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A BIMSTEC-Japan Framework for Global Commodity Chains

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Abstract: This paper attempts to study the likelihood of such internationalization occurring within the BIMSTEC group of countries, which show diverse competitive advantages. This is an attempt to study the possibility of multi-country production networks within the BIMSTEC getting integrated with Japanese production systems. The paper suggests that the efficiencies developed by each country in different production segments, particularly assembling operations, can be combined for creating regional production networks within BIMSTEC. These networks can provide the small and medium enterprises in the region the scope for integrating in broader marketing chains. It is also possible that these networks can develop into production hubs capable of catering to larger markets outside the BIMSTEC. Indeed, the Japanese market is one such segment where intra-BIMSTEC production networks can not only explore opportunities, but can also conceive collaborative options for accessing global markets. Given that Japan has the highest value chain presence in the world, the paper recommends that the close collaboration with Japanese industry can provide BIMSTEC networks quick access to global business. This is a 'win-win' situation for Japanese industry as well given the ability of BIMSTEC firms to handle some stages of the production cycle more efficiently.

1. Introduction

Rapid global integration of the world economy has resulted in significant reorganization of production networks. A major outcome of such far-reaching reorganizations has been the emergence of

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complex and systematically integrated production arrangements. These comprise well-knit distributions of discrete segments of production processes situated in different locations. Such distributions symbolise the functional integration between internationally dispersed activities. They also symbolize the gradual 'internationalization' of production, where a sequence of related activities is performed across the world for deriving the final product.

This paper attempts to study the likelihood of such internationalization occurring within the BIMSTEC group of countries. It also attempts to study the possibility of multi-country production networks within the BIMSTEC getting integrated with Japanese production systems.

The paper is divided into four broad sections. Section 2 outlines the theoretical perspective of global commodity chains (GCCs). Section 3 outlines the Indian evidence in this regard. The Indian evidence is deliberately highlighted since Indian firms are expected to play a key role in shaping multi-country networks within BIMSTEC. Section 4 analyses the technological strengths and weaknesses of BIMSTEC countries. Since entry into GCCs is intricately linked to technological capabilities, it is important to assess such capacities at the national and firm-level. Finally, Section 5 explores the possibilities of GCCs within BIMSTEC, their linkages with Japan, and the policy support required for fostering such linkages.

2. Global Commodity Chains (GCCs)

GCCs are sequences of related and dependent activities performed in multiple locations across the world. A considerable body of literature has emerged in recent times on the GCC framework. The main objective of this literature is to conceptualise the customer-supplier relationships being captured by these networks in a global context. The conceptualization involves studying the dynamics of production and the global division of labour yielded by the dynamics.

The theoretical literature on evolution of GCCs (Gereffi 1994; Gereffi and Korzeniewicz, 1999) distinguishes between two types of

chains on the basis of their internal governance structures. These are commonly referred to as producer-driven and buyer-driven commodity chains (Gereffi 1994, 1999).

The producer-driven commodity chains are distinguished by the key role played by manufacturers of final products in coordinating activities within the chain. These networks dominate capital and technology-intensive industries (e.g. automobiles, aircraft, and software), where large global firms not only own the final product, but also conceive and synchronise different stages of geographically dispersed production networks.[1]

Buyer-driven chains on the other hand, comprise retailers, marketers, as well as branded manufacturers, who set up horizontal production networks. Unlike lead enterprises in producer-driven chains, who invest heavily in setting up production facilities, the lead firms in buyer chains concentrate on design and marketing, rather than production. These chains typically prevail in labour-intensive consumer goods industries like garments, footwear and handicrafts. The branded products sold by the major retailers are usually sourced from low-cost locations, mostly in the third world (Gereffi, 1999).[2]

The features of the two chains are briefly summarized below:

Producer-driven chains

- Lead firms are manufacturers of final products.
- Main sources of comparative advantages of lead firms are in production-related activities.
- The chains are found in capital and technology-intensive industries.
- Automobiles, aircraft, software industries are typical examples.
- The chain has a vertical network structure.

Buyer-driven chains

- The lead firms are retailers, marketers and branded manufacturers.
- The comparative advantages of lead firms lie in design and marketing.

- The chains are usually found in consumer non-durables.
- Readymade garments, footwear and handicrafts are typical examples.
- The chain has a horizontal network structure.

