

Executive Summary

This study on the "global competitiveness of Indian Capital Goods Industry" is based on application of measures of competitive performance and analysis of competitiveness issues. As a prelude to competitiveness analysis, the report seeks to define and classify Capital Goods, which have often been subject to non-uniform representation. The study formulates strategic goal to achieve global competitiveness, and identifies the actionable strategic initiatives and implementation plan to address the diagnosed lacunae in Indian Capital Goods industry.

Capital Goods Definition, Classification and Selection

Capital Goods has been defined for the purpose of this study as any "product/ equipment of high value, durable (economic asset life ≥ 3 years), used as plant and machinery for agricultural, industrial and commercial (transportation etc.) purpose in production/ service delivery process".

We have adopted "use-based" classification to segment Capital Goods. From the list of classified segments, we have shortlisted five most representative segments based on - market size of the segment and its user industry, and IIP weightage of the segment. The five representative segments identified are as follows:

- Textile Machinery
- Machine Tools
- Electrical and Power Equipment which includes Boilers, Turbines, Diesel Engines, Transformers, Switchgear, Motors and Generators
- Earthmoving and Construction Equipment
- Process Plant Equipment which includes Pressure Vessels, Cooling Towers, Furnaces and Heat Exchangers

Competitiveness Analysis of Indian Capital Goods sector

The study of the performance of the Capital Goods sector reveals that its fortunes are inextricably linked with that of the overall Indian industry. High degree of correlation between the performance of the two sectors is further accentuated by high elasticity of Capital Goods industry to changes in industry growth. The Capital Goods value added contributes a fairly constant proportion (9-12 percent) of the total manufacturing value added, thus establishing that manufacturing as the key end-user sector of Capital Goods drives the performance of the latter. Another key determinant of the demand for Capital Goods is the gross investment undertaken in the economy. The apparent consumption of Capital Goods constitutes a constant share (17-21 percent) of the total Gross Domestic Investment in the country. On the supply side the output of Capital Goods is determined by investments in Capital Goods sector and capacity utilization. The investments in the Capital Goods sector have declined with the decline in the relative profitability of the Capital Goods sector with respect to other sectors.

The export performance corroborates the inward focus of Capital Goods industry as less than one-tenth of its sales is directed to exports. Except for few segments within the Capital Goods sector, almost all of them have single digit exports as percentage of sales figures. Based on the study of industrial development trajectory and share in world exports of Capital Goods, we have chosen to compare Indian Capital Goods sector's competitiveness vis-à-vis three reference countries – China, Korea and Taiwan, and three benchmark countries – Japan, Germany and USA.

Measurement of Competitive Performance

We define competitiveness as "continually sustained increases in productivity...also characterised by increasing export shares..." With the blurring of boundaries between domestic and global markets, competitive arena has extended into the export markets and competitiveness in domestic market has spillover effect on exports. The preference for trade-based measures of competitiveness also owes to the fact that trade data are easier to obtain than the firm-level and industry-level productivity, which are difficult to calibrate and are infrequently compiled.

Our primary analysis is based on the conventional measure of competitiveness, Revealed Comparative Advantage (RCA), which we compare with alternate measure obtained from Constant Market Share (CMS) analysis. The RCA index¹ compares national export structure with the world export structure. RCA is calculated by dividing a country's share in the exports of a given commodity category by the share in the world exports of that category and is used to identify products in which a country does or does not have a comparative advantage.

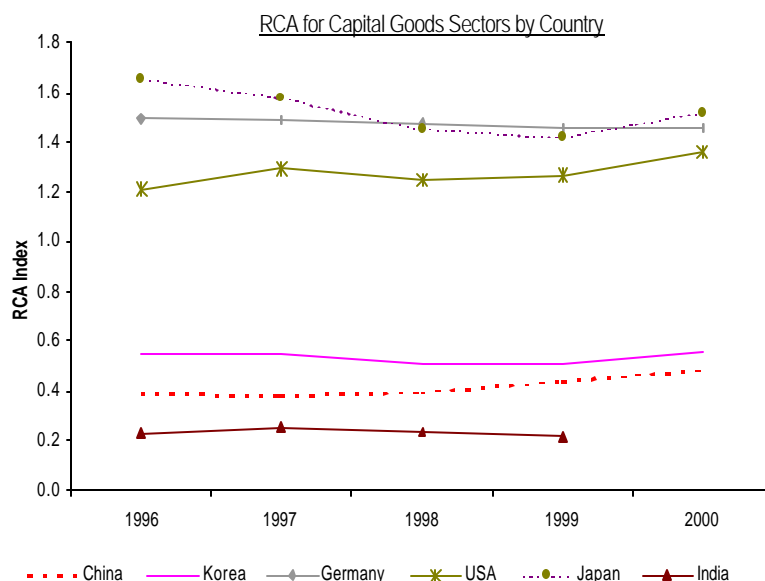
Indian Capital Goods industry exhibits relative disadvantage as evinced by low value of RCA (< 1.0), which has taken a downward dip in recent years. While both Chinese and Korean Capital Goods sector exhibits relative disadvantage, they still show an upward trend for the period under study, 1996-00. On the other hand, all benchmark countries show healthy and upwardly mobile RCA index (> 1.0), thus implying comparative advantage in favour of Capital Goods sector.

