RESA
AQUALIFE LIMITED

Proposal for Establishment of Bottled Pure drinking Water facility in Hai District - Kilimanjaro, Tanzania

Written by the Secretariate for RESA AQUALIFE LIMITED

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EXECUTIVE SUMMARY

This project is being prepared to establish a new Purified water Bottling Factory to be located at Hai District, Kilimanjaro Region in Tanzania. The business will be owned by RESA AQUALIFE LIMITED, a duly registered entity with index number 181695080.

At full capacity operation, in the first phase, the Factory will have a capacity of filling 2,000 bottles per hour in 350ml, 650ml, 1,100ml, and 1,650ml bottles. Further, in the second phase, the Factory will have an additional line for the production of 20-liter Jars.

Our market study and prior experience in the industry show that there is a still unsatisfied demand for purified bottled water in Tanzania generally, and with this factory, we can fill up the demand gap and limit importation of this product.

The total investment cost of the project amounts to TZS 625,000,000.00, from which TZS 200,000,000.00 shall finance the purchase of the production machinery from China, TZS 325,000,000.00 shall develop the factory area, and TZS 100,000,000.00 shall finance the operations of the factory.

The Factory is proposed to be established on 700 SQM of land located at Saawe village, Masama East, Hai district, in the Kilimanjaro region near 80 Saawe road. The project will create permanent employment opportunities for 62 persons and also create temporary jobs for more than 50 persons during the construction phase.

1.BACKGROND

A decade ago, the idea of bottled water for many Tanzanians was a trend that characterized the modern, wealth-driven way of life.

Today, it is common to see people purchase bottled water along with their groceries in supermarkets and kiosks. Young people order bottled water in cafés and restaurants. In several offices, bottled water has also become another choice in addition to the "tea or coffee" offered by secretaries to visitors.

Bottled water has a constant presence at meetings and discussion forums.

Urbanites from many different walks of life have made it part of everyday consumption.

There are many reasons for this fast growth. The general economic growth the country has been registering in the past decade is just one reason. Though this growth is accompanied by urbanization, the income of the urban population has also shown tremendous growth. Further, the changing lifestyle trends of the urban population in drinking bottled water at home, workplace and recreation has contributed to this growth.

2. PROJECT OBJECTIVES

The general objective of the project owner, in preparing this business plan, is to start up a purified water Factory with a capacity of producing 2,000 bottles per hour.

This project implementation shall include procuring the necessary machinery and equipment as well as arranging the continuous supply of raw materials and other inputs to ensure operation of the factory at its full capacity and fulfillment of the company vision in supplying the best quality of bottled water in Tanzania and East Africa.

2.1. THE FACTORY

The Factory is proposed to be established on a 700 SQM land located at 80 Saawe road, Saawe village, Masama East, Hai – Kilimanjaro, P. O. Box 3 Hai 25313 Kilimanjaro

2.2. BASIC INFORMATION OF THE OWNER

Brand Name: TBC

Company Name: RESA Aqualife Limited

Business Type: Manufacturing

Location: Hai, Kilimanjaro – Tanzania

RESA Aqualife Ltd is the owner of the envisaged project. The company has very good entrepreneurial skills and long years of experience in different business activities in Tanzania, ranging from the medical field and infrastructure development to project management.

3. MARKET SITUATION

3.1. OVERVIEW

As it is said above, the bottled water and beverage industries are vital for all human beings and our economy. The availability and/or supply of these products are also vital for the Hotel and Tourism Industries, mining and infrastructure development projects, and the corporate industry, to mention a few.

However, the availability and/or supply of bottled water is still short of the demand for the products in the country due to the absence of sufficient Factories.

3.2. DEMAND ANALYSIS

The country's requirement for purified water is met through about 8 domestic productions and imports. The following Table shows the supply of the product from domestic production and imports during 2020-2023. During the period under reference, domestic production, imports, and total supply averaged 404,950 hectoliters, 789 hectoliters, and 405,740 hectoliters, respectively. Thus, domestic production, on average, accounted for 99.8 percent of the total supply of purified water in the domestic market, revealing the relatively limited share of imports (0.20%) in the total supply of the product.

