

**GIDR WORKING PAPER SERIES**

**No. 258 : October 2019**

**Upgrading Technology and Space  
as Collective Strategy:  
Creation of Jobs and Market Potential  
in Gujarat's Ceramic Clusters**

**Keshab Das**



*Gujarat  
Institute of  
Development  
Research*

**Working Paper No. 258**

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**Gujarat Institute of Development Research**  
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First Published    October 2019

Price                Rs. 100.00

## Abstract

This paper enquires into factors leading to the positive transformation, including unleashing potential to generate jobs, of dynamic ceramic clusters in the Morbi trapezoid in Gujarat. This industrial activity has received huge impetus from a fast growing demand for the ceramic products from both the domestic (urban and rural regions) and global markets. Drawing upon both primary and secondary sources of information, this analysis emphasizes the sustained role of the state and industry collective towards effecting major upgrading of technology, product diversification and external orientation through proactive, responsive and symbiotic approaches to policy initiatives including *rescaling* territory, infusing an innovative ethos and reaching out to wider markets. An attempt has been made to delineate strategies of firms in clusters to upgrade business ecosystem and specific role the provincial state and local industry associations in addressing challenges of imports as also competing producers outside Morbi. These efforts have resulted in lowering of costs, creating jobs and accessing newer markets both in the domestic and global spheres. Nevertheless, challenges of informal work arrangements, air pollution and getting close to hitting a stage of *technological maturity* remain.

**Keywords** : Ceramic Cluster; Technology Upgradation; Rescaling Space; Employment; Collective Action; Morbi.

**JEL Codes** : J24; J46; L23; L25; L26; L61; O14; R11 and R58

## Acknowledgements

This paper is based on a component study of a larger research project on “Industrialisation for Jobs and Growth” based at the Indira Gandhi Institute of Development Research, Mumbai and sponsored by the Ford Foundation. For constructive and insightful comments and suggestions, earnest thanks are due to R. Nagaraj, Shuji Uchikawa, Vikas Rawal and Jaya Prakash Pradhan. For their helpful observations, thanks are also due to all the co-researchers and participants of workshops where earlier versions of this paper had been presented. Special mention may be made of the following: Dinesh Awashti, Srinivasan Iyer, Sunil Mani, Santosh Mehrotra, K. Narayanan, K. V. Ramaswamy, Satyaki Roy, Padmini Swaminathan and M. Vijayabaskar. For field work support Dipak Nandani deserves appreciation. Thanks are due to Itishree Pattnaik and Madhusudan Bandi for bringing this out as a working paper.

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# Upgrading Technology and Space as Collective Strategy: Creation of Jobs and Market Potential in Gujarat's Ceramic Clusters

Keshab Das

## Introduction

During the period of economic reforms in India, the crisis in manufacturing employment has been manifested not only in terms of what is characterised variedly as *jobless* or *jobloss* growth (falling labour intensity and even absolute decline in numbers) (Das *et al.*, 2015; and Mehrotra and Parida, 2019), but certain trends which suggest a decline in the *quality* of employment. These include i. a steady rise in contractual jobs in the so-called 'Organised' manufacturing (Srivastava, 2016: 10-12); ii. decline in the manufacturing employment elasticity at least since the turn of the century (Giri and Singh, 2017: 9); and iii. continued dominance of informality in both production and labour processes across sectors or, the *low road* syndrome reflecting entrepreneurial immaturity (Tooze, 2017; Das, 2005 and 2017).

Even as, historically, micro small and medium enterprises (MSMEs) have been recognized as sources of large scale job generation, accommodating a wide range of skills and age groups, firms adopt strategies that could reduce costs of production and compliance while they continue to identify and access echelons of markets. MSMEs have no intention of effecting numerical changes to employment, irrespective of what policy expects. MSMEs, even in the face of uncertain market demand and low on resources (to invest in expansion of production and acquiring new technology), have often displayed dynamism and resilience. Unlike integrated large plants constrained by indivisibility of factors of production, MSMEs in a cluster have been mutually supportive whether in sharing bulk orders through in-cluster subcontracting or small-batch production to cater to niche markets or even using workers from another factory. This has implied that business has thrived through a curious admixture of competition and cooperation in clusters with the munificent role played by the local industry association.

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The study, based on both primary and secondary sources of information, aims at understanding what drives the growth and external orientation of MSMEs in the ceramic clusters of Morbi in the western Indian state of Gujarat. This is to unravel the nature of positive transformation, including unleashing potential to generate jobs that could be effected through proactive, responsive and symbiotic approaches to policy initiatives including *rescaling* territory, infusing an innovative ethos and reaching out to wider markets. An attempt has been made to delineate i. strategies of firms in clusters to upgrade business ecosystem; and ii. the specific role the provincial state and local industry associations have played to face up to the challenges of imports as also competing producers outside Morbi. This would, hopefully, inform a more relevant policy strategy.

## **Current Status of the Ceramic Industry in Morbi and Gujarat**

Tiles from Morbi began to have enjoy growing demand from the construction sector which took off by the 1980s and the pace of urbanization had contributed to it in a big way. The ascendancy of the Morbi cluster attracted large number of entrepreneurs and the current huge ceramic clusters in and around Morbi is only an advanced phase of what had started as a single factory in the region. From a local economic regeneration perspective, it is instructive to appreciate a constellation of regional factors that contributed to the remarkable growth of this industry here (Government of Gujarat, 1965: 380-381; Dave, 1972: 97-119; and Das, 1998).

Over 700 enterprises in and around this small industrial township manufacture a wide range of ceramic tiles and sanitaryware products (ceramic tiles, floor tiles, roofing tiles, lustre wall tiles, glazed wall tiles, vitrified tiles, porcelain tiles, 2D, 4D tiles, mosaic tiles, quartz stone and sanitaryware). This is the largest ceramic tile production region in the country (and the second largest globally, only after Guangdong in China) accounting for above 80 per cent of national production with an estimated cumulative investment of over Rs. 8000 crore. This provides employment - direct and indirect - to over 600,000 people across India. (<http://www.morbiceramicindustry.com/>). Availability of cheap (and often migrant) labour on contract basis remains a key advantage to the units here; with large scale automation, factories here have no need to employ skilled labour on a permanent basis. With a large part of the production and labour processes operating in an informal manner, it is difficult to have a reliable database on various aspects of business here.



Even as Morbi remains the key driver of ceramic production in Gujarat there are other areas (mainly, Thangadh, Wankaner, Jetpar and Himmatnagar) where this industry has flourished. As summarised in Table 1, during the last couple of decades or so, Gujarat's ceramic industry has grown in terms of number of units, production, net value added and, importantly, employment (although the informal workers are not included here). Interestingly, over the years, with capital-output ratio on the decline, labour productivity has risen. The share of exports has started to take off after a phase of decline. It is possible to surmise that the growing industry has contributed to rising domestic demand as well.

**Table 1: Aspects of Ceramic Industry in Gujarat, 1999-2015**

Variables	1999-2001	2004-06	2009-11	2013-15
Factories (Number)	512	905	1195	1601
Fixed Capital (Rs. Million)	3630.18	13850.00	34600.00	57900.00
Total Workers (Number)	12216	28518	60822	52800
Total Output (Rs. Million)	4515.47	22681.43	95200.00	103600.00
Total Input (Rs. Million)	2753.45	17204.62	75260.00	82845.00
Net Value Added (Rs. Million)	1762.02	5476.81	19940.00	20755.00
Exports (Rs. Million)	2092.55	4879.65	11637.08	40418.52
Share of Exports to Total Output (%)	46.34	21.51	12.22	39.01
Labour Productivity (Output per Worker)	369611.17	795337.33	1565223.11	1962121.21
Capital Output Ratio (Fixed Capital/Output)	0.80	0.61	0.36	0.56

Source: *Annual Survey of Industries* (Unit Level Data at 4-digit NIC) and, for exports, UN Comtrade

Notes: Export data relate to all-India total  
2-yearly averages are considered for all variables

