



BUSINESS PLAN

Washing and extrusion plant of PE and PET waste



Ministry of Economy of the Central Bosnia Canton

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INVESTMENT REQUIREMENTS

Equipment:	1.250.000	EUR
Working capital:	200.000	EUR
Total:	1.450.000	EUR
Sources:		
I - Establishing Capital:	200.000	EUR
II- Loan:	1.250.000	EUR
Grace period:	12	months
Payback period:	84	months

SUMMARY

The project is designed to collect/purchase PE-PP and PET waste and then further process it on the plant for washing and extrusion of PE-PP and PET waste. It is going to be organized in two segments:

1. collection and purchase of PE-PP and PET waste and further processing of that waste for production of regranulate, and
2. further processing of the waste and making industrial foil parallel with the regranulate.

The capacity utilization is planned to increase gradually every year for certain percentage and the capacity utilization is calculated with some 90% of the full capacity according to technical specification of the equipment.

Problem identified:

Enormous quantities of waste is ending up in the environment all over the country. Yet, the collecting activities in Bosnia and Herzegovina are still on very low level. The new project will contribute in great extent in cleaning the environment throughout collecting waste by installing several press machines on different locations across the country, where the collection of PE-PP and PET waste would be organized, and besides those collecting points, the new company will also purchase this sort of waste from other suppliers.

Business system:

The project will in general concentrate its activities on the project's strengths and opportunities, as well as on requirements of the customers.

The management team:

The management team will be made up of five people with very good qualifications and ample experience. All team members are fully committed to the project and determined to make a success of washing and extrusion plant for PE-PP and PET waste. The team comprises of people with extensive experiences for the positions they will be covering and comprehensive knowledge required for starting and developing the project.

1. INTRODUCTION

1.1. Purpose

The purpose of the project is to launch a new, modern and enlarged business activity for washing and extrusion of PE-PP and PET waste, where the company will organize buying of used and waste product range of PE-PP (Polyethylene-Polypropylene) and PET (Polyethylene terephthalate) material in a new business entity, which will be the main business activity, with the purpose of further processing of the collected used and waste material. The entire project consists of two segments, which are in connection with each other and that can be seen as follows:

- Segment 1 - collection and purchase of PE-PP and PET waste and further processing of that waste for production of regranulate for the market;



- Segment 2 - processing of the above mentioned waste and making industrial foil parallel with the regranulate



1.2. Project idea

The idea is to establish a new company that will be responsible for launching and running modern washing and extrusion plant for both PE-PP and PET waste. The whole activity is to be organized in business premise that will consist of indoor space of approximately 2000 m² and outdoor space, "economic yard", of approximately 3000 m², where the collected material will be stored. The business premise is to be rented. The entire process will be organized in three shifts and the technological process can be divided in two segments, as already mentioned above. It can be described as follows. PE-PP and PET waste will be purchased from several different sources; from one or two big companies, supplier(s) from Bosnia and Herzegovina, plus, two years following the project implementation, it will be purchased also from domestic suppliers, where the company plans to install several press machines on different locations in Bosnia and Herzegovina as buying off points, where purchasing of waste material would be organized; and/or import of waste material would also be organized, if and when necessary from abroad, in the first place from Croatia and from Serbia. The waste will be sorted and stored in the economic yard, and then it will be included in further processing on fully automated process. Firstly it goes to grinding lane, as the first step of the process being performed on washing and extrusion plant for PE-PP and PET waste. Next steps in fully automated process are deep washings, three times, and then spin drying.

In segment 1, after all these steps and processing on the washing and extrusion plant are completed, the dried material will be melted and end product for the phase 1 will be regranulate, which opens much wider potential market for the new company as every company in the industry, and wider, uses and need regranulate for their production processes, yet, there are no companies in BiH that are dealing with regranulate production.

