

Update Report on Natural and Engineered Stone Industry

December 2022

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1. Economic Outlook

1.1 Global economy outlook

As per the International Monetary Fund (IMF)'s World Economic Outlook growth projections released in October 2022, the world economy grew by 6 % in CY21¹ majorly due to economic recovery and the lower base. For CY22, projection for global economic growth slashed to 3.2% citing disruptions due to the Russia-Ukraine conflict and higher-than-expected inflation worldwide. The CY23 is projected to slow down further to 2.7% mainly due to tightening global financial conditions, expectations of steeper interest rate hikes by major central banks to fight inflation, a sharper slowdown in China and spillover effects from the war in Ukraine with gas supplies from Russia to Europe tightening. The IMF projects world economy growth between 2.6%-3.3% on year on year (Y-o-Y) basis for next 5 years.

IMF revises the GDP growth outlook considering uncertainties relating to global inflation

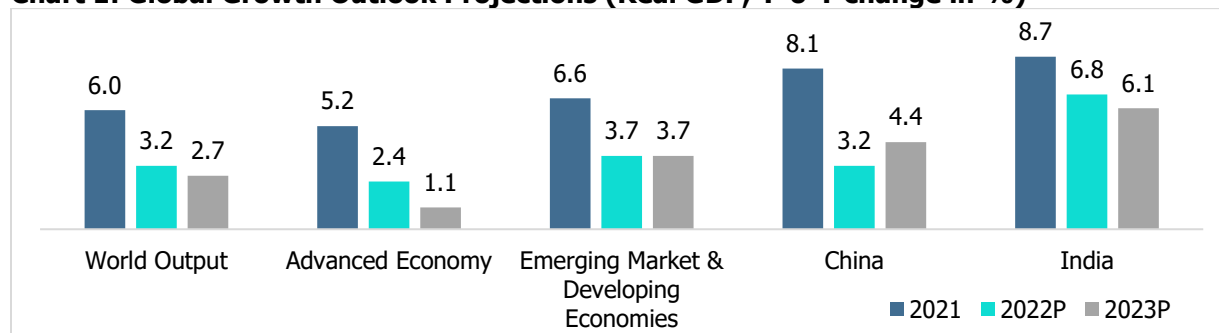
Advanced Economies Group

For the major Advanced economies group, the GDP growth is projected to be lower at 2.4% in CY22 and 1.1% in CY23. One of the major countries from this group is United States.

The baseline growth for United States is revised down by 0.7 percentage points for CY22 and remains unchanged for CY23. This is reflective of declining real disposable income impacting consumer demand with higher interest rates taking toll on spending.

The growth in Euro Area is comparatively less pronounced than that in United States, which displays average of performance of the member countries in Euro Area. Recovery in tourism related services and industrial production in Italy and Spain, Russian gas supply cuts, tighter financial conditions, with rapidly rising policy rate reflects upward revision of 0.5 percentage point in CY22 and downward revision 0.7 percentage point in CY23.

Chart 1: Global Growth Outlook Projections (Real GDP, Y-o-Y change in %)



Notes: P-Projection

*For India, data and forecasts are presented on a fiscal year basis and GDP from 2011 onward is based on GDP at market prices with fiscal year 2011/12 as a base year.

Source: IMF – World Economic Outlook, October-2022

¹ CY – Calendar Year

Emerging market and developing economies group

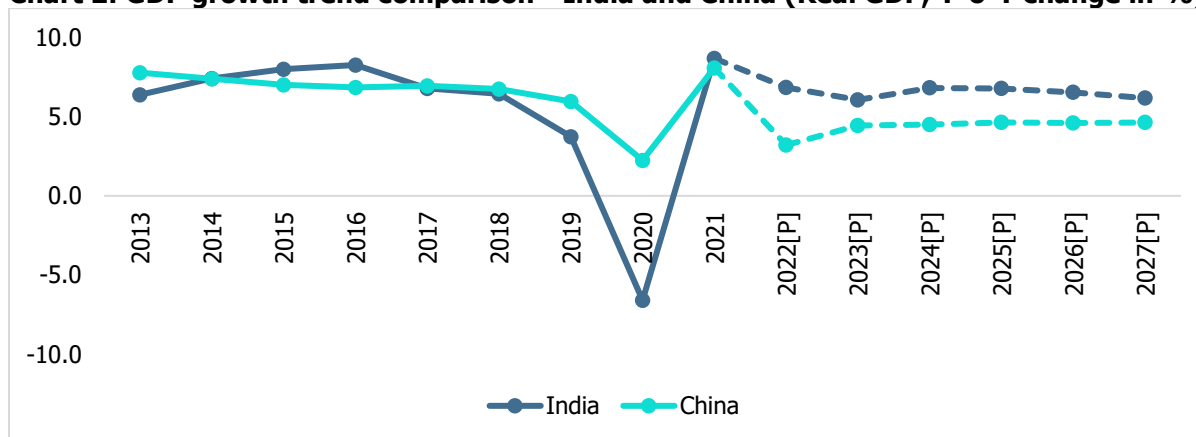
For the Emerging market and developing economies group, GDP growth is expected to decline to 3.7% in CY22 and sustain at that level in CY23. This downgrade is primarily reflection of sharp slowdown of China’s economy and the moderation in India’s economic growth. The China’s GDP growth is expected to slow down to 3.2% in CY22 and then pick-up to 4.4% in CY23. This is the lowest growth in more than four decades, excluding the initial COVID-19 crisis in CY20. Shanghai, a major global supply chain hub, entered a strict lockdown in April 2022 due to worrisome surge in Covid-19 cases, forcing citywide economic activity to halt for about eight weeks. The worsening crisis in China’s property sector is also dragging down sales and real estate investment. Furthermore, COVID pandemic related intermittent lockdowns continue to adversely impact economic growth.

The estimates for India’s GDP growth have been downgraded to 6.8% in CY22 and 6.1% in CY23. This downgrade is majorly reflection of weaker-than-expected outturn in the second quarter and more subdued global demand.

India to remain fastest growing economy transcending China

Despite of the turmoil in last two-three years, India bears good tidings for becoming USD 5 trillion economy by CY27. According to the IMF dataset on Gross Domestic Product (GDP) at current prices for India, the current GDP is estimated to be at USD 3.5 trillion for CY22 and projected to be at USD 5.5 trillion by CY27. The expected GDP growth rate of India for coming years is almost double as that of world economy.

Chart 2: GDP growth trend comparison - India and China (Real GDP, Y-o-Y change in %)



P- Projections; Source: IMF, World Economic Outlook Database (October 2022)

Besides this, India stands out as the fastest growing economy amongst the major economies. Outshining the growth rate of China, the Indian economy is expected to grow at more than 6% rate in the period of CY23-CY27.

Indian economy is paving its way towards becoming largest economy in the world. Currently, India is the third largest economy globally in terms of Purchasing Power Parity (PPP) with ~7% share in global economy with China [~18%] on the top and United states [~15%] being second. Purchasing Power Parity is an economy performance indicator denoting price of an average basket of goods and services that a household needs for livelihood in each country. In spite of the pandemic and the geo-political tensions in Europe, India has been one of the major contributors to world economic growth.

1.2 Indian Economy Outlook

1.2.1 GDP growth and Outlook

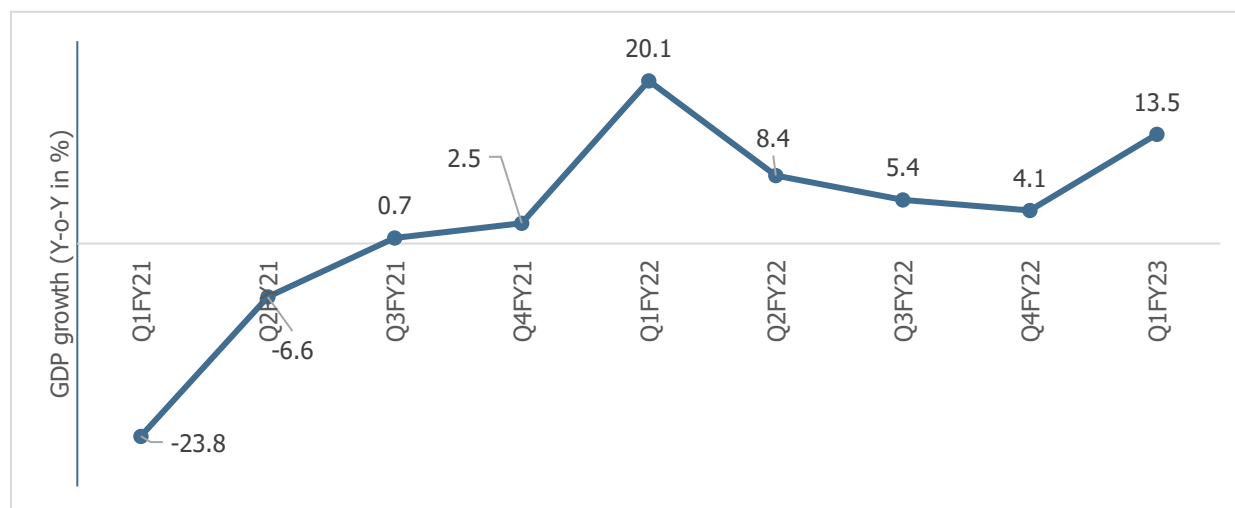
Resilience to external shocks remains critical for near-term outlook

The FY21² started with the country being hit by the pandemic which saw lockdowns and restrictions being imposed across states. This impeded economic output in Q1FY21 and led to a year-on-year (y-o-y) decline of 23.8% in GDP. By the end of Q4FY21, the economy preceded the way to recovery. In broader sense, the pandemic resulted to 6.6% of negative growth for the Indian economy in FY21.

The Indian economy bounced back strongly in Q1FY22 with 20.1% y-o-y growth due to lower base effect. The easing of lockdowns and restrictions across states since June coupled with the decline in Covid-19 cases and higher vaccination rate facilitated higher economic activity as reflected in the GDP for the Q2FY22, which grew annually by 8.4%. The dip in Q3FY22 of 5.4% can be attributed to the fading base effect. India’s economy recorded modest growth of 4.1% in Q4FY22, down from 5.4% in the previous quarter. The economy was hit by the third wave of Covid-19 pandemic during the quarter. Global supply bottlenecks due to the Russia-Ukraine dispute and higher input costs slowed down the pace of recovery in the last quarter. Overall, India is expected to have witnessed 8.7% growth in FY22.

In Q1FY23, India recorded 13.5% growth in GDP which can largely be attributed better performance by agriculture and services sectors. Prospectively for the FY23, the announcements in the Union Budget 2022-23 on boosting public infrastructure through enhanced capital expenditure are expected to augment growth and crowd in private investment through large multiplier effects. However, heightened inflationary pressures and resultant policy tightening may pose risk to the growth potential.

Chart 3: Growth in GDP at constant prices (Y-o-Y in %)



Source: Ministry of Statistics and Programme Implementation (“MOSPI”)

²FY – Financial Year

GDP growth outlook

The announcements in the Union Budget for Fiscal 2023 on boosting public infrastructure through enhanced capital expenditure are expected to augment growth and boost-in private investment through large multiplier effects.

Table 1: RBI's GDP Growth Outlook (Y-o-Y %)

Q2FY23	Q3FY23	Q4FY23	Q1FY24	FY23
6.3	4.6	4.6	7.2	7.0

Source: RBI press release dated October 14, 2022

With improvement in demand for contact-intensive sectors as well as positive business and consumer sentiment, the discretionary spending and urban consumption is expected to bolster economic growth. Along with increasing government support and push towards capex, the investment activities are expected to stay upright through improving bank credit and rising capacity utilization. On the other hand, headwinds from geopolitical tensions, tightening global financial conditions and the slowing external demand pose downside risks to net exports and hence to India's GDP outlook.

Taking all these factors into consideration, the real GDP growth for 2022-23 is pared down to 7% by RBI for the October 2022 Outlook from the estimated figure of 7.8% for the February 2022 Outlook.

1.2.2 Gross Value Added (GVA)

Gross value added (GVA) is the measure of the value of goods and services produced in an economy. GVA gives a picture of supply side whereas GDP represents consumption.

Industry and Services sector leading the recovery charge

- The gap between GDP and GVA growth has turned positive in FY22 (after a gap of two years) as a result of robust tax collections. Of the three major sector heads, service sector has been fastest growing sector in the last 5 years.
- **Agriculture sector** was holding a growth momentum till FY18. In FY19, the acreage for rabi crop was marginally lower than previous year which affected the agricultural performance. FY20 witnessed growth on account of improved production. During the pandemic impacted period of FY21, agriculture sector was largely insulated as timely and proactive exemptions from covid-induced lockdowns to the sector facilitated uninterrupted harvesting of rabi crops and sowing of kharif crops. However, supply chain disruptions impacted the flow of agricultural goods leading to high food inflation and adverse initial impact on some major agricultural exports. However, performance remained steady in FY22.

The Q1FY23 recorded a growth of 4.5%. Due to uneven rains in this financial year, the production of some major Kharif crops such as rice and pulses was adversely impacted thereby impacting agriculture sector's output growth. Going forward, high prices for agri products and subsidy support from the government, is expected to bode well for the sector.

- **Industrial sector** witnessed CAGR of 4.7% for the period FY16 to FY19. From the March 2020 month onwards, nation-wide lockdown due to the pandemic had a significant impact on industrial activity. In FY20, this sector felt mild turbulence and recorded downfall of 1.4%. FY21 witnessed 3.3% decline on account of adverse impact of covid-19 pandemic. With the opening up of economy and resumption of industrial activity, FY22 registered 10.3% growth which also has a lower base effect.

The industrial output in Q1FY23 jumped 8.6% on y-o-y basis. However, sequentially the sector witnessed a sharp contraction due to lower output across mining, manufacturing and construction sectors. In the coming quarters, easing of commodity price pressures and prospects of improvement in consumption demand are potential attributes to support growth in the manufacturing sector.

- **Services sector** recorded CAGR of 7.1% for the period FY16 to FY20, which was led by trade, hotels, transport, communication and services related to broadcasting and finance, real estate & professional service. This sector had been hardest hit by the pandemic and registered 7.8% of decline in FY21. The easing of restrictions aided a fast rebound in this sector, with 8.4% growth witnessed in FY22.

In Q1FY23, this sector registered growth of 17.6%, on a lower base of Q1FY22. While the output in the sectors related to trade, hotels, transport, communication and broadcasting recorded a good growth of 25.7% on y-o-y basis, it was still 15.5% lower compared with the pre-pandemic level.

Table 2: Sectoral Growth (Y-o-Y % Growth) - at Constant Prices

At constant Prices	FY17	FY18	FY19	FY20	FY21	FY22	Q1FY23
Agriculture, forestry & fishing	6.8	6.6	2.1	5.5	3.3	3.0	4.5
Industry	7.7	5.9	5.3	-1.4	-3.3	10.3	8.6
Mining & quarrying	9.8	-5.6	-0.8	-1.5	-8.6	11.5	6.5
Manufacturing	7.9	7.5	5.4	-2.9	-0.6	9.9	4.8
Electricity, gas, water supply & other utility services	10.0	10.6	7.9	2.2	-3.6	7.5	14.7
Construction	5.9	5.2	6.5	1.2	-7.3	11.5	16.8
Services	8.5	6.3	7.2	6.3	-7.8	8.4	17.6
Trade, hotels, transport, communication & broadcasting	7.7	10.3	7.2	5.9	-20.2	11.1	25.7
Financial, real estate & professional services	8.6	1.8	7.0	6.7	2.2	4.2	9.2
Public administration, defence and other services	9.3	8.3	7.5	6.3	-5.5	12.6	26.3
GVA at Basic Price	8.0	6.2	5.8	3.8	-4.8	8.1	12.7

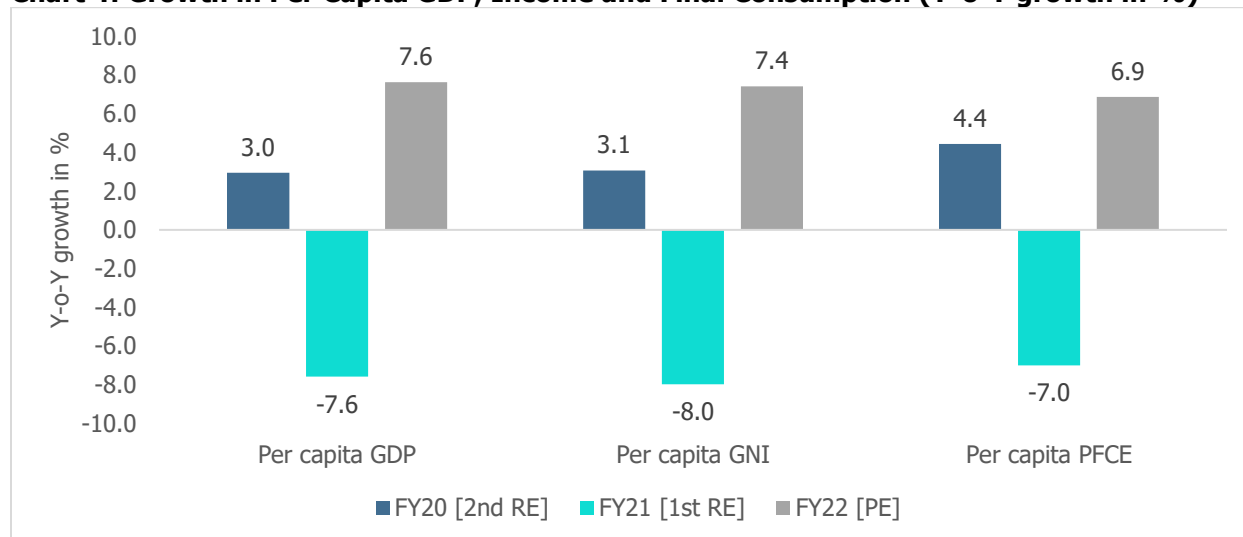
Source: MOSPI

Per Capita GDP, Income and Final Consumption

India has a population of about 1.39 billion with a young demographic profile. (Source: World Bank). The advantages associated with this demographic profile are better economic growth, rapid industrialization and urbanization.

GDP per capita is a measure of a country's economic output per person. Fiscal 2021 witnessed a significant slowdown due to the pandemic. However, in FY22 the economy is on a path of recovery and the per capita GDP is estimated to grow by 7.6%. The Gross National Income ("GNI") is also estimated to increase by 7.4% in FY22. The per capita private final consumption expenditure ("PFCE"), that represents consumer spending, is likely to increase by 6.9% in FY22. Majorly, the FY22 reflects per capita growth due to a lower base.

Chart 4: Growth in Per Capita GDP, Income and Final Consumption (Y-o-Y growth in %)

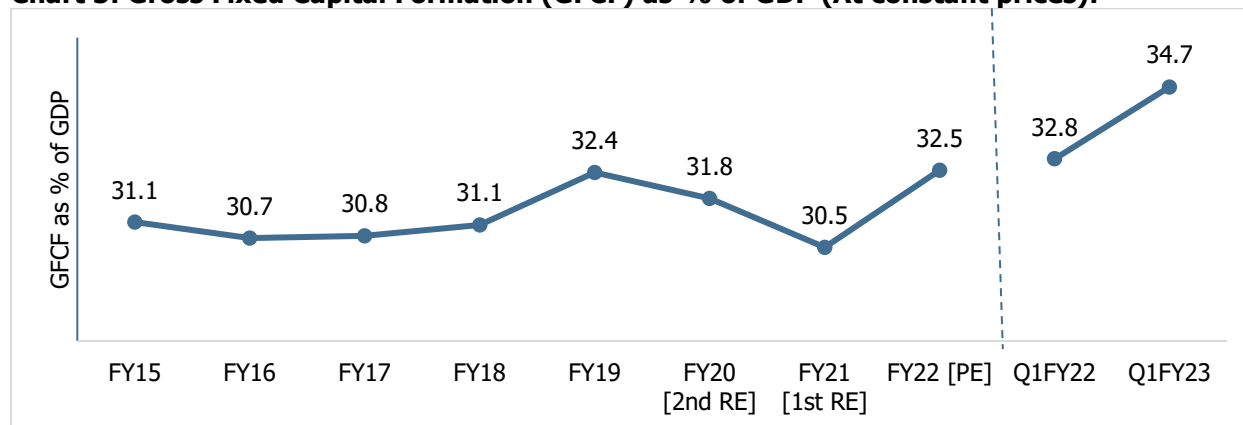


Source: MOSPI; RE – Revised Estimates; AE – Advanced Estimates, PE – Provisional Estimates

1.2.3 Investment Trend in infrastructure:

Gross Fixed Capital Formation (GFCF) which is a measure of the net increase in physical asset, is estimated to have made an improvement in FY22. As a proportion of GDP it is estimated to be at 32.5%, which is the second highest level in 7 years (since FY15).

Chart 5: Gross Fixed Capital Formation (GFCF) as % of GDP (At constant prices):



PE: Provisional Estimates, RE: Revised Estimates, AE: Advanced Estimate; Source: MOSPI

Overall, support of public investment in infrastructure is likely to gain traction as Infrastructure is one of the five pillars of Atmanirbhar Bharat Abhiyaan (Self-reliant India campaign).

1.2.4 Industrial Growth

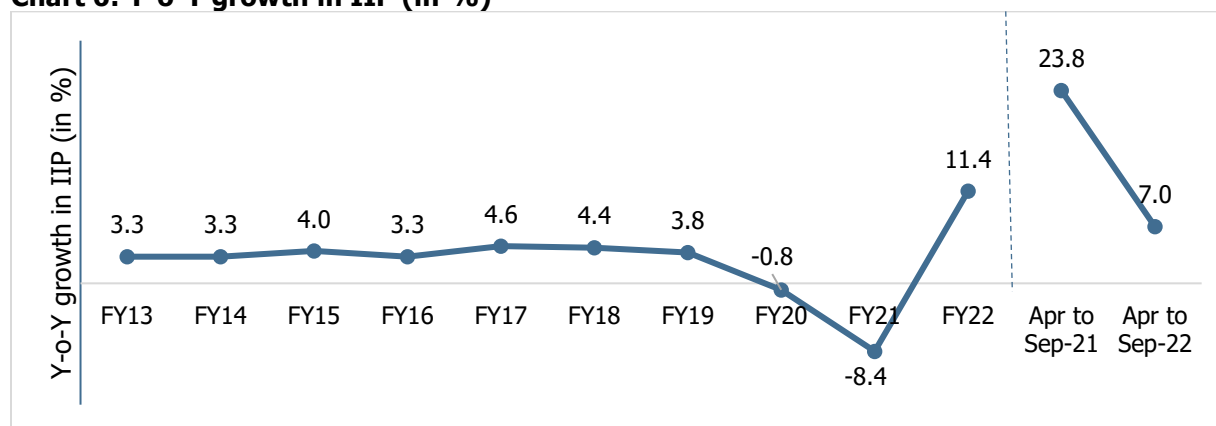
Improved core sector and capital goods sector helps in IIP pickup

Index of Industrial production (IIP) is an index to track manufacturing activity in an economy.

On a cumulative basis, IIP grew by 11.4% in FY22. However, this high growth is mainly backed by a low base of FY21. FY22 IIP was higher by 2.0% when compared with the pre-pandemic level of FY20, indicating that while economic recovery is underway, it is still very nascent.

India’s industrial production moved to the expansion zone recording growth of 3.1% in September 2022 from -0.7% in August 2022. Rebound in IIP was led by expansion in manufacturing (1.8%), mining (4.6%) and electricity (11.6%). Here, improved performance in core sectors and capital goods sector helped in improving industrial output performance from negative to positive territory.

Chart 6: Y-o-Y growth in IIP (in %)



Source: MOSPI

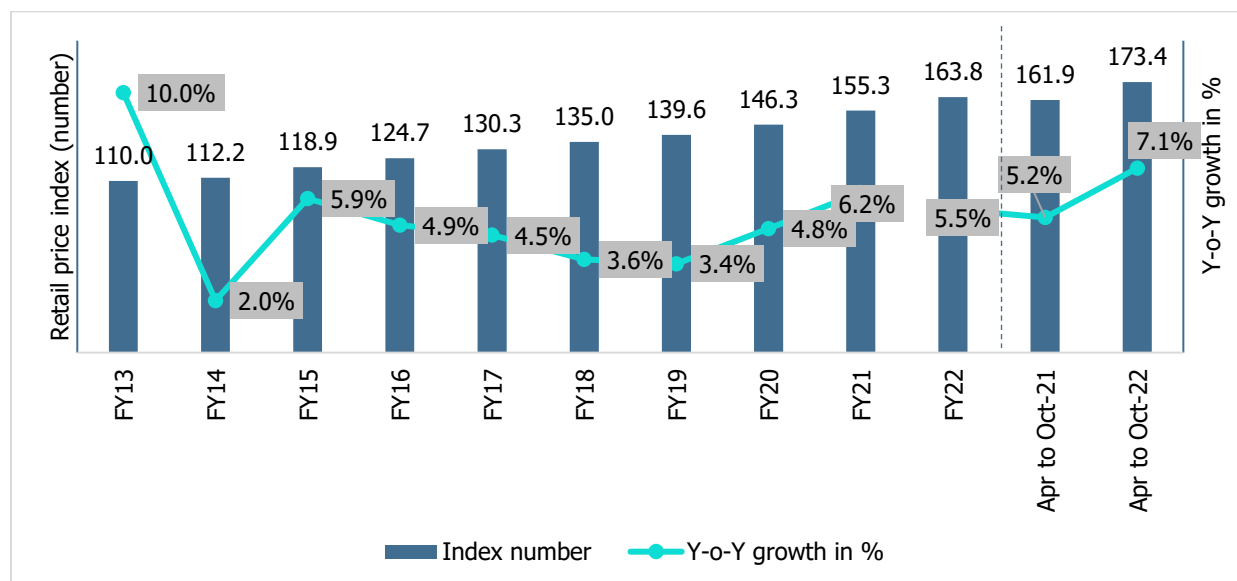
Going ahead, the consumption growth with commencement of festive and wedding season would be a key driver for industrial growth. However, elevated domestic inflation, volatility in commodity prices and global economic slowdown could be the major challenges.

1.2.5 Consumer Price Index

CPI continues to remain uncomfortably high

Inflation has reappeared as a global issue in both advanced and emerging economies. India’s retail price inflation stood at 5.5% in FY22 which is within the targeted tolerance band of 6%. The consumer inflation started to upswing from October 2021 onwards. As per the monthly numbers, the inflation rate reached the tolerance level of 6% in January 2022. Following this, the month of March 2022 registered 6.9% rate.

Chart 7: Retail Price Inflation in terms of index numbers and Y-o-Y Growth in % (Base: 2011-12=100)



Source: MOSPI

Consecutively, during the cumulative period of April 2022 – Oct 2022, the inflation rate remained above the RBI’s tolerance level, surpassing even the band of 7.1%. The retail inflation eased at three months low of 6.8% in October 2022.

The CPI is primarily factored in by RBI while preparing their bi-monthly monetary policy. At the bi-monthly meeting held in October 2022, RBI projected inflation to be at 6.7% for FY23. For the Q2FY23 projections were made at to 7.1%, for Q3FY23 at 6.5% and Q4FY23 at 5.8%. Entering into FY24, CPI inflation for Q1FY24 is projected at 5 %.