### ***Exports and Imports of Ceramic Products:***

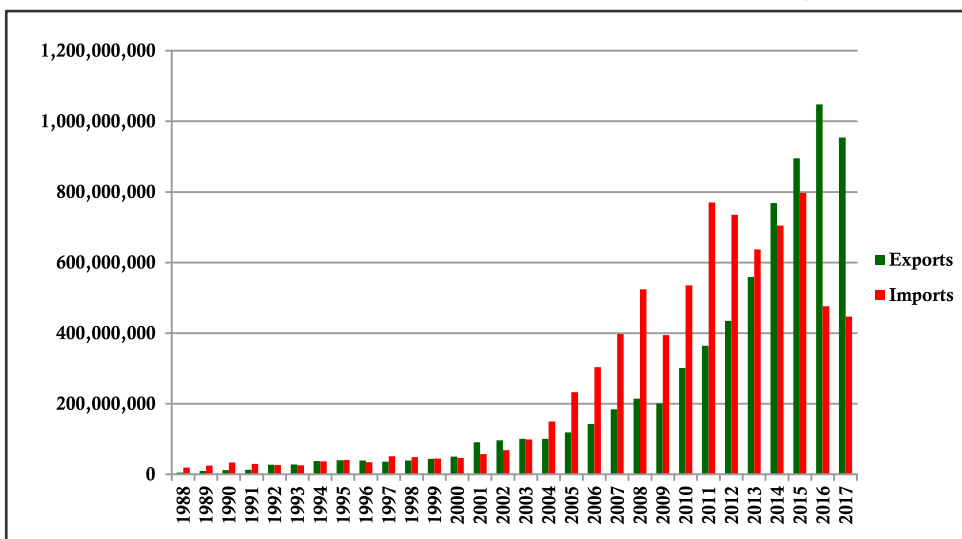
An important indication of maturing of the ceramic industry in Morbi has been its continued efforts made at enhancing manufacturing competitiveness. A close look at the trade figures in ceramic products suggests significant progress made by enterprises here to participate in global markets.

Figure 1 presents the values of Indian exports and imports of ceramic products for a 3-decade period. It may be useful to mention here that the data on ceramic products at the All-India level almost entirely represent those of Morbi clusters. Over a decade of very low levels of exports from this sector, since around the beginning of 2000s exports have peaked steadily

even as the value of exports has typically remained lower than that of imports for several years. The major share of imports is attributable to from China which has flooded Indian markets with low-cost ceramic products. What is interesting to note is that these imports from China also included products *for* Indian ceramic makers. However, by 2013, the gap between exports and imports had closed perceptibly. What remains relevant for analysis is that since 2014 the value of exports from the Indian ceramic sector had, in fact, overshoot the import values and within a couple of years (by 2016 and 2017) the imports had fallen drastically. This is no ordinary achievement for a group of MSME clusters operating from a small Indian urban region.

**Figure 1: Export and Import of Ceramic Products: India, 1988-2017**

(Values in US\$)

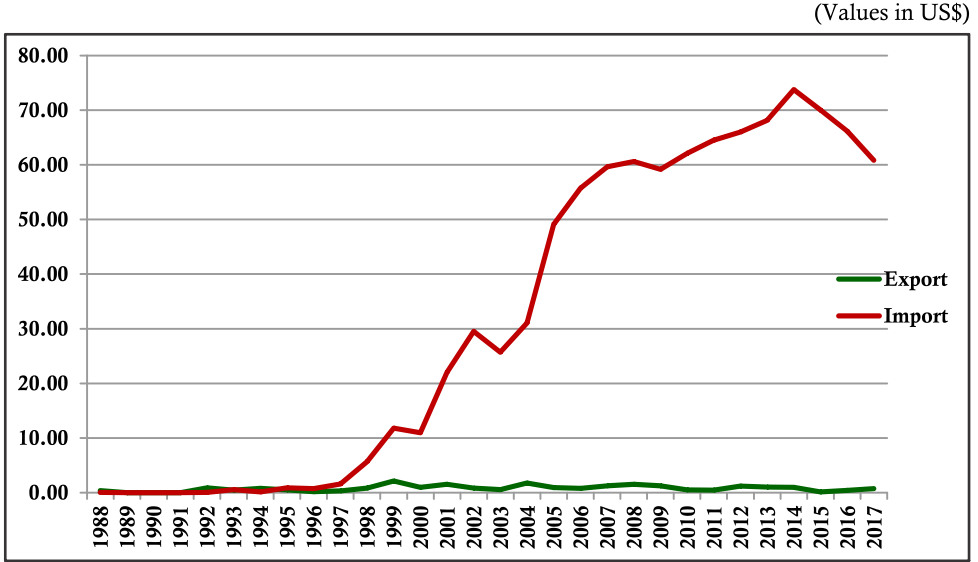


Source: UN Comtrade

The worrying aspect was that between 1996 (by when the industry began to shift to ceramic tiles from the previous mosaic and *galicha* tiles) and 2015 the share of Indian imports of ceramic products from China (as compared to that from the rest of the world) had sharply risen from less than 1 per cent in 1996 to 74 per cent in 2015 (Figure 2). This, however, has dropped since then indicating strengthening of the Morbi ceramics. As corroboration, as shown in Figure 3, while the trade balance in Chinese ceramic products has risen impressively between 1992 and 2015, the

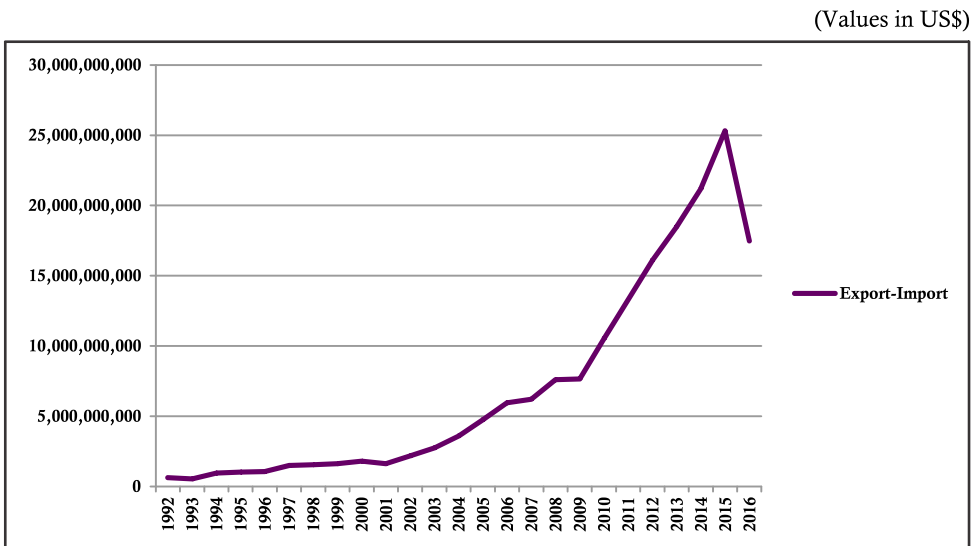
subsequent drop is noteworthy. Similarly, the sharp rise in trade balance in Indian ceramic products establishes the growing competitiveness of Morbi ceramics since 2011, in more senses than one (Figure 4).