In segment 2, which will require new investment in additional equipment that will enable production of industrial foil and which will be logical sequence of segment 1 in year 4 of the project development process, part of produced regranulate will be used for further processing where the company will bring the degree of its processing to a higher level, and where the company will produce industrial foil out of the self-produced regranulate, which will be used now as raw material in segment 2. If and when necessary, for segment 2, it will be considered for the new company to expand its capacities by purchasing new equipment in order to be able to meet required capacity for both, regranulate production and for production of industrial foil. The investment is planned to be financed from company's internal sources as there will be sufficient cash for such an investment in the new equipment. It means that only a certain part of self-produced regranulate will be allocated and used for

production of industrial foil as a new product in production process, while at the same time the company will continue with production of regranulate for its customers. The reason why the new company plans starting the production of industrial foil, besides the regranulate production, is to expand the range of products and in that way make horizontal diversification where the company will make new products for new market, which allows the company to expand its markets and increase number of customers and thus reduce risk of dealing with only one or a few customers.

The washing capacity of the washing and extrusion plant for PE-PP and PET waste is 500 kg per hour, and the estimated projected capacity for regranulate production is more than 350 kg per hour, which amounts up to 250 tons on monthly basis taking into consideration that production will be organized in 3 shifts, 6 days in a week. For the reason that it will take some time to put the equipment into operation at full capacity, this plan suggests a conservative method of calculation so, as mentioned in finance analysis, we start with the income based on the quantity of 120 tons of regranulate PE and PET flakes on monthly basis, and that quantity will increase per slow rate on a yearly basis.

The overall concept of the project idea is indirectly helping to solve one of very actual problems that almost every town in Bosnia and Herzegovina is facing with - cleaning of the environment in general all over Bosnia and Herzegovina, as the situation in the country is still such that enormous quantities of waste is ending up all over the country and especially in riverbeds.

Production/service line	Degree of capacity utilization (2015)	% of share in overall activity
Activities		
Buying PE waste	500 tons	
Buying PET waste	100 tons	
Sorting the waste	600 tons	
Production of regranulate (automatic processing of PE-PP and PET waste)	600 tons	100%
Production of industrial foil (Segment 2 / 2018)	-	

Buying PE-PP and PET waste will be done from suppliers in Bosnia and Herzegovina in the first place, and also from abroad if necessary. The waste will be sorted by our employees and stored in economic yards, and thus made ready for recycling process. As already mentioned above, in segment 1 the new company will focus on production of regranulate out of collected PE-PP and PET waste, and besides domestic market, the regranulate in bigger part will be exported and sold out as end product for segment 1 to European market. Of course, plan is also to constantly expand the market and offer our products to other companies in Bosnia and Herzegovina and abroad who need and are interested in regranulate for their own production processes, as well as industrial foil.

1.3. SWOT analysis

STRENGTHS	WEAKNESSES
<p>Socially useful activity of waste processing - useful local role makes things easier; Collecting waste is still very undeveloped and the role of manpower in sorting the waste is inevitable, so low labor costs is very important factor, and there are no any serious industry in B&H for recycling plastic waste; Regardless the fact what kind of future will plastic have, recycling of plastic waste is inevitable in the following two decades; Experience and knowledge acquired</p>	<p>The entire project depends on a loan to be approved; New in recycling business with new equipment; New on EU market of PE regranulate and PET flakes; Business premises (to be rented)</p>
OPPORTUNITIES	THREATS
<p>Undeveloped activity of collection and recycling of plastic waste in B&H; Increasing demand for regranulate in domestic as well as in the world market; Irreplaceable role of human labor in the process of collecting and recycling of plastic waste, big rate of unemployment in B&H and low labor costs; The necessity of cooperation between public and private sector in B&H about resolving the issue of waste management; Market in constant growth</p>	<p>Uncertainty and lack of uniformity of regulations when it comes to the industry of plastic in B&H and in the world; Competition from other developing countries with low labor costs and large quantities of plastic waste; Uncertainty in economy policy in B&H, especially policy about waste management; Competition from the EU; Bureaucratic and administrative complications in B&H; Increase in price of raw material Increase in price of electricity and labor force</p>

2. EMPLOYMENT

EMPLOYMENT FOR THE NEW PROJECT:

