Major Assignments in Food & Agro Processing

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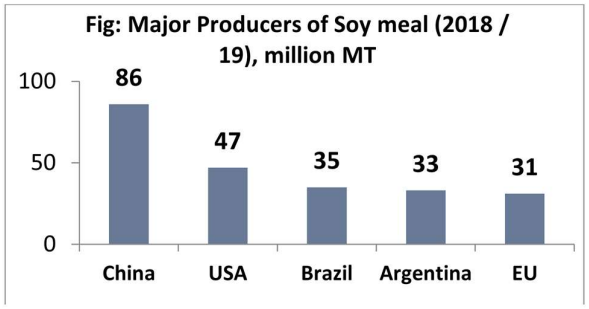
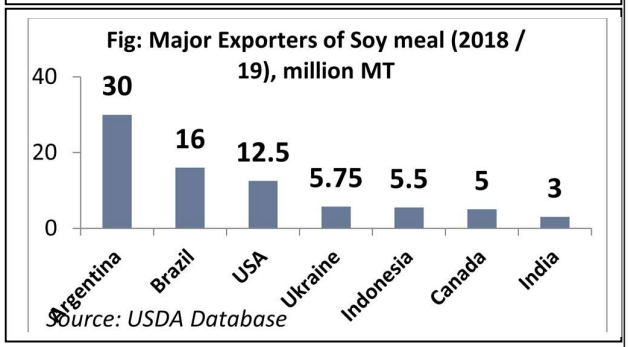
Detailed Project Report- Textured Soy Protein (TSP) Processing Plant & Value-Added Products

Investment Rationale

The recent consumer trend is showing a categorical shift in dietary preferences in many developed regions like Europe and other developed countries toward choosing plant-based protein products as a meat substitute.





Source: USDA Database

Assignment Highlights – DPR to setup a 100 Tons Per day Soybean Processing Plant primarily for production of Soya Oil, Soya Chunks for human consumption as a meat substitute and Soya Cake for stock feed manufacture. The assignment was for a key player from a major soybean producing area in Zambia.

Investment Proposition- The plant is an end to end factory with zero wastes, and soybeans processed products have some 365 applications. The primary products of the plant is initially TSP Soy Chunks, Vegetable Crude Oil, Soy Cakes and other associated products like Soy Milk, Tofu etc.

Off takers & Social Capital Creation- ***New Product Innovation:*** Soybean production is mostly concentrated in Central, Eastern and Northern Provinces. The project plans to contract minimum of 25 commercial farmers with 30,000 hectares of farmland and an estimated 12,000 smallholder farmers with 25,000 hectares across two Farming Blocks. The farmers are provided with credit in the form of inputs reflecting the correct & adequate quantity of fertilizer, seeds, insecticides as well as all other required inputs, such as extension services to maximize yield out of the farmers' land.

Current status- The business implementation model also included options of M&A or acquisition of a medium sized soy processing plant in the catchment area. This unit receives and stores soy beans on behalf of its shareholders or third-party clients. The Company is currently not adding value soy beans and only focussing on wheat flour production. The client intends to invest in this existing processing plant and restructure it. The client also aims to establish a hi-tech TSP plant integrating it to the existing set up. The funding requirements for the project is approximately US$ 40 million which includes a rolling facility to provide inputs to farmers.

KEY FINANCIAL INDICATORS	
Payback period	24 months
IRR (5 years horizon)	41%
NPV	US$ 35.8 million
Discount Rate	10%

INVESTMENT APPRAISAL						
	Year 0 US$ million	Year 1 US$ million	Year 2 US$ million	Year 3 US$ million	Year 4 US$ million	Year 5 US$ million
Outlay	-40					
Inflow		20.00	20.00	20.00	20.00	20.00
Present Value	-40					

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TSP Soybeans Processing And Value-Added Products

Interesting Snippet: ***In the 1930s, Henry Ford believed that industry and agri sector should complement one another! He pursued soybeans as a crop that might unite the two. Ford built a soybean laboratory in Greenfield Village. Experiments there led to the use of some soy-based oils and plastics in Ford Motor Company vehicles.***

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Detailed Project Report- Knik Knacks And Corn Flakes Production

Investment Rationale

Global breakfast cereal market primarily constitutes products like biscuits, corn flakes, bread and bakery products, cakes, brownies, pastries pasta, noodles etc.

