Form 1.
Summary of industrial blood, meat and bone meal powder production unit

1. Introduction to products or services

1.1. The goal of plan

The main goal of this plan is to establish blood, meat and bone meal powder production unit in Lorestan province. This plan will be exploited from 2017 with 12 personnel and 70% of the practical capacity in 1 working shift of 8 hours and 300 day annually and will reach its 100% of the practical capacity.

1.2. Characteristics and advantages

After the clean blood is dried, the blood meal powder is obtained. This product has to be free of urine, hair, stomach contents and so forth and it is prepared from collecting, drying and grinding the blood obtained from slaughterhouses. The meat meal powder is a product obtained from slaughterhouses' waste meat, canning, the corpse and animals useless parts which are inconsumable for human for any reasons as well as liver, heart and lungs and white parts such as stomach and intestine which are emptied and cleansed and feet. This product is a good source of vitamin B complex and particularly riboflavin, nicotine amid, B_{12}, trace elements such as copper, iron and manganese. The bone meal powder is obtained from complete or sliced parts of the livestock's bones such that the bones are washed first and then cured in particular tanks in 130℃ for 3 hours under the pressure of 4.5 at and the fat and gelatin are removed from the bones. Then, after cooled, the bone is grinded and produces powder. The ash bone is obtained the complete or sliced parts of the livestock such that, after removing fat, gelatin and other additional materials, the bones are burned as above in 550-600℃ furnace in vicinity of the air to complete whiteness. Then, the bones are grinded as ash.

1.3. Custom fees

Table1. Blood, meat and bone meal powder custom fees and tariffs

No.	Description	Tariff code	Fees
1	Flour, grain of meat, unsuitable for human food, animal fats dross	23011000	5
2	Meat products (as well as animals' blood products) not mentioned elsewhere.	16029000	40

1.4. ISIC code

The plant considered is for producing blood, meat and bone meal powder. The ISIC code related to this product is 1151 in the department of industry, mine and commerce systems in subgroup of processing and packing lateral productions of the slaughterhouses (animal meal) of birds and livestock and their packing and its measurement scale is ton.

Table3. Product ISIC code

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ISIC code	Description	Scale
1511512426	Bone powder obtained from livestock slaughterhouse (animal meal)	Ton
1511512427	Blood powder obtained from livestock slaughterhouse (animal meal)	Ton
1511512428	Red meat powder obtained from livestock slaughterhouse (animal meal)	Ton
1511512431	Bone powder obtained from birds slaughterhouse (animal meal)	Ton
1511512432	Blood powder obtained from birds slaughterhouse (animal meal)	Ton
1511512433	Bird meat powder obtained from birds slaughterhouse (animal meal)	Ton

1.5. Introduction to products application

Since the botanic proteins is challenged in livestock and birds food cycle due to being solely in term of amino acids balance, therefore one has to make used of the animal protein sources such as blood, meat and bone meal powders in this cycle. The experiences proved that making used of these sources is economical in term of the economy; of course these products follow the fish meal powder. Blood, bone and meat meal powders are highly significant in Iran and worldwide due to being protein and essential amino acids sources in birds and livestock and aquatic animal's food. At present, these products are consumed in poultry and livestock industries.

Blood meal powder usage:

Blood meal is constituent of 2% of the fat chicken food. Of course, making use of this product is limited 5-6%; because livestock doesn't tend to eat it. For this reason, it is stated that making use of this product in livestock meal typically needs a multiple month period for making the livestock accustomed to its taste. One has to always heat the blood before giving to the animals to prevent animals from being ill. Raw blood (fresh) should not be used before heating in 100℃ for 15 min. Of course; making use of this product for feeding the soil in agriculture is also common. Generally, the fertilizers resulted from the wastes of organisms is called organic fertilizer. Blood meal powder also is an organic fertilizer with higher nitrogen level. If it was consumed more than necessary level, it would cause plants burn in vicinity of ammonium. This product is water soluble and can be added to liquid fertilizer. One of the advantages of this product is that it doesn't transfer the BSE; therefore by having high protein at BSE time, blood meal powder is a good alternative for meat meal powder along with other complements.