		Yr. 1	Yr. 2	Yr. 3
1	New employees, production	22	31	34
2	New employees, administration:	4	4	4
3	New seasonal employees:	-	-	-
4	Totals:	26	35	38

BREAKDOWN OF ADDITIONAL EMPLOYEES:

	Total No. of employees	Year 1	Year 2	Year 3	Totals (Year IV - Year VII)
1	Men	10	15	18	20
2	Women	16	20	20	26
					46

New company will employ workers on the basis of previous experience and knowledge, where all nationalities will be equally represented. As far as skilled workers are concerned, we can say that 1 employee with experience will be required per shift, which means that we will need in total 3 workers with experience and they will cover positions of shift leaders. Other workers in a shift do not need much of experience, and some basic knowledge and experience will be acquired in a training period of 10 days. After training period, the best workers will be selected to cover positions of shift leaders, so each shift will have a group of experienced and skilled workers. Workers will also receive training by the supplier of washing and extrusion plant within contract obligations.

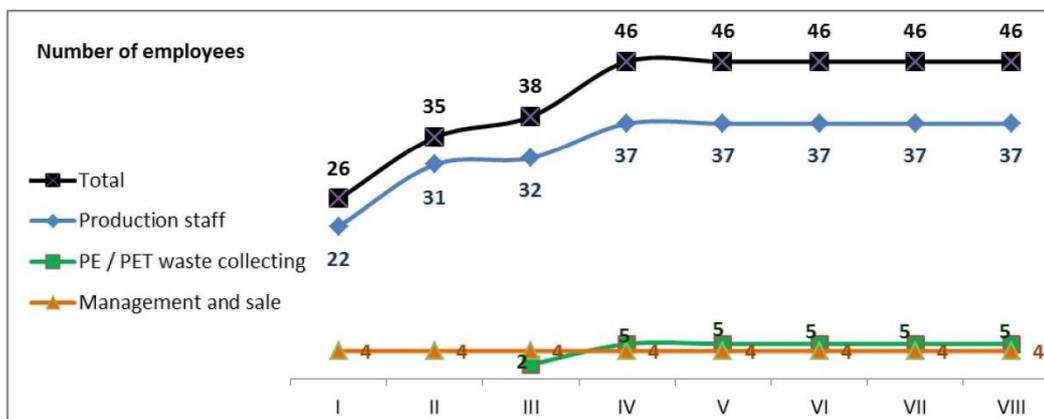
3. PRODUCTION

Workers will be trained and prepared for production that is to start by the end of 2015. year, and the expected production volume will be 120 tons per month at the first place during 2015, which is going to increase in the following years up to 230 tons on monthly basis.

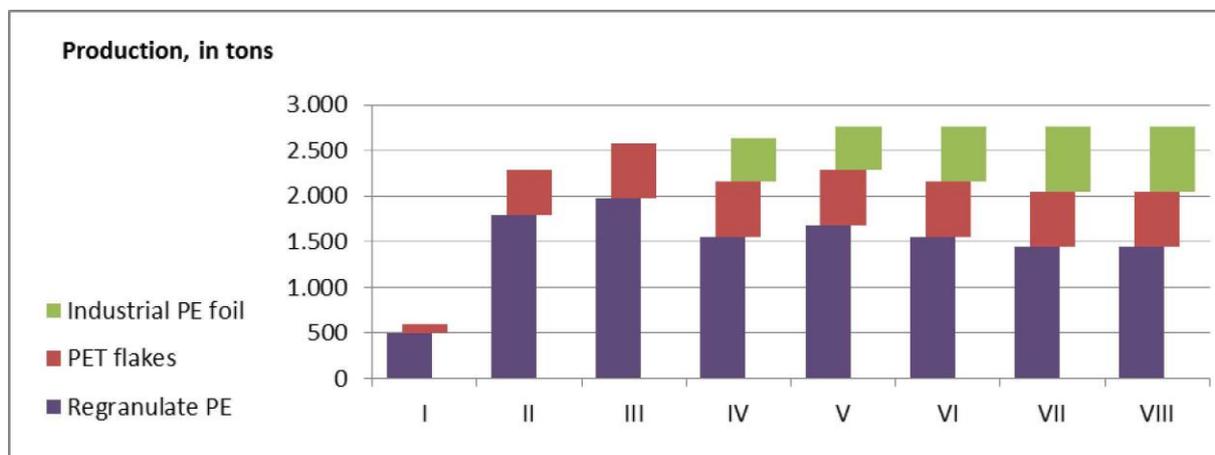
At the beginning, the production would be organized in two shifts, and by the beginning of 2016 the company would introduce the third shift.