RCA values above unity for countries like USA, Japan and Germany can be attributed to the investment in advanced

factors to support the innovation, sophistication of home markets, the presence of competitive supporting industries, strong firm-level presence across value chain and efficient business processes.

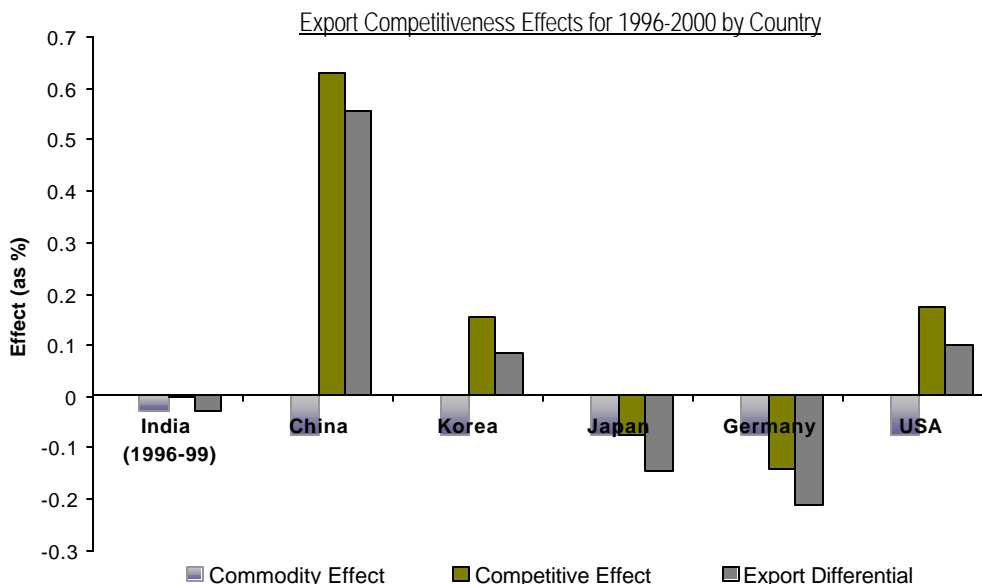
Constant Market Share (CMS) analysis looks at the export trends more closely and decomposes growth into different components which reflect changes in competitive position. The observed growth, whether negative or positive, is attributed to:

- the choice of commodities i.e. specialization in commodities for which the consumption of world is increasing (Commodity Effect)
- the choice of markets i.e. targeting of countries whose consumption is growing faster than average (Country/ Region Effect)
- the competitiveness factor i.e. increasing market penetration as reflected in market shares (Competitive Effect)