Table 3: Component wise retail inflation (Y-o-Y growth in %)

	Food and Beverages	Pan, tobacco and intoxicants	Clothing & footwear	Housing	Fuel & light	Miscellaneous
Weight	45.9	2.4	6.5	10.1	6.8	28.3
May-21	5.2	10.0	5.3	3.9	11.6	7.5
Jun-21	5.6	4.0	6.2	3.8	12.7	7.3
Jul-21	4.5	4.7	6.5	3.9	12.4	6.7
Aug-21	3.8	4.0	6.8	3.9	13.0	6.4
Sep-21	1.6	4.2	7.2	3.6	13.6	6.4
Oct-21	1.8	4.3	7.5	3.5	14.4	6.8
Nov-21	2.6	4.1	7.9	3.7	13.4	6.8
Dec-21	4.5	3.2	8.3	3.6	11.0	6.7
Jan-22	5.6	2.5	8.8	3.5	9.3	6.5
Feb-22	5.9	2.4	8.9	3.6	8.7	6.5
Mar-22	7.4	2.9	9.4	3.3	7.5	7.0
Apr-22	8.1	2.7	9.9	3.4	10.8	8.0
May-22	7.8	1.2	8.9	3.7	9.5	6.8
June-22	7.6	1.8	9.5	3.9	10.4	6.3

	Food and Beverages	Pan, tobacco and intoxicants	Clothing & footwear	Housing	Fuel & light	Miscellaneous
July-22	6.7	1.8	9.9	3.9	11.8	6.7
Aug-22	7.6	1.7	9.9	4.1	10.8	7.0
Sep-22	8.4	1.9	10.1	4.6	10.4	6.1
Oct-22	7.0	1.9	10.2	4.6	9.9	5.9

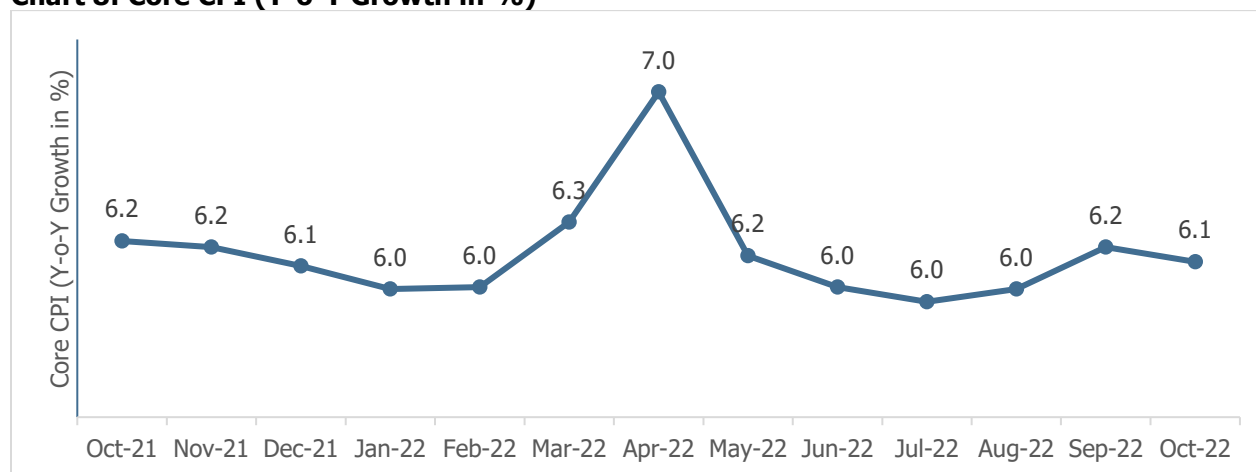
Source: MOSPI

- Food and beverage** inflation came in at 7% in October which was significantly higher than 1.8% registered a year ago. Except edible oils and fruits, all other sub-categories witnessed a sequential gain in prices. The increase was more pronounced for categories such as cereals, vegetables, milk and spices. Cereals prices have been marching upward owing to lower production of rice and wheat, increased festive demand and speculative trading whereas, vegetable prices have gained momentum due to disrupted supply because of the unseasonal rains in October. For instance, the average retail price of tomato witnessed a sharp 23% jump in October from a month ago.
- Fuel and light inflation** Though fuel and light inflation moderated to 9.9% in October from 10.4% in September, there was sequential pickup in price momentum.
- Clothing and footwear inflation** was largely unchanged at last month’s level.
- Housing and personal care** segments witnessed a sharp sequential jump in prices which could be attributed to the festive demand push.

Core CPI

Core inflation (which excludes volatile components, such as food and energy prices) eased out but was still close to the 6.1% mark, indicating that inflation has become broad-based.

Chart 8: Core CPI (Y-o-Y Growth in %)



Source: MOSPI and CareEdge Research

RBI tightening the monetary policy to tame the inflation

RBI hiked its policy repo rate by 50 basis points (bps) to 5.90% in a meeting held between 28-30 September 2022. This was the another policy rate action after a hike of 50 bps thrice in August, June and May 2022 respectively. RBI maintained the liquidity adjustment facility (LAF) corridor by adjusting the standing deposit facility (SDF) rate at 5.65% as the floor and the marginal standing facility (MSF) at the upper end of the band at 6.15%.

The central bank continued to maintain its stance as accommodative.

The consecutive rate hike by the RBI has come against the backdrop of intensifying inflationary pressures in the global and domestic economies. With the US dollar index appreciation to a two decade high in July 2022, both advanced and emerging economies witnessed weakening of their currencies against the US dollar. RBI foresees this could lead to imported inflationary pressure. With domestic economic activities gaining traction, RBI has shifted gear to prioritize controlling inflation. RBI continues to remain focused on withdrawal of accommodation to ensure that inflation remains within the target going forward, while supporting growth.

1.2.6 Concluding Remarks

Despite the global growth uncertainties, Indian economy is relatively better placed. The major headwinds to economic growth are escalating geopolitical tensions, volatility in global commodity prices and shortages of key inputs. However, the bright spots for the economy are continued healthy demand, support from government capital expenditure and improving business confidence. Various high-frequency growth indicators including purchasing managers index, auto sales, bank credit, GST collections have shown improvement in the first few months of FY23.

Despite high food and fuel inflation pressure, the normalizing employment situation after the opening up of economy is expected to improve and provide support to consumption expenditure.

Public investment is expected to exhibit healthy growth as the government has budgeted for strong capital expenditure in FY23. The private sector's intent to invest is also showing improvement as per the data on new investment projects announced. However, the volatility in commodity prices and the economic uncertainties emanating from global turbulence is likely to slow down the pick-up in the private capex and investment cycle.

Among sectors, the industrial segment is expected to be negatively impacted due to high input prices. Nonetheless, with flagship programmes like 'Make in India' and the Production Linked Incentive (PLI) schemes, the government is continuing to provide the support to boost the industrial sector. Service sector are expected to see a bounce back in FY23 with good economic revival and growth. However, in the services sector, some segments like Information Technology would feel the pinch of slowdown in the US and European economy.

2. Overview of Natural and Engineered Stone Industry

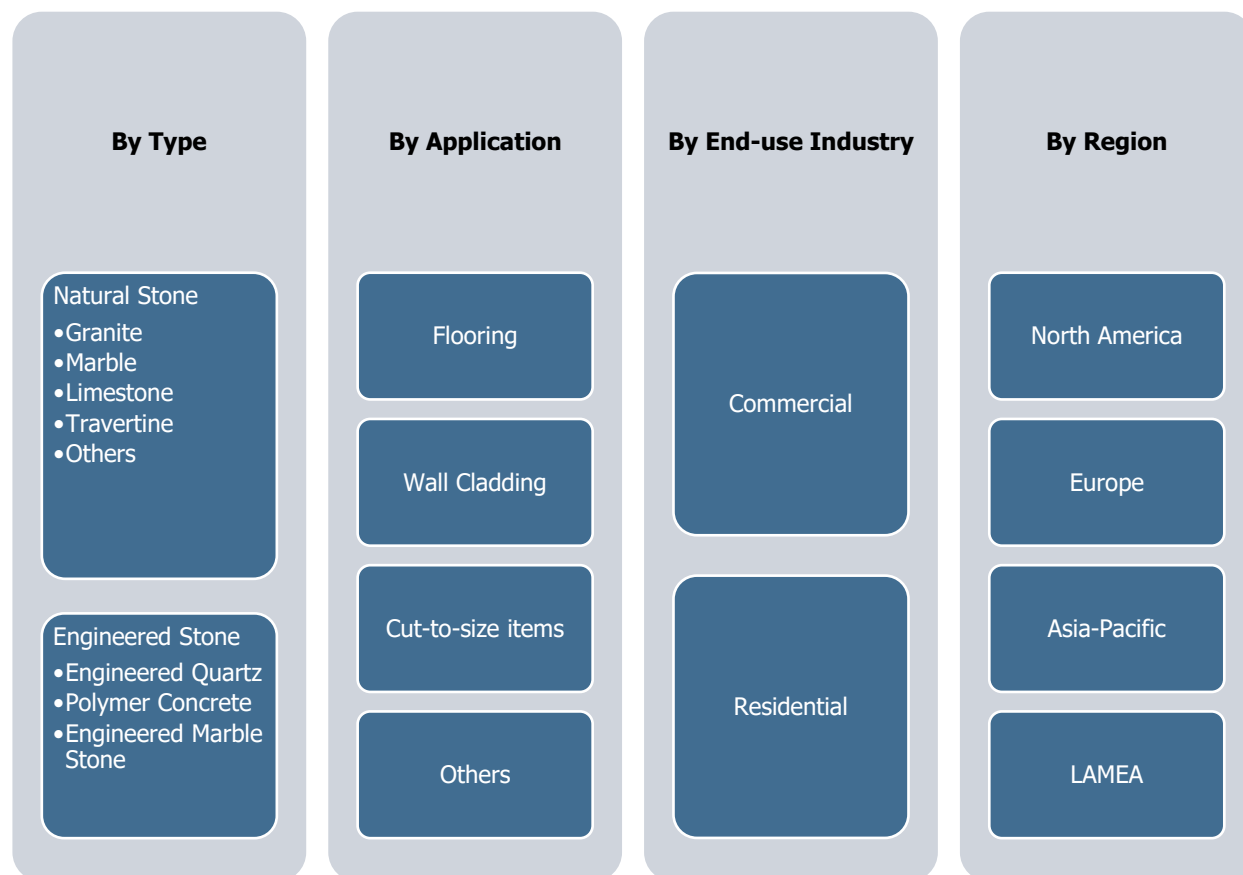
Natural stones are produced by complex geological processes and include a number of products such as granite, limestone, marble, slate, quartzite, onyx, sandstone, travertine, and others that are quarried from the earth. Natural stones are widely known for their uniqueness, aesthetic appeal, texture, color, and composition as no two natural stones are the same.

Natural stones have wide range of applications in large-scale constructions such as construction of government buildings, churches, monuments, and road construction. Previously, for residential construction projects, wood and brick was a non-debatable choice. However, as per recent trends, natural stone is widely used in residential construction owing to its excellent structural and decorative aspects. Some of the popular applications of natural stones in residential construction include atriums, fireplaces, countertops, bathrooms, entryways, and other surfaces. Natural stones are known for the sense of peaceful tranquility that they create and for their distinctive beauty. In addition to aesthetic appeal, natural stones are durable compared to other building materials, such as wood, they can last for decade, and require very little maintenance. Natural stones are also available in slabs that can be as large as 350x200 cm. These stones are available in a variety of finishes such as antiquated, leather, rugged, polished, and tumbled and in a variety of edges such as bull-nosed, beveled, and others.

Quartz, an example of engineered stone used in the countertop industry, is a composite material made up of crushed stone bonded by an adhesive. For instance, for countertops, the slabs are made from quartz crystals bonded with a resin binder. The engineered stone slabs are manufactured by bonding up to 93% natural quartz which is one of the hardest materials, and pigments, aggregates, and polymer resins are used to produce vibrant stone surface with excellent stain, heat, chip, and scratch resistance properties. Also, it is recommended that the engineered stone products should not be used for exterior applications as the direct exposure to sunlight can lead to fading. Owing to this, engineered stones are used for vanity tops, reception or bar counters, kitchen benchtops, upstands and splash backs. The engineered stone is as hard as, and if properly installed it is less prone to cracks or fractures as seen in slate or granite. For instance, natural stones are susceptible to staining from wine, oil, juice, and other substances if the sealant wears off or if it is not properly sealed. However, engineered stone is free from such issues and it can outperform sandstone, granite, marble, and other counterparts. The engineered stone countertops are highly attractive as they have uniform color and texture. Also, engineered stone surfaces are hard, resistant to wear, easy to clean, and free from nuances of installation.

2.1 Market Segmentation

The Natural and Engineered stones can be bifurcated into various segments depending upon their type, application, end use industries and region. We have studied the segmentation of the stones in the following manner:



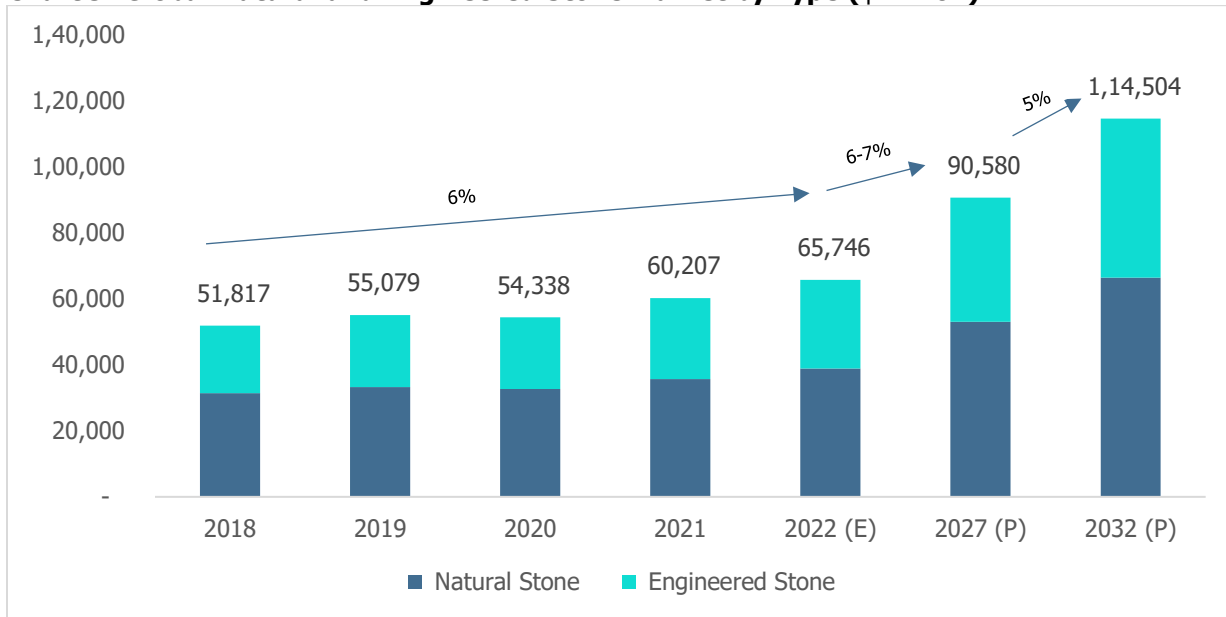
2.2 Market Segmentation by Type

Depending on the type, the stone market has been categorized into natural stone and engineered stone.

The global natural and engineered stone (combined) market is expected to account for \$65,746 million in 2022 and is expected to reach of \$1,14,504 million by 2032.

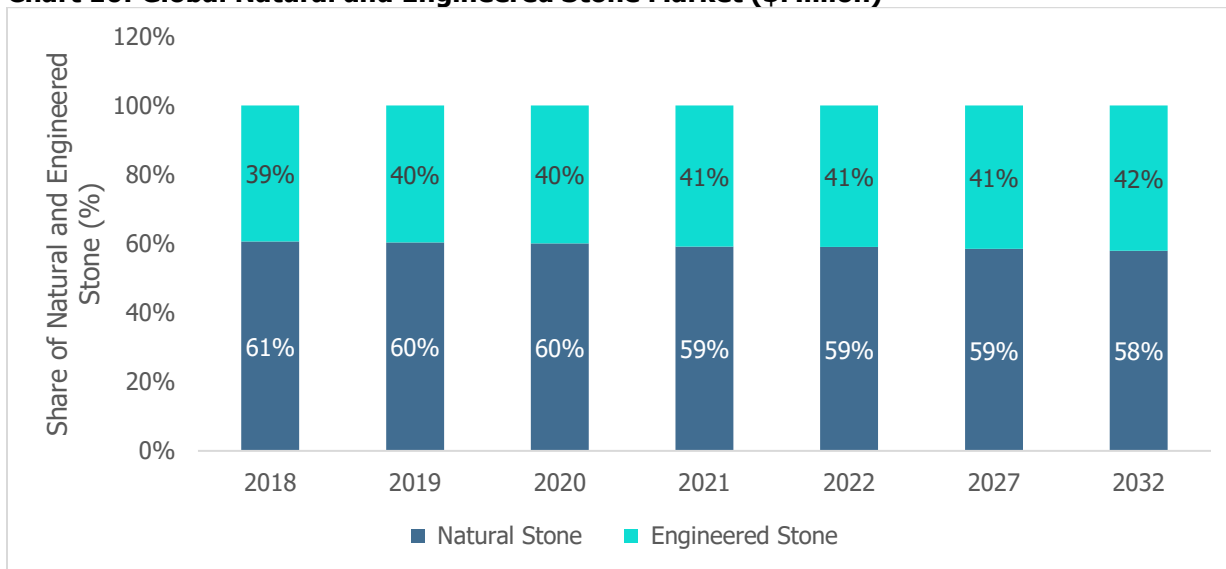
In the year 2022, the natural stone segment is expected to account for a major 59% of market share with \$38,829 million while the contribution of engineered stone segment stood at \$26,917 million. However, in projected years between 2022 and 2027, the engineered stone is expected to grow at a higher CAGR of 6-7% as compared to natural stone which is expected to grow at a CAGR of 5-6%. This is mainly because the engineered stones are non-porous, strong, durable and stain resistant. The engineered stones are also available in various colors and designs which is making them a preferred choice.

Chart 9: Global Natural and Engineered Stone Market by Type (\$Million)



Source: Research Dive, CareEdge Research

Chart 10: Global Natural and Engineered Stone Market (\$Million)



Source: Research Dive, CareEdge Research

Natural Stones

Natural stones are a result of millions of years of geological changes and mineral compositions in the Earth. These materials are mined from the Earth's surface and utilized in a range of projects such as sculptures, worktops, fireplaces, and flooring.

The Natural Stone segment is further divided into:

- Granite
- Marble
- Limestone
- Travertine and others.

Marble

Marble is the geological name for massive, compact limestone which is completely re-crystallized by heat and pressure that captures several foreign substances, thus creating a unique variety of colors and veining (minerals). Marble is just a changed limestone, or to be more specific, metamorphic limestone. The dissimilarity of materials causes veining in marbles causing areas of weakness within many marbles. Like numerous other stones such as Calcareous stones, travertine and onyx, calcium carbonate is a major component of marble.



Marble can be polished and used for architectural and ornamental purposes. It is available in different colors from white to black, yellow, red, and green. Marbles are also veined or clouded beautifully that are preferred for floorings as it emphasizes the living space with its richness.

Compared to other stones marble is relatively softer and is also less stain resistant. It is required to be carefully maintained and should be treated as fine furniture. It is vulnerable to damage from citric acids, alcohols and oils and hence spills should be wiped up immediately.

Granite

Granite is an igneous rock, which, during its development, remains in the form of liquid magma in the center of the Earth. Unlike lava, granite does not come to the surface. It remains trapped inside the earth where it slowly cools and gets crystallized. Due to the extreme pressure within the Earth, and the absence of atmosphere, the granite formed is very dense and is without any pores. Granite made up of different kind of ingredients, including common minerals like feldspar, quartz and mica, the proportions of which differ from deposit to deposit. Quartz, which is the hardest part of granite (ranging between 70% and 80% to the density of a diamond) makes up only between 10-30% of the rock, whereas feldspar (potassium and sodium varieties) makes up 60-80%.



There are different colors of granite comes varying from stark white to beiges, browns, reds, pinks, yellows, greens, blues, grays and blacks. Textures range from clear to coarse and crystalline to heavily veined. These natural materials were created in the earth many years ago by processes and conditions, which gave each of them varying properties and characteristics.

Granite is the most durable of the stone surfaces, which makes it the best choice for a worry-free countertop. It is extremely durable, stain resistant and easy to care for. It is chip resistant and is unlikely to crack or scratch during normal use.

Limestone

Limestone is formed as a result of millions of years of sea shells and bones of sea creatures settling as sediment on the ocean floor (hence it is called a sedimentary stone). The calcium in the bones & shells combines with Carbon Dioxide in the water to form Calcium Carbonate, which is the basic mineral structure of all limestone and marble. Limestone is available in elegant shades of yellow, blue, brown and black. Due to its durability limestone is generally used as building stone and for making statues. Its use as wall cladding material has also gained immense popularity.



Engineered Stone

Engineered stone, is a composite material formed out of crushed stone that is held together by an adhesive. The various types of engineered stones are:

- Engineered quartz,
- Polymer concrete and
- Engineered marble

Historically, amongst the three kinds of engineered stone, engineered quartz has accounted for the highest market share followed by engineered marble stone.

Engineered Quartz

Engineered quartz, which is also known as "engineered stone", is a product with the word "quartz" referring to a natural mineral. Quartz particles are bound together with resin, pigments, and other elements. Quartz is manufactured at plants across the globe, including the United States, Europe, and Asia. The specific composition of engineered quartz varies by brand and hue, and manufacturers promote their slabs' high mineral content. Manufactured quartz includes 93% mineral quartz. There are, however, two caveats: first, the maximum quartz percentage is 93%, and actual quartz content can be substantially lower. Second, the percentage is based on weight rather than volume. A quartz particle is much heavier than a resin particle. So, if a person wants to determine how much quartz is in a countertop, he/she should measure the elements by volume rather than weight. Vicostone, for example, is about 90% natural quartz aggregates and polymer resin and pigments.



Polymer Concrete

Conventional cement concrete is manufactured by substituting the cement hydrate binders with polymer resins or liquid resins, creating a composite material known as polymer concrete. Liquid resins, such as methacrylic resins, thermosetting resins, and tar-modified resins, polymerize at ambient or room temperature to form polymer concrete. Polymer concrete's binder phase is made entirely of polymers and does not include any cement hydrates. Polymeric binders hold the aggregates together tightly. As a result, polymer substitution significantly improves the strength, adhesion, water tightness, chemical resistance, freeze-thaw durability, and abrasion resistance of polymer concrete as compared to standard cement concrete.



Engineered Marble Stone

Engineered marble is made from crushed natural stone that has been pressed, heated, and bonded with a little quantity of resin. Engineered marble, unlike porous natural stone, is less pervious to moisture, which may lead to mildew. It's also more scratch and stain resistant than quarried or cultured marble, and it doesn't need any extra cleaning or polishing.



Engineered Stones are preferred and are expected to grow at a higher rate than natural stones because of the following reasons:

1. Engineered Stones are non-porous

Engineered stones have components such as resins which makes its surface non-porous and highly resistant to staining. Natural stones on the other hand are porous and can get stained.

2. Engineered stones have a wide color range

When quartz is produced, the pigments are added to it to change its color. Quartz has a very wide color palette that contains colors that are not usually found in nature. Although natural stones are very durable, their color palette is limited to colors found naturally.

3. Engineered Stones do not need sealing

With engineered stones, sealing is not needed because resins are already acting as a sealant. Natural stones need to be sealed several times, depending on the material and color.

4. Engineered Stones are more affordable

Engineered stones are a mixture of quartz that is blended with an adhesive or a sealant. Sometimes the primary material like quartz is also mixed with glass and mirrors. Thus, compared to natural stones engineered stones are cheaper.

2.3 Market Segmentation by Application

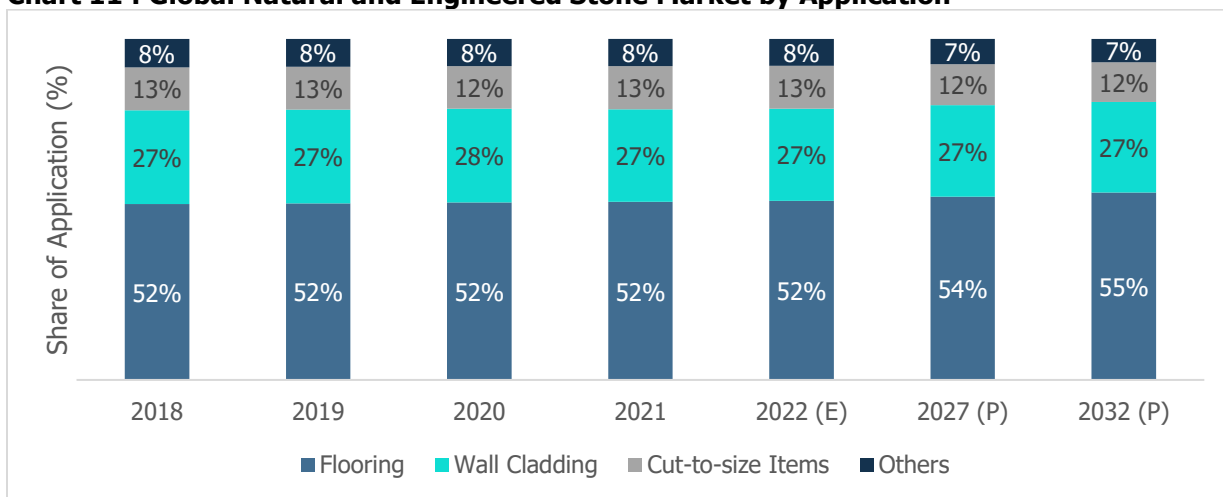
Based on application, the market has been classified into flooring, wall cladding, cut-to-size items, and others. Among these, the flooring segment accounted for the highest share of 52% of the total market in 2021 and is estimated to hold this share in 2022. It is further expected to grow at a CAGR of 6-7% and reach \$48,674 million in 2027. Compared to engineered stones, natural stones occupied a larger share in the flooring segment in 2021. This is because, natural stone flooring is elegant, has superior durability, and is easy to clean. For instance, marble flooring endures smooth texture, dramatic veining, and high-gloss finish. Granite is also a popular choice for flooring as it ranks 7 on the Mohs scale and is harder than marble. Similarly, travertine flooring is used in hallways, shower stalls, living rooms, bathrooms, and laundry rooms.

Table 4: Global Natural and Engineered Stone Market by Application (\$Million)

Application	2018	2019	2020	2021	2022 (E)	2027 (P)	2032 (P)
Flooring	26,735	28,540	28,276	31,444	34,503	48,674	62,970
Wall Cladding	14,221	15,144	14,968	16,346	17,815	24,302	30,415
Cut-to-size Items	6,549	6,912	6,770	7,621	8,257	10,934	13,263
Others	4,312	4,483	4,324	4,796	5,171	6,669	7,855
Total	51,817	55,079	54,338	60,207	65,746	90,580	1,14,504

Source: Research Dive, CareEdge Research

Chart 11 : Global Natural and Engineered Stone Market by Application



Source: Research Dive, CareEdge Research

2.4 Market Segmentation by End-Use Industry

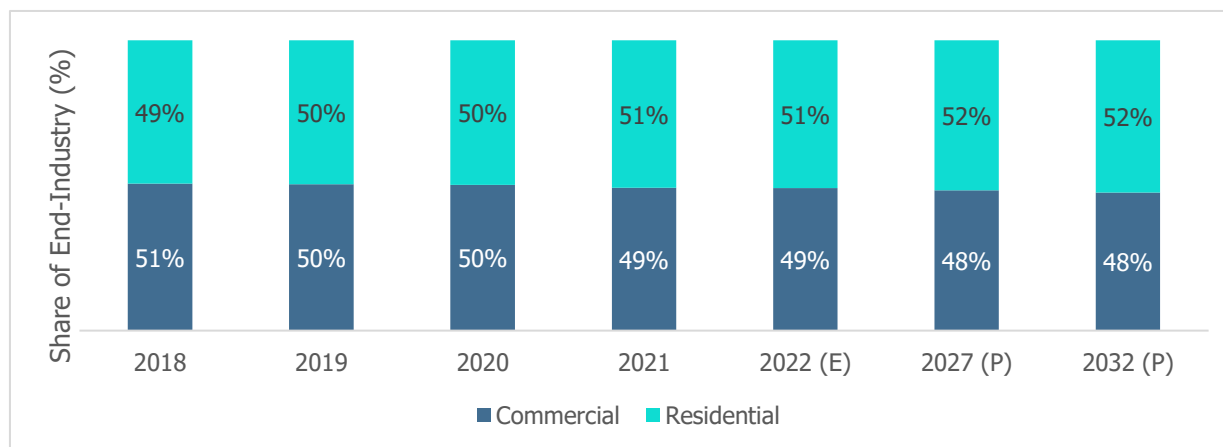
Based on end-use industry, the market has been classified into commercial and residential. Among these, the commercial segment accounted for ~49% of market share in 2022. However, by 2032 the share of the commercial segment is expected to decrease and account for 48% of the market while the share of residential sector is expected to increase from ~51% to 52%.