**Figure 2: China’s Share (%) in India’s Exports and Imports of Ceramic Products, 1988-2017**



Source: UN Comtrade

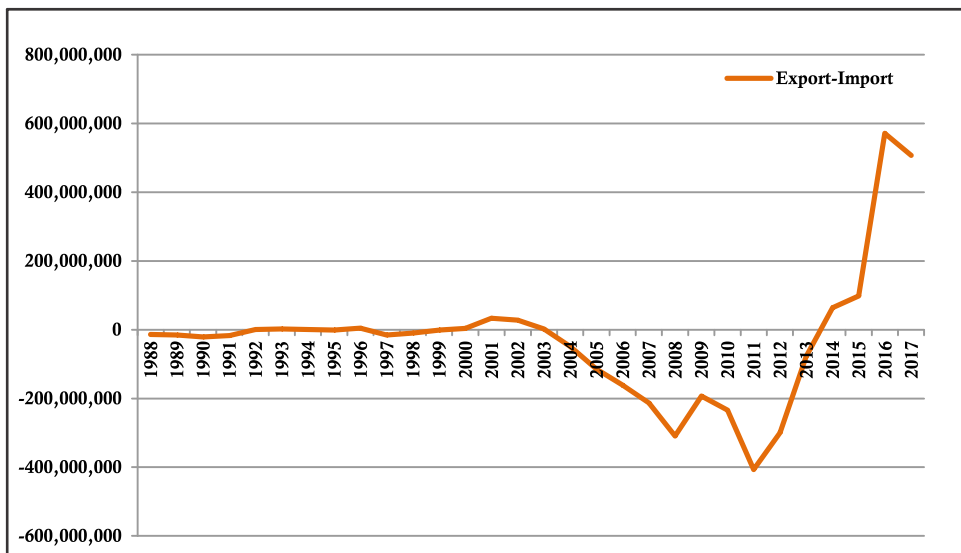
**Figure 3: Trade Balance in Ceramic Products: China, 1992-2016**



Source: UN Comtrade

**Figure 4: Trade Balance in Ceramic Products: India, 1988-2017**

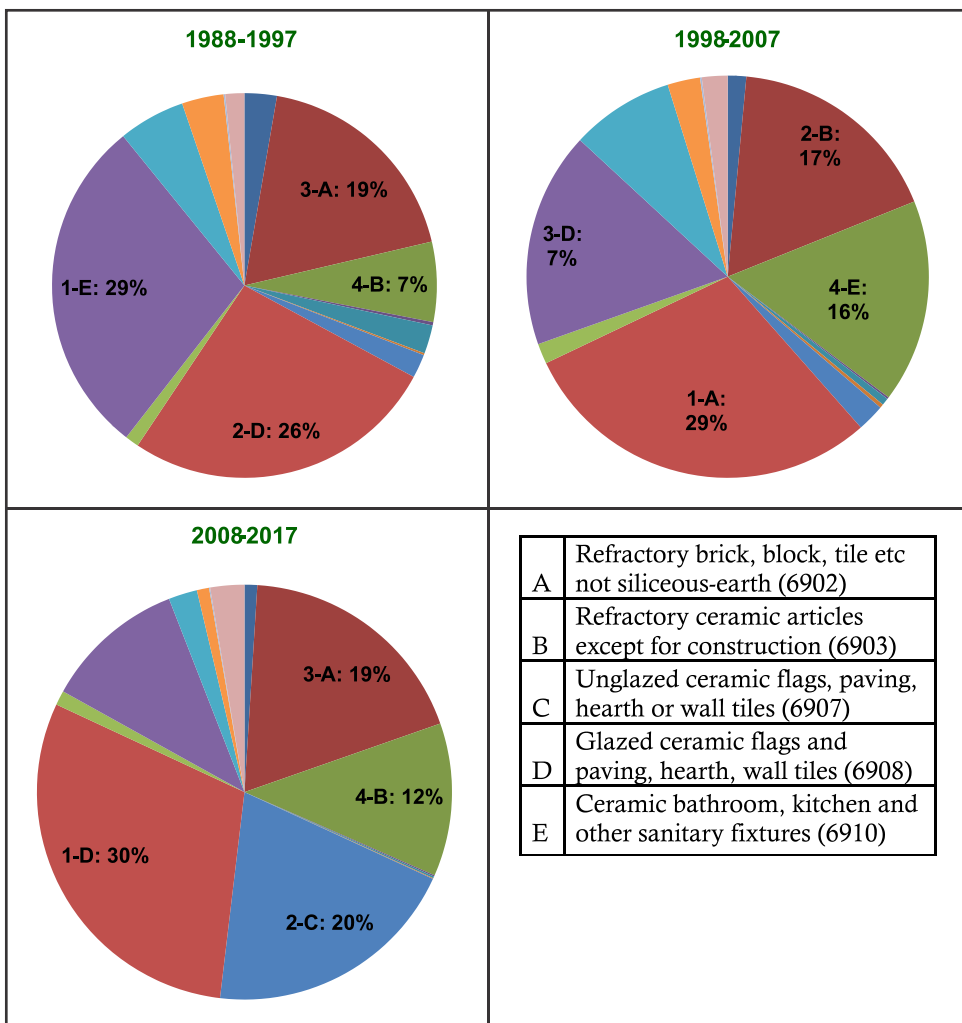
(Values in US\$)



Source: UN Comtrade

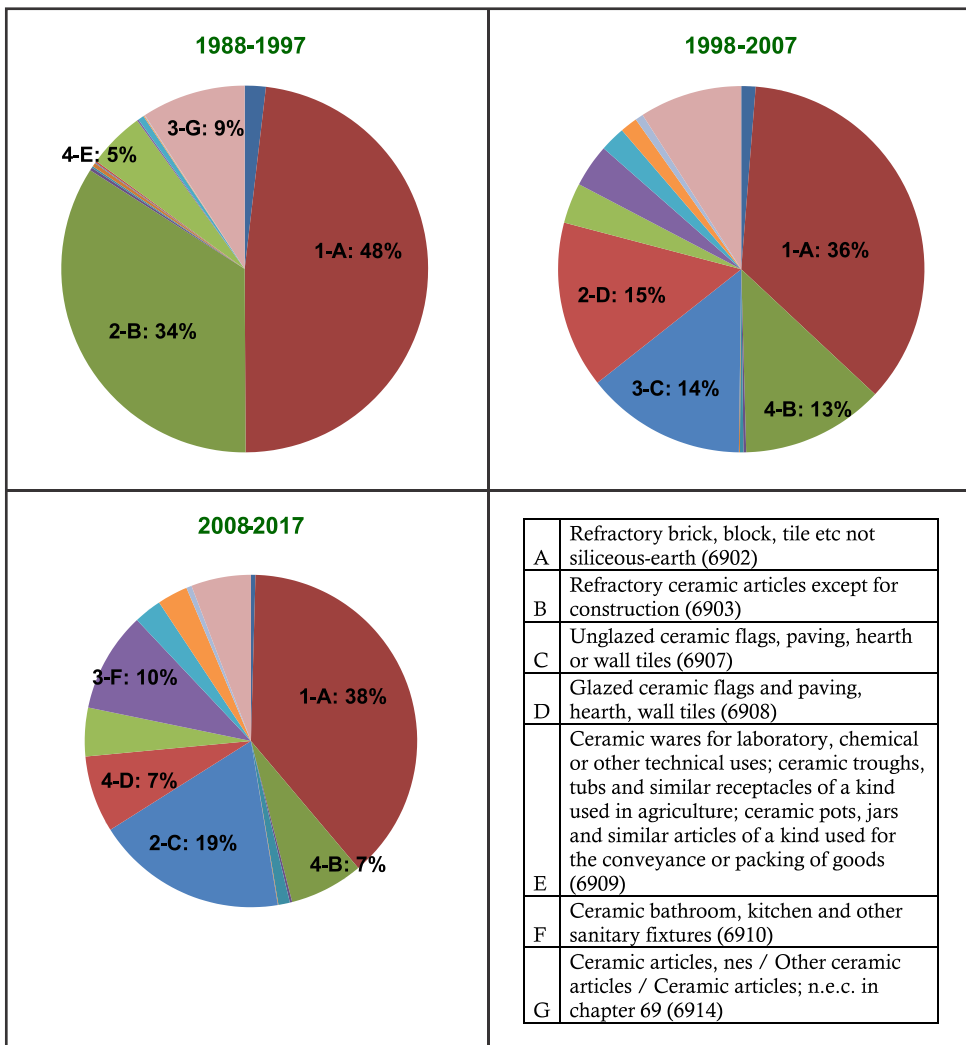
In addition to the improving trade balance, it is useful to examine the major types of products being exported from and imported into India over the 3-decade period, considering ceramic products at the 4-digit HS level classification. So far as export figures are concerned, Figure 5 exhibits the changing dominance of product groups over the said period. Over the three decades, five product groups have dominated (accounting for over three-fourths of value) the ceramic export basket. From bathroom and sanitaryware and glazed tiles as the top items of export during the first decade (1988-1997), refractory bricks and refractory ceramic items in the second decade (1998-2007) to glazed tiles and unglazed wall tiles in the recent decade (2008-2017), the ceramic export profile has changed notably over the years. This signals a shift towards high value items as superior tiles have emerged as major items of export from, essentially, the Morbi clusters. Similarly, Figure 6 suggests that seven product groups have dominated the imports into India. While refractory bricks, blocks and tiles remained the top item of import all through the almost three decade period, refractory ceramic articles except for construction and ceramic wares for laboratory, chemical or other technical uses were relegated to a marginal position over the period; the new product groups those emerged in the import basket included both glazed and unglazed ceramic flags, paving, hearth or wall tiles.

