Trade Development Authority of Pakistan

A Report on

Marble & Granite

Prepared By:

Masroor Ahmed Korai (Product Officer)

Supervised By:

Dr. Sajid Hussain (Consultant)

Checked By:

Athar Jamal Abro (Director General)

Minerals & Metals Division

Table of contents

INTRODUCTION

The word Marble comes from Greek word Mamaros which means shining stone Marble is a non-foliated, Granular Metamorphic Rock that is formed by the Metamorphisim of Limestone and Dolostone. Marble is calcium Carbonate (caCO3). The term marble is also applied to serpentine rocks that can be polished to high shine. The Marble is a carbonate rock which means it has (CO3) in chemistry.

Marble, Onyx and Granite belong to the category of building stones widely known as Dimension Stone, These are natural stones which can be shaped in form of blocks, slabs, tiles, etc and are mostly used for monumental and decorative purposes since antiquity, various civilizations have used dimension stone in many ancient buildings and monuments that have survived to the present day. Although numerous varieties of igneous, metamorphic and sedimentary rocks are used as dimension stone, the principal rock types used are granite, limestone, marble, sandstone and slate.

Major deposits of high quality Dimension Stone available in a wide range of colours, shades and patterns could not be exploited so far due to lack of modern quarrying and manufacturing facilities. This hindered the development of marble and granite sectors. Consequently, despite being accorded the status of industry over a decade ago and other continuing efforts of Federal and Provincial Government and other stake holders as Pakistan Stone Development Company
(PASDEC) and subsidiary of Pakistan Industrial Development Corporation, has initiated many projects to up lift the existing set up
of Marble and granite sector .These projects are setup according to international

practices, employ modern technology and focus on detail technical studies .As per plane about 10 model quarries and a number of marble cities are to be created in Pakistan .According to (PESDEC) estimates about 96,000 new jobs

are to be created .these projects hold the promise to transform Pakistan's dimension sector to a great extent .CFTC (Common Facility and trainings Centre) is also under consideration to infuse new blood and give new dimension to Pakistan's Stones Industry.

FORMATION OF MARBLE:

Metamorphic Rock of Crystalline Aggregate of Calcite and/or Dolomite.

CALC – Silicate Rock with Calcium – Magnesium Silicate Mineral"(Calciphyre).

Any Calcareous and / or Dolomite Rock Capable of Taking Polish & Suitable for Decorative & Structural Purposes.

Crystalline Calcite and / or Dolomite Rock – Marble Geologically

Partially Crystallized Dense Compact Limestones – Marble Commercially

Travertine (Calcium Carbonate Precipitates) – Onyx marble

Verde Antique – Serpentine Marble

CHEMICAL COMPOSITION OF MARBLE

Calcite & Dolomite

Carbonate of calcium

(Hardness 3-sp.grav.2.72)

Carbonate of calcium & Magnesium

(Hardness 3.5/4-Sp.Grave.2.9)

Marble Formula

(CaCO3), 1- Calsium, 1-Carbon, 3Oxygen

APPLICATIONS OF MARBLE

Industrial use:

Blocks of cut Marble:

Colorless or light-colored marbles are a very pure source of calcium carbonate, which is used in a wide variety of industries. Finely ground marble or calcium carbonate powder is a component in paper, and in consumer products such as toothpaste, plastics, and carbonate can be made from limestone, chalk, and marble; about three-quarters of the ground calcium carbonate worldwide is made from marble. Ground calcium carbonate is used as a coating pigment for paper because of its high brightness and as a paper filler because it strengthens the sheet and imparts high brightness. Ground calcium carbonate is used in

Consumer products:

consumer products such as a food additive, in toothpaste, and as an inert filler in pills. It is used in plastics because it imparts stiffness, impact strength, dimensional stability, and thermal conductivity. It is used in paints because it is a good filler and extender, has high brightness, and is weather resistant. However, the growth in demand for ground calcium carbonate in the last decade has mostly been for a coating pigment in paper Calcium carbonate can also be reduced under high heat to calcium oxide (also known as "lime"), which has many applications including being a primary component of many forms of cement.

Production Sculpture:

White marble has been prized for its use in sculptures since classical times. This preference has to do with its softness, relative isotropy and homogeneity, and a relative resistance to shattering. Also, the low index of refraction of calcite allows light to penetrate several millimeters into the stone before being scattered out, resulting in the characteristic waxy look which gives "life" to marble sculptures of the human body.

Construction marble:

Construction marble is a stone which is composed of calcite, dolomite or serpentine which is capable of taking a polish. More generally in construction, specifically the Dimension stone trade, the term "marble" is used for any crystalline calcitic rock (and some non-calcitic rocks) useful as building stone. For example, Tennessee marble is really a dense granular fossil ferrous gray to pink to maroon Ordovician limestone that Geologists call the Holston Formation.

According to the United States Geological Survey, U.S. dimension marble production in 2006 was 46,400 tons valued at $18.1 million, compared to 72,300 tons valued at $18.9 million in 2005. Crushed marble production (for aggregate and industrial uses) in 2006 was 11.8 million tons valued at $116 million, of which 6.5 million tons was finely ground calcium carbonate and the rest was construction aggregate. For comparison, 2005 crushed marble production was 7.76 million tons valued at $58.7 million, of which 4.8 million

tons was finely ground calcium carbonate and the rest was construction aggregate. U.S. dimension marble demand is about 1.3 million tons.

Artificial Marble:

Marble dust is combined with cement or synthetic resins to make reconstituted or cultured marble. The appearance of marble can be simulated with faux marbling, a painting technique that imitates the stone's color patterns.

Ancient Marble columns in the prayers Hall of the mosque of Uqba in Kairouan,Tunisia.

As the favorite medium for Greek and Roman sculptors and architects (see classical sculpture), marble has become a cultural symbol of tradition and refined taste. Its extremely varied and colorful patterns make it a favorite decorative material, and it is often imitated in background patterns for computer displays, etc.

Places named after the stone include Marblehead,Ohio; Marble Arch, London; the Sea of Marmara; India's Marble Rocks; and the towns of Minnesota; Marble; and Marble Hill, Manhattan, New York. The Elgin Marbles are marble sculptures from the Parthenon that are on display in the British Museum. They were brought to Britain by the Earl of Elgin.

Deposits in Pakistan

MARBLE, ONYX & GRANITE

Pakistan has enormous wealth of marble, re-crystallized lime stone, fossil-ferrous limestone, dolomite and granite. These materials occur on the surface suitable for open cast bulk

MARBLE

RESERVES
Not specifically measured, however Marble& Onyx more than 300 billion tons of reserves are estimated.

MAJOR COLOURS
White, Black, Green, Pink, Grey, Brown and Yellow colours.

LOCATION
Mohmand Agency, Chitral, Buner, Swat, Parachinar, Gilgit, Hunza, Swabi, Bajour, Mardan, Wazirstan, Azad Kashmir, Lasbela, Chagai & Khuzdar.

ONYX

MAJOR COLOURS
Dark Green with layers of Light Green, Green with streaks of white & yellow and White with layers of Light Grey.

LOCATION
Onyx occurs mainly in Chaghai District, Baluchistan. Baluchistan Onyx is favorite in the world markets and is used for facing, flooring and decorative items

GRANITE

RESERVES:

Not specifically measured, however more than 1000 billion tons of granite reserves are generally estimated.