During the period 2020-2023, the maximum total supply (apparent consumption) of purified water was 448,983 hectoliters in the year 2023, while a minimum of 376,755 hectoliters was registered in year 2014. In the remaining years, apparent consumption was fluctuating between these two extremes quantities. The mean of the total supply was 405,740 hectoliters and the average growth rate during the period under reference was 2%.

Accordingly, due to the fluctuating nature of the products total supply, it appears more appropriate to consider the average of the last four years of the period under reference (2019-2023) which was 418,931 hectoliters as the effective demand for the product for the year 2012.

In estimating the present (2024) effective demand for the product, since the consumption of purified water is associated with the urban population, the demand for the product is assumed to grow at the rate of 4% which corresponds to the annual growth rate of urbanization in the Country.

Accordingly, the present effective demand for purified water is, thus, estimated at 435,688 hectoliters **(Table 1).**

Table 1. Supply of Purified Water (Hectoliters)

Year	Domestic Production	Import	Total Supply	Market Share (%)	
				Domestic Production	Import
2014	374,257	2,498	376,755	99.34	0.66
2015	390,068	967	391.035	99.75	0.25
2016	412,307	953	422,260	97.64	2.36
2017	399,763	1,007	400,770	99.75	0.25
2018	395,451	571	396,022	99.86	0.14
2019	394,632	198	394,830	99.95	0.05
2020	432,600	224	432,824	99.95	0.05
2021	398,844	47	398,891	99.99	0.01
2022	394,303	723	395026	99.82	0.18
2023	448,279	704	448,983	99.84	0.16
Average	404,950	789	405,740	99.81	0.19

Source: *Customs Authority, External Trade Statistics, 2020-2023. NBS, Statistical Abstract, various years.*

3.2. PROJECTED DEMAND

The future demand for purified water is a function of income, urban population growth, and growth of catering and recreational establishments.

Accordingly, the demand for purified water is forecasted to grow at a rate of 4%, which is equivalent to the growth rate of the urban population. Moreover, assuming that existing domestic producers will maintain their current production (year 2023) for the future, the unsatisfied demand for the product is depicted to be 453,116 hectoliters in 2024 with factories' capacity of 448,279, hence a market gap (unsatisfied demand) of 4,837 hectoliters and 249,272 hectoliters by the year 2035.

3.3. OUR TARGET MARKET

As a result of declining consumer confidence in the safety and quality of municipal water supplies, the market for bottled water has increased dramatically over the last few years, especially in our target market areas.

In response, individuals and businesses are purchasing bottled drinking water for use in their homes and offices.

Our target market can't be restricted to just a group of people, but all those who reside in our target market locations of the Western regions zone to the whole country of Tanzania.

Assuming that our target market areas constitute 10% of the total country, we can narrow down the above demand and demand gap projection for the years 2024-2035 to reflect the same in our target areas. Accordingly, the average effective demand and unsatisfied demand in our target market areas for the coming ten years (2011-2021) amounts to 58,662.00 hectoliters and 47,212.80 hectoliters, respectively.

Therefore, the implementation of our project is the right idea at the right time.

3.4. PRICING AND DISTRIBUTION

The factory gate price of our products shall have a more than 10% price advantage over the prices of main competitors in our target market areas to be able to easily penetrate the market and convince the public (customers) to try out our products.

3.5. OUR COMPETITORS

Although purified water factories are booming in Tanzania, the market for Western regions is still saturated by products coming from other Cities in the country. Thus, we understand that we have to be highly creative, customer- centric, and proactive to sustain our presence in this industry. We are aware of the stiffer competition, and we are well prepared to compete favorably with other bottled water products coming from Dar es Salaam and throughout the Country.