**Figure 5: Share of Exports of Ceramic Products by Type: India, 1988-2017**



Source: UN Comtrade

**Figure 6: Share of Imports of Ceramic Products by Type: India, 1988-2017**



Source: UN Comtrade

## Observations from the Field

In order to understand the functional dynamics of enterprises and constraints facing the clusters a total of 50 units have been surveyed using a structured questionnaire and discussions were also held with other stakeholders. Issues engaged with through the survey included aspects of production, employment, technology, marketing, financing, industry associations and interface with the state.

### *Profile of Enterprises*

The study covered a total of 50 ceramic units from the three clusters of Morbi (32), Wankaner (11) and Jetpar (7). Over two-thirds of these units were private limited companies and about one-third was partnership firms. Importantly, not only all the sample units were registered as SMEs with the District Industries Centre but every sample unit had the ISO certification for exports.

The ceramic products in Morbi clusters may be classified under three broad categories, namely, tiles (for floors, roofs and walls), sanitaryware and miscellaneous products (cups, saucers, toys, jars, vases, lab flasks, etc.). In fact, the aforesaid miscellaneous products are mostly produced in a few micro or home-based units in Thangadh (not included in this survey) and even to an extent in Wankaner; these are of low quality and targeted at local or district level markets. However, as shown in Table 2, the main products currently been manufactured are high-end tiles and sanitaryware. The predominant item, expectedly, is vitrified tiles in which Morbi units have established their reputation for quality, design and durability. On being asked what products were being manufactured by them (and, in fact, others in the clusters) in the initial years (till late 1990s), sanitaryware (both Indian and western style commodes, urinals and accessories); small sized plain tiles (typically, 20x20cm, 20x10cm and 15x15cm) for bathrooms, floors and walls; *Naliya* decorative tiles; and crockery items. What is important to note is that the upgrading and diversification of ceramic products since early 2000 have signalled a transformation of business not usually observed on Indian MSME clusters. However, such a change has come about through long experience of entrepreneurs in Morbi and in the ceramic sector; majority (90 per cent) of respondents had over 6 years of experience in the sector and two-fifths of all respondents had spent over 6 years in Morbi.

**Table 2: Main Products Manufactured by Sample Units**

Products	Units (%)
Vitrified	26 (40.0)
Sanitary	10 (15.4)
Bathroom Tiles	3 (4.6)
Floor Tiles	10 (15.4)
Wall Tiles	7 (10.8)
Gels Tiles	6 (9.2)
Granito	3 (4.6)
All (MR)	65 (100.0)

Source: Field Survey

The source of finance for the sample enterprises varied although all had obtained loan from commercial banks. The supplementary funds came from personal sources (friends and relatives) as indicated by 45 respondents. Financial support has also been sought through various government programmes, as stated by 34 of the respondents.

The transformation of the Morbi ceramic cluster, especially, since the mid-1990s, may be attributed to a few ‘Turning Points’ as listed by the respondents, the crucial being their growing exposure to export markets which has prompted every enterprise to focus on competitiveness, whether through product or process upgradation. The adoption of new technology has yielded positive results for the entrepreneurs. Similarly, the provision of dedicated gas pipeline by the state government for uninterrupted supply of the key fuel to the units has also been recognized as a favourable factor. Government policies, depending on the context and particular mechanism, have affected business favourably or otherwise; some of the recent policies have been discussed later.

### ***Employment and Skills***

With substantial changes in the technological sphere, the ceramic units in Morbi clusters are no semblance of the labour-intensive factories that one observed in the 1990s. It was quite possible to envisage then that ceramic industry would remain a huge source of generating jobs that would not involve much formal skills. However, the present sophisticated factories have several operations automated - the conveyor belt, automatic mixers,



automatic heavy-duty pressing, glazing liquid spraying, spool-roller based tunnel firing and so on - have transformed the labour process almost entirely. That is not to say that labour requirement has declined drastically. Newer skills and operations have taken over, but still involve human manoeuvring. An idea about workers in the units may be had from Table 3. It is interesting to note that the units are dominated by male workers who constitute about three fourths of the workforce and often in large numbers. Contrarily, women workers are engaged in much smaller numbers and seven units did not have a single woman worker.

**Table 3: Number of Workers in Sample Units**

Number of Workers (Range)	Male	Female	Total
Upto 19	101 (8)	363 (43)	464
20-39	667 (26)	192 (7)	859
40-59	367 (7)	-	367
60-79	523 (8)	-	523
80 & above	80 (1)	-	80
Total	1738 (50)	555 (50)	2293

Source: Field Survey

Note: Figures in brackets indicate number of units.

The average per unit size of employment works out to be almost 46. It may be useful to mention here that even during the early 1990s (1990-93) the per unit number of persons engaged in the ceramic industry in Gujarat (as per relevant *Annual Survey of Industries* data) was about 44. This suggests that in spite of a rise in capital intensity in ceramic factories, per unit employment has, in fact, risen; the quality of work and skill requirement would have changed, nevertheless. Assuming that there are about 800 units in Morbi clusters, the total employment in all would come to over 36000. However, the MCA website informs that the Morbi clusters provide direct factory based employment to 3.5 lakh workers and another 10 lakh jobs in auxiliary and related businesses and professions. While these claims are difficult to verify through our survey, it is important to acknowledge that the actual employment figures could be high. For instance, during the survey, this author interacted with a group of migrant workers from Odisha and they put the number of only Odia migrant workers in Morbi ceramic factories at 30000 to 40000 depending on the usual or busy seasons. There are migrant workers in these clusters from Madhya Pradesh, West Bengal, Bihar, Chhattisgarh, Jharkhand and from southern states like Tami Nadu

and Kerala. That these and other local workers hold mostly casual and temporary status resulting in high turnover is common knowledge in the locality.

While most permanent workers receive monthly salaries most temporary and casual workers were paid on piece rate basis. Table 4 presents estimated monthly average income by broad skill category and worker status. However, those skilled workers with ability to work on more number of pieces (especially, in the sanitaryware segments) could earn close to Rs. 1 lakh in a month and that is considered a huge income irrespective of extremely unhygienic and unhealthy working conditions.

**Table 4: Monthly Average Income by Skilled and Unskilled Workers**  
(Rs.)

Type	Males	Females
<i>Skilled Workers</i>		
Permanent	31857 (14)	22000 (1)
Temporary	17731 (26)	-
Casual	15000 (49)	14000 (1)
<i>Unskilled Workers</i>		
Temporary	10875 (20)	9333 (3)
Casual	6250 (49)	5000 (49)

Source: Field Survey

Note: Bracketed figures indicate number of units.

The nature of production process largely determines labour use schedule as also type of skills required. In the Morbi ceramic units, depending on the order profile, often the production cycle continues for days without a break. The survey found that 3-shift a day was quite a common practice in over three-fourths of units and in others there were 2 shifts. Although every shift was usually of 8 hours duration, in certain cases (12 units) these shifts lasted for as long as 12 hours. As excepting for certain unskilled tasks such as cleaning the premises, dusting racks, etc. most of the tasks involved skill relating to operating electrical and electronic equipment and a constant vigilance over a range of machines, conveyor belts, rollers and firing tunnel. Other important tasks included i. unloading and sorting different types of sands, clay and chemicals in the warehouses; ii. collecting tiles at the final stages and stacking and packaging those ensuring zero breakage; and iii. making various moulds for sanitaryware products, especially. While 30 entrepreneurs reported that they provided special training to workers, others

were confident that workers often came with some initial acquaintance with certain processes and learnt on site from older and experienced workers in the unit. However, in the absence of any formal regulations to ensure decent working conditions, firms generally neglected issues of dealing with thick dust pollution inside the factory premises. About 10 to 20 per cent of responses in this connection indicated providing some form of personal kits to workers as sun glasses, masks, hand gloves, helmets, shoes, caps and uniforms.