MAJOR COLOURS

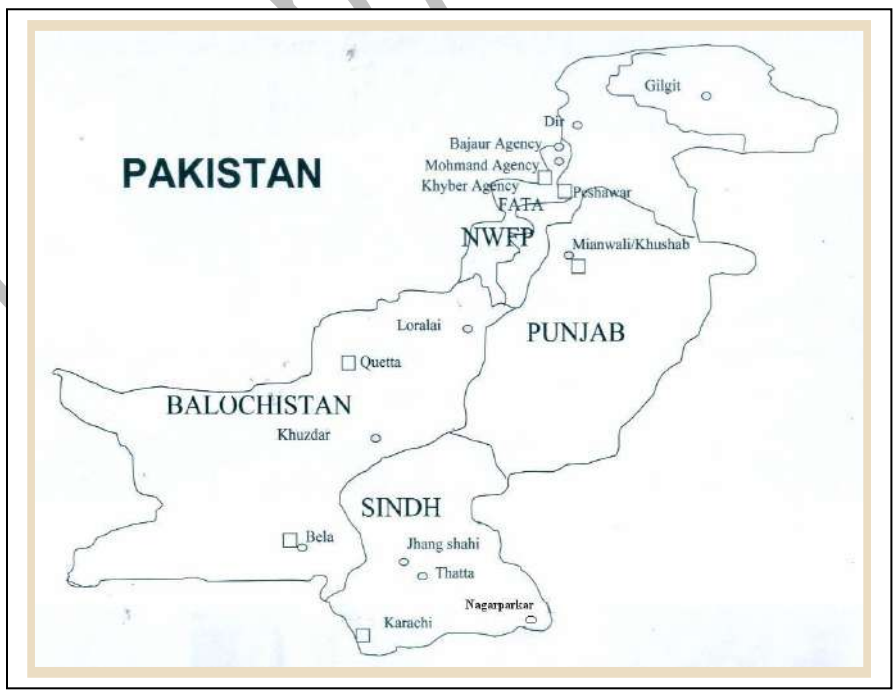
Balck, Pink, Grey, Green, Gold & Yellow and Red

LOCATION

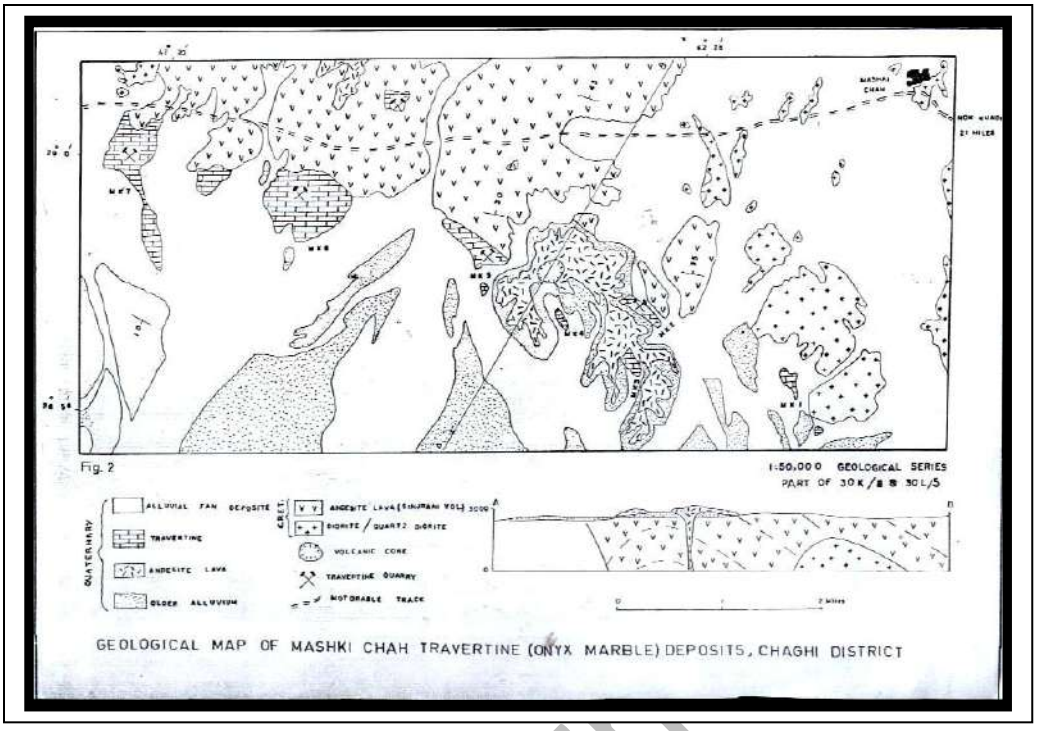
Gilgit, Dir, Chital, Swabi, Kohistan, Nagarparker, Chagai, Mansehra, Malakand & Swat.

Nagarparkar (Sindh) and Mansehra (Khyber Pukhtoonkhwa) are only known sources of workable Granite in the country. Geology evidence shows Gilgit Region holds great promise of the superior quality deposits.

Deposits in Pakistan
Marble & Granite



Deposits in Baluchistan



Baluchistan-Chaghi District

Deposits of high quality onyx (travertine) marble locally known as Malmal are found in Chaghi District at seven localities, 50 to 80 Km away from the railheads of Dalbandin and Nokkundi.

JUHLI DEPOSITS

- Pale to deep green beds.
- Deep green variety is the most desired decorative stones.
- Reddish and rusty brown known as multicolor onyx.
- Reserves of 1.5 million cubic feet.

ZARD KHAN DEPOSITS

- Yellow, pale green, grayish white and white dense, thinly bedded and fine grained.
- Reserves of 30 million cubic feet

MASHKI CHAH DEPOSITS

- Transparent to translucent white, pale yellowish marble.
- Reserves of 6 million cubic feet.

BALUCHISTAN-OTHER DEPOSITS

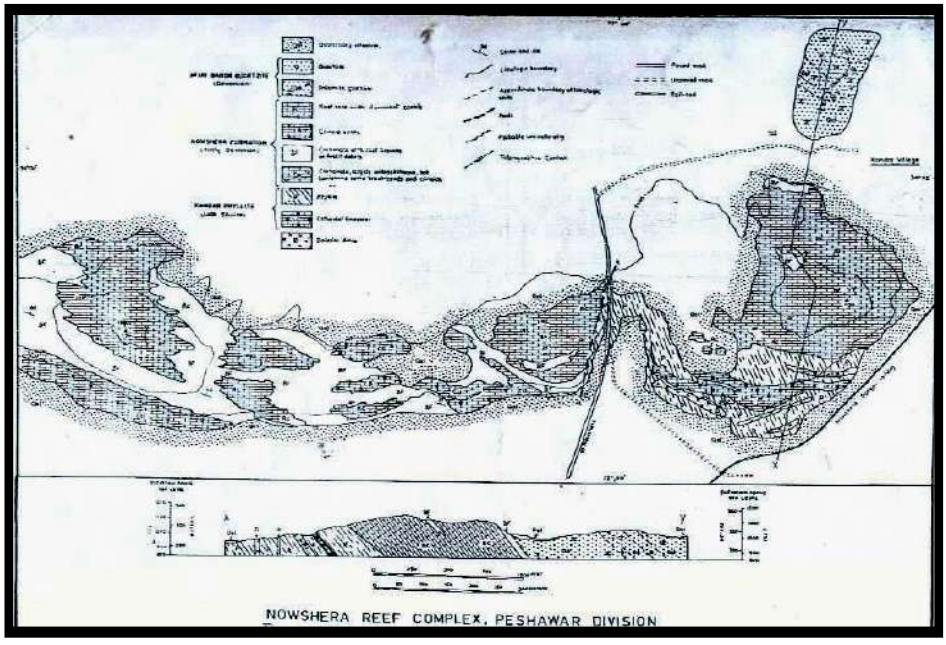
Patkok Deposits – 3 feet thick bed pale green marble of 24,000 cubic feet reserves.

Butak Deposits – Good quality thin bedded, dense yellow marble of 60,000 cubic feet reserves.

Tozghi Deposits – Opaque having off white color with ferruginous layers of 24,000 cubic feet reserves

Zeh Deposits – Green good quality reserves – studies to be carried out to determine its quality and quantity.

MARBLE & GRANITE
Deposits in Khyber Pukhtoonkhwa



Khyber Pukhtoonkhwa

Khyber Agency

MULLAGORI AREA

SHAHID MENA

- Crystalline Limestones Beds.
- 100 feet thick section with 30 feet workable Marble.
- White, Grey, Yellow, Brown
- Medium to fined grained saccharoidal.
- White Marble of 30 feet comparable with Carrara of Italy and Makrana of India.
- Reserves – 2.2 million cubic feet within a depth of 500 feet.

