

MEMORANDUM

DATE: April 30, 2012
TO: Catholic Relief Services, Cairo, Egypt
FROM: Team Egypt, Business on the Frontlines
SUBJECT: Recommendation for Tomato Processing Project



Favorable climactic and soil conditions coupled with strong price competition and a large and growing consumer base make Egypt a prime market for implementing processing nodes in close proximity to small tomato farmers. In order for Catholic Relief Services (CRS) to successfully implement the project, it must partner with an operational NGO that ensures both participation from farmers as well as scalability. CRS will be the organizer of this project, by contributing the know-how and by establishing the link between the local implementing NGO (most probably an Agricultural Cooperative in this case), financing NGOs, private sector, government, research institutions, and farmers. CRS will also act as the initial fund for this project. The project costs are outlined below. CRS should request a \$50,000 grant from USAID which would provide 40 jobs and launch a sustainable business. The potential viability of the business is such that the initial investment of \$50K could be earned back within two years, given reasonable assumptions of the potential market, economic conditions and political stability. This \$50K could then be reinvested to grow and expand the initial venture or alternative, invested into another business opportunity.

Situation

The Egyptian population surpassed 81 million this year and is projected to double every thirty years, which gives rise to a larger consumer market for tomatoes. Additionally, Egypt's geographic location provides a very favorable climate and soil for tomatoes, allowing for 120-day growth spans, compared to a menial 40-day growth span in Europe. Egypt currently produces 8.8 million tons of tomatoes annually which results in extremely strong price competition and low prices for tonnage. However, of the large numbers of tomatoes grown in Egypt, most are consumed fresh domestically and Egypt is an importer of processed tomato products. Volume growth for canned vegetables was 8.5% from 2005-2010. Sales growth for the same time period was 47.8%, reflecting the high cost of importing these goods and the impact in currency fluctuations. As a result of local consumption, there is a large, untapped domestic market for processed tomatoes, which, combined with the arguments listed above, provide a strong rational for focusing solely on tomatoes, and particularly processed tomatoes to sell domestically.

Additionally, the production and processing of tomatoes has been considerably hampered by high post-harvest losses amounting to 50 to 60 percent of production (or 4.8 million tomatoes in 2010). These losses stem from damage or loss in transit and handling due to poor packaging, lack of cold chain facilities, and rough transport. If the increase in agricultural production of tomato, and reduction in post harvest losses is achieved by implementing a central processing hub in the places where tomatoes are grown—Assiut, Minia, and other towns in Upper Egypt—Egyptian tomato sales domestically can be expanded from fresh produce to processed (canned) tomatoes.

We therefore recommend a three-phase solution built on the creation of processing nodes, distribution centers, and focuses on the ability to scale the two while creating the most jobs possible.

Phase 1: Processing nodes

Key Assumptions:

- One feddan produces 15MT of tomatoes per year
- Three harvests per year, averaging 5MT per cropping
- Each harvest is completed over a two week period
- A processing node can process 2MT per day
- A single tomato weighs half of a pound
- The shelf life of canned tomatoes is one year

Execution:

For an initial small scale operation, start with five farmers with one feddan of tomatoes each. The physical processing center must be big enough to fit 20 employees, tables, boiling water facilities, and storage.

Once the tomatoes are brought to the processing facility, a team of two sorters that look for rotten fruit and remove large objects that are not tomatoes. Next, the tomatoes are sterilized by dipping in boiling water for 60 seconds. Then, the tomatoes are sliced and the cores are removed. A team of 9 slicers should be able to process 4,000 tomatoes in an 8-hour day if each tomato takes one minute to slice. Once sliced, the tomatoes are placed into jars by a team of three. Another employee then fills the jars with water and salt. A team of two will close and seal the jars, with final sealing taking place in boiling water for 45 minutes. The final team of two employees will stack and organize the finished jars in preparation for warehousing or transport. There will also be one supervisor present.