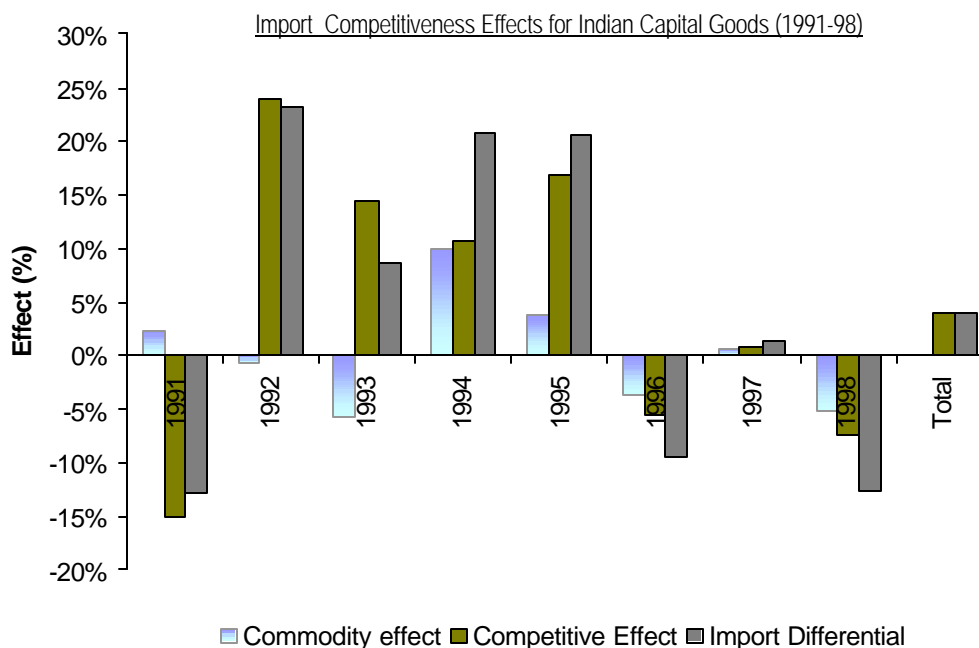
¹ $RCA = [Indian\ Export\ of\ Capital\ Goods / Total\ Indian\ Exports] / [World\ Export\ of\ Capital\ Goods / Total\ World\ Exports]$

CMS analysis bears that the Capital Goods sector worldwide has grown at a slower rate compared to the world average of all merchandise exports (i.e. negative commodity effect), hence any country that possesses a positive export differential has made it possible only through the positive competitive effect i.e. growth at the



expense of other country's sector. Indian Capital Goods sector has shown a marginally negative competitive effect between 1996-99, which combined with negative commodity effect, has resulted in a small negative differential. On the other hand, China and Korea have had much higher competitive effects to overcome the effect of a slow growing sector. Germany and Japan have exhibited negative competitive effect, while USA has managed to maintain a positive export differential.

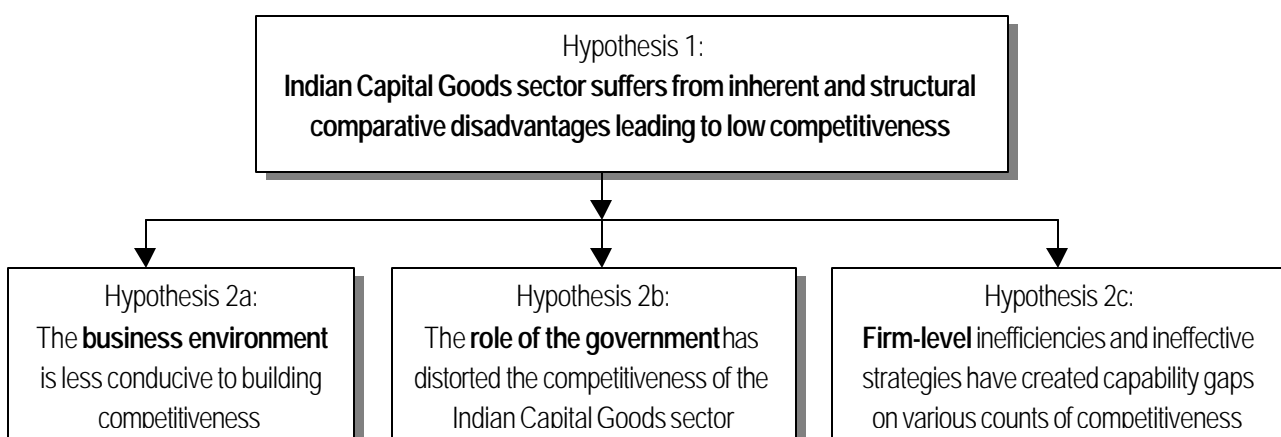
We have also used the Constant Market Share (CMS) analysis to analyze the competitiveness of Indian Capital Goods Manufacturers against imports in the domestic market. For the eight year period under observation there



has been a positive competitive effect, meaning that imports have been gaining at the expense of domestic producers in the Indian market. This competitive effect has created the resultant positive import differential despite the negative or marginally positive commodity effect over six of the eight years.

