Business Plan

East Coast Oil & Fats Limited

(ECOF)

Establishment of
PET Bottles Recyling Plant for
PET Granules Production

Kiwalani Industrial Area,
Ilala Municipality, Dar-es-salaam

Tanzania

Presented By:

East Coast Oil & Fats Ltd
P.O. Box 20660,
DAR-ES-SALAAM
TANZANIA

December, 2025

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Project Summary

EAST COAST OIL & FATS LIMITED

Nature of Project	:	Manufacturing Industry
Project Concept	:	Establishment of PET Bottles Recycling Plant
Main Raw Materials	:	Recycled PET Flakes from Used PET Bottles
Project Size	:	PET Flakes Intake Capacity

Kg/Hour	**-**	**2,500**
Kg/Day	-	60,000
Kg/Month	-	1,560,000
Kg/Year	-	18,720,000

Project Output	:	PET Granules
Investment Costs	:	Capital Expenditure..... USD 9.0 mn. Working Capital ..... USD 3.8 mn. Total Investment ..... USD 12.8 mn.
Project Site	:	Kiwalani Industrial Area, Ilala Municipality, Dar-es-salaam
Country of Operation	:	TANZANIA
Implementing Agency	:	East Coast Oil & Fats Ltd Tanzania's Private Limited Liability Company
Project Promoters	:	East Coast Oil & Fats Ltd P.O. Box 20660, Dar-es-salaam TANZANIA Web: www.metl.net
Contact Person	:	PRADIP SHAH **Chief Executive Officer**

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EXECUTIVE SUMMARY

1.1 Background

- This Business Plan has been prepared by **EAST COAST OIL & FATS Limited** (shortly, 'ECOF') for a proposed investment in recycled polyethylene terephthalate (PET) granules Plant that will produce recycled PET granules.
- Most recycled plastic granules are made from post-consumer waste, such as water bottles or food packaging. The plastic is first sorted by type and color. Next, it's ground into small flakes. These flakes are then melted and formed into pellets. The pellets are then cooled and cut into granules.
- PET bottles are made of one of the few polymers that can be recycled into the same form – a new beverage bottle – again and again. As with virgin PET, recycled PET (rPET) can be used to make many new products, including polyester staple fibre or filament used for apparel (clothing), home textiles (duvets, pillows, carpeting), automotive parts (carpets, sound insulation, boot linings, seat covers) and industrial end-use items (geotextiles and roof insulation), and new PET packaging and bottles for both food and non-food products.

1.2 Proposed Project

- Development of the proposed project follows the growing utilization of plastics in industrial and consumer applications. **ECOF**, a company involved in refining of cooking oil (palm oil and sunflower oil) in Dar-es-salaam, is positioning to capitalize on the opportunities in the recycled resin and packaging markets through production of Recycled PET granules from recycled PET flakes.
- ECOF is investing in the industrial processing of recycled PET Flakes to produce PET granules for production of PET bottles. The plant is located in Kiwalani Industrial Area, Ilala Municipality, Dar-es-salaam. The plant will have capacity to process 2,500 tons per day of recycled PET Flakes.
- The project will purchase the raw materials (PET Hot Wash Flakes) produced by an associate company, **A-One Products & Bottlers Ltd** from its recycling factory in Visiga, Kibaha, Coast region. The project will be the first project that will enable bottle-to bottle recycling in the country.

1.2 Investment Plan

- The project will invest in the machinery and equipment for processing recycled PET Flakes and construct buildings to accommodate the plant and machineries and other amenities.
- The project will, further, invest in the support facilities including utilities (water and electricity), motor vehicles for office use, office furniture and equipment and other support facilities. At commissioning, the project will require working capital for purchase of the recycled PET fakes and meet the initial operating expenses.
- The total project cost is estimated at USD 9.0 million for the capital expenditure and an additional USD 3.8 million for working capital as summarized below:

East Coast Oil & Fats Ltd
PET Bottles Recycling Plant - Granules Production
PROJECTED INVESTMENT AND FINANCING PLANS

Investment Plan	**Amount in USD**			
	Additional Investment			**TZS '000' Equivalents**
	Year 1	**Year 2**	**Total Additional**	
Exchange Rate (USD/TZS)	2,500.00	2,500.00		
Land & Land Development	175,000	-	**175,000**	**437,500**
Buildings & Civil works	225,500	-	**225,500**	**563,750**
Plant & Machinery	7,253,631	-	**7,253,631**	**18,134,078**
Utilities	419,320	-	**419,320**	**1,048,300**
Motor Vehicles	429,000	-	**429,000**	**1,072,500**
Office Furniture & equipment	86,900	-	**86,900**	**217,250**
Pre-Operating costs	456,000	-	**456,000**	**1,140,000**
Total Capital Expenditure	**9,045,351**	**-**	**9,045,351**	**22,613,378**
Working Capital	-	3,840,918	3,840,918	**9,602,295**
Total Investment	**9,045,351**	**3,840,918**	**12,886,269**	**32,215,673**

1.3 Project Financing

- The project will be financed through equity from shareholders and external financing in the form of loans. The shareholders' contribution to the project will be about 53% of the total project cost and the balance of 47% will be sourced from lending institutions.
- The project financing structure is as summarized below.

East Coast Oil & Fats Ltd

PET Bottles Recycling Plant - Granules Production

PROJECTED INVESTMENT AND FINANCING PLANS

Financing Plan	Amount in USD			
	Additional Financing			TZS '000' Equivalents
	Year 1	Year 2	Total Additional	
Equity Financing				
Shareholders funds (capex)	5,045,351	-	5,045,351	**12,613,378**
Shareholders funds (W/capital)	-	1,840,918	1,840,918	**4,602,295**
Total Equity	**5,045,351**	**1,840,918**	**6,886,269**	**17,215,673**
External Financing				
Medium Term Loans				
Medium-Term Loan 1	4,000,000	-	4,000,000	**10,000,000**
Medium-Term Loan 2	-	-	-	**-**
Short-term Loans				
Bank Overdrafts	-	2,000,000	2,000,000	**5,000,000**
Other Short-term Facilities	-	-	-	**-**
Total External Financing	**4,000,000**	**2,000,000**	**6,000,000**	**15,000,000**
Total Financing	**9,045,351**	**3,840,918**	**12,886,269**	**32,215,673**
Exposure				
Equity Financing	56%	48%	53%	53%
External Financing	44%	52%	47%	47%

1.6 Proposed Loans

- The proposed long-term loan facility of USD 4,000,000 earmarked to part-finance capital expenditure will be payable in 5-years including one-year of grace period on principal and interest. The loan is assumed to attract 8.0% annual interest expense.
- The short-term loans facilities of USD 2.0 million is assumed to attract about 6% interest rate. The sources and uses of the project funds are as summarized below.

PET Bottles Recycling Plant - Granules Production			
	Amount in USD		
	Year 1	Year 2	Total
Equity Financing			
Land & Land Development	175,000	-	175,000
Buildings & Civil works	225,500	-	225,500
Plant & Machinery	3,253,631	-	3,253,631
Utilities	419,320	-	419,320
Motor Vehicles	429,000	-	429,000
Office Furniture & equipment	86,900	-	86,900
Pre-Operating costs	456,000	-	456,000
Working Capital	-	1,840,918	1,840,918
Equity Financing	**5,045,351**	**1,840,918**	**6,886,269**
External Financing			
Plant & Machinery	4,000,000	-	4,000,000
Working Capital	-	2,000,000	2,000,000
External Financing	**4,000,000**	**2,000,000**	**6,000,000**
Total Financing	**9,045,351**	**3,840,918**	**12,886,269**
Exposure			
Equity Financing	56%	48%	53%
External Financing	44%	52%	47%

1.7 Project Rationale

- Currently, Tanzania produces over 15,000 tons of waste per day, 48% of which is plastic. With more than 10 soft drinks companies producing carbonated soft drinks (CSD), bottled water and juices, there is high supply competition in commercial cities and towns which has significantly increased the use of PET bottles.
- Every day, tons of plastic waste in the form of PET bottles and other plastic packages are dumped in roadside drains or burned in landfill sites or on vacant land. The impact of plastic waste on communities and the environment is significant and far-reaching.
- Plastic recycling technology enables the process of recovering scrap or waste plastic and reprocessing the material into useful products, sometimes completely different in form from their original state. For instance, this could mean melting down soft drink bottles and then casting them as plastic chairs and tables. Plastics are also recycled / reprocessed during the manufacturing process of plastic goods such as polyethylene film and bags.
- Besides protecting the environment, the proposed project will create jobs, reduce the amount of PET granules imported and introduce bottle-to-bottle recycling industry in the country.

1.8 Project Location

- The project will be situated in Kiwalani Industrial Area in Ilala Municipality, Dar-es-salaam. The project is within the Dar-es-salaam city, and adjacent to a Beverage production factory (A-One Products & Bottlers Ltd).

1.9 Project Outputs

- Recycling is clearly a waste-management strategy, and one way of implementing the concept of industrial ecology, whereas in a natural ecosystem there are no wastes but only products.
- Recycling of plastics is one method for reducing environmental impact and resource depletion. Fundamentally, high levels of recycling, as with reduction in use, reuse and repair or re-manufacturing can allow for a given level of product service with lower material inputs than would otherwise be required.
- The project will process recycled PET Flakes. The project will have capacity to process 2,500 PET flakes/ hour equivalents to 18.72 million kg of PET flakes/year.

- Initially, the project is assumed to operate at 60% capacity utilization increasing gradually over the years. The summary of the projected production assumptions is as presented below:

Projected Production Assumptions

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plant Operation	Kg/Hour	-	2,500	2,500	2,500	2,500	2,500
	Kg/Day	-	60,000	60,000	60,000	60,000	60,000
	Kg/Month	-	1,560,000	1,560,000	1,560,000	1,560,000	1,560,000
	Kg/Year	-	18,720,000	18,720,000	18,720,000	18,720,000	18,720,000
Plant Capacity Utilisation	%	-	60%	66%	73%	80%	85%
PET Flakes Consumed	MT/Year	-	11,232	12,355	13,591	14,950	15,847
Clear PET Flakes	KG/Year	-	3,931,200	4,324,320	4,756,752	5,232,427	5,546,373
Blue PET Flakes	KG/Year	-	3,369,600	3,706,560	4,077,216	4,484,938	4,754,034
Green PET Flakes	KG/Year	-	0	0	0	0	0
White PET Flakes	KG/Year	-	3,369,600	3,706,560	4,077,216	4,484,938	4,754,034
Extra Colour PET Flakes	KG/Year	-	561,600	617,760	679,536	747,490	792,339
PET Flakes Consumed	**KG/Year**	**-**	**11,232,000**	**12,355,200**	**13,590,720**	**14,949,792**	**15,846,780**
Conversion Ratio							
PET Flakes to PET Granules	Kg	-	1.0	1.0	1.0	1.0	1.0
Granules Produced							
Clear PET Granules	KG/Year	-	3,931,200	4,324,320	4,756,752	5,232,427	5,546,373
Blue PET Granules	KG/Year	-	3,369,600	3,706,560	4,077,216	4,484,938	4,754,034
Green PET Granules	KG/Year	-	0	0	0	0	0
White PET Granules	KG/Year	-	3,369,600	3,706,560	4,077,216	4,484,938	4,754,034
Extra Colour PET Granules	KG/Year	-	561,600	617,760	679,536	747,490	792,339
PET Granules Produced	**KG/Year**	**-**	**11,232,000**	**12,355,200**	**13,590,720**	**14,949,792**	**15,846,780**
	MT/Year	-	11,232	12,355	13,591	14,950	15,847

1.10 Uses of Recycled PET Granules

- The project will solely purchase Recycled PET flakes (rPET Flakes) from the associate company – A-One Products & Bottlers Ltd from its recycling plants located in Kibaha, Coast Region.
- Primarily, ECOF will process rPET flakes for production of PET granules which will be used solely for production PET bottles.
- The flakes will be melted and formed into pellets, then the pellets are cooled and cut into granules ready for manufacture of recycled PET bottles.

1.11 Market Aspects

- The project will sale 100% of its produce to an associate company, A-One Products and Bottlers Ltd.
- A-ONE PRODUCTS AND BOTTLES LIMITED ("**A-One Products**") is a soft-drinks manufacturing company. It is one of the leading local producers and distributors of soft drinks in Tanzania.
- A-One Products is an associate company of the MeTL Group of companies of Dar-es-salaam, Tanzania. MeTL Group, through A-One Products, has positioned itself to capture Tanzania's opportunities in the soft drinks industry.
- Currently, A-One Products is MeTL Group's third largest company, and primarily produces beverages (soft drinks) and plastic packages. The company has grown to become one of the leading producers of drinking bottled water and flavoured drinks in Tanzania.

1.12 Implementation and Organization

- The Recycling project establishment will be done based on a turn-key project where the plant suppliers will undertake to provide the machinery; undertake the installations works; and commissioning of the project.
- The project is estimated to take 12-month of implementation and production is assumed to commence in the second year of the project.
- Upon completion of the implementation works, the project will be under the management of ECOF with a technical assistance from the technology partners.

1.13 Projected Profitability

- The analysis of the profitability of the overall project indicates that the project is a profitable undertaking with short-term returns to the investors.
- The overall gross margins are projected to average 47% and the net margins are projected at 21% over the first 10-years of operation as summarized below.

