

## *Sustainable Development in Central America and the Dominican Republic*

**Company:** Coopagrimar R.L.  
**Country:** Costa Rica  
**Project:** TMF Program: Poverty reduction and environmental improvement.  
An integral sustainable development strategy.  
**Year:** 2005

### THE COMPANY

**COOPAGRIMAR R.L.** was founded in 1969, and its plant started operations in 1994. It is located in Zarcero – Alfaro Ruiz, a county that belongs to the Alajuela province. It has 475 associates. Operations are divided in two parts: the frozen plant and the Agriculture supply warehouse. Information presented in this document relates to the frozen plant – where the project focused.



### PRODUCTS AND MARKETS



The company processes fruits and vegetables both fresh and frozen that are mostly exported. Within its product portfolio are pineapple, carrot (frozen and in juice) and papaya. Occasionally they also process mango and banana.

Between 80% and 85% of the production is exported to the United States. They also export to Europe and Japan (the later one through Mexico). Exports are not done directly, but through a merchant company that is their most important client.

### PROJECT DESCRIPTION

The methodology to implement the company's Sustainability Strategy started with the conceptualizing of the sustainable development system –at which stage an internal and external organizational analysis took place to determine its sustainability profile, as well as its options for improvement in the environmental, economic and social dimensions.



Later on, a strategic sustainable frame was developed which included the organization's mission, vision, organizational values, strategic objectives in the three mentioned components and the company's commitment to sustainable development.

Based on the strategic frame, the action plans in each of the components were defined and indicators and monitoring mechanisms were established to guarantee compliance with the strategic established objectives.

Later on, training and technical assistance were provided to support the company in implementing the action plans. This way, it was intended to fulfill the transfer of knowledge to the organization; also, the follow up oriented towards the achievement of the expected results was developed.

## MOST RELEVANT OBTAINED RESULTS

### Strategies, policies and plans

A new company's strategic frame plan was defined:

#### Cooperative's Mission




Satisfy the clients' likes and preferences with quality products and services, contributing to its associates' socioeconomic development.

#### Cooperative's Vision

Be a consolidated company, leader in service, production, processing and commercializing of innocuous products, taking advantage of the zone's production and installed capacity, ruled under quality principles, adequate technology and a better use of sub-products and waste.

#### Our Commitment to Sustainability







Initial Diagnosis	Achieved Improvements
<b>ECONOMIC DIMENSION</b>	
<b>Financial Management</b>	
<ul style="list-style-type: none"> <li>The company showed decreasing results in its Economic Value Added (EVA).</li> <li>The plant has made efforts to quantify the waste levels resulting from their productive processes. Nonetheless, they are considerably high.</li> </ul> 	<ul style="list-style-type: none"> <li>Company's capital cost generation and validation, and the Economic Value Added (EVA).</li> <li>Instruments and training provided for the company so that it can identify costs which do not add value to the company, or consider – if the current selling price per product is appropriate.</li> <li>Design of a cost assignment model for a pilot process, and personnel training in the topic.</li> <li>Easier mechanisms to monitor the productive processes performance and the products profitability.</li> <li>Strengthening of the capacity to better understand plant cost behaviour from the definition of adequate costs and reasonable mechanisms for expenses application.</li> <li>Personnel motivation towards the process analysis and its implications in terms of cost.</li> </ul>
<b>Productive Efficiency</b>	
<p><i>LEAN MANUFACTURE</i></p> <ul style="list-style-type: none"> <li>The quantification of tidiness, cleanness and waste aspects in the production process are not well defined.</li> </ul>  <p><i>QUALITY MANAGEMENT AND FOOD INNOCUOUSNESS ASSURANCE</i></p> <ul style="list-style-type: none"> <li>There has not been an internal, partial audit of the integrated system jointly with the company's HACCP audits, so that collaborators understand the scope of an audit and from which new work opportunities on which to focus - may be obtained</li> <li>There is no process identification, as required by ISO 9001 section 4.1, nor were the follow up and measuring data defined. (Process cards).</li> </ul>	<ul style="list-style-type: none"> <li>Quantification of tidiness, cleanness and waste aspects in the production process. Said index show that current order help visualize/forsee problems and clarify production or improvement goals. The obtained values are: <ul style="list-style-type: none"> <li>✓ Visual Factory Index: 94.4%</li> <li>✓ Tidiness and cleanness: 100%</li> </ul> </li> </ul>  <ul style="list-style-type: none"> <li>Internal audit done to verify the implementation of the company's quality and innocuous systems. Audits results were presented in a report in which the following recommendations were made. <ul style="list-style-type: none"> <li>✓ Improve the purchase mechanism and the suppliers' control.</li> <li>✓ Design a simplified, easy to implement version of the maintenance procedure.</li> <li>✓ Improve the water treatment.</li> <li>✓ Design a plan which includes the purpose, frequency and responsible personnel for the verification activities.</li> </ul> </li> </ul>

