

Pre-Feasibility Study

Marble Tiles (SMEDA DOCUMENT)



Small and Medium Enterprises Development Authority Government of Pakistan

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1. PROJECT PROFILE

1.1. OPPORTUNITY RATIONALE

Housing and construction is one of the major drivers of growth in more than 40 allied industries including marble. This sector has witnessed the growth rate of 9.84%¹ in 2016-2017 as against extraordinary growth of 13.68 % in 2015-2016.

As per a report of the State Bank of Pakistan (SBP), the annual housing demand is 400,000 units in the country. This is the extent of the annual housing market in Pakistan, which positively pronounces a persistent growth in construction sector thereby substantiating opportunities and potential in marble tiles, which accounts for almost 7% to 10% of the total material use for the construction of a unit.

On the other hand, known marble reserves in enormous quantities ensure the availability of raw material for decades. Besides, development steps taken by the government for this sector, its high export merit in countries, where the construction of high buildings is brisk and progress in the value added products, a fair increase in the profit margins of the manufacturer are not difficult to predict.

1.2. PROJECT BRIEF

Natural marble in its wide range of colors, texture, crystals, and various finishing techniques, when properly applied, permit to décor every type of ambience beautifully. Marble is an expressive material and by its various types can make your ambience look sophisticated or simple, warm or cool, elegant or rustic, sumptuous or minimalist. The eternal life of marble is disconnected from fashion and enhances the beauty of our environment in the most natural way.

Tiles can be used on both the walls and floors. Specifically these can be laid in any part of the house i.e. bathrooms, kitchens, bedrooms, portico, foyer, driveway, drawing room/living rooms, study, lobby, etc.

The proposed project envisaged the manufacturing of marble tiles in various sizes and their sales in the local and export market. However, it is pertinent to note that during discussions with the industry players it was found that more than 90% of the marble tiles manufactured locally are used by the local construction industry.

The proposed marble tiles manufacturing unit will produce approximately 1500 sq. ft. of tiles daily utilizing 80% of total capacity. For this purpose, cutting and sizing machines will be installed. Large Size marble stone (10-15 ton) will be purchased from the suppliers and production facility will cut them into different sizes on the cutting

¹ Economic Survey of Pakistan 2016-2017

machinery and these cut to piece stone will further be converted into marble tiles using sizing machine. These tiles will be supplied to the whole sellers for distribution.

1.2.1. PRODUCTS:

1) Marble Tiles & Slabs

Marble is a natural stone in a class by itself, and for an air of sophistication and artistry, marble is the classic choice. Marble tiles and slabs are ornate and alluring with a naturally elegant appearance, and are suitable for a variety of effects. For an application such as a front hallway or foyer, marble tile flooring certainly sets an affluent and professional tone. Popular choices for unique, eye-catching statements in more casual settings as well, you can imagine the stunning effect of a marble tile floor in your kitchen, bathroom, or recreation room. Veined with rivulets of subtle color on varied background of earthy tones, marble tile flooring and marble slabs can be a subtle or a bold feature in the modern designer's vision.

2) Marble Countertops, Island Tops

Pakistani exporters have a very strong advantage to pre-fabricate & export Marble Natural stone tops such as Kitchen Countertop , Bathroom Vanity Top, restroom bowed vanity's, Bar Top , desk tops, worktops, and Shower Panel, Tub Surround, Window sill, Marble Panels tub, Granite Panel, Marble Panel, custom-built granite Vanity, granite Countertops, marble bowed Bathroom Vanity , table tops, Island tops, Vanity Cabinet, Counter tops, kitchen worktops ,Custom Marble Mantels, Vanity tops for hotel, Condo, Hospital Building etc.

Especially, Marble tiles are used in floor and walls of homes, public areas and mosques.

1.3. MARKET ENTRY TIMING

Marble tiles business depends on activity and movement in construction industry. Housing and construction as well as government initiated development projects demand mass availability of marble tiles all over the year. Therefore, a marble tiles manufacturing unit can be established at any time of the year.

1.4. PROPOSED BUSINESS LEGAL STATUS

The legal status of business tends to play an important role in any setup; the proposed marble tiles manufacturing unit is assumed to operate on Sole Proprietorship basis.

1.5. PROJECT CAPACITY AND RATIONALE

Production capacity of the proposed Marble tiles unit would depend on the market demand and size of the production facility. In the presence of latest machinery and continuity in production, it is estimated that the production will be 1500 sq. ft to 1800 sq. ft tiles per day at the beginning of the project utilizing 80% of total capacity. During discussions with the industry stakeholders operating in Karachi, it was estimated that there is a demand of hundreds of thousands sq. ft. of marble daily; therefore, the project's proposed capacity seems reasonable to begin with.

1.5.1. Raw Material Sourcing

Marble, Onyx and Granite mountains are found almost in every province of Pakistan, particularly in NWFP and Balochistan. The biggest known reserves of marble occur in NWFP from where it is supplied to the manufacturing industry all over the country. Industry located in Punjab mainly procure marble stone from NWFP, whereas, in Sindh where majority of the marble products manufacturing are mainly located in Manghopir—main source of material is Balochistan mines. Raw material is generally sourced from two sources:

- 1) Buying directly from Quarries
- 2) Buy from market (Manghopir, Sher Shah and Pak Colony)

Large scale manufacturers procure directly from quarries, whereas, small sized manufacturing units source material from suppliers or quarry contractors located in Manghopir. Due to heavy transportation cost of the material from NWFP, Karachi based manufacturing units procure material from Balochistan based suppliers. However, some of the marble colors are available only in NWFP (i.e. white marble) and manufacturers procure this marble directly from the quarry depending on the size of the contract.

Currently, Millat Marble and Zafar Zehri Marble Industries (Pvt) Ltd. are the largest quarry setup supplying all kinds of stones to this industry. Sometimes, large scale manufacturers establish a regular supply contract with the quarry in order to ensure backward integration of their production operations.