Similarly, in terms of other facilities offered to workers, the survey came up with these details: First Aid (37 units), accident insurance (27 units), staying facility on factory premises (9 units), and food during working hours (26 units). It was interesting to learn through the survey that the entrepreneurs faced absolutely no difficulty in locating or engaging either skilled or unskilled workers in the region. Their unanimous opinion has been that because of the bustling business activity in the clusters, workers – both local and from other states – were available in large numbers.

### *Production Process and Subcontracting*

The annual turnover of Morbi ceramic unit owners, the survey revealed, has mostly been on the rise during at least the last five years; 45 out of 50 respondents agreed to the sustained increase, while five entrepreneurs observed no change in the figures. A sense of the stated turnover values may be obtained from the responses that about 60 per cent of the sample units did business to the tune of around Rs. 20 crore to Rs. 60 crore. There were another 12 units which reported a much higher turnover of above Rs. 60 crore. As regards reasons for a rising turnover by most of the firms surveyed, the major factors cited related to i. an increase in demand within the country (29 firms); ii. growing exports (33 firms); and iii. increase in production capacity (13 firms). Easy access to loans through public sector banks was also pointed out as a favourable factor that enhanced business (16 firms). Despite high and sustained turnover levels the real constraint related to high prices of procuring required raw materials and other inputs of good quality in desired quantities and reasonable prices.

A total of five units surveyed had been engaged in taking subcontracting work from top brands from Morbi clusters. Last year, while three units manufactured for Vermora the other two worked for Somany and AGL;

both tiles and sanitaryware products were being produced. The share of in-contracting work for the concerned units would amount to 10 to 20 per cent of their own production and the total production time ranged between 40 and 90 days depending upon the volume of order placed. The cost estimates were based on fixing rate per box (of, usually, 12 tiles), typically, with a profit margin of 5 per cent (that is, the in-contracting firm would have to supply the required output at a cost 5 per cent higher than what the parent firm would have incurred). Last year, these five in-contracting firms reported having done business to the tune of Rs. 30 lakh to Rs. 150 lakh with the parent firms, which are unable to respond to (by producing in their own units) the massive surge in demand they are burdened with.

The ceramic manufacturers of Morbi have a keen sense of markets and assign significance to different echelons to the variety of demand that might exist whether in rural areas, small towns or large cities or foreign countries. While dependence on exporters and big traders for distant markets is common for local markets small traders and even subcontractors are taken as agency for sales. Several of the units (28 sample firms) have set up marketing outlets showrooms and shops within Gujarat and even outside the state. All the respondents agreed that they have engaged sales representatives within and outside the state and have close links with huge number of dealers across the country. The dealers are offered incentives as long months of credit, free travel (including airfare to and from Ahmedabad) and concessions for bulk purchase. In terms of prices of similar products (including those imported from China), only 15 firms would charge higher rates than market the market rates, while others stated that their prices were either on par (18 firms) or even below market prices (17 firms).

### **Technological Upgradation as the “Game Changer”**

A key factor explaining the ascendancy of Morbi ceramics has been a collective preference to build up an innovative ethos in the clusters. Respondents were unanimous in asserting that adoption of new technologies – in manufacturing, processing, fuel-use, raw material mix, designs and even sorting and packaging – by most units almost simultaneously was a “game changer” in Morbi’s ceramic business. An idea about the technologies adopted in the early decades would be got from Table 5. The process of firing using traditional coal or charcoal based kilns (*bhattis*) remained a dominant technology that not only implied a huge dependence on imports

of coal (from other Indian states or even from abroad) but determined the quality of the output not comparable to most available in the global markets.

**Table 5: Technology Used till mid-1990s in Ceramic Factories of Morbi**

Technology adopted	Response (%)
Local coal-based <i>bhattis</i>	48 (36.9)
Local machinery	32 (24.6)
Highly labour intensive manual processes	28 (21.5)
Locally available raw material	22 (16.9)
All	130 (100.0)

Source: Field Survey

Note: Multiple responses

As all ceramic units in the Morbi clusters have gone in for modern machineries and new processes, the units look virtually transformed as this researcher had surveyed units in the cluster way back in 1994-95. A few questions were asked regarding type and current status of machineries being used. While 36 units (72 per cent) described most of their main machineries as new, 11 units used second-hand machineries and the rest old ones. However, as high as 92 per cent of respondents insisted that their machineries were foreign makes, mostly, Chinese, Italian, German and Japanese brands. All the respondents stated that the machines are run by electricity and controlled by electronic apparatus. This is a remarkable contrast to the scenario during the early 1990s when majority of processes (mixing, pressing, firing, etc.) and machineries were partially operated by electricity but more with large number of skilled and semi-skilled workers under constant supervision of technical staff. While 39 respondents agreed that the machineries being used are 'modern' the remaining dubbed theirs as 'general' or 'traditional'. The reasons for including new (or, replacing old) machineries were dictated by strong market signals - the need to raise production capacity substantially to cater to a burgeoning demand domestically and also for exports. There was also a reference to be able to make newer designs/sizes with new technology.

The major changes, as indicated by entrepreneurs, that have been brought about through these changes in technology included the two most-cited ones related to an increase in output and improvement in quality. The additional investment incurred firms to upgrade technology was nullified by the extra benefits that bigger business prospects brought. Further, over 90

per cent of respondents held that the transition to higher forms of technology implied major shop-floor reconfigurations which involved enhanced work intensity but mostly highly skilled personnel.

The sources of new technology, that is, information about or the agency from where it could be purchased are varied. While purchases are made from machinery dealers from abroad or domestically, local technical expertise exists to modify existing machines by copying from others' machines. Consultants or repair service providers, input suppliers or even jobwork-offering firms are noted as sources of new technology for Morbi clusters. What is important to recognize is that the firms in the Morbi clusters have made persistent efforts at promoting an innovative ethos in the business which sharpened their acumen to enhance both product and process qualities. As shown in Table 6, the most important in-house initiative made by the sample firms has been setting up of laboratories to ensure quality check at various stages of production. Further, there have been initiatives to introduce novel designs and sizes of products. One of the specialities of Morbi tiles has been introduction of unusually large sizes which are in great demand both in the Indian and foreign markets. For instance, there are floor tiles with different sizes (300x300mm, 400x400mm, 600x600mm, 800x800mm, and 600x1200mm) and wall tiles of varying dimensions (200x300mm, 250x375mm, 200x600mm, 250x750mm, 300x450mm, and 300x600mm). In order to achieve higher standards of products the entrepreneurs have engaged skilled professionals, modified processes of manufacturing and tried numerous new designs, colours, textures and finishes.

**Table 6: In-house Changes/Innovations Undertaken**

Details	Responses (%)
Set up testing laboratory	42 (33.1)
Introduce new products with different sizes, shapes and textures	38 (29.9)
Employ skilled workers	21 (16.5)
Alter processes in manufacturing	14 (11.0)
Introduce new designs	12 (9.4)
All	127 (100.0)

Source: Field Survey

Note: Multiple responses

The concern about quality of products is reflected in their pursuing quality testing procedures; 64 per cent of firms reported that they undertook quality test at all stages till the final product is ready. Only a small proportion mentioned about a one-stage quality check at the end of production. Statistical quality control procedures have also been introduced gradually into the clusters. By upgrading technology, amongst major changes the entrepreneurs noticed included huge possibilities for making innumerable changes in designs, input-mix and sizes of tiles. Similarly, almost all respondents agreed that new technology has considerably expanded their production capacity, enhanced their profit margin due to high quality products made with cost advantages, reduced administrative or managerial intervention and, importantly, opened up scope for competing in the global market.