Projected Profitability						
	Amount in USD					
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Revenues	-	13,747,968	15,425,220	17,307,097	19,418,563	20,995,350
Direct Operating Costs						
PET Flakes	-	5,166,720	5,683,392	6,251,731	6,876,904	7,289,519
Other Operating Costs	-	2,695,680	2,965,248	3,261,773	3,587,950	3,803,227
Direct Operating Costs	-	7,862,400	8,648,640	9,513,504	10,464,854	11,092,746
Gross Profits/(Loss)	**-**	**5,885,568**	**6,776,580**	**7,793,593**	**8,953,708**	**9,902,604**
Gross Margins	-	43%	44%	45%	46%	47%
Indirect Operatng Costs	-	2,856,120	2,911,514	2,968,017	3,025,649	3,084,434
EBITDA	**-**	**3,029,448**	**3,865,066**	**4,825,576**	**5,928,059**	**6,818,170**
EBITDA Margins	-	22%	25%	28%	31%	32%
Other Costs						
Depreciation & Amortisation	-	339,968	313,404	291,289	294,263	274,478
Loans Interest Expenses	-	512,046	454,102	398,599	345,811	285,475
Provision Corporate Tax	-	653,230	929,268	1,240,706	1,586,395	1,877,465
Net Profits	**-**	**1,524,204**	**2,168,292**	**2,894,981**	**3,701,589**	**4,380,752**
Net Margins	-	11%	14%	17%	19%	21%
Net Present Value (NPV)	12,460,389 USD					
Internal Rate of Return (IRR)	24.3%					
Return on Investment	38.0%					
Normal Payback Period	3 Years					

1.14 Projected Cashflows

- The projected cash flow statements indicate that the company will have negative cash balances in the first year of operation which will partly be financed by the proposed short-term facilities of USD 2.0 million.
- The projected cashflows statements are as summarized below.

Projected Cash Flow Satements						
	Amount in USD					
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Cash Inflows						
Equity Financing	5,045,351	1,840,918	-	-	-	-
External Financing	4,000,000	-	-	-	-	-
Sales revenues						
PET Granules Revenues	-	13,747,968	15,425,220	17,307,097	19,418,563	20,995,350
Less: Value Added Tax (VAT)	-	-	-	-	-	-
Net Sales Revenues	-	13,747,968	15,425,220	17,307,097	19,418,563	20,995,350
Total Inflaws	**9,045,351**	**15,588,886**	**15,425,220**	**17,307,097**	**19,418,563**	**20,995,350**
Cash Outflows						
Capital Investment	9,045,351	-	-	107,250	-	-
Change in Working Capital	-	3,840,918	441,121	489,949	544,239	393,278
Operating Expenses						
Direct Operating Costs	-	7,862,400	8,648,640	9,513,504	10,464,854	11,092,746
Indirect Operating Costs	-	2,856,120	2,911,514	2,968,017	3,025,649	3,084,434
Finance Costs						
Loans Interest Expenses	-	512,046	454,102	398,599	345,811	285,475
Loans Principal Repayment	-	1,000,000	1,000,000	1,000,000	1,000,000	0
Corporate Tax	-	653,230	929,268	1,240,706	1,586,395	1,877,465
Total Cash Outflows	**9,045,351**	**16,724,714**	**14,384,645**	**15,718,025**	**16,966,949**	**16,733,398**
Net Cash Flows	**-**	**(1,135,828)**	**1,040,575**	**1,589,072**	**2,451,614**	**4,261,952**
Opening Cash Balance	-	0	(1,135,828)	(95,253)	1,493,819	3,945,433
Closing Cash Balance	**-**	**(1,135,828)**	**(95,253)**	**1,493,819**	**3,945,433**	**8,207,385**

1.15 Project Viability

- The projected is a viable investment with Internal Rate of Return (IRR) of 24.3% which is greater than the current cost of funds; and a positive Net Present Value (NPV). The project Normal Payback Period is within four-year period.

1.16 Economic Benefits

- Tax Income – the project will pay income taxes, property taxes, corporate taxes and other taxes to the Tanzania government.
- Jobs Creation – the project will create over 100 direct jobs and over 500-indirect employment.

1.17 Conclusion And Recommendations

- Recycling is one strategy for end-of-life waste management of plastic products. It makes increasing sense economically as well as environmentally and recent trends demonstrate a substantial increase in the rate of recovery and recycling of plastic wastes.
- These trends are likely to continue, but some significant challenges still exist from both technological factors and from economic or social behaviour issues relating to the collection of recyclable wastes, and substitution for virgin material.
- Besides addressing environmental threats from PET bottles, the project analysis suggests that it is financially and economically viable and technically feasible. The project will be able to meet its financial obligations from the project sales revenues.

The Project Promoters

2.1 Introduction

- ECOF is an associate company of MeTL Group of Dar-es-salaam, Tanzania. MeTL Group is a Tanzania-based Group of companies with investment interests in trading, agriculture, manufacturing industries, energy, infrastructure and other sectors of the economy.

2.2 Legal Status

- ECOF is a private limited liability company registered in Tanzania. The company main business objectives are to carry on the business of manufacturing of edible oil, fats, soap and allied products.
- The company has been registered with the following statutory certification:
    - Certificate of Incorporation
    - Certificate of Registration for Taxpayer Identification
    - Certificate of Value Added Tax (VRN)
    - Industrial Licenses
    - Business Licenses and other statutory documents

2.3 The Company Ownership

- ECOF is an associate company of the MeTL Group of companies. The registered shareholders of the company are Mrs. Dixita Mohamed Dewji and Mr. Murtaza Dewji who are family members of the Dewji family, the principal shareholders of MeTL Group of companies.
- The shareholding structure of ECOF is as follows:

Shareholders' name	% shareholding	Nationality
Mohamed Gulamabbas hassanali Dewji	60%	Tanzanian
Mrs. Zubeda Gulamabbas Dewji	40%	Tanzanian
Total	**100.00%**	

2.4 Production and Products Development

- Core Products
    - Since inception, ECOF continues to produce and provide the market with refined palm oil, refined sunflower oil, soaps (toilet and laundry soaps), margarine and cooking fats and cosmetics.
    - The refined cooking oil (palm and sunflower Oil) accounts for about 82% of the annual sales revenues followed by soaps (14%). Refined palm oil alone accounts for about 80% of the ECOF annual revenues.
    - The Palm Oil plant was ideally set to serve the eastern and central Africa regional market that includes Malawi, Zambia, Rwanda, Burundi and the Democratic Republic of Congo (DRC). However, due to unfriendly local tax regime on the imported crude palm oil, ECOF has been unable to directly penetrate the export market in these neighbouring countries. The high tax rate increases the local cost of production that erodes the market competitive ability.
    - Presently, the Palm Oil Refinery Plant operates below 50% of its installed capacity due to local market product absorption capacity.

- Other Products
    - With the view to reduce packaging costs, ECOF is currently manufacturing plastic packages for packing its refined cooking oil and cosmetics.
    - In the advent of covid-19, the company introduced sanitizer and washing liquids manufacturing lines to make available Personal Protective Equipment (PPE) for coronavirus in the country.

2.5 Company Business Strategy

- ECOF main business strategies focus on the following:
    (i) Increase products portfolio of allied products to capitalise on the existing physical and human resources base of the company
    (ii) Increase efficiency in raw materials procurement with the view to reduce per unit cost of raw materials.

The Project Concept

3.1 Introduction

- The project will produce PET plastic granules from used PET bottles.
- Tanzania is estimated to produce over 15,000 tons of waste per day, 48% of which is plastic.
- The growing utilization of plastics in industrial and consumer applications, combined with increased consumer awareness surrounding solid waste recycling, has led to an increased demand for recycled plastic resins and products.
- One of the fastest growing types of collected plastic materials for recycling is polyethylene terephthalate ("PET") from post-consumer beverage and water bottles.

3.2 The Concept

- The proposed project involves establishment of a modern commercial PET plastic granules manufacturing plant for production of PET granules. The project's main raw materials will be recycled PET flakes from used PET bottles produced purposely for packaging soft drinks – carbonated soft drinks (soda), bottled water and juice.
- The Company is developing a PET granulator plant located in Kiwalani Industrial area in Dar-es-salaam.

3.3 Recycling Plants Capacities

- The project entails importation and installation of one PET Granulator plant which will have input capacity of 2,500 kg of PET Hot Wash Flakes. This is equivalent to a capacity of producing 18.72 million tons of PET granules per annum.
- At 60% capacity utilization, the plant will process 11.2 million tons of PET flakes in the first year of operation.

The Project Components

4.1 Introduction

- Recycling of a wider range of post-consumer plastic packaging, together with waste plastics from consumer goods will further enable improvement in recovery rates of plastic waste and diversion from landfills.
- Coupled with efforts to increase the use and specification of recycled grades as replacement of virgin plastic, recycling of waste plastics is an effective way to improve the environmental performance of the polymer industry.
- Recycling of used PET bottles to obtain PET Granules involves a number of activities including collection of used PET bottles, crashing the bottles before transporting for recycling then the raw materials are used to produce, yet again, PET bottles.

4.2 Project Components

(a) Investment in production facilities –

- Land and land Development –
    - The project has already rented industrial premises which is adequate for the development of recycled PET Granules manufacturing plant operation. The land is under the names of Mohammed Enterprises (Tanzania) Limited.
    - The land is located in Kiwalani Industrial Area, Ilala Municipality in Dar-es-salaam.

- Buildings and Civil Works –
    - The project is in the process of constructing industrial building that will accommodate the main recycling plants. The building has a built-up area of 6,000 square meters.
    - The project, also, involves construction of concrete perimeter wall, drainage system, internal roads and packing yard. The project will construct warehouse for storage of PET Flakes and the finished products.
    - The project will, also, undertake to construct amenities buildings and the drainage system and other civil works.

- Machinery and Equipment –
  - The project will procure and install one PET granular making plant with an input capacity of 2,500 to 2,700 kg/hour of PET flakes. The machinery components include the following:
    - ✓ **Feeding Screw for Hot Air Dryer –**
      - ➢ This is type HAD9400 including metal separation for PET 215. In this machine the PET flakes are fed directly into the hot air dryer by a feeding screw.
      - ➢ The feeding screw is additionally equipped with a metal detector for the automatic separation of material contaminated with metals. The metal separator can perform up to 60 ejections per hour. Metal detector for all metallic materials (such as Fe, Ni, Co, stainless steel, Cu, Al, CuZn, Pb).

    - ✓ **Hot Air Dryer HAD9400**
      - ➢ This unit is for higher moisture levels of the input material and/or for increased drying time and improved final material quality. In the hot air dryer hot air heats up the material.
      - ➢ This process dries the material and serves for optimum preparation of the material prior to extrusion.

    - ✓ **Exhaust Air Filtration for HAD9400**
      - ➢ Continuous air filtration via cyclone including a dust collecting box which collects the separated dust. Manual emptying can be done without interruption of production.

    - ✓ **Pre-drying Unit PDU11000**
      - ➢ this is accompanied with dried air including air filtration and condensate separator. This unit is for increased drying performance and improved final material quality. In the pre-drying unit hot and dry air heats up the material.

- This process dries the material and serves for optimum preparation of the material prior to extrusion, to reduce hydrolytic degradation. Constant low dew point value is reached via closed air process with 2 molecular sieves.
- The process air is constantly filtered and the condensate is separated. The condensate separator in front of the air dryer serves for improved optical properties of the final material and protects the molecular sieves of the air dryer.

✓ **Extruder Exp215HC (530 KW) With High Vacuum Unit H-VAC**

- This includes melt pressure sensor, melt temperature sensor, and control air conditioning for electrical components and control panel
- The extruder barrel is of a bimetallic design. The screw is nitride-hardened and armor-plated. The extruder screw plasticizes and homogenizes the material. extruder screw is driven by a cardan shaft and is optionally speed-controlled.
- The extruder is equipped with a melt pressure display. The material is fed into the extruder by a speed-controlled dosing screw. Extruder extension by 16 L/D with two degassing openings. Vacuum unit is consisting of condensateseparating container, mechanical filtration and a rotary vane vacuum pump.
- Compared to conventional vacuum units for high vacuum demands this new vacuum system for the extruder venting area is benefits due to reduced energy investment (up to 50% compared with conventional two stage systems) and without fresh water demand.

✓ **Vented Extruder Screw And Barrel In Wear Resistant Version**

- Screw – this is a 2.5 mm nickel-chrome based armour-plating in C56 (RP50/ Colmonoy56/ BN56) quality. The screw ground is plasma nitride.

- Barrel – this is a high quality CrMoCoB based bimetallic barrel in R121 (X220/ AC333) quality which is an excellent protection against abrasion and corrosion. The armour thickness is min. 1.5 mm.

✓ **Colour Touch Panel**

- The operation of the line is done via an operator interface terminal which is executed as a 15-inch colour touch panel.
- The panel is equipped with a recipe-management. Furthermore, the panel is equipped with a Ethernet interface and a USB slot.

✓ **Speed Controlled Extruder Drive** (530 KW)

- Extruder drive speed-controlled with frequency converter. Via the control terminal the requested screw speed can be regulated easily on the control panel according to process requirements.

✓ **Double Piston Backflushing Filter DPB1960**

- This is a Double piston backflush filter with 4 screen packs for continuous melt filtration. Via a backflush alarm adjustable at the operator terminal a backflushing cycle is released fully automatically, by which already filtrated melt is pressed in the reverse direction through one filter and together with the contamination to the outside.
- The backflush system ensures that the backflushing pressure loss is kept at a very low level. One piston remains in the working position while the other is moved into the backflush position. During this process one of the 4 screens is cleaned.

✓ **Underwater Pelletizing UWP140CC**

- This comes with inline Crystallization (Closed Water Circuit). The strands from the die plate are cut under water within a continuous water stream. The knife head is pressed fully automatically and with

an adjustable contact pressure to the die plate. The pellets will be separated from the water and dried in a centrifuge.