Buying directly from a Quarry: Quarry holders generally follow a bidding procedure to sell the stone in the market. Suppliers and manufacturers participate in the bidding process and offer the best (or highest) price depending upon the quality of the stone and size. In this process, stone bidding price vary according to quality and demand of the stone at that time. Since, most of the manufacturers depend on the availability of order

and follow ‘make to order’ operational procedure, this buying method is most suitable and eliminates the intermediaries, thereby minimizing the material cost.

Buying from open market: Dealers and suppliers who are mainly located in Manghopir and Pak Colony Karachi due to its proximity to Balochistan sell stone in various sizes, shapes and colors from one ton to 15 ton. The cut to size stone is priced higher than the quarry justified by reduced wastage ratio.

1.6. PROJECT INVESTMENT

The cost of the project including land requirement, building size, machines and equipment and utilities, personnel requirement is given below: -

Description	Cost
Building Construction Cost	11.88
Land	7.00
Machinery & Equipment	9.50
Vehicle	2.20
Furniture & Fixtures	0.10
Preliminary Expenses	0.50
Fixed Cost	31.18
Working Capital	4.36
Total Cost	35.54

A total of Rs. 35.54 million (approximately) is estimated to be the cost of the project. The working capital requirement is estimated around Rs 4.365 million, and Rs. 31.18 million would be the fixed investment; out of these Rs. 07 million would be used for the purchase of land and construction cost has been estimated at Rs. 11.88 million. An amount of Rs. 9.50 million has been estimated for the machinery and equipment. Rs. 0.5 million would be required for the arrangements and supply of the electricity. Prior permission would also be required from electricity suppliers for substantial electricity supply necessary for the production operations.

1.7. PROPOSED PRODUCT MIX

Currently demand of marble tiles exhibits a variety of colors and sizes. For the purpose of this pre-feasibility it is proposed to manufacture marble tiles which are high in local demand. These include tiles in the sizes of 12”X12” and 12”X24”. These sizes are also considered to be the standard, because, they can further be cut into other desired sizes which are high in demand.

Marble types which would mainly be used by the purposed unit would include batch type marble (local term used for Balochistan marble). This marble has further different categories defined by colors and shades & includes Fancy, Verona and multi.

1.8. RECOMMENDED PROJECT PARAMETERS

Capacity	Human Resource	Technology/ Machinery	Location
1500 sq.ft. daily (80% capacity utilised)	38	Local	Industrial areas of 1 st and 2 nd tier cities
Financial Summary			
Project Cost	IRR	NPV	Payback Period
Rs. 35.54 million	23%	Rs. 8,325,252	4 years 8 months

1.9. PROPOSED LOCATION

Proposed location for setting up a marble tiles manufacturing unit would largely depend on the availability of marble and its transportation cost. However, factors like availability of manpower, utilities and easy access to the target markets should also be carefully examined. For this pre-feasibility, we propose a location around Karachi, Lahore, Peshawar and other big cities where extensive construction is in progress and demand is high. Manghopir being the centre of marble products manufacturing industry has been proposed for this pre-feasibility.

1.10. KEY SUCCESS FACTORS/PRACTICAL TIPS FOR SUCCESS

Marble tiles business is dependent on the pricing and margins given to builders, suppliers and retail customers. Secondly, availability of good quality stone is also critical. Based on our discussions with the existing stakeholders, it was found that due to obsolete quarrying technology and conventional methods, stone quality plays a major role in stone pricing. In most of the cases it is expected that stone procured directly from quarry would have fractures inside and hence wastage would be 20% to 30%. Beside the stone quality, supply chain also plays critical role in the success of marble tiles business. During discussions with the existing players of the business, it was noted that product passes through three to five channels before final delivery to the user. These include, quarry operator, raw stone supplier, sized stone supplier, tiles manufacturer, tiles wholesaler and

tiles retailer. Reduced number of channels may increase the profit margins of the manufacturer. A new marble tiles manufacturer may eliminate wholesaler and retailer in order to increase his/her profit margins.

1.11. ORDERING AND DELIVERY PROCEDURE:

Product order depends on the process adapted by the manufacturer regarding the delivery. Around 80% to 90% of the total demand is derived from the local market, while in export market there may be two types of clients: (1) Local traders who procure orders from foreign country and contact the manufacturer for the supply. In such cases, trader provides a detailed product specification and order detail to the manufacturer with the delivery time and place. Manufacturer delivers products at the given location (2) Second scenario is the one when manufacturer has his/her own order procurement setup. He/she markets the product directly representing the company and generating orders through participation in the foreign trade fairs and exhibitions, personal visits to the whole sale buyers/direct marketing and through internet marketing. In such instances, customer provides the same details as for the local trader. Product shipment is made through LC (letter of credit) and pricing will depend on delivery terms i.e. FOB etc. It is suggested to contact local trade promotion agency (Trade Development Authority of Pakistan) to get suggestions on export market and procedures involved to sell marble products in the foreign markets.

1.12. PRODUCT MARKETING AND PACKING

These finished tile products are packed in wooden boxes generally made up of Eucalyptus / Mango wood each taking about 30-35 sq. m. of material of 7-15 mm thickness with specification tags and quantities. It should also be ensured that the items fit in boxes to avoid any breakage and damage to the product during transit. A 20 ft long container takes about 20 boxes of size 38" x 38" x 25". The quantity shipped per container depends on (1) The allowed weight at the destination port and (2) Upon the thickness of the stone.

Generally (with a variation of +/- 10%), the quantity of material that can be shipped in a 20 ft container would be the following (28 tons): (For 20 tons a pro-rata reduction is advised)

Thickness	Quantity (Approx)
7 - 15 mm	975 m ² /container
10 - 20 mm	775 m ² /container
15 - 25 mm	575 m ² /container
25 - 35 mm	390 m ² /container
35 - 45 mm	290 m ² /container
45 - 55 mm	230 m ² /container

As discussed with market experts, they provide extra packing on demand of client, i.e.