Analysis of Competitiveness Issues

To explain the performance of Indian Capital Goods sector, we have used an inductive hypothesis approach. The underlying framework for analysis has been the Michael Porter's "Diamond" Model of Competitive Advantage. The "Diamond" model identifies the four determinants of competitive advantage as - Factor Conditions, Demand Conditions, Related and Supporting Industries, and Firm Strategy and Structure. Competitive advantage is created and sustained by enhancement of these determinants and strengthening the linkages between them. Based on this overarching framework we formulated a set of hypotheses, which we then set out to prove. The analysis of competitiveness revolves around the primary hypothesis, which has been drawn down to secondary sub-hypotheses level for a more focused analysis.



Business Environment Competitiveness Issues

- Labour in the Indian Capital Goods sector is highly cost competitive, even after discounting a comparatively low labour productivity. The labour cost efficiency (which captures the cost and productivity aspects of labour) for Indian Capital Goods sector is 1.32 times that of China's and 1.38 times that of Taiwan's. Among the reference set of countries only Korea (whose labour cost efficiency is 1.31 times that of India's) outscores India on this count. But since the labour factor proportion is low (approximately 7 to 21 per cent) in the total factor usage, this does not translate into a significant relative advantage. Inflexible labour policies have also eroded this advantage partly.
- The raw materials used are largely domestic in origin. With the dismantling of various price controls on key inputs, Indian Capital Goods manufacturers now procure raw materials at market prices, which move in line with international prices. The raw material price indices have risen faster than the machinery price index. It is difficult for the Indian Capital Goods manufacturers to pass on the rise in prices to the customers, thereby impacting their profitability. However the rising cost of raw materials has prodded only a few Indian manufacturers to resort to value engineering techniques for efficient raw material usage and cost reduction. The quality of raw materials is also not up to the international standards in terms of dimensional tolerances and metallurgical properties, and this, in turn, affects the quality of the final product.

- Indian Capital Goods manufacturers have working capital requirements as high as 45 per cent of net sales (against global benchmark of 15 per cent). High interest rate regime in India results in a substantial 7 to 8 per cent interest rate differential relative to the reference countries, amounting to 3.1 to 3.6 per cent capital cost disadvantage due to interest differential and 0.9 per cent due to higher working capital requirement. It is becoming increasingly difficult for the Indian Capital Goods sector to source capital. Total bank credit to engineering sector has steadily declined from 20.3 per cent (as share of total bank credit to all industrial sectors) in 1990 to 9.0 per cent in 2000. This is largely a result of the shift from developmental banking to universal banking by financial institutions initially set up to provide finance at lower costs to industry. With a bearish capital market and reduced FDI inflow (except for electrical machinery segment), the sector has been crowded out of project funding opportunities.
- The technological competitiveness of the Indian Capital Goods sector is low. Indian Capital Goods firms present a full spectrum of technological capabilities - while there are few firms close to the international frontier in terms of product design capability and process technology, technological capabilities of most players are extremely limited. The advantage due to high availability of quality engineers and scientists is lost, partly due to brain drain and partly due to stagnation of skill sets of scientists and engineers within India. India has a number of high quality R&D institutions, but the industry–institute interactions are low, thereby reducing the chances of creation of commercially viable technologies. Capital Goods sector has a comparative disadvantage with respect to both product and process technologies. In the case of the Indian Capital Goods manufacturers, the human resources devoted to design and engineering activity is about 20 to 50 per cent less than in other industrialized countries. Although Indian firms are capable of achieving high levels of precision, they are unable to produce high quality products due to lack of supporting process technologies such as precision measuring, material engineering and process control.
- Negative perceptions about "Made in India" image have damaged the ability of Indian Capital Goods manufacturers to compete at optimal capacity in world markets, while promoting their products abroad. This invariably results in price concessions by Indian manufacturers to offset product bias in export markets, thereby compounding cost disadvantage. So strong is the negative image that leading Indian Capital Goods exporters play down their "Made in India" identity as the association of 'country of origin' is more harmful than helpful. The problem has been further exacerbated by negative self-perception of Indian buyers and lack of strong "Buy Indian" sentiment.
- The quality of infrastructure (transport, communication and power) is poor, thus affecting competitive delivery schedules and increasing operating costs. The delivery time of locally made Capital Goods in many cases is 1.5 to 2 times longer than in industrialized nations. Companies tend to lose orders on delivery schedules. Inland transport is slow, although the railroad density is among the highest in the world. The cost of electric power is comparable to that in other nations, but the reliability is poor. Many Indian Capital Goods firms have set up their own captive power plants to obviate the problem. This has added to the costs. Overall the infrastructure inadequacies are estimated to translate into 5 per cent cost disadvantage for Indian Capital Goods manufacturers vis-à-vis foreign manufacturers.
- Indian Capital Goods industry derives some degree of comparative advantage from clusterization in certain segments like foundry, electronics etc., while engineering consulting services has exhibited competitive advantages relating to the accumulation of knowledge assets and advanced tools. However, in the larger frame of picture, ancillaries and supporting industries (for bought-outs like

hydraulics etc.) are far from being competitive in terms of technical capability, quality and delivery. The industry is characterized by relative lack of sub-contracting arrangements, despite large scale SME presence in engineering sector, thus losing out on opportunities to exploit horizontal economies of scale or specialization.