Table 5 : Global Natural and Engineered Stone Market by End-Use Industry (\$Million)

End-Use Industry	2018	2019	2020	2021	2022 (E)	2027 (P)	2032(P)
Commercial	26,246	27,782	27,294	29,641	32,268	43,766	54,458
Residential	25,571	27,297	27,044	30,566	33,479	46,813	60,046
Total	51,817	55,079	54,338	60,207	65,746	90,580	1,14,504

Source: Research Dive, CareEdge Research

Chart 12: Global Natural and Engineered Stone Market by End-Use industry

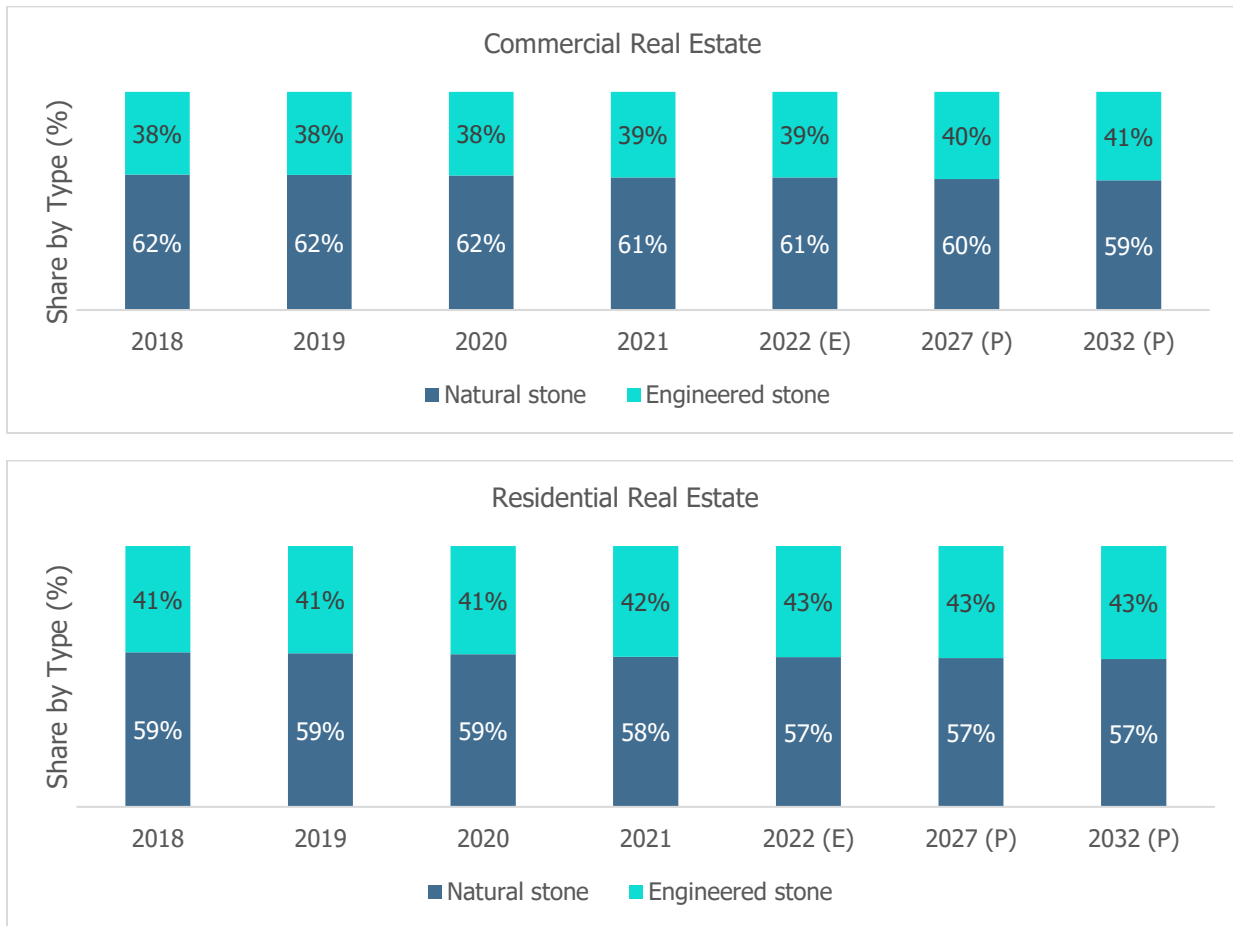


Source: Research Dive, CareEdge Research

The commercial construction projects such as construction of hotels, medical facilities, shopping malls, sports facilities, industrial structures, retail & grocery stores are expected to grow at a lower CAGR of 6-7% as compared to CAGR of 7-8% of residential segment between 2022 to 2027. This is mainly because residential construction activities are growing at a faster pace owing to growing population and government support for residential construction in countries namely India, Indonesia, United Arab Emirates, Spain, China. For instance, the urbanization rate of China is the highest in the world, and it reached 61% in 2019. Thus, to improve the urban living conditions, the Chinese government is focusing on urban renewal policy that aims to develop efficient and greener cities.

For Commercial and Residential real estate, natural and engineered stones are a primary material. Historically, natural stones have dominated the market for both commercial and residential real estate. In commercial real estate, natural stone is expected to account for over 61% of the market while in the residential real estate it is estimated to account for ~57% of the total market.

Chart 13: End-Use industry bifurcation by Type



Source: Research Dive, CareEdge research

2.5 Market Segmentation by Region

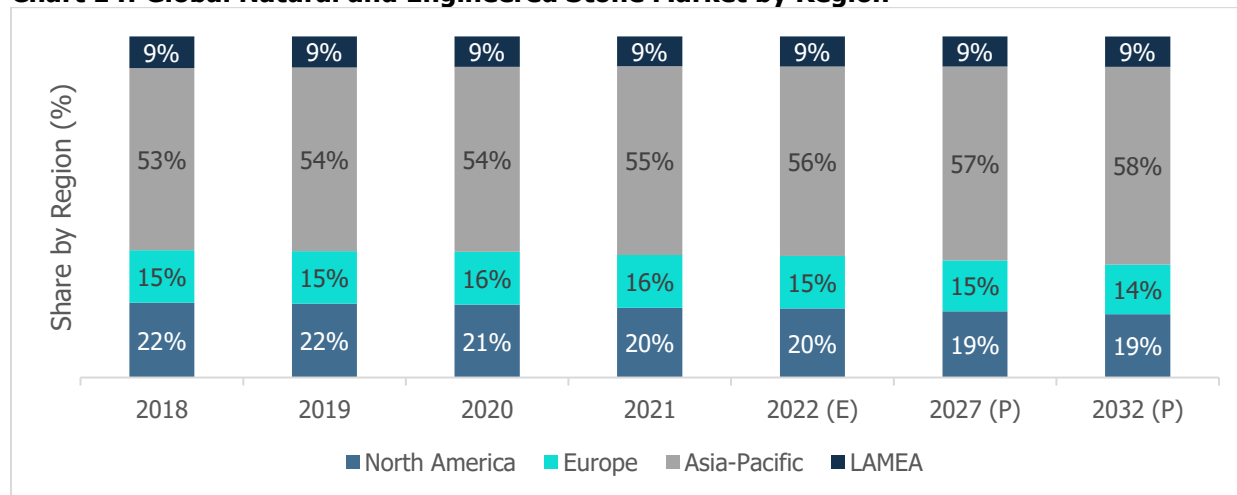
The Asia-Pacific natural and engineered stone market accounted for \$33,313 million in 2021 and is expected to reach \$66,424 million in 2032. This growth is majorly owing to the presence of large construction markets in this region namely China and India. In addition, the technological advancements in the construction sector are anticipated to drive the procurement for natural and engineered stone market in the Asia-Pacific region. For instance, China’s 14th Five-Year Plan focuses on implementing digital technology in building and construction projects. It focuses on increasing the connectivity between city clusters and developing greener economy, facilitating low-carbon construction, water conservation, and sustainable development.

Table 6 : Global Natural and Engineered Stone Market by Region (\$Million)

Region	2018	2019	2020	2021	2022 (E)	2027 (P)	2032 (P)
North America	11,350	11,915	11,607	12,282	13,305	17,589	21,298
Europe	7,995	8,521	8,428	9,344	10,142	13,549	16,592
Asia-Pacific	27,688	29,665	29,495	33,313	36,538	51,442	66,424
LAMEA	4,783	4,979	4,809	5,268	5,762	8,000	10,191
Total	51,817	55,079	54,338	60,207	65,746	90,580	1,14,504

Source: Research Dive, CareEdge Research

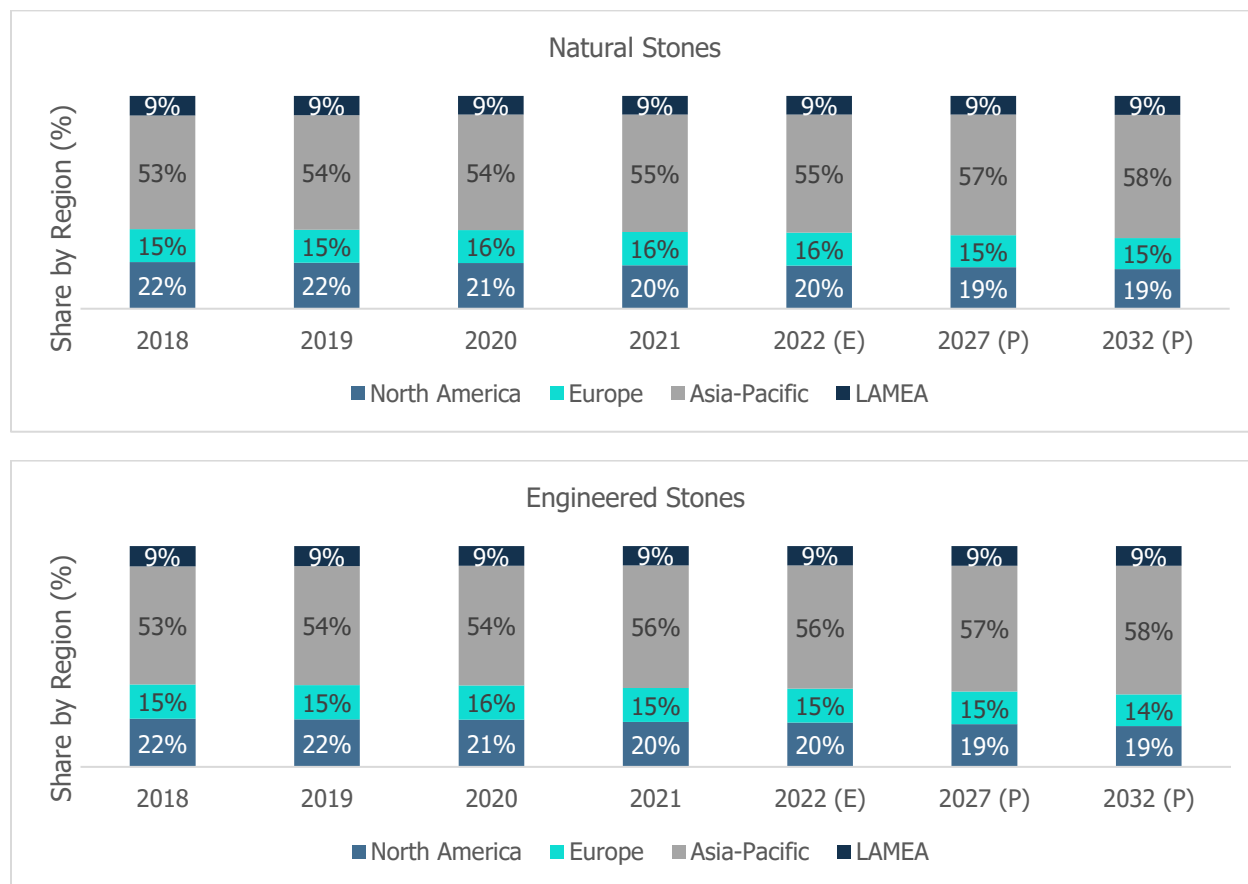
Chart 14: Global Natural and Engineered Stone Market by Region



Source: Research Dive, CareEdge Research

Further, the industry can be bifurcated into Natural stone and Engineered Stones. Asia-Pacific region is expected to account for the largest share (56%) in both natural and engineered stone market followed by North America and Europe.

Chart 15: Global Natural and Engineered Stone Market by Region



Source: Research Dive, CareEdge Research

3. Global Natural Stone Industry

3.1 Brief overview of Global Natural Stone Industry

The use of natural stone can be traced back to countless buildings, structures, and monuments that were built thousands of years ago in different parts of the world and they have stood the test of time. Some of the examples of such structures include the Colosseum in Rome, the Mayan temples in Mexico, the great Pyramids of Giza, Egypt, and others.

In addition, natural stone is a green building material as it is recyclable and can be used without any additional wall covering or finishes.

Marble is quarried from countries namely Italy, Greece, U.S., India, Sweden, China, and Germany. Among these, Italy is well-known for high-grade and luxurious marble. The Italian marble has high heritage as Italy has been a pioneer in perfect quarrying methods since ancient times. Some of the popular Italian marbles are carrara marble, calacatta marble, statuario marble, and others.

Granite forms 70-80% of the Earth’s crust and two fifths of the global natural stone market are constituted by granite stones. Owing to its properties like strength and durability, it is used across several industries for making tiles, murals, staircases. Etc.

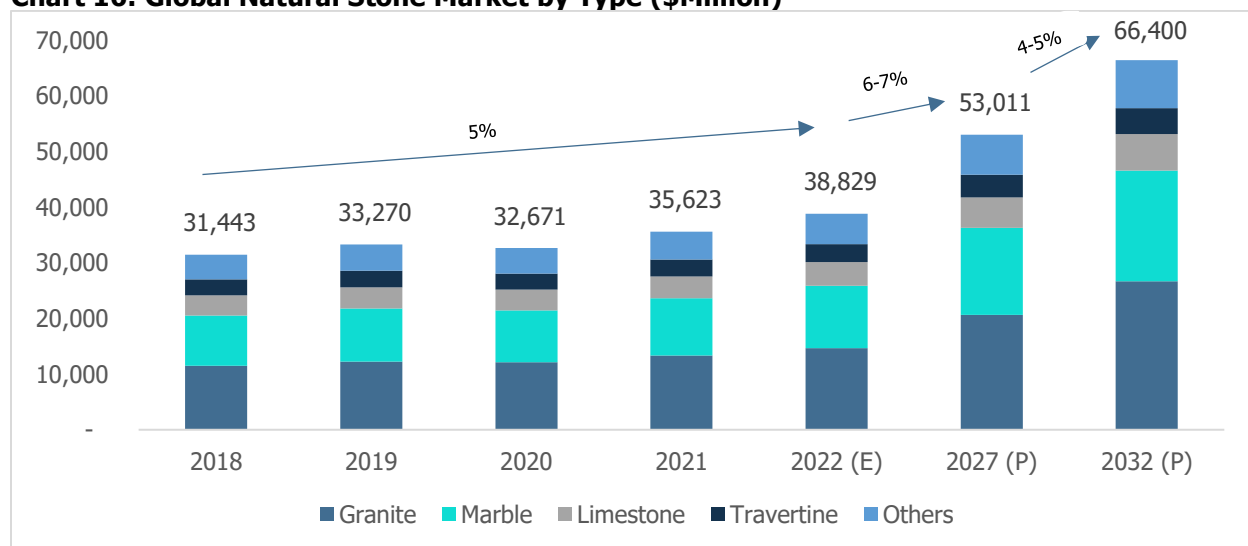
3.2 Current Scenario

In 2021, the global natural stone held a higher share of 59% of the total market as compared to engineered stone market and it is expected that it will remain same in 2022. Its market grew from \$31,443 to \$35,623 in 2021.

It is expected that the market would grow at a CAGR of 6-7% between 2022 and 2027.

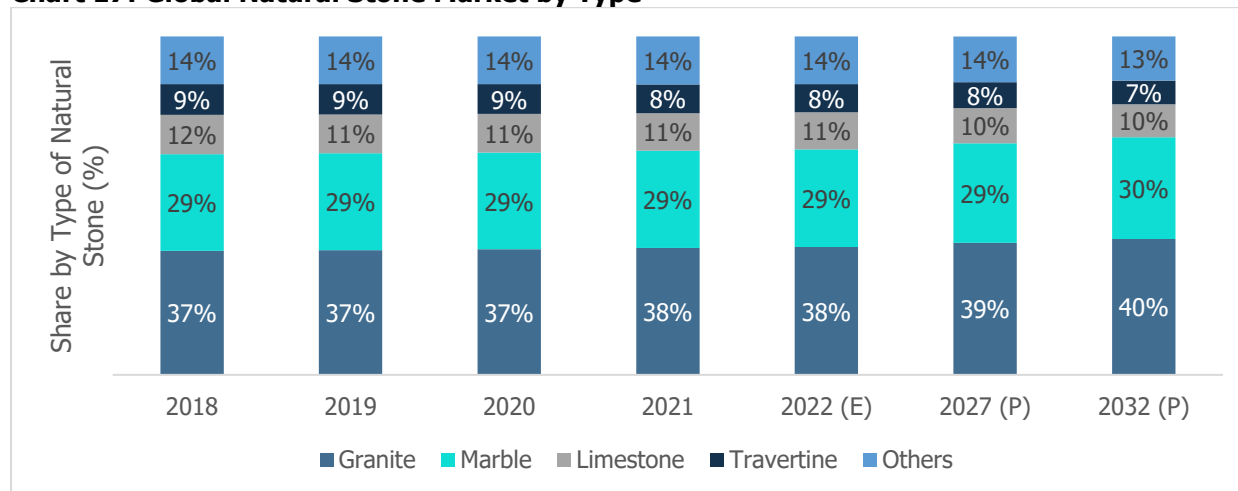
Under the natural stone segment granite has been the highest contributor followed by marble. The granite and marble segments collectively are expected to account for around 67% market share in 2022.

Chart 16: Global Natural Stone Market by Type (\$Million)



Source: Research Dive, CareEdge Research

Chart 17: Global Natural Stone Market by Type



Source: Research Dive, CareEdge Research

Granite

Granite is a hard-igneous rock that is granular and phaneritic in nature. Granite grew from \$11,522 in 2018 to \$13,367 in 2021 and expected to reach \$14,664 in 2022. The market is expected to grow at a CAGR of 6-7% to reach \$20,661 million in 2027.

Increase in adoption of granite for the construction of kitchen countertops, bath vanity tops, backsplashes, bathrooms skins & basins, and tabletops or desktops majorly drives the growth of the global granite market. In addition, rise in demand for granite for residential purposes and rise in investment in construction activities drive the growth of the market.

Marble

Marble is a popular metamorphic rock found in mountainous regions and is usually quarried in India, Italy, China, and Spain. The estimated CAGR between 2018 and 2022 for marble industry is 6%. The estimated market is valued at \$11,208 in 2022, expected to reach \$15,603 in 2027.

Marble is famous for its beauty, elegance, and timeless appeal. Many architectural projects including the historical ones are built using different marbles.

The marble market is expected to see rise in demand from residential, industrial and commercial construction industries. Due to its aesthetics such as beauty and sculpting and rising consumer demand for interior designing of housing structures, use of marbles for decorative purposes in buildings is expected to grow further.

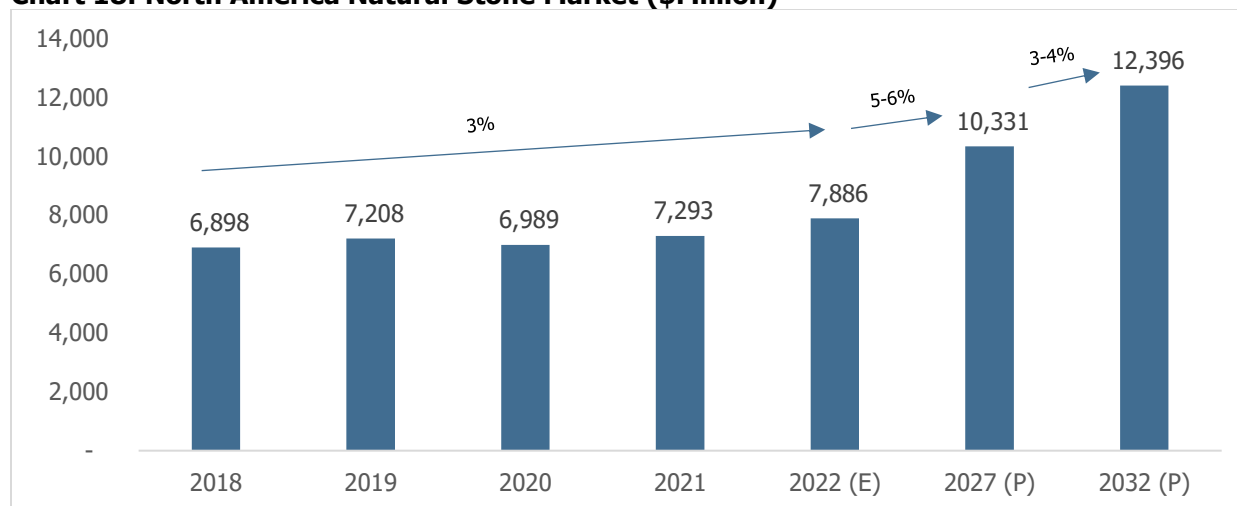
3.3 Region Wise Contribution

North America

The natural stone segment of North America is valued at an estimated \$7,886 million in 2022 and expected to grow at a CAGR of 5-6% between 2022 and 2027.

Going forward, the North American market is expected to reach \$12,396 million by 2032.

Chart 18: North America Natural Stone Market (\$Million)



Source: Research Dive, CareEdge Research

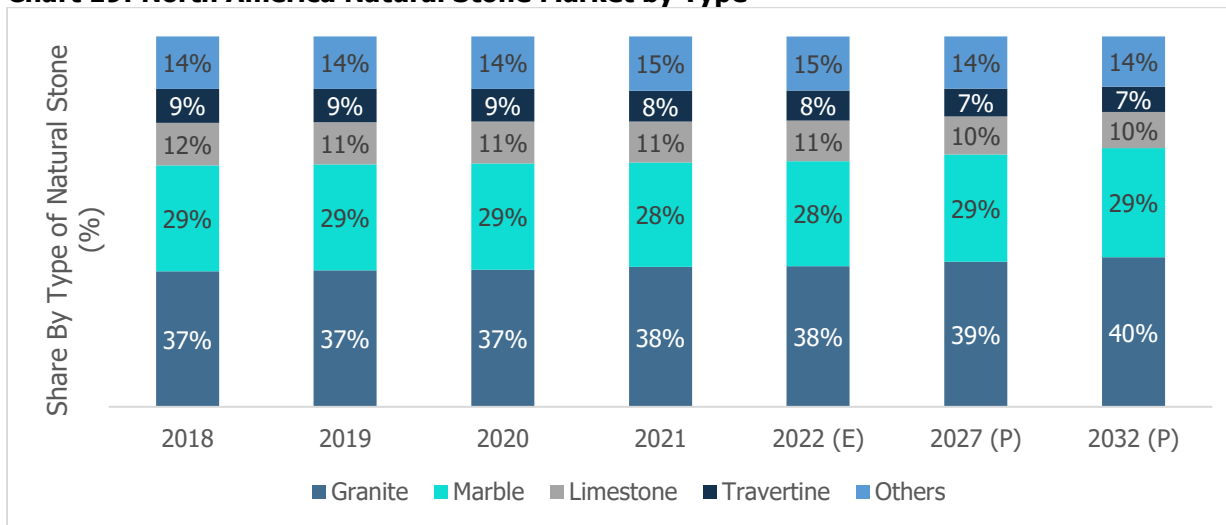
Under the natural stone segment granite and marble have been the major contributors in the North America market having around 66% share of the total market.

Table 7: North America Natural Stone Market by Type (\$Million)

Type	2018	2019	2020	2021	2022 (E)	2027 (P)	2032 (P)
Granite	2,526	2,656	2,591	2,755	2,998	4,053	5013
Marble	1,972	2,063	2,001	2,056	2,233	2,984	3651
Limestone	793	823	792	806	862	1,066	1204
Travertine	629	646	615	604	642	774	847
Others	977	1,022	991	1,072	1,151	1,454	1681
Total	6,898	7,208	6,989	7,293	7,886	10,331	12396

Source: Research Dive, CareEdge Research

Chart 19: North America Natural Stone Market by Type



Source: Research Dive, CareEdge Research

The influx in homeowners buying and renovating homes owing to rise in the disposable income and increase in new construction projects is estimated to drive the natural stone market demand in the North America region. This is majorly owing to the outstanding position held by natural stones compared to other building materials due to natural and unique components held by the stones that can be combined with other materials.

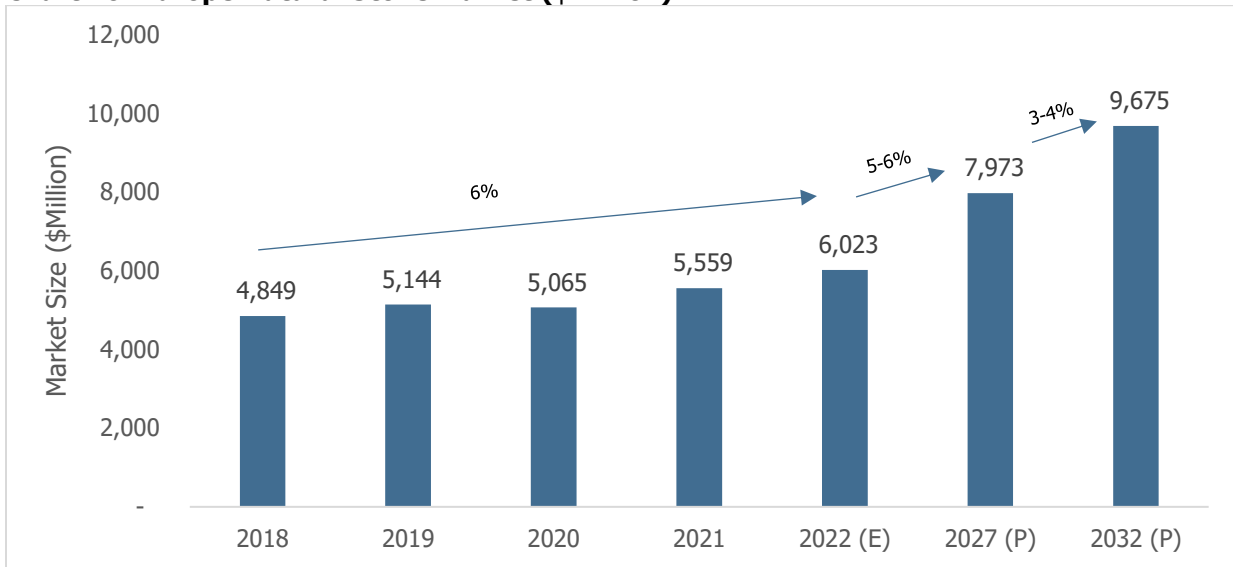
The demand for natural stone tiles and slabs for flooring, wall-cladding, and kitchen countertops is on an all-time high. Granite is popularly used as kitchen countertops in countries such as USA, Canada and Mexico due to its upscale look and premium visuals. Even though it has ample of granite deposits, USA is the largest importer of granite due to factors such as access to wide range of variety and availability of lower costs from countries such as India and Brazil. As procuring granite from other countries became easier, it made the stones more affordable for local builders and households driving the demand further. Introduction of advanced processing methods has also had a positive impact on the demand for natural stones in the region.

Europe

The natural stone market in Europe has grown at an estimated CAGR of 6% from \$4,849 million in 2018 to \$6,023 million in 2022. The market is estimated to reach \$9,675 million by 2032. Granite is estimated to account for the highest market at \$2,272 million in 2022 followed by marble.

The diversification of usage of natural and engineered stone products and growing consumer interest in stone products for residential and commercial purpose such as flooring, kitchen countertops, and others are estimated keep the demand in Europe consistent.

Chart 20: Europe Natural Stone Market (\$Million)



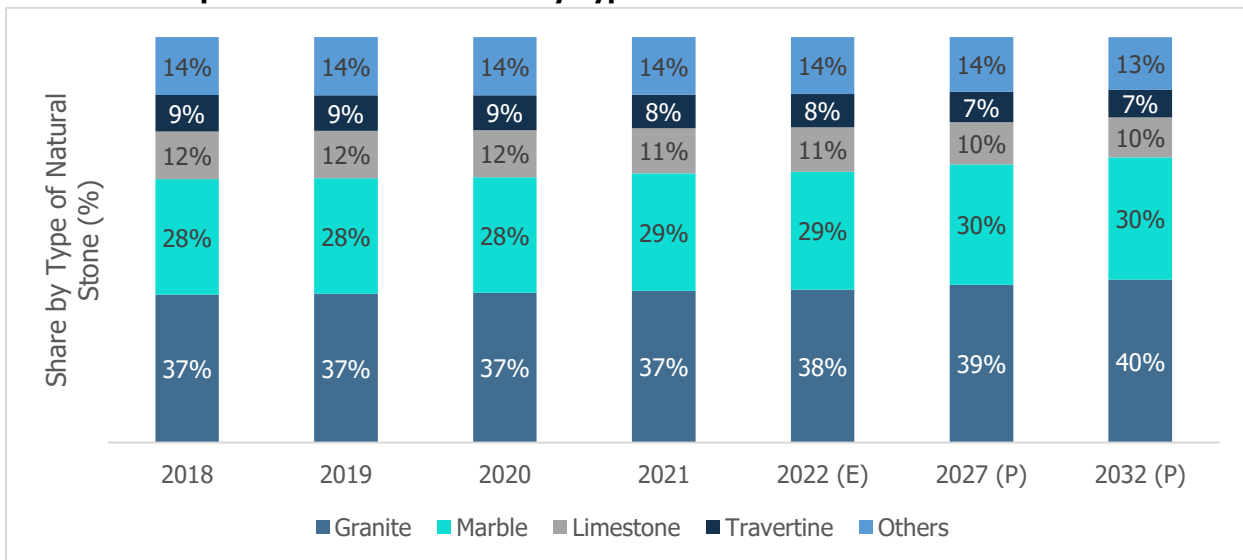
Source: Research Dive, CareEdge Research

Table 8: Europe Natural Stone Market by Type (\$Million)

Type	2018	2019	2020	2021	2022 (E)	2027 (P)	2032 (P)
Granite	1,771	1,891	1,873	2,083	2,272	3,105	3,886
Marble	1,380	1,464	1,442	1,610	1,751	2,363	2,922
Limestone	570	600	586	619	663	831	951
Travertine	436	454	438	461	491	598	661
Others	693	736	725	786	845	1,077	1,256
Total	4,849	5,144	5,065	5,559	6,023	7,973	9,675

Source: Research Dive, CareEdge Research

Chart 21: Europe Natural Stone Market by Type

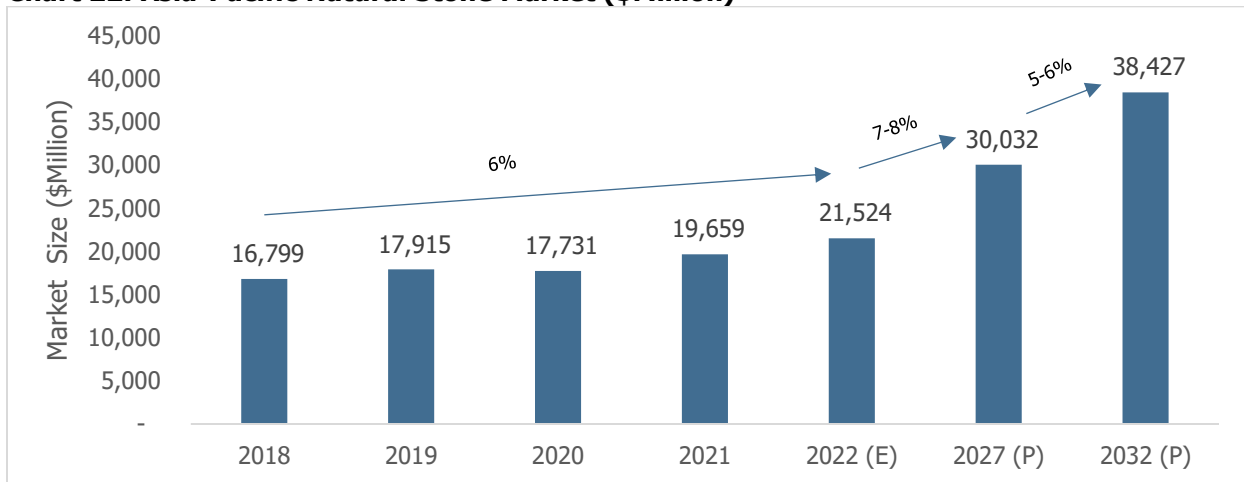


Source: Research Dive, CareEdge Research

Asia-Pacific

Asia-Pacific natural stone market accounted for highest market share in 2021 (\$19,659) and it is estimated that the trend will continue in 2022 as well. The Asia – pacific market is anticipated to grow at a CAGR of 7-8% between 2022 and 2027 and is expected to reach \$38,427 million by 2032. Asia-Pacific region has large number of natural stones producing countries such as India, China and others. Improved construction activities such as launch of mega projects and development of smart cities in countries such as China and India are growth indicators for natural stone market.