Part of what is going to count as competitive advantage for our Company is the vast experience of our management team, we have people on board who are highly experienced and understand how to grow a business from scratch to becoming a national phenomenon.

3.6. MARKETING STRATEGY

Our Marketing Strategy consisted of 3 main categories;

a. Deliver mineral water with unpatrolled packaging appeal, taste, and quality.

b. Focus on distribution channels and Target segments of the market ignored by local players.

c. Create awareness in Mineral water production and the health benefits of filtered water produced with high standards.

4. PRODUCTION PROCESS

4.1. Product Packaging

Product packaging and presentation is one of the main dynamics, which control the flow of target customers towards the product. Packaging should be in line with industrial norms.

The bottle should be clear and have a light sky-blue color, which is considered a natural symbol of water. The water should give a shiny reflection. The color and the design will create a positive perception for the new brand. The opening of the bottle should be large enough to accommodate the outflow and inflow of water. The bottles should be placed in special racks and strands meant for bottled water at retail outlets, which will have a unique color and a unique design.

The wrapper of the bottle is suggested to be on four-color printing and should have the following information in addition to the logo of the company.

- Certificate mark of the QSAE and ESA Expiry Date (Best Before Date)
- Name and address of the manufacturer Website address of the company
- Brand Name or Trade Name
- Net volume in System International / Metric system Batch number or code number
- Water Specification

The containers shall be hygienically suitable for complete cleaning and shall not cause any undesirable change in the tastes, odor, color, or quality of the water. It shall be packed in hermetically sealed containers of food-grade material to prevent contamination of bottled water. Filling and sealing operations of containers shall be done in an aseptic atmosphere to prevent any contamination.

4.2. Bottle Production Process Flow

Plastic performs are made by injection molding, followed by a reheat stretch blow molder which creates the final shape, followed by inspection and testing of the plastic bottles to ensure application suitability.

Raw Materials: The plastic bottles are made from a light, but strong plastic known as polyethylene terephthalate (PET). Caps are also made from LDPE, HDPE, and coloring agents.

Bottle Injection Molding Machine: The first stage of stretch blow molding is to heat PET pellets and put them in a mold to form what is known as a "preform."

Stretch Blow Molding: The preform is heated again, placed in a bottle-shaped mold, and "blown" with high-pressure air that pushes or stretches the plastic against the sides of the mold. A separate piece of plastic is added to the bottom of the bottle so that it will stand up on its own. Once the plastic bottle has been blow molded, it is cooled with water, moist air, or liquid carbon dioxide (CO2) as quickly as possible to prevent it from losing its shape.

Cap Injection Molding machine: in the cap injection molding machine, the LDPE and HDPE pellets are mixed with the coloring agent and heated to be put in a mold to form caps. it is cooled as quickly as possible to prevent it from losing its shape. Conveyor belts will transport the bottles and caps from the bottle production room to the bottling section.

4.1. Bottling Process Flow

The first step for setting up the water purification plant is the chemical analysis of the source of water. After the chemical analysis, the specifications of the purification plant are set.

In the purification plant, source water is stored in the feed water tank and then passes through the sand filter for preliminary water filtration.

Water then passes through the dosing pump to the chlorination tank where primary disinfection is brought about by bubbling chlorine gas.

Here, chlorine is added to kill the microorganisms in the water.

After the chlorination, the water is passed through sand filters for trapping of un-dissolved impurities.

The water after sand filtration is passed through Carbon filters for removal of odor, color, and also for de-chlorination (removes chlorine from water).

The carbon filters help in the maintenance of proper odor and taste of the water.

Water then passes through a reverse osmosis module. This stage of the process makes water clear from all the contaminations and minute particles.

Water is then passed through a series of micro filters comprising 5-micron, 1 micron, and 0.4-micron filters followed by an ultraviolet disinfection system.

After this stage, water undergoes Ultraviolet treatment to avoid any contamination from bacteria and other microorganisms using UV light.