In later phases, sales and distribution will be handled through a central processing center. In Phase I, local sales and distribution will need to be handled through the processing node. A five person sales and distribution force can cover the local markets and continue to identify new market opportunities.

In the initial phase, the processing node will only need to be in operation during the harvest period. As opportunities are identified, the node could be adapted for other produce as they come in season or expand the operation of tomatoes to accommodate a longer harvest season.

We believe that the finished product can sell on in the local market for approximately LE 8/jar. In doing so, the program should be able to raise LE 400,000 in revenues. With operating costs of approximately LE 246,000 we estimate a payback period of 2.17 years. Please refer to Appendix A and B for further breakdown.

Operating Income		
	Revenue	400,000
	Operating Costs	245,800
	Operating Income	154,200
Year 1		
	Total Revenue	400,000
	Total Cost	280,800
	Total Profit	119,200

Our model assumes the following conditions and requirements:

Processing Node - JOB IMPACT: 20		
<ul style="list-style-type: none"> - Total required production node labor force: 20 people (including supervisor) - Wages: 50LE per day per person = 1,000LE per day - Total production: ~1,300 quarts per day; 50,000 quarts annually - Total time to process 75MT: 6 weeks with 20 employees - Total labor cost: 36,000LE - Glass jar costs: 1LE per jar - Tomato cost: 240LE – 2400LE per ton¹ 		
CRS cost = \$10,000		Local NGO cost = \$5,000 - JOB IMPACT: 15
<ul style="list-style-type: none"> - Project Implementer - Project Administrator 		<ul style="list-style-type: none"> - Project Administrator - General Manager - Marketing Staff - Distribution Staff - Quality Control Staff - Guards
Required Training		
<ul style="list-style-type: none"> - Of the tomato processing workers - Of the marketing and distribution staff - Of the Quality Control staff 		
Transportation	Energy Costs	Distribution - JOB IMPACT: 5
<ul style="list-style-type: none"> - Truck = 25,000 - 28,000LE - Gas = LE1.3/L <90 octane; LE1.75/L 92 octane; LE1.1/L diesel ('solar') 	<ul style="list-style-type: none"> - Electricity = 2.54 cents per kilowatt hour - Gas = LE1.3/L <90 octane; LE1.75/L 92 octane; LE1.1/L diesel ('solar') - Water = 1 LE/cubic meter (1000 liters) 	<ul style="list-style-type: none"> - Sales force

¹ ACDI/VOCA

Phase II: Central Collection

Key Assumptions:

- 5 processing nodes to necessitate a distribution center
- 50,000 quarts take up 2,000 ft² (need minimum of 10,000 ft² for distribution center with 5 nodes)
- Warehousing space can be secured from the Government in an industrial zone for free

Execution:

The key need for this step is transportation from the processing nodes to the warehousing and distribution facility. This process will require a truck and at least two staff members. These employees will load the truck, transport, and unload the truck at the warehouse. Assuming 1,000 quarts per trip and two trips per day, the total capacity of the 5 nodes (250,000 quarts) can be moved to the main distribution facility in 125 workdays.

At the distribution center, the quarts can undergo any further processing necessary, such as additional quality control and labeling. This can be done with an additional staff of up to 5 people, depending on need. As distribution commences in Phase 2, full time staff at the distribution center can assist with loading and unloading of trucks, as well as product movement and proper storage. There must be an employee or possibly two for tracking the arrival of the products to ensure FIFO distribution. As the operation grows, additional machinery, such as a forklift can be valuable.

Distribution:

- Local markets
 - Upper Egypt
 - Initial market (very local)
 - At least for the first 5 years
- Inter-Egypt consumption
 - All of Egypt
 - Marketing issue
 - Requires economies of scale
 - Increased training
 - Increased quality
- Export
 - Requires economies of scale
 - Increased training
 - Increased quality

Total labor force: 10+5 distribution

Wages: 50LE per day per person = 500LE per day

Overhead costs:

- Electricity = 2.54 cents per kilowatt hour
- Gas = LE1.3/L <90 octane; LE1.75/L 92 octane; LE1.1/L diesel ('solar')
- Water = 1 LE/cubic meter (1000 liters)

While the success of this phase is incumbent in the successful implementation of the individual processing nodes, we believe that the distribution center will be crucial in the sustainability for the overall project. With scaled production and more efficient channels, we estimate revenues at LE 2MM with an overall profit of approximately LE 509,000. As a result of these two phases, we anticipate the creation of approximately 150 new jobs. Please refer to Appendix A and B for further breakdown.