Overview of number of employees and level of production are shown in the tables below.

Ref. No.	Number of employees	YEAR							
		I	II	III	IV	V	VI	VII	VIII
1	Production staff	22	31	32	37	37	37	37	37
2	PE / PET waste collecting			2	5	5	5	5	5
3	Management and sale	4	4	4	4	4	4	4	4
	Total	26	35	38	46	46	46	46	46



Ref. No.	Production	YEAR (Tons)							
		I	II	III	IV	V	VI	VII	VIII
1	Regranulate PE	500	1.800	1.980	1.560	1.680	1.560	1.440	1.440
2	PET flakes	100	480	600	600	600	600	600	600
3	Industrial PE foil				480	480	600	720	720
Total		600	2.280	2.580	2.640	2.760	2.760	2.760	2.760



4. USES AND THE SOURCES OF FOUNDS

INVESTMENTS IN FIXED ASSETS (in EUR)							
USES OF FUNDS		SOURCES OF FUNDS				INVESTMENT TIMING	
Description	Amount	Investment /Credit	Owner's New Inv.	Owner's Prior Inv.	Other Financing	Inv Mo-Yr	
Furniture, Fixtures, Equipment							
Washing and extrusion plant of PE and PET waste (Section 1 and Section 2)	1,250,000	1,250,000				2015	
Extruder (for industrial foil production)	110,000		110,000			2018	
Truck	30,000		30,000			2017	
Van, 2T (3 pieces)	45,000		45,000			2017	
Press machines (3 pieces)	30,000		30,000			2017/2018	
Other equipment	50,000		50,000			2015	
Subtotal:	1,515,000	1,250,000	265,000				
Buildings & Land							
Production site, 2000m ² Indoor space; 3000m ² Eco Yard space (to be rented)	100,000		100,000			2015	
Other buildings & land							
Subtotal:	100,000		100,000				
Working Capital							
Working capital (for starting production cycles)	200,000		200,000			2015	
Other working capital							
Subtotal:	200,000		200,000				
GRAND TOTAL:	1,500,000	1,250,000	565,000				

5. ENVIRONMENTAL IMPACT AND COMPLIANCE

Due to increasing quantities and harm that waste causes to the environment, the waste is considered as one of the biggest ecological problems of the modern world.

The situation in Federation of Bosnia and Herzegovina (FBiH), according to the Report on the state of the environment, made by the authorized institutions (Source: Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina; <http://www.mvteo.gov.ba/>) there is about 270 kg of municipal waste produced in FBiH per year per capita, and 36% of totally produced waste is not being taken care for at all by public utility companies. Furthermore, about 30% of paper waste is being recycled and only 6.4 of plastic waste is being recycled. From the other side, the industry in FBiH is producing about 2 million tons of industrial waste and only 5% of that waste is adequately cared for, whilst the rest of the waste is being disposed within industrial facilities or being disposed to the environment. All these things indicate that waste is becoming bigger and bigger problem in the country, so as far as this project and its impact to the environment are concerned; we can see it as something that can have positive impact to the environment. As earlier mentioned, a huge amount of PE and PET waste, besides the other waste, in Bosnia and Herzegovina is ending up in the environment. The recycling activity in the country is still on very low scale, and thus collection of the PE and PET waste from the environment is also on a very low level of organization. This project will through collecting PE and PET waste contribute in cleaning the environment in B&H, where such activities are still pretty undeveloped. Therefore this project will have positive aspect concerning the environment impact by collecting and purchasing the waste, which will be stored and sorted in the Economy yard within the new company facilities.



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