- a. The pallets lined inside with polythene sheets.
- b. Box Packing
- c. Thermopol sheets (for polished tiles)

In the Marble tiles manufacturing industry, marketing is considered to be of significant importance while going into the export market. In the marble tiles industry, marketing parameters are very limited and usually in some degree associated with the construction sector. Some of the marketing promotion activities may include:

- Development of contacts with the building material suppliers, well-known builders and contractors.
- Update information on civil and construction works initiated by local, provincial and central government.
- Draw linkages with material suppliers to the housing industry at town level.
- Emphasis on image development and acquaintance across individual contractors who are serving private sector.
- Establish contacts with local civil engineering firms and professionals.

1.13. PRODUCT CATEGORIES

There are many kinds of tiles in the market. Broadly these are of three types:

1. **Mosaic:**
These are pre-cast concrete tiles with marble chips at top surface.
2. **Chequered Tiles**
This is a type of plain cement tiles except it has got chequered grooves on finish layer.
3. **Marble Tiles:**
These are Marble earthenware tiles usually used for finishing the surfaces of walls and floors of water closets, bathrooms, kitchens, hospitals and similar places where cleanliness is an important factor.

2. SECTOR & INDUSTRY ANALYSIS

Marbles are the building materials that have been developed as products for decorating walls or interior space of buildings. They are now one of the most essential buildings materials for the durability as well as protection of the buildings.

The bulk of marble is processed in the shape of tiles, slabs and table tops. The demand for marble and marble products is expected to keep growing in the local market primarily because of rise in standard of living, expansion in housing projects due to growing urbanization, and growth in commercial and industrial construction. In order to meet the rising demand, a large number of Marble tiles processing units working across the country. Following table gives city wise distribution of these units²:

City	No. of Units
1. Karachi	1,000
2. Thatta	5
3. Khushab/Mianwali	5
4. Multan	150
5. Faisalabad	100
6. Sahiwal	50
7. Lahore	400
8. Gujranwala	150
9. DG Khan	5
10. Attock	30
11. Rawalpindi	400
12. Islamabad	51
13. KPK	859
14. Balochistan	210
15. FATA	1,077
Total	4,492

During the discussions with the existing players, it has been found that current demand exceeds the total production of the industry primarily due to boom in the real estate and construction industry. Only in Karachi, the monthly demand of marble tiles is indicated to be more than two million sq. ft. Besides, spread of marble tiles manufacturing units across the country suggests the demand pattern which covers almost all of the major cities of Pakistan.

² All Pakistan Marble Industries Association

2.1 GOVERNMENT SUPPORT³

In line with the policy of trade facilitation, deregulation and tariff rationalization, the Federal Board of Revenue (FBR) has allowed concessionary duty of 3-5 percent on import of machinery and equipment for marble. The Marble sector has significant export potential and reduction of these duties will incentivize investment in them. However, this sector needs attention of the government.

2.2 SUB-SECTOR INFORMATION⁴

According to estimates, there are more than 300 million tons of marble reserves in the country out of which 98% are in NWFP. However, the absence of modern extraction technology and manufacturing poses a threat particularly for exports which would not pick-up unless and until the local manufacturing meets the strict quality standard in the affluent international markets.

Balochistan government has established Marble City at Hub for cutting, polishing and marketing of Marble. Variety of colors of large Marble and Granite found in the province are widely accepted in the local and international market due to its similarity with Italian stones, but due to lack of knowledge, expertise and sophisticated machinery, the mineral wealth is being mined on primitive methods and most of it is being wasted.

NWFP produces about 87% of the total marble in the country. There are wide varieties of marble and granite with huge reserves available in the province. Of the 160 millions tons of total estimated reserves of marble, 158 million tons are found in the NWFP. There are three major clusters of processing units in FATA, namely at Buner, Mohmand Agency and at Peshawar. According to official estimates there are 859 processing units in the province.

2.3 OPPORTUNITIES AND WEAKNESSES OF SECTOR:

OPPORTUNITIES

1. Availability of raw material
2. Availability of skilled labor
3. Basic infrastructure exists

WEAKNESSES

1. Blasting wreckages the deposits

³ <http://www.customstoday.com.pk>

⁴ All Pakistan Marble Industries Association

2. Uneven treatment of sales tax regulations in respect of registered and unregistered persons.

2.4 ENVIRONMENTAL & PROTECTION ASPECTS

The major environmental aspects for marble tiles manufacturing units are discussed for each of the process steps.

Raw and Finished Material Transportation

This activity can bring about significant increase in the noise levels in the vicinity of the marble unit due to the heavy transport deployed to bring the raw material to the site. The loaded trucks are also slow moving vehicles and if the access roads are not wide enough they can cause overall traffic slowdowns and congestion during peak hours.

Cutting and Processing

The main aspects of these activities are generation of noise, dust and liquid effluent. Excessive use of freshwater in wet processing is another environmental aspect. These are discussed below:

- Dry cutting of marble tiles results in generation of marble dust. Depending on the size of the operation and equipment, the dust can spread locally and can affect the health of the community apart from being a general nuisance.
- Wet cutting and polishing uses water. The water containing marble dust, if discharged to the environment pollutes watercourses.
- In areas where water resources are limited, marble factories are competing with the local communities for the available water. Conservation and re-use of water in these areas is critical.
- Dust emission, apart from being an environmental issue is also a serious occupational health hazard. The workers operating various machines and engaged in polishing of marble pieces are exposed to unacceptable levels of dust.
- Marble cutting operation can be major source of noise pollution. Excessive levels of noise can cause nuisance to the surrounding community and can also be an occupational hazard.

3. MARKET INFORMATION

3.1 MARKET POTENTIAL ⁵

The international marble and granite trade was valued at \$2,605 million in 2017, with production of about 12 million tons. Italy is the world leader in marble, granite, and stone sector, exporting over 17.4% of finished material and importing 4.1% of the world trade. Pakistan's production is 1.3 m tons annually, with less than 10% exported (1.1% of world trade in 2017). China, which is physically near the major mining sites in Pakistan, is the biggest importer of finished marble slabs and tiles (nearly double the imports into the USA) in the world.