Across emerging markets and developing countries, a consensus has emerged in favour of host country small and medium enterprises (SMEs) stepping up efforts to become parts of GCCs. There are several reasons encouraging the consensus. With global trade in technology-intensive products rising at a rapid pace, it is important for developing countries to increase technological capabilities for obtaining larger shares in high-technology exports. The lead firms in GCCs are the most fertile source of advanced technologies, as they devote the largest resources to R&D based innovations. Entry into GCCs construes large scope for 'learning' on part of developing country firms. The scope for technology diffusion is much larger with the captive networks of GCCs. However, it is obvious that more technologically capable countries have better chance of entering global chains. Within these countries, again, more capable firms have better chance of getting 'chained'.

3. The Indian Evidence of GCCs

A close study of Indian industry reveals that quite a few segments have slowly dovetailed into GCCs. While automobiles, drugs & pharmaceuticals, and software are the prominent industries that have shown evidence of moving into producer-driven chains, the ones integrating into buyer-driven chains are: textiles, leather and food processing.

Automobiles

The automobile industry in India 'took off' much later than it's counterparts in other emerging market economies (e.g. Argentina, Brazil, China, Mexico, and Thailand). With gradual liberalization of foreign investment policies from the early 1990s, major global auto assemblers started moving into India. By the late 1990s, General Motors (GM), Ford, Daimler-Chrysler, Fiat, Toyota and Honda operationalised light-vehicle assembly plants in India. The latest global automobile major to express keen interest in India is Volkswagen.

Available evidences indicate that the local automobile components manufacturing enterprises have benefited significantly from the presence of leading global manufacturers. A pertinent example is that of component manufacturing SMEs located in and around the city of Chennai in Tamil Nadu,[3] which have grown robustly by supplying to assemblers like Ford, Hyundai and Mitsubishi. The local component industry here has transformed from being a domestic hub catering to servicing requirements of diverse categories of vehicles, to a lead player in export strategies of global assemblers (Tewari, 2005). This has happened on account of a complex network of diverse strategic alliances between local firms and the 'follow' sources of automobile assemblers. The growth of these alliances has been motivated by the need to adapt existing models to local conditions. Such alliances have created vast scope for technology diffusion in the local firms leading to significant upgrading of several segments of the components industry.

With the major auto assemblers sourcing bulk of sub-assemblies from first-tier suppliers, considerable subcontracting avenues have arisen for capable domestic firms at the middle and lower end of the value chain. The indigenous firms have technologically upgraded through diffusion of technology and know-how, which has 'spilled over' from the first-tier 'follow' suppliers. Besides, the increasing importance of information technology in design and management of components has also played a critical role in upgrading capabilities of many local enterprises. Greater deployment of IT-enabled systems has not only helped the more IT-intensive local firms to develop niches for supplying to original equipment manufacturers (OEMs), but has also enabled them to forge closer working relationships with more distant customers.[4]

Pharmaceuticals

Liberalization of foreign investment policies has led to the entry of quite a few multinationals in the Indian pharmaceuticals market. The prominent ones include Glaxo, Hoechst, Novartis, and Pfizer, all of whom are reported to be experiencing growing market shares. At the same time, large Indian firms like Dr Reddy's Laboratories, Cipla,

Wockhardt, and Ranbaxy, are also competing efficiently with the foreign entrants. Glaxo is the market leader in formulations, followed closely by Cipla, Ranbaxy and Hoechst. Many Indian firms have spread deep into overseas markets and moved up the value chain by graduating from export of bulk drugs to formulations and generic products.

Foreign firms operating in the domestic market are outsourcing a large part of their output to third-party manufacturers within India – a trend usually not observed elsewhere (Jain et al, 2005). This is commonly referred to as contract manufacturing. This is mostly occurring in bulk drugs on account of the cost competitiveness enjoyed by Indian firms.[5] India has also emerged as an attractive location for contract research by global companies.

Software

The initial growth of the software industry in India had much to do with the growing shortage of capable programmers and software developers in the US industry that encouraged American firms to tap the large pool of skilled technical manpower in India. As a result, Indian professionals migrated to on-site project locations for carrying out specific well-defined functions. This was commonly known as 'body shopping'. Over time, with improvements in IT sharply reducing the cost of doing business across distant locations, and a growing recognition of the ability of Indian professionals to handle complex projects, Indian firms began offering off-shore contract programming services (Lateef, 1997).