Ready-to-eat (RTE) cereals such as cornflakes and muesli are preferred breakfast choices in North America and European regions, characterized by less preparation time and high demand for gluten free products. These constitute almost 60% of the total breakfast cereals market globally (Source: Statistica).

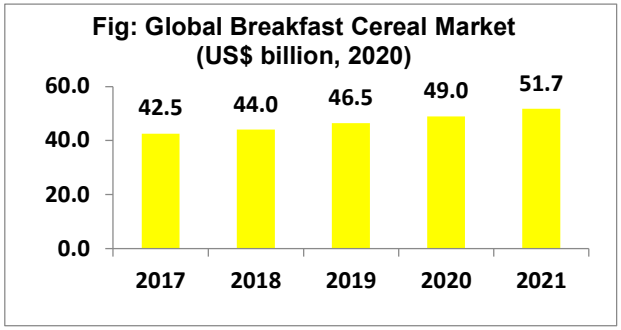
Investment Highlights – Client aims to establish one production unit of 7 TPD for manufacture and sale of cornflakes and knick knacks.

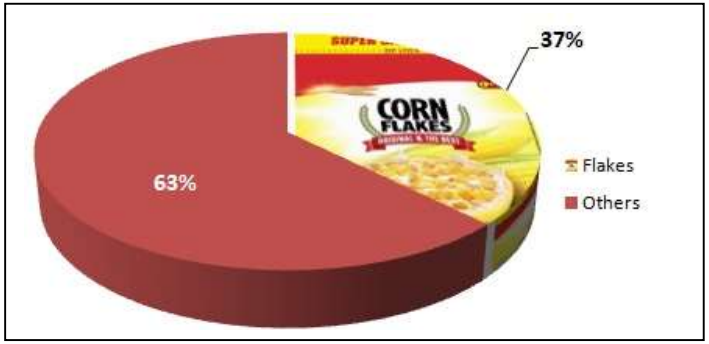
Investment Proposition- Zambia is known as being one of the leading maize growers globally. Client along with its collaborators have an out grower scheme with almost 250,000 small hold farmers and associated with over a production base of over 125,000 hectares. This ensures steady backward integration and supply chain integration for maize, which is the main raw material for production of corn flakes and knick knacks. Client wants to get into the breakfast cereals segment and compete with existing brands like KP Snacks, Nik Naks SA, Simba, Quavers, Skips and United Biscuits and other local brands in the regional market.

Offtakers, Social Capital- Nutrition & Value Addition: Apart from the business case for getting into breakfast cereals sector through manufacturing and marketing of corn flakes and knick knacks, it also has the potential of integrating maize value chain in Zambia, infuse value addition and provide an assured market linkage for hundreds of thousands of small hold farmers.

Supporting Activities- With the current outgrower scheme in place, client is providing credit packages of seed, organic manure, fertilizer besides providing training and capacity building of the farmers, particularly the small hold growers.

KEY FINANCIAL INDICATORS	
Payback period	36 months
IRR (5 years horizon)	20%
NPV	US$ 3.2 million
Discount Rate	10%





	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Outlay	Outlay	-12				
Inflow	Inflow		4.00	4.00	4.00	4.00

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Knik Knacks And Corn Flakes Production








"A good and just world where people are not just fed but fulfilled"...Vision Statement of Kellog's, the pioneer and trendsetter in Corn flakes in 1906!

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Detailed Project Report- Animal Feed Manufacturing

Investment Rationale

World compound feed production is estimated at over one billion tonnes annually. Global commercial feed manufacturing generates an estimated annual turnover of over US$ 400 billion (Source: IFIF). The African region is currently estimated to be producing over 60 million tonnes of animal feed annually, with USA being the leader with 177 million tonnes and closely followed by the EU 28 producing 165 million tonnes of animal feed . Within the African region, South Africa is the largest producer constituting almost 45% of the total regional production.