3.2 STRATEGY FOR SUB-SECTOR DEVELOPMENT

- A detailed marketing package based on identification of buyer in the target market, and effective distribution system for entering in to this market.
- Technology up-gradation and human resource development, Machinery up-gradation is the mainstay of technology improvement. A comprehensive package is being developed to make this sector technology efficient.
- Mineral specific financial packages including mine collateralization are planned to support investment activities at mines.
- Investor friendly Regulatory Framework and export oriented fiscal regime has been developed for promoting investments at mine sites.
- Infrastructure facilities including link roads and feeder roads at Marble and Granite bearing areas have been worked out for the country.
- To support investment facilities at mines, Government is considering mineral specific financial packages.

EXPORTS OF MARBLE⁶

S. No	Year	Qty (Tons)	Value in '000' US\$
01	2017	225,694	28,122
02	2016	225,095	31,030
03	2015	323,717	44,109
04	2014	392,264	48,996
05	2013	471,975	63,112

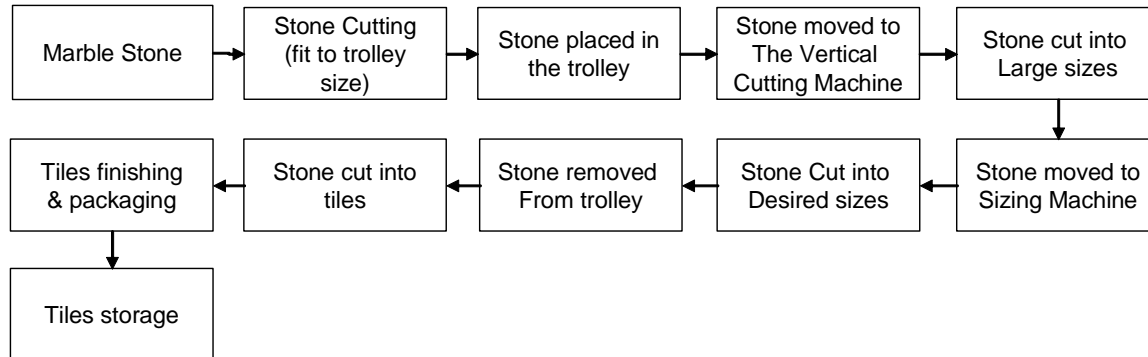
⁵ <https://www.trademap.org>

⁶ <https://www.trademap.org>

Marble exports can be distinguished in three categories i.e. raw marble, rough worked and finished marble. All of these have a comparable share in total exports in Pakistan but finished marble has had the lion's share of about 50% throughout the previous six years.

4. PRODUCTION PROCESS

4.1 MARBLE TILES AND SLABS PRODUCTS - PRODUCTION PROCESS



When a large size stone (approximately 10 to 15 ton) reaches the factory, it is cut into the sizes (using gang saw) fit to trolley size. Stone is fixed in the trolley and moved to vertical cutting machine to further divide it into small (but still large enough to handle) sizes. These stone pieces are then brought to the sizing machine to cut them into desired size of tiles blocks. Tiles blocks are then cut into tiles of desired thickness which are then stacked using trolleys in the storage area where packaging is performed.

4.2 RAW MATERIAL REQUIREMENT

Marble Stone will be used as raw material for manufacturing of Marble tiles and slabs products. There are many marble suppliers in the market; however, the following two entities are actively working in the Karachi market and can be contacted for the procurement of raw marble.

- 1) Millat Marbles
- 2) Zafar Zehri Marble Industries
- 3) Hanam Marbles
- 4) Mehran Marbles
- 5) Stone World

For the proposed project, approximate production of marble tiles is assumed to be 1500 – 1800 sq. ft per day during the initial phases of the business operations. In order to meet this level of production, there would be a daily requirement of around 25 ton of marble stone. Based on our discussions with the existing manufacturers, it is estimated that from

one ton of marble stone, 60 – 70 sq. ft (+/-10%) of tiles can be manufactured. Monthly requirement of the marble stone would be no less than 500 ton.

Besides the marble stone, few other items will also be used during the manufacturing process, which include the following:

- Masala Atmi
- Amri Paper
- Nut-500
- Luster
- Buff

The above material is used during the production process in order to prevent stone fracture or breakages.

4.3 MACHINERY REQUIREMENT

Both local and imported machinery is available for the production of marble tiles. As discussed with market experts, local machinery is generally used in this sector; however, some of the export oriented setups are using imported machinery which enhances tiles quality and reduces wastage. For the purpose of this pre-feasibility, following machinery is proposed which is easily available in the local market:

S. No	Name of the Machine	No. of units	Total Cost in Rs.
1	Vertical cutting machine	01	2,500,000
2	Sizer machine	02	500,000
3	Tiles cutting machine	03	800,000
4	Gantry crane – 20 ton	01	3,500,000
5	Erection equipment	LS	400,000
6	Support structure	LS	300,000
7	Generator (50 kVA)	01	1,500,000
	Total		9,500,000

There are many local suppliers of Marble tiles machinery working at Karachi and other cities who could be contacted for obtaining machinery; however, during the course of study it was found that manufacturers buy different machinery components from different suppliers as there is no single integrated machinery supplier available in the market.

4.4 PLANT AND MACHINERY MAINTENANCE

Machinery is expected to be serviced on an annual basis. During the projection period, maintenance expenses are estimated to be around 3% of the total cost of machine.

5. LAND & BUILDING REQUIREMENT

5.1 SITE DEVELOPMENT

The Marble tiles manufacturing unit is estimated to require a total area of 1000 yards (approximately 9000 sq. ft) plot. Since heavy machinery and vehicles will be used for transportation, cutting and stacking of stone and tiles—large open space would be required. The Installation of a gantry crane, trolley platform and other infrastructure development would draw considerable space and capital.