The transition from the on-shore to the off-shore model has enabled the industry to create a niche in the global software value chain. Over time, many Indian firms have moved up the value chain by acquiring Original Equipment Manufacturer (OEM) status for several large foreign firms through offshore production from India. Many large US corporations have also invested in creation of R&D facilities in India (Saxenian 2002). Successful SMEs have graduated from low-end coding, testing and maintenance functions to high-end activities like design and programming.

Textiles

Readymade garments and textile footwear manufactured by Indian SMEs have carved out strong footholds in global markets. Not only are developed country markets in the Europe and the US sourcing Indian apparels, but several reputed brands (e.g. Benetton, Crocodile, Dockers, Lacoste, Lee Cooper, Levi Strauss, Givo, Pepe, Reebok and Wrangler) have moved into the Indian market, following the franchising route. All these brands are sourcing from domestic enterprises for supplying to the high-end domestic market, as well as foreign customers, by adopting contract manufacturing practices, which involve not only providing specifications to domestic units, but also technical assistance.

Two textile clusters from India have been major success stories. These are Tirupur and Ludhiana. Both supply some of the largest fashion brands in the US and Europe and have become key nodes of global retail textile chains on account of heavy demand from global retailers and branded manufacturers. In recent times, India has emerged as an important sourcing hub for textile footwear. Globally, in the footwear industry, wage costs are lowest in South Asian countries[6] like India and Bangladesh. These have encouraged major global brands to increasing sourcing from India.

Leather

There are two features in regard to leather industry.

- Retailers are providing their own specifications and are also taking those designed independently by local firms.
- Several footwear SMEs in these clusters have graduated from manufacturing semi-finished leather to shoe uppers.

While traditionally finished leather products were manufactured in line with the specifications laid down by buyers, the industry has now graduated to creation of its own designs. Finished leather products are accessing the global markets through heavy sourcing by reputed international brand manufacturers like Floresheim, Harrods, Pierre Cardin, Tommy Hilfiger and Versace.[7]

Development of international niches has been most marked in leather footwear. The bulk of the units in the leather industry produce semi-finished leather. However, a number of large and medium units produce high-quality finished leather. Many of these units have created forward linkages by setting up factories for manufacturing shoe uppers. Leading global brands like Eeco, Floresheim, Florind, Fretzman, Marks and Spencers, Numbush, Salamander and Sears, are sourcing their supplies indigenously from these units.

Food processing

Driven by India's large domestic market and encouraging growth prospects, several multinationals have entered the industry. Major global processed food brands like Coca Cola, Pepsi, Heinz, and Kellogs, have set up production bases in India. In addition, Indian incorporated companies like Hindustan Lever Ltd (HLL) and the Indian Tobacco Corporation (ITC) - already established in the Indian FMCG market – have moved into the processed food segment in a significant way.

The scope for the industry's integration into the global value chain has arisen from two levels. The first relates to the sourcing demand from multinationals producing in India. Global giants like Pepsi, who are already sourcing from domestic enterprises, plan to turn India into a regional hub for particular products like juice concentrates. Secondly, major global retailers are entering the Indian market. Given the existing policy restrictions on foreign investment in retailing, the global retail firms are mostly entering into collaborations with Indian partners for accessing the Indian market. Notable examples in this regard are Nanz AG of Germany and Dairy Farm International Holding. Among more recent entrants are the Metro Cash and Carry GmbH.

4. Technological Features of BIMSTEC Countries

The influential work by Evenson and Johnson (1998) has had profound impact upon the literature on technological development for low and middle-income countries. The authors classify developing countries into six different levels of technological capabilities. Countries at the

first three levels of this classification show limited evidence of investment in R&D underlining a critical lack of innovative capacities. Indeed, whatever little R&D exists in the countries at these levels is essentially directed at pirating of trademarks and design. In the next two levels of technological capabilities, enterprises can be distinguished by their efforts to develop R&D for creating absorptive capacity for adapting and implementing imported technologies. Finally, at the very last level, countries actively promote R&D over a much longer time horizon with the objective of generating new technology and creating new capabilities (Guha and Ray, 2004).

The classification proposed by Evansen and Johnson (1998) provides a useful background for understanding the existing technological competencies within BIMSTEC. It is important to have a clear understanding of these capacities, since they play a vital role in enabling host country firms to move into GCCs as explained earlier in section 1.