- The size of the pellets is adjustable by the inverter driven knifehead. Inline crystallization as an option to the underwater pelletizing unit serves for energy saving crystallization of the produced PET pellets.
- The pellets are kept on a high temperature level and are intermediately stored in an insulated chamber where the crystallization takes place.

✓ **Other equipment –**

- Other machinery components include Automatic Water Filtration for UWP140 CC (Closed Water Circuit); Filling Station 5,000L after Exp Including Diverter Valve and Piping (Pellet Temp. Up To 150°C); Frame provided with big bag holding facility.
- Others are Technical Data Storage silo volume: 5000; 4X Water Condenser for Separation of Ambient Humidity; Feeding Screw for Pre-drying Unit PDU11000; Water Heat Exchanger For H-VAC UNIT

(b) Working capital –

- The project will require initial working capital to finance the operating expenses including collection and purchase of PET Hot Wash Flakes, processing costs, labour charges and other expenses.
- The working capital is also for finance current assets of the project including trade debtors, stocks of finished goods and other inventories.

Project Rationale

5.1 Introduction

- Technological advances in recycling have decreased the cost of recycling and increased the gap between the value of recycled resin and virgin resin.
- The gap between the cost of recycled plastic products to the virgin plastic product has been enhanced by technologies for turning recovered plastic into food grade polymer by removing contamination—supporting closed-loop recycling. This technology has been proven for rPET from clear bottles, and the rHDPE from milk bottles.
- ECOF planned investment in the PET Granules production aims to support government initiatives for environmental protection in the country.

5.2 Project Benefits

- Deploying a suitable plastic recycling strategy, companies can reduce toxic waste output, reduce costs on waste management, and create profits by purchasing recycled PET bottles that are slowly gaining requirement in a variety of markets.
- Some of the important benefits of recycling used PET bottles include:

(a) Reduce Pollution Around Ecosystems

- Greenhouse gases are a significant reason behind the rising pollution levels in our surroundings. Throughout the production of plastics, oil is burnt. This generates a huge quantity of greenhouse gases.
- Recycling plastic rather than producing it from scratch consequently significantly reduces the emission of poisonous greenhouse gases.
- Plastic waste apart from contaminating soil, soil, and water using dangerous compounds can, also, be accountable for the death of tens of thousands of animals on earth, in water, and in the sea because of ingestion.

(b) Saves depleting landfill space

- The expanding human population implies that habitable land is getting increasingly more precious with every passing day.
- Appropriate waste management through recycling and pruning of plastics may save a substantial quantity of waste space.
- About 7.4 cubic meters of landfill space could be saved by recycling 1 ton of used PET bottles.

(c) Promotion of sustainable living

- Plastic bottles are the second most common type of plastic waste found in the oceans, and that in 2021, plastic bottles accounted for 12% of all plastic waste in the world's oceans.
- If companies work together with their internal and external stakeholders towards creating awareness and encouraging positive consequences of plastic and recycling, then they will definitely lead to a sea change towards environment conservation.

(d) Reducing the Waste

- The main intention of recycling is to reduce plastic waste. Used PET bottles cannot be disposed of on the floor or even in the seawater.
- Thus, recycling the bottles becomes the only workable alternative for reducing the number of plastic wastes.

(e) Energy saving

- From the plastic bottle manufacturing plants, big power intake happens in regards to creating or producing a large number of bottles. In the contrast, recycling these plastic bottles will reduce energy intake significantly.
- With reduced energy consumption, the environment remains greener. Lesser waste of energy for a source is always valued. This is why plastic recycling is highly suggested.

(f) Reduction in Operating Costs

- To soft drinks manufacturers, the use of recycled PET bottles will definitely reduce the operating costs of the company.
- Rather than purchasing brand new plastic bottles, or import virgin granules even when the company recycle the present plastic bottles, it really saves a good deal of costs.

(g) Employment Generation

- Recycling of used PET bottles starts with the collection of the used PET bottles where the recycling companies have to pay for the used bottles.
- Today, thousands of people in urban and rural Tanzania are engaged in the collection of used plastic bottles at a pay.
- Besides the used bottles collectors, a number of people are directly employed in recycling plants, transportation of recycling materials, and in others sectors.

(h) Industrial Development

- PET bottles recycling would create suppliers of direct inputs to the recycling plants. Within the value chain of recycling process, there are used bottles crashing units, PET flakes manufacturing, PET granules manufacturing, and bottle-to-bottle manufacturing.

Tanzania's Soft Drinks History

6.1 Introduction

- The beverage sector comprises alcoholic and non-alcoholic drinks. The alcohol sub-sector includes the distilling of ethyl alcohol, the distilling and blending of spirits and the brewing of wines, cider and beer.
- The soft drinks sub-sector comprises the processing and bottling of juices, carbonated drinks, natural spring water and mineral water. According to a 2009 survey of manufacturing firms by the National Bureau of Statistics, there were 37 large and medium-sized establishments in the sector, of which 10 are foreign-owned and seven are owned jointly by Tanzanian and foreign investors.
- About 15 firms were located in Dar es Salaam, including most of the larger ones. About a third of the firms were established after 2000.

6.2 Early Players

- In the soft drinks area, the first entrants, who remain dominant in the sector, were franchisees of Coca-Cola and PepsiCo. The first soft drink bottling plant was set up in 1952 when Greek businessman Aris Cassolis established Tanganyika Bottlers Limited to make Coca-Cola products.
- Renamed as Tanzania Bottlers in 1964, it was bought by the Mac Group in 1986. The business remained in private hands during the socialist period.
- In 1995 the South African Bottling Company bought Tanzania Bottlers from Mac Group. SBC Tanzania, a producer of Pepsi soft drinks, began its operations in 2001. In the juices sub-sector, a number of government-owned processors were established in the 1970s. These ventures were already in financial distress at the time when they were privatized. Subsequently, a number of new private firms entered the sector, using concentrates to make juices. Only recently has one firm, Bakhresa Food Products, begun making juices from fresh fruit as opposed to concentrates.
- Bonite Bottlers Ltd was the first Tanzanian company to bottle mineral water; it began its operations in 1990. Several firms entered the market later; these included both small and large firms, and some PepsiCo and Coca-Cola franchisees. A-ONE joined the sector in 1997.

Major Soft Drinks Industry Players

7.1 General Overview

- Tanzania's soft drinks supply chain includes soft drinks manufacturers, importers, wholesalers and retailers. In terms of soft drinks categories, there are three major categories of soft drinks produced and distributed in the Tanzania market:

  - **Carbonated soft drinks**
    - Tanzanian firms produce local brands of carbonated drinks. The most prominent of these are Azam Cola, produced by Bakhresa Food Products, and Sayona Cola, produced by Sayona Drinks (part of Motisun Holdings) and Mo-Cola produced by A-One Products.
  - **Fruit juices**
    - Until 2015, domestic production met only 8% of demand. However, this has changed, in large part due to the entry of the Bakhresa Group into large-scale fruit juice processing. The juices available in Tanzania include orange, guava, coco-pine, peach, tropical plum and passion fruit.
  - **Bottled water**
    - Bottled water is produced by Coca-Cola and PepsiCo franchisees as well as by large, medium and small-sized local companies. The larger local firms include Sayona Drinks, Bakhresa Food Products, A-One Products, Kilimanjaro Water and Jambo.
    - In recent years, local small-scale producers have emerged producing local brands including Hill Water and other brands.

7.2 Major Soft Drinks Producers

Besides A-One Products, other major producers of soft drinks in Tanzania include the following:

(i) Coca-Cola Brands

- Created and developed in Atlanta, Georgia in 1886, Coca-cola is a US-based soft drinks giant. The Coca-Cola Company (TCCC) is the largest beverage company in the world, serving 1.7 billion consumers a day in more than 200 countries. The

production and distribution of Coca-Cola follows a franchising model in which TCCC provides a syrup concentrate to its bottling partners who then manufacture, package, distribute, and sell products for local consumption.

- The US-based TCCC in conjunction with its Tanzanian bottling partners is involved in marketing, manufacturing and distribution of soft drinks in Tanzania.
- Coca-Cola's three bottling partners in Tanzania are **Coca-cola Kwanza Bottlers** in Dar es Salaam, **Bonite Bottlers** in Moshi and **Nyanza Bottlers** in Mwanza.
- Over the last three years Coca-Cola has invested in excess of USD 358 million in Tanzania. In the past decade, the company invested over USD 6.0 billion in the African continent and intends to invest another USD 12 billion by 2020. The investments are part of its ambitious long-term plans to double its net revenues globally, from USD 100 billion in 2010 to over USD 200 billion by 2020.
- Coca-cola brands in Tanzania include the following:
  - Coca-cola – favoured carbonated soft drink
  - Sprite – lemon-lime flavoured soft-drink
  - Fanta – fruit-testing flavoured soft drink
  - Coce Diet - sugar and calorie-free soft drink
  - Coca-cola Zero – zero sugar flavoured soft drink
  - Sparlleta – flavoured carbonated soft drink
  - Dasani – flavoured mineral water
  - Krest – digestive carbonated soft-drink

(ii) Pepsi-Cola Brands

- Created and developed in 1893, Pepsi-Cola is a carbonated soft drink that is produced and manufactured by PepsiCo, an American multinational food and beverage corporation headquartered in New York, United States.
- SBC Tanzania Ltd is the sole franchisee and bottler of the Pepsi Cola range of products in Tanzania. In 2010, the company recorded an annual turnover of more than US USD 93 million.
- SBC Tanzania Limited was incorporated in 2001 with the mission to "revive the Pepsi Cola business in Tanzania and to transform Pepsi brands into sizeable and serious contenders for volume and share of mind in the Tanzanian market.
- The company has its headquarters in Dar es Salaam and operates plants in Mwanza, Arusha and Mbeya. It has distribution depots in Moshi, Shinyanga,

Dodoma, Iringa and Morogoro. The company has a sophisticated distribution network, with agents, wholesalers and retailers throughout the country.

- SBC Tanzania produces, distributes and markets various product brands including Pepsi, 7UP, Mirinda, MountainDew and Evervess in the following pack sizes:

	Products	Pack sizes			
1	Pepsi	200ml	350ml		
2	Pepsi PET			500ml	1.5 litre
3	Pepsi Light PET			500ml	
4	Pepsi Max PET				
5	Pepsi Can	300ml			
6	Pepsi Diet Can	300ml			
7	7up		350ml		
8	7 up PET			500ml	1.5 litre
9	7Up can	300ml			
10	Mirinda Orange		350ml		
11	Mirinda Orange PET			500ml	1.5 litre
12	Mirinda Fruity		350ml		
13	Mirinda Mango		350ml		
14	Mirinda Pineapple		350ml		
15	Mirinda Can	300ml			
16	Mountain Dew		350ml		
17	Mountain Dew PET			500ml	
18	Mountain Dew Can	300ml			
19	Evervess Club Soda	300ml			
20	Evervess Tonic Water	300ml			
21	Evervess Tonic Water PET			500ml	
22	Evervess Tonic water can	300ml			
23	Evervess Club Soda Can	300ml			

(iii) **Bonite Bottlers Limited**

- Bonite Bottlers Ltd was the first Tanzanian company to bottle mineral water; it began its operations in 1990. Several firms entered the market later; these included both small and large firms, and some PepsiCo and Coca-Cola franchisees.
- Bonite Bottlers, part of the IPP Group of Companies, produces Kilimanjaro Drinking Water, the leading bottled water in Tanzania selling under its own brand, Kilimanjaro Drinking Water.
- The company operates in four regions of Northern Tanzania: Kilimanjaro, Arusha, Manyara and Singida.
- Bonite Bottlers Ltd also bottles and distributes coca-cola soft-drinks brands.

(iv) **Bakhresa Food Products Limited**

- Bakhresa Food Products Ltd was established by the Bakhresa group in 1998 and it's based in Dar es Salaam. Backhresa Food Products Ltd is involved in the production and marketing of a range of food products including dairy products, ice-cream products, bottled water, juices and carbonated drinks.
- The company's fruit juice processing plant is the first aseptic packing facility for fruit juices in Tanzania, with a capacity of 41 million litres per annum.

#	Products	Pack sizes		
1	Azam Cola	300ml	500ml	
2	Azam Cola Orange	300ml	500ml	
3	Azam Soda Orange	300ml	500ml	
4	Azam Soda Fursana	300ml	500ml	
5	Azam Soda Apolina		500ml	
6	Azam Soda Komamanga	300ml		
7	Azam Cream Soda	300ml		
8	Azam Energy Drink	300ml		
9	Azam Malti Apple	300ml	500ml	
10	Azam Malti Pineapple	300ml	500ml	
11	Azam Malti Coffee	300ml		
12	Azam Malti Ginger & Lime-Lemon	300ml		
13	Azam Embe	300ml		
14	Tropical	300ml		
15	Safina Premium Drinking Water		500ml	1000ml
16	Safina Sparkling Drinking Water		500ml	

(v) **Sayona Drinks Ltd**

- **Sayona Drinks Limited** is part of the Motisun Holding Group and was the first Tanzanian firm to produce carbonated soft drinks in plastic bottles. It produces cola soda, orange soda, lemon soda and mango juice.
- Motisun Group is a privately owned diversified business conglomerate based in Tanzania with various manufacturing companies in steel and roofing products, mining and power, cement, plastic tanks and pipes, hospitality, paint, industrial products, beverage and food processing, construction and logistics. The company has presence in Zambia, Mozambique and Uganda.

- Sayona Drinks Limited produces quality beverages ranging from carbonated soft drinks to ready to drink juice and packaged drinking water under the brands – Twist and Sayona. These are local brands of soft drinks.
- The company's manufacturing facility has capacity to produce 300 Bottles Per Minute (BPM) of carbonated drinks and 200 BPM of packaged drinking water.
- The company produces the following products:
  - Sayona water available in various pack sizes: 350ml, 500ml, 600ml, 1000ml, and 1,500ml and in bulk water jars of 5Litre, 10 Litres and 20 Litres.
  - Sayona "twist" carbonated soda available in 350ml PET bottles with 7 different varieties of flavours.
  - Sayona juice, artificial juice available in different flavours.

