

INDUSTRIALIZATION OF WHEY INTO CONCENTRATED PROTEIN

EXECUTIVE SUMMARY

In order to support the implementation of a whey processing plant (MILK WHEY), with international quality standards, an execution agreement is proposed, which includes the following components:

- **PRODUCTIVE DEVELOPMENT:** Industrialization of the whey generated from cheese production in the central highlands.
- **ADDRESSING DAIRY MISUSE:** By transforming whey into high-value products, its illicit use in dairy beverages will be prevented.
- **ADDING VALUE:** Production of nutritional supplements derived from whey.
- **COMMERCIALIZATION:** Establishment of a commercial network for the products.
- **SOCIAL IMPACT:** Reinvestment in social programs to eradicate child malnutrition.
- **TRAINING:** Technical training on collection, processing, and business management.

The total cost of the project is twenty three million three hundred seventy-seven thousand two hundred twenty-one dollars (\$23'377.221,00), covering the outlined points.

LOCATION

The Whey Processing Plant will be situated in the Province of Cotopaxi, Latacunga County.

JUSTIFICATION

- In Ecuador, approximately 1,250,000 liters of milk are processed daily into cheese.
- The cheese industry produces 150,000 kg of cheese and over 1,000,000 liters per day of whey.
- Ecuador has one of the highest milk prices in the world.
- Ecuador imports 100% of the whey protein it consumes in the form of nutritional supplements, infant formulas, dietary supplements, etc.
- The high cost of these products makes them some of the most expensive in Latin America.
- The central highland region, one of the most productive areas for cheese production, is being severely impacted, and producers are seeking a solution.
- Nutritional deficiencies across the country have led to severe anemia among infants and the elderly.
- High-performance athletes require whey protein isolates as an essential component of their diets.

OBJECTIVES

The purpose of this project is to produce whey protein concentrates (WPCs) and whey protein isolates (WPIs) for commercialization in the food industry by implementing and developing the industrialization of whey, creating high-value-added concentrated or isolated dairy proteins intended for the food sector. The specific objectives of the project are:

- Industrialize the whey currently wasted that currently contaminates water sources (1,000,000 liters/day of whey are wasted, adulterating dairy products and polluting water sources).
- Significantly reduce and ultimately eliminate malnutrition among children and the elderly.
- Meet the needs of the food industry to enhance their products.
- Reduce the import of food ingredients.
- Support the development of high-performance athletes.
- Promote the development of new products.
- Replace imports (currently amounting to \$80 million annually in foreign purchases).

INVESTMENT

- The investment required for the physical implementation of the plant includes:

AÑO	PRESUPUESTO
0	19.377.221
1	2.000.000*
2	2.000.000*
Total	23.377.221

*Reinvestment aimed at optimizing production and plant capacity.

- **PROJECT COMPONENTS**

COMPONENT	BUDGET
Previous Investments	403.000
Land	500.000
Construction	3.055.000
Equipment	16.287.122
Working Capital	2.409.299
Others	722.800
Total	23.377.221

BENEFITS

The financial benefits are reflected in a 10-year financial projection:

- **Internal Rate of Return (IRR):**
- **Net Present Value (NPV):**
- **Return on Investment (ROI):**
- **NET PRESENT VALUE:** The NPV is calculated at a discount rate of 12%, demonstrating that the initiative is economically viable.
- **INTERNAL RATE OF RETURN:** The project's IRR over a 20-year period is 118.70%.
- **PAYBACK PERIOD:** The investment will be recovered within the first 5 years of plant operation, with a Payback Period (PRI) of 4 years.
- **TOTAL INVESTMENT:** \$23,377,221

Would you like me to include any additional financial details or specific explanations on the metrics (like ROI) in the translation?

Additionally, this project will create at least 40 direct jobs and over 100 indirect jobs, not including the participation of at least 300 small-scale cheese producers, enabling them to sustain and improve their standard of living.