Meat meal powder use

Meat powder constitutes up to 5% of the fat chicken food. Also it is used between 5-7% and at last 10% for livestock. If the protein of this product was not determined, it would be better not to make it used more than 4-5%. Its usage in domestic animals' meal such as dog and cat is the other usage, as it is used today in USA as a profitable market. In Europe also this is similar, but in Asia, meat meal is mostly used as an alternative for fossil fuels in many energy plants such as cement factories furnaces. It is stated that the bone and meat powders contain 66% of the fossil fuels energy such as coil. In England, this product is used for electricity generation. This issue

was started when bovine spongiform encephalopathy was prevalent in England. The Glanford plant is an example of these plants with 13.5 MW electricity generation power (this level is sufficient for 32000 homes). As a consequence, using this product is mostly in pisciculture farms as the low quality and second handed food (following the soya and fish powder). Of course, it is used for feeding the soil in agriculture, too. Generally, the fertilizers resulted from the wastes of organisms is called organic fertilizer. Making use of the meat powder for these applications is similar in different Europe. For example, German, France and Switzerland law is the strictest law in this line for making use of the blood and meat powder in nitrate fertilizers and this issue is due to the BSE. In some European countries such as Slovakia, there is tax and fine for making use of this product.

Blood powder use

Blood powder is used in concentrate producing units, fish meal producing factories, poultries and the livestock units.

2. Suggested sites

Based on surveys, the cities such as Aligudarz and Khoramabad are suitable sited for establishing this unit.

3. Raw, auxiliary materials and consumables

The raw materials include meat, blood and bone wastes and packing materials.

4. Sales plan and target market

The target market at first is to supply locally in sections and then for additional production, the export would be done to Iraq and western neighbor countries.

Table4. Products production and sales plan

Description	2017	2018	2019	2020
Production capacity	70%	80%	90%	100%
Meat powder	350000	400000	450000	500000
Blood powder	175000	200000	225000	250000
Bone powder	175000	200000	225000	250000
Oil	115850	132400	148950	165500
Production level:	815850	932400	1048950	1165500
Meat powder	2800	3200	3600	4000
Blood powder	2275	2600	2925	3250
Bone powder	1750	2000	2250	2500
Oil	463400	529600	5958000	6620000
Sales (m. Rials)	11459	13096	14733	16370

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5. Annual nominal and practical capacity

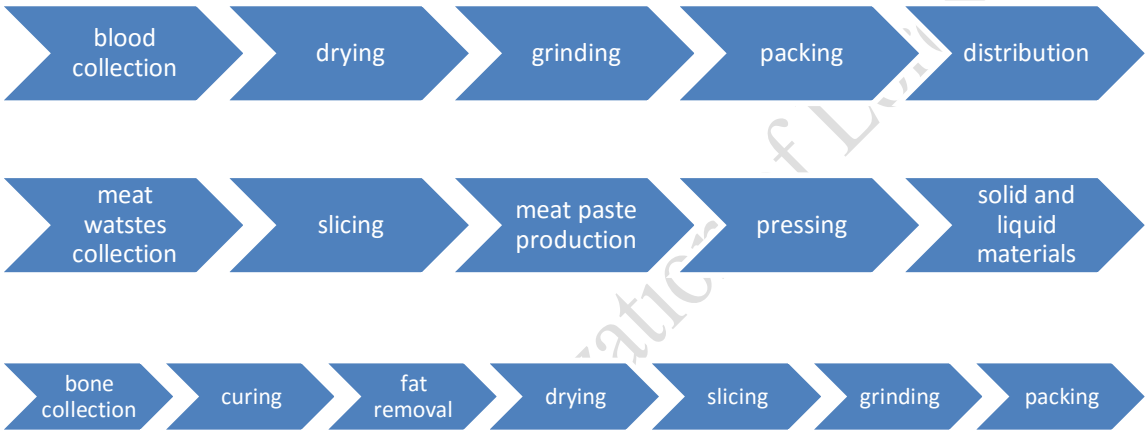
Nominal capacity

The Nominal capacity is the production in ideal situation. This capacity is registered by the machineries manufacturers and is based on the engineering and designing principles.

5.2. Practical capacity

The practical capacity is the maximum available capacity in typical situation which is considered as a percentage of the nominal one. The practical capacity for this unit is 1000 ton annually.

6. Production procedure and technology



7. Investment costs

7.1. Fixed investment

Table5. Investment costs

No.	Description	Total (m.Rial)			
		Dollar	Rial	Rial	Total
1	Land	1.000	1000	0	0
2	Landscaping	976	976	0	0
3	Building construction	7390	7390	0	0
4	Machineries and equipment	3981	3808	173	5000
5	Branches and installation	1569	1569	0	0
6	Vehicles	1250	1250	0	0
7	Service and official equipment	200	200	0	0
8	Other and unpredicted costs (5% of above costs)	818	818	0	0
9	Pre-exploiting costs	693	693	0	0
10	Total fixed investment costs	17704	17704	173	5000

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11	Working capital in 100% of capacity	1843	1843	0	0
12	Total investment costs	19720	19547	173	5000

7.2. Working capital

Table6. Working capital

No.	Description	Day	1st year	Base year
1	Raw and auxiliary materials	1	9	13
2	Current and produced products inventory	30	573	743
3	Debts	30	583	757
4	Cash	30	282	331
Total			1447	1843