(vi) **Jambo Food Products Limited**

- Jambo Food Products is a limited company incorporated in Tanzania. It is a subsidiary of the Jambo Group of Companies Limited located in Shinyanga, a strategic location in the Lake Region.
- The company is a new entrant in the beverages industry in the country. Its CSD plant was launched in June 2016.
- The company has installed capacity consists of three bottling lines with an average total capacity of 96,000 Bottles per Hour or 80,000 cartons per day of 24 bottles for carbonated soft drinks, fruit juice drinks and drinking water.
- The company produces Jambo Soda, Jambo Malta, Jambo Juices, Jambo Energy, and Jambo Drinking Water. From these brands mix the plant is producing an average of 44 SKUs in 300ml, 500ml, 1Litre and 1.5 Litre pack sizes.

7.3 Other Players

- Besides the major players, there are small players in the market of the beverage products particularly in the bottled water sub-sector.
- There are also imported juices in market.

Plastic Pollution & Policy in Tanzania

8.1 Introduction

- In Tanzania, most of the plastic pollution originates from land-based activities with Polyethylene Terephthalate (PET), High-Density Polyethylene (HDPE), Polypropylene (PP), Positronium (PS), Poly Vinyl Chloride (PVC), Polyester, and Synthetic Rubber as the main pollution hotspots originated mainly from large cities.
- Plastic pollution in the country is attributable to the mismanagement of plastic waste, especially in unplanned urban settlements. According to official reports, 84% of all plastics were mismanaged and disposed of informally in various ways, such as by burning and roadside dumping. This rate increased to 95% in 2021.
- Tanzania's per capita plastic waste generation in 2021 was around 5.6 kg/year (lower than the world average of 29 kg/year) while only 4% of the plastic waste was collected for recycling. The mismanaged waste can potentially leak into the oceans, rivers, and lakes and cause irreversible effects on the environment.

8.2 Policy Framework on Pollution

- The legal and regulatory framework guiding the management of plastic pollution in Tanzania is incorporated in the National Environmental Policy (NEP) 1997 which is legally formalized in the Environmental Management Act, of 2004. The Act is the principal law on the environment which establishes a clear institutional framework to manage the environment.
- This includes the National Environmental Advisory Committee (NEAC) with an advisory role to the Ministry responsible for the environment, the National Environmental Management Council (NEMC) to enforce laws related to environmental management, Sectoral Environmental Sections to oversee environmental management to respective sectors, and Environmental Committees at the Local Government Authorities (LGAs) levels to oversee the implementation of the Act at their jurisdictions.
- The Act further confers the role of enforcement to the National Environmental Council (NEMC) and empower LGAs to appoint Environmental Management Officers as implementers at their respective levels.

8.3 Policy Instrument to Reduce Plastic Pollution

- Tanzania uses a mix of policy instruments to reduce plastic pollution by reducing the production and leakages of plastic materials, enhancing proper management and collection of plastic wastes, and enhancing the re-use of plastic materials while discouraging single-use plastics and enhancing the recycling of plastics.
- One of the policy instruments is the Extended Producers' Responsibility (EPR) which addresses the lack of market challenges for used plastic materials by making producers responsible for the collection and recycling of the plastics they have produced.
- In Tanzania, any manufacturer or supplier of products contained in plastic bottles has to set up, operate or participate in a take-back system for collecting their respective waste plastic bottles for recycling.

8.4 Private Sector Initiatives

- Tanzania produces over 15,000 tons of waste per day, 48% of which is plastic. In the year 2021, eight companies have joined together to improve sustainable waste management through a coalition called the Polyethylene Terephthalate Recycle Company (PETCO). The coalition is made up of the following companies:
    - A – One Products & Bottles (MeTL),
    - Coca Cola Kwanza,
    - SBC Tanzania (Pepsi),
    - Nyanza Bottling,
    - Bonite Bottlers,
    - Sayona Drink,
    - Cool Blue
    - Pure Drinking Water and
    - Silafrica.
- The project aims to collect and recycle 12.5 million tons of plastic waste across the country. This private sector coalition will contribute to the implementation of the United Nations Sustainable Development Goal (SDG) 12 on sustainable production and consumption, in this country where the use of single-use plastic bags is banned since 2019.
- This new initiative will allow the creation of 5,000 jobs per year, which will give a boost to the economy, because the different stages of PET recycling will require people to manage the processes.

The Products & Services

9.1 Introduction

- The project will process PET Flakes from recycled used PET bottles to produce **PET Granules**. These are widely used in the manufacturing of products used in the day-to-day life as they are as raw materials in the manufacturing of PET bottles.
- The PET granules which will be produced by ECOF will be solely for production of PET bottles.

9.2 PET Granules Produced

- The envisaged project will manufacture PET Granules obtained from different recycled PET Flakes; and will produce different grades and colours including blue, green, white, and clear as described below:

Type of PET Granules	Description
White Granules	• White PET Granules are used for manufacturing of products in the health and beauty sector like shampoo and hand wash bottles. • At present it has great demand for hand sanitizer bottles due to increase in the consumption of sanitizers.
Green Granules	• Green PET Granules have great demand in the packaging industry and toy industry, green PET having great tensile strength make it very attractive for strap manufacture. • It is one of the most important PET flakes among all. These flakes are also used in the manufacture of non-alcoholic beverages.
Blue Granules	• Blue PET Granules are most wanted amongst other colours because of its usage and great quality and extensive use in textile industries. • It is used in almost every sector of PET use such as the medical industry for packaging and manufacture of asphalt in the construction industry.
Clear Granules	• Along with the PET quality it has the transparent appearance which helps to stand out in the packaging sector. • Clear Granules are mainly used for water bottle manufacture and food container manufacturing. It also comes with good temperature resistance so making containers oven usable.

Market Overview

10.1 Introduction

- PET is the most recycled form of plastic. The recycled PET is crushed into PET flakes and reused to make polyester fiber or new PET bottles
- Manufacturers can use PET bottle recycling as a raw material, packaging food and beverages, personal care products, and many other consumer products. PET stands for polyethylene terephthalate, which is a form of polyester. The rapidly rising demand for recycled PET flakes market can be attributed to its growing utilization of plastics for industrial and consumer usage. Manufacturers use PET bottle flakes as a raw material for a range of products that would otherwise have been made of polyester.

10.2 Global Demand for PET Granules

- The global Recycled PET Flakes and Granules market was valued at US$ million in 2022 and is projected to reach US$ million by 2029, at a **CAGR** of % during the forecast period. The influence of COVID-19 and the Russia-Ukraine War were considered while estimating market sizes. The U.S. Market is Estimated at $ Million in 2022, While China is Forecast to Reach $ Million. Clear Segment to Reach $ Million by 2029, with a % **CAGR** in next six years.
- The growth of this industry can be attributed to the consolidated development of the food and beverages, household appliances, and personal care products sub-segment. Recycled PET flakes are used in fibers to produce various types of clothing, such as t-shirts and jackets. They are additionally used in the manufacture of automobile seat covers, sofa and chair covers, carpets, and so on.

10.3 Key factors driving market growth

- **Governments Stringent Regulations –**
    - The rapid shift in consumer behavior towards sustainability with the implementation of stringent regulation by governments and increasing demand for rPET, especially from the food and beverage industry, are some of the ley factors driving the market. The recycled PET flakes market size is expanding

as it has many features such as durability, adaptability, eco-friendly and infinite recyclability in F&B and textile sectors.

- Recycled PET materials are lightweight, and transportation costs and lower energy consumption during the production of products are beneficial. Recycled PET flakes market sales are soaring as the material provides effective break-proof protection to products within rPET packaging. As per COCA-COLA HBC Switzerland, the reduction of weight of 450-milliliter bottles from 22.7 to 19.5 grams was made attainable to reduce the amount of material used for packaging.

- **Rising demand for electric vehicles –**
  - The recycled PET market in the US is expected to witness significant growth during the coming years due to the rising demand for electric vehicles in the US. This is anticipated to augment the requirement for lightweight and durable plastic components to enhance their efficiency.
  - Several key market players have into strategic mergers and acquisitions, joint ventures, and new product development to expand their market presence in the global market. In the past few years, the joint venture has been an integral part of the rPET flakes industry that allows market players to strengthen their market position globally.

- **Increased Public Awareness –**
  - Broad public awareness has helped to change the way that plastic is viewed, used and managed as waste. Education and engagement have been part of strategic action plan for many countries, and has included consumer awareness campaigns, business awareness campaigns, documentary films, school initiatives and clean-up activities, among others.
  - The public awareness campaigns, objectively, are aimed to increase public understanding and shape community perceptions on the dangers of plastic pollution and available solutions, thereby empowering more people and organizations to take action. Community actions can include changes in individual attitudes and purchasing habits, increased sorting and recycling

behaviour, responsible business processes and practices, among others. As a result, beverage companies and others have invested in PET bottles recycling.

- **Technology Advancement –**
  - A ground-breaking technology for the production of PET bottles entirely out of post-consumer waste has been developed. This fully integrates two processes that are normally kept separate:
    - the creation of process-ready material from prewashed flakes coming from used bottles; and
    - the production of new bottles (or at least the preforms that are later blown into bottles) from the flakes.
  - rPET is in itself an important contribution to the Circular Economy. This process integration brings additional important advantages in terms of sustainability, since it is much more energy-efficient than traditional methods.

10.4 Segmentation assessment

- **The clear segment –**
  - Based on the product, the clear segment is expected to witness the fastest growth. The recycled PET flakes market demand is on the rise due to factors such as ease of bottle-to-bottle recycling, reduced carbon footprint, and low energy usage during remanufacturing.
  - Recycled products are more demanded in FMCG, personal care, pharmaceuticals, and cosmetics.

- **Non-food bottles and containers segment**
  - Based on end use, the non-food bottles and containers segment accounted for the largest market share. Recycled PET flakes market trends include lower manufacturing and material costs, user-friendly features such as precise content dosing by pressure on flexible containers, and high recycling capabilities along with a beautiful look in the finished product.
  - Similar to the beverage industry, the transition to PET packaging for domestic items, cosmetics, personal care products, cleaning products, and chemicals.

Company's PET Granules Market

11.1 Introduction

- A-One Products & Bottlers Ltd is one of the leading manufacturers, distributers of beverages and packaged drinking water (Mo Brand water and Soda) in Tanzania. The company is fully engaged in the waste management of used PET bottles produced by its factories as well as from other soft drinks manufacturing companies.
- The company has taken several measures to encounter the problem of plastic pollution from used PET bottles in the country.
- Currently, A-One Products is the sole soft drinks manufacturer that has invested in own facility of recycling PET Bottles with proper conversion capacity. The company has both recycling plant and main beverages production unit. The company has upgraded facilities to convert 6,000-tons of PET Bottles per Month.

11.2 Internal Market

- A-One Products provides a ready for 100 percent of the PET Granules produced from ECOF processing plant.
- The company is investing in a bottle-to-bottle recycling plant for purposes cost reduction in the production through use of less virgin PET bottles as well as preventing environmental damage from plastic pollution caused by bottles produced by the company.

PET Granules Production Process

12.1 Introduction

- PET is one of the world's most used plastic packaging materials. It is, also, one of the most dominant waste types. However, after use PET bottles should not be seen as waste, but as a resource as they are 100% recyclable.
- The PET can be heated and moulded into numerous shapes. It is a clean, safe and convenient packaging method. Unlike glass and aluminium alternatives, PET has a low melting temperature.

12.2 Production Process

Step 1: Collecting the PET bottles

- In Tanzania, after use, the PET bottles are discarded of. The recycling companies have to develop a mechanism of collecting the used PET bottles.
- After collection, the recyclable products will be collected and transported to a sorting centers before delivered to the recycling plant ready for processing.

Step 2: Separating the PET bottles

- At the sorting centers the PET bottles get sorted roughly. The PET bottles, both empty and full, needs to be dewatered and compacted.
- The compacting or crashing of the used bottles use Screw Compactors to separate the dry packaging material from the liquid.
- The transportation of the PET to further recycling will also be much cheaper and more sustainable if the bottles are already dewatered and compacted.

Step 3: Compacting the PET bottles

- In a continuous process, the screw compactor both drains and compacts the PET bottles. The machine operator feeds the machine via conveyor or with a fork lift.
- The material then falls into the screw, which compacts the PET while squeezing out the liquid. Usually, the drained and compacted PET bottles fall into a container.
- Drained and compacted PET bottles are easier and more sustainable to transport to a recycling plant.

Step 4: Recycling of the PET bottles

- PET bottles can be recycled in 2 different ways: Via chemical and mechanical recycling. Mechanical recycling is the most widely used, as this does not pose a risk of releasing toxic substances from chemical agents that can potentially harm the environment.
- When recycling PET mechanically the goal is to obtain clean PET flakes that can be used either directly or mixed with virgin polymer to produce new products.

Step 5: Transforming recycled plastic bottles into pellets

- When the compacted PET bottles arrive to a recycling plant, they are sorted and washed to get rid of any metals, residues, the labels and glue. Afterwards they will be sent to grinding.
- After the washing, the PET bottles go into a grinder. The grinder makes the bottles into small PET flakes to make it fit for recycling. When the PET bottles have been grinded into flakes, they are transported into a machine that sorts the flakes by material and colour. This is done to ensure that no non-PET materials go further in the recycling system.