## **Policy Challenges**

### *Anti-Dumping and Morbi Ceramics*

Despite Morbi ceramic industry's sustained efforts at upgrading both technology and marketing towards meeting growing domestic market for their products the cataclysmic effect of import of Chinese ceramic products posed a huge challenge to the local clusters (ASSOCHAM, 2013a). A detailed study by ASSOCHAM (2013b) reported that close to two-thirds of Indian imports of ceramics came from China. Unable to compete with the huge Chinese imports mainly on count of prices but also on quality and variety of products, this had led to a situation where several ceramic units in Morbi were under pressure to close down production due to thinned profit margins; a report in October 2016 pegged the number of closed units at about 100. The challenge to compete with the Chinese imports was difficult to meet, the study indicated, due to rise in costs of transportation (both raw material and finished goods), inputs (mainly, sand and other chemicals), electricity and gas. This threat to the very prosperity of the Morbi clusters had not deterred the local entrepreneurs who had initiated collective action to apprise the central government to impose anti-dumping duties to protect domestic firms.

For instance, by around February 2016, the Government of India imposed an anti-dumping duty (of \$1.37 per square meter on all types of vitrified tiles from China) and this was considered effective as it encouraged Morbi's clusters; a contemporary report in Sandesh TV suggested that this step

encouraged some 50 new units to be set up within six months of the implementation of the tariff restriction. Interestingly, Indian tile exporters also receive incentives through the provisions of schemes under the foreign trade policy, namely, the Merchandise Exports from India Scheme (MEIS) and Export Promotion Capital Goods (EPCG). While such a supportive mechanism has been lauded by the Morbi clusters exports have not always been rewarding. However, it is important to note that recently, in December 2018, Morbi ceramic products also faced constraints of accessing the market in Gulf nations – one of its key destinations –where there had been demands by local firms to impose anti-dumping duties on imports from India at the earliest possible time. The Morbi Ceramic Association (MCA) had represented to the Director General of Trade Remedies (DGTR) to prevent the move by the Gulf Cooperation Council (GCC) – members of which include Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates–preparing to lay an anti-dumping duty of 15 per cent on tiles imported from India. As per a report, in 2017-18 the value of ceramic exports from Morbi was around Rs. 80 billion and approximately 35 per cent of it was accounted for by exports to Gulf nations. “Indian tiles industry is already reeling under overcapacity situation along with pricing pressure and the latest development on exports front will only aggravate the situation at home. The antidumping duty by GCC will impact exports of Indian tiles to Gulf, part of which may be diverted to domestic market, putting supply glut in the market” (Rao, 2018).

### ***Demonetization and Its Impact***

Surmising from media reports and also through the field survey it may be observed that there have been three major reasons why (or, rather how) demonetization (disbanding of Rs. 500 and Rs. 1000 currency notes on November 8, 2016) adversely impacted the enterprises in the Morbi ceramic clusters. First, the ceramic business is deeply a cash-transaction based activity wherein, as in numerous similar MSMEs, varying credit payment options (whether for paying for wages, raw materials, transportation and several business services) act as “oil in a machine”. In fact, as has been an acknowledged characteristic of industrial clusters, direct cash dealings reflected the mutuality of different stakeholders within an informal sector setting. Second, the ceramic industry, as has been mentioned earlier, is almost entirely dependent on the demand from both the real estate and construction sectors. The nationwide sudden slowdown in these sectors



(which are also characterised by informality and cash-based dealings) had directly affected demand for ceramic products (Care Ratings Ltd., 2019: 16). Third, the ceramic industry is critically depended on transport services (particularly, road) which was severely hit due to cash shortages that arose during the post-demonetization period. However, as some opined during the survey, the entrepreneurs were slowly emerging out of that crisis as time passed. As a study observed demonetisation “disrupted” the demand situation across the country and normalcy in ceramic business would have been restored after almost six months (Sawdust, 2018: 3).

The impact of demonetization on the ceramic business has been deep and extensive as various reports would indicate. Through an online survey of larger units (10-30 acres area), the MCA held that 200 units had shut down by the last week of November 2016 due to shortage of both cash and raw material from Rajasthan; this has caused about 30 per cent of fall in business (Pathak, 2016). Similarly, in a survey of a total of 470 units in the Morbi cluster conducted by the Morbi-Dhuva Glaze Tiles Association it was held that while 60 per cent of the manufacturers had closed down production within a fortnight of the announcement of demonetization another 20 per cent were planning to follow suit soon. This was mainly due to their inability to pay wages in cash to their labour and their difficulty in transporting raw material and finished products. “Production unit owners do not have cash to pay their labourers who are mainly from Uttar Pradesh and Bihar. Many of these workers do not have bank accounts. With caps on withdrawal, we are unable to draw required cash from the banks”, the survey team was told (Damor, 2016). The owners had asked many of their workers to stop coming to the units and, in fact, quite a few migrant workers had left for their home states in the absence of work. About 80000 workers were affected by demonetization. In the initial week, an average daily loss had been estimated at Rs. 15 crore due to drop in sales. That demonetization had a definite unexpectedly adverse impact on the Morbi ceramic industry needs no underscoring.

### ***GST and the Morbi Ceramic Industry***

To attempt a realistic assessment of the impact of Goods and Services Tax (GST) on the ceramic clusters in Morbi is a difficult exercise as the new tax rates not just kept changing but also remained in most parts incomprehensible by the enterprises in the region. Previously, entrepreneurs

paid a 5 per cent Value Added Tax (VAT) and 12.5 per cent excise duty on ceramic products; albeit with high incidence of informality in majority of the firms in the Morbi ceramic clusters it would not have been unusual for them to have evaded VAT and excise duty to remain relevant in the market. However, with the enhanced provision of tax compliance under the new GST regime local firms were certainly under pressure to allow their profit levels being compromised.

The effect of GST has been deep and sharp on the Morbi firms as the GST Council had enlisted ceramics in the luxury category and, initially, imposed as high as 28 per cent tax which would push prices by 42 per cent for the final consumers. As argued by K.G. Kundariya of the MCA, the jump in prices of Morbi ceramics had immediate and eventual effect on a drop in sales as Chinese products turned out to be competing out Morbi ceramic products due to cost competitiveness. In fact, during the first four months of introduction of GST in July 1, 2017 export shipments from Morbi had halved. The point was that the transport cost borne by the Morbi producer to send across its products to remote parts of the country turned out to be costlier than what the Chinese paid to ship their products to reach Chennai port (Dhandeo, 2017). In Thangadh, the ceramic units had insisted on reducing the GST to 5 per cent as their products were typically low-cost and, especially, the squat water closet pans which were in demand in villages all over India as part of the Swachh Bharat Abhiyan. With much resentment and protests, the relentless representations made to the GST Council by the MCA finally led to a reduction in the GST from 28 per cent to 18 per cent on November 10, 2017 (Tol, 2017). Albeit the entrepreneurs continued to expect that the rate would come down to 12 per cent.

### **Inter-firm Relationship and Collective Action**

Intense competition between firms in an industrial cluster is not only inevitable but, from a business perspective, essential for the dynamism of the industry to be maintained. This is particularly the case when constituent enterprises are small in size and try hard to capture as much of the market share. Similarly, industrial clusters world over are construed unique spaces for business as firms often cooperate through joint action in non-competitive areas. Typically, cluster level enterprise associations take up the task of articulating such challenges in appropriate fora. A substantive explanation to the sustained progress and increased competitiveness of the Morbi ceramic

clusters lies in understanding the dynamics of inter-firm relations over the decades.

### ***Key Issues in Competition***

Even as with fast growing urbanization in several Indian states and changes in sanitation behaviour across rural and urban areas demand for Morbi ceramics has been on the rise, local entrepreneurs are still wary of competition from firms within the clusters and also elsewhere. The most striking aspect of the responses is that there exists intense completion between firms within the clusters of Morbi *per se*. This could, actually, be interpreted as a positive feature of the Morbi clusters that acts as an intrinsic mechanism to raise the bar of competitiveness in the clusters – this would ultimately be every clustered-firm's advantage as the reputation of Morbi ceramics would be held high. There have been other ceramic clusters in Himmatnagar and Thangadh where both SMEs and large firms compete with Morbi firms. However, what assumes added significance is that as many as 19 respondents cited only one country, China, where medium and large firms are real competitors to firms in the Morbi clusters.