Water then passes through automatic washing, filling and capping plant fitted with an Ozone generator. Here water is filled into bottles.

The bottles after capping are shrink wrapped and packed in corrugated boxes of one dozen each for 0.5-liter bottle water and half a dozen of each for 1- and 1.5-liter bottled water. After packing bottles are taken into the warehouse or shipped to the retailers.

The complete process flow is shown in the annexed process flow diagram.

4.3. Production Sections

The plant has 5 interconnected subdivisions.

i.Purification Section

Water received from the external source is passed through the purification plant and stored in a stainless-steel tank. Thereafter, it is fed to the bottling section. The capacity or flow rate is 1000 liters/hour.

The water is processed with multi-stage purification processes such as:-

- Sand filter: Eliminates load of total suspended solids in the raw water.
- Activated carbon filter: removes most of the organic contamination and pesticide residuals from the water. It also controls the taste and odor of water.
- Ultraviolet (UV): Water is exposed to UV light of wavelength 245 nanometers (nm). A dosage of 16000 microwatt/sq.cm at 40° C for effective disinfection.
- Ultrafiltration: low-pressure membrane process that removes dissolved organic macro molecules, viruses, pyrogen enzymes, etc.
- Reverse Osmosis: Eliminates dissolved impurities like unwanted salts and retains minerals, which are essential to the human body.
- Ozonization: - is the strongest oxidizer and disinfection agent, which acts on a broad spectrum of microbiological organisms.
- Filtration: pumps water through a microscopic filter that is rated for a certain size organism. The standard size rating is the micron.

ii. Bottle Manufacturing Section

The plastic typically used in most clear pop bottles and water bottles is Polyethylene Terephthalate (PET or PETE). The PET bottle preforms are blown into bottles, and a sufficient number of bottles, say 1000 pieces, are kept ready while the machine continues to produce more during the shift.

High-density polyethylene (HDPE) and low-density polyethylene (LDPE) with Coloring agents are also used in this section to produce the caps. The capacity of this bottle manufacturing section is 1100 pieces of bottles and caps per hour of production using two bottle blow molding and one bottle perform and cap injection molding machine.

iii. Rinsing - Filling and Capping Section

- This section receives the empty bottles, rinses them, and fills and caps them. Machine speed is dependent on the volume to be filled. Bottles are rinsed by means of spraying pressurized water inside the bottle.
- After rinsing, the bottles are loaded into the filling and capping machine one by one.
- This section has a capacity of filling and capping 24 bottles per minute for 1 liter bottle (1,440 bottles per day) and is capable of filling 0.5, 1, 1.5, and 2 liter bottles.

iv. Labeling Section

The expiry date and batch number could be printed on labels before their being put on the bottles. The label will include information such as the name of the product, ingredients, the chemical composition of the bottled water, and the name and address of the manufacturer. The label and the neck sleeve are to be manually put on the bottles, which will then pass through the shrink tunnels so that the label and neck sleeve shrink and stick to the bottles.

v. Packing Section

This is the final section where a dozen 0.5-liter bottles and half a dozen of 1, 1.5, and 2-liter bottles are packed into a corrugated plastic package. The bottles bounded in the plastic bag are allowed to pass through a heating tunnel, which shrinks and packs the bottles. The packages are then transported to the warehouse to be distributed.

4.4. Quality Control

It is important to maintain product consistency. Batches of products must contain the same ingredients in the same quantities, and the finished

products must taste the same and have the same chemical composition.

Products must be completely free of contaminants, and the bottled product must be clean and ready to be stocked on the shelves of sellers.

Laboratory technicians (the chemist) test products from each batch produced to ensure consistency of quality and carry out operations related to the development and implementation of quality-assurance programs.

The chemist designs and administers programs for health and safety, chemical hygiene, hazard communication, environmental compliance, medical surveillance, indoor air quality monitoring, hazardous waste management, emergency response, and training.