Step 6: Washing and decontamination

- After washing and grinding, the PET-flakes will then be dried and melted into long lines of PET plastic and then cut into small pellets. The pellets undergo decontamination by using nitrogen to make it food approved.
- Because of the decontamination step, it is possible to use the PET for packaging for food and beverages once again. It could also be used for other types of bottle packaging, like cleaning supplies.
- This process is very important, because it is what make it safe to use the PET in the bottle-to-bottle loop.

Step 7: Reforming and reusing the PET bottles

- The recycled PET pellets are then transported to manufacturers for use in the packaging industry. It is now ready to be made into new bottles.

- The pellets are now heated and formed into the wanted size and shape. They are now ready to be reused. This is the end of the bottle-to-bottle loop.
- The bottle-to-bottle loop is the ideal way of recycling PET bottles, but it is not always achievable.
- Sometimes the plastic collected for recycling is not of high enough quality to be used this way again. In these instances, the recycled PET is grinded into flakes and washed before undergoing heat. When heated it is stretched into fibre used in recycled polyester. This can be used for seat belts, bags, carpets, shoes, clothing etc.

12.3 Plant Capacity

- Based on the projected demand and technology recommended, it is envisaged that the plant will have capacity of recycling 2,500 kg/hour of used PET bottles which is equivalents to 18.72 million kg PET flakes.

12.4 Capacity Utilisation

- Initially, the project is assumed to operate at 60% capacity utilization.
- The assumed rate is conservative due to availability of used PET bottles for recycling.
- Further, the project will allow optimum learning experience to be attained.
- The plant would operate single shift of 8 hours a day for 300 days in a year.

		Year 1	Year 2
Plant Operation	Kg/Hour	-	2,500
	Kg/Day	-	60,000
	Kg/Month	-	1,560,000
	Kg/Year	-	18,720,000
Plant Capacity Utilisation	%	-	60%
PET Flakes Consumed	MT/Year	-	11,232
Clear PET Flakes	KG/Year	-	3,931,200
Blue PET Flakes	KG/Year	-	3,369,600
Green PET Flakes	KG/Year	-	0
White PET Flakes	KG/Year	-	3,369,600
Extra Colour PET Flakes	KG/Year	-	561,600
PET Flakes Consumed	**KG/Year**	**-**	**11,232,000**
Conversion Ratio			
PET Flakes to PET Granules	Kg	-	1.0
Granules Produced			
Clear PET Granules	KG/Year	-	3,931,200
Blue PET Granules	KG/Year	-	3,369,600
Green PET Granules	KG/Year	-	0
White PET Granules	KG/Year	-	3,369,600
Extra Colour PET Granules	KG/Year	-	561,600
PET Granules Produced	**KG/Year**	**-**	**11,232,000**
	MT/Year	-	11,232

Used Bottles Collection

13.1 Introduction

- The PET bottle recycling collection systems are different among countries because of the differences in local conditions, which include technical design of recycling system, government policy, and social-culture about recycling.
- Despite Tanzania experiences increasing consumption of PET bottles and RPET resins, the country lacks an organized recycling collection system for PET bottles. The country's informal/private sector is the main agent for PET bottles' recycling collection.
- To address this problem, A-One Products and other players in the PET bottles recycling industry have developed formal recycling collection systems for recyclables since 2021, by placing collection/buying centers for used PET bottles.

13.2 Company Collection Initiatives

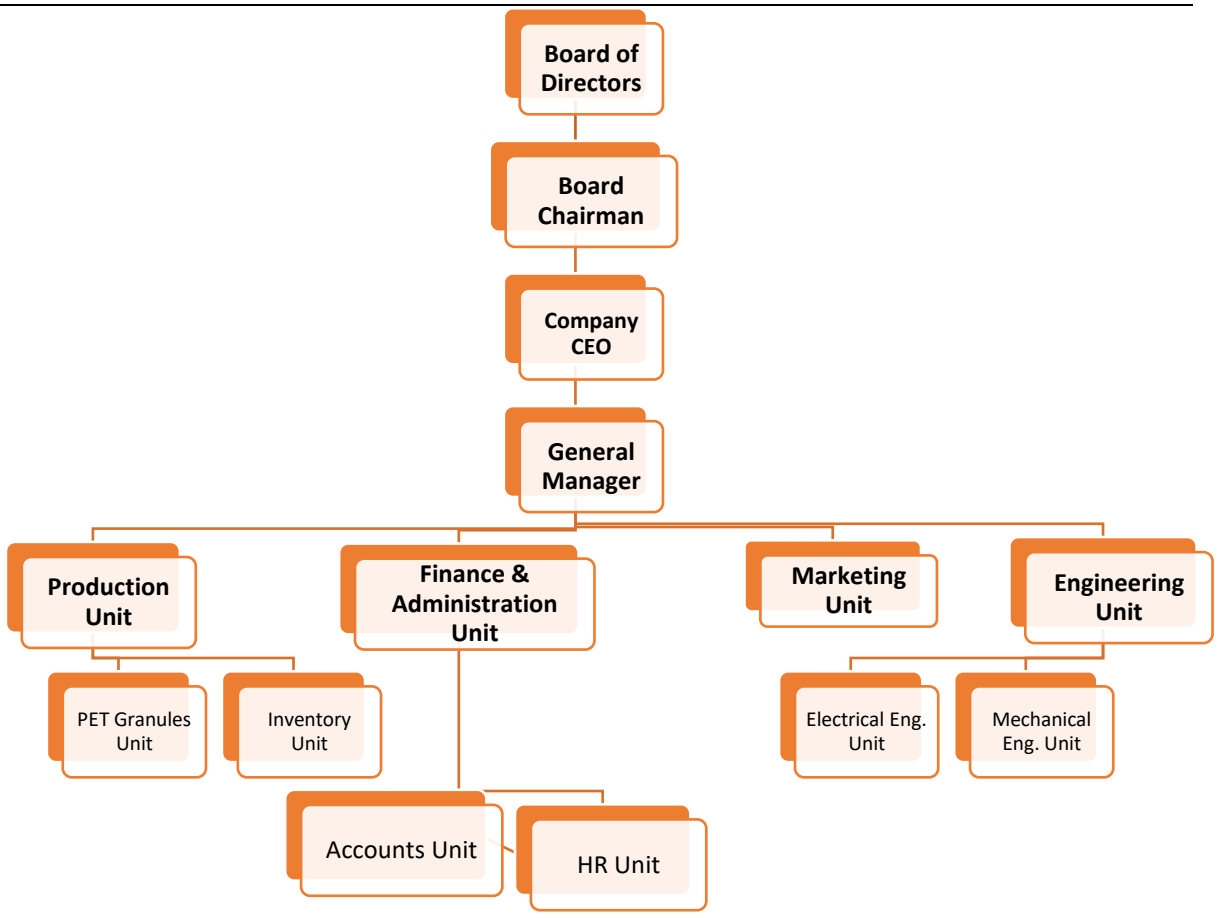
- Presently, A-One Products has engaged more than 500 people as independent collectors of used PET bottles. Further to establishing collection centres, the company has invested in the supply chain of scrap bottles in the regions of Dar Es Salaam, Mtwara, Tanga, Mwanza, Morogoro, Tarime, Arusha & Moshi.
- Due to less weight and high volume of unprocessed used PET bottles, which attracts high transport costs of the materials to the factory, the company has established branch offices in Arusha, Moshi, Dodoma and Mwanza. Presently, the company has plans to establish other offices in Morogoro, Tabora, Shinyanga and Kahama.

- The company, through transport division of the MeTL Group, has been able to provide free transport facility for suppliers from the upcountry towns and motivate them for more collection of PET Bottles.
- The company is, also, from time-to-time is involved in waste collection campaigns in the cities and towns.

Management And Organisation

14.1 Organisation Structure

- The project will be under the general management of ECOF. The company has a Board of Directors responsible for the major policy and strategic issues. The Board is comprised of members representing the shareholders and other non-shareholders.
- The daily management issues will be under the General Manager (GM) who will be in-charge of all matters of the project. The GM will report to the company Chief Executive Officer (CEO).
- The GM will be assisted by different functional staff in Production, Finance and Administration, Marketing, and Engineering.
- The company's Organisation Chart is presented below:



14.2 Staffing

- The company is projecting to employ a total of 108-staff contingent excluding casual labourers. The staff contingent will comprise of the following:

    - Top management 5
    - Technical Managers 6
    - Supervisors 12
    - Workers 85

- The project is expected to employ 60% women and 40% men.

14.3 Remuneration

- The project will pay salaries and wages to the workers at competitive rates. Additionally, the project will provide the workers with other benefits including lunch at work place, transport services and other benefits.

14.4 Manpower Training on Factory Operation

- The management will mostly employ experienced workers so that they can easily adopt the system and good practices involved in efficient running of the plants.
- The management will identify the training needs of all the technical staff and will install systematic and focused training programs and refresher courses.

14.5 Human Resources Development

- ECOF in collaboration with other relevant stakeholders will provide training programs to workers on issues such as:
    - Plant maintenance
    - Plant operation and materials handling
    - Warehouse management
    - And other training courses

Implementation And Operational Plan

15.1 Implementing Agency

- The project will be implemented by ECOF. The management of the company will undertake to organize all the aspects of the project including the following:
  - Undertake construction of buildings and civil works
  - Arrange for PET flakes procurement and transportation
  - Procurement of machinery and equipment
  - Procurement of office equipment, furniture and fittings, utilities and motor vehicles.
  - Pre-operating expenses and initial working capital for the proposed project.
  - Provide working capital for the variable and fixed costs of the project.
  - Finance all cost over-runs resulting from the project.

15.2 Implementation Plan

- The company sought to obtained the Proforma Invoices from suppliers of all the plant; and machinery; and installed most of the plants.
- The buildings and civil works have been built using building specifications from the machinery supplier
- Except for the plants, the rest of the physical assets will be procured locally.

15.3 Operational Plan

- Upon completion of the implementation, ECOF will undertake to manage and operate the project.
- The shareholders of the company will provide strategic and policy directives to the project.

Risks And Uncertainties

16.1 Delays in Project Implementation

- A number of factors may lead to delays in project commissioning including statutory documentations, funds mobilisation and timely disbursement as well as machinery delivery and installation works.
- The shareholders have great experience in the industrial sector and will follow closely with the government technocrats and policy makers to reduce delays in the project implementation. The company will ensure all conditions with the financing partners are timely addressed. On the machinery procurement and installations, the risks are minimized by the choice of the turnkey structure.

16.2 Inflation risks

There is a potential risk that inflation might increase at higher rates than projected. This may increase the price of the final products hence reduce the demand for the product. While this risk usually prevails in Developing Countries like Tanzania, the government appears committed to continue maintaining the macroeconomic stability and bring inflation further down.

16.3 Political risks

The government may from time-to-time issue new directives (on issues such as regulations of plastic bottles usage, marketing of recycled materials, etc.) which may negatively impact on the project implementation and operations. This risk is strongly addressed by the fact that the Tanzania government has maintained long-term commitment of involving the private sector in policy decisions.

16.4 Managerial risks

Managerial risks – The management of plastic recycling industry requires close supervision and expertise in production and marketing. The company will employ personnel with experience in the PET bottles recycling industry in the fields of production and marketing.

Economic And Social Justification

17.1 Contribution to National Output

- The manufacturing sector in Tanzania is still relatively small but has a significant contribution to the country's overall GDP. Over the past decade the sector has averaged 8% of GDP and 4% annual growth rate. Most of the manufacturing activities is centered on simple consumer products such as foods, beverages, tobacco, textiles, chemicals, plastic, wood and steel allied products.
- The project will develop PET Recycling plant that will produce PET Hot Wash Flakes that will afford producers of plastic products using PET flakes in Tanzania and in the countries of export access the products at affordable prices.

17.2 Reduction of Plastic Pollution

- Polyethylene terephthalate (PET or PETE), which is a polyester plastic, is one of the most widely used packaging materials for beverages.
- Currently, Tanzania has more than 10 bottled beverages companies using PET bottles for packaging of carbonated soft drinks, bottled water and juices. The high supply competition in commercial cities and consumption of PET bottles have significantly increased. It is, therefore, that tons of plastic waste in the form of PET bottles are dumped in roadside drains or burned in landfill sites or on vacant land. The impact of plastic waste on communities and the environment is significant and far-reaching.
- Plastic recycling technology enables the process of recovering scrap or waste plasticandre processing the material into useful products, sometimes completely different in form from their original state. The project will recycle used PET bottles for other uses hence reduce the potential environmental impact.

17.3 Employment Creation

- The project will generate direct and indirect employment. The project will create more employment from use of materials sourced from the local market (used PET bottles).
- Besides the local inputs, the project will create employment from the value chain including collectors of used PET bottles, transporters and suppliers of consumables to the recycling company.

Financial And Economic Evaluation

18.1 Introduction

- This section presents the financial plan.
- The main objective of the financial analysis is to examine both commercial profitability and economic viability of the proposed project.
- The financial projections are divided into the following sections:
  - Investment and Financing Plans
  - Financial Results –
  - Machinery & Equipment Assumptions
  - Operations Assumptions

18.2 Financial Goals

The immediate financial goals of the company are as follows**:**

- Finance the investment costs through equity financing and external financing.
- Obtain funds from lending institutions to part-finance additional working capital.

18.3 Financial Assumptions

(i) General Financial Assumptions

- The currency of accounting is US Dollar
- The exchange rate of TZS to USD is assumed at TZS 2,500 to 1 USD.
- Financial projections for the first 10-years of operation have been worked out.
- Project Commissioning is within 1-year of project implementation.
- The project entails procurement and installation of machinery plants for producing recycled PET Granules.