In order to identify the factors which are considered critical in the otherwise dynamic Morbi ceramic cluster the respondents were asked about their perception. With demand for ceramic products rising fast, it was not surprising to note that having capacity to produce a larger volume tops the list. This is followed by access to skilled professionals and workers who would be indispensable to maintain a high standard of product quality. Sales promotion strategies have also assumed significance in broadening the consumer base. These factors are quite unlike those cited during the early 1990s when flooring tile manufacturers of Morbi competed based on undercutting prices by compromising quality of input mix and adopting a range of unscrupulous business practices (Das, 1998: 40-42). The other interesting aspect of these responses is that technological attributes are no longer considered principal issues in competition as all enterprises are well aware of and prepared with building up technological capacity through investing in newer machines or upgrading processes or introducing new designs and so on.

Despite healthy inter-firm competition within the cluster, it is not unusual to come across instances of intense activities of an unscrupulous nature representing a sense of rivalry to out-compete a fellow-entrepreneur. As

noted by the respondents providing incorrect or negative information on other firms' products or prices to customers or traders as one such major tactics in rivalry. Hindering business activities of fellow producers and also trying to 'lure' skilled workers/technicians from other's units by offering higher remuneration or other incentives are all considered as reflecting rivalry between fellow entrepreneurs. These are, however, not intractable issues and are often sorted out with intervention by other members of the clusters.

### *Cooperation as a Business Strategy*

Over the decades, entrepreneurs in the Morbi ceramic clusters have displayed a strong sense of cooperation and mutuality not always seen in many dynamic clusters in India. The MCA is a longstanding umbrella body of smaller associations around certain type of products groups as vitrified tiles, wall tiles, floor tiles and sanitaryware. With growing business nationally and also abroad the MCA has been extremely beset with responsibilities of not only facilitating interactions between manufacturers with the concerned state authorities (regarding tax relief, fiscal concessions, access to land at reasonable rates, building transport infrastructure, etc.) but also constantly updating its members regarding the emerging regulations and expectations of trading partners. One specific issue which has engaged its attention in recent years relates to preventing fraudulent dealings involving its members, as it could sully the image of the entire industry. The formation of an initiative 'Fight against Fraud' is a collective commitment to maintaining ethical practices in business.

In terms of collective action addressing various challenges facing the industry most respondents were positive about the initiatives taken in mutual interest. The respondents spoke about constant endeavour by entrepreneurs through several meetings – formal and informal – to identify sources of new machines, costs of replacement, scope of acquiring second-hand foreign machines and also arrangement for repair and services of imported machines. Further, joint action, through the active support of the MCA, has been on reduction of taxes, including GST, anti-dumping duties and other levies on utilities. Collective efforts at familiarizing entrepreneurs with export procedures and knowing potential foreign importers have also been made on several occasions. Extending a helping hand to a fellow entrepreneur in times of financial difficulties has been noted by over one third of respondents; this is also to a large extent due to intra-community bonding existing in the clusters.

On being asked about special role played by the local industry associations, it is clear that they have been at the centre of driving the clusters onto a high-road syndrome that has not only rendered them globally competitive but also helped iron out numerous rough edges in business matters. The associations have played a yeoman role in acting as a responsible conduit between the local state and entrepreneurs. Several respondents pointed out the supportive role of associations in organizing distribution of large orders, including liaising with traders and exporters on their behalf. The industry collective also has facilitated group training of workers and has been helping individual entrepreneurs in sorting out legal hurdles.

Based on discussions with office bearers of the MCA and several individual entrepreneurs it is obvious that there exists a strong community/social angle to the prevalence of an enviable cooperative ethos in the clusters, despite the fact that a select few of the entrepreneurs have been extraordinarily successful in expanding their business during the last decade or so. That almost all the members (may be with an exception of about four or five members) belonged to what could be labelled the Patel-Prajapati social group is cited as a vital community cohesive factor that prevents open conflicts between entrepreneurs. It is this, what Granovetter (1985) had described as social embeddedness of business, which needs to be recognized as a non-economic factor deeply influencing success of a cluster in a small urban region.

## **Challenges Facing the Morbi Clusters**

The *achieving* ceramic clusters of Morbi have been on a constant struggle to maintain competitiveness and grow into larger market spaces, both in the domestic and global sphere. Within the Indian market the top position enjoyed by Morbi ceramics is asserted by the fact that over 90 per cent of such products used in the country are from these clusters. In the global market, there is a long way to go although quality conscious manufacturers of Morbi have been pushing forward with new designs, sizes and cost savings. There are, however, several constraints faced by Morbi's ceramic manufacturers some of which have persisted over the years and some have been of relatively recent origin. Interestingly, the most-cited constraint (by 40 of the total 50 respondents) is about the dithering or irresolute approach of the state in fulfilling their expectations. The other constraints related to rising transportation costs due to oil price hike; these exerted pressure on the profitability of firms. This also implied that Chinese products could still

be sold cheaper in Indian market as the products from Morbi get costlier due to high transport charges. Absence of provision for loan funds has been a barrier for large investments as in changing the machines or shifting to new processes of firing, expanding production or sales capacity, or even purchasing additional land. Lack of infrastructure, delayed payments and difficulty to find machines made in India are also cited as constraints to conducting a profitable business.

In Table 7 the expectations from the state have been described and it is clear that the two main support desired are related to physical infrastructure and provision of easy loan finance. Reduction of prices of electricity and gas remains a major expectation of the entrepreneurs. Some even expected the state to facilitate exports by firms. However, as shall be noted soon, the Government of Gujarat has, in fact, contributed substantially in developing infrastructure in the clusters and has indirectly helped export activity to grow.

**Table 7: Expectations from the State**

Expectations	Responses (%)
Provision of infrastructure (mainly, land, roads and water)	57 (33.3)
Subsidy and/or soft loans with fast processing (single window)	36 (9.4)
Electricity at low price	23 (13.5)
Reduce gas price	18 (10.5)
Facilitate easy export	16 (9.4)
Lower all taxes	6 (3.5)
All	155 (100.0)

Source: Field Survey

Note: Multiple responses

## **Firm Strategies for Expanding Business and Enhance Competitiveness**

The respondents were asked about firm strategies to expand business so as to have a larger presence in both domestic and global markets. Of the several strategies, improving product quality by adopting new technology dominated their thoughts followed by efforts to expand production capacity, improved designs, provide for quality testing all targeted at accessing high-end markets. The concern for building up a sustainable stock of key raw materials, engaging skilled workers/technicians and even collaborating with foreign companies points to an outward-oriented local industry that is

concerned with upgrading technology and set a reputation for the Morbi ceramics.

As part of aiming to be globally competitive, the respondents' attention was drawn to the specific challenges confronted due to China's known advantages in massive production capacity, low costs of manufacturing and facility to broad-base its reach including making an important presence in the Indian market. Several of the local entrepreneurs sounded confident that the demand for Morbi ceramics would only rise in coming years as there exist collective efforts to improve product quality, reduce cost of production through expanding scale and lower dependence on imported Chinese machinery.

### **Policy Support as Key**

The Morbi trapezoid (region between Morbi, Wankaner, Thangadh and Jetpar) is being developed as a high potential ceramic manufacturing zone and the state has contributed immensely to this process (Map 1 and Map 2). Discussions during the field survey and media reports indicate that the provincial state (Government of Gujarat) has been extremely supportive of the local industry in terms of providing dedicated gas line to units, building roads (including linking to the Kandla Port), providing uninterrupted power supply, etc. and supporting holding of the huge Vibrant Ceramics Expo event periodically.