5.2 LAND & BUILDING REQUIREMENTS FOR MARBLE TILES FACTORY

Land and building requirements for the Marble tiles factory would be as follows:

Details	Size/Area (Sq. Ft.)	Civil Works /Construction Cost/Sq. Ft.	Total Construction Cost
Factory / Covered Area			
Raw Marble Factory Area	7650		
Crushing Area	1350	1300	1,755,000
Vertical Machine	1800	1300	2,340,000
Sizer Machine	1350	1300	1,755,000
Cutter Area (36")	1800	1300	2,340,000
Finished Products	900	1300	1,170,000
Machinery & other installed equipment	450	1300	585,000
Office / Other Services Area in the Factory	1350		
Factory Office	900	1500	1,350,000
Other Services (water plant, tool shop etc.)	450	1300	540,000
Total Covered Area	9000		11,880,000

Cost of Land - 1000 Sq. Yds.			7,000,000
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Note: Land and construction costs are subjected to the site location, therefore may vary as the location would change

As per discussion with market expert, 1000 Yards area is sufficient as the premises for the Factory of Marble tiles products manufacturing unit. The space has a provision for the machinery installation, storage, staff and office requirements.

6. HUMAN RESOURCE REQUIREMENT

Marble tiles industry is a labor-intensive industry in Pakistan. A total 38 persons will be required to handle the production operations of the marble tiles manufacturing unit. The business unit will work on shift basis (12 hours daily as the trend is noticed). Technical staff with relevant experience will be required for operating machines.

Total approximate work force requirement for the business operations along with the respective salaries are given in the table below:

Staff Title	No of Persons	Individual Salary	Monthly Salary	Annual Salary
1. Business Unit Manager/Owner	1			
Production Staff (Quarry/Excavation Site)				
Supervisor / Manager	1	35,000	35,000	420,000
Vertical Operator	1	25,000	25,000	300,000
Sizer Operator	2	18,000	36,000	432,000
Cutter Machine Operator	3	18,000	54,000	648,000
Crane Operator	1	18,000	18,000	216,000
Helper/Laborer	15	14,000	210,000	2,520,000
Factory Workers	3	14,000	42,000	504,000
Packaging Department Staff	6	14,000	84,000	1,008,000
Total Production Staff	33		504,000	6,048,000
General Administration/ Selling Staff				
Accountant	1	30,000	30,000	360,000
Office Assistant	1	18,000	18,000	216,000
Guard	2	14,000	28,000	336,000
Driver	1	15,000	15,000	180,000
Total G A /S Staff	5		91,000	1,092,000
TOTAL	38		595,000	7,140,000

1.1 Experience Requirement for the Staff

Machinery and vehicle operations involved at a Marble tiles Production site are of technical nature; therefore, it is proposed that all machinery operators (particularly vertical cutting machine and Sizer) should have a minimum of two to three years' experience of same type of operations / work.

7. FINANCIAL ANALYSIS & KEY ASSUMPTIONS

The project cost estimates for the proposed "Marble tiles manufacturing unit" have been¹ formulated on the basis of discussions with industry stakeholders and experts. The projections cover the cost of land, machinery and equipment including office equipment, fixtures etc. Assumptions regarding machinery have been provided, however, the specific assumptions relating to individual cost components are given as under.

7.1 LAND & BUILDING

Land⁷ for setting up the proposed marble tiles manufacturing unit would be purchased which will cost around Rs. 07 million for a 1000 yards area at the location of Manghopir.

It has been assumed that it would be a plot and would need to be constructed according to specific requirement of a typical tiles manufacturing facility. However, for the necessary infrastructure construction and gantry crane installation Rupees two million (Rs. 211.07) million) will be required, which has been assumed to depreciate at 10% per annum using diminishing balance method.

7.2 OVERALL FACTORY & OFFICE RENOVATION

To renovate the factory / office premises in Year 5 and Year 10, costs would be incurred for which an amount equivalent to 5% of the total factory/office construction cost is estimated.

7.3 FACTORY / OFFICE FURNITURE

A lump sum provision of Rs. 100,000 for procurement of office/factory furniture is assumed. This would include table, desk, chairs, and office stationery. The breakup of Factory Office Furniture & Fixtures is as follows:

Item	Number	Total Cost (Rs.)
Table & Chair for Owner	1	20,000
Tables & Chairs for Admin. Staff	1	30,000
Waiting Chairs	5	25,000
Stools for Workers/Labor	6	25,000
Total		100,000

7.4 DEPRECIATION TREATMENT

The treatment of depreciation would be on a diminishing balance method at the rate of 10% per annum on the following. The method is also expected to provide accurate tax treatment.

1. Machinery
2. Land & Building Construction and formation
3. Vehicles
4. Furniture and Fixtures etc.

⁷ Real Estate Agents

7.5 UTILITIES

Marble tiles manufacturing plant will be operated using electricity for production purposes. This would draw considerable amount of electricity. The cost of the utilities including electricity, diesel/fuel, telephone, and water is estimated to be around Rs. 23.4 million per annum; electricity will account for the major portion of the utilities expenses. Approximate cost of utilities has been given below:

Utility	Total Monthly Cost (Rs.)	Total Annual Cost (Rs.)	Annual %age Increase
1. Electricity	250,000	3,000,000	5%
2. Gas or Furnace Oil, Lubricants etc.	10,000	120,000	3%
3. Diesel for Vehicles and Machinery	15,000	180,000	5%
4. Water	10,000	120,000	5%
5. Telephone	2,000	24,000	5%
Total	287,000	3,444,000	

7.6 WORKING CAPITAL REQUIREMENTS

It is estimated that an additional amount of around Rs. 2.5 million will be required as cash in hand to meet the working capital requirements. These provisions have been estimated based on the following assumptions for the proposed business.

Description	Amount in Rs.
First Three Months Salaries (Production staff)	1,512,000
First Three Months Utilities Charges	861,000
First Three Months Misc. Expenses	75,000
Raw Material	1,917,500
Total	4,365,500

7.7 PLANT & MACHINERY INSTALLATION

Machinery installation and trial run expenses are assumed to be around Rs. 100,000/-.