(ii) Investment Plan

- Projected Investment costs and financing plan are presented in Annex 5 (i), and the detailed investment plans are presented in Annexes 5 (ii) and (iii)
- The total investment costs are estimated at USD 12.8 million which include the fixed assets, pre-operating costs and initial working capital as summarized below:

Annex 5 (i)

East Coast Oil & Fats Ltd

PET Bottles Recycling Plant - Granules Production

PROJECTED INVESTMENT AND FINANCING PLANS

Investment Plan	**Amount in USD**			
	Additional Investment			**TZS '000' Equivalents**
	Year 1	**Year 2**	**Total Additional**	
Exchange Rate (USD/TZS)	2,500.00	2,500.00		
Land & Land Development	175,000	-	**175,000**	**437,500**
Buildings & Civil works	225,500	-	**225,500**	**563,750**
Plant & Machinery	7,253,631	-	**7,253,631**	**18,134,078**
Utilities	419,320	-	**419,320**	**1,048,300**
Motor Vehicles	429,000	-	**429,000**	**1,072,500**
Office Furniture & equipment	86,900	-	**86,900**	**217,250**
Pre-Operating costs	456,000	-	**456,000**	**1,140,000**
Total Capital Expenditure	**9,045,351**	**-**	**9,045,351**	**22,613,378**
Working Capital	-	3,840,918	3,840,918	**9,602,295**
Total Investment	**9,045,351**	**3,840,918**	**12,886,269**	**32,215,673**

(iii) Financing Plan

- The proposed financing structure of the project include shareholders' equity and external financing.
- The external financing shall include long-term loan and short-term working capital loan facilities. The external financing will account for about 37% of the total financing requirements and the shareholders will account for 63%.
- The external loans financing amount to USD 6.0 million and equity financing of USD 6.8 million as follows:

Annex 5 (i)

East Coast Oil & Fats Ltd

PET Bottles Recycling Plant - Granules Production

PROJECTED INVESTMENT AND FINANCING PLANS

Financing Plan	**Amount in USD**			
	Additional Financing			**TZS '000' Equivalents**
	Year 1	**Year 2**	**Total Additional**	
Equity Financing				
Shareholders funds (capex)	5,045,351	-	5,045,351	**12,613,378**
Shareholders funds (W/capital)	-	1,840,918	1,840,918	**4,602,295**
Total Equity	**5,045,351**	**1,840,918**	**6,886,269**	**17,215,673**
External Financing				
Medium Term Loans				
Medium-Term Loan 1	4,000,000	-	4,000,000	**10,000,000**
Medium-Term Loan 2	-	-	-	**-**
Short-term Loans				
Bank Overdrafts	-	2,000,000	2,000,000	**5,000,000**
Other Short-term Facilities	-	-	-	**-**
Total External Financing	**4,000,000**	**2,000,000**	**6,000,000**	**15,000,000**
Total Financing	**9,045,351**	**3,840,918**	**12,886,269**	**32,215,673**
Exposure				
Equity Financing	56%	48%	53%	53%
External Financing	44%	52%	47%	47%

18.4 Operating Assumptions

(i) Depreciation Assumptions

- The Depreciation Schedules are presented in Annex 6.
- The depreciation and amortization rates are as indicated in the schedule.

(ii) Production Assumptions

- The projected production schedule is presented in Annex 7.
- The recycling plants are assumed to operate for 12-months in a year and 26-days a month.
- Recycling plants capacities –
    - The project has one processing plant with intake capacity of 2,500 kg of PET flakes per hour. This is equivalents to 60,000 kg and 18.72 million kg of PET Flakes per day and year, respectively.
    - A summary of the plant's manufacturing capacity is as summarised below:

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plant Operation							
Plant Operation	Hours/Day	-	24	24	24	24	24
	Days/Month	-	26	26	26	26	26
	Month/Year	-	12	12	12	12	12
	Days/Year	-	312	312	312	312	312
Plant Capacity							
Flakes Intake	**Kg/Hour**	**-**	**2,500**	**2,500**	**2,500**	**2,500**	**2,500**
	Kg/Day	-	60,000	60,000	60,000	60,000	60,000
	Kg/Month	-	1,560,000	1,560,000	1,560,000	1,560,000	1,560,000
	Kg/Year	-	18,720,000	18,720,000	18,720,000	18,720,000	18,720,000

- Quantity Processed –
    - The project is assumed to process PET Flakes from recycled used PET bottles. These PET bottles are produced by all the players in the beverages and water industry in the country.
    - The project will produce PET Granules from recycled used PET bottles which were used to pack carbonated soft drinks, bottled water and juices.

- PET Granules Produced –
    - The project is assumed to operate at 60% capacity utilization in the first year of operation producing 11.2 million kg of PET Granules in the first year.
    - The project has conservatively assumed to increase production by 5% annually as summarized below:

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plant Capacity Utilisation	%	-	60%	66%	73%	80%	85%
PET Flakes Consumed	MT/Year	-	11,232	12,355	13,591	14,950	15,847
Clear PET Flakes	KG/Year	-	3,931,200	4,324,320	4,756,752	5,232,427	5,546,373
Blue PET Flakes	KG/Year	-	3,369,600	3,706,560	4,077,216	4,484,938	4,754,034
Green PET Flakes	KG/Year	-	0	0	0	0	0
White PET Flakes	KG/Year	-	3,369,600	3,706,560	4,077,216	4,484,938	4,754,034
Extra Colour PET Flakes	KG/Year	-	561,600	617,760	679,536	747,490	792,339
PET Flakes Consumed	**KG/Year**	**-**	**11,232,000**	**12,355,200**	**13,590,720**	**14,949,792**	**15,846,780**
Conversion Ratio							
PET Flakes to PET Granules	Kg	-	1.0	1.0	1.0	1.0	1.0
Granules Produced							
Clear PET Granules	KG/Year	-	3,931,200	4,324,320	4,756,752	5,232,427	5,546,373
Blue PET Granules	KG/Year	-	3,369,600	3,706,560	4,077,216	4,484,938	4,754,034
Green PET Granules	KG/Year	-	0	0	0	0	0
White PET Granules	KG/Year	-	3,369,600	3,706,560	4,077,216	4,484,938	4,754,034
Extra Colour PET Granules	KG/Year	-	561,600	617,760	679,536	747,490	792,339
PET Granules Produced	**KG/Year**	**-**	**11,232,000**	**12,355,200**	**13,590,720**	**14,949,792**	**15,846,780**
	MT/Year	-	11,232	12,355	13,591	14,950	15,847

(iii) Revenues Assumptions

- The projected revenues assumptions are presented in Annex 8.
- Product Pricing and prices –
    - The project has assumed the prices to increase by 2% annually and the initial ex-factory price of USD 1,200 per ton of recycled PET Granules.
    - The revenues are projected to increase by 4% annually due to the projected increase in annual production as well as projected annual price increases.

Projected Revenues						
	Amount in USD					
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Granules Pricing & Prices						
Annual Price Increase	2%	2%	2%	2%	2%	2%
Selling Price	1,200	1,224	1,248	1,273	1,299	1,325
Projected Revenues						
PET Granules	-	13,747,968	15,425,220	17,307,097	19,418,563	20,995,350
Other Revenues	-	-	-	-	-	-
Projected Revenues	**-**	**13,747,968**	**15,425,220**	**17,307,097**	**19,418,563**	**20,995,350**
Revenues Growth	-	-	12%	12%	12%	8%

(iv) Operating Costs Assumptions

- The projected operating costs assumptions include direct and indirect operating costs and have been presented in Annex 8.
- The direct operating costs include costs related to purchase of recycled PET Flakes, utilities costs (water and electricity), consumables (cleaning chemicals and spare parts for plants maintenance), labour and other direct costs.

Direct Operating Costs		
	USD/MT of Granules	
PET Flakes	460	USD/Year
Utilities		
Electricity costs	64.0	USD/Year
Water	16.0	USD/Year
Consumables		
Cleaning Chemicals	75.0	USD/Year
Plant Maintenance & Repair	45.0	USD/Year
Labour Charges	30.0	USD/Year
Other Direct Costs	10.0	USD/Year

- The indirect operating costs include salaries and staff benefits, administration expenses and marketing and distribution costs.
- The projected operating costs are as summarized below.

Projected Operating Costs							
		Amount in USD					
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Change in Costs	Percentage	2%	2%	2%	2%	2%	2%
Direct Operating Costs							
PET Flakes	USD/Year	-	5,166,720	5,683,392	6,251,731	6,876,904	7,289,519
Utilities	USD/Year	-	898,560	988,416	1,087,258	1,195,983	1,267,742
Consumables	USD/Year	-	1,347,840	1,482,624	1,630,886	1,793,975	1,901,614
Labour Charges	USD/Year	-	336,960	370,656	407,722	448,494	475,403
Other Direct Costs	USD/Year	-	112,320	123,552	135,907	149,498	158,468
Total Direct Operating Costs	**USD/Year**	**-**	**7,862,400**	**8,648,640**	**9,513,504**	**10,464,854**	**11,092,746**
% of Revenues	Percentage	-	57%	56%	55%	54%	53%
Indirect Operating Costs							
Salaries & Staff Benefits	USD/Year	-	2,016,000	2,056,320	2,097,446	2,139,395	2,182,183
Administrative Expenses	USD/Year	-	739,320	752,378	765,698	779,284	793,142
Marketing & Selling expenses	USD/Year	-	100,800	102,816	104,872	106,970	109,109
Exchange Loss	USD/Year	-	0	0	0	0	0
Total Indirect Operating Costs	**USD/Year**	**-**	**2,856,120**	**2,911,514**	**2,968,017**	**3,025,649**	**3,084,434**
% of Revenues	Percentage	-	21%	19%	17%	16%	15%
Projected Operating Costs	**USD/Year**	**-**	**10,718,520**	**11,560,154**	**12,481,521**	**13,490,503**	**14,177,180**
% of Revenues	Percentage	-	78%	75%	72%	69%	68%

18.5 Financial Results

- The financial results are presented in the Profit and Loss Statements and Cash-flow Statements and Balance Sheets.

(i) Projected Profitability

- Profitability of the project has been carried out and presented in Annex 1.
- The analysis of the profitability of the overall project indicates that the project is a profitable undertaking with short-term returns to the investors. The summary of the projected Profit and Loss Statements for the first 10-years of operation is presented.

ANNEX 1
East Coast Oil & Fats Ltd
PET Bottles Recycling Plant - Granules Production
Projected Profit &Loss Statements

		Amount in USD					
	Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Projected Revenues							
PET Granules Revenues		-	13,747,968	15,425,220	17,307,097	19,418,563	20,995,350
Less: Value Added Tax (VAT)	0%	-	-	-	-	-	-
Net Revenues		**-**	**13,747,968**	**15,425,220**	**17,307,097**	**19,418,563**	**20,995,350**
Revenue Growth		-	-	12%	12%	12%	8%
Direct Operating Costs							
PET Flakes		-	5,166,720	5,683,392	6,251,731	6,876,904	7,289,519
Utilities		-	898,560	988,416	1,087,258	1,195,983	1,267,742
Consumables		-	1,347,840	1,482,624	1,630,886	1,793,975	1,901,614
Labour Charges		-	336,960	370,656	407,722	448,494	475,403
Other Direct Costs		-	112,320	123,552	135,907	149,498	158,468
Total Direct Operating Costs		**-**	**7,862,400**	**8,648,640**	**9,513,504**	**10,464,854**	**11,092,746**
Gross Profits/(Loss)		**-**	**5,885,568**	**6,776,580**	**7,793,593**	**8,953,708**	**9,902,604**
Gross Margins		-	43%	44%	45%	46%	47%
Indirect Operating Costs							
Salaries & Staff Benefits		-	2,016,000	2,056,320	2,097,446	2,139,395	2,182,183
Administrative Expenses		-	739,320	752,378	765,698	779,284	793,142
Marketing & Selling expenses		-	100,800	102,816	104,872	106,970	109,109
Exchange Loss		-	-	-	-	-	-
Total Indirect Operating Costs		**-**	**2,856,120**	**2,911,514**	**2,968,017**	**3,025,649**	**3,084,434**
EBITDA		**-**	**3,029,448**	**3,865,066**	**4,825,576**	**5,928,059**	**6,818,170**
EBITDA Margins		-	22%	25%	28%	31%	32%
Depreciation & Amortisation		-	339,968	313,404	291,289	294,263	274,478
Profit Before Interest + Tax		-	**2,689,480**	**3,551,662**	**4,534,287**	**5,633,796**	**6,543,692**
Loans Interest Expenses							
Medium Term Loans							
Medium-Term Loan 1		-	320,000	240,000	160,000	80,000	-
Medium-Term Loan 2		-	-	-	-	-	-
Short-term Facilities		-	192,046	214,102	238,599	265,811	285,475
Total Interest Expenses		**-**	**512,046**	**454,102**	**398,599**	**345,811**	**285,475**
Profit/(Loss) Before Tax		**-**	**2,177,434**	**3,097,560**	**4,135,687**	**5,287,985**	**6,258,217**
Provision Corporate Tax	30%	-	653,230	929,268	1,240,706	1,586,395	1,877,465
Net Profit/(Loss)		-	**1,524,204**	**2,168,292**	**2,894,981**	**3,701,589**	**4,380,752**
Net Margins		-	11%	14%	17%	19%	21%
		-					
Retained Earnings		-	**1,524,204**	**3,692,496**	**6,587,477**	**10,289,066**	**14,669,818**
Cumulative Retained Earnings		-	**1,524,204**	**5,216,700**	**11,804,177**	**22,093,243**	**36,763,061**

(ii) Projected cash flow Statements

- The projected cash flows statements are presented in Annex 2.
- The project will have cashflow deficit in the first 2-years of operation which will turn into positive in the 3rd year, subsequently.