Chart 22: Asia-Pacific Natural Stone Market (\$Million)



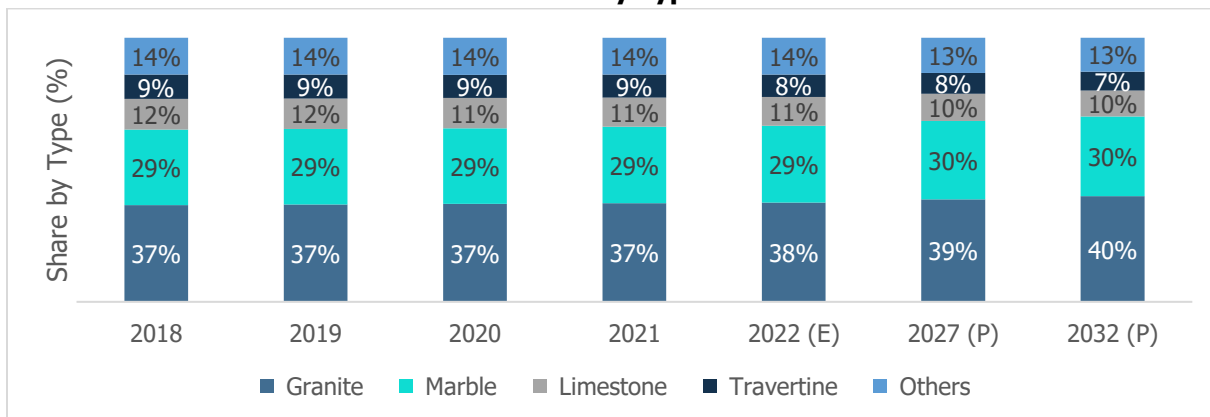
Source: Research Dive, CareEdge Research

Table 9: Asia-Pacific Natural Stone Market by Type (\$Million)

Type	2018	2019	2020	2021	2022 (E)	2027 (P)	2032 (P)
Granite	6,161	6,610	6,581	7,351	8,101	11,666	15,392
Marble	4,806	5,129	5,080	5,686	6,250	8,889	11,589
Limestone	1,947	2,060	2,024	2,179	2,361	3,119	3,767
Travertine	1,537	1,611	1,566	1,693	1,825	2,349	2,754
Others	2,348	2,505	2,480	2,750	2,988	4,010	4,926
Total	16,799	17,915	17,731	19,659	21,524	30,032	38,427

Source: Research Dive & CareEdge Research

Chart 23: Asia-Pacific Natural Stone Market by Type

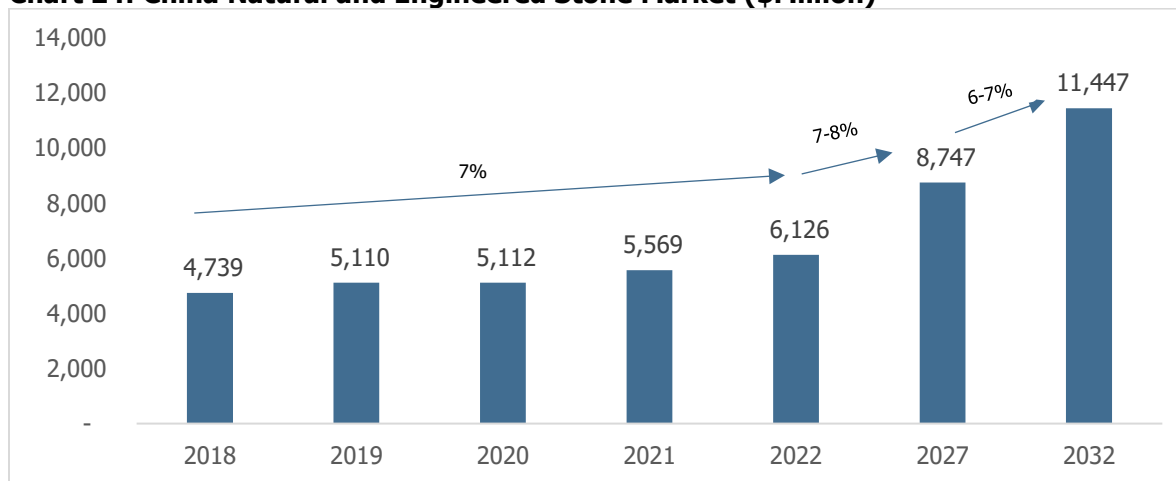


Source: Research Dive, CareEdge Research

China

Under Asia-Pacific, China’s natural stone market is estimated to be valued at \$6,126 million in 2022, and is projected to reach \$11,447 million by 2032.

Chart 24: China Natural and Engineered Stone Market (\$Million)



Source: Research Dive, CareEdge Research

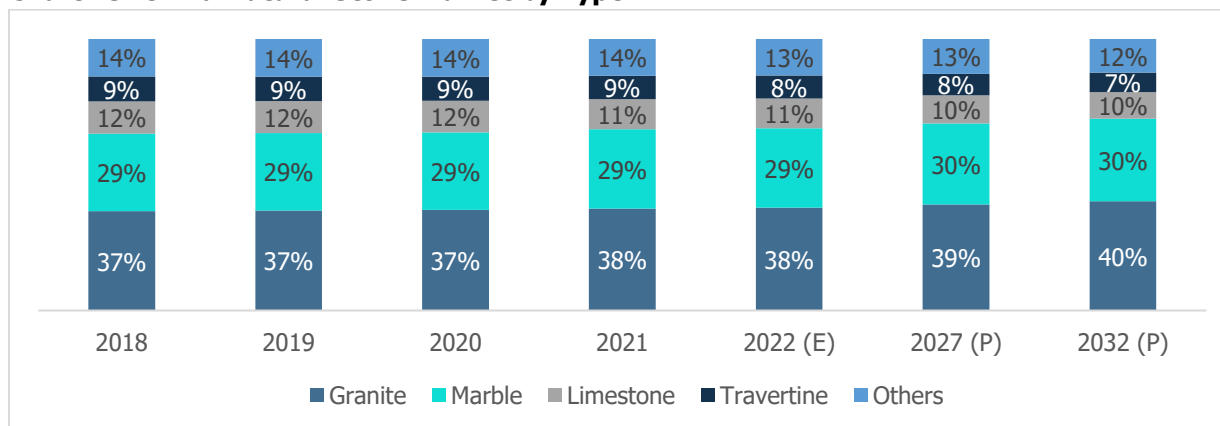
Table 10: China Natural Stone Market by Type (\$Million)

Type	2018	2019	2020	2021	2022 (E)	2027 (P)	2032 (P)
Granite	1,735	1,883	1,895	2,094	2,318	3,415	4,609
Marble	1,351	1,458	1,460	1,624	1,793	2,610	3,480
Limestone	560	599	595	618	672	908	1,120
Travertine	436	462	454	481	521	685	821
Others	656	708	709	754	823	1,129	1,418
Total	4,739	5,110	5,112	5,569	6,126	8,747	11,447

Source: Research Dive, CareEdge Research

Granite was the major contributor in the natural stone segment in China in the year 2021 and the trend is expected to remain same in 2022. The granite market in China is growing due to advancement in granite manufacturing technologies and machinery.

Chart 25: China Natural Stone Market by Type

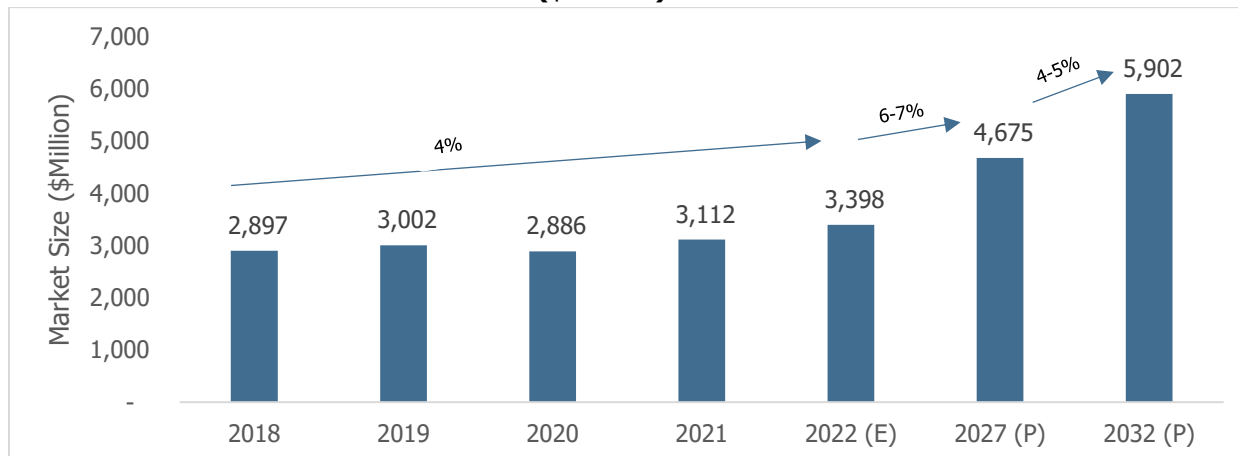


Source: Research Dive & CareEdge Research

LAMEA

The natural stone market in LAMEA is analyzed across Brazil, Saudi Arabia, United Arab Emirates, South Africa, and rest of LAMEA. Brazil is one of the well-known granite producers in the world. Along with granite, Brazil has also emerged as popular producer of marble. In addition, Brazil is one of the leading exporters of natural stones to the United States. Dubai also has a huge demand for natural stones owing to huge number of construction projects and being the hub for architects, contractors, stone companies, builders and others.

Chart 26: LAMEA Natural Stone Market (\$Million)



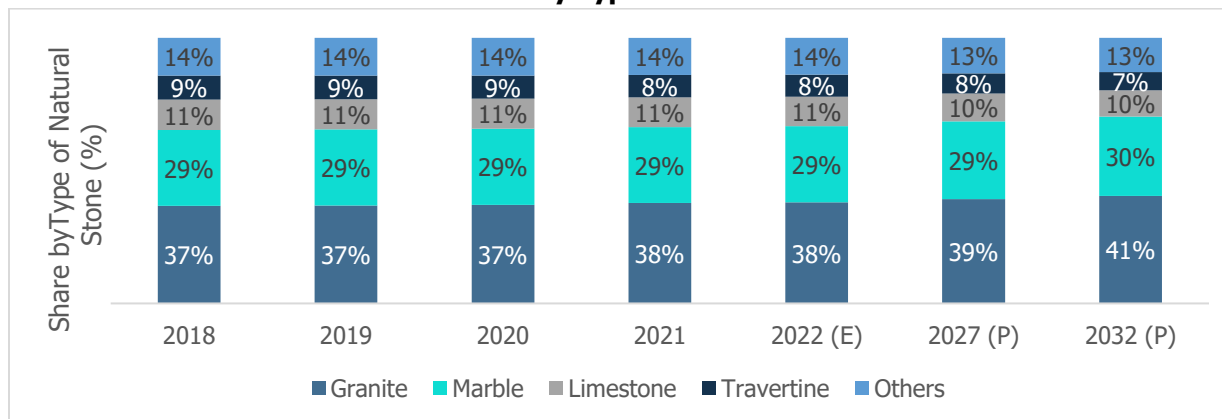
Source: Research Dive, CareEdge Research

Table 11: LAMEA Natural Stone Market by Type (\$Million)

Type	2018	2019	2020	2021	2022 (E)	2027 (P)	2032 (P)
Granite	1,063	1,109	1,072	1,178	1,294	1,837	2,391
Marble	830	861	828	890	975	1,368	1,760
Limestone	331	340	324	348	376	490	583
Travertine	263	268	253	262	281	356	410
Others	410	425	408	436	472	625	758
Total	2,897	3,002	2,886	3,112	3,398	4,675	5,902

Source: Research Dive, CareEdge Research

Chart 27: LAMEA Natural Stone Market by Type



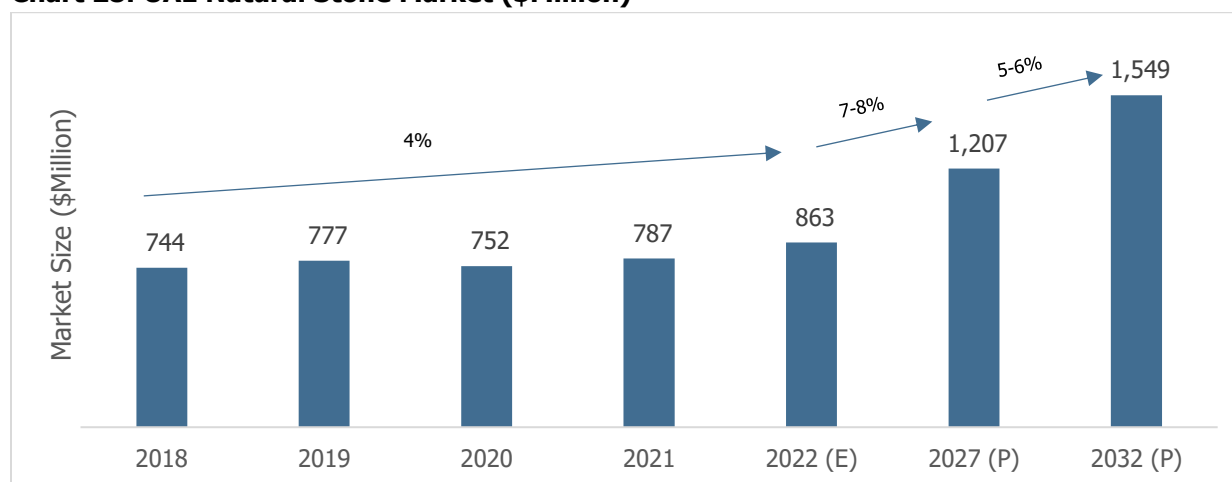
Source: Research Dive, CareEdge Research

UAE

Increased construction activities in the UAE region is expected to drive the natural stone market in the next few years. In Dubai, natural stones are widely used in applications such as luxurious hotels flooring, interior decoration, villas cladding and much more. The climate in the UAE generally favors stone floorings more compared to carpets. Although, marble and granite are very expensive flooring material and cost comparably more than other alternative flooring options like laminates and wood flooring, the trend of using engineered and natural stones in the country has gained popularity in recent years due to rapidly growing living standards and consumer demand. Such factors are further anticipated to have a positive growth in natural stones market, in the forecast time frame.

UAE’s thriving construction and interiors industry is further set to propel the demand for natural stones. Being a tourist attraction, global events such as Expo 2020 drive the demand for natural stones in commercial segment.

Chart 28: UAE Natural Stone Market (\$Million)



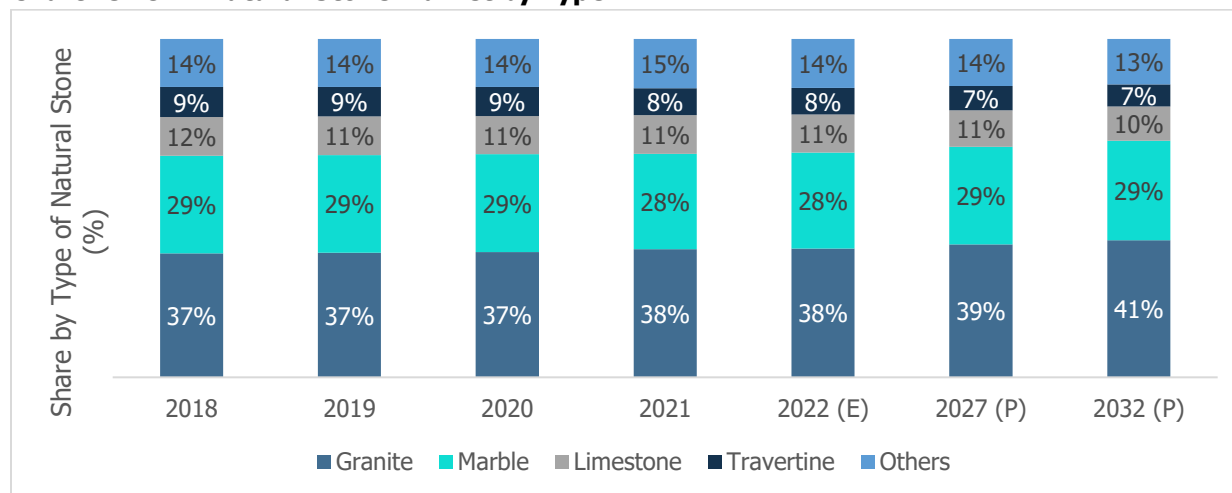
Source: Research Dive, CareEdge Research

Table 12: UAE Natural Stone Market by Type (\$Million)

Type	2018	2019	2020	2021	2022 (E)	2027 (P)	2032 (P)
Granite	272	286	279	298	329	474	628
Marble	215	224	217	222	244	349	456
Limestone	86	89	85	90	98	130	157
Travertine	66	67	64	63	68	87	101
Others	106	110	107	115	125	168	207
Total	744	777	752	787	863	1,207	1,549

Source: Research Dive, CareEdge Research

Chart 29: UAE Natural Stone Market by Type



Source: Research Dive & CareEdge Research

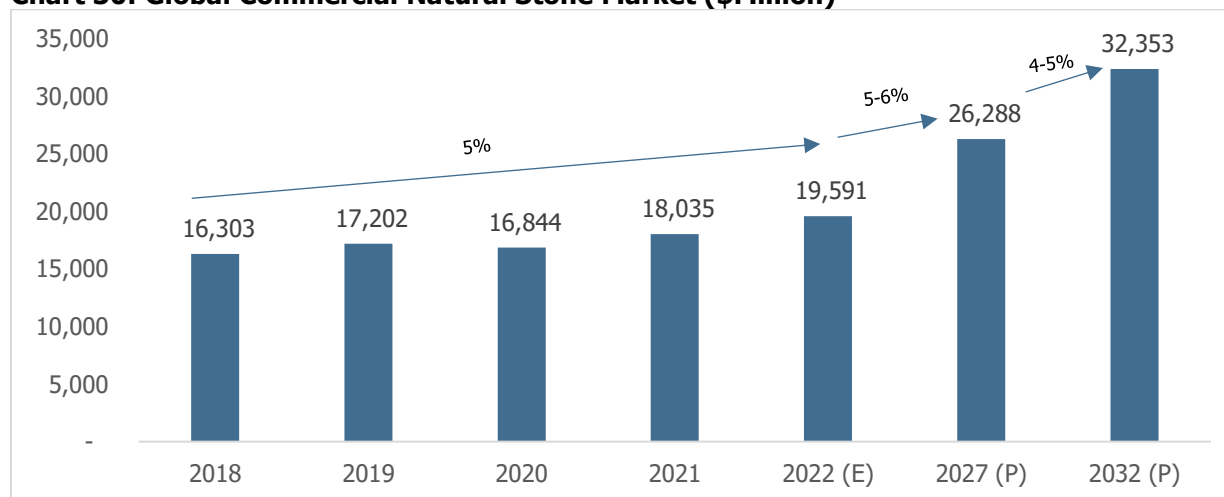
3.4 Performance of key end use industries

3.4.1 Commercial

Natural stone flooring is a tile cut from natural stone blocks. Natural stone floorings such as marble, travertine, limestone, granite, quartzite, slate, and sandstone are been used for thousands of years in homes and buildings. Natural stone floorings are durable and elegant, owing to which, they are used both in indoor and outdoor flooring of homes and buildings.

The commercial natural stone market’s estimated value is \$19,591 million in 2022, and is projected to reach \$32,353 million by 2032.

Chart 30: Global Commercial Natural Stone Market (\$Million)



Source: Research Dive, CareEdge Research

Under Natural stone granite is the most popular natural stone on the market, with countries such as Brazil, India, China, Spain, and Saudi Arabia producing the majority of it. China, India, and Brazil together account for a considerable share of worldwide granite production and export a significant amount of granite to the United States, which is one of the largest consumer markets. Italy is also a major source of good textured marble resources, although China is the world's largest marble producer in terms of volume.

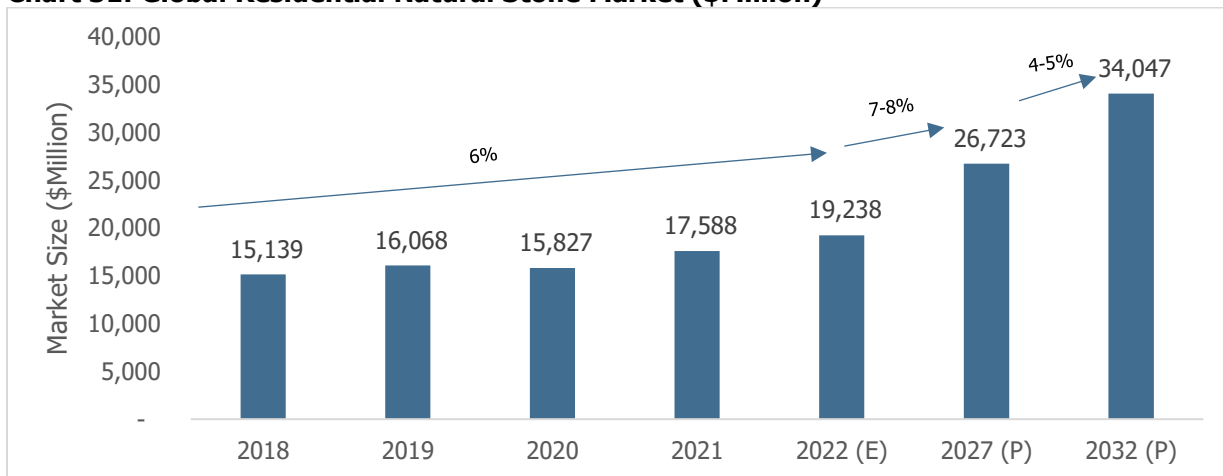
Non-residential building activities, such as the development of offices, motels, and public safety facilities, are driving demand growth in many locations, particularly in North America.

The construction industry in the Asia Pacific area will benefit from increased demand for infrastructure, particularly healthcare complexes and hospitals. Government initiatives and programs, as well as FDI investments, will help to accelerate the non-residential sector's market expansion, hence assisting the construction stone industry's growth. Due to expanding urbanization and increased consumer spending power, the Asia Pacific region is also driving worldwide market expansion. Product differentiation and durability are also helping to strengthen the stone sector.

3.4.2 Residential

The residential natural stone market was valued at \$19,238 million in 2022, and is projected to reach \$34,047 million by 2032.

Chart 31: Global Residential Natural Stone Market (\$Million)



Source: Research Dive, CareEdge Research

Natural stone is widely used in wall construction and wall cladding as natural stones such as granite, marble, sandstone, limestone, and others act as natural insulation against external environment such as heat, rain, cold, humidity, and others. In addition, the paving of natural and engineered stone for interior and exterior wall cladding prevents the surface being damaged due to extreme heating, frost damage, rain calamities, and others.

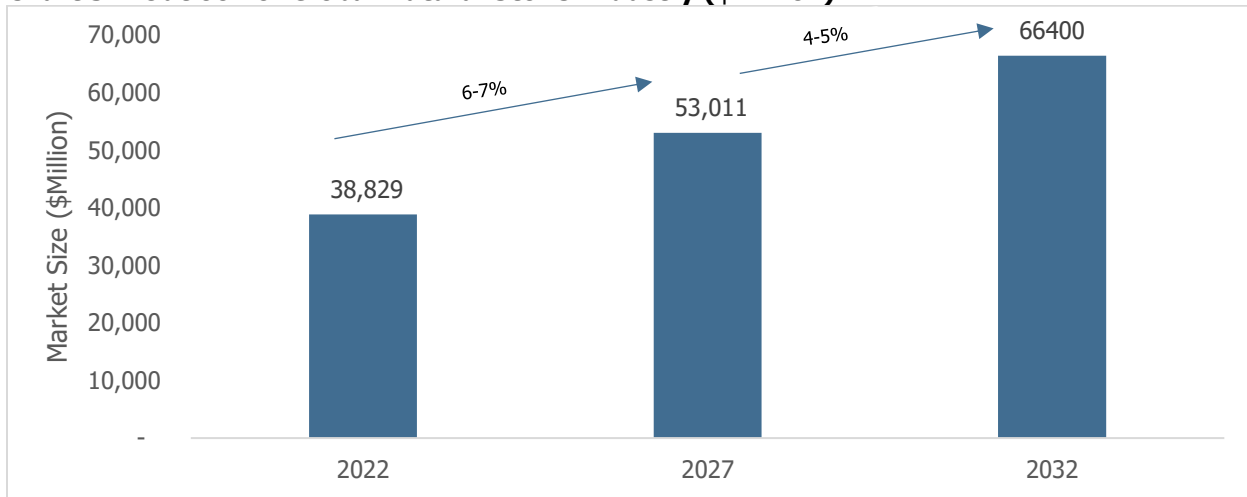
Natural stones have numerous practical advantages when it comes to construction and building. These stones impart a sense of tranquility and distinctive beauty to the construction. Natural stone goods are more durable than artificial stone products, and they can last for decades with little upkeep. As industrialized countries such as the United States continue to recover from the recession, the population in developing countries has more discretionary income. These factors are propelling the expansion of home renovation projects and will continue to do so in the coming years. The building and infrastructure industries are

driving the industry forward. The construction business is benefiting from rising consumer disposable incomes, particularly in developing countries like China and India. Increased urbanization in these areas is propelling market expansion even faster. The growing need for residential, commercial, and public infrastructure is also propelling the market forward.

3.5 Outlook

The global natural stone industry has showed signs of recovery after in decline in 2020 and is expected to grow at a CAGR of 6-7% between 2022 and 2027. Further, the industry is expected to grow at 4-5% CAGR between 2027 and 2032.

Chart 32: Outlook of Global Natural Stone Industry (\$Million)



Source: Research Dive & CareEdge Research

The global economy was impacted by the Covid-19 pandemic. Country-wise lockdowns and delays in manufacturing and delivery of natural stone used in residential and commercial areas hampered the growth of the natural stone sector. As the pandemic is subsiding, the global economy has started to show signs of recovery. The building industry is expanding as a result of rising housing investment and construction spending in countries such as the United States, Japan, India, and others, which is fueling the worldwide natural stone market. Furthermore, the global market is predicted to develop due to increased urbanization and population expansion, which is expected to increase demand for natural stones for flooring and wall cladding applications.