7.8 VEHICLE FOR SUPPORT AND MAINTENANCE SERVICES

A loading vehicle would be required for providing services for the transportation of material, equipment and labor etc. For this purpose, a transportation vehicle has been proposed which will cost around Rs. 2,200,000

7.9 SELLING & DISTRIBUTION EXPENSES

For the purpose of this pre-feasibility, it has been assumed that the Marble tiles manufacturer will mainly entertain local orders. In order to meet order booking, delivery and selling expenses, a provision of amount equivalent to 2% of the annual sales has been assumed.

7.10 MISCELLANEOUS EXPENSES

Miscellaneous expenses of running the business are assumed to be Rs. 25,000 per month. These expenses include various items like office stationery, daily consumables, traveling allowances etc. and are assumed to increase at a nominal rate of 10% per annum.

7.11 RAW MATERIAL INVENTORY

Based on our assumptions for the production facility, orders and availability of desired material, it would be necessary to maintain 250 ton marble stone (equivalent to 15 days stone requirement) in order to cover any urgent order requirement.

7.12 FINISHED GOODS INVENTORY

The proposed setup is assumed to maintain finished goods inventory to meet urgent order supplies. For this purpose 10,000 sq. ft. of marble tiles will be maintained.

7.13 REVENUE PROJECTIONS

For the purpose of revenue projection, annual growth rate of 5% has been assumed which would cover anticipated growth in the industry as well as price. Based on our discussions with the industry experts and entrepreneurs, it is anticipated that the sales price will vary according to location. Therefore, most precise sales price and growth is not possible to estimate.

PRICES OF TILES

Tile Size	Size	Qty Sold (per day)	Unit Price	Total Sales
12 x 12	14 sood	350	100	35,000
12 x 24	$\frac{3}{4}$	750	60	45,000
12 x 12	14 sood	150	170	25,500
12 x 24	$\frac{3}{4}$	250	100	25,000
Total Sales price (per day)				130,500

7.14 ACCOUNTS RECEIVABLES

Considering the industry norm, particular to the marble tiles sector and all of its allied industries, it has been assumed that 70% of the sales will be on cash where as, remaining 30% sales will be on credit. A collection period of 60 days is assumed for the credit sales.

A provision for bad debts has been assumed equivalent to 2% of the annual credit sales.

7.16 TAXATION

The business is assumed to be run as a sole proprietorship; therefore, tax rates applicable on the income of a non salaried individual taxpayer are used for income tax calculation of the business.

7.18 OWNER'S WITHDRAWAL

It is assumed that the owner will draw funds from the business once the desired profitability is reached from the start of operations. The amount would depend on business sustainability and availability of funds for future growth.

Machinery Suppliers

Machinery Supplier -1

Name of Supplier /Organization	Xiamen Moscut Stone Machine CO. LTD		
Address	Hailian Industrial Park, ShuiTou Town, Nan'An City, Fujian province China		
Phone	+86-158-609301366	Fax	
E-mail	Chenxuelin2007@hotmail.com		
Website	www.moscut.com		

Machinery Supplier -2

Name of Supplier /Organization	Ashraf Engineering Works Pvt LTD		
Address	2-New G.T Road Shahdra, Lahore, Punjab, Pakistan		
Phone	9242-7920477	Fax	9242-7922293

Machinery Supplier -3

Name of Supplier /Organization	Ahabab Associates		
Address	174, sector 30, Korangi Industrial Area, Karachi-74900, Pakistan		
Phone	021 35065379	Fax	021 3506998
E-mail	info@ahbab.com.pk		
Website	http://www.ahbab.com.pk		

Raw Material Suppliers**Raw Material Supplier -1**

Name of Supplier /Organization	Millat Marble		
Address	Nusrat Bhutto Colony Deh Mangopir Road, Karachi, Pakistan		
Phone	+92 312 345 8989	Fax	
E-mail	info@millatmarble.com		
Website	www.millatmarble.com		

Raw Material Supplier -2

Name of Supplier /Organization	Zafar Zehri Marble Insudtries Private Limited		
Address	F-7,S.I.T.E,Mauripur Road, Karachi, Sindh, Pakistan		
Phone	92-213-5863787	Fax	92-213-2575175

Raw Material Supplier -3

Name of Supplier /Organization	Hanam Marbles Industries		
Address	1D- 25/26, Block 2, Qasba Metrovile, Mangopir Road, Karachi, Pakistan.		
Phone	92-21-6659357	Fax	92-21-6659369
E-mail	hanam@cyber.net.pk		
Website	www.hanammarbles.com		

Summary of Key Assumptions		
		(in Pak. Rs.)
Sr. No.	PARTICULARS	TOTAL COST/DETAILS
Fixed Capital		
	Plant & machinery	9,500,000
	Vehicle for support and transportation	2,200,000
	Cost of Land	7,000,000
	Construction & Renovation	11,880,000
	Factory / Office Furniture	100,000
	Preliminary Expenses - Electricity Transformer	500,000
	Total Fixed Capital	31,180,000
Working Capital		
	Utilities - Three Months (Office & Factory)	861,000
	1. Electricity/Month	250,000
	2. Diesel for Vehicles and Machinery	15,000
	3. Gas, Furnace Oil and Lubricants/Month	20,000
	4. Telephone/Month	2,000
	Salaries - Three Months (Production Staff)	1,512,000
	Raw Material Inventory	1,917,500
	Misc. Expenses - Three months (@ 25000 /month)	75,000
	Total Working Capital	4,365,500
	TOTAL PROJECT COST	35,545,500
	Loan Finance	-
	Equity Financing	35,545,500
	Debt:Equity Ratio (50:50)	0.00%
PROJECT RETURNS AND OTHER FINANCIAL		
	IRR	23%
	NPV	7,695,233
	Payback Period (Years)	3 Years 6 Months
	Debt Equity Ratio	0:100
OTHER ASSUMPTIONS		
	Depreciation	10%
	Machinery Annual Repair & Maintenance (as %age of total cost of Machinery)	3.00%
	Selling & Distribution Expenses	2.00%
Factory Operations and Capacity Utilisation Assumptions		
	Increase in Production (Annual)	3%
	Annual sales price increase	5%
	Operational Hrs./day	12
	Operational Days / Month	26
	Operational Months	12
	Annual Operational Days	312
Economy related assumptions		
	Electricity charges growth rate	5%
	Increase in Salaries	10%
	Increase in Misc. Expenses	10%
Cash Flow Assumptions		
	Sales on Credit - as %age of total	30%
	Sales on Cash - as %age of total	70%
	Accounts Receivable period (months) - only for 30% credit sales	2
	Provision for bad debts (only on 30% credit sales)	2%
	Raw Material Inventory - Stone (Days)	30
	Finished Goods Inventory (Days)	7