ANNEX 2
East Coast Oil & Fats Ltd
PET Bottles Recycling Plant - Granules Production
Projected Cash Flow Statements

	Amount in USD					
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Cash Inflows						
Equity Financing						
Shareholders funds (capex)	5,045,351	-	-	-	-	-
Shareholders funds (W/capital)	-	1,840,918	-	-	-	-
Retained Earnings	-	-	-	-	-	-
Equity Financing	**5,045,351**	**1,840,918**	**-**	**-**	**-**	**-**
External Financing						
Medium-Term Loan 1	4,000,000	-	-	-	-	-
Medium-Term Loan 2	-	-	-	-	-	-
Short-term Loans	-	-	-	-	-	-
External Financing	**4,000,000**	**-**	**-**	**-**	**-**	**-**
Sales Revenues						
PET Granules Revenues	-	13,747,968	15,425,220	17,307,097	19,418,563	20,995,350
Less: Value Added Tax (VAT)	-	-	-	-	-	-
Net Sales Revenues	**-**	**13,747,968**	**15,425,220**	**17,307,097**	**19,418,563**	**20,995,350**
Total Inflaws	**9,045,351**	**15,588,886**	**15,425,220**	**17,307,097**	**19,418,563**	**20,995,350**
Cash Outflows						
Capital Investment						
Land & Land Development	175,000	-	-	-	-	-
Buildings & Civil works	225,500	-	-	-	-	-
Plant & Machinery	7,253,631	-	-	-	-	-
Utilities	419,320	-	-	-	-	-
Motor Vehicles	429,000	-	-	107,250	-	-
Office Furniture & equipment	86,900	-	-	-	-	-
Pre-Operating Expenses	456,000	-	-	-	-	-
Capital Investment	**9,045,351**	**-**	**-**	**107,250**	**-**	**-**
Change in Working Capital	-	3,840,918	441,121	489,949	544,239	393,278
Direct Operating Costs						
PET Flakes	-	5,166,720	5,683,392	6,251,731	6,876,904	7,289,519
Utilities	-	898,560	988,416	1,087,258	1,195,983	1,267,742
Consumables	-	1,347,840	1,482,624	1,630,886	1,793,975	1,901,614
Labour Charges	-	336,960	370,656	407,722	448,494	475,403
Other Direct Costs	-	112,320	123,552	135,907	149,498	158,468
Direct Operating Costs	**-**	**7,862,400**	**8,648,640**	**9,513,504**	**10,464,854**	**11,092,746**
Indirect Operating Costs						
Salaries & Staff Benefits	-	2,016,000	2,056,320	2,097,446	2,139,395	2,182,183
Administrative Expenses	-	739,320	752,378	765,698	779,284	793,142
Marketing & Selling expenses	-	100,800	102,816	104,872	106,970	109,109
Exchange Loss	-	-	-	-	-	-
Indirect Operating Costs	**-**	**2,856,120**	**2,911,514**	**2,968,017**	**3,025,649**	**3,084,434**
Loans Interest Expenses						
Medium Term Loans						
Medium-Term Loan 1	-	320,000	240,000	160,000	80,000	-
Medium-Term Loan 2	-	-	-	-	-	-
Short-term Facilities	-	192,046	214,102	238,599	265,811	285,475
Total Interest Expenses	**-**	**512,046**	**454,102**	**398,599**	**345,811**	**285,475**
Loans Principal Repayment						
Medium-Term Loan 1	-	1,000,000	1,000,000	1,000,000	1,000,000	-
Medium-Term Loan 2	-	-	-	-	-	-
Total Principal Repayment	**-**	**1,000,000**	**1,000,000**	**1,000,000**	**1,000,000**	**-**
Corporate Tax	**-**	**653,230**	**929,268**	**1,240,706**	**1,586,395**	**1,877,465**
Dividends	**-**	**-**	**-**	**-**	**-**	**-**
Total Cash Outflows	**9,045,351**	**16,724,714**	**14,384,645**	**15,718,025**	**16,966,949**	**16,733,398**
Net Cash Flows	**-**	**(1,135,828)**	**1,040,575**	**1,589,072**	**2,451,614**	**4,261,952**
Opening Cash Balance	-	-	(1,135,828)	(95,253)	1,493,819	3,945,433
Closing Cash Balance	**-**	**(1,135,828)**	**(95,253)**	**1,493,819**	**3,945,433**	**8,207,385**
TZS Equivalents (in 'million')	-	(2,840)	(238)	3,735	9,864	20,518

(iii) Projected Balance Sheets

- The projected balance sheet is presented in Annex 3.
- The projected balance sheet shows that the net physical assets are decreasing overtime due to depreciation. The total net assets increase overtime due to increased net current assets over time. The project will have positive net current assets throughout the project life-time.

ANNEX 3
East Coast Oil & Fats Ltd
PET Bottles Recycling Plant - Granules Production
Projected Balance Sheets

	Amount in USD					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Fixed Assets						
Fixed Assets	9,045,351	9,045,351	8,705,383	8,499,229	8,207,940	7,913,676
Less: Depreciation	-	339,968	313,404	291,289	294,263	274,478
Total Net Capital Assets	**9,045,351**	**8,705,383**	**8,391,979**	**8,207,940**	**7,913,676**	**7,639,198**
Current Assets:						
Cash Balances	-	0	0	1,493,819	3,945,433	8,207,385
Trade Debtors	-	1,694,955	1,901,739	2,133,752	2,394,069	2,588,468
Advance Payments	-	659,149	737,989	824,712	920,108	989,950
Inventories	-	1,711,203	1,896,410	2,101,857	2,329,776	2,488,737
Other Current assets	-	446,949	488,646	534,329	584,396	621,732
Total Current Assets	**-**	**4,512,256**	**5,024,784**	**7,088,468**	**10,173,782**	**14,896,271**
Current Liabilities:						
Trade Creditors	-	564,985	633,913	711,251	798,023	862,823
Administrative Expenses	-	60,766	61,839	62,934	64,051	65,190
Marketing & selling costs	-	-	-	-	-	-
Accruals	-	-	-	-	-	-
Direct Labour	-	6,462	7,108	7,819	8,601	9,117
Other Current Liabilities	-	39,125	39,884	40,658	41,447	42,253
Total Current Liabilities	**-**	**671,338**	**742,745**	**822,662**	**912,122**	**979,382**
Net Current Assets	**-**	**3,840,918**	**4,282,039**	**6,265,806**	**9,261,659**	**13,916,889**
Total Net Assets	**9,045,351**	**12,546,301**	**12,674,018**	**14,473,746**	**17,175,335**	**21,556,087**
Financed By:						
Equity Financing						
Shareholders funds (capex)	5,045,351	5,045,351	5,045,351	5,045,351	5,045,351	5,045,351
Shareholders funds (W/capital)	-	1,840,918	1,840,918	1,840,918	1,840,918	1,840,918
Profit/Loss Account	0	1,524,204	3,692,496	6,587,477	10,289,066	14,669,818
Total equity	**5,045,351**	**8,410,473**	**10,578,765**	**13,473,746**	**17,175,335**	**21,556,087**
External Financing						
Medium-Term Loan 1	4,000,000	3,000,000	2,000,000	1,000,000	-	-
Medium-Term Loan 2	-	-	-	-	-	-
Short-term facilities (O/D, etc.)	-	1,135,828	95,253	-	-	-
Total external financing	**4,000,000**	**4,135,828**	**2,095,253**	**1,000,000**	**-**	**-**
Total Financing	**9,045,351**	**12,546,301**	**12,674,018**	**14,473,746**	**17,175,335**	**21,556,087**

(iv) Other Economic Benefits

- Tax Income –
    - The project will pay income taxes, property taxes, corporate taxes and other taxes to the government.
- Dividends –
    - The shareholders will receive dividends from the project.
- Jobs Creation –
    - The project will create more than 85 direct jobs and 0ver 200 indirect employments.
- Generation of foreign currency-
    - The project will lead to reduced expenditure of foreign currency as the country will import less of PET granules for virgin PET bottles manufacturing.
- Industrial development –
    - The project will add to the stock of industries to the economy. Tanzania is in a great need for industrial development, an important factor for the country's economic growth and development.

(v) General Comments

- The project financial and economic analysis suggests that the project is financially viable and economically feasible. The project will be able to meet its financial obligations from internally generated incomes.
- The project will be able to pay-back to the equity investors from the incomes generated from sale of its finished products.

Finance Requirements

19.1 Introduction

- ECOF is investing in the PET Granules manufacturing industry by establishment of new recycled PET Flakes process plant at an estimated cost of USD 9.0 million on capital expenditure and USD 3.8 million for initial working capital.
- The promoters will inject equity to the tune of USD 6.8 million to part-finance the project and the balance will come from external sources (USD 6.0 million).

19.2 Funds Required

- The project will require a total of USD 12.8 million as cash requirements for the project implementation. The project's funds requirements are as follows:

Annex 5 (i)

East Coast Oil & Fats Ltd

PET Bottles Recycling Plant - Granules Production

PROJECTED INVESTMENT AND FINANCING PLANS

Financing Plan	Amount in USD			TZS '000' Equivalents
	Additional Financing			
	Year 1	Year 2	Total Additional	
Equity Financing				
Shareholders funds (capex)	5,045,351	-	5,045,351	**12,613,378**
Shareholders funds (W/capital)	-	1,840,918	1,840,918	**4,602,295**
Total Equity	**5,045,351**	**1,840,918**	**6,886,269**	**17,215,673**
External Financing				
Medium Term Loans				
Medium-Term Loan 1	4,000,000	-	4,000,000	**10,000,000**
Medium-Term Loan 2	-	-	-	**-**
Short-term Loans				
Bank Overdrafts	-	2,000,000	2,000,000	**5,000,000**
Other Short-term Facilities	-	-	-	**-**
Total External Financing	**4,000,000**	**2,000,000**	**6,000,000**	**15,000,000**
Total Financing	**9,045,351**	**3,840,918**	**12,886,269**	**32,215,673**
Exposure				
Equity Financing	56%	48%	53%	53%
External Financing	44%	52%	47%	47%

19.3 Sources and Uses of Funds

- The project will utilize the equity and external sources of funds for buildings and civil works, plant and machinery, working capital and other support facilities as summarized below:

PET Bottles Recycling Plant - Granules Production			
	Amount in USD		
	Year 1	Year 2	Total
Equity Financing			
Land & Land Development	175,000	-	175,000
Buildings & Civil works	225,500	-	225,500
Plant & Machinery	3,253,631	-	3,253,631
Utilities	419,320	-	419,320
Motor Vehicles	429,000	-	429,000
Office Furniture & equipment	86,900	-	86,900
Pre-Operating costs	456,000	-	456,000
Working Capital	-	1,840,918	1,840,918
Equity Financing	**5,045,351**	**1,840,918**	**6,886,269**
External Financing			
Plant & Machinery	4,000,000	-	4,000,000
Working Capital	-	2,000,000	2,000,000
External Financing	**4,000,000**	**2,000,000**	**6,000,000**
Total Financing	**9,045,351**	**3,840,918**	**12,886,269**
Exposure			
Equity Financing	56%	48%	53%
External Financing	44%	52%	47%

19.4 Proposed Terms and Conditions

- The project is seeking for USD 4,000,000 external finance facilities in the form of long-term loan and USD 2.0 million in the form of short-term working capital facilities including Bank Overdraft loans/Letters of credits and other facilities.
- The Loan Repayment Schedule is presented in Annex 10.
- The following are the proposed Terms and Conditions of the proposed Term Loan:

Type of facility	Long-term Loan
Loan Currency	➢ United States Dollar (USD)
Loan Amount	➢ 4,000,000
Moratorium period	➢ 12- months on Principal and Interest
Mode of disbursement	➢ Direct disbursement to the account of promoters/supplier/ contractors/consultants
Loan tenure	➢ 5-years excluding 1-year of grace on Principal
Mode of repayment	➢ Quarterly Payments from sale of the products
Interest rate	➢ Floating rate of 8% p.a.

19.5 Security of the loan

- The collateral offered against the requested loan is all assets of the proposed project.

Conclusion And Recommendations

- Economic and population growth and industrialization in the world together cause an increase in the amount of waste. As a consequence of all these, while the more intensive use of natural resources is inevitable, the wastes created by the ever-increasing consumption tendency have reached the huge amounts that threaten the environment and human health due to their quantity and harmful contents.
- Polyethylene terephthalate (PET) is a versatile material and has a wide range of applications such as clothing, acoustic panels, sportswear, agricultural nets, nonwovens, sheets and films, straps, engineering resins, food and beverage bottles, bottles, packaging materials, reinforcement in building construction, etc.
- Among these products, bottle grade PET is generally used for water and beverage packaging due to its lightweight, inexpensive price, resistance to microorganisms, and light. Bottles of water, soft drinks, and other beverages constitute 83–84% of global PET resin requirement. Furthermore, the projected demand for PET packaging materials was forecasted to reach 20 million tons by 2019 with an annual increase of 4.6%
- PET Granules are obtained from PET bottle wastes after a series of procedures such as sorting, washing, grinding, drying, etc. Because of environmental reasons initially, the recycling of PET bottles has now become commercially attractive. Furthermore, as petroleum prices increase, recycling of PET becomes more financially feasible rather than a virgin PET.
- The project is intending to process PET Hot Wash Flakes to produce PET Granules for the local market.
- The assessment of the viability of the proposed project demonstrates the project is a medium-term investment and a profitable venture. In view of the analysis, it is recommended to the promoters to undertake the project and find an external partner to participate in the co-financing of the project.