KAMBELA KHWAR
Metamorphosed Limestone.
800 feet thick section with average individual beds of 09 feet.
The Following famous colours of Marble in (KHYBER AGENCY)
White, Grey, Green, Yellow, Brown and Pink.
Lower beds of good quality pure white.
Fine grained saccharoidal.Reserves – Considerable huge in million tons.

Mardan District

GHUNDAI TARAKO
(Between Swabi and Buner)

White, Crystalline and Uniform Texture.
Comparable with Carrara of Italy and Makrana of India – commercially known as Swabi White.
100 million cubic feet at a depth of 50 feet.

MANERI
(North of village Maneri – Swabi Tehsil)

Grey, White, Green and Yellow varieties with medium to fine grained.
Two white beds of marble with 300 feet combined thickness.
2.4 million cubic feet of reserves at a depth of 100 feet.
Commercially known as Aristocrat Grey.

NOWSHERA DISTRICT

A number of rounded hills of pink colour fossiliferous and dense limestone of 100 to 500 feet in thickness around Nowshera (including Pir Sabak hill) – Does not take good polish. Generally used as marble chips and slabs are known as Nowshera Pink. Reserves – 3.8 million tons**.**

MOHMAND AGENCY

- Fairly large marble reserves of various shades and grades in the metamorphic terrain of Mohamed Agency and adjacent area of Bajaur.
- Several textural variations ranging from very fine to very coarse grained in white and yellowish-green shades imparted by serpentine and can be termed as Verde antique or zebra green marble. The deposits are fairly large in quantities.

MARBLE & GRANITE
Deposits in (Sindh)

THANO BULA KHAN
Travertine Deposits occurring in Cavern and Cavities in the limestone.
Reserves have been estimated at 360,000 tons.

THATTA

Braudabad, Sonda – Jherak, Jangshahi dense grey, greyish white limestone and dolomite in considerable quantities.

MARBLE & GRANITE
Deposits in Pakistan

NORTHERN / TRIBAL AREAS

Crystalline limestone and multicolor dense marble have also been located in Northern /
Tribal Areas of Hunza, South Waziristan, Kurram Agency, Mohamed Agency and Bajaur. Further studies are however required to know exactly about their quality and quantity.

PUNJAB

Crystalline grey, grayish white limestone and dolomite in district Mianwali (Punjab).Crystalline grey, grayish white limestone and dolomite in district Mianwali (Punjab).

BRANDS MARBLE & GRANITE FROM PAKISTAN

Branded Marbles

Following are 17 branded Marbles:

- **Mastung Royal (LBM-19)**
  Light cream colour marble deposits with fine texture are located in Mastung (District Chaghi). The reserves are sufficiently large. Technically the deposit is limestone but commercially marble.

- **Mastung Cream (LBM-20)**
  Dark cream colour marble deposit with fine texture is located in Mastung (District Chaghi). Technically it is limestone but commercially known as marble. Fine and compact grained texture with large reserves.

- **Koulan Beig (LBK-1)**
  Grey colour commercially marble but technically limestone is located at Naal (Khuzdar). Thick grained texture with sufficient reserves

- **Mohmand Tribal White (MFBJ-5)**
  White colour fine grand marble is located in Mohamand Agency (Tribal Area) in huge quantity.

- **Pak Black & Gold (MBLB-10)**
  Black marble with golden spots and fine graind texture is located in Lasbela with considerable reserves.

- **Tippy Tevera (MBK-13)**
  Grey colour fossiliferous medium grained marble located in Lasbela in huge quantity.

- **Tribal White (MFWAZ-8)**
  White colour marble deposits with huge reserves and fine grained texture are located in Mohmand Agency.

- **Jinnah White (MFB-1)**
  White colour medium to fine grained marble deposits are located in Chitral with substantial reserves.

- **Sunny Grey (MFB-2)**
  Grey colour shining marble deposits with fine texture is located in Bunair (Swat) in huge quantities.

- **Shangla White (MFSS-6)**
  White colour marble deposits with fine grained texture are located in Shangla (Swat) in huge quantities.

- **Sunny White (MFB-4)**
  White colour shining marble is located in Bunair (Swat) in fine grained texture with huge reserves.

- **PAK Teek Wood (MBLB-15)**
  Wood like textured marble is located in Lasbela (Balochistan) with huge reserves.

- **Indus Gold ((LST-11)**
  Technically limestone (commercially marble) with medium grained texture is located at Braudabad – Sonda- Jharack – Jungh Shahi (District Thatta) in dark golden colour with medium size reserves.

- **Bampokha (MFBP-4)**
  Sky white marble deposits with fine grained texture are located in Bunair (Swat). Sufficient reserves.

- **Pak Black (MFB-9)**
  Jet black colour fine grained marble deposits are located in Bunair (Swat). Sufficient reserves.

- **White Onyx (OBCH-3)**
  High quality semi precious white onyx marble is located in District Chaghi. World wide famous for its utilization in handicrafts and as a semi precious stone.

Types & colours of Marble in Pakistan

White	Muhammad Agency, Chitral,Buner,Swat,Parachinar,Gilgit,Hunza,Swabi,Malakan	Pure white: white with pink,brown and Green shades white to grey with yellowish patches, white to light grey with yellowish brown Patches;Creamy white
Black	Buner,Bajour.Mardan,Bela	Deep Black :with patches of white: Black with white and golden steaks
Green	Swat,Swabi,Buner,Azad Kashmir and Lasbela	Dark Green,green with streak & patches of white grey and black,greenish white,
Pink	Nowshehra,chitral,Lasbela	Pink with streaks and patches white, grey,redand brown :pink with fossils
Grey	Buner,Bajour,Mardan,Swat,M-uhammad Agency,Lasbela	Grey with white bands grey with pink ,beown and green patches
Brown	Bunner Swat,Kohat,Waziristan,Khuz-dar	Dark Brown with white lines ,brown with yellow Patches,light brown with fossils
yellow	Bunner Swat,Kohat,Waziristan,Khuz-dar	Yellow with golden patches: Yellowish golden with fossils
Green	Jhuli,Zard Khan,Zeh	Dark Green with layers of light green, green with streaks of white and yellow
White Brown Banded	----------	White with layers of light grey

Historically Notable Marble varieties and locations

Marble Name	Colour	Location	Country
Bucova Marble	white, gray	Băuţar, Caraş-Severin County (applied inUlpia Traiana Sarmizegetusa)	Romania
Carrara marble	white or blue-gray	Carrara	Italy
Macael marble	white	Macael, Almeria	Spain
Makrana Marble	white	Makrana	India
Murphy Marble	white	Pickens and Gilmer Counties, Georgia	United States
Parian marble	pure-white, fine-grained	Island of Paros	Greece
Pentelic marble	pure-white, fine-grained semitranslucent	Penteliko Mountain, Athens	Greece
Phrygian Marble	purple	Phrygia	Turkey
Ruskeala Marble	white	Ruskeala, Karelia	Russia
Sienese Marble	yellow, yellowish-white	Sovicille, Tuscany	Italia

Marble Specification

- Production of International Standard Size blocks divides of cracks and fractures in international market the standard size of block is according to the following specification:

Length: **1.9m, 2.6m**

Width: **1.4m, 1.8m**

Height: **1.1m, 1.4m**

- The standard weight of these blocks are 13.7tons, 22.7 tons even large up-to 30tons.

Slabs

- American sizes of Slabs are 120 inches.

Tiles

- The International standard sizes of tiles are 22 up-to 24.