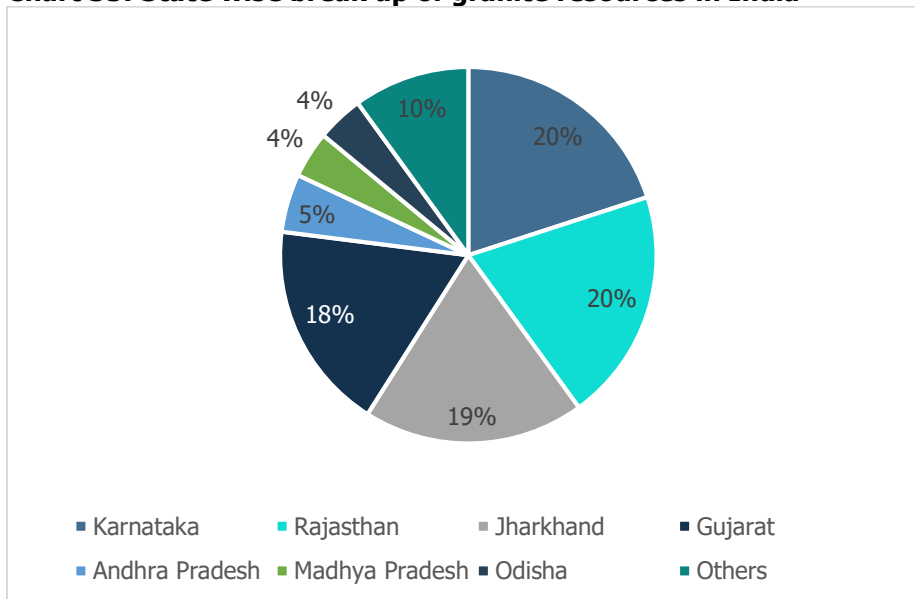
Increase in Individuals' disposable income, and their awareness of appealing outdoor designs has caused a shift in the preference for house remodeling among residential end users, particularly in urban regions. Natural stone benefits such as extended durability, aesthetic presence, and dependability encourage the use of slate and limestone in commercial and residential construction, propelling the global natural stone market forward.

4. Indian Natural Stone Industry

The market for natural stones in India is expected to grow considerably in the coming few years. India has rich reserves of stones due to its diverse geographical location. India holds 3rd place in the global production of natural stones, and holds nearly 11% share of the global natural stone market. Rajasthan is the most important and a major contributor to country’s mining business and holds nearly 90% share in India’s sandstone sector. Natural stone deposits in Rajasthan can be widely observed in Kota, Bharatpur, Tonk, and Sawai Madhopur, among others.

India has rich mineral deposits and has one of the largest granite reserves in the world. It accounts for over 20% of the global granite reserves. The granite production mainly takes place in and around the states of Andhra Pradesh, Telangana, Rajasthan, Karnataka, Tamil Nadu, Uttar Pradesh, Odisha, Madhya Pradesh, and Gujarat among others.

Chart 33: State wise break up of granite resources in India

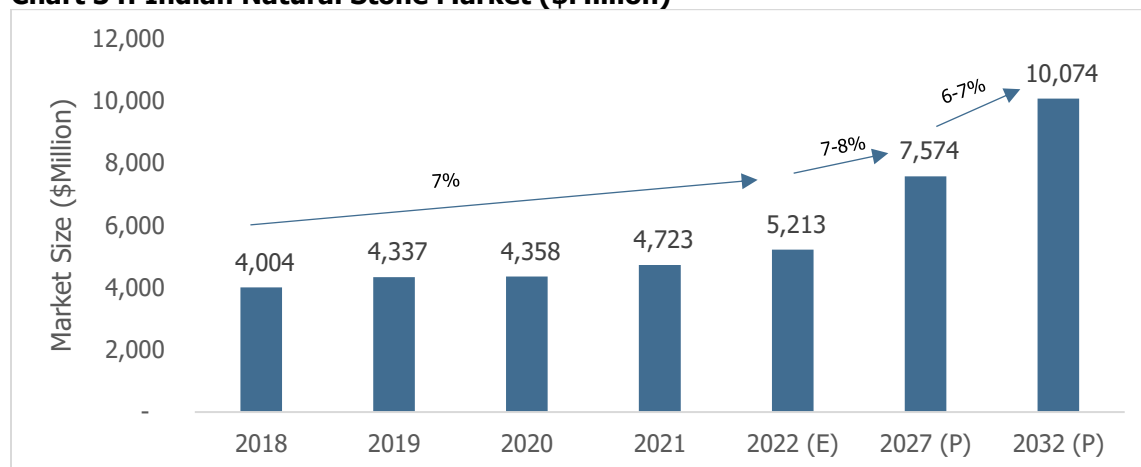


Source: Indian Minerals Yearbook 2019

The market for natural stones in the country is mainly driven by the extraction, processing, export and import of natural stones. The natural stone industry in India has also opened many different employment opportunities for low level labor owing to rising demand for natural stones in construction and remodeling of both commercial and residential buildings.

In 2022, the Indian natural stone market is estimated at \$5,213 million growing at a CAGR of around 7% between 2018 and 2022. Going forward, the market is expected to reach \$10,074 million in 2032. However, the growth could be affected due to factors such as illegal mining, lack of environmental clearances or irregularity in the allotment process of the quarries as these issues have cropped up in the recent years. Also, lack of support from government or introduction of new policies can impact the growth of the industry. For instance, for the Indian granite industry 2019 was a tough year. According to industry players, issues like lack of policy support from the government and implementation of GST resulted in a slowdown in the exports of the country. However, in FY21 and FY22, Granite blocks or slabs (rectangular, square) worth US\$119.12 million and US\$148.67 million were exported from India.

Chart 34: Indian Natural Stone Market (\$Million)



Source: Research Dive & CareEdge Research

Growing construction and remodeling activities in the country due to rapidly increasing urbanization and population is set to boost the demand for using natural stones for flooring and interior aesthetic looks of homes and commercial buildings. Government has also taken initiatives and launched many schemes to increase employment rate, construction activities and build many residential buildings for people. Under government’s PMAY-Pradhan Mantri Awaas Yojna-Urban, the government has allocated \$2.5 billion to construct the foundations for approximately 1.5 million new houses and 1.8 million existing houses. The scheme is also aimed at creating additional 7.8 million jobs, across the country. Such initiatives by the government are expected to generate high demand for natural stones.

Covid -19 Impact: The industry was impacted by the Covid-19 pandemic majorly owing to unprecedented lockdown imposed across the country with ban on non-essential activities. In March 2020, the Indian stone industry had suspended their entire operations related to production, manufacturing, and transport, import-export of various natural stones such as granite, marble, limestone, and others owing to Indian government directives to contain the pandemic. For All quarry activities, allied logistics, administrative offices, and natural stone processing facilities were ceased which also affected the construction sector owing to non-availability of raw materials required for flooring, countertops, and others. The operations were affected for a brief period of time but the Government resumed the services across sectors in a phased manner limiting the damages to the industry.

As the cases of coronavirus infection declined, the economy geared up to cover the losses it experienced in the peak time of the Covid-19 pandemic. Industries have opened up their production units and the workers have also returned back to work. Hence, the construction activities have resumed due to which the demand for natural stones has also started growing rapidly. Also, government has relaxed the earlier-imposed rules on import and export of construction materials which has also boosted the natural stones market growth in post pandemic time.

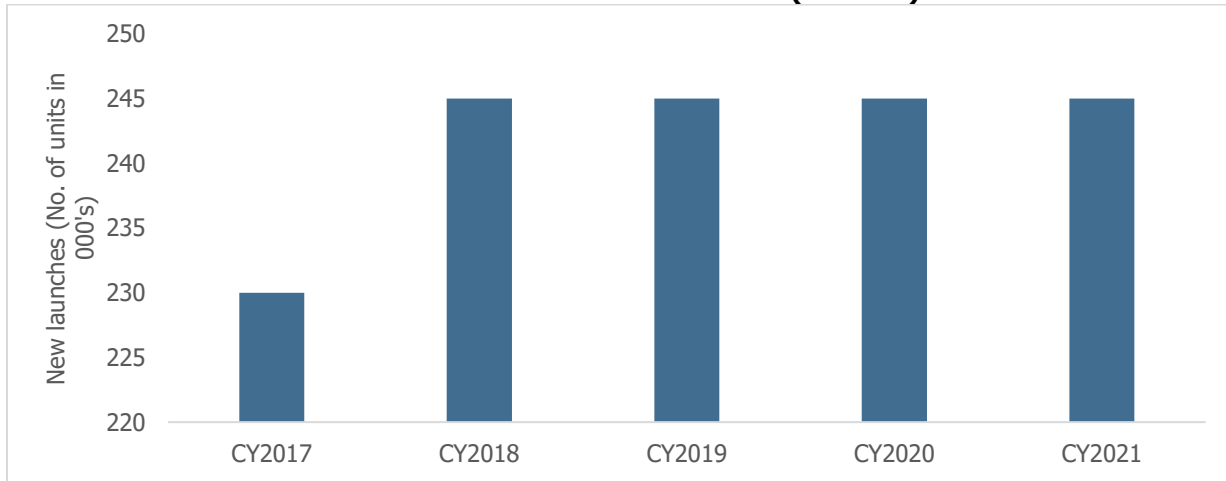
4.1 Performance of key end use industries

4.1.1 Residential Real Estate

Current demand in residential real estate

The coronavirus crisis hit when the Indian economy was already slowing. The nationwide lockdown during the June 2020 quarter rendered developers unable to complete ongoing projects which resulted in a sharp fall in new launches. New launches, which indicate the new inventory coming on-stream, fell sharply in 2020.

Chart 35: Trend in new launches in residential real estate (in 000's)



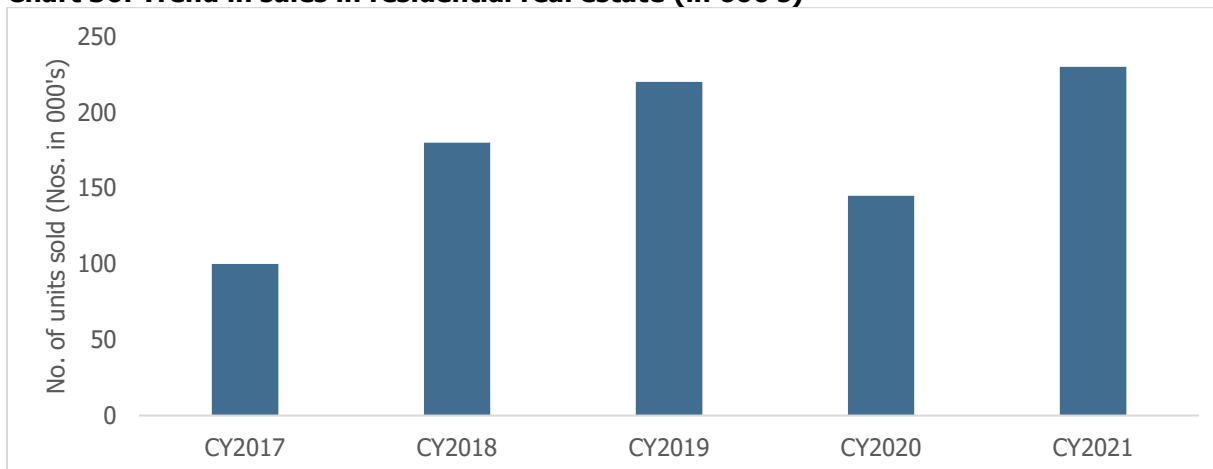
Source: Industry Sources, CareEdge Research

Note: Figures are approximations

The second half of the year saw recovery in the residential real estate segment due to interventions from the RBI and the Central Government on the regulatory side and developers too tried to speed up construction of properties underway. Prospective homebuyers responded positively due to a convergence of factors such as low interest rates, shift in perception of owning a house, lockdown-induced need for open spaces. Resultantly, an increase in ready-to-move inventory was witnessed from the September 2020 quarter onwards. Except for the blip in Q1FY21 which coincided with the second wave, new launches increased continuously in FY22.

India is also focusing on development of smart cities. Around 31% of India's population is residing in cities and the urban areas are expected to house ~40% of the country's population by 2030. The focus of smart cities is to promote core infrastructure and provide a better-quality life to its citizens. Providing affordable housing and efficient public transport are few areas that smart cities wants to focus on.

Chart 36: Trend in sales in residential real estate (in 000's)



Source: Industry Sources, CareEdge Research

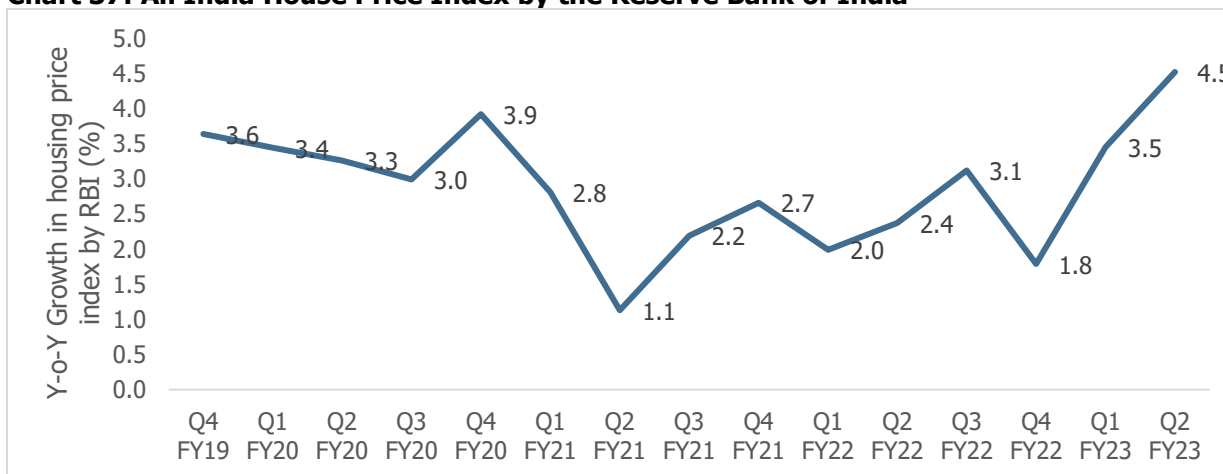
Note: Figures are approximations

The first half of FY21 witnessed a drop-in sale of residential units by more than half, according to industry estimates. Developers were able to sell a combined 60,000 units. These were the lowest sales in more than a decade. The coronavirus crisis, its ensuing income uncertainty, poor consumer sentiments and restrictions on mobility collectively impacted sales of housing units.

Property Prices in residential real estate

RBI’s Housing Price Index

Chart 37: All India House Price Index by the Reserve Bank of India



Source: RBI

The All India Housing Price index by the RBI shows that average housing prices across India recorded an increase in both, absolute and growth terms. The index recorded a growth during the H1FY22 and H1FY23 over the corresponding year-ago period and housing prices were 2.6% higher during Q2FY22 indicating that demand is indeed on the rise and buyers are willing to pay more when compared to last year.

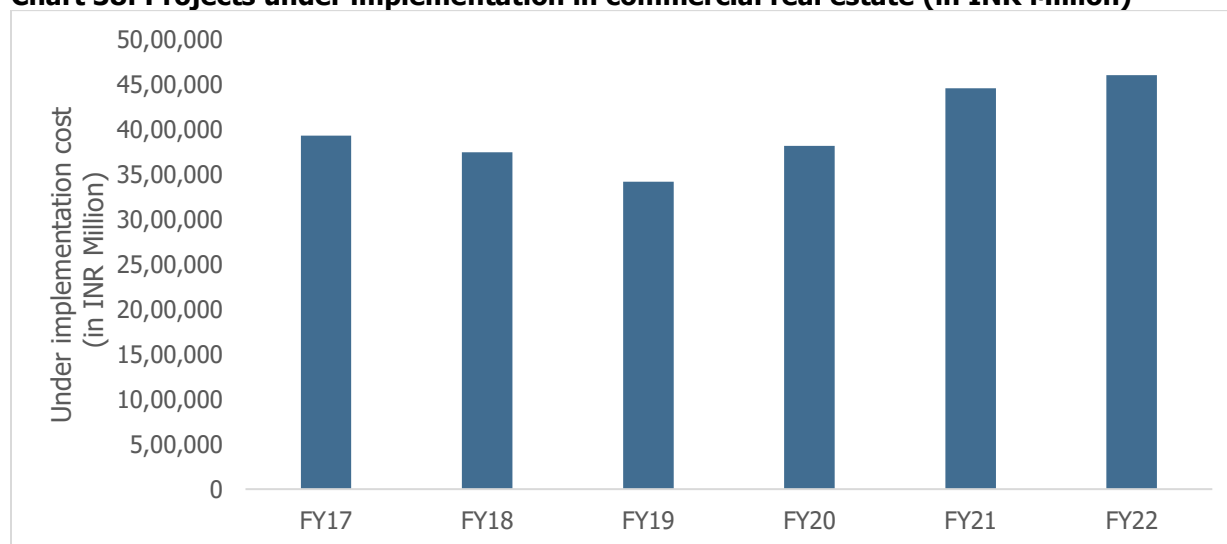
While the 2.6% rise in housing prices during Q2FY22 also came on the back of subdued housing prices during the year-ago quarter, the broad momentum in housing prices has been positive even when compared to pre-pandemic times. The housing price index numbers show that index numbers registered from H2FY21 onwards were higher than those prior to Q4FY20. The housing price index numbers stood at 287 and 285 during Q1FY22 and Q2FY22, respectively, and these levels were not surpassed even prior to the pandemic. This indicates that the demand conditions are higher not just due to a pandemic-led low base, but the housing market itself is witnessing better growth.

4.1.2 Commercial Real Estate

Projects under implementation in commercial real estate

The value of projects under implementation increased for three consecutive years ending 2020-21 after falling in 2018-19. While the progress on completions slowed during the pandemic and this too contributed to projects under implementation being higher in 2020-21, construction of projects in the commercial space picked up over the past five years due to increased opportunities in metros following a higher presence of multinational companies. The investments are likely to have been driven by demand for grade 'A' offices.

Chart 38: Projects under implementation in commercial real estate (in INR Million)



Source: CMIE, CareEdge Research

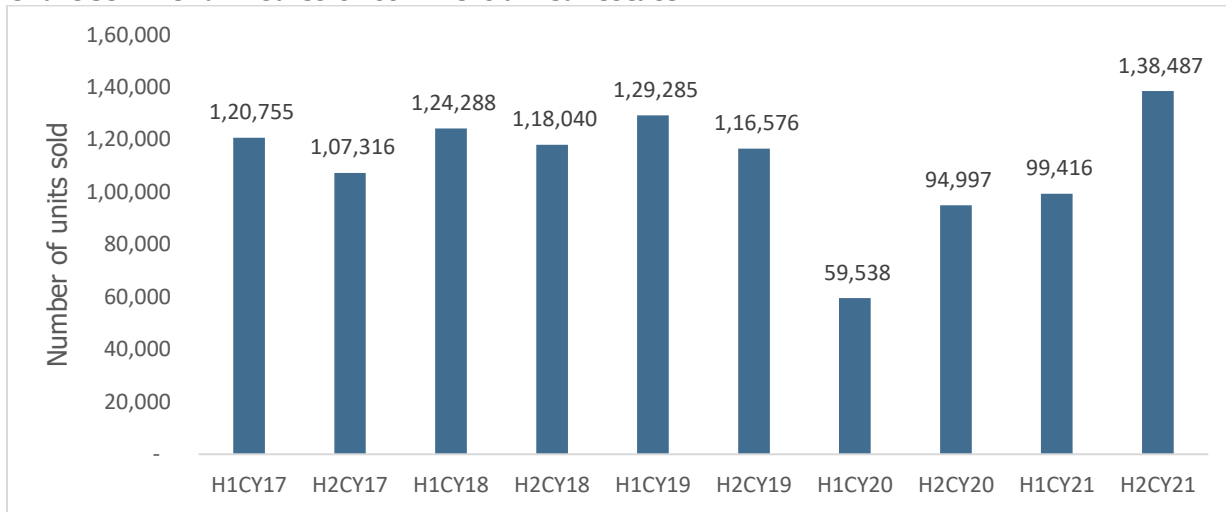
Growth in the office segment was also aided by investors who showed great interest in the commercial space. Along with this, NRIs also started investing in this segment because of lucrative returns. A comparison of the investment in commercial with residential shows that returns from commercial are higher than those from the residential space. An increasing number of private equity funds showed interest in the commercial office space in 2018 which was followed by the same in 2019.

The industry witnessed an increase in vacancy rates post the outbreak of the coronavirus and vacancy rates averaged 13-16% throughout the pandemic. However, an increase in the vaccination drive, coupled with reduced intensity of new variants, the return to office is increasing and with it, vacancy rates are likely to edge lower.

Transactions in commercial space

In the pre-pandemic period, the demand for commercial real estate was on an upswing. Demand as indicated by sales of commercial real estate units remained elevated over 100,000 units in each of the six-month periods prior to the pandemic. The demand for commercial real estate dipped in the first half of CY20 on account of the coronavirus pandemic. However, a resumption to normalcy and improved vaccinations enabled unit sales to increase gradually from H2CY20 to H2CY21.

Chart 39: Trend in sales of commercial real estate



Source: Industry Sources, CareEdge Research

Note: Figures are approximations

The 2019 calendar year was a year of record highs for the office space, according to estimates. Transactions in this space grew at a decadal high of 27 % to an estimated 60 million square feet. The supply crunch witnessed at the start of the decade had normalised, to an extent, as the pace of growth in demand slowed down. Resultantly, new completions witnessed a spike and even exceeded annual transactions for the first time since 2013.

4.1.3 Construction

Before the onset of the pandemic the Government of India had unveiled the National Infrastructure Policy (NIP) covering various sectors and regions indicating that it is relying on an 'infrastructure creation' led revival of the country's economy.

The NIP which covered rural and urban infrastructure entailed investments to the tune of Rs. 111 trillion to be undertaken by the central government, state governments and the private sector during FY20-25. Now with that the economy has almost opened up with most of the migrant workers too are returning, infrastructure development will be relied upon to propel the Indian economy from the current slowdown.

This in turn is expected to offer significant opportunities to EPC players in India. Significant investment in infrastructure development, real estate will boost construction activities and act as a catalyst for growth of EPC companies in India.

Through the National Infrastructure Pipeline, the Government of India plans to complete around 7,400 projects aggregating to Rs. 111 trillion. The project pipeline is expected to be collectively funded by the Central Government, State Governments and PSUs to the extent of 79% with the remaining 21% being envisaged to come from the private sector.

4.2 Government regulations

In India, the mining activities are regulated by the Mines and Minerals Development and Regulation (MMDR) Act, 1957. It specifies the requirements for obtaining and granting mining leases for mining operations. The act is applicable to all minerals except minor minerals and atomic minerals. Since granite, marble and quartz are minor minerals, this act is not applicable to these minerals. The minor minerals are administered under the Minor Mineral Concession Rules of the respective states. In India, the State Governments are the owners of the minerals within their respective boundaries. The State Governments grant the mineral concessions for all the minerals located within the boundary of the State, under the provisions of the MMDR Act, 1957, and Mineral Concession Rules (MCR), 1960 framed thereunder.

The Mineral Laws (Amendment) Act 2020 India: It amends the Mines and Minerals (Development and Regulation) Act 1957 (MMDR Act) and the Coal Mines (Special Provisions) Act 2015 (CMSPA). The amendments to the MMDR Act, among other things enables State governments to take advance actions for the auction of a mining lease before its expiry; provides for approvals, licenses and clearances of the previous lessee to be automatically transferred to the new lessee for a period of two years from the date of grant of the new lease; and allows holders of a non-exclusive reconnaissance permit to apply for other licenses.

National Mineral Policy 2019: This policy replaces the National Mineral Policy 2008. The policy was introduced with the aim to increase transparency and enforcement and implement sustainable mining practices. Among other things, the policy includes incentives to attract private investment and state-of-the-art technology through rights of first refusal at auction and opportunities for the private sector to take up exploration activities.

The policy also emphasizes strengthening the regulatory mechanism by incorporating e-governance systems for the following:

- Facilitate end-to-end accounting of mineral ore in the supply chain
- Increase awareness and information campaigns to involve local populations, to supplement law enforcement capabilities in preventing illegal mining

The Mineral Conservation and Development (Amendment) Rules 2018: These rules aim to ensure that mineral production is not affected by the expiry of existing mining leases. The rules require general exploration (G2) to be carried out by 1 April 2019 for all mining leases (other than coal, lignite and atomic minerals) used for non-captive purposes expiring in March 2020. The amendment also lays down timelines for the implementation of exploration plans to ensure seamless transition on the expiry of existing mining leases.

Granite Conservation and Development Rules, 1999: The Granite Conservation and Development Rules, 1999 was brought into effect to conserve and have a systematic development and scientific mining of granite resources and to lay a uniform framework with respect to scientific and systematic exploitation of granite throughout the country.

The Rules state that:

- No lease shall be granted by the State Government unless it is satisfied that there is evidence to show that the area for which the lease is applied for has been prospected earlier for granite or the existence of granite therein has been established otherwise.
- The period for which leases may be granted shall not exceed thirty years. Provided that the minimum period for which any such lease may be granted shall not be less than twenty years. A lease may be renewed for a period not exceeding twenty years. Notwithstanding anything contained in sub-rule, if the State Government is of the opinion that in the interest of development of granite it is necessary to do so, it may, for reasons to be recorded, authorize the renewal of a lease for a further period or periods not exceeding twenty years in each case.
- The minimum area that may be granted or renewed under a lease for ensuring mining activities to optimum depth shall not be less than one hectare.

4.3 Key growth and demand drivers

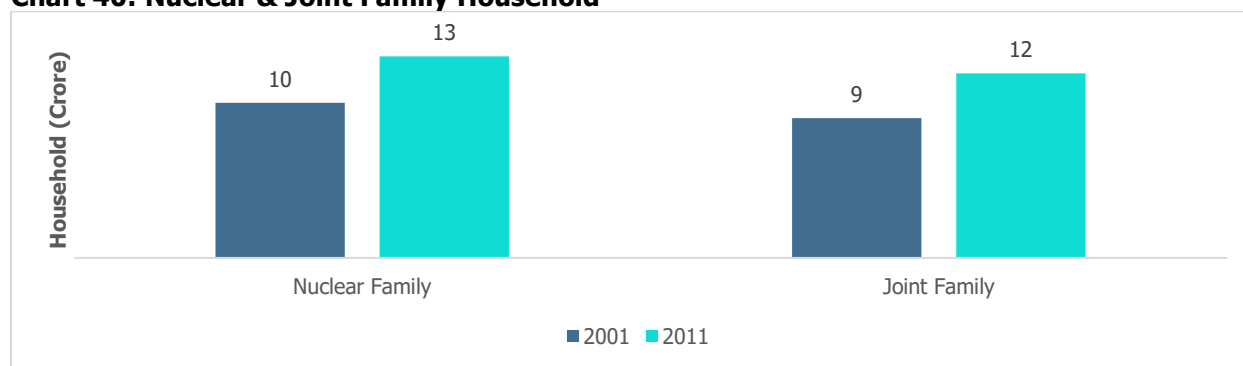
4.3.1 Residential real estate:

Rise in Number of Nuclear Families

- According to 2001 census, out of 19 crore households, 10 crore or a little over 50 % were nuclear households. In the 2011 census, the share grew to 52.1% - 13 crore nuclear out of 24.9 crore households.
- The nuclear family concept is very well linked with rapid urbanization of the country.
- People migrate from one place to another in search of jobs which ultimately increases the nuclear family counts.

An increase in nuclear family will therefore lead to an eventual increase in demand for residential units which would in turn lead to rise demand for natural stones as natural stone is widely used in wall construction and wall cladding.

Chart 40: Nuclear & Joint Family Household



Source: Census Data & CareEdge Research

Relocations

- The pandemic made consumers from the middle income and above categories aware of shortfalls of their present residences. As the pandemic forced individuals to spend all their time within the confines of their homes, most families became acutely aware of lack of space or limitations with respect to facilities offered in their complexes. We expect such families, mostly from metros and tier-1 cities, to be motivated to relocate and make new purchases due to the want of more open space, modern amenities, proximity to their workplace and desire to relocate closer to extended families and friends. Increase in demand for residential homes would have a positive impact on the demand for interior designing resulting into an increased demand for natural stones.

Shift in buying behavior

- The coronavirus pandemic has shifted the attitude that resulted in consumers buying new homes. One, the financial uncertainty brought on by the pandemic is estimated to have led to many consumers considering a home as an essential financial security. Consumers are also giving a serious thought to how they live and may want to move to larger homes considering their family size and the need to accommodate work-from-home and study-from-home. The demand for projects with good architecture, uncluttered space and recreational activities for children and elderly is projected to increase.

4.3.2 Commercial real estate:

Increasing population to result in increased workforce

- China's (most populated country in the world) population grew at a rate of 12% from 1.25 billion in 1999 to 1.4 billion in 2019 whereas India's population increased by 32% from 1.04 billion to 1.37 billion during the same period. India accounts for the second largest populated country in the world and rising population will result in more individuals joining the workforce. A higher number of employees will create more demand for office space and construction of more office spaces leading to higher commercial real estate demand which will result into increase in demand for natural stones.