Annex 5 (i)

East Coast Oil & Fats Ltd

PET Bottles Recycling Plant - Granules Production

PROJECTED INVESTMENT AND FINANCING PLANS

Investment Plan	**Amount in USD**			
	Additional Investment			**TZS '000' Equivalents**
	Year 1	**Year 2**	**Total Additional**	
Exchange Rate (USD/TZS)	2,500.00	2,500.00		
Land & Land Development	175,000	-	**175,000**	**437,500**
Buildings & Civil works	225,500	-	**225,500**	**563,750**
Plant & Machinery	7,253,631	-	**7,253,631**	**18,134,078**
Utilities	419,320	-	**419,320**	**1,048,300**
Motor Vehicles	429,000	-	**429,000**	**1,072,500**
Office Furniture & equipment	86,900	-	**86,900**	**217,250**
Pre-Operating costs	456,000	-	**456,000**	**1,140,000**
Total Capital Expenditure	**9,045,351**	**-**	**9,045,351**	**22,613,378**
Working Capital	-	3,840,918	3,840,918	**9,602,295**
Total Investment	**9,045,351**	**3,840,918**	**12,886,269**	**32,215,673**

Financing Plan	**Amount in USD**			
	Additional Financing			**TZS '000' Equivalents**
	Year 1	**Year 2**	**Total Additional**	
Equity Financing				
Shareholders funds (capex)	5,045,351	-	5,045,351	**12,613,378**
Shareholders funds (W/capital)	-	1,840,918	1,840,918	**4,602,295**
Total Equity	**5,045,351**	**1,840,918**	**6,886,269**	**17,215,673**
External Financing				
Medium Term Loans				
Medium-Term Loan 1	4,000,000	-	4,000,000	**10,000,000**
Medium-Term Loan 2	-	-	-	**-**
Short-term Loans				
Bank Overdrafts	-	2,000,000	2,000,000	**5,000,000**
Other Short-term Facilities	-	-	-	**-**
Total External Financing	**4,000,000**	**2,000,000**	**6,000,000**	**15,000,000**
Total Financing	**9,045,351**	**3,840,918**	**12,886,269**	**32,215,673**
Exposure				
Equity Financing	56%	48%	53%	53%
External Financing	44%	52%	47%	47%

ANNEX 1

East Coast Oil & Fats Ltd

PET Bottles Recycling Plant - Granules Production

Projected Profit &Loss Statements

Amount in USD

	Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Projected Revenues											
PET Granules Revenues		-	13,747,968	15,425,220	17,307,097	19,418,563	20,995,350	21,415,257	21,843,562	22,280,433	22,726,042
Less: Value Added Tax (VAT)	0%	-	-	-	-	-	-	-	-	-	-
Net Revenues		**-**	**13,747,968**	**15,425,220**	**17,307,097**	**19,418,563**	**20,995,350**	**21,415,257**	**21,843,562**	**22,280,433**	**22,726,042**
Revenue Growth		**-**	-	12%	12%	12%	8%	2%	2%	2%	2%
Direct Operating Costs											
PET Flakes		-	5,166,720	5,683,392	6,251,731	6,876,904	7,289,519	7,289,519	7,289,519	7,289,519	7,289,519
Utilities		-	898,560	988,416	1,087,258	1,195,983	1,267,742	1,267,742	1,267,742	1,267,742	1,267,742
Consumables		-	1,347,840	1,482,624	1,630,886	1,793,975	1,901,614	1,901,614	1,901,614	1,901,614	1,901,614
Labour Charges		-	336,960	370,656	407,722	448,494	475,403	475,403	475,403	475,403	475,403
Other Direct Costs		-	112,320	123,552	135,907	149,498	158,468	158,468	158,468	158,468	158,468
Total Direct Operating Costs		**-**	**7,862,400**	**8,648,640**	**9,513,504**	**10,464,854**	**11,092,746**	**11,092,746**	**11,092,746**	**11,092,746**	**11,092,746**
Gross Profits/(Loss)		**-**	**5,885,568**	**6,776,580**	**7,793,593**	**8,953,708**	**9,902,604**	**10,322,511**	**10,750,817**	**11,187,688**	**11,633,296**
Gross Margins		**-**	43%	44%	45%	46%	47%	48%	49%	50%	51%
Indirect Operating Costs											
Salaries & Staff Benefits		-	2,016,000	2,056,320	2,097,446	2,139,395	2,182,183	2,225,827	2,270,343	2,315,750	2,362,065
Administrative Expenses		-	739,320	752,378	765,698	779,284	793,142	807,276	821,694	836,400	851,400
Marketing & Selling expenses		-	100,800	102,816	104,872	106,970	109,109	111,291	113,517	115,788	118,103
Exchange Loss		-	-	-	-	-	-	-	-	-	-
Total Indirect Operating Costs		**-**	**2,856,120**	**2,911,514**	**2,968,017**	**3,025,649**	**3,084,434**	**3,144,395**	**3,205,555**	**3,267,938**	**3,331,568**
EBITDA		**-**	**3,029,448**	**3,865,066**	**4,825,576**	**5,928,059**	**6,818,170**	**7,178,117**	**7,545,262**	**7,919,750**	**8,301,728**
EBITDA Margins		**-**	22%	25%	28%	31%	32%	34%	35%	36%	37%
Depreciation & Amortisation		-	339,968	313,404	291,289	294,263	274,478	166,797	174,463	158,594	145,392
Profit Before Interest + Tax		-	**2,689,480**	**3,551,662**	**4,534,287**	**5,633,796**	**6,543,692**	**7,011,320**	**7,370,799**	**7,761,156**	**8,156,337**
Loans Interest Expenses											
Medium Term Loans											
Medium-Term Loan 1		-	320,000	240,000	160,000	80,000	-	-	-	-	-
Medium-Term Loan 2		-	-	-	-	-	-	-	-	-	-
Short-term Facilities		-	192,046	214,102	238,599	265,811	285,475	289,570	293,720	297,925	302,188
Total Interest Expenses		**-**	**512,046**	**454,102**	**398,599**	**345,811**	**285,475**	**289,570**	**293,720**	**297,925**	**302,188**
Profit/(Loss) Before Tax		**-**	**2,177,434**	**3,097,560**	**4,135,687**	**5,287,985**	**6,258,217**	**6,721,750**	**7,077,079**	**7,463,230**	**7,854,149**
Provision Corporate Tax	30%	-	653,230	929,268	1,240,706	1,586,395	1,877,465	2,016,525	2,123,124	2,238,969	2,356,245
Net Profit/(Loss)		-	**1,524,204**	**2,168,292**	**2,894,981**	**3,701,589**	**4,380,752**	**4,705,225**	**4,953,956**	**5,224,261**	**5,497,904**
Net Margins		-	11%	14%	17%	19%	21%	22%	23%	23%	24%
		-									
Retained Earnings		-	**1,524,204**	**3,692,496**	**6,587,477**	**10,289,066**	**14,669,818**	**19,375,043**	**24,328,998**	**29,553,260**	**35,051,164**
Cumulative Retained Earnings		-	**1,524,204**	**5,216,700**	**11,804,177**	**22,093,243**	**36,763,061**	**56,138,104**	**80,467,102**	**110,020,362**	**145,071,526**

ANNEX 3

East Coast Oil & Fats Ltd

PET Bottles Recycling Plant - Granules Production

Projected Balance Sheets

	Amount in USD									
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
Fixed Assets										
Fixed Assets	9,045,351	9,045,351	8,705,383	8,499,229	8,207,940	7,913,676	7,746,448	7,579,651	7,405,189	7,353,844
Less: Depreciation	-	339,968	313,404	291,289	294,263	274,478	166,797	174,463	158,594	145,392
Total Net Capital Assets	**9,045,351**	**8,705,383**	**8,391,979**	**8,207,940**	**7,913,676**	**7,639,198**	**7,579,651**	**7,405,189**	**7,246,594**	**7,208,453**
Current Assets:										
Cash Balances	-	0	0	1,493,819	3,945,433	8,207,385	12,890,253	17,935,677	23,234,425	28,685,229
Trade Debtors	-	1,694,955	1,901,739	2,133,752	2,394,069	2,588,468	2,640,237	2,693,042	2,746,903	2,801,841
Advance Payments	-	659,149	737,989	824,712	920,108	989,950	1,008,184	1,026,419	1,044,654	1,062,888
Inventories	-	1,711,203	1,896,410	2,101,857	2,329,776	2,488,737	2,508,294	2,528,242	2,548,590	2,569,344
Other Current assets	-	446,949	488,646	534,329	584,396	621,732	633,314	644,945	656,626	668,358
Total Current Assets	**-**	**4,512,256**	**5,024,784**	**7,088,468**	**10,173,782**	**14,896,271**	**19,680,282**	**24,828,325**	**30,231,197**	**35,787,660**
Current Liabilities:										
Trade Creditors	-	564,985	633,913	711,251	798,023	862,823	880,079	897,681	915,634	933,947
Administrative Expenses	-	60,766	61,839	62,934	64,051	65,190	66,351	67,536	68,745	69,978
Marketing & selling costs	-	-	-	-	-	-	-	-	-	-
Accruals	-	-	-	-	-	-	-	-	-	-
Direct Labour	-	6,462	7,108	7,819	8,601	9,117	9,117	9,117	9,117	9,117
Other Current Liabilities	-	39,125	39,884	40,658	41,447	42,253	43,074	43,912	44,766	45,638
Total Current Liabilities	**-**	**671,338**	**742,745**	**822,662**	**912,122**	**979,382**	**998,622**	**1,018,246**	**1,038,263**	**1,058,680**
Net Current Assets	**-**	**3,840,918**	**4,282,039**	**6,265,806**	**9,261,659**	**13,916,889**	**18,681,661**	**23,810,079**	**29,192,934**	**34,728,980**
Total Net Assets	**9,045,351**	**12,546,301**	**12,674,018**	**14,473,746**	**17,175,335**	**21,556,087**	**26,261,312**	**31,215,268**	**36,439,529**	**41,937,433**
Financed By:										
Equity Financing										
Shareholders funds (capex)	5,045,351	5,045,351	5,045,351	5,045,351	5,045,351	5,045,351	5,045,351	5,045,351	5,045,351	5,045,351
Shareholders funds (W/capital)	-	1,840,918	1,840,918	1,840,918	1,840,918	1,840,918	1,840,918	1,840,918	1,840,918	1,840,918
Profit/Loss Account	0	1,524,204	3,692,496	6,587,477	10,289,066	14,669,818	19,375,043	24,328,998	29,553,260	35,051,164
Total equity	**5,045,351**	**8,410,473**	**10,578,765**	**13,473,746**	**17,175,335**	**21,556,087**	**26,261,312**	**31,215,268**	**36,439,529**	**41,937,433**
External Financing										
Medium-Term Loan 1	4,000,000	3,000,000	2,000,000	1,000,000	-	-	-	-	-	-
Medium-Term Loan 2	-	-	-	-	-	-	-	-	-	-
Short-term facilities (O/D, etc.)	-	1,135,828	95,253	-	-	-	-	-	-	-
Total external financing	**4,000,000**	**4,135,828**	**2,095,253**	**1,000,000**	**-**	**-**	**-**	**-**	**-**	**-**
Total Financing	**9,045,351**	**12,546,301**	**12,674,018**	**14,473,746**	**17,175,335**	**21,556,087**	**26,261,312**	**31,215,268**	**36,439,529**	**41,937,433**

Annex 4

East Coast Oil & Fats Ltd

PET Bottles Recycling Plant - Granules Production

Projected Internal Rate of Return, Net Present Value & Payback Period

Amount in USD

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Cash InFlows:										
Net Profit/(Loss)	-	1,524,204	2,168,292	2,894,981	3,701,589	4,380,752	4,705,225	4,953,956	5,224,261	5,497,904
Depreciation	-	339,968	313,404	291,289	294,263	274,478	166,797	174,463	158,594	145,392
Salvage Value										7,208,453
Total InFlow	**-**	**1,864,172**	**2,481,696**	**3,186,271**	**3,995,853**	**4,655,230**	**4,872,021**	**5,128,418**	**########**	**12,851,749**
Cash OutFlows:										
Capital Costs	9,045,351	-	-	107,250	-	-	107,250	-	-	107,250
Net change in Operating expenses	-	3,840,918	441,121	489,949	544,239	393,278	81,903	82,994	84,107	85,242
Total OutFlow	**9,045,351**	**3,840,918**	**441,121**	**597,199**	**544,239**	**393,278**	**189,153**	**82,994**	**84,107**	**192,492**
Net InFlow/(OutFlow)	**(9,045,351)**	**(1,976,746)**	**2,040,575**	**2,589,072**	**3,451,614**	**4,261,952**	**4,682,868**	**5,045,424**	**5,298,749**	**12,659,257**

Cost of Loan Funds	**8.0%**
Net Present Value (NPV)	**USD 12,460,389**
Internal Rate of Return (IRR)	**24.3%**

Payback Period

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Capital Investments	-9,045,351	0	0	-107,250	0	0	-107,250	0	0	-107,250
Undiscounted Net Flow	-9,045,351	2,689,480	3,551,662	4,427,037	5,633,796	6,543,692	6,904,070	7,370,799	7,761,156	8,049,087
Cumulative Undiscounted Net Flow	-9,045,351	-6,355,871	-2,804,209	1,622,828	7,256,623	13,800,316	20,704,386	28,075,185	35,836,341	43,885,428
Normal Payback Period	**3 Years**									

Return on Investment

Capital Investment	9,045,351	9,045,351	9,045,351	9,152,601	9,152,601	9,152,601	9,259,851	9,259,851	9,259,851	9,367,101
Net Profit	-	1,524,204	2,168,292	2,894,981	3,701,589	4,380,752	4,705,225	4,953,956	5,224,261	5,497,904
	-	17%	24%	32%	40%	48%	51%	53%	56%	59%
Average Returns on Investement	38%									