MARBLE & GRANITE

Production In Pakistan

	Product	2006-2007	2007-2008
Province Balochistan	Marble	461465	337756
	Granite	10,92	291

	Product	2006-2007	2007-2008
Province Khyber-P	Marble	428,649	196,545
	Granite	2,528	1,044

	Product	2006-2007	2007-2008
Province Punjap	Marble	10059	42016
	Granite	370	90

	Product	2006-2007	2007-2008
Province Sindh	Marble	3,305	1,415
	Granite	180	629

MARBLE & GRANITE - World Exports (2009-10)

(PAKISTAN SHARE)

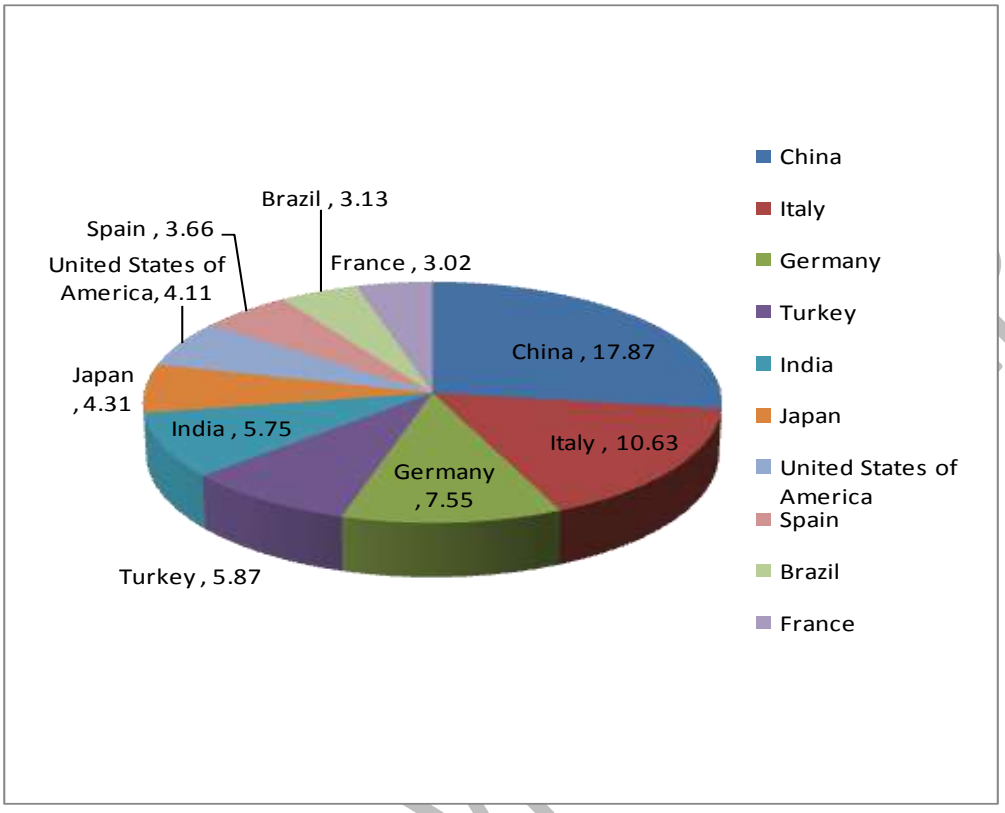
World Exports	US$62 Billion
Pakistan Exports	US$59.79 Million
Pakistan Share in World Exports	0.096%

World-Top 10 Marble Exporters 2009

Source: ITC **Values in Million US$**

Sr.#	Country	Value in 2009	%age Share
	World	21,862.95	100.00
1	China	3,907.71	17.87
2	Italy	2,323.06	10.63
3	Germany	1,651.50	7.55
4	Turkey	1,284.13	5.87
5	India	1,256.91	5.75
6	Japan	941.46	4.31
7	United States of America	898.20	4.11
8	Spain	800.71	3.66
9	Brazil	683.37	3.13
10	France	660.56	3.02

World- Top Ten Marble Exporters-2009

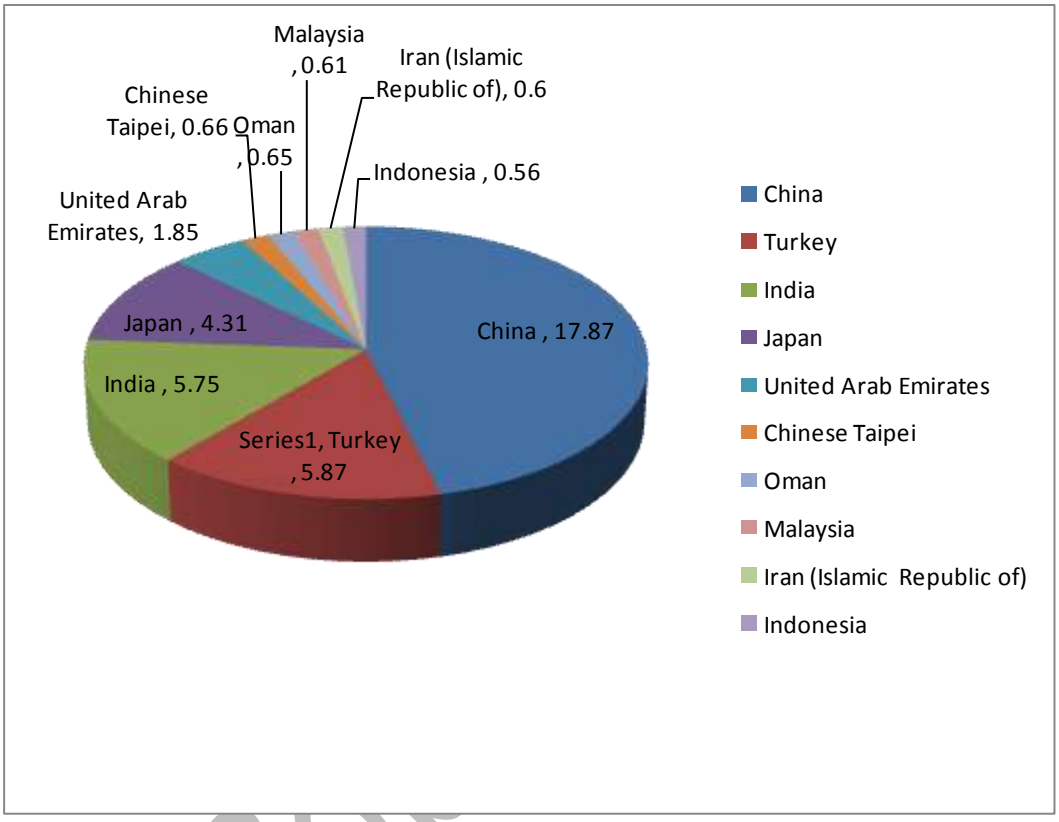


Asia-Top 10 Marble Exporters 2009

Source: ITC **values US$ In Million**

Sr. #	Country	Value in 2009	%age Share
	World	21,862.95	100.00
	Asia Aggregation	9,201.27	42.09
1	China	3,907.71	17.87
2	Turkey	1,284.13	5.87
3	India	1,256.91	5.75
4	Japan	941.46	4.31
5	United Arab Emirates	405.26	1.85
6	Chinese Taipei	144.08	0.66
7	Oman	142.91	0.65
8	Malaysia	132.80	0.61
9	Iran (Islamic Republic of)	130.16	0.60
10	Indonesia	121.85	0.56