The available technological evidence on BIMSTEC nations shows that India and Thailand are the 'front-runners' in technological capabilities. The technological capabilities of these two countries are much advanced than those of the rest in the grouping. It is evident that capability-wise there is pronounced technological 'inequality' within BIMSTEC with the other nations requiring considerable 'catching up'.

Between India and Thailand, however, there are differences in the nature of capabilities acquired by the two countries. India has developed much stronger capabilities in innovation capacity. Such capacities, helped to a very large extent by the ample availability of well-qualified technical professionals produced by high-quality scientific institutions, have made India an attractive location for handling complex, high value-added operations. In terms of the nuances employed by technological development literature, India has matured beyond the stage of 'know-how' and is expanding the frontiers of 'know-why' for acquiring frontier R&D capabilities.[8]

Thailand, despite enjoying a long history of using FDI for

Table 1: BIMSTEC : Technological Strengths, Weaknesses, and Entry Opportunities into Value Chains

	Country	Strengths	Weaknesses	Opportunities
1.	India	a) Strong innovation capacity. b) Presence of Large number of scientists & engineers. c) High-quality scientific institutions.	ICT penetration still relatively low.	Contract manufacturing and research awards in complex 'high-end' R&D intensive operations. Outsourcing opportunities in 'medium-end' IT-enabled services.
2.	Thailand	a) Good firm-level adaptive capabilities. b) Strong ICT infrastructure.	a) Relatively weak innovative capacity. b) Low incidence of scientists & engineers. c) Lack of 'deepening' of technological effort.	Considerable scope exists in medium-end operations pertaining to assembling of high-technology exports.
3.	Sri Lanka	Reasonably good ICT penetration.Innovation capacities likely to improve due to more corporate investment in R&D.	Low firm-level technology absorption. FDI yet to emerge as major source of technology transfer	Can emerge as an attractive 'efficiency-seeking' destination for Japanese FDI on the basis of growing innovative and outsourcing capabilities.
4.	Bangladesh	Human capital	Lags behind in most fundamental technology indicators.	Can obtain less complicated lower-end tasks.

technology diffusion and recording pretty high technology-intensive exports, has fallen somewhat short of advanced innovative capacities. Unlike Singapore or the Taiwan Province of China, which have utilized FDI to enhance domestic technological capabilities to much higher levels for handling complex R&D-based operations, Thailand has focused more on assembling of high-technology exports. The relative lack of innovative capacity and human capital in terms of adequate number of scientists and engineers has prevented 'deepening' of technological effort (UNCTAD, 2003). This apparent mismatch between the ability to use foreign technology for assembling into hi-tech exports and lack of skills for generating new technology can impact future efforts for moving into higher-end of global value chains.

Bangladesh and Sri Lanka, at present, are much behind India and Thailand in terms of technological readiness, as well as innovative capacities. But as between India and Thailand, Bangladesh and Sri Lanka's technological development trajectories show marked contrasts. Sri Lanka appears to have an edge in penetration of ICT infrastructure, as well as innovation capacity. There are encouraging signs of a pick-up in corporate R&D as well as public-private partnerships (PPPs) for promoting technology growth. Bangladesh, while lagging behind in most technology fundamentals, possesses a large body of scientists and engineers. However, both countries, till now, have failed to utilize FDI for augmenting domestic technological capabilities.

On the basis of our discussions we present below a strength-weaknesses-opportunity (for entering global value chains) profile for four leading BIMSTEC members: India, Thailand, Bangladesh and Sri Lanka.

5. GCCs within BIMSTEC and Possibilities of Linkages with Japan

The BIMSTEC comprises a group of countries with diverse competitive advantages. The efficiencies developed by each country in different production segments, particularly assembling operations, can be combined for creating regional production networks within

BIMSTEC. These networks can provide the small and medium enterprises in the region the scope for integrating in broader marketing chains. It is also possible that these networks can develop into production hubs capable of catering to larger markets outside the BIMSTEC. Indeed, the Japanese market is one such segment where intra-BIMSTEC production networks can not only explore opportunities, but can also conceive collaborative options for accessing global markets. Given that Japan has the highest value chain presence in the world, close collaboration with Japanese industry can provide BIMSTEC networks quick access to global business. This is a 'win-win' situation for Japanese industry as well given the ability of BIMSTEC firms to handle some stages of the production cycle more efficiently.