Growth in e-commerce to be key driver for warehousing

- The e-commerce industry is likely to be the demand driver for the warehousing industry. Unlike most sectors, the e-commerce industry benefited from the coronavirus pandemic. Even consumers who were averse to using e-commerce websites to shop were forced to do so as retail stores remained shut and malls weren't allowed to operate. The reliance on online marketplaces selling groceries and medicines also increased and in times of distress, discounts and offers offered by these companies made them more attractive to consumers. The shift in buying habits of consumers is unlikely to change after the departure of the pandemic and this will create the demand for more storage facilities for online marketplaces.

4.4 Key challenges

Delay in Shipping and rise in marine freight

- Container shortages have been reported at the originating ports across all countries. This is due to an overwhelming amount of material arriving and insufficient resources to handle the flow such as lack of workers at the ports to load and unload and less truck driver to take the containers inland and bring them back disrupting the global logistics system.
- The shortage of containers has also resulted in increased waiting periods and increased marine freight. The rise in cost is especially detrimental for countries where the major form of transport is by sea. The high freight makes up a significant amount of the CIF export price. Usually, an export order is awarded at a fixed price with tight margins wherein the transportation cost is also included. Even a marginal increase in transportation cost impacts the profitability of the players. It is difficult for international players to endure such high total-product costs given the substantial growth in transportation expenses over the last two years. The price is anticipated to remain high for at least the next two years. Maintaining customers and orders with such high sea freight is a major challenge for stone export businesses.

Lack of Technological Upgradation

- The stone sector is facing an industrial upgrade challenge. The penalty of ignoring environmental protection will be revoked again in the near future as an industry with substantial environmental damage. Stone processing firms must adapt their previous comprehensive management, which overlooked environmental protection, if they are to develop sustainably. As a result, upgrading processing equipment and infrastructure is critical to the stone industry's long-term development. Upgrades necessitate a significant financial investment by businesses. It is a significant burden for businesses to update equipment and infrastructures in the current climate of low earnings and severe competition in the stone product industry. Given the uncertainties surrounding future government policies, businesses face a difficult task in making investment decisions.

Unorganized players

- The real estate industry has a significant presence of smaller players. The high share of unorganized players made the industry susceptible to working capital and liquidity issues during demonetization and the coronavirus pandemic. The presence of small firms, coupled with reliance on labor, makes the industry vulnerable to such shocks.

Illegal mining in parts of India

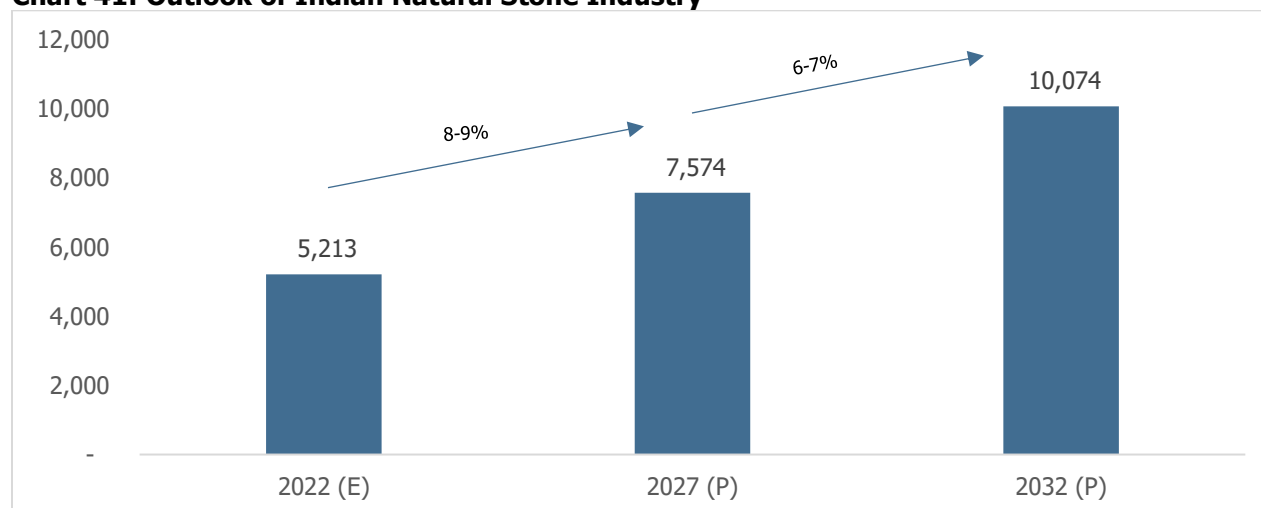
- Granite, in India is classified as a minor mineral under the MMDR Act 1957 and its reserves and leasing regulations are governed by the governments of respective states. However, the Indian granite mining has suffered due to illegal mining. In 2019, the mining activities suffered as the quarries which did not have environmental clearances were shut by the government. This also led to shortage of granite in the market which subsequently led to raw material shortage for granite processors. Also, the lack of environmental clearances by the granite quarries aggravated the raw material shortage issues.

- In Tamil Nadu and Karnataka, a number of quarries were shut as they lacked the environmental clearances and the granite processors were forced to source the granite blocks from other states or even countries. The sourcing of raw material of from other states and countries increased their transportation cost and had an adverse effect on their competitiveness in international market.
- This issue of illegal mining and lack of environmental clearance in the country could be a point of concern in future as well which could lead to stone shortage.

4.5 Outlook of Indian Natural Stone Industry

The Indian natural stone industry is expected to grow at a CAGR 8-9% between 2022-2027 reaching \$7,574 million in 2027. In the projected years, the industry is expected to grow at a CAGR of 6-7% between 2027 and 2032 to reach \$10,074 million.

Chart 41: Outlook of Indian Natural Stone Industry



Source: Research Dive & CareEdge Research

The outlook for the natural stone segment is stable with a positive upside in the medium term. The natural stone industry is linked to the commercial and residential real estate industries. The residential and commercial real estate industries are expected to return to normalcy recovering from the effects of the pandemic.

The real estate industry made a quick turnaround post the first wave of the pandemic. The residential real estate segment remains poised for growth in the future on account of relatively better economic momentum and better preparedness to deal with newer variants of the virus or any lockdowns.

The resumption in sales and launches indicates that consumer sentiment around investing in a property is picking up. With the reopening of the economy, the rate of absorption of office spaces is expected to increase as offices have started to open up again and employees are returning back. This augurs well for the natural stone industry as construction of new real estate would also lead to demand growth for natural stones such as marble and granite.

5. Overview of the Engineered – Quartz Industry

5.1 Brief overview

Quartz, an engineered stone, is a composite material formed of crushed stone that is held together by an adhesive. Slabs of quartz crystals are kept together by a resin binder in the case of counters. The majority of quartz is made using a 93% crushed stone to 7% resin and coloring ratio. Engineered quartz is gaining significant popularity as they are durable and non-porous. For instance, the engineered quartz is resistant to dents, abrasion, scratches, and acid.

Engineered quartz is available in different styles, designs, and prices that makes it a popular choice among home renovators and contractors. When these quartz aggregates are compressed to slabs, they endure similar texture and color as that of granite or natural slate.

One of the key benefits of engineered stone is that it can be cut into tiles which can be used for flooring and provides sophisticated finish. Also, engineered stones are resistant to mold and mildew due to which they are also suitable for wet rooms of commercial and residential constructions. The engineered stones can also be used to create luxurious fireplaces owing to its modern and sleek finish that meet the architectural styling requirements.

5.2 Current scenario

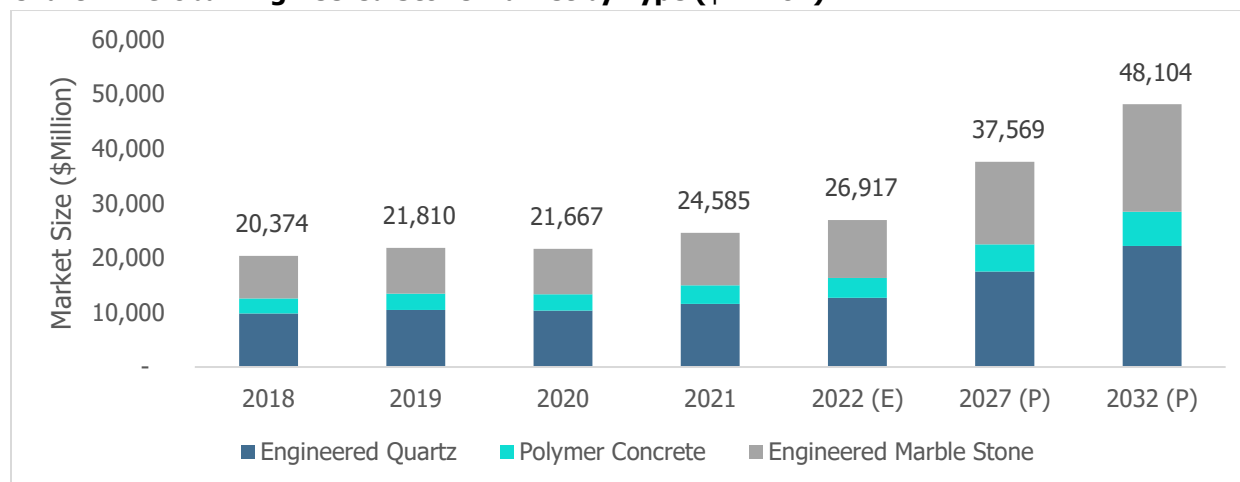
The global engineered stone market's CAGR is expected to be 7% and reach \$26,917 million in 2022 from \$20,374 million in 2018. The engineered quartz has been the major contributor in the engineered stone segment followed by the engineered marble stone.

In the year 2020 and 2021, the industry was impacted by the price fluctuations of quartz. The average price of quartz increased by 12% and 3% in the year 2021 and 2020 respectively. Rise in shipping cost and raw materials were the primary reason for the same.

Global situations like Ukraine – Russia war, trade wars and pandemic lead to surge in uncertainty in global economy. The war between Ukraine and Russia has triggered a humanitarian crisis and economic slowdown in the global growth. The commodity price rise due to the war has led to projections of inflation at 5.7% in advanced economies and 8.7% in emerging economies. The developing economies are projected to have inflation projections of 1.8 and 2.8 percentage points higher than projections for last January.

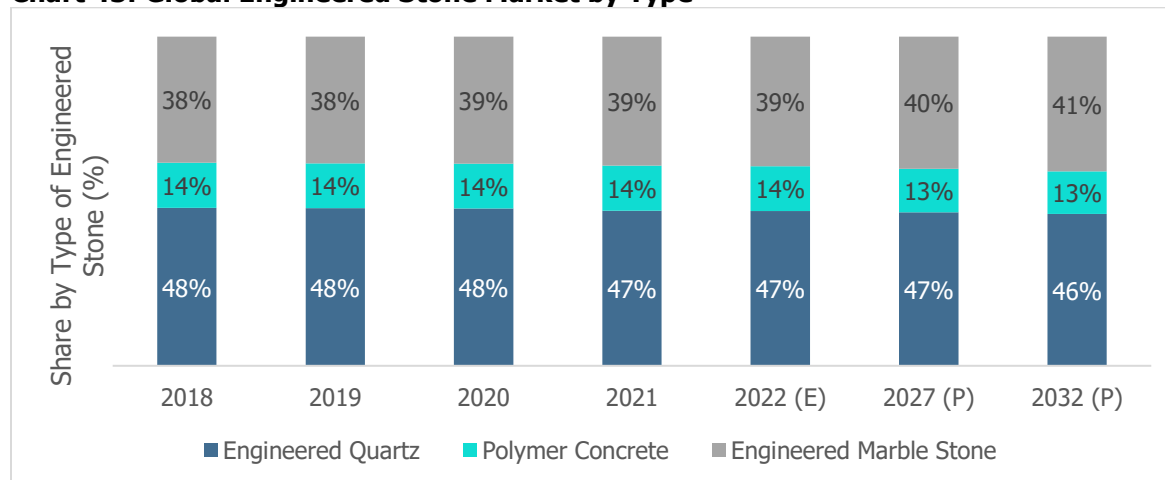
However, in the projected period from 2022 to 2027, the engineered stone market is expected to grow at a CAGR of 7-8% and reach \$37,569 million, thereafter the industry is expected to reach \$ 48,104 million in 2032.

Chart 42: Global Engineered Stone Market by Type (\$Million)



Source: Research Dive, CareEdge Research

Chart 43: Global Engineered Stone Market by Type



Source: Research Dive, CareEdge Research

5.3 Region Wise Contribution

North America

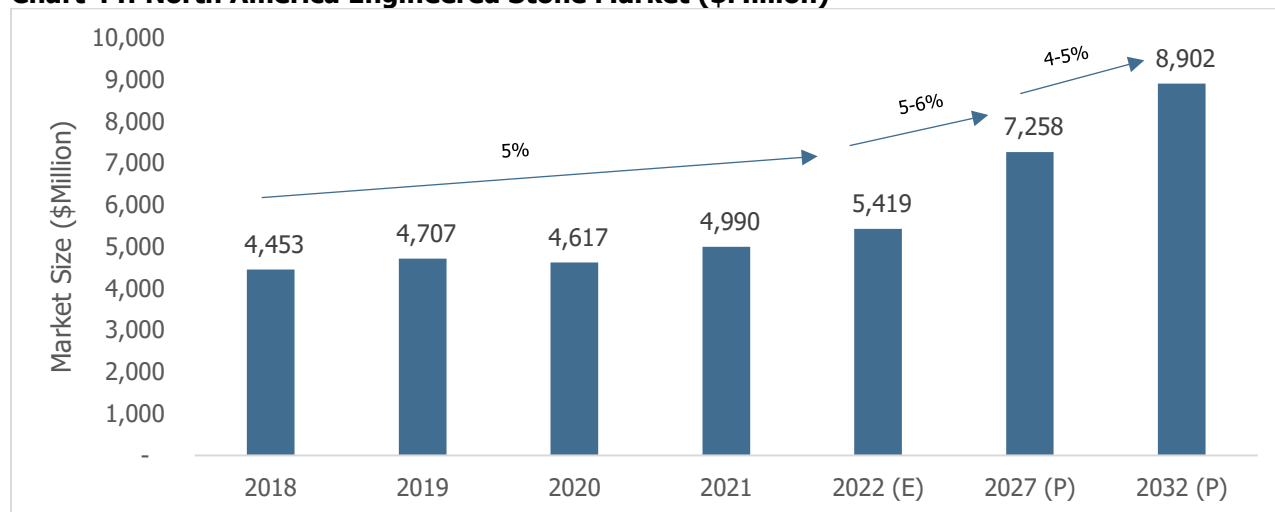
The engineered stones market in North America is expected to have a high growth in Canada in the forecasted years 2022 to 2032. The growth is majorly attributed to increased construction and remodeling activities, and growing demand for strong, natural, and aesthetic looking countertops for kitchens.

The segment is also expected to expand in the USA driven by increase in demand for building and construction activities. The rise in demand for countertops in new construction as well as renovations is expected to boost the engineered stone market in the USA. Countertops is the dominant application segment for engineered stones. Engineered stones surface countertops have gained popularity due to their durability and stain resistance. They can be used primarily for kitchen countertops, bathroom countertops, and outdoor applications as they are durable and non-porous.

Thus, growth in the building and construction activities is estimated to boost the demand for engineered stones. Rise in commercial activities in the country is leading to construction of commercial buildings and institutional buildings further driving the demand for engineered stones.

The engineered stone segment is valued at an estimated \$5,419 million in 2022, growing at a CAGR of 5% from \$ 4,453 million in 2018.

Chart 44: North America Engineered Stone Market (\$Million)



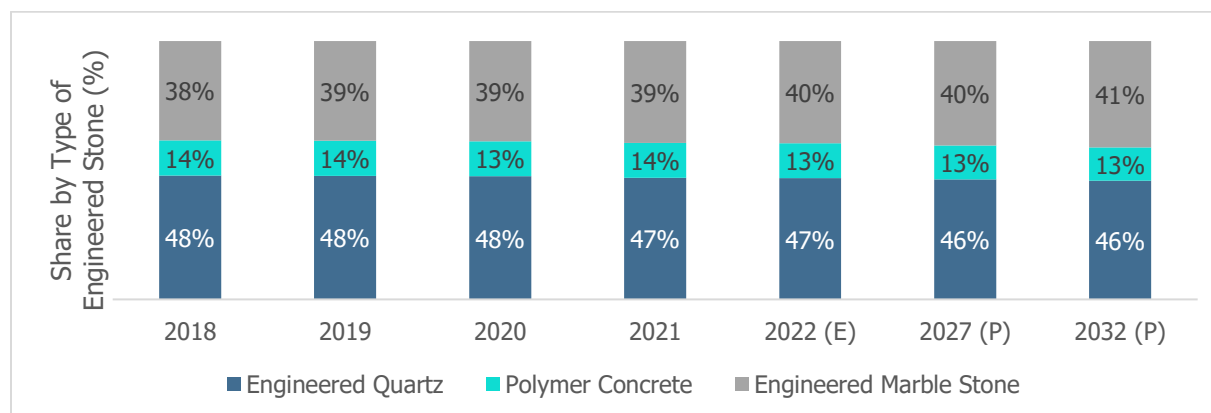
Source: Research Dive, CareEdge Research

Table 13: North America Engineered Stone Market by Type (\$Million)

Type	2018	2019	2020	2021	2022 (E)	2027 (P)	2032 (P)
Engineered Quartz	2,135	2,252	2,205	2,346	2,543	3,372	4,095
Polymer Concrete	607	637	621	675	729	953	1,141
Engineered Marble Stone	1,711	1,817	1,791	1,969	2,147	2,932	3,667
Total	4,453	4,707	4,617	4,990	5,419	7,258	8,902

Source: Research Dive, CareEdge Research

Chart 45: North America Engineered Stone Market by Type

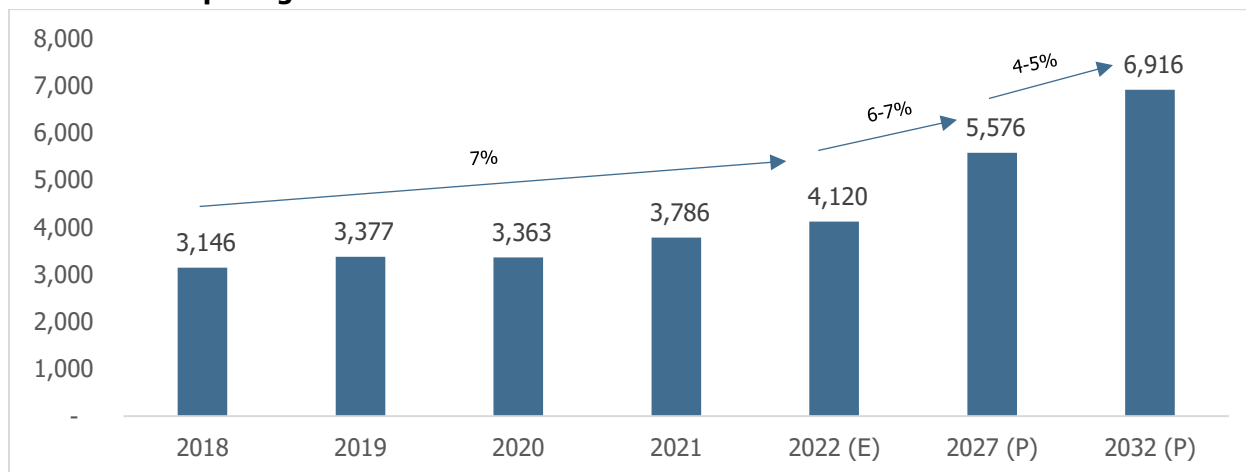


Source: Research Dive & CareEdge Research

Europe

The engineered stones are known for their color, structure, texture, and appearance which offer broad spectrum of choices to its consumers are estimated to drive the engineered stones market share. Engineered stone offers a wide spectrum of choice that can be matched to any desired appearance or ambience. To add to it, the high expectation in terms of the quality are major growth driving factors. The engineered stone segment estimated to be valued at \$4,120 million in 2022 and is expected to grow at a CAGR of 6-7% between 2022 and 2027.

Chart 46: Europe Engineered Stone Market



Source: Research Dive, CareEdge Research

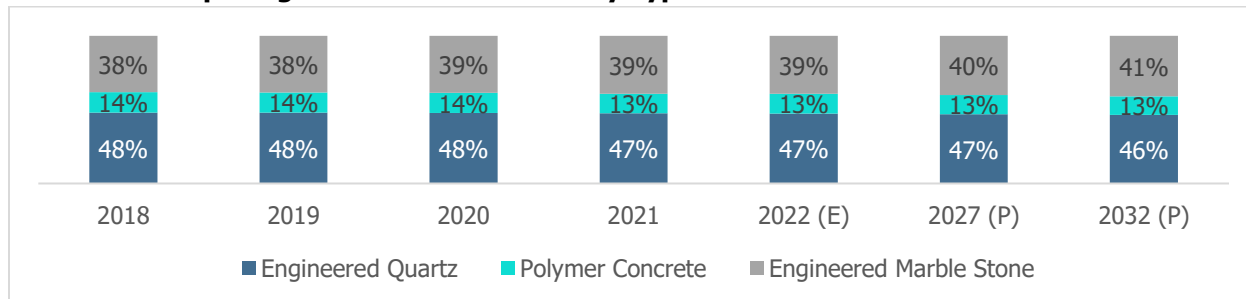
Table 14: Europe Engineered Stone Market by Type (\$Million)

Type	2018	2019	2020	2021	2022 (E)	2027 (P)	2032 (P)
Engineered Quartz	1,510	1,617	1,608	1,797	1,951	2,615	3,212
Polymer Concrete	435	463	459	506	548	724	876
Engineered Marble Stone	1,202	1,296	1,297	1,483	1,621	2,237	2,828
Total	3,146	3,377	3,363	3,786	4,120	5,576	6,916

Source: Research Dive, CareEdge Research

Engineered quartz has been the highest contributor in the engineered stone market in Europe in the historical period. In future, the engineered marble stone is expected to grow at a higher CAGR between 6-7%. Engineered marble’s features like high strength and durability can drive its growth in future.

Chart 47: Europe Engineered Stone Market by Type



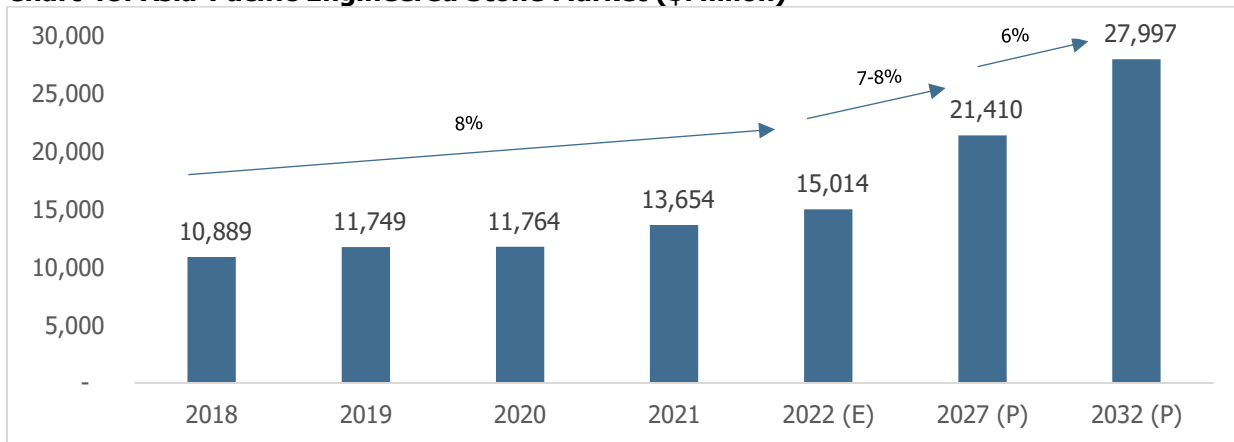
Source: Research Dive, CareEdge Research

Asia-Pacific

Asia Pacific’s engineered stone segment is valued at an estimated \$15,014 million in 2022. It is expected to grow at a CAGR of 7-8 % between 2022 and 2027 and is estimated to reach \$27,997 million by 2032.

Improved building construction activities along with the expansion & modernization of building stock in developing countries and growth in the housing units & non-residential structures are estimated to keep the demand consistent for engineered stone in the Asia-Pacific region. In addition, growing demand for engineered stone countertops for non-residential sectors such as hotels, universities, schools, and hospitals would drive the demand in this region.

Chart 48: Asia-Pacific Engineered Stone Market (\$Million)



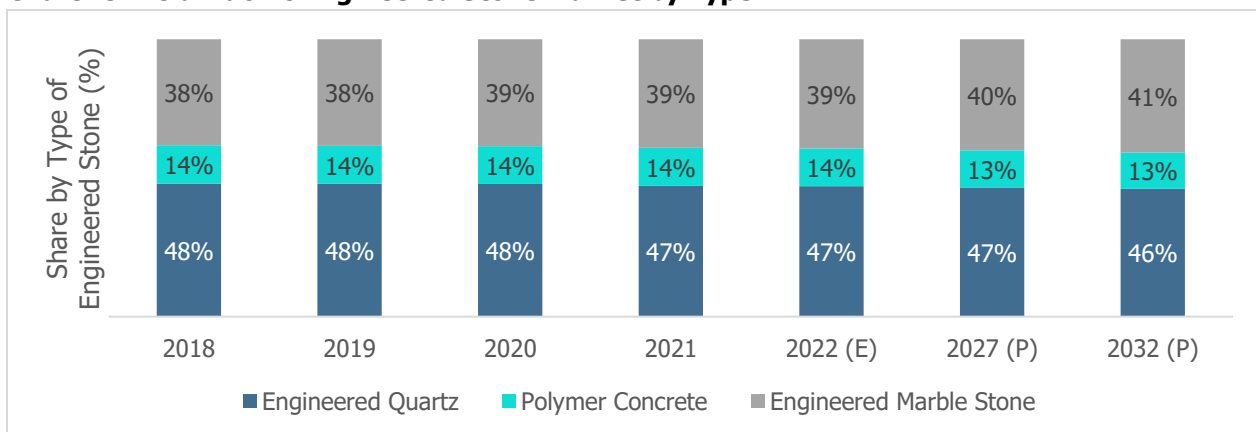
Source: Research Dive, CareEdge Research

Table 15: Asia-Pacific Engineered Stone Market by Type (\$Million)

Type	2018	2019	2020	2021	2022 (E)	2027 (P)	2032 (P)
Engineered Quartz	5,226	5,628	5,624	6,430	7,057	9,965	12,903
Polymer Concrete	1,502	1,610	1,601	1,875	2,053	2,860	3,653
Engineered Marble Stone	4,162	4,512	4,539	5,348	5,904	8,584	11,441
Total	10,889	11,749	11,764	13,654	15,014	21,410	27,997

Source: Research Dive & CareEdge Research

Chart 49: Asia-Pacific Engineered Stone Market by Type

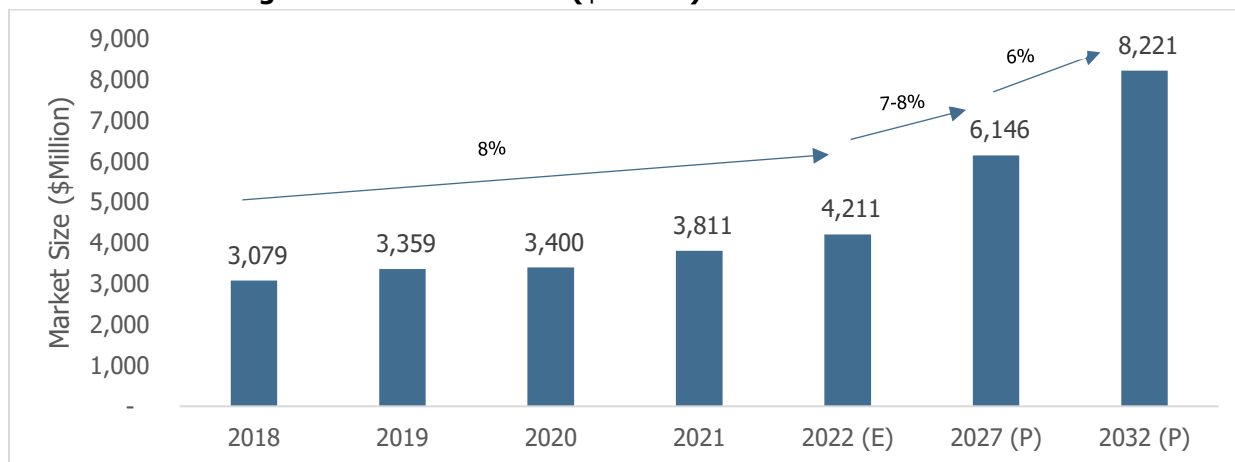


Source: Research Dive, CareEdge Research

China

Under the Asia-Pacific region, the Chinese engineered stone market is valued at an estimated \$4,211 million in 2022, and is projected to reach \$8,221 million by 2032.