- Indian Capital Goods sector is strengthened by large home demand with high growth potential (on flip side even inducing inward orientation). At the same time, low degree of buyer sophistication neutralizes any accruing size advantage as the companies can get away with less than desirable quality, with little incentive to innovate.

Competitiveness Issues related to the Role of Government

- There is comparatively high incidence of indirect taxation (excise duty, octroi duty/entry tax, Merit duty, central sales tax, sales tax, service tax etc.) in the case of the Indian Capital Goods sector when compared to taxes faced by Capital Goods sectors of other nations. Imposition of surfeit of taxes on Capital Goods sector increases the final price to the end consumer, thereby stifling demand. The cost disadvantage due to indirect taxes to Indian Capital Goods manufacturers can be as high as 24 percent in certain cases. Combining above cost disadvantages with the high cost of finance and infrastructure inadequacies, the domestic Capital Goods producers suffer from an overall cost disadvantage upto 34 per cent against the imports.
- Inversion of duty structure (higher import duty on select raw materials like copper, rubber components etc. compared to that of finished Capital goods import) results in a reduced effective protection rate for the electrical segment as a whole.
- Zero-duty imports for projects like refinery, fertilizer etc. puts the domestic Capital Goods industry at a clear disadvantage. The purchase preference in favour of public sector enterprises results in distortion of the market mechanism. It deprives the private sector firms of a level playing field and also erodes the profitability of the public sector enterprise.
- The issue of second-hand machinery imports is like a double-edged sword. Although it enables end-user industries to set up projects at lower costs, it puts the Capital Goods industry at a disadvantage. It has been seen that the domestic industry is losing its competitiveness to imports. This is further accentuated by the import of second hand goods.
- Export transaction costs for Indian Capital Goods industry are among the highest in the world. Heavy transaction costs not only increase the price of the final export product, but also result in inordinate delays in export fulfillment, thus affecting export competitiveness. According to available studies, total cost of transaction of engineering goods in India works to around 10 per cent of the total export earnings. It is further estimated that if the procedural complexities were eliminated, then the export sales of Indian Capital Goods is likely to go up significantly (by 28 per cent as per Exim Bank estimates).
- Indian Capital Goods industry also lags in strong institutional mechanisms for export credit and promotion. Credit periods in international markets ranges from 90 to 360 days at interest terms varying from 0.25 to 4 per cent with 1 to 3 years moratorium. In India the interest rates vary from 6.5 to 10 per cent. The Export-Import Bank today raises money at commercial rates from the market and is unable to offer competitive rates. India thus lags significantly in competitive institutional mechanisms that can provide short term and long term financing for exports.