4.5. Laboratory

Standardized laboratory should be arranged for assuring constant quality of cleanse of the drinking water production with a team of experts. The set up would comprise general laboratory materials and equipment, including deionized and distilled water, analytical balances, refrigerators, ovens, glassware specifications, and filters for processing samples for organic determinations.

4.6. Sampling

In any consignment, all the bottles of the same size and belonging to one batch of the manufacturer or supply would constitute a LOT.

Each bottle of the sample will be marked with the necessary details of sampling, and the bottles for bacteriological testing will be marked separately.

The bottles of the sample should be stored in such a manner that there will be no deterioration of the quality of water.

The bottles for bacteriological testing should be brought to the testing laboratory within one hour of sampling. If this is not possible, the bottles should be stored at 10 °C or below and transported to the testing laboratory within 24 hours.

In the case of small units, the original packing would be treated as a sample.

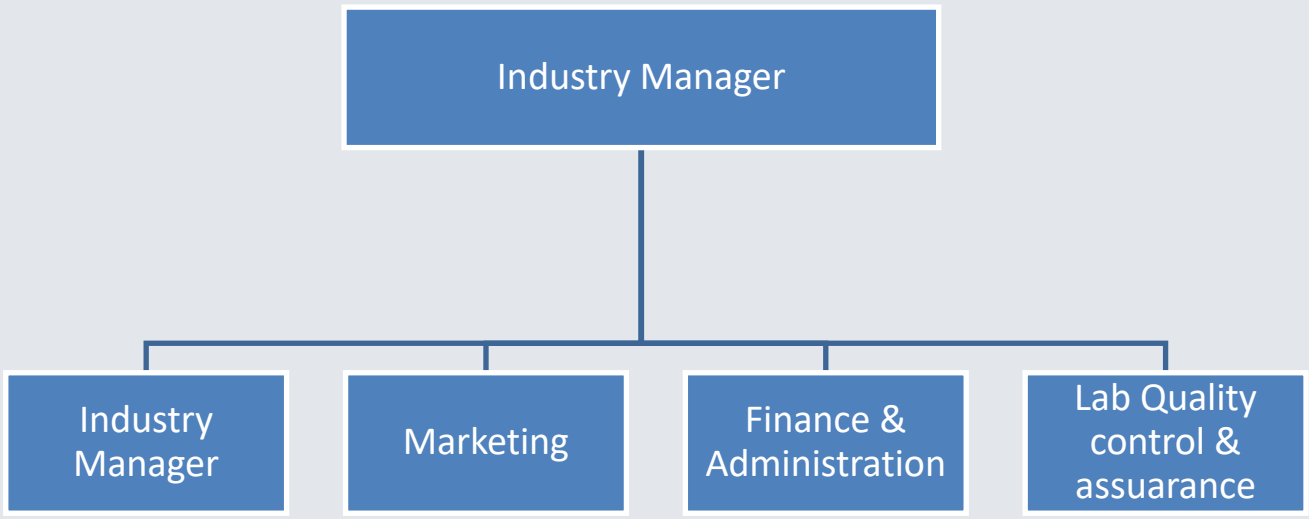
The sample shall be tested from each lot to ascertain its conformity to the requirements of the specification. The number of bottles to be selected from a lot should be according to QSAE and ESA standards.

The production processes for purified bottled water have three major processes, which are summarized as follows: Water from Spring/Raw Water > Raw Water Treatment > Treated Water Tank > Washing and Filling > Labeling and Packaging > Bottled Water/Products.

5. ORGANIZATION STRUCTURES

To achieve its vision, mission, and strategic objectives effectively, the factory will be organized in such a way that all decision-making processes, communication flows, and relationships and coordination should be efficiently carried out. To do so, the factory's organizational structure is designed by considering its capacity and business operations. Accordingly, the factory is structured on four departments accountable to the factory manager, as is the following chart.