Asia-Top 10 Marble Exporters 2009

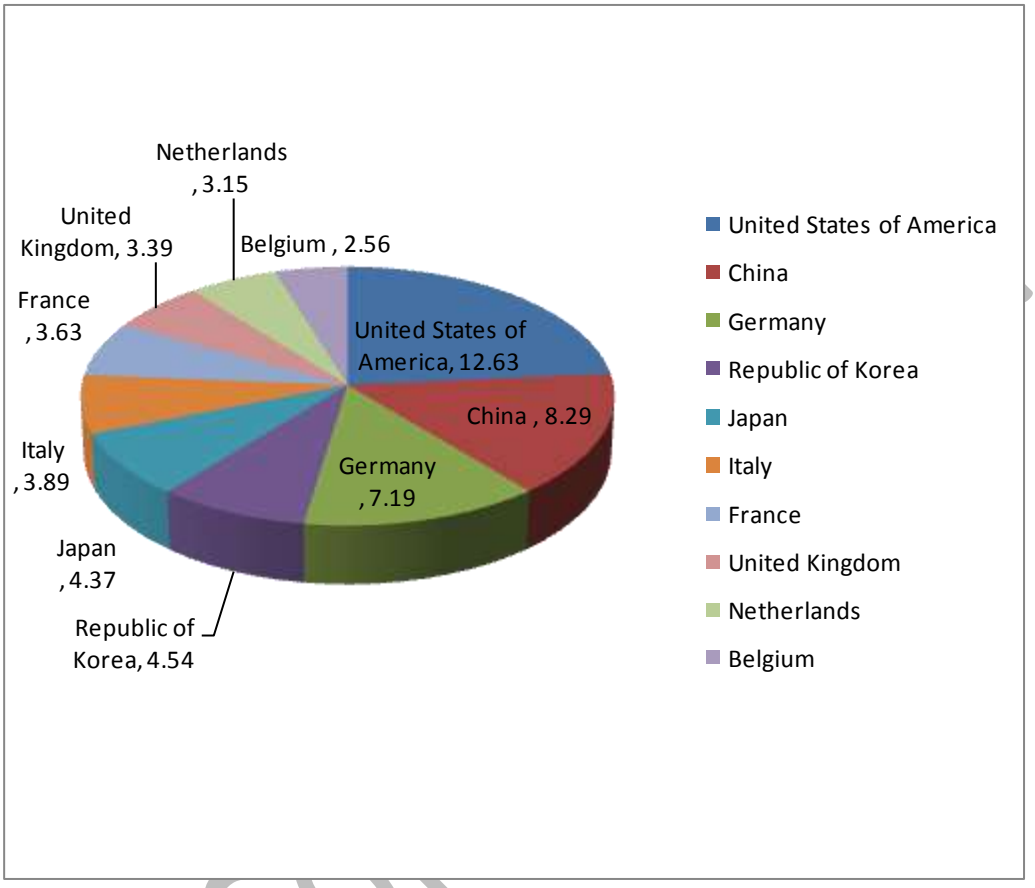


World-Top 10 Marble Importers 2009

Source: ITC **Values in MillionUS$**

Sr. #	Country	Value in 2009	%age Share
	World	22,665.23	100.00
1	United States of America	2,863.13	12.63
2	China	1,879.22	8.29
3	Germany	1,629.24	7.19
4	Republic of Korea	1,029.61	4.54
5	Japan	991.47	4.37
6	Italy	882.46	3.89
7	France	822.31	3.63
8	United Kingdom	768.11	3.39
9	Netherlands	713.93	3.15
10	Belgium	579.61	2.56

World-Top 10 Marble Importers 2009

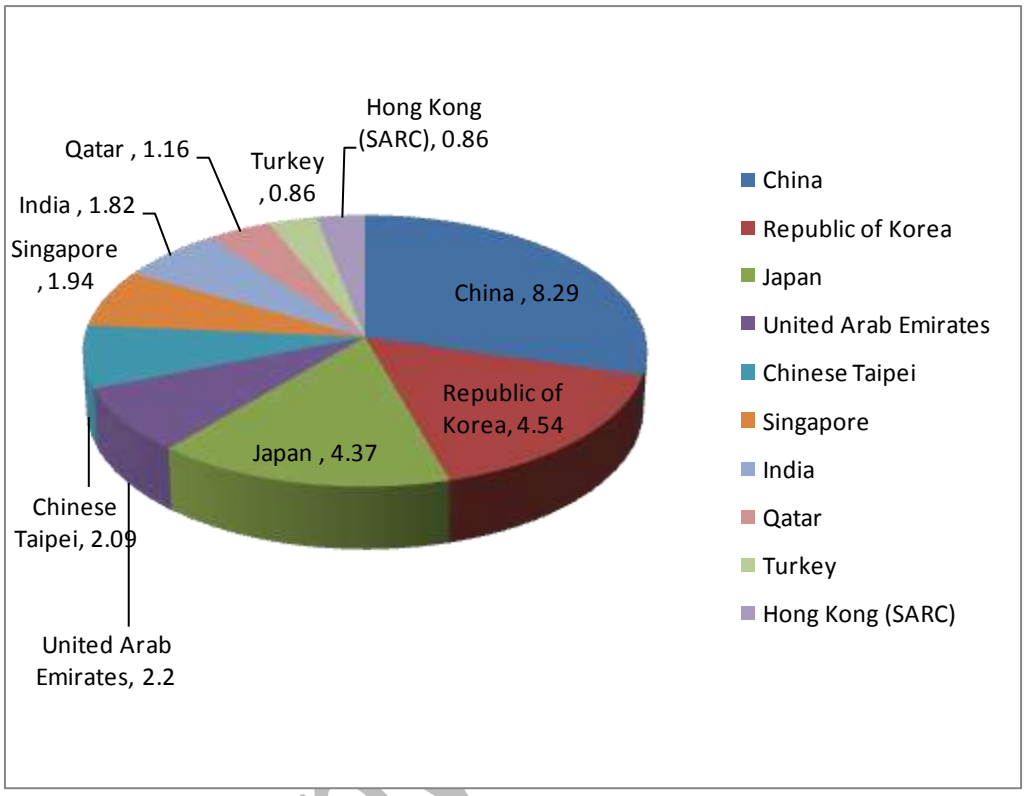


Asia-Top 10 Marble Importers 2009

Source: ITC **Values in Million US$**

Sr. #	Country	Value in 2009	%age Share
	World	22,665.23	100.00
	Asia Aggregation	7,957.55	35.11
1	China	1,879.22	8.29
2	Republic of Korea	1,029.61	4.54
3	Japan	991.47	4.37
4	United Arab Emirates	498.52	2.20
5	Chinese Taipei	473.64	2.09
6	Singapore	440.41	1.94
7	India	412.47	1.82
8	Qatar	262.70	1.16
9	Turkey	194.11	0.86
10	Hong Kong (SARC)	193.85	0.86

Asia-Top 10 Marble Importers 2009



PAKISTAN

Marble & Granite -Product wise Analysis (FY2008-09) & (FY2009-10)

Source :PASDEC, SBP US$ Million

Sr. No.	HS Code	Products	Export,July- June		Change	
			09-10	09-10	09-10	09-10
1	2515	MARBLE/TRAVERTINE/ALBASTAR,CRUDE ROUGH	18.78	13.81	4.97	**35.99**
2	2516	GRANITE/PROPHYRYL/BASALT, CRUDE/ROUGHLY TRIMMED	0.04	0.05	(0.01)	**(14.89)**
3	2517	PEBBLES,GRAVEL/CRUSH STONE, MACADAM OF SLAG, DROSS ETC	0.72	0.41	0.30	**72.95**
4	2521	LIMESTONE FLUX, LIMESTONE & OTHER CALCARIOUS	7.34	7.15	0.19	**2.67**
5	2522	QUICK LIME, SLAKED LIME & HYDRAULIC LIME	0.18	0.60	(0.42)	**(69.93)**
6	6801	SETTS, CURBSTONE & FLAGSTONES OF NATURAL STONE	4.88	2.10	2.78	**132.38**
7	6802	WORKED MONUMENTAL OR BUILDING STONE	6.71	5.70	1.01	**17.77**
8	6804	MILL STONE AND GRIND STONE/OTHER STONES	0.08	0.23	(0.15)	**(65.20)**
9	6815	ONYX (MARBLES)& OTHER MINERAL SUBSTANCES	21.03	17.19	3.84	**22.33**
Total			**59.76**	**47.24**	**12.52**	**26.50**

MODEL QUARRIES IN PAKISTAN

To encourage cluster development and up gradation, some Model quarries to be set up across Pakistan.

Province	FATA	Khyber Pukhtoonkhwa	Punjab	Baluchistan	Sindh
Zone	1. Mohmand Agency 2. Bajaur Agency	1. Mansehra 2. Dir /Chitral 3. Swat /Buner 4. Kohat 5. Mardan	1. Mianwali / Khushab	1. Loralai 2. Loi 3. Lasbella 4. Khuzdar 5. Chaghi	1. Butt Jabal 2. Nagarparkar 3. Thatta / Jang Shahi 4. Sehwan Sharif

MARBLE QUARRY BUNER

TDAP and Pakistan Stone Development Company (PASDEC) are jointly collaborating to develop Model Quarry Buner in Khyber Pukhtoonkhwa. TDAP has already released Rs. 50.00 Million to PASDEC and Rs. 66.52 Million are yet to be released. However, balance amount will be released by TDAP after submission of accounts by PASDEC and subsequent reconciliation.