Firm-level Competitiveness Issues

- The ownership pattern in Indian Capital Goods Industry is marked by the dominance of Public Sector Enterprises (PSEs) in heavy engineering, machine tools, boiler manufacturing, while private firms prevail in industrial machinery segments such as cement, sugar and most other non-electrical machinery. The impending privatization of these large PSEs would radically change the industry structure. The firm structures and their ownership pattern at the end of the privatization process would significantly affect the development of this sector in the future.
- The Indian Capital Goods sector at present is concentrated in terms of output shares. In most product groups, there are a few companies at the top of the pyramid, generally large Public Sector Enterprises (PSEs), followed by a middle layer of companies comprising large private companies and Multi-National Companies (MNCs) operating in India and a large number of small units at the bottom. Although the last decade has seen the decline in PSE's market share, the dominance of PSEs is partly maintained through preferential policies like purchase preference. This results in sub-optimal market functioning, leading to less innovation and thereby low competitiveness.
- Indian Capital Goods sector is characterised by a large width of products (almost all major Capital Goods are domestically manufactured) - a legacy of import-substitution policy. This is reflected in the import and export weights calculated for the various reference and benchmark countries. The import weight is defined as the ratio of imports to domestic consumption and the export weight as the ratio of exports to total domestic production. Low values for both weights would indicate an inward oriented economy focused on catering only to its demand through domestic production. In the case of India, the import weight works to 21 percent, while the export weight is 7 percent. A case in point is the vibrant German Capital Goods sector, which has an import weight of 32 percent and export weight of 41 percent with a self-sufficiency of 115 percent. Even nations with advanced Capital Goods sector do not produce the entire range of Capital Goods, but instead focus on select segments or sub segments. The Indian Capital Goods sector, on the other hand, lacks sufficient depth largely due to low demand sophistication of the Indian market, thus, resulting in comparatively low competitiveness.
- Indian firms, in general, lack export thrust in their marketing strategies. The emergence of global market, through lowering of tariff barriers, has led to blurring of margins between domestic and export markets. Worldwide Capital Goods firms are increasingly becoming global in operations. Very few Indian firms have a global mindset. The focus is largely on the domestic market; exports gain importance only in case of fall in domestic demand.
- Most Indian manufacturers define quality of Capital Goods largely by performance parameters and dimensional accuracy, and not in terms of aesthetics or finish of the goods. Most Indian Capital Goods are functionally at par with equipment made elsewhere in the world, but they rank poorly as far as finish is concerned. This has adversely impacted the competitiveness of the Indian Capital Goods in a discriminating and sophisticated export market.
- The limited presence of Indian Capital Goods firms in the value chain leads to diminished cost and differentiation advantage. An emerging trend amongst Capital Goods companies around the world is the transformation of these engineering companies to a more service based organization. Some large international firms earn a substantial proportion of their revenue from services through significant investment in downstream activities.

- Indian firms invest less in marketing activities and have low customer orientation. Very little effort is expended on branding. Investments in marketing, increased customer orientation and branding could act as entry barriers for foreign firms into the Indian market. The trend internationally has been towards adopting a solutions approach to selling. Indian firms continue to adopt a product-oriented approach towards their customers.
- Firm level innovation is very low in India. Indian Capital Goods firms source technology, but very few of them improve upon it. The research spending as a percentage of sales amongst Indian Capital Goods is low when compared to the R&D spends of companies in Taiwan and Korea.
- Indian Capital Goods firm operational efficiencies are comparatively low. Very few Indian firms use technology to make their business processes like procurement, distribution, marketing and servicing more efficient. Also the use of techno-managerial processes like JIT, TQM, TPM etc. are limited to large firms only.

Competitiveness Analysis by Segment

Drawing from the competitiveness analysis of Capital Goods sector, we examine the issues in the segmental context. The segmental analysis reveals that many of the broad competitiveness issues are common across all the five segments studied. However, these issues impact each segment to a varying degree, as follows:

- Indiscriminate second-hand machinery imports and lack of buyer sophistication in weaving and finishing sub-segments have badly affected the competitiveness of the Indian textile machinery industry
- Sluggish investment demand in engineering sector, coupled with lack of export thrust and technology focus has led to low competitiveness of machine tools sector
- Lack of domestic demand for electrical and power equipment due to failure in implementation of planned power and infrastructure projects has dented domestic firms' profitability, thereby reducing competitiveness
- Lack of domestic demand and imports of second-hand machinery are major factors affecting competitiveness in the earthmoving and construction machinery sub-segment
- Absence of large Indian Lump Sum Turnkey (LSTK) operators, lack of referrals and zero- or 5 per cent import duty on process plant equipment in certain sectors have affected competitiveness in the process plant and machinery segment

Exportable Capital Goods and Destinations

To leverage the strengths of the Capital Goods sector and work on the opportunities available, the Indian Capital Goods Sector needs to focus on those products that show potential. In addition to this, these products have to be targeted at select promising markets to enhance the chances of success. The basket of exportable products is shown below:

Exportable Products from Capital Goods basket

Textile Machinery

- | | |
|----------------------------|---|
| * Textile Yarn Machinery | * Weaving, felt manufacturing machinery etc |
| * Sewing Machinery & Parts | * Auxiliary textile machinery and parts etc |

Machine Tools

- | | |
|-------------------------------|--|
| * Metal working lathes | * Parts of metal working machine-tools |
| * Metal Forming Machine Tools | |

Electrical and Power Equipment

- * Piston engines including diesel engines
- * Electrical Transformers
- * Steam Turbines
- * Steam Boilers
- * High Voltage Electrical Machinery
- * Electrical Power Equipment other than Transformers
- * Parts of Internal Combustion Engines
- * Parts of rotating electric plant

