up in house QA laboratory and testing protocols for individual units
  - Setting up a Knowledge Centre with detailed documentation on national/ international food standards and activities for spreading awareness

Activities Undertaken

- 3 Interactive Training programmes on Processing and Marketing of Apple and Banana Products held in Shimla, Jalgaon and Mumbai respectively.
- Identified units in Shimla and Jalgaon to work closely - on issues of Quality management and technology
- Liaison with private players to develop Cold chain Infrastructure – with technological support from Apple Expert appointed by UNIDO and also from contacts built during Europe Study Trip
- Identifying 3 units for Capacity Building, Cost Cutting & HACCP certification in each cluster
- Interaction with Bankers like ICICI & SIDBI with processors on financial assistance
- Preparing bankable projects in each product

Activities Undertaken:.....*contd.*

- Survey Report on the present Status of Apple and Banana Production, Processing and Marketing complete
- Preparation of the Comprehensive Document on Apple and Banana processing covering
  - Global Production and Market for both fresh and processed
  - Indian production and market
  - Status of processing in India and the opportunities
  - Technologies needed and their sources
  - Quality Management
  - Action Plan on Marketing of Apple products in India and in Globally Identified Markets

Activities Undertaken:.....*contd.*

- **Study trip to ANUGA Food Fair and Apple growing and processing regions in Europe for Apple processors. 8 company representatives alongwith Govt Officials from Himachal and Ministry of Food processing Industries. Visits included:**
  - Learning about the Unique Joint Marketing Strategy of multiple growers in Styria, Austria
  - Contract Farms of Apples in Styria & Krems – showing Harvesting, storage and processing of Juices & Wines
  - Modern Technology of extracting flavours from Apples
  - Dehydration of Temperate Fruits
  - One of the largest fruit processing units in Austria (Agarana Group) producing Variety of products involving apple and many other temperate fruits ranging from juices to desserts to bakery products

Activities Undertaken:.....*contd.*

- **Food testing Labs in the clusters - dialogue on with both government and industry bodies in each cluster for Land and support towards basic infrastructure.**
- **Action towards Capacity Building**
  - **A model training lab being set up with full fledged training facility - equipped to**
    1. **Train on primary QA/ QC needs**
    2. **Hands-on training to Industry Personnel**
  - **Developing an Exhaustive Knowledge Bank on Technology, Food Standards, and Testing requirements. The Knowledge Centre to include**
    1. **Complete database on national/ international standards**
    2. **All Analytical procedures**
    3. **Advanced journals, books, periodicals**
    4. **Internet/ networking facility**

Planned Actions in these clusters in 2006

- Pilot project on Apple chips to be undertaken in association with CFTRI
- Work closely with ICICI and SIDBI to address financing needs in clusters and prepare bankable projects
- Help upgrade quality in select 5 units each in Shimla and Jalgaon – provide customized training and certification on Quality management through FICCI Quality Forum
- Support the Entrepreneur trying to set up Modern cold storage system in Shimla with technical guidance from UNIDO Expert
- Make available basic testing facilities by establishing one Food testing Lab in each cluster (Dialogue on with both government and industry bodies in each cluster for Land and support towards basic infrastructure)

The Phase II - 2006

Similar activities in the following clusters

- Fruits & Vegetables - Kolar (Karnataka)

- Pineapple - Arunachal Pradesh & other NE states

- Grapes - Maharashtra

Unit Level Intervention

in

Pulp & Paper Industries

(Energy & Environment)

Objectives - To introduce

Energy Efficiency

Clean Technologies

in selected Pulp and Paper Mills through Technological up gradation and measures including Capacity Building.

Deliverables & Status

- To conduct Diagnostic study & Audits with regard to energy consumption, in 10 selected mills (1st Phase) in the states of Uttranchal and Western UP – Ongoing (90% Completed).
- Capacity building of personnel - Completed
- Study visit of unit personnel to developed countries for adoption of new technologies – 2nd Phase.
- Study & disseminate International best production and process practices – 2nd Phase.