QUARRIES UPGRADATION

From among the quarries already in operation using orthodox methods of mining a few may be selected for up gradation. Up gradation will entail Skill Development, Machinery Up gradation and Awareness of Modern Techniques. Setting up of a pool is necessary to provide latest machinery to mine owners on reasonable rates.

Upgraded Quarry:

Low investment, utilize common Machinery pool, Strich Drill, wire saws, quality Improvement West Mitigation (50%-75%)

Model Quarry:

High Investment, Dedicated Earth Moving, Machinery Chain Saw Skill Development, High Quality Standards, Lower Wastage (30% - 45%)

MARBLE CITIES IN PAKISTAN

Sr. #	Name	Land (Acre)
1	**Marble City Karachi** ❑ MoU signed between PASDEC & BOI Sindh for Land	300
2	**Marble City FATA** ❑ FDA has invested Rs. 352 Million for Grid Station, Land & Access Road ❑ Master Plan Finalized	300
3	**Marble City Risalpur** ❑ Plots Allotted, Down payment in Progress ❑ Master Plan & Detailed Completed ❑ Tender for Civil Work is in process ❑ Electricity Arrangements are underway ❑ Total Rs. 47 Million received against Down payment	185
4	**Marble City Chitral** ❑ Land Identified ❑ Business Plan submitted by PASDEC to Government of Khyber Pukhtoonkhwa	50
5	**Marble City Loralai** ❑ Land allocated, Contour Mapping Completed	50

INDUSTRIAL ESTATES

1.Gidani / HUB (Baluchistan)
2.Risalpur–EPZA(Khyber Pukhtoonkhwa)
3.Karachi (Sindh)
4.FATA
5.Islamabad
6.Loralai
7.Chaghi
8.Chatral
9.Lahore
10.Buner
11.Chakdara
12.Thatta
13.Khuzdar
14.Quetta

PROCESSING INDUSTRY OF MARBLE & GRANITE

The processing industry for Marble in Pakistan started in to late sixties with housing construction boom .At the time there was much demand for low cost, low quality, locally processed stone produced by local processing equipment.

The midseventies brought imported Plants from Italy .Initially the plants were second generation machine that were barely capable of cutting slabs and Tiles and high speed.

Today there are still processing Units with complete range of machinery and equipment capable of processing stone in accordance with International Standards.

Processing Units of Major Areas in Pakistan

Province	Area	Total	Gang-Saw	H/V Cutter	Single Cutter
NWFP	Mansehra Mardan Peshawer	400	20	400	800
FATA	Muhammad Agency Khyber Agency Bajur Agency	250 350 50	15 2	335 350 75	500 700 150
Baluchistan	Quetta Loralai Lasbela	14 25 35	1 1 20	7 22 35	7 15
Sindh	Karachi	500	100	500	100
Total		**1,624**	**159**	**1,724**	**3,242**

Major Marble & Granite Importers to Pakistan

Source: ITC US $ Million

Importers	Value Exported in 2009	Share in Pakistan's Imports	Share in the World's Exports
World	0.265	0.100	0.100
Afghanistan	0.087	0.032	-
China	0.041	0.015	0.006
Greece	0.028	0.010	0.004
Italy	0.027	0.010	0.017
Egypt	0.025	0.009	0.010
Iran	0.021	0.007	0.005
Chinese Taipei	0.017	0.006	0.001
U.A.E	0.011	0.004	-
Spain	0.009	0.003	0.013

Research & Development In Pakistan

- Study of More than 120 stones of Pakistan
- Testing of more than 70 stones available in Pakistan
- Branding of 18 Dimension Stones
- Marble Institute of America (MIA) membership
- Collaboration for Quarry Skill Development & international accredited training programs with International Institute of marble (ISIM)-ITALY
- Collaboration with international partners like, Progetto Sud, Ipalmi, University of Perugia for establishment of three Marble Mosaic, Inlay and handmade Development Centre one each in Quetta, Chaghi and Mansehra.
- A comprehensive study of Egypt Marble and Granite Sector
- Developed a training curriculum and training manual for Quarry Trainings
- PASDEC will conduct International Accredited Stone Test from Turkey
- Publication of quarterly Company Newsletter “STONEBIZ”

EXPORT PROMOTION OF MARBLE & GRANITE

Pakistan has sizable reserves of high quality of Marble & Granite .Yet while neighboring India occupies fourth position in global Export of Marble and Granite products share of Pakistan is insignificant .In order to increase the exports it is essential to reduce cost of production, improve product quality and develop a sustainable market.

Pakistan earns sizeable foreign exchange from sale of raw Marble for the present but the ultimate aim should be to export finished products – polished slabs and value added products .So as to earn maximize foreign exchange .The projects with supply and fixing should be undertaken by enterprises within Pakistan as well as abroad as there is lot of profit in such activities.

The following proposals for promoting Marble & Granite (Minerals Sector)

- For conducting overseas market potential survey
- Propose a collective /group participation of private companies involved in quarrying ,processing and trading /export of stones in at least in four international Stone fair in Pakistan
- Propose organizing an international stone fair in Pakistan
- Propose scheme for bringing in overseas Byers to international fairs being held in Pakistan as well visit to quarries, processing plants.

These activities shall have to be under taken in the beginning of first year of implementation as by than industry will have become self sufficient mechanization of Quarries will have been done modern processing plants will have been established and a number of value added products will be available from the manufacturing units

The above activities can be entrusted so that in 10 years period Pakistan rises to become one of the top ten stone exporting countries in the world.

The Advisory committee on Marble & Granite

Sr.No.	Name	Address
1	Chairman, All Pakistan Marble Industries Association Mr.Haroon Rashid	Bhatti, Plaza I-9 Markaz,Islamabad
2	Mr.Farrukh Majeed	Flate#1,Talla Plaza ,I-9 Markaz Islamabad
3	Mr. Ihsanullah Khan	Chief Executive,Pakistan Stone Development Company ,Islamabad Chamber of Commerce Building,Mauve Area,G-8/1 Islamabad
4	Mr.Muhammad Arif	CEO,Mehran Marble Industries 1D9/3 Manghoper Road ,Qasba Moteroville,Karachi
5	Mir Saeed Zahri	CEO,Zahri Corporation(Pvt)Ltd.S-32,SITE,Hawksbay Road,Karachi
6	Mr.Shahid R.Khan	Cief Executive,Indus Minning Company Peshawer .He is also Executive Commette Member of Tribale Area Chamber of Commerce& Industries
7	Mr.Nazim Hashwani	CEO,Syndicate Mineral Export Company 108-Cotton Exchange Building ,I.I chunrigar Road Karachi
8	Mr.Khurram Rangoonwala	CEO, Hannan corporation, 1-D25/26 Mangopeer Road ,Qasba Metrville,Karachi
9	Mr.Khurrum Ibrahim	CEO,Memon Marble Industries ,1-D 9/32 Mangopeer Road ,Qasba Metrville,Karachi
10	Mr.Aslam Shafi	CEO,Shabir Marble Works ,Plot# A-52 Wilayatabad,Manghopir Road ,Karachi.
11	Mr.Abdul Hameed Shera	CEO,Marina Marble & Granite Industries,Plot# M-1 Hasrat Mohani colony, SITE, Karachi
12	Prof. Dr.Imdadullah Siddiqui	Centre for pure & Applied Geology University of Sindh,Jamshoro