Earthmoving and Construction Equipment

- * Earthmoving and Boring Machines

Process Plant Equipment

- * Commercial refrigerating equipment
- * Centrifuges
- * Gas generator, air liquefier

Other Machinery and Equipment

- * Cultivating Machinery
- * Metal Rolling Mills
- * Parts of air pumps, fans etc
- * Centrifugal Pumps
- * Parts of Pump and Liquid Elevators

In general, the favourable export destinations (defined as high value importing and having growth rates higher than world average growth rates) for the above Capital Goods include European Union, USA, North America, ASEAN and China. Similarly, with certain exceptions, the potential destinations (defined as currently low value importing and having growth rates higher than world average growth rates) for these Capital Goods include Middle East, CIS, South America and Eastern Europe. Surprisingly Japan does not figure high on the potential exportable destinations; this is understandable given the closed nature of Japanese Capital Goods market.

The focus product strategy should target to improve the competitive effect (assuming that negative commodity effect is a given condition and is, therefore, an exogenous variable), while the focus market strategy should target to export in those countries with high country/ region effects and large imports. Below we enumerate the strategies for exportable products in the four types of markets:

Strategies for exportable products in export markets

Type of markets	Strategy
Favorable	Invest in these markets to increase export growth rates. Transfer learning experiences in these markets to others
Potential	Invest in these markets to increase market shares
Sluggish	Maintain current investments. Aggressive marketing to gain at competitors' expense
Wait & Watch	De-emphasise but continuously monitor these markets. Carry out opportunistic exports

Further to above competitiveness analysis, the study formulates strategic initiatives that leverage the advantages that we possess, overcomes the selective disadvantages, seizes the opportunities and minimizes the impact of threats.

Strategic Goals for Indian Capital Goods industry

The strategic goal for the Indian Capital Goods sector can be represented a multiplier of value of production and export weight. We have created medium-term (2002-07) and long-term (2007-12) scenarios, co-terminus with tenth and eleventh five-year plan. Below we enumerate the strategic goals under the two scenarios:

Table: Scenario for Strategic Goals

Scenario	Terminal Year	Input Variables			Output Indicators		
		VoP (in billion \$)	VoP CAGR	Export Weight	Export Value (in billion \$)	Export CAGR	RCA Index
Baseline	2001	20.0	-	5%	1.00	-	0.20
Medium-term	2007	31.7	8.0%	20%	6.35	36.2%	0.91
Long-term	2012	51.1	12.0%	30%	15.33	19.3%	1.51

In the medium-term scenario, the Indian Capital Goods industry should strive to close on the global competitiveness level ($RCA \geq 1$). The overall strategic goal of achieving \$ 6.35 billion Capital Goods exports by 2007 can be further decomposed into sub-goals as follows:

$$\begin{aligned} \text{Target Export Value in 2007} &= \text{Target VoP in 2007} \times \text{Target Export Weight in 2007} \\ &= \text{growth in (Labour \& Capital Input, Total Factor Productivity)} \times \text{Target Export Weight in 2007} \end{aligned}$$