KEY FINANCIAL INDICATORS	
Payback period	**23 months**
IRR (5 years horizon)	**46%**
NPV	**US$ 26.2 million**
Discount Rate	**10%**

Investment Highlights – Proposal is to setup set up an animal feed manufacturing plant using mainly local raw materials such as like maize, wheat and soybeans. Zambia has been experiencing increasing demand for poultry, fish and livestock, and therefore, demand for good quality feed is rising. Over the last two decades, there has been rapid growth in the poultry industry with recent annual growth rates averaging 8 per cent. There is unmet demand of fishes, over 77,000 metric tons (MT) per year. the trade statistics show a more than 15-fold increase in fish imports to Zambia over the last 10 years (Source: documents.worldbank.org).

Investment Proposition- Zambia has been experiencing increasing demand for poultry, fish and livestock, and as a consequence, demand for good quality feed is rising. The proposed capacity for the feed plant is 50,000 tons per annum. The capital investment is US$ 25 million. The annual direct costs of production are projected at US$ 30 million. The net margin can be estimated to be around US$ 12 million

Off takers: It is proposed that the primary offtake of the feed will include the captive related party companies that are involved in large scale poultry and fish production and cattle feedlots. Offtake contracts will also be established with leading large scale stock farmers and the export market.

Convergence- It is proposed that the animal feed factory will be linked to the proposed TSP Soya processing plant and a wheat project that is to be acquired. The soya and wheat mills will supply Soya cake and wheat bran to the animal feed factory.

INVESTMENT APPRAISAL						
	Year 0 US$ million	Year 1 US$ million	Year 2 US$ million	Year 3 US$ million	Year 4 US$ million	Year 5 US$ million
Outlay	**-25**					
Inflow		**13.50**	**13.50**	**13.50**	**13.50**	**13.50**
Present Value	**-25**					

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Business Plan For Macadamia Farming Hub & Processing Facility

Investment Rationale

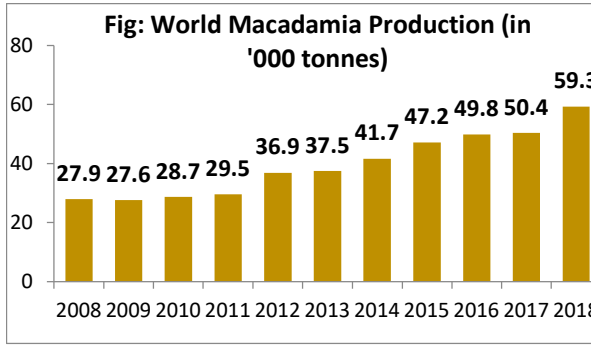
The global Macadamia Nuts market size is projected to reach USD 1782.8 million by 2026, from USD 1369 million in 2020, at a CAGR of 4.5%. In the African region, Kenya is the largest producer and exporter of macadamia nuts, ranking third in the world in terms of exports. Zambia can emerge as a major player in near future, with concerted efforts on increasing production, more processing facilities and an export oriented value chain integration.

Investment Highlights –Develop Hitech Macadamia nurseries for quality planting material, establish processing facility and undertake value chain integration of macadamia with a focus on export. The project will be rolled out in two districts of Zambia. Client aims to engage and source from over 1,000 macadamia farmers in the two regions by 2026, improving these farmers' access to a profitable value chain, developing local emergent farmers into SME agriculture businesses and establishing market linkages.

Investment Proposition- ***Sustainable and Traceable Macadamia:*** Project aims to invest US$ 40 million support for establishing hitech nurseries, processing facilities, develop the irrigation facilities in Mkushi and Serenje apart from supporting the farmers end to end with quality input supplies to farmers. AGR would strengthen the smallholder out grower through profitable agro-forestry model for growing spices, chili, paprika as intercrop with macadamia nuts. In addition, client will also invest in installing out grower database software to manage the program. The database would capture productivity, sales and farmer training data and improve product traceability and internal auditing.