Leading Exporters of Marble & Granite in Pakistan

S.No	Firm name	Contact	Items
01.	Mr. Haroon Rashid, Director M/s. Marmonyx, 504 Windsong Place, Block 7 & 8, KCHS, Karachi	Ph: +92-021-6976381 Cell 0300-8228982 E-mail: haroon@marmonyx.com	Marble/ Slabs/ Blocks
02.	Mr. Abdul Hameed Shera , Chief Executive Officer, M/s. Marina Industries, M-1/1, Hasrat Mohani Colony, S.I.T.E., Karachi	Ph:+92- 021-2577490 Cell: 0300-9233819 E-mail: marinaindus@yahoo.com	Marble
03.	Mr. Sana ullah Khan, Chief Executive Office, M/s. SANCO B-18 Block -3, Gulshan-e-Iqbal, Post Code # 75300 Karachi	Ph:+92- 021-6553838 Fax: +92-021-4960416 E-mail: sanco@inbox.com Cell: 0332-225555	Marble Blocks/Slabs
04.	Ms. Azra Ahmed, M/s. Rivaj, 18, Khayaban-e-Shaheen, Phase # 5, DHA, Karachi	Cell:+92- 0334-3478487 Ph:+92- 021-582347-2 azra@rivajcraft.com	Marble/ Handicrafts
05.	Rao Iftikhar, Al Hamra Handicrafts 3rd floor 92-C 11th Commercial Street, Phase-2, Extension DHA, Karachi	Cell:+92- 0300-5001231 Ph:+92- 021-5380539 Email:alhamra@cyber.net.pk	Marble & Granite
06.	M/s. Hassan Marble Plot # 375-A, Potohar Road, 1/9 Industrial Area, Islamabad	Ph:+92- 051-4435374-5 E-mail: infohassanmarbles.com	Marble Handicrafts
07.	Mr. Shahnawaz, Director, M/s. Stone Marks Suit No.11, Millat Plaza F-10, Markaz, Islamabad	Ph:+92- 051-2113646 Cell: 0344-3151468 khan_and_brothers@yahoo.com	Marble
08.	Mr. Shahid-ur-Rehman, Chairman Standing Committee Indus Mining Company (Peshawer)	Ph:+92- 091-9214074 Cell: 0333-9157894 Indus_mining@hotmail.com	Marble & Granite Blocks.
09.	Irfan Orient Arts & Crafts, F-959/3, WAPDA Labour Union Hall, Khokh Muhalah Gari Khata, Hyderabad	Cell: 0336-3049620 E-mail: Iranorientac15@yahoo.com	Marble/ Handicrafts
10	M/S Zehri Onyx & Mineral Syed M.Akhtar Ali 401-4th floor Shawer Trade Centre ,Alma Iqbal Road ,P.E.C.H.S Block-2 Karachi	Ph:+92-021-4391748-49 Cell:0323-2257389 E-mail: abrafnc@gmail.com Fax:+92-021-4559237	Marble & Granite,Mosacs, Iron ore
11.	Syndicate Minerals Export Company (Hashwani Group) 108,Cotton Exchange Building I.I Chundrigar Road ,karachi	Tel:+92-021-32412946-49 Fax:+92-021-32416725 Email:mil@hashgroup.com	Marble & Iron ore –chrome ore

World's Buying Companies of Marble & Granite

Country	Company Name	Address	Contact	Product
China	Xiamen Belson Import & Export Co., Ltd.	21N, C Building,No.38 Yuxiuli, Xiamen, Fujian, China	Tel: 0086-05925042471 Cell: 13906042330 Fax: 0086-05925053120 www.belson.net.cn	Marble& Granite
India	Prabhu Marble & Granite Industries - India	3-6-107 Liberty Road, Himayat Nagar, 5, Hyderabad, Andhra Pradesh India	Tel: +91-562-355028/351600	Marble& Granite
Italy	FURRER S.P.A	Via Covetta, 2 54031 CARRARA - ITALY	Tel. +39.0585.858494 Fax +39.0585.52027	Marble& Granite
Italy	Italian Marbles	GES.CAV. srl Viale Galilei ,15 - 54031 Avenza-Carrara	Tel: +39 0585 026915 Fax: +39 0585 379157	Marble& Granite
Spain	AC Antonio J. Carrer as SA Mr.MARIO ZAKI	Crta. Palma de Mallorca Baleares – Espana	Tel:+34 971 42 9595 Fax: +34 971 42 9596 www.ajcarreras.com	Marble& Granite
Turkey	Kale Marble Import Industry co.ltd Mr.Canan CICEK	Cumhuriyet Mah.Mevlevi Cad.Cincikli Is Merk.No:40/38	Tel:+90 352 222 39 42 Cell: +90 532 411 67 92 Fax +90 352 222 39 42 www.kalemarble.com.tr	Marble& Granite
Turkey	Agora Marble Ltd. Co.	1385 Sok. No:3/608 Yeni Asir Is Merkez i Alsancak, Izmir, 35210, Turkey	Tel:+90 232 4252549 Fax:+90 232 4259879 www.agoramarble.com	Marble& Granite
United Arab Emirates	Total Solution Middle East LLC Mr.Mick Flaherty	PO Box 283712 Dubai United Arab Emirates	Tel:+971 4 450 8368 Fax:+971 4 450 8371 E:mick@totalsolutionsme.com	Marble& Granite

Marketing of Marble & Granite in Future

Venue	Exhibition Name	Duration	Products in Focus
Moscow, Russia	Expostone 2011	22-06-11 to 25-06-11	Natural Stones
Verona, Italy	Marmomacc (Natural Stones Trade show)	29-09-11 to 02-10-11	Natural Stones
Riyadh, Saudi Arabia	Saudi Stone	18-10-11 to 21-10-11	Natural Stones

1) Expostone 2011 Moscow is selected to explore the export potential in Russian Federation, CIS & Eastern European countries on the strong recommendation from All Pakistan Marble Industry Association .

2) Marmomacc (Natural Stones Trade show) Verona has been selected being the biggest event in Marble and Granite sector in the world.

3) The Saudi Stone has been selected due to tremendous emerging construction activities in Saudi Arabia. It will also serve the purpose of Marketing in the neighboring Middle East countries.

Beside participating in above mentioned Fairs, Exporter's Delegation may also be formed to explore the markets of participating countries simultaneously.

(Participation in International Trade Fairs & Exhibitions cum Delegations)

SUGGETIONS & RECOMMDATIONS

It is necessary to provide invectives / steps with following objectives:

- Inland Subsidy & Freight Subsidy should be increased and implemented over value added Products of Marble as an incentive for Exporters to generate more revenue,
  Subsidy as Export of Marble to the EU, CIS and to the central Asians countries it can reduce cost of transportation that may create comfort for Exporters in contributing in increase of Export, in Marble export continuously increase of 80% till to November 2010-11.

- To develop High quality Manpower of Pakistan

- To serve as centre of Knowledge for Pakistan

- To provide world class consultancy for public and private sector Projects specific to dimension stone

- To assist all stake holders to develop standard Marble of Pakistan

- To carry out research and development activities to find solution to develop new products and promote export

- To organize seminars and talk shows to disseminate Knowledge and create country wide entrepreneur awareness

- To launch a Dimension stone Magazine/Research journal specifically focusing on products, markets, issues and solutions of this industry.

CONCLUSION

The Marble is developing on unorganized lines .one of the key reason for this slow progress of this sector is dismally low level of education of the work force and Mines owner engaged in Quarrying Processing, Marketing sales of Construction Stones.

The Global Market access of Marble through duty free under GSP based on new incentives arrangement i.e. Pakistan is front line state fighting against Terrorism.

We can achieve the export target of Marble & Granite provided Law & Order situation in FATA & Khyber Pukhtoonkhwa improves and needed electricity is available to cater the requirements of subsequent processing of Raw material.
(2010 to2011) exports of Marble & Granite have reached US$ 41.09 Million.

An Institute of Marble should be established at District Meerpur Khas (Sindh) where the royalty should be given of scholarship to those people are living around Therparker & Thata Districts (Sindh) having huge deposits of Marble & Granite .These are under developing areas people can not afford money. How ever it is not beneficial to hire work force to Pakistan by broad i.e. adding higher cost .Regarding this we should prefer to educate the Manpower living along Mineral areas of Pakistan.

Free Trade Agreements or Global Market access becomes than following incentives for Exporters should be implemented as the recommendation of (APMIA) All Pakistan Marble Industries Association.

- Quota system to be implemented for Raw Material (Blocks) export or Raw Material export be allowed to only those Exporters who also export value added products.

- Some Rebate may be offered to Marble Exporters on value added products as incentive.

- TDAP may instigate Financial Institutions to give priority to Marble sector by offering soft term financing facilities.