Revenues	5 Nodes @ 50,000 qts	2,000,000
Operating Costs	5 Nodes @ 245000LE	1,225,000
Distribution Costs	Central Collection	<u>265,715</u>
Total Profit		509,285
Total jobs		140
Total Investment*	5 Nodes + Distribution center	1,800,000
*Node Investment=300,000/Node		
Distribution Center Investment=300,000		

Phase III: Distribution, Expansion, and Information Exchange

Assumptions:

- Phases I & II are successful
- Transportation nodes exist for distribution
- Market exists
- Export standards will be the most difficult to meet

Execution:

Phase III is an expansion of roles and responsibilities for the distribution center. There will be three key lines of effort that must be undertaken for effective implementation of this phase: Processor Development, Capital (Human and Physical) Expansion, and Product Expansion.

1. **Processor Development:** Market expansion will ultimately lead to an increase in standards. Efforts should be made to meet the highest quality standards - we assume are export quality will be the most difficult to meet. To help reach this goal, information must flow through the distribution center to the processing centers. The distribution center can effectively manage standards education through extension programs with local university agricultural programs.
2. **Capital Expansion:** By increasing the ability of processors to meet increasingly tougher standards, new markets will open. The end state for this program is to reach export quality. This will require two key investments in both human capital and capital assets.

- a. It is essential that the distribution centers proactively reach out and increase their customer base. This will require additional sales staff to assist in sales objectives. Initially the requirement will be small, in order of 2-3 individuals, but as scale increases additional sales staff might be required. Furthermore, as production quality begins to meet and adhere to international export requirements additional sales staff will be needed to manage increased order loads. Efforts should be made to develop sales staff from the beginning and retain them as the business grows.
 - b. Increased distribution will require greater assets, like trucks and forklifts to help enhance operations and reach. Assuming that this initiative will occur in Upper Egypt, the center must be able to effectively meet delivery requirements for all regional governorates. We estimate this initial requirement at 2 trucks, but efforts should be made to take advantage of both rail and river transport. Additionally after successful implementation of the program, efforts should be made to transition from glass to cans in the production process. While this will require an additional capital expense its impact would be diminished through greater production capability.
3. **Product Expansion:** Access to new markets will also provide useful market demand data that might be applied to either expand current processing capabilities or form new nodes. While we initially suggest canning tomatoes, it is not unreasonable to assume that demand exists for similar tomato based products. Through aggressive relationship building and targeted sales, information can be gathered to organize a second or third processing effort.

Additional Challenges

Complications:

Despite the large market, CRS must overcome a number of challenges in order for it to be successful in tomato processing:

- **Ability to Find Willing Farmers:** CRS must convince farmers to sell to the processing nodes. Especially as the production facility starts to grow, farmers must be convinced to sell more and more of their tomatoes to the nodes rather than to middle-men or directly to the market. Over time, CRS will also have to demand higher quality tomatoes from farmers.
- **Ability to Find Willing Women:** CRS must convince women (and especially their families) that these processing nodes are a good and suitable place for them to work.
- **Ability to Find Location for Warehousing:** CRS must help procure the location for warehousing the product. More investment could potentially need to be made for cold warehousing, transport, and other similar activities.
- **Ability to Ensure Worker Productivity:** CRS will have to monitor worker productivity for the amount that they are paying per day. This is especially important for this project, different from the Queba'a cash-for-work program because the tomatoes have to be processed quickly after harvest.
- **Ability to Market & Sell Product:** CRS will also have to help develop a marketing and sales plan. If the main part of the plan is have a sustainable business, the nodes and collection centers must be able to sell the product.