Offtakers & Social Capital- Client received interest from the leading commercial farmers in Zambia to partner with, together with a leading Macadamia processing and marketing company, from South Africa, to setup a processing facility for Macadamia. In 2019/20 alone, more than 120,000 macadamia nut trees were delivered to Zambia's Mkushi farmers, representing a minimum of 400 ha planted. The proposed venture would also provide up to 2,000 hectares of year-round irrigation to local smallholder farmers to grow cash crops, such as chillies, and food crops.

Fig: World Macadamia Production (in '000 tonnes)



KEY FINANCIAL INDICATORS	
Payback period	40 months
IRR (5 years horizon)	25%
NPV	US$ 16.9 million
Discount Rate	10%

INVESTMENT APPRAISAL (US$ million)						
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Outlay	-40					
Inflow		15.00	15.00	15.00	15.00	15.00
Present Value	-40					

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Business Plan For Macadamia Farming Hub & Processing Facility

"From butters to yogurts, macadamia nuts will show up in different ways"...Forbes Magazine

Our Other Important & Related Assignments

Business Plan for Processing of Two Special Varieties of Lemon in India

Kachai Lemon (C. jambhiri Lush) popularly known as Kachai Champra locally is a native of the Kachai village in Ukhrul district of Manipur. Kachai Village is around 140 Kms from Imphal and 46 km approx. from Ukhrul district headquarters . Although Manipur has a GI tag for Kachai lemon, however, it can still be considered as an underutilized variety whose health and commercial potential is still to be tapped adequately. It has tremendous potential in the citrus industry because this variety has been found to exhibit a range of functional components and bioactive compounds with antioxidant capacity.

Fig: 30:70 Fresh Fruits and Juice Product Mix

Assam lemon (C. jambhiri) on the other hand is widely grown in the districts Dibrugarh, Golaghat, Cachar, Chirang, Nalbari and Dima Hasao in Assam. Agro-climatic conditions of Assam are the most congenial and some parts of few north other eastern states (like Tripura) are also suitable for this lemon cultivation.

An estimated 110000 MT of Assam lemon is produced every year from about 13200 ha of land which is mostly through conventional farming practices which are not organic. Manipur produces an estimated 5000 MT of lemon from Kachai village and from adjoining villages and few other districts too. The total production of all types of lemon in the state is about 22000 MT from an estimated area of about 3000 ha.

Business Plan for Processing of Mandarin in North Eastern Part of India

Madarin is produced more or less in all the 8 North Eastern States of India. It occupies an area of approximately over 100,000 hectares covering all the NER States and with a production of almost 500,000 tons. Mandarin cultivation occupies a prominent status in comparison with other horticultural products being cultivated in the region. However, compared to the oranges produced in other parts of the Country like Nagpur, Chhindwara, or the kinnows (hybrid mandarin) grown in several areas of Punjab or Rajasthan, produce from NER has yet not been able to create a market niche or a branding at national level despite its potential, exclusivity and quality. While Assam has the advantage of almost all the year round production in certain places within the State, mandarin of Meghalaya enjoys exclusivity and uniqueness for which it has received the GI tagging for its Khasi Mandarin. These variety has the potential to create a distinct market niche within the domestic market as well as in the export markets and in recent years, several efforts have been seen to be undertaken by related agencies to showcase, promote and market Khasi oranges as a brand

Exhibit: A Khasi Mandarin

Target States, area and production planning for Organic Orange Project		
State	**Area ('000 ha) to be Brought Under Organic Orange**	**Projected Production ('000 MT) From Organic Orange**
Sikkim	30	45
Arunachal Pradesh	20	40
Mizoram	10	25
Meghalaya	5	10
Total	65	120
Note: (First Year Planning with Subsequent Target of 15% increase in area and quantity in subsequent years till 5th Year of the Project)		