The process of growth of production networks between BIMSTEC and Japan have to be conceived at two levels. First, emergence of such networks within the BIMSTEC community. Second, linking up these emerging networks with Japanese producers. There are several conceivable examples for the first. In most of these, however, Indian and Thai industries that have already developed strong competitive advantages and niche markets are best placed for leading the chains.

The study of the Indian auto-component industry earlier has underlined the production capabilities developed by this sector. Several Indian components manufacturing SMEs are not only supplying to global auto assemblers based in India, but also to those located elsewhere. At the same firm, there is evidence of these SMEs moving into replacement markets for supplying spares, including those in Bangladesh and Sri Lanka. For example, Lumax Industries – a Gurgaon-based firm in the state of Haryana - manufactures automotive lighting equipments and plastic moulded components. It supplies the Sri Lankan aftermarket, Daimler Chrysler in Indonesia, and has a technological collaboration with Stanley Electric Co. Ltd of Japan. The firm's international marketing operations give it a foothold in India, Sri Lanka and Japan. There are many such firms with similar cross-country business presence within the BIMSTEC and Japan. Indian auto-component manufacturing SMEs can locate suitable vendors in Bangladesh and Sri Lanka for contracting out relatively

lower ends of their products meant for replacement markets in these countries. On many occasions, this can be cost-effective for Indian manufacturers. And, on the other hand, such contracting will create opportunities for vendors from relatively smaller members within the BIMSTEC to move into global commodity chains.

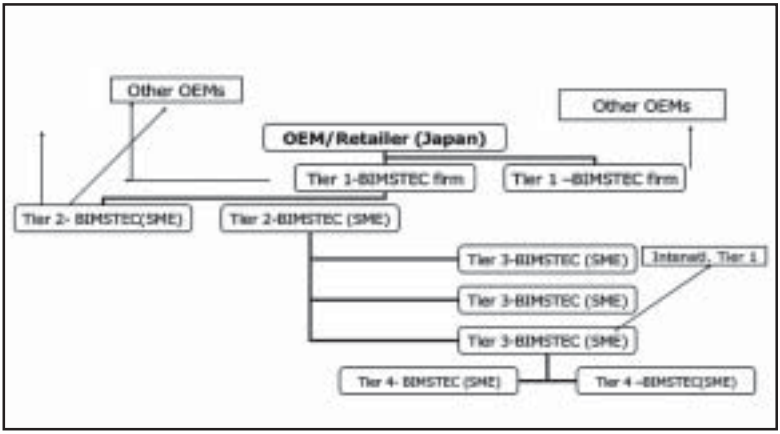
The above is a possible example of a producer-driven chain emerging within the BIMSTEC with Indian firms playing the lead role in shaping the chain. We can think of other examples too. As mentioned earlier again, the garment clusters located at Tirupur and Ludhiana in India, have been successful in fanning out a well-spread global marketing network. Large chunks of SMEs located in these clusters are supplying leading international retailers. The success achieved by these firms in consolidating the brand value of their labels has resulted in sharp growth in demand. It's important to remember that garment production is largely volume-driven. Meeting sustained growth in volumes requires acquiring larger scales, which take time. A better option might be to outsource. Indeed, Indian SMEs from Tirupur, Ludhiana, and elsewhere, can think of outsourcing operations to other BIMSTEC SMEs, particularly in Bangladesh, who have the abilities to respond to volume-based lower-end jobs.

The growth of these regional networks within the BIMSTEC can effectively link with Japan in several respects. The possible form of such collaborations is pictorially depicted in Figure 1.

At the outset, the process can begin with the BIMSTEC networks linking up with Japanese OEMs. The leading Tier-1 BIMSTEC firms are likely to be from India or Thailand. However, once the chain starts consolidating, there is every possibility of firms from other BIMSTEC countries to become Tier-1 enterprises and move up the value chains. For Japanese industries, linking to BIMSTEC networks offers the opportunity of economizing costs and gaining access to capable vendors in hitherto less-explored markets.