<ul style="list-style-type: none"> <li>• There are no visual aids that allow workers to be participants in the data analysis.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Define the control to the company's processes, so that it complies with ISO 9001 4.1 and 8.2.3 requirements.</li> <li>✓ Implement ISO 9001 improvement mechanisms, such as: internal audits, revision by the direction, data analysis – among others.</li> </ul>
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**ENVIRONMENTAL DIMENSION**

**1. Energy Efficiency**


<ul style="list-style-type: none"> <li>• At the cooperative, electric consumption is high, due – mostly- to the use of refrigeration chambers and a freezing tunnel. Electrical use is not monitored to verify if consumption peaks match production peaks, so that measures may be taken to decrease utilization.</li> </ul>  <ul style="list-style-type: none"> <li>• The preventive maintenance program has not been implemented in all plant equipment.</li> </ul>   <ul style="list-style-type: none"> <li>• The freezing tunnel does not have any thermic isolation.</li> </ul>	<ul style="list-style-type: none"> <li>• Improvement in the monitoring of the electric energy indicator so that energy saving measures may be implemented. The base line and the final value are the following: <ul style="list-style-type: none"> <li>✓ Initial value: 0.73 kWh monthly consumption/kilogram of finished product</li> <li>✓ Final value: 0.46 kWh monthly consumption/kilogram of finished product</li> <li>✓ % Achieved savings:36.8</li> </ul> </li> <li>• Computer equipment was set-up to “Energy Saver – Power Schemes” mode so that each computer’s electric expenditure lowered.</li> <li>• Personnel have been made aware of the advantages of natural lighting, in areas where possible.</li> <li>• Writing of equipment and machinery logs where all details of revisions made are shown – which will permit a control of the preventive equipment maintenance. Currently, there are 25 logs out of 50 equipments.</li> <li>• It was suggested to keep a log where the revision made is shown, as well as any procedure done. Besides, the preventive maintenance plan within the quality system is being documented, and a continuous update and revision is expected.</li> <li>• Recommendation was made to include the lighting system within the preventive maintenance plan, as well the refrigeration chambers - mainly the doors’ seals.</li> <li>• Recommendation made to thermally isolate the freezing tunnel area to separate it from the processing area, so that energy losses decrease while consumption becomes more efficient.</li> </ul> 
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<ul style="list-style-type: none"> <li>• There is permanent diesel consumption for the steam producing boiler –equipment that should have better maintenance and better practices in its use. At the beginning of the project, diesel consumption was: <ul style="list-style-type: none"> <li>✓ 0.132 L diesel consumed/kilogram of finished product.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Recommendations made in the Energy Efficiency report related to the boiler’s efficient use, the kind of maintenance required, the steam distribution system within the plant and the required reports for the treatment of water feeding the boiler.</li> <li>• Adopted measures are: <ul style="list-style-type: none"> <li>✓ Cleaning of the fire chamber is done annually.</li> <li>✓ Revision of the steam pipes isolation and fodder at the boiler’s exit.</li> <li>✓ A thermometer was installed to check temperatures.</li> <li>✓ Change of a damaged safety valve.</li> </ul> </li> <li>• The fuel consumption indicator at the end of the project was: <ul style="list-style-type: none"> <li>✓ 0.067 L diesel consumed/kilogram of finished product</li> <li>✓ % Achieved savings: 49.2</li> </ul> </li> </ul>
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**2. Water efficient use and waste water generation**