MARBLE TILES MANUFACTURING UNIT COST AND REVENUE SHEET				
1. REVENUE CALCULATION				
<u>Monthly Production</u>				
Tile Size	Tile Width	Total Production (sq. ft)	Sales Price (per unit)	Total Sales Price
12 x 12	14 sood	350	100	35,000
12 x 12	3/4"	750	60	45,000
12 x 24	14 sood	150	170	25,500
12 x 24	3/4"	250	100	25,000
Total Production (per day)		1,500		130,500
Total Production (Monthly)			Rs.	3,393,000
Total Monthly Sales			3,393,000 Rs.	
Total Annual Sales			40,716,000 Rs.	
2. COST CALCULATION				
<u>Raw Material Required for daily production</u>				
Product Category	Daily Production (Sq. Ft)	Required Stone (tonne)	Unit Price (tonne)	Total Cost
Marble Stone	1500	25	2,950.00	73,750.00
<u>Monthly Cost of Production</u>				
Raw Material Cost			1,917,500	Rs. / month
Labour Cost			504,000	Rs. / month
Electricity Charges			250,000	Rs. / month
Misc. Material			25,000	Rs. / month
<u>Annual Cost of Production</u>				
Raw Material Cost	-		23,010,000	Rs. / annum
Labour Cost			6,048,000	Rs. / annum
Electricity Charges			3,000,000	Rs. / annum
Polishing Material			300,000	Rs. / annum
TOTAL ANNUAL COST OF PRODUCTION			32,358,000	Rs./annum
Total Annual Sales			40,716,000	Difference
Total Annual Cost			32,358,000	8,358,000

MARBLE TILES MANUFACTURING UNIT										
Projected Income Statement (Rs.)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	40,716,000	44,034,354	47,623,154	51,504,441	55,702,053	60,241,770	65,151,474	70,461,320	76,203,917	82,414,536
Beginning Inventory	-	725,981	750,326	783,284	818,276	855,466	895,037	937,186	982,128	1,030,102
Ending Inventory	725,981	750,326	783,284	818,276	855,466	895,037	937,186	982,128	1,030,102	1,081,366
Gross Revenue	39,990,019	44,010,009	47,590,196	51,469,449	55,664,862	60,202,199	65,109,326	70,416,377	76,155,943	82,363,272
Sales on Credit	11,997,006	13,203,003	14,277,059	15,440,835	16,699,459	18,060,660	19,532,798	21,124,913	22,846,783	24,708,982
Sales on Cash	27,993,013	30,807,006	33,313,137	36,028,614	38,965,403	42,141,540	45,576,528	49,291,464	53,309,160	57,654,291
Bad Debt Expenses	239,940	264,060	285,541	308,817	333,989	361,213	390,656	422,498	456,936	494,180
Net (Adjusted Sales)	39,750,079	44,010,009	47,590,196	51,469,449	55,664,862	60,202,199	65,109,326	70,416,377	76,155,943	82,363,272
Cost of Sales	32,502,000	33,909,300	35,401,599	36,985,703	38,669,046	40,459,752	42,366,704	44,399,613	46,569,105	48,886,808
Cost of Production	26,010,000	26,790,300	27,594,009	28,421,829	29,274,484	30,152,719	31,057,300	31,989,019	32,948,690	33,937,151
Labor (Production Staff)	6,048,000	6,652,800	7,318,080	8,049,888	8,854,877	9,740,364	10,714,401	11,785,841	12,964,425	14,260,868
Other Utilities	444,000	466,200	489,510	513,986	539,685	566,669	595,002	624,753	655,990	688,790
Gross Profit	7,248,079	10,100,709	12,188,597	14,483,746	16,995,816	19,742,447	22,742,622	26,016,764	29,586,838	33,476,465
Gross Profit Margin	18%	23%	26%	28%	31%	33%	35%	37%	39%	41%
General Administrative & Selling Expenses										
Salaries	1,092,000	1,201,200	1,321,320	1,453,452	1,598,797	1,758,677	1,934,545	2,127,999	2,340,799	2,574,879
Factory/Office Miscellaneous Expenses	300,000	330,000	363,000	399,300	439,230	483,153	531,468	584,615	643,077	707,384
Amortization of Preliminary Expenses	100,000	100,000	100,000	100,000	100,000	-	-	-	-	-
Depreciation Expense	2,368,000	2,131,200	1,918,080	1,726,272	1,553,645	1,457,680	1,311,912	1,180,721	1,062,649	956,384
Maintenance Expense	285,000	285,000	285,000	285,000	285,000	285,000	285,000	285,000	285,000	285,000
Selling & Distribution	795,002	880,200	951,804	1,029,389	1,113,297	1,204,044	1,302,187	1,408,328	1,523,119	1,647,265
Subtotal	4,940,002	4,927,600	4,939,204	4,993,413	5,089,969	5,188,554	5,365,112	5,586,663	5,854,643	6,170,913
Operating Income	2,308,078	5,173,109	7,249,393	9,490,333	11,905,847	14,553,893	17,377,511	20,430,101	23,732,195	27,305,552
Earnings Before Taxes	2,308,078	5,173,109	7,249,393	9,490,333	11,905,847	14,553,893	17,377,511	20,430,101	23,732,195	27,305,552
Tax	577,019	1,293,277	1,812,348	2,372,583	2,976,462	3,638,473	4,344,378	5,107,525	5,933,049	6,826,388
Net Profit	1,731,058	3,879,831	5,437,045	7,117,750	8,929,385	10,915,420	13,033,133	15,322,576	17,799,146	20,479,164
Monthly Profit After Tax	144,255	323,319	453,087	593,146	744,115	909,618	1,086,094	1,276,881	1,483,262	1,706,597