There are some issues that need to be looked at carefully if the network relationship illustrated in Figure 1 is to become a reality. The

Figure 1: BIMSTEC –Japan: A Possible GCC Framework



most important point of course is why Japanese firms should be interested in entering into production chains involving BIMSTEC firms. Unless there are distinct economic gains that can be obtained by doing so, Japanese firms will see little merit in supporting BIMSTEC product chains. There are two firm-specific conditions which might be significant in realizing such gains. These are:

(i) The SMEs from BIMSTEC member economies are capable of carrying out low-end production activities based on simple production-engineering techniques.

And/ Or

(ii) They have access to cheap raw materials and inputs and are capable of supplying them in bulk over time.

Satisfying either of these two conditions, or both, can help the BIMSTEC enterprises emerge as competent vendors for Japanese firms. Indeed, while Japanese firms would be searching for such competencies among the relatively more industrial BIMSTEC countries, firms from the latter will be looking for similar attributes in other BIMSTEC nations. The search can develop into a mutually

complementary process and facilitate the growth of strong production networks between BIMSTEC and Japan.

The Indian experience, as well as success stories of developing host country SMEs moving into global value chains, has highlighted the importance of following a cluster development approach for improving technological capabilities. The most virtuous aspect of promoting the growth of a carefully chosen cluster of enterprises is ensuring a homogeneous spread of capabilities among and across units. In India, well-known manufacturing clusters like Tirupur, Ludhiana and Gurgaon are pertinent examples. Over time, the capabilities acquired by SMEs in these clusters have led to the latter acquiring distinct brand attributes. A dedicated push to cluster development in other BIMSTEC countries can certainly reproduce successful examples elsewhere too.

A lot has been said and written about development of successful SME clusters in low-income countries. There are more examples of failures and fewer examples of successes in this regard. It is important to remember that state support, in form of providing the right institutional atmosphere and facilities is essential for cluster development. For those BIMSTEC nations planning to launch cluster development and capacity-building programmes, ensuring the right institutional support is vital. In addition, identifying capable industries or natural clusters, assessing their growth potential and providing the right infrastructure, finance and logistics can make a huge difference to the success of the programmes.

Footnotes

[1] The automobile industry is a typical case of a producer-driven chain, where lead firms exercise administrative control over all stages of the value chain. A pertinent example of a lead firm driving a value chain is that of the leading global car manufacturer, Mercedes Benz, a German company, which has a production base in Brazil. While the model being manufactured at the Brazilian plant is similar to that in Germany, rigid controls are maintained over product specification, with designs being developed through collaboration with suppliers in Europe. Some key parts are imported from Germany (e.g. engine, gear-box, rear axle etc.), while some others (e.g. seats,

wheels) are procured from other transnational suppliers and local manufacturers (e.g. petrol tanks, taillights). See Humphrey (1999).

[2] Major global retailers dealing with garments and footwear (e.g. Nike, Reebok, Wal-Mart), as well as fashion-oriented international brand names (e.g. Liz Claiborne) do not engage in direct manufacturing. They emphasize on design, sales, and marketing, while sourcing manufactures from production centers in low-cost overseas locations. These companies are often referred to as 'manufacturers without factories'. See Ramaswamy and Gereffi (2000).

[3] The state of Tamil Nadu is often referred to as 'Detroit of India'.

[4] Many local suppliers for Siemens-India were exposed to design requirement for Siemens Germany during the development of the platform for Ford's Ikon model in India. See Tewari (2005).

[5] India's average hourly wages is reported to be US$1.8, which are much lower than those of UK (US$16.6) and Poland (US$5.6), but somewhat higher than China's (US$1.1). See 'India gains first place in contract manufacturing', June 20, 2004; Outsourcing News; http://www.openoutsource.com/resource.

[6] Studies indicate that in India an average worker in the organised segment of footwear manufacturing in the year 1998 used to receive hourly emoluments of not more than 25 cents. See D'Mello (2003).

[7] According to industry estimates, around 15% of total purchases of leading global brands in footwear, garments, leather goods, and accessories, in Europe, are being outsourced from India. See http://www.tradeget.com/industrynews.html

[9] In the context of developing nations, it is useful to distinguish between "know-how" and "know-why" as components of their technology-mix. Know-how is acquired through a combination of efficient assimilation of imported techniques, quality control, improved plant layout and production practices, equipment modifications, use of different raw materials and so on (Lall, 1985). For most developing nations, acquiring know-how is a lengthy learning process. Know-how is followed by know-why as the next stage of technological development. Acquiring know-why implies understanding the nature of the process and product technologies leading to the development of new improved designs.

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