Chart 50: China Engineered Stone Market (\$Million)



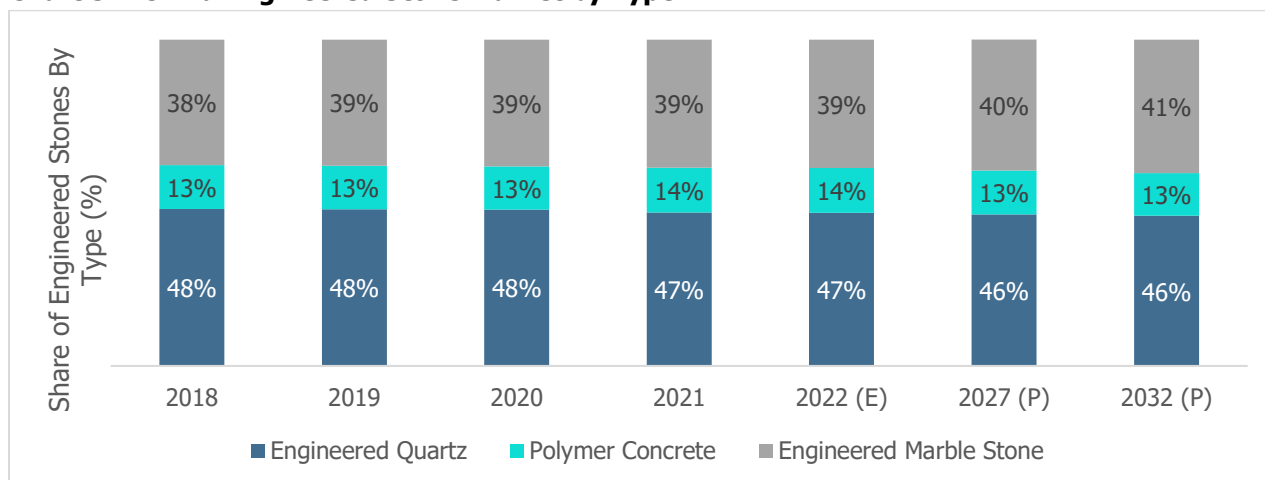
Source: Research Dive, CareEdge Research

Table 16: China Engineered Stone Market by Type (\$Million)

Type	2018	2019	2020	2021	2022 (E)	2027 (P)	2032 (P)
Engineered Quartz	1,482	1,613	1,629	1,792	1,976	2,856	3,782
Polymer Concrete	413	448	450	524	576	821	1,072
Engineered Marble Stone	1,184	1,298	1,320	1,496	1,659	2,469	3,367
Total	3,079	3,359	3,400	3,811	4,211	6,146	8,221

Source: Research Dive, CareEdge Research

Chart 51: China Engineered Stone Market by Type

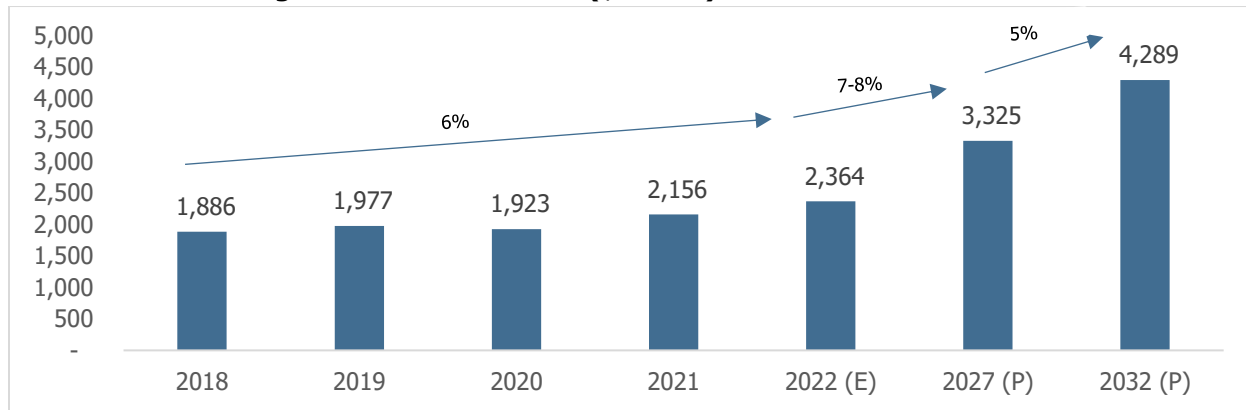


Source: Research Dive, CareEdge Research

LAMEA

The engineered stone market in LAMEA is estimated to have a CAGR of 6% and is estimated at \$2,156 million in 2022. It is expected to reach \$ 4,289 million in 2032. The expansion in the construction sector in countries namely Abu Dhabi, Qatar, Saudi Arabia, and Dubai is estimated to propel the engineered stone market demand in the coming years.

Chart 52: LAMEA Engineered Stone Market (\$Million)



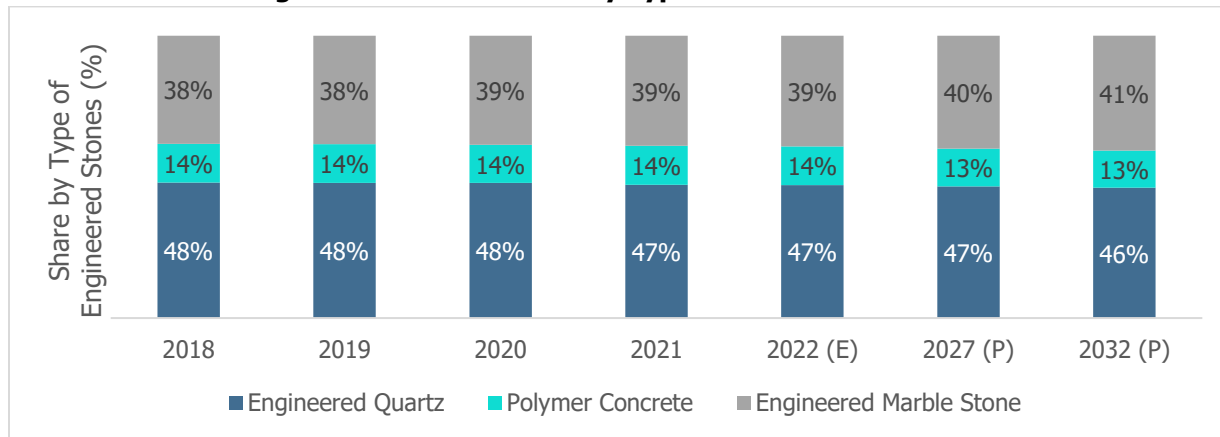
Source: Research Dive, CareEdge Research

Table 17: LAMEA Engineered Stone Market by Type (\$Million)

Type	2018	2019	2020	2021	2022 (E)	2027 (P)	2032 (P)
Engineered Quartz	906	947	920	1,017	1,113	1,550	1,980
Polymer Concrete	259	269	260	298	325	447	563
Engineered Marble Stone	721	760	743	841	926	1,328	1,746
Total	1,886	1,977	1,923	2,156	2,364	3,325	4,289

Source: Research Dive, CareEdge Research

Chart 53: LAMEA Engineered Stone Market by Type

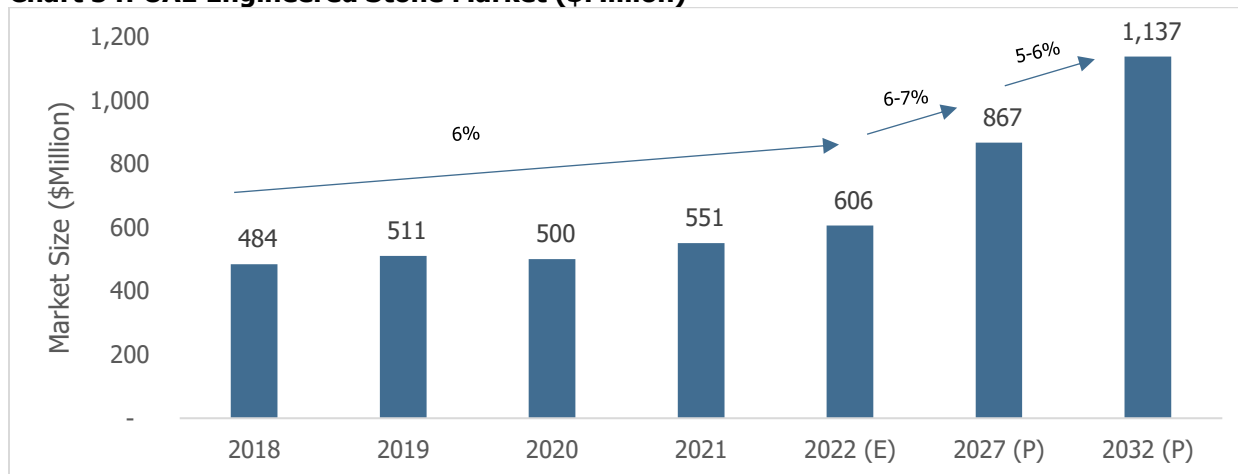


Source: Research Dive & CareEdge Research

UAE

Under LAMEA, the UAE engineered stone market is estimated to be valued at \$606 million in 2022, and is projected to reach \$1,137 million by 2032.

Chart 54: UAE Engineered Stone Market (\$Million)



Source: Research Dive, CareEdge Research

Dubai and Gulf region have evolved as the global business hub with corporates having their offices in this region. It is also developing as the center for export and for various activities around the world. Engineered stone industry in Dubai is expected to benefit from the following key demand drivers:

- In Dubai, infrastructure is developing at a rapid pace. The application of engineered stone is expected to witness growth in Dubai due to increase in infrastructure activities like building metro stations and various tourist attraction places.
- Dubai is situated centrally and has new manufacturing lines established strategically at Free Trade Zone and near port. This positioning of the manufacturing units near the port leads to optimization of freight and transportation charges as compared to manufacturing units established in landlocked areas that use rail and roads for transportation. The companies and production facilities located in Free Trade Zones are exempt from income tax and VAT. The income tax exemption and free trade privileges serve as a key factor in attracting investments.
- Given the impact of global trade war between countries such as US and China, Dubai is a growing manufacturing destination providing a suitable alternative.

In 2018, the US had imposed very high anti-dumping duties on imports of quartz surface products from China. The US Department of Commerce, in 2019 announced its final Anti - dumping Duty (AD) and Countervailing Duty (CVD) rates on Quartz surface products from China.

Anti – dumping duty:

Exporter	Producer	Estimated weighted average dumping margin(percent)
Foshan Yixin Stone Co., Ltd	Foshan Yixin Stone Co., Ltd	333.09
Foshan Yixin Stone Co., Ltd	QingYuan Yue Feng Decoration Material Co., Ltd	333.09
Suzhou Colorquartzstone New Material Co., Ltd., Shanghai Meiyang Stone Co., Ltd., CQ International Limited	Suzhou Colorquartzstone New Material Co., Ltd. and Shanghai Meiyang Stone Co., Ltd	265.81
Non-Individually Examined Exporters Receiving Separate Rates.	Producers Supplying the Non-Individually-Examined Exporters Receiving Separate Rates.	297.40
China-Wide Entity	China-Wide Entity	336.69

Source: USITC

Countervailing duty:

Company	Subsidy rate (percent)
Foshan Hero Stone Co., Ltd.	190.99
Fasa Industrial Corporation Limited	190.99
Foshan Yixin Stone Co., Ltd	45.32
Foshan Nanhai Julang Quartz Co	190.99
Qinguan Yuefeng Decoration Material Co	190.99
All Others	45.32

Source: USITC

The rates announced on the imports of quartz slabs range between 265.81%-336.69%. Along with this, countervailing duty in the range of 45.32%-190.99% was also announced on the imports of quartz surface products. The imposition of AD and CVD duties was to protect US businesses from dumping of quartz surface products at less than fair value by China. Quartz surface products consist of slabs and other surfaces made up from a mixture of materials consisting of predominately silica and resin binder. The duties imposed also includes but is not limited to, other surfaces such as countertops, bar tops, work tops, tabletops, flooring, wall facing, shower surrounds, fire place surrounds, mantels and tiles however, it does not cover quarried stone products such as granite, marble, soapstone, quartzite and crushed glass.

This opened up opportunities for other countries to increase their exports of quartz surface products to the US. However, to restrict other countries from selling quartz surface products at lower prices in the US market, The Department of Commerce under the United States International Trade Commission (USITC) issued a notice imposing anti-dumping duty on India and Turkey.

Anti – dumping duty:

Country	Exporter/Producer	Estimated average margin(percent)	weighted dumping
Turkey	Belenco Dis Ticaret A.S. ; and Peker Yu`zey Tasar(mlar(Sanayi ve Ticaret A.S	5.17	
	Ermas , Madencilik Turizm Sanayi Ve Ticaret Anonim S , irketi	0.00	
	All Others	5.17	
India	Antique Marbonite Private Limited, India; Shivam Enterprises (Shivam); and Prism Johnson Limited (Prism Johnson)	323.12	
	Pokarna Engineered Stone Limited	0.00	
	Non - Selected Companies*	3.19	

Source: USITC

Countervailing duty:

Country	Exporter/Producer	Subsidy rate (percent)
Turkey	Belenco Dis , Ticaret A.S. . and Peker Yu`zey Tasar(lar(Sanayi ve Tic. A.S	2.43
	All Others	2.43
India	Antique Marbonite Private Limited	1.57
	Pokarna Engineered Stone Limited	2.34
	All Others	2.17

Source: USITC

The Anti – dumping duty in the range of 0.00% to 5.17% was imposed on quartz surface products from Turkey applicable from May 2020 (period of investigation from April 2018 through March 2019) as published in the May 2020 notice. Also, countervailing subsidy of 2.43% was imposed on quartz surface products from Turkey applicable from May 2020 (period of investigation from January 2018 through December 2018) as published in the May 2020 notice.

The Anti – dumping duty in the range of 0.00% to 323.12% was imposed on quartz surface products from India applicable from January 2023 (period of review from December 2019 through May 2021) as published in the January 2023 notice. Also, as published in the May 2020 notice, countervailing subsidy in the range of 1.57% - 2.34% was imposed on quartz surface products from India applicable from May 2020 (period of investigation from April 2018 through March 2019).

*It should be noted that the Anti – dumping duty for the below list of Non - selected companies existed at 3.19% and they were not a part of the review process:

List of Companies not selected for individual examination:

Alicante Surfaces Pvt., Ltd.	Mahi Granites Private Limited.
Antique Granito Shareholders Trust	Malbros Marbles & Granites Industries
Argil Ceramic Private Limited	Marudhar Rocks International Pvt. Ltd
ARO Granite Industries Limited	Mountmine Imp. & Exp. Pvt., Ltd
Asian Granito India Ltd	P.M. Quartz Surfaces Pvt., Ltd
Baba Super Minerals Pvt. Ltd	Pacific Industries Limited
Camrola Quartz Limited	Pacific Quartz Surfaces LLP
Chaitanya International Minerals LLP	Pangaea Stone International Private Ltd
Chariot International Pvt. Ltd	Paradigm Granite Pvt., Ltd
Colors Of Rainbow	Paradigm Stone India Private Limited
Creative Quartz LLP	Pelican Quartz Stone
Cuarzo	Quartzkraft LLP
Divyashakti Granites Limited	Rocks Forever
Esprit Stones Pvt., Ltd	Rose Marbles Ltd
Globalfair Technologies Pvt	Safayar Ceramics Private Ltd
Glowstone Industries Private Limited	Satya Exports
Gupta Marbles	Southern Rocks and Minerals Private Limited
Gyan Chand Lodha	Stone Imp. & Exp. (India) Pvt., Ltd
Hi Elite Quartz LLP	Stoneby India LLP
Hilltop Stones Pvt., Ltd	Sunex Stones Private Ltd
Inani Marbles and Industries Ltd	Tab India Granites Pvt., Ltd
International Stones India Private Limited	Ultima International
Jennex Granite Industries	Vishwas Ceramic
Jessie Kan Granite Inc	Vishwas Exp.
Keros Stone LLP	Yash Gems
M.B. Granites Private Ltd	

Source: USITC

As per the World Trade Organization (WTO) norms on anti-dumping duty, 'Anti-dumping investigations are to end immediately in cases where the authorities determine that the margin of dumping is insignificantly small (defined as less than 2% of the export price of the product). Other conditions are also set. For example, the investigations also have to end if the volume of dumped imports is negligible (i.e. if the volume from one country is less than 3% of total imports of that product — although investigations can proceed if several countries, each supplying less than 3% of the imports, together account for 7% or more of total imports)'.

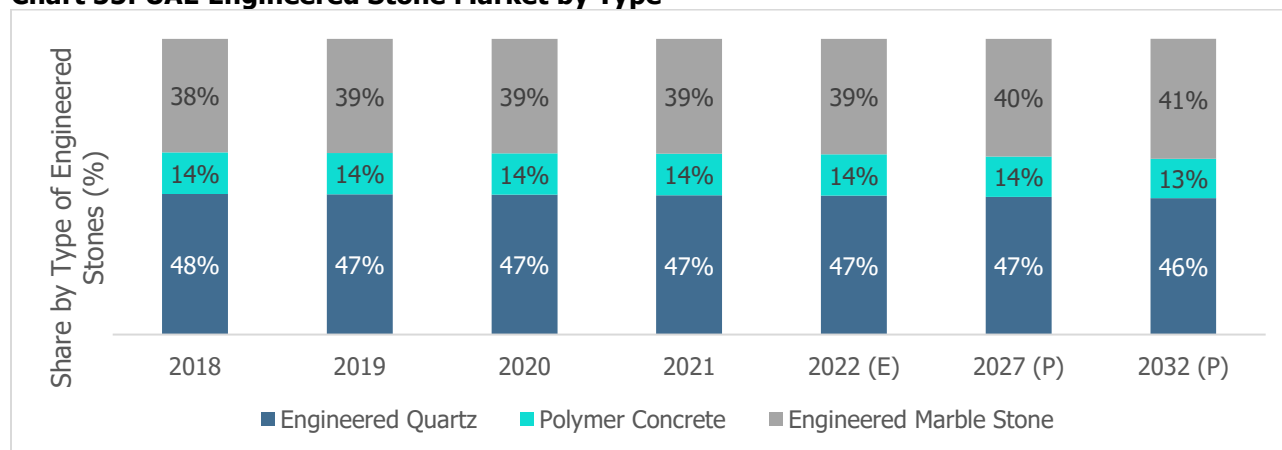
UAE does not have significant production facilities at present, hence there’s a lesser likelihood of such anti-dumping measures being imposed on it. This makes UAE an attractive base for global stone manufacturers to setup production facilities.

Table 18: UAE Engineered Stone Market by Type (\$Million)

Type	2018	2019	2020	2021	2022 (E)	2027 (P)	2032 (P)
Engineered Quartz	230	242	237	260	285	404	525
Polymer Concrete	68	71	69	77	84	118	151
Engineered Marble Stone	186	197	194	214	237	345	461
Total	484	511	500	551	606	867	1,137

Source: Research Dive, CareEdge Research

Chart 55: UAE Engineered Stone Market by Type



Source: Research Dive, CareEdge Research

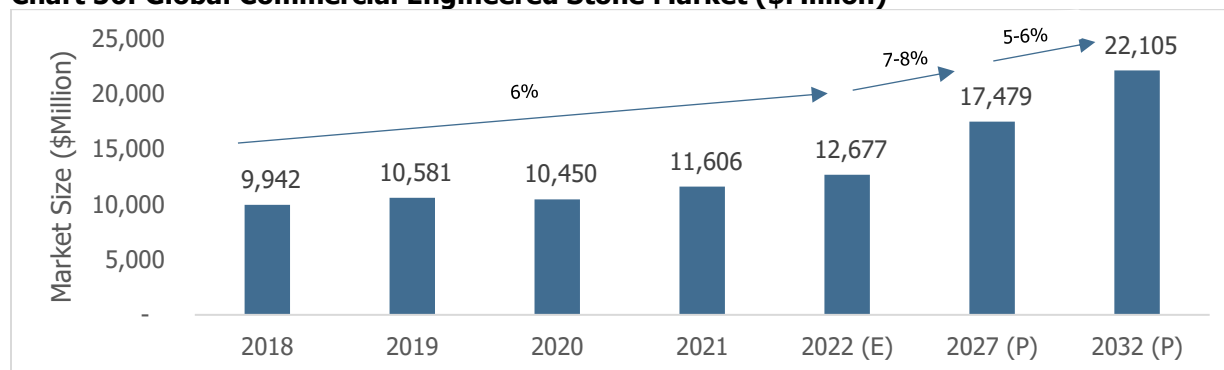
5.4 Performance of key end use industries

5.4.1 Commercial real estate

The commercial engineered stone market is estimated to be valued at \$11,606 million in 2022, and is projected to reach \$22,105 million by 2032.

The construction industry of countries such as China, India and UAE are expected to drive the growth in the industry. The central government of China is expected to focus on transportation and energy, emphasizing increasing connectivity within city clusters.

Chart 56: Global Commercial Engineered Stone Market (\$Million)



Source: Research Dive, CareEdge Research

The UAE’s construction sector is also anticipated to attain moderate post-pandemic growth over the coming years. The significant commitment and resources of the UAE government would lead to development of different mega-projects opportunities for construction and engineering companies.

For example, mega construction projects like the redevelopment of Mina Rashid in Dubai, and the Dubai International Financial Centre Expansion 2.0.

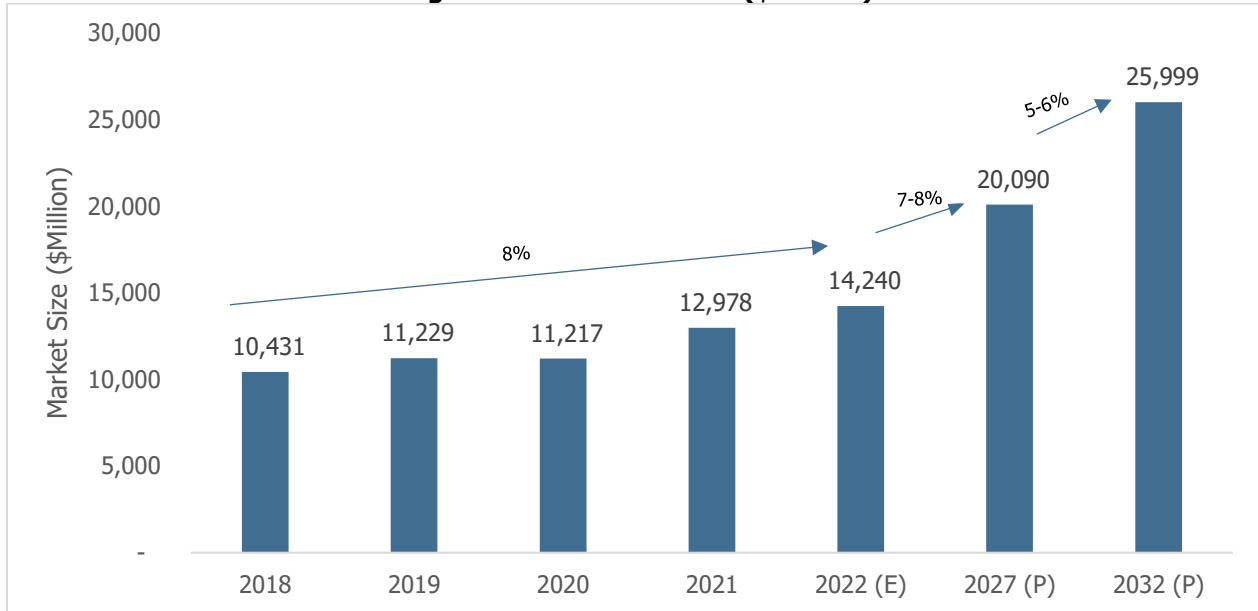
Increased awareness of pollution reduction is opening doors for the manufacture of recyclable engineered stone, which is projected to drive the global market over the forecast period. Some engineered stone items, such as porcelain sinks, liquor bottles, wine bottles, beer bottles, and perfume bottles, include up to 70% recyclable material, allowing for product recycling. Engineered stone's eye-catching look and durability are also increasing its application in works of art, which is expected to provide many potential prospects in the global market. Engineered stones are highly resistant to heat and scratch, and are highly durable thus widely being used in the fireplace. Owing to the high living of standard and luxurious lifestyle, the global market for engineered stone is anticipated to grow at a significant CAGR in near future.

Engineered stones are suitable for use in hospital food facilities, canteens, and commercial buildings due to properties such as non-porousness and durability. Engineered stones can be produced in large sizes and their non-porous nature allows them to be used in wet areas such as washrooms, swimming pools, showers, bathtubs, etc. Engineered stones find their potential use in a wide range of applications accelerating their growth and demand in the global market.

5.4.2 Residential real estate

The residential engineered stone market is estimated at \$14,240 million in 2022, and is projected to reach \$ 25,999 million by 2032. The use of engineered stone in the residential industry is expected to grow at a CAGR of 7-8% between 2022 to 2027. This is mainly due to the growing popularity of engineered stone owing to its durability, aesthetic appearance, and application in residential flooring.

Chart 57: Global Residential Engineered Stone Market (\$Million)



Source: Research Dive, CareEdge Research

Engineered stone has been a popular alternative for household applications such as vanities, kitchen countertops, walls, and flooring due to its exquisite aesthetic. Countertops have evolved from basic platforms which were made of concrete earlier.

Now, the countertops are multi-purpose platforms and have expansive utilities. Engineered quartz is one of the major stones that is used in manufacturing countertops. Demand for trendy designs, modular kitchens and decorative cabinets or shelves are increasing the demand of the engineered stone. It is projected that through 2024, the engineered stone will be the fastest growing major countertop material. The rising share of housing space devoted to kitchens, bathrooms and interest in home renovation will continue to drive the countertop market in future.

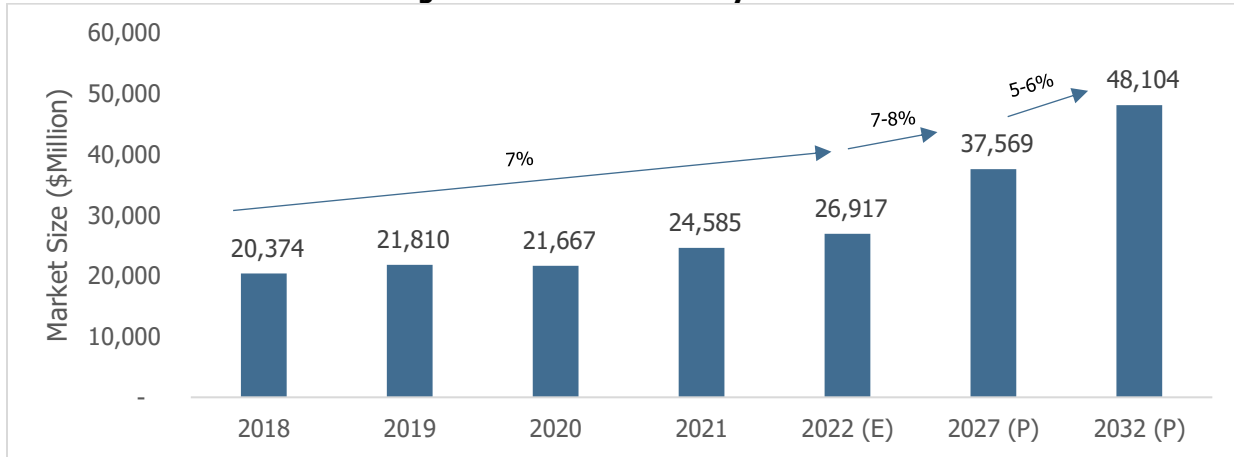
The engineered stones also prevent bacterial development and aid in the maintenance of a sanitary environment, which is a major element driving the global engineered stone market.

Since, engineered stones are non-porous due to their manufacturing style, they are the best choice for kitchen and bathrooms, among people. Engineered stone can be safely used in food areas as it does not require any auxiliary chemical substance such as protective coatings. Variety of colors and structures of engineered stones that make them suitable for variety of ambience or appearance is estimated to propel the market growth.

5.5 Outlook

The global engineered stones market is expected to reach \$ 48,104 million by 2032. The industry is expected to grow at a CAGR of 5-6% between 2027 and 2032.

Chart 58: Outlook of Global Engineered Stone Industry



Source: Research Dive, CareEdge Research

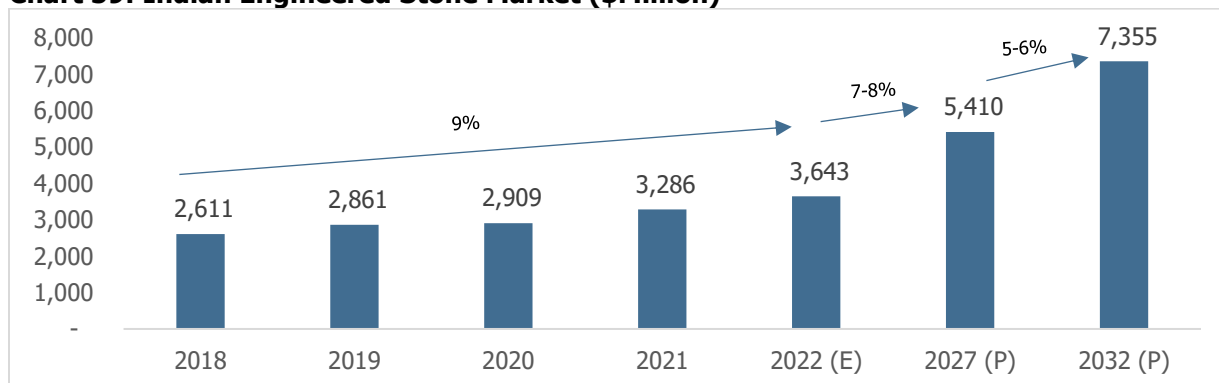
As the global economy is recovering from the pandemic, the industry has started to witness a gradual uptrend. Rising per-capita income, rapid expansion of building sectors, and existence of a high number of engineered stones in regions such Asia-Pacific would further boost demand. Increase in residential renovations, as well as surging need for redeveloping old building constructions will further contribute towards growth of the industry. Engineered stones are environmentally friendly as they contain 93% crushed leftover stone from quarries or natural stone beds and their demand would be benefitted with increasing need for environmentally friendly and sustainable building products for various applications such as kitchen worktops, flooring, raised flooring, internal cladding, vanity tops, and bathroom furnishings for residential and commercial construction projects.