Figure 2: Organization structure of the project



5.1. Human Resource Requirement

For this industry, a total of 62 workers will be required to handle the production operations of the industry. The business unit will work on a two- shift basis (each 8 hours daily). The quality of the products and services that a project produces and renders depends on the competence of the technical and administrative personnel the project recruits. Based on this fundamental principle, the project will employ the following workers with the level of qualification and skill necessary to run the project.

The total approximate manpower required for the business operations along with the respective salaries are given in the table below:

Table 2: Manpower Requirement

A: Administrative Staff	Job Title	Qty	Monthly Salary	Total Amount Salary
1	General Manager	1	1,500,000	18,000,000
2	Marketing	1	1,200,000	14,400,000
3	Finance manager	1	1,500,000	18,000,000
4	Personnel	5	2,700,000	32,400,000
5	Sales	1	450,000	5,400,000
6	Accountant	2	1,400,000	16,800,000
7	Main cashier	1	400,000	4,800,000
8	Storekeeper	1	500,000	6,000,000
9	Purchaser	1	600,000	7,200,000
10	Truck driver	2	1000,000	12,000,000
11	Minibus driver	1	400,000	4,800,000
12	Vehicle driver	1	500,000	6,000,000
13	Marketing	1	400,000	4,800,000
14	Cleaner	3	600,000	7,200,000
15	Guard	4	1000,000	12,000,000
16	Gardener	2	400,000	4,800,000
			Sub total	**174,600,000**
B: Production Staff				
1	Production head	1	600,000	7,200,000
2	Quality control head	1	500,000	6,000,000
3	Maintenance head	3	1,200,000	14,400,000
4	Lab Tech	2	800,000	9,600,000
5	Lab Chemist	4	1,000,000	12,000,000
6	Machine Operator	6	1,800,000	21,600,000
7	Porters	10	200,000	2,400,000
			Sub total	**73,200,000**

Table 3: Production capacity

Products by bottle size	Bottles per hour	Hours/day
350ml	650	12
650ml	500	12
1100ml	450	12
1650ml	400	12
Subtotal	**2,000**	

Table 4: Annual revenue "TZS"

Products by bottle size	Qty/hour	Price per Dozen	Revenue/day	Revenue/year*
350ml	650	3,000.00	1,300,000	390,000,000
650ml	500	3,500.00	1,166,667	350,000,000
1100ml	450	9,000.00	2,700,000	810,000,000
1650ml	400	13,500.00	3,600,000	1,080,000,000
Total	**2,000**		8,766,667	2,630,000,000

**Assuming a 300-day calendar to account for holidays, Sundays and downtime.*

Table 5: Revenue Forecast '000'

Products by bottle size	Year 1	Year 2	Year 3	Year 4	Year 5
Capacity	70%	85%	100%	100%	100%
Total	1,841,000	2,235,500	2,630,000	2,630,000	2,630,000

Table 6: Total Value of Fixed Assets

Description	**Total value**
Building & construction	230,000,000.00
Machinery & equipment with generator	200,000,000.00
Source of water	95,000,000.00
Contingencies	100,000,000.00
Total	625,000,000.00

Table 7: Profit and Loss statement '000'

Description	**Year 1**	**Year 2**	**Year 3**
Sales	1,841,000.00	2,235,500.00	2,630,000.00
Direct costs	1,583,260.00	1,877,820.00	2,182,900.00
Gross Profit	257,740.00	357,680.00	447,100.00
Margin (%)	14%	16%	17%
Operating expenses	220,920.00	201,195.00	184,100.00
EBTI	36,820.00	156,485.00	263,000.00
Depreciation	45,000.00	45,000.00	45,000.00
EBITDA	-8,180.00	111,485.00	218,000.00
Interest expenses	19,687.50	19,687.50	19,687.50
Profit Tax	0	27539.25	59493.75
Net Profit	-27,867.50	91,797.50	198,312.50
Net profit margin ratio	**-1.51%**	**4.11%**	**7.54%**