<ul style="list-style-type: none"> <li>• There is no monitoring of the well’s water used in the cooperative’s productive process.</li> <li>• A lot of water is used to clean the reception area, raw and processing materials, to “drag along” residues using the water pressure from the hoses’.</li> </ul>  <ul style="list-style-type: none"> <li>• Water pistols are not used in some of the hoses, mostly the ones used to clean the reception.</li> </ul>	<ul style="list-style-type: none"> <li>• Installation of a meter to monitor water use. Measures started on January 2006.</li> <li>• Implementation of waterless clearing procedure as a first step of the cleaning process, both to decrease water consumption and to reduce the amount of solids in the waste water</li> </ul>  <ul style="list-style-type: none"> <li>• Recommendation to change some of the hoses caliber to ¾, with which it is expected to decrease water use, place water pistols on them and regulate their use.</li> </ul>
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**3. Raw materials consumption and prevention of solid waste production**

<ul style="list-style-type: none"> <li>• A large amount of organic, solid waste result from production.</li> </ul> 	<ul style="list-style-type: none"> <li>• Recommendation to work under production quality standards, such as times and movements, besides writing the corresponding documentation in the handbook.</li> <li>• Recommendation to train plant personnel and develop awareness on general processing and finished product.</li> </ul>
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<ul style="list-style-type: none"> <li>In the end cutting and de-hearting sections there is significant raw material waste.</li> </ul>  <ul style="list-style-type: none"> <li>A lot of the raw materials come packed in sacks which result in an important amount of solid waste for the cooperative.</li> <li>Improvements are needed at the mill, the hopper and press of the juice process to generate a lesser amount of solid residues.</li> <li>Wood platforms are used at the company.</li> <li>The selected indicators base line to measure solid waste production is the following: <ul style="list-style-type: none"> <li>✓ % of pineapple waste: 0.56%</li> <li>✓ % non-conforming product papaya: 1.19%</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Technology search to take best advantage of raw material, and replace current one.</li> </ul>  <ul style="list-style-type: none"> <li>Reuse of the sacks by the suppliers. A clause will be included in suppliers' contracts related to this issue.</li> <li>Improvements in the mill, hoppers and press in the juice process. To do these improvements, the service was sub-contracted and it was done in a 100% of the recommendation.</li> <li>Recommendation to change the wood platforms for plastic ones. The cooperative decided to do the change and 85 of existing platforms have been changed.</li> <li>Final indicators values are the following: <ul style="list-style-type: none"> <li>✓ % of pineapple waste: 0.47%</li> <li>✓ % non-conforming product papaya: 0.27%</li> </ul> </li> </ul>
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**SOCIAL DIMENSION**

<p><b>1. Occupational Safety</b></p>	
<ul style="list-style-type: none"> <li>The cooperative has with fairly safe facilities; it is required to identify the risks and label them on the premises.</li> </ul>  	<ul style="list-style-type: none"> <li>First risk analysis in the company, detailing the risk degree for each found risk.</li> <li>Creation of awareness on the importance of the existing Health and Occupational Safety Committee, and on the responsibility they have on the identification and action taking to decrease risks present in the facilities.</li> <li>Recommendation made to carry out a detailed risk analysis which leads them to the making of a map for work risks in the company.</li> </ul>

<p><b>2. Internal and External Social Projection</b></p>	
<ul style="list-style-type: none"> <li>There was not an in depth interpretation of the results from the organizational climate study and the current Human Resources structures.</li> </ul>	<ul style="list-style-type: none"> <li>Study done on the company's current conditions in regards to Human Resources and a climate study – taking into account the general procedures revision, position profiles, training plan and the climate study that was applied this year. Recommendations were given to improve all aspects previously mentioned.</li> </ul>