8. Production costs

Table7. Production costs

Description	Total costs (m.Rial)
Raw and packing material	4690
Energy	421
Repair, maintenance and spare parts	791
Personnel's salary	2480
Unpredicted (6%)	503
Depreciation	1568
Insurance	29
Sales and official costs	164
Total operational and non-operational production costs	10644

9. Economic indices

Description	Amount-measurement scale
NPV	154295 m Rial
IRR	25.13%
PBP	5.87 years equal to 2020

Islamic Republic of Iran
Ministry of Economic Affairs and Finance
Organization for Investment
Economic and technical Assistance of Iran

PROJECT PROFILE – SUMMARY SHEET

Project Introduction

1. Project title: establishment of the blood meal, bone and meat powder unit

2. Sector: food and drinks producing
Sub sector: meat and meat products production and processing in order to prevent from spoilage

3. Products/Services: producing frozen fruit and vegetable in IQF method

4. Location: … Free zone ☐ Economic special zone ☐ Industrial Estate ■ Main Land ☐

5. Project description:
After the clean blood is dried, the blood meal powder is obtained. This product has to be free of urine, hair, stomach contents and so forth and it is prepared from collecting, drying and grinding the blood obtained from slaughterhouses.
The meat meal powder is a product obtained from slaughterhouses' waste meat, canning, the corpse and animal's useless parts which are inconsumable for human for any reasons as well as liver, heart and lungs and white parts such as stomach and intestine which are emptied and cleansed and feet. This product is a good source of vitamin B complex and particularly riboflavin, nicotine amid, B_{12}, trace elements such as copper iron and manganese.
The bone meal powder is obtained from complete or sliced parts of the livestock's bones such that the bones are washed first and then cured in particular tanks in 130℃ for 3 hours under the pressure of 4.5 at and the fat and gelatin are removed from the bones. Then, after cooled, the bone is grinded and produces powder. The ash bone is obtained the complete or sliced parts of the livestock such that, after removing fat, gelatin and other additional materials, the bones are burned as above in 550-600℃ furnace in vicinity of the air to complete whiteness. Then, the bones are grinded as ash.

6. Annual capacity: 1000 t / year

Project Status

7. Local / internal raw material access 100 %

8. Sale: 80% locally
- Anticipated export market 20 %

9. Construction Period 16 month
Beginning of activity: 03/2016
In-site beginning of activity: 03/2016
End of project: 09/2017
Commercial activity beginning: 10/2017

Project Status

10. Project Status:

- Feasibility study available?	Yes ■	No ☐
- Required land provided?	Yes ☐	No ■
- Legal permissions (establishment license, foreign currency quota, environment, etc) taken?	Yes ☐	No ■
- Partnership agreement concluded with local/foreign investor?	Yes ☐	No ■
- Financing agreement concluded?	Yes ☐	No ■
- Agreement with local / foreign contractor(s) concluded?	Yes ☐	No ■
- Infrastructural utilities (electricity, water supply, telecommunication, fuel, road, etc) procured?	Yes ☐	No ■
- List of know-how, machinery, equipment, as well as seller / builder companies defined?	Yes ☐	No ■
- Purchase agreement for machinery, equipments and know- how concluded?	Yes ☐	No ■

1 *Financial Structure*

11. Financial Table

Description	Local Currency Required			Foreign Currency Required Million Dollar	Total Million Dollar
	Million Rials	Rate	Equivalent in Million Dollar		
Fix Capital	17704	34530	0.51	0.01	0.51
Working Capital	1843	34530	0.05	0.00	0.05
Total Investment	19547	69060	0.57	0.01	0.57

- Value of foreign equipment/machinery 0.57 million dollar
- Value of local equipment/machinery 0.11 million dollar
- Value of foreign technical know- how 0 million dollar
- Value of local technical knows- how 0 million dollar

- Net Present Value (NPV): 1.542.095 million dollars for …. Year
- Internal Rate of Return (IRR) 25.13%
- Payback Period (PP) 4.87 Year (2020)

General Information

12. Project Type : Establishment ■ Expansion and completion ☐

13. Company Profile:

-Name (legal /natural persons): Sepinud Shargh institute of strategic studies
-Company Name: engineering consultation
-Address: unit 5, No. 3, Boostan 3 St., Pasdaran, Tehran
-Tel: 02122584901 Fax: 02122580343
-E-mail: info@sepinud.com Web site: www.sepinud.com

-Local entrepreneur : private sector ■ public sector ☐ other☐

Please attach follow documents if available

- Pre-feasibility study ■
- Feasibility study ☐
- Legal permissions (establishment license, foreign currency quota, environment, etc) ☐

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