Resolutions

Although there are a number of challenges, with ample foresight and the appropriate infrastructure and mechanisms in place, the tomato-processing project has the potential to be extremely successful.

- **Ability to Find Willing Farmers:** CRS is offering a second (or third) market for farmers: if the farmer cannot sell the product directly on the market or to a middle-man, it can be sold to the processing nodes. Additionally, paying the farmers on-market or above-market prices could help with this problem. CRS and the co-op requires a minimum commitment of tomatoes and farmers as you can see from the “Breakeven” numbers outlined above.
- **Ability to Find Willing Women:** CRS must assure women as well as their families that the processing nodes will be a good place for women to work. First, it will be only women that work at these nodes. Any males will be from CRS or a trusted local NGO (for example men that work at the Assyut Businesswomen’s Association (ABWA)). The work is also 1) fairly simple, 2) does not require movement, especially publicly, and 3) does not require interaction with a lot of men or strangers. CRS must also make it economically viable for women to work, but we believe that the cash-for-work wage of LE50 appropriately addresses that concern.
- **Ability to Find Location for Warehousing:** Governments in some municipalities are willing to provide free warehouse locations. This is provided through executive action rather than through legislation. Therefore CRS (or a local NGO) must do its due diligence to figure out 1) whether the local municipality has such a program, 2) how else to acquire this property, and 3) the legal status of the property. Redundancy creates jobs, so keeping the 1) producing and the 2) warehousing separate is useful, at least at the start of the project.
- **Ability to Ensure Worker Productivity:** CRS should tackle this issue via several steps: 1) instilling a sense of professionalism with in the work staff [This could include training on hygiene, such as washing hands, but also professionalism meaning how to log hours in properly, showing up to work on time, bonuses, etc.], 2) train supervisors to monitor as well as encourage productivity, and 3) create a periodic review of the staff to ensure promotion/demotion and firing, as appropriate.
- **Ability to Market & Sell Product:** CRS must do some market research to see what other canned tomatoes are sold in the local market and 1) how to match that price-point and 3) how to market the product properly (especially considering location of sales, labeling, other connections to the market). The man that we met at the Vitrac factory would be a good resource for CRS for this issue.

If CRS can successfully garner a \$50,000 grant from USAID for the tomato processing market in Egypt, we expect to see 25 jobs created in one initial processing node. This node should be able to completely pay off the \$50,000 grant in just over two years. A \$300,000 grant should be enough to finance five production nodes and a central distribution hub, creating approximately 140 jobs with a similar repayment period of just over 2 years. After the initial financing, CRS should be able to assist only with guidance and technical expertise as the Co-op begins to grow and sophisticate.



APPENDIX A



Support Slide Documentation

Recommendation for Tomato Processing
Project



Phase I: Processing Node



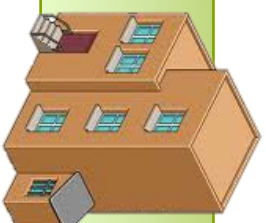
Local participating farmers
provide input at fair market
price



Small sales staff
covers local markets
and identifies new
opportunities
JOB IMPACT: 5



40
NEW
JOBS



CRS provides initial
start-up funds to identified
implementing partners
~ LE 35,000
JOB IMPACT: 15

Operational Costs
totaling ~LE 246,000
Outlined in Appendix B
JOB IMPACT: 20

50,000 Jar @ LE8/Jar	
Total Revenue	400000
Start-Up	35,000
Operational Costs	246,000
Total Cost	280800