6. Indian Engineered Stone Industry

Engineered quartz was declared as a minor mineral by the Government of India in 2015. More than half of quartz in India comes from the state of Andhra Pradesh. Other states where quartz is available are Chhattisgarh, Gujarat, Rajasthan, West Bengal, Karnataka and Jharkhand. The industry mainly consists of unorganized players. Besides catering to the Indian market, India is a major exporter of engineered or quartz stones in countries like the U.S, Europe and U.A.E. The demand for engineered stones has increased tremendously owing to its wide range of applications, cost effectiveness, and many other characteristics such as strength, durability, and availability in various color pellets.

The Indian engineered stone market is estimated to be valued at \$3,643 million in 2022. The industry is expected to grow at a CAGR of 7-8% in the projected years between 2022 to 2027. By the year 2032, the Indian engineered stone market is expected to reach \$ 7,355 million.

Chart 59: Indian Engineered Stone Market (\$Million)



Source: Research Dive, CareEdge Research

In the FY2020-21 the industry was impacted by the Covid-19 leading to disruptions in production and transportation process. As the lockdowns were imposed throughout the country, laborers migrated back to their native towns creating a shortage of labor. The infrastructure and customer base were also affected by the pandemic as the customers wanted to check the look and feel of the products which was not possible during the time of lockdowns. The Indian stone industry grew at a very slow pace in that period.

6.1 Performance of key end use industries

6.1.1 Residential Real Estate

The residential real estate segment was performing exceptionally well during the first half of the previous decade on account of growth in the economy and the services sector which resulted in migration to metros and propelled the demand for housing units in these areas.

However, problems related to elevated property prices, delayed launches by developers and stalled projects triggered loss of confidence towards the sector.

In India, around three houses are built per 1,000 people per year as against the required construction rate of five houses per 1,000 individuals per year, as per industry estimates. This indicates that there is significant untapped potential for growth in the sector. While the current shortage in housing in urban areas is pegged at around 10 million units, the shortage in the affordable housing space is expected to be much higher considering the population belonging to that strata. Along with this, increased economic growth and

the uptick in India's service sector has created additional demand for office space, which in turn is likely to result in greater demand for housing units in nearby vicinity.

The Indian housing market has also been appreciating steadily over the past decades. It is expected that this will result in the industry incurring investment, both in the short term and the long term. The Government allowed FDI up to 100 per cent through automatic route in the construction sector. This helped attract investments in the sector. The growing flow of funds through the FDI route in Indian real estate is encouraging increased transparency. Developers, in order to attract funding, have revamped their accounting and management systems to meet due diligence standards.

For performance of the industry please refer to section 4.1.1

6.1.2 Commercial Real Estate

The Indian real estate industry witnessed a slowdown in the years prior to the pandemic due to the general slowdown in the economy. However, this had little impact on the demand for office space. The demand for office space grew by leaps and bounds for the better part of the past decade with the unavailability of good quality supply being the only impediment to higher growth. We estimate the demand for office space, particularly in metros, to have outstripped supply prior to 2020.

With the residential real estate becoming end-user driven, the commercial real estate emerged as a more attractive investment proposition for individual investors as well as institutional funds. Due to the investment potential of commercial spaces, developers are also responding to the demand.

For the performance of the industry refer to section 4.1.2.

6.1.3 Construction

The construction sector is the country's second-largest economic segment after Agriculture. The sector contributed 7.6% to the national GVA (at constant price) in FY21.

The order book of construction companies is dependent upon the capital expenditure in the economy. Broadly, the investments can be classified into infrastructure, real estate and industrial construction.

Historically, infrastructure creation, spread across sectors such as roads and highways, telecom, airports, ports, power, oil and gas and railways has dominated the investments. Increase in Infrastructure demand & government initiative shows the potential for catapulting India to the third largest construction market globally.

For performance of the construction industry please refer to section 4.1.3

6.2 Government regulations

The Occupational Safety, Health and Working Conditions Code 2020 (OSH Code): The Central government has recently amalgamated the existing Indian labor laws relating to safety, health and working conditions of workers employed in various establishments, including mines, under the OSH Code. Among other things, the OSH Code sets the requirements for safety and working conditions of labor employed in mines. The OSH Code will come into effect on a date to be notified by the central government. Once notified, it will replace the Mines Act 1952 (Mines Act) and the Mines Rules 1955 (Mines Rules).

The OSH Code sets to provide safe working conditions for the laborers, some of the provisions listed under OSH code are:

- Employer must provide a risk-free workplace and instruct employees on safety protocols.
- In case of interstate migrants, the employer/contractors should notify specified authority of both states in case of fatal accidents and serious bodily harm. They should ensure suitable work conditions and extend medical checkup and other benefits.
- No worker below the age of 18 or apprentice/trainee below the age of 16 may work in a mine.

6.3 Key growth and demand drivers

1. Global situations and Anti-dumping duties

- Historically, China has been the largest global exporter of engineered stones. Factors such as large - scale manufacturing, low cost and government support has helped China to dominate the global exports market.
- In 2018, the US – China trade war started and the tensions negatively impacted consumers in both countries. The US imposed anti-dumping duty on Chinese imports and in retaliation, China also responded by imposing high tariffs on the US goods. The tariffs imposed by both the countries led to decline in imports and exports to and from US and China. However, trade diversion to other countries due to the anti-dumping duty on China benefitted manufacturers of the other countries. The decline in imports from China opened opportunities for other countries to export goods to the US.
- In addition to the trade war, the disruption caused by Covid-19 led to the manufacturers adopting the 'China Plus One' strategy. The China Plus One strategy focuses towards shifting away from China and diversify their sources of production.
- Countries like Vietnam, Thailand, Indonesia, Malaysia and India are major attractions for the manufacturers because of low cost labor.

2. Growth in economy coupled with increased urbanization to boost demand

- The Indian economy has experienced steady growth in the past decade and is expected to be one of the fastest growing economies in the post-pandemic era
- India's urban population is expected to reach over half a billion by 2025 from an estimated 461 million in 2018.
- Rising income and employment opportunities have led to migration to urban areas thereby creating greater need for real estate in major Indian cities. A rise in need for real estate would also create demand for engineered stones because of its multipurpose uses such as kitchen countertops, flooring, wall cladding, cut-to-size items, etc.

3. Net absorption of office space in commercial real estate

- After dropping around 60% in Q1CY17 mainly due to demonetization in November 2016, the net absorption witnessed a five-year high in Q1CY19. While the net absorption continued witnessing strong growth until February 2020 (before outbreak of coronavirus), post the outbreak many new leasing deals have been pushed back by couple of months and are also being renegotiated for the removal of lock-in periods and downward revision of rentals. Bengaluru, Mumbai and Delhi NCR accounted for nearly 75% of the net absorption in Q1CY20, which was led by IT/ITeS sector. Pre-commitments for Q1CY20 accounted for 50% (4.9 msf) of the net absorption for the same period.

Table 19: City-wise net absorption in India's office market

City	Q4FY20	Q1FY21	Q2FY21	Q3FY21	Q4FY21	Q1FY22	Q2FY22
	(mn sq ft)	(mn sq ft)	(mn sq ft)	(mn sq ft)	(mn sq ft)	(mn sq ft)	(mn sq ft)
Bengaluru	2.7	0.5	2.7	1.4	2.2	5.2	1.01
Chennai	0.9	0.1	0.2	0.9	0.4	0.5	0.7
Delhi NCR	1.6	0.5	0.2	1	1.1	1.2	1.4
Hyderabad	0.9	1.2	1.5	2.8	1.1	1.6	1.1
Kolkata	0.02	-	0.02	0.2	0.1	-	0.03
Mumbai	2.1	0.5	0.3	0.9	0.2	2.5	1
Pune	0.4	0.6	0.5	1.1	0.5	0.6	0.6
Total	8.6	3.3	5.3	8.2	5.5	11.7	5.9

Source: Industry Sources & CareEdge Research

City-wise absorption rate is higher in metros than in tier II and III cities on account of a higher presence of offices and multinational companies in these regions. Net absorption in India's overall office market, which is driven by metros, witnessed a fall of 33% on a sequential basis during Q4FY21. During this period, around 5.5 million square feet of office space was leased. When compared to the same period during the previous year, net absorption accounted for 64% of that in the Q4FY20 quarter.

4. Development of attractive and aesthetic infrastructure

- Due to its elegant appearance, quartz stone has been a popular choice for home applications such as vanities, kitchen countertops, walls, flooring etc. with the rise in demand for residential and commercial real estate, the demand for these applications will also tend to rise.

5. Growth in construction and building industry to push demand for engineered stones

- As the construction activities rise, properties such as non-porous and durability makes engineered stones suitable for applications in hospital food facilities, canteens and commercial buildings, railway and metro stations.
- Quartz can be produced in large size and is non-porous in nature allowing it to be used in wet areas such as washroom, swimming pool, shower and bath tubs, etc.

6. Demand from tier-2 and tier-3 cities to be on an upswing

- E-commerce companies were already growing by leaps and bounds prior to the pandemic mainly due to increased penetration and demand from metros. As a result, most warehousing space occupied by these companies was near or in metros and tier 2 cities such as Mumbai, Delhi NCR, Bengaluru, Chennai, Ahmedabad, Kolkata, Hyderabad and Pune.

- However, with growing absorption of online retail in India, the demand from smaller towns and cities will be on an upswing. E-commerce companies will consider investing in warehousing space in these cities to ensure seamless last-mile deliveries which would further benefit the engineered stone industry.

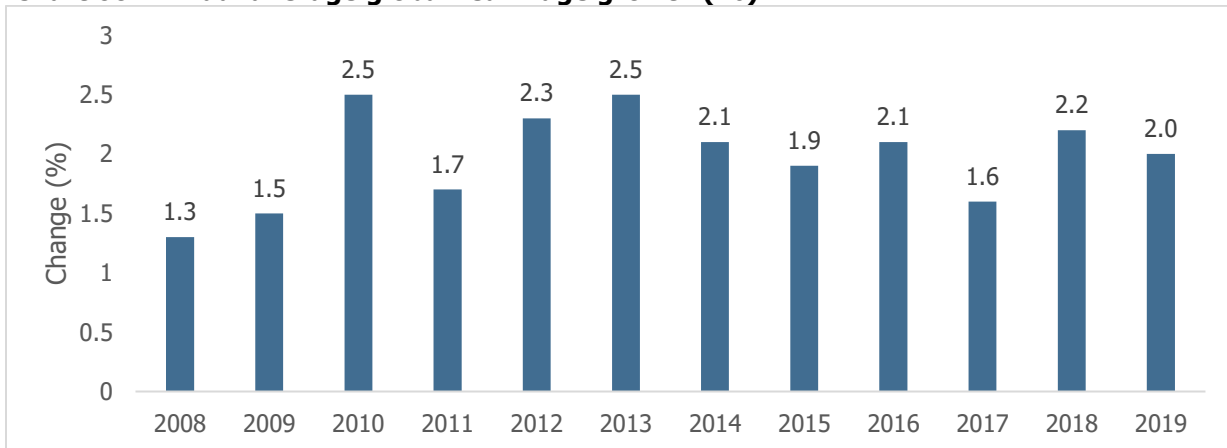
7. Hygienic and resistant to bacteria growth

- The engineered stones are also resistant to bacteria growth and thus help in maintaining hygienic environment, which is an important factor driving the engineered stone market. An engineered stone is not only visually appealing but is very robust and thus increases its use in work of art which in turn is anticipated to create several growth opportunities.

8. Labor Cost advantage

- Globally, in the years preceding the Covid-19 pandemic the growth in real wages has witnessed a fluctuating trend, wherein China stood out with a constant rise in wages, which more than doubled during the period 2008-19. Among the advanced G20 economies, wage growth was accelerated by Republic of Korea followed by Germany. Among the emerging G20 countries, all countries except Mexico experienced a significant positive growth in wages over the period.

Chart 60: Annual average global real wage growth (%)



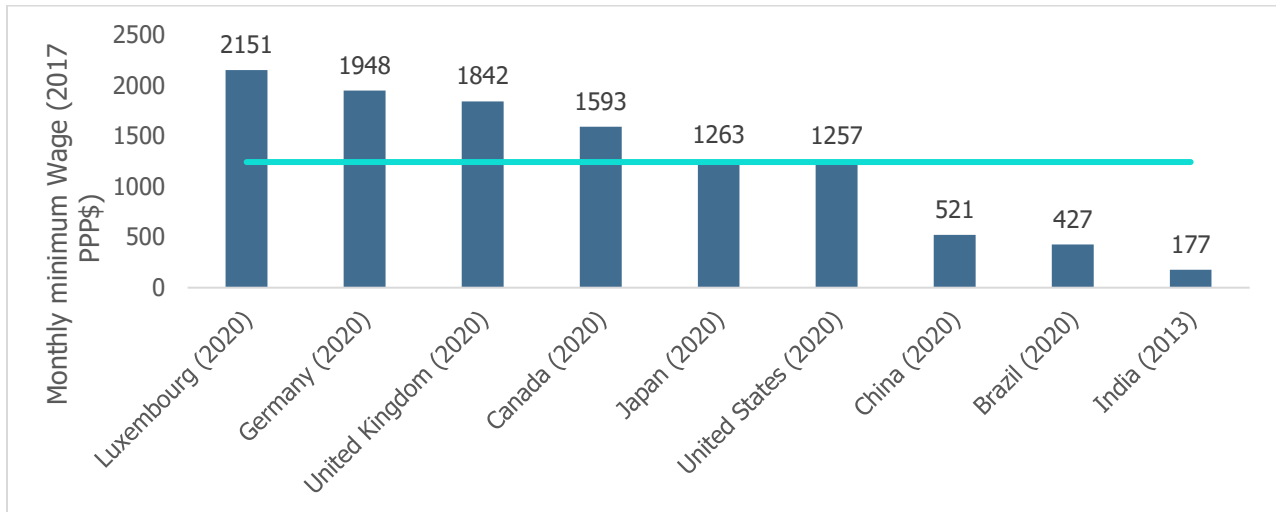
Source: International Labour Organization’s Global Wage Report 2020-21, CareEdge Research

However, it is observed that developing countries such as India, China continued to have lower minimum wages compared to developed countries such as US, UK and Germany.

- A comparison of monthly minimum wages across countries show that India has the lowest monthly minimum wage at \$177 compared to the average minimum wages at \$1242.

India benefits from having lower minimum wages as there is availability of large labour pool and almost half its population is of working age. A majority section of the working population is involved in the unorganized sector working for small scale businesses. Due to its low wage structure, India enjoys a competitive advantage over other countries.

Chart 61: Gross Monthly Minimum Wage (2017 PPP\$)



Source: International Labour Organization

Note: The wages for all the countries have been converted to U.S. dollars as the common currency by using the 2017 Purchasing Power Parity (PPP) rates for private consumption expenditures. Converting to 2017 PPP\$ helps to internationally compare countries by taking into account the differences in relative prices between countries

6.4 Key challenges

Availability of substitutes

- There are other alternative materials available in the market such as tiles, laminate, hardwood flooring and soft flooring like carpet which are gaining popularity among people as these materials are ready to use and do not require any additional coating. Also, the cost of alternative flooring materials is cheap compared to engineered stones which makes these materials even more preferable among people with low income.

Health related issues

- Engineered stone is a mix of ground natural stone and resin. Like much of the earth’s crust, natural stone contains crystalline silica, and when pulverized during fabrication or processing it becomes easy to inhale, or “respirable.” Exposure to respirable crystalline silica (RCS) causes inflammation and, over time, permanent lung scarring. This condition, known as silicosis, can lead to tuberculosis, lung cancer, chronic bronchitis, autoimmune disorders, and kidney disease.
- Engineered quartz counters pose a higher risk than natural stone, because workers are exposed to dust that is more than 90 percent silica. By comparison granite may contain up to 50 percent, and some varieties of marble and limestone may contain no silica at all. Workers in manufacturing—those opening bags of ground quartz or mixing raw materials—have a high risk of exposure to RCS. But those in quartz countertop fabrication who are cutting, sawing, grinding, and drilling into the material face risks as well.

Highly Competitive Intensity

- The engineered stone industry is highly competitive due to factors such as low entry to barriers, easy availability of raw materials and limited initial capital investment which leads to large inclusion of regional and unorganized players

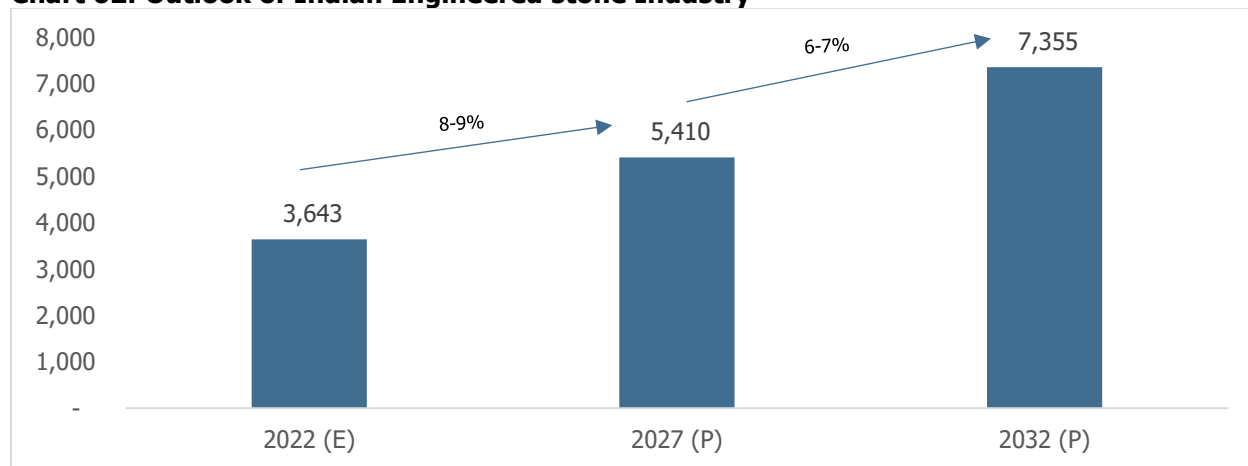
Fluctuation in raw material prices

- Prices of quartz have fluctuated significantly in the last few years. Increase in shipping costs and expensive sand mix, are some factors leading to a rise in quartz prices. There has been an unprecedented rise in the market price of resin due to Covid-19 pandemic related issues like supply chain issues, production difficulties and shortage of labor.
- Polyester which forms a major share of the total raw materials used for engineered stones also saw fluctuations in the prices. In 2020, the average polyester prices decreased resulting because of lower energy prices. In 2021, the average polyester prices increased due to rise in raw material prices of resin because of higher energy prices affected by the pandemic.

6.5 Outlook of Indian Engineered Stone Industry

The Indian engineered stone industry is estimated to be valued at \$ 3,643 million in 2022 and is expected to grow at a CAGR of 8-9% between 2022-2027 to reach \$5,410 million in 2027.

Chart 62: Outlook of Indian Engineered stone Industry



Source: Research Dive & CareEdge Research

The outlook for the natural segment is stable with a positive upside in the medium term. Like natural stones, the engineered stone industry is also linked to commercial and residential real estate industries. Going forward, with hybrid working environment, design specifications for homes are likely to be altered as there will be higher demand for flexible homes that are capable of functioning as offices and classrooms if required. This would result in increased penetration of engineered stones to be used in interior designing. Under commercial real estate, the hospitality segment is expected to register a gradual pick-up over the coming years as the sector recovers from the effects of the pandemic. This would turn out well for engineered stones as they are widely used in swimming pools, food facilities, walls, canteens, kitchen countertops, etc.

7. Key Players

7.1 Global Natural and Engineered Stone Players

1. Cosentino Spain:

Cosentino is a family owned company that was founded in 1979 in Spain. It produces innovative surfaces that can be used for indoor as well as outdoor designs.

The company deals in natural and engineered stones like quartz, granite, marble, limestone and travertine. Some of the uses of the surfaces provided by Cosentino include kitchen countertops, claddings, bathroom flooring, facades.

It offers over 200 colors, unique designs and a range of thickness in the stones. The surfaces provided by the company are resistant to stains and easy to maintain.

Cosentino has four segments, namely – Silestone, Dekton, Sensa and Scalea. Each of these segments provide unique surfaces made of different materials.

2. Caesarstone Ltd:

Caesarstone Ltd. was founded in the year 1987 in the state of Israel. It was incorporated in 1989 and got listed on NASDAQ in March 2012.

It started as a manufacturer of high end engineered surfaces, primarily countertops and now it sources and designs engineered quartz, natural stone and porcelain products. The products are largely countertops, vanities and are used in other interior and exterior spaces. It is also a reseller of countertops that are mainly used in commercial and residential buildings and has become one of the largest providers of engineered quartz surfaces.

Caesarstone designs its products in wide range of colors, textures, thickness and finishes. Its products are sold in over 50 countries and it generates substantial portion of its revenues from United States, Australia and Canada. In the year 2021, Caesarstone's sales in US market accounted for 47.4%, in Australia (including New Zealand) accounted for 18.4% and in Canada accounted for 13.1%.

3. Cambria USA:

Cambria was founded in the year 2000 and is headquartered in Minnesota, United States. It is a family owned business and is a leading quartz surface producer.

Cambria focuses on pure, natural quartz surface products like countertops, fireplace surrounds, floor tile, etc. It is believed to be a premier source for expansive design palettes and their quartz surfaces reportedly showcase strength, are nonabsorbent and stain and scratch resistant. These surfaces are also believed to be durable, maintenance free and nonporous.

Cambria has more than 2000 employees across North America and has 32 facilities that includes a state of art slab manufacturing facility, fabrication and distribution centres.

4. LX Hausys:

LX Hausys was founded in the year 1947 in Korea and now it has become the largest building material company in Korea. The company has different segments like Building & Decorative material, Industrial film and Automotive material & Components.

It deals in engineered stones like quartz and provides different products that can be used in kitchens and bathrooms like windows, coated glass and flooring. It is present in North America, Europe, Asia pacific and LAMEA.

5. Vicostone

Vicostone was established in the year 2002 and is based in Vietnam. It is a pioneer in manufacturing engineered stones in Asia.

Its quartz based engineered stones are produced from about 90% pure natural quartz and are available in more than 130 designs and wide color palette. Its quartz surfaces can be used in interior applications like countertops, wall paneling, flooring, bathroom vanities. Etc.

The company has five production lines of compound stones that utilize technology transferred from Breton S.p.A (Italy). Vicostone holds certifications like National Sanitation Foundation for providing safe surfaces for food preparation environments, healthcare facilities and GreenGuard certification for being free of volatile organic compounds. It also has passed the Microbial resistance (D6329-98) test which states that Vicostone surfaces meet standards to prevent growth of bacteria.

7.2 Indian Natural and Engineered Stone Players

1. Pokarna Ltd:

Pokarna Ltd. was founded in the year 1991 in India and offers a wide range of natural stones. The company has a start to end procedure which involves extracting, cutting, shaping and polishing granite. Today, Pokarna Ltd. is one of the leading exporters of granite and largest exporter of quartz in India.

The company's product range includes tiles, slabs and cut to size natural quartz and granite. The quartz manufactured by the company is used in countertops, wall cladding, furniture and flooring. Pokarna Ltd is also exclusive partners with IKEA for measurement, supply and installation of made to measure quartz surface worktops in India.

Pokarna Ltd. has 15 mines and 2 state of art manufacturing facilities of Granite and Quartz in Telangana.

2. ARO Granite Industries Ltd:

Aro granite started its operations in the year 1991 in India for processing of polished/flamed granite tiles and marbles. It is largest exporter of processed granite in India and exports to over 50 countries across the world.

The company has a wide product range across granite and quartz. Granite product offering includes tiles, slabs and cut to size while quartz product offering includes slabs and tiles.

Aro granite has an installed capacity of 7,35,000 square meters per year for granite slabs. It also has an installed capacity for granite tiles of 3,60,000 square meters per year. The company also processes Quartzite stone in its Hosur plant which has a production capacity of 50,000 square meters per year. The company has a 100% Export Oriented Unit in Tamil Nadu and a new unit in Jaipur as well which was established in 2019. The company's major exports markets are USA, Poland, Germany, Italy, Australia and Slovakia.

3. Esprit Stones Pvt Ltd:

Esprit stones manufactures engineered stone like quartz and natural stone surfaces. It has a state of art factory in Udaipur and a 1,00,000 sq. ft plant which is set up in a 6-acre area. It has products in a wide range of colors and designs. The surfaces produced by the company can be used for vanities, kitchen countertops, floors and wall cladding.

Esprit stones is a joint venture promoted by 2 prominent business houses namely, Aravali group and Gattani group. The groups have expertise in across sectors like mining, real estate, hospitality, energy amongst others.

The Aravali group was founded in the year 1975 and has 8 companies in minerals, real estate and finance sector. It owns the largest underground mines in India in addition to 6 mines which it has taken on lease from the Rajasthan government. Its spread over 83 hectares and has 600 feet proven deposits, yield of 100,000 MT of marble.

The Gattani group was established in the year 1979 and is a multi-faceted conglomerate. In the infrastructure sector, they have expertise in excavation, mining and land grading.

4. Global Surfaces Ltd (Previously – Global Stones Pvt Ltd):

Global Surfaces Ltd was incorporated in the year 1991 in Jaipur and provides natural and engineered stone products. It is involved in mining, production and export of natural stones and engineered quartz.

The company offers products made of granite, marble and quartz. The products range includes slabs and countertops that can be used in flooring, indoor wall cladding, vanity tops, reception desk, table tops, staircase. etc. The products can be customized as per different shapes, sizes, colors and forms. Since its inception, the company has progressed and created new growth avenues in the international markets.

Global Surfaces Ltd. holds various certifications including Greenguard, ISO 9001:2008 Registered QMS certification.

5. Johnson Marble & Quartz Ltd:

Johnson Marble & Quartz is the engineered marble and quartz business of H&R Johnson (HRJ) – India, a division of Prism Johnson Ltd (Formerly Prism Cement Ltd). HRJ was founded in the year 1958 and is a leading tile and bathroom company. Its products include bath fittings, sanitaryware, engineered marble and quartz and tile fixing adhesives.

The company is a manufacturer of engineered quartz and marble. The engineered stone has its applications across industry verticals. The company also has readymade product segment which offers kitchen countertops, stairs and mosaic engineered stone. These products are ready to install and also save costs and time of the company.

Johnson Marble and Quartz is an innovative company adapting eco-friendly alternatives which now holds a UL Greenguard Gold certificate.

6. Classic Marble Company (CMC):

Classic Marble Company is headquartered in Mumbai and was founded in the year 1994. It is the biggest importer of stones in India and is the only company to supply more than 150 Mn sq. ft. of imported marble in the country since its inception.

The company supplies natural and exotic marble as well as other stones like travertine's, onyx, and limestone.

CMC is an ISO 9001:2015, 14001:2015, 45001:2018 certified company and has its stockyards in Silvassa. The company has various brands like Kalinga stone, Quadra, Techlam and Kalesinterflex which provide wide range of stones like engineered marble, terrazzo and quartz. The company has over 700 varieties of exquisite stones sourced from nearly 53 countries.

7.3 Global Raw material suppliers

1. Wacker Chemie AG:

Wacker Chemie is headquartered in Germany is a leading chemical company. The company's portfolio is spread across silicone chemistry, polymer chemistry fine chemicals and biotech products, polysilicon, wafers and hyperpure silicon monocrystals. The company has specialized business divisions like Wacker silicones, Wacker polymers, Wacker fine chemicals and Siltronic.

It supplies products for major global industries including construction industry. The products find its application in construction materials where it is used as tile adhesive and sealant.

2. Evonik:

Evonik was established in the year 2007 and is headquartered in Germany. It is one the largest specialty chemical companies in the world and is active in over 100 countries. It manufactures chemicals that are used in industries across medical, agriculture, construction, paper and packaging, transportation. Etc. The company offer additives to improve properties of methacrylate monomers for adhesives and sealants, interior and exterior paints and coatings, polymers such as hotmelt adhesives, epoxy curing agents and silanes as adhesion promoters in insulating materials or silica for improved handling of powdered additives for concrete.

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