The State has contributed in a major way to the growth and upgradation of the industry and business infrastructure by providing for i. industrial gas line in the area in 2008; ii. uninterrupted power supply from Gujarat Electricity Board; iii. well developed transport network (NH), especially, the road linking Pipli and Jetpar since 2012; and iv. port facilities at Mundra and Kandla. The units also cater to export market in Europe, Middle East, African Countries, Sri Lanka, Bangladesh and recently to Latin American countries. In the recent years Morbi has also become an important manufacturing outsourcing zone.

The favourable role of the state to this industry could also be comprehended through the massive political patronage it enjoys being a crucial (and influential) Patel belt in the Saurashtra region. The ruling party could ill-afford to sideline this bustling industry due to its potential as a major vote bank. Interestingly, during 1995-2017 for the Morbi Assembly Constituency

**Map 1: The Morbi Ceramic Clusters Trapezoid**



**Map 2: The Kandla Port Link Roadway to Morbi Ceramic Clusters Trapezoid**





and since 1996 for the respective Lok Sabha Constituency (Kachchh) candidates of Bharatiya Janata Party (BJP) have consistently won. Moreover, the same party has been in power in the state since 1998.

Despite this industry's dynamism and huge market share in the domestic sphere, the global presence remains low (at about 6 per cent, while China's share is about 42 per cent). To be able to build up export competitiveness the industry requires multi-pronged interventions including raising product, process standards and raising levels of skill.

The primary surveys and discussions with the cluster stakeholders brought out the following issues where state intervention would be most helpful.

*Infrastructure:* Common state-sponsored testing facility for products and raw materials would be useful. Partial support by the central government in building transport and power infrastructure across the trapezoid is expected.

*Refunds on C Form:* For the last 7 years the promised C Forms have not been shared by the dealers/buyers of Morbi ceramic products for which the Morbi units (sellers) are liable to pay 15 per cent tax (instead of 3 per cent CST through the C Form provision), in addition to an annual penalty at 1.5 per cent. Even as since July 1, 2017, under GST, the concept of C Form is not applicable, the huge refund due has not been received. That the states concerned did not have online C Form system (or, no records of it) at the time of purchase has been a bone of contention between responsible bureaucrats of Gujarat and other states. GST has not solved this problem and this calls for immediate attention by the state.

*Reconsidering National Green Tribunal (NGT) Order:* The NGT has ordered closure of all ceramic units using coal gasifiers. About 550 units still use these as switching over to gas (LNG/PNG) would enhance cost by at least 10 per cent. As the Gujarat Pollution Control Board (GPCB) has already laid a gas pipeline network in the clusters at the cost of Rs. 4500 crore, the coal gasifier users have been levied a penalty of Rs. 2500. The affected entrepreneurs have made a plea for a reconsideration of the NGT order to retract penalty.

*Reducing GST and Other Cess:* A reduction in GST from the present 18 per cent to 12 per cent is being expected. In Thangadh, the ceramic units had insisted on reducing the GST to 5 per cent as their products were typically

low-cost and, especially, the squat water closet pans which were in demand in villages all over India as part of the Swachh Bharat Abhiyan. Gas and electricity may be supplied at a concessional rate, at least at a 10 per cent reduced rate.

*Support in Trade:* The entrepreneurs also seek intervention in securing access to the US market as Chinese imports have been restricted through anti-dumping duties. State support in participation in global trade fairs and joint ventures with Spain and Italy in particular was also sought by the entrepreneurs.

*Improving Working and Living Environment:* Technological upgradation (including large scale automation) notwithstanding the nature of the labour processes and raw material used have led to high air pollution inside the units directly affecting the workers' health and also productivity. Regulations to adhere to pollution control in workplaces are essential. The urban areas where these clusters are based have also been affected by air pollution emanating from ceramic factories. To enhance the quality of living environment for workers, particularly, migrants, housing and/or hostel facilities is an area of policy intervention. The MCA and state government could jointly promote the facilities.

## **Concluding Observations**

The remarkable progress of the ceramic clusters in Morbi points to the effectiveness of collective (industry and state) strategies towards technology upgradation, product diversification and external orientation. These efforts have resulted in lowering of costs, creating jobs and accessing newer markets both in the domestic and global spheres. While the Morbi clusters, with high level of automation, may be close to hitting what may be termed, following Hobday's conceptualization (Greitemann *et al.*, 2014; and Hobday, 2005), the *technological maturity* - beyond which they fail to compete with imports – macro policy benefits (such as undervalued exchange rate, cheap credit and other state support measures) would still keep the industry dynamic. Enlarging the potential of scale remains a key challenge if the Morbi clusters move ahead basing on their hard-earned achievement including in the global sphere; the role of *rescaling* the territory would be useful to bring in here.

The potential for jobs would depend on the growth with maturity of the cluster and substantive focus on re-skilling.

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The Gujarat Institute of Development Research (GIDR), established in 1970, is a premier organization recognized and supported by the Indian Council of Social Science Research, New Delhi and Government of Gujarat. It is an approved institute of Mahatma Kriplankumarviji Bhavnagar University, Bhavnagar, Gujarat. GIDR undertakes analytical and policy-oriented research concerning development issues.

The broad-based areas of research at the Institute include Natural Resource Management, Agriculture and Climate Change, Industry, Infrastructure, Trade and Finance, Employment, Migration and Urbanization, Poverty and Human Resource Development and Regional Development, Institutions and Governance.

- In the area of **Natural Resource Management, Agriculture and Climate Change**, in-depth studies have been carried out relating to some of the major development interventions like Participatory Irrigation Management, Watershed Development Programmes, Joint Forest Management and Protected Area Management. The studies have focused mainly on aspects relating to economic viability, equity and institutional mechanisms. In the sphere of management of natural resources, these studies often explore the interrelationships between the community, government and civil society. Many of these studies, based on careful empirical enquiry at the micro level, have contributed to the on-going debates on sustainable environment and institutions. Issues in Common Property Land Resources and land use have also been researched extensively.
- The research in the area of **Industry, Infrastructure, Trade and Finance** focuses on the response of micro, small and medium enterprises to the changing government policies in the wake of liberalisation. The research has contributed to work on industrial clusters, flexible specialization and addresses issues involving intellectual property regimes, especially for pharmaceuticals and biotechnology. Studies dealing with issues in provisioning of and access to basic infrastructure both in the rural and urban areas, the linkages between infrastructure, trade and finance, regional growth and aspects of governance have also been carried out at the Institute.
- Studies under the theme **Employment, Migration and Urbanization** relate to population, demographic changes, labour, nature of employment, diversification of economic activities and migration. An emerging aspect has been to study international migration to trace social, economic, cultural and political influences through remittances, social spending and norms setting. Urban services and aspects of urban economy and governance have also been an important emerging area of research at the Institute.
- The research in **Poverty and Human Resource Development** focuses on population, labour and poverty issues. The studies relate to quality of life, education, social infrastructure, diversification of economic activities and migration. The informalisation process in the labour and production systems leading to poverty and social security issues form another important theme. The research on health and family welfare has contributed towards developing a framework for target-free approach in family planning. In the informal sector debate the research has focused on the collection of social statistics to influence policies for better labour conditions and social security reforms.
- The enquiry in **Regional Development, Institutions and Governance** concentrates on application of regional planning models, data collection and analysis for regional planning exercises, impact of area development plans on growth and development of the regional economy. Studies have also focused on studying the role and participation of Non-Governmental Organisations (NGOs) in the development process, the changes in the characteristics of the NGOs and so on.

The major strength of the Institute is a thorough understanding of the micro processes and a consolidated effort to link these to macro issues. The faculty members have made considerable endeavours towards developing policy-sensitive database of the Indian economy, especially relating to the informal activities, including child labour. The Institute has played a useful role in promoting original research in the country and the evolution of related conceptual framework and approaches. Over time, the Institute's research agenda has broadened to cover a fairly wide range of issues pertaining to development policy both at the regional and the national levels. The results of the Institute's research are shared with policy makers, non-governmental organisations and other academicians. The faculty members at the Institute also participate in government panels, committees and working groups to influence certain policy decisions. The Institute promotes public discussion through the publication of its research findings and through seminars, conferences and consultation and undertakes collaborative research along with NGOs, international organisations, government and academic institutions.