Total Profit

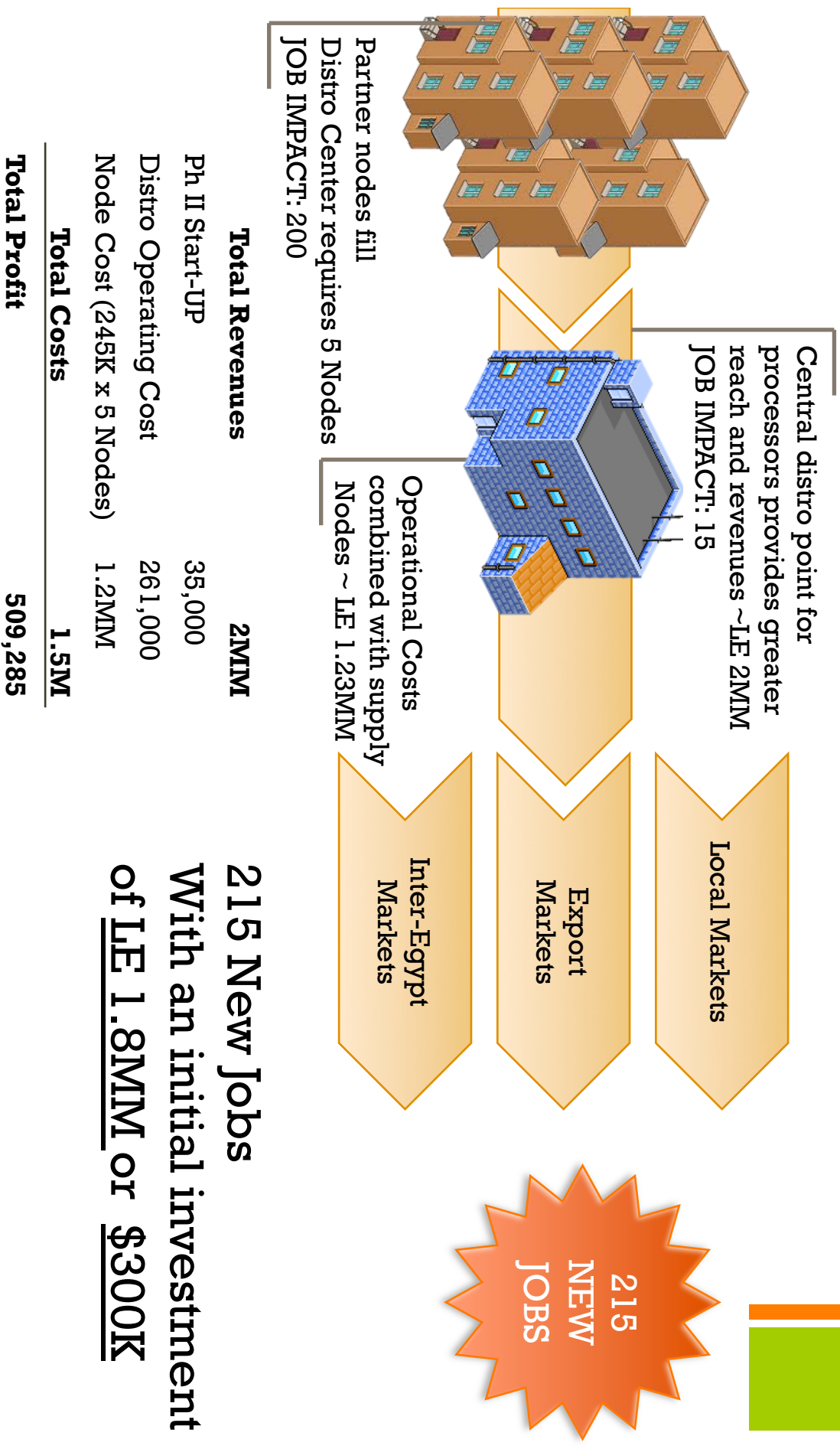
119200

40 New Jobs

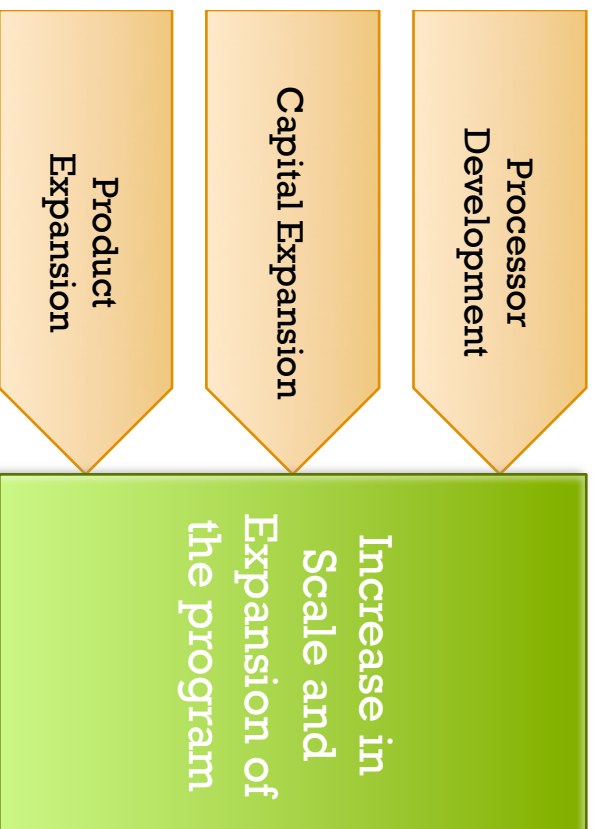
With a per job cost of
LE 4520 or \$750.00



Phase II: Central Collection



+ Phase III: Distribution, Expansion, and Information Exchange



- Build Program Ecosystem
 - Support Staff
 - Equipment
 - Network
- Encourage extensions with local universities
- Spread program to other agriculture centers
- Remain flexible

Input Flow: Processor to Customer

Information Flow: Customer to Processor

APPENDIX B - OPERATIONAL AND FINANCIAL DATA

Phase 1A: 1 Node Annually

Start Up Costs

Truck	25000
Equipment	10000 (Tables, knives, pots/vats, heat equipment)
Total Start Up Costs	35000

On Going Costs

Labor Cost	52500 (25 people, 50LE/day, 6 weeks)
Glass Jar Cost	50000 (1LE per jar, 50,000 jars)
Tomato Cost	81000 (Average 240LE-2400LE per ton, 75 tons)
Water Cost	46200 (1LE/cubic meter, 1100 liters, 42 days/year)
CRS Costs	10000 (100,000LE for 10 nodes)
Local NGO Cost	5000 (500,000LE for 10 nodes)
Gas	1100 (1.1LE/L, 1000L)
Electricity	0 (2.54 cents/kWh, working during day)
Total On Going Costs	245800