Broad Findings

- **Technology obsolescence is seen as a major problem.**
- **Inadequate Personnel skills-Need for Training**
- **Improvement measures unit-wise identified for energy efficiency.**

Energy Conservation Potential

It is estimated that by investing Rs. 70 lac per unit for Implementation of identified energy conservation measures (ECM)on an average Rs. 147 lac per annum can be saved. The identified ECMs are broadly of the following nature :

- ✓ **Retrofitting of equipments.**
- ✓ **Technology Up-gradation.**
- ✓ **Efficiency Improvement of equipments.**
- ✓ **Re-engineering of some processes**
- ✓ **Better Operation & maintenance practices**

Environment
Key problems

- Lack of proper Effluent Treatment Technologies
- Solid waste generation
- High consumption of fresh water resulting in groundwater level depletion.

Roadmap

- Conduct clean technology diagnostic studies in 10 selected mills in the states of Uttaranchal and Western U.P
- Conduct Environment Audit in the 10 mills
- Organise training programmes for the pulp and paper units in both regions
- Prepare a handbook on International best practices for clean technologies in pulp and paper industry
- Study visit for the units to gain hands-on knowledge on best available technologies
- Facilitating implementation of recommended clean technologies

Status

- Clean technology diagnostic studies completed for identified units
- Environmental Audit in progress for the identified units – to be completed by Dec'05
- Training Programmes scheduled for December 2005

Outcomes

- **Gaps identified :**
  - **Under-designed and/or improperly operated Effluent Treatment Plants (units lack knowledge on how to operate effluent treatment plants)**
  - **Over-consumption of fresh water, generation of high volumes of wastewater**
  - **Need for chemical recovery system for reuse of black liquor**

Key Recommendations

- **Technology implementation for**
  - **Chemical recovery - for black liquor utilisation**
  - **Reduction of effluent toxicity by introducing oxygen bleaching system**
  - **Upgraded technology for water conservation replacement of traditional washers by twin-decker washers**
  - **Maximum utilisation of backwater in process**
  - **Sludge thickening equipments for sludge handling**
- **Capacity building of the units on design and operation of effluent treatment plants**

Additional Impacts

An integral part of the clean technology diagnostic study was an interactive discussion with unit owners and technical personnel where FICCI-UNIDO project experts answered their queries and discussed the feasible clean technology options specific to their units.

Several mills have already initiated the process of acquiring the recommended equipments and have been constantly interacting with FICCI for expert opinion on technology suppliers, equipment models etc.

Center for Global Competitiveness

To enhance Competitiveness in

- **Quality : to match with the best**
- **Cost : Minimum**
- **Delivery : Quickest**

Through

- **Enhancement of competitiveness of 20 SME industries belonging to Food processing & Paper and pulp sectors**
- **Development of customized improvement techniques based on Lean Manufacturing principles**
- **Development of Training programs and materials to share the Lean Manufacturing technique with other industries**
- **Capacity building for consulting & training of Lean Manufacturing in India**

Roadmap

- Development of customized Lean Techniques for Indian industry with the assistance of Lean Enterprise Academy UK through UNIDO
- Consultancy & Training to 20 participating units (from the Food processing & Paper sectors)
- Promotion of the Lean techniques for benefit of other industries through development of case studies and training materials
- Training of National consultants

Deliverables

- Enhanced competitiveness of 20 participating units. Measurable in terms of financial savings
- Customized technique of Lean Manufacturing for improving competitiveness
- Training materials and case studies for sharing of knowledge with other industries
- A group of trained National Consultants & Managers of the organizations to promote the Lean methodology

Actions taken

- Lean awareness Training: 3 programs already conducted to create Lean thinking in Indian industries. 2 more scheduled inDec'05
- Training Material for Cost reduction: CD ROM & Work book developed
- Lean Methodology Development: A meeting with Lean UK scheduled in Dec 05 through UNIDO
- Consulting to selected SMEs: To begin from Dec.2005. Contract for 3 units released on 10th Nov.05