References:

1. **Organizations:**
   - Geological Survey of Pakistan (GSP)
   - Pakistan Mineral Development Corporation (PMDC)
   - Federal Bureau of statistics (FBS)
   - M/S Zehri Onyx & Minerals
   - SK stones,SK Traders,Inc.
   - Research Analysis Directorate, TDAP
   - Pakistan Stone Development company(PASDEC)

2. **Books & Journals:**
   - Minerals & Rocks for Industry by Zaki Ahmad & Razi Ahmad Siddiqui issued by Geological Survey of Pakistan, Quetta
   - Mineral statistics of Pakistan by Nazrul Islam, Syed Anwar Hussain, Syed Qamar Abbas & Muhammad Ashraf issued by Geological Survey of Pakistan
   - Geological Bulletin by University of Peshawar
   - Journal of Himalayan Earth Sciences 39 (2006) page 55-59 by Irshad Ahmad1 and Noor Jehan, Department of Environmental Sciences, University of Peshawar
   - Dana's System of Mineralogy, (6th edition), Page 678-680.

2. **Websites:**
   - *www.en.wikipedia.org/wiki/soapstone*
   - *www.ima-eu.org/en/talcwhat.html*
   - *www.ima-na.org/talc*
   - *www.usgs.gov*
   - *http://pubs.usgs.gov*
   - *www.luznac.com*
   - *www.haichenco.com*
   - *www.bisnetindia.com;*
   - *www.golcha.com;*
   - *www.mineral.galleries.com;*
   - *www.wwmag.net*
   - *www.trademap.com*
   - *www.gsp.gov.pk*
   - *www.pmdc.gov.pk*

Glossary of Marble & Granite Terminology

AGATE: A natural mineral, a stone marble desired by mibsters, as in bulls-eye agate. Name adopted by early American marble manufacturers to describe any and all classes, types and styles of marbles; ceramic, as in trademarks Dyke's American Agates, registered Samuel C. Dyke; glass, Akro Agate, registered The Akro Agate Company.

AGGIE: Mibster's slang for a marble; can be of any class, type or style, though originally derived from the word agate as in a natural stone marble.

ALLIES: Mibster's slang for a marble, often a shooter.

ANNEAL: A means of tempering a hand-made glass marble to reduce its brittle nature and give it added strength. Once completed, the marble is placed in an annealing oven where its temperature is reduced slowly over a 24 hour period to room temperature. The removal of differential thermal stress. Machine-made glass marbles are not annealed.

ANTE: As used in the play of marble games, where each player starts out by placing into the ring an equal number of marbles or marbles judge to be of equal value.

BATCH: A properly proportioned mixture of raw materials to be delivered to a melting apparatus, a furnace, which when melted becomes molten glass.

BENNINGTON FANCY: A glazed stoneware marble, as above, glazed in multicolored patches as if sponged.

BERRY PINK: Known as the "Marble King", Berry Pink was involved with selling and marketing marbles since the early 1930's. Realizing that he could sell more marbles then he could get his hands on from the manufacturers, Berry started to produce his own marbles. Marble King in Paden City, West Virginia is his living legacy.

CANE: Also "cane marble"; a glass rod used in the manufacture of hand-made marbles.

CARNELIAN: A type of natural agate stone marble, made of chalcedony, with a reddish waxy appearance, a highly coveted shooter marble by young mibsters

CATS-EYE MARBLE: Second only to the hand-gathered onyx marble in length of time in continuous production, the Cats-Eye was introduced in Japan

in the 1950's and is still one of the most commonly produced marbles in the world today

CHINAS: A ceramic marble manufactured of porcelain. A popular type of marble manufactured in Europe;

DING: Concerning the condition of a marble; a sign of slight damage, a mark appearing on the surface of a glass marble cause by impact.

DIVINING: A humorous term; process used to determine the origins and dates of a marble's manufacture by staring intently into the marble to divine its past.

FACET: Agate marbles ground by hand will upon close inspection reveal numerous tiny flat spots or "facets." Also sometimes seen on hand-made glass marbles where the pontil was ground smooth.

FLAKE: As it relates to the condition of a marble determining value. A sign of damage, a small portion that's missing from the surface of a glass marble.

FOAMER: As in a 'marble foamer; a term used largely by museum personnel to describe a rabid collector of any type of artifact,

GERMAN SWIRLS: Among the most common German hand-made glass marbles made from canes, sometimes called German spirals or candy-stripes in the older days of the hobby

GOB: A marble sized portion of molten glass delivered either by the hand-gather process or by an automatic gob feeder.

HAND-MADE MARBLES FROM CANES: These marbles are easily identified by two cut-off marks, one at each axial pole.

IMMIE: Term that appears in the historic record as mibster's slag for a marble made of glass, which imitates the look of a natural agate marble.

LATTICINIO: Also Latticinio Core, A hand-made glass marble made from cane, a swirl marble with Thin stripes or ribbons of colored glass,

LEHR: The name given to an annealing oven, where a glass article can slowly come to room temperature, giving it added strength. A necessary process for hand-made glass marbles. Also see anneal. Machine-made glass marbles are not annealed.

LUTZ: A hand-made glass marble made from cane, which contains a sparkling powdered goldstone. A highly desirable and very valuable marble. In a pamphlet titled "Marbles:

MARVERING: As related to the manufacture of hand-made glass marbles; rolling a gather of glass on a flat plate whereby it is shaped into a cylindrical form and slightly cooled.

MIBOLOGY: The study of marbles
MIBOLOGICAL: Relating to the field of study of marbles

MOLD-MARK: A diagnostic trait used to identify ceramic and glass marbles manufactured from molds. A slightly raised ridge circling the equator of a marble, also often ground smooth leaving trace of grinding.

ONYX: As relates to a type of hand-gathered glass marble, can be hand-made or machine-made. Original to the United States. Also see Leighton US Patent Number 462,083. Registered, J.H. Leighton: American Onyx marble. Registered, M.F. Christensen: National Onyx Marble

OPAQUE: A solid single color marble being either hand-made or machine-made marble, also see purie.

PEE WEE: Any small marble 1/2" in diameter or less. Sometimes thought to be the name-sake of New York Yankee's Captain Peewee Reese, an outstanding ball player of diminutive size,

PINPRICK: A very small mark of imperfection on the surface of a marble, caused by any sort of impact. Also sometimes called a flea bite, or pit.

PIT: A very small mark of imperfection on the surface of a marble, caused by any sort of impact. Also sometimes called a flea bite, or pin-pick.

RIBBON CORE: A hand-made glass marble made from a cane, with a single or two wide bands of colored glass running through the center of the marble from pole to pole.

SLAG: ('Onyx Marble') A derogatory term used in the hobby to describe an 'onyx' marble.

SOLID CORE: A hand-made glass marble made from a cane, where colored stripes or bands swirl within in the center of the marble running from pole to pole.

SPANNING: As used in the play of marble games. It is a means of measurement, defined by the distance between the tip of the thumb and the out stretched tip of the forefinger and used in those games whereas the object is to place your marble as close to a target as possible. A technique used in the game of Rolley Hole

STONEWARE MARBLE: A ceramic material used in the manufacture of marbles, often glazed

SUBMARINE: A fluke in the design feature of a marble, as in a strand or stripe that would normally appear on the surface of the marble, can be seen instead the body of the marble.

SUBSURFACE MOON: A sign of damage appearing under the surface of a marble, usually in the shape of a moon, thus the name. It is cause by an impact and usually reduces the value of the marble. Also called a Bruise Mark.

SWIRL: This is a broad category of marbles. It includes handmade marbles, usually made from canes, with bands or stripes of different colors running from pole to pole. It is also used to define machine-made marbles with one or more colors swirling about the marble.

SULPHIDE: Referred to as "figure marbles" in the historical record, these marbles have a small white figure inside a clear glass marble (can be translucent greens, blues, ambers, etc. but in these colors they are very rare.

TAW: A name most often used in the United Kingdom to describe a shooter marble, usually made of stone, either limestone or agate.

ZANESVILLE, OHIO: Ceramic marbles were produced in Zanesville, Ohio in limited numbers during the early 19th century.