MARBLE TILES MANUFACTURING UNIT											
Projected Balance Sheet (Rs.)	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Assets											
Current Assets											
Cash & Bank Balance	2,448,000	3,371,576	8,692,238	15,168,420	22,914,502	31,585,517	41,618,993	52,601,152	65,216,510	79,663,381	95,560,927
Raw Material Inventory	1,917,500	2,167,500	2,232,525	2,299,501	2,368,486	2,439,540	2,512,727	2,588,108	2,665,752	2,745,724	2,828,096
Finished Goods Inventory	0	725,981	750,326	783,284	818,276	855,466	895,037	937,186	982,128	1,030,102	1,081,366
Accounts Receivable	0	1,999,501	2,200,500	2,379,510	2,573,472	2,783,243	3,010,110	3,255,466	3,520,819	3,807,797	4,118,164
Total Current Assets	4,365,500	8,264,558	13,875,590	20,630,714	28,674,736	37,663,767	48,036,867	59,381,912	72,385,209	87,247,004	103,588,552
Fixed Assets											
Plant Machinery & Facility	9,500,000	8,550,000	7,695,000	6,925,500	6,232,950	5,609,655	5,048,690	4,543,821	4,089,438	3,680,495	3,312,445
Factory Construction	11,880,000	10,692,000	9,622,800	8,660,520	7,794,468	7,609,021	6,848,119	6,163,307	5,546,976	4,992,279	5,087,051
Land	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000
Furniture & Fixtures	100,000	90,000	81,000	72,900	65,610	59,049	53,144	47,830	43,047	38,742	34,868
Vehicle	2,200,000	1,980,000	1,782,000	1,603,800	1,443,420	1,299,078	1,169,170	1,052,253	947,028	852,325	767,093
Total Fixed Assets	30,680,000	28,312,000	26,180,800	24,262,720	22,536,448	21,576,803	20,119,123	18,807,211	17,626,490	16,563,841	16,201,457
Intangible Assets											
Preliminary Expenses	500,000	400,000	300,000	200,000	100,000	-	-	-	-	-	-
Total Assets	35,545,500	36,976,558	40,356,390	45,093,434	51,311,184	59,240,570	68,155,989	78,189,122	90,011,698	103,810,844	119,790,008
Owner's Equity	35,545,500	36,976,558	40,356,390	45,093,434	51,311,184	59,240,570	68,155,989	78,189,122	90,011,698	103,810,844	119,790,008
Total Equity & Liabilities	35,545,500	36,976,558	40,356,390	45,093,434	51,311,184	59,240,570	68,155,989	78,189,122	90,011,698	103,810,844	119,790,008

MARBLE TILES MANUFACTURING UNIT

Projected Statement of Cash Flows (Rs.)	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Cash Flow From Operating Activities											
Net Profit	0	1,731,058	3,879,831	5,437,045	7,117,750	8,929,385	10,915,420	13,033,133	15,322,576	17,799,146	20,479,164
Add: Depreciation Expense	0	2,368,000	2,131,200	1,918,080	1,726,272	1,553,645	1,457,680	1,311,912	1,180,721	1,062,649	956,384
Amortization Expense	0	100,000	100,000	100,000	100,000	100,000	-	-	-	-	-
(Increase) / decrease in Receivables	-	(1,999,501)	(200,999)	(179,009)	(193,963)	(209,771)	(226,867)	(245,356)	(265,353)	(286,978)	(310,366)
(Increase) / decrease in RM	-	(250,000)	(65,025)	(66,976)	(68,985)	(71,055)	(73,186)	(75,382)	(77,643)	(79,973)	(82,372)
(Increase) / decrease in FG Inventory	-	(725,981)	(24,345)	(32,958)	(34,992)	(37,191)	(39,571)	(42,148)	(44,943)	(47,974)	(51,264)
Net Cash Flow From Operations	0	1,223,576	5,820,662	7,176,181	8,646,083	10,265,014	12,033,476	13,982,159	16,115,359	18,446,871	20,991,546
Cash Flow From Financing Activities											
Receipt of Long Term Debt	0										
Repayment of Long Term Debt		0	0	0	0	0	-	-	-	-	-
Owner's Equity	35,545,500	(300,000)	(500,000)	(700,000)	(900,000)	(1,000,000)	(2,000,000)	(3,000,000)	(3,500,000)	(4,000,000)	(4,500,000)
Net Cash Flow From Financing Activities	35,545,500	(300,000)	(500,000)	(700,000)	(900,000)	(1,000,000)	(2,000,000)	(3,000,000)	(3,500,000)	(4,000,000)	(4,500,000)
Cash Flow From Investing Activities											
Capital Expenditure	(11,700,000)					(594,000)					(594,000)
Factory/Office Furniture	(100,000)										
Preliminary Operating Expenses	(500,000)										
Purchase of Raw Material Inventory	(1,917,500)										
Purchase of Land	(18,880,000)										
Net Cash Flow From Investing Activities	(33,097,500)	0	0	0	0	(594,000)	0	0	0	0	(594,000)
NET CASH FLOW	2,448,000	923,576	5,320,662	6,476,181	7,746,083	8,671,014	10,033,476	10,982,159	12,615,359	14,446,871	15,897,546
Cash at the Beginning of the Period	0	2,448,000	3,371,576	8,692,238	15,168,420	22,914,502	31,585,517	41,618,993	52,601,152	65,216,510	79,663,381
Cash at the End of the Period	2,448,000	3,371,576	8,692,238	15,168,420	22,914,502	31,585,517	41,618,993	52,601,152	65,216,510	79,663,381	95,560,927