Operating Income

Revenue	400000	35100	0.702	8LE/jar
Operating Income	154200			

Year 1

Total Cost	280800	46800
Total Revenue	400000	
Total Profit	119200	

Repayment Period	2.17 (Assumes 300,000LE grant)
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Number of Jobs	40
Cost per Job (1st year)	4520 (LE)

APPENDIX B - OPERATIONAL AND FINANCIAL DATA

Phase 2: 5 Nodes + Distribution Center Annually

Start Up Costs

Equipment	25000 (Pallet jack, carts, supplies, computer?)
Total Start Up Costs	25000

On Going Costs

Labor Cost	225000 (15@50LE/day
CRS Costs	10000 (100,000LE for 10 nodes)
Local NGO Cost	5000 (500,000LE for 10 nodes)
Rent	2400 (200LE/month)
Gas	11000 (1.1LE/L, 10000L)
Electricity	7315 (.1524LE per kWh, 4K kWh/month)
Overhead	5000 (Office supplies, etc.)
Total On Going Costs	265715
Total Phase II Costs	290715

Revenues	5 Nodes @ 50,000 qts	2,000,000	
Operating Costs	5 Nodes @ 245000LE	1,225,000	
Distribution Costs	Central Collection	265,715	400
	Profit	<u>509,285</u>	

Total jobs	215
Total Investment* 5 Nodes + Distro center	1,800,000

*Nodes=300,000/Node
Distribution Center 300,000