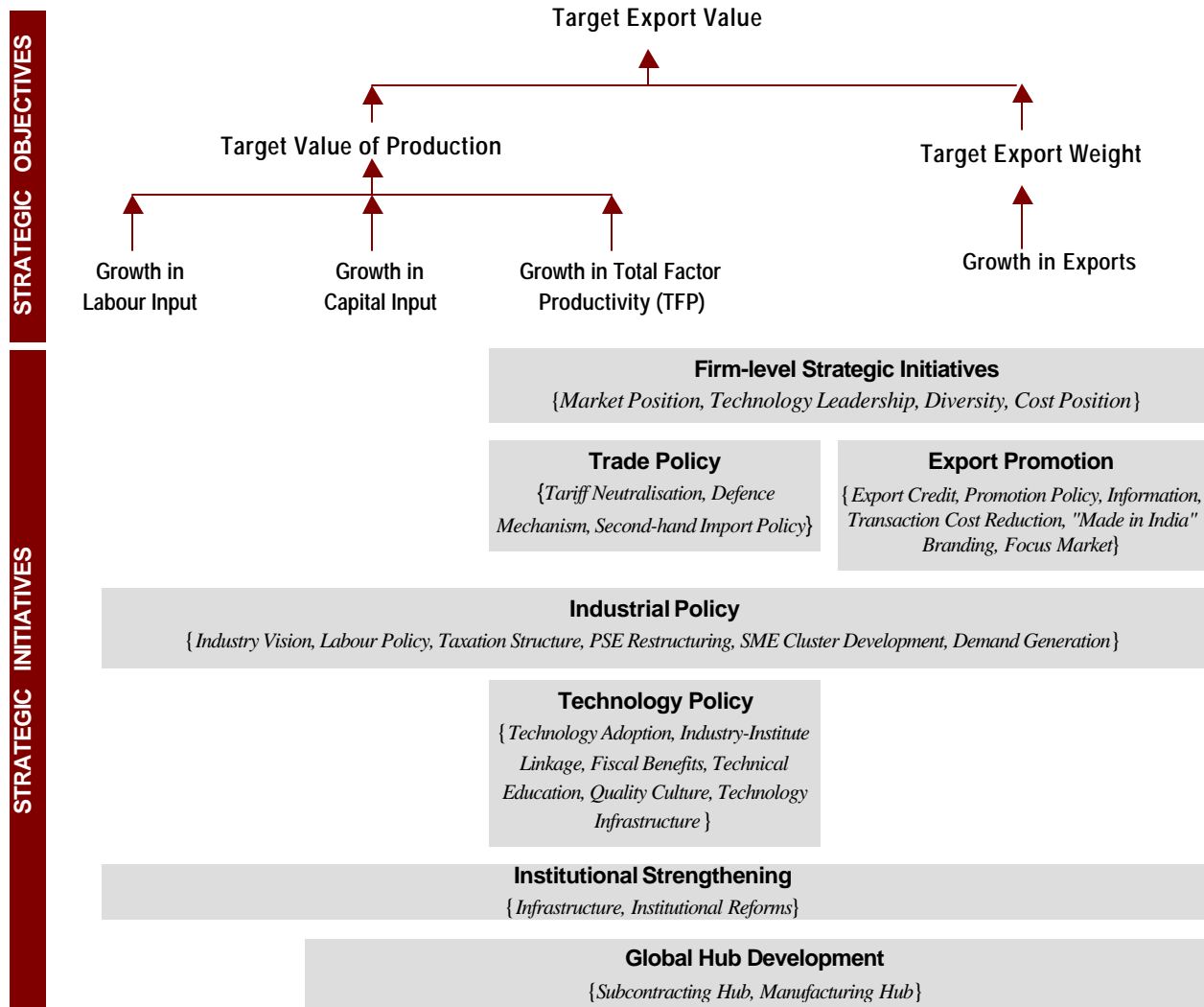
Thus a two-pronged thrust is needed to achieve export competitiveness. The productivity growth is obviously preferable to growth due to increases in factor inputs, since the latter might be subject to diminishing marginal returns. Also since the factor inputs are usually supply-constrained in short and medium run, an improvement in factor efficiency is distinctly more significant.

The sources of TFP growth for Indian Capital Goods industry broadly comprise infrastructure, reorientation in the industrial policies, restructuring of PSEs and adoption of technology. The growth in TFP has to be complemented by increased export orientation resulting in higher export weight for Indian Capital Goods.

Strategic Initiatives

Below we discuss the strategic initiatives geared to enhancing export competitiveness of Capital Goods sector. Given that resources and skills in the government and the economy at large are very limited, it is best to adopt a targeted approach where the Capital Goods sector can get maximum “bang for the buck” in terms of response to strategic initiatives. For better actionability, we have also identified actors and facilitating agents associated with each of the proposed initiatives.

Schematic Representation of Strategic Initiatives



Firm-level Strategies

- Enhance Market Position [*Capital Goods Firms*]
 - Attain market leadership through acquisition and consolidation to gain economies of scale in a price-sensitive industry. Market leadership will also create clout with distributors and make it easier to reinvest in maintaining product leadership.
 - Build and nurture brands for creating a franchise in the export markets and stabilising market shares in a sector characterised by slow pace of technological development

- Enhance value-chain presence by providing custom-engineered products and special design services to cement relationships with customers and mitigate price pressures
 - Provide value to the customers in terms of return on investment with emphasis on solutions-approach instead of product-approach to selling. In order to satisfy demanding customers, Capital Goods firms can provide better value-for-money by either adding more sophisticated controls or reducing equipment complexity.
 - Build and strengthen distribution channels through direct marketing channel in export markets or regional distribution network to sell on 'stock-and-sale' basis
- Build technology leadership [**Capital Goods Firms**]
 - Adopt latest product and process technologies to enhance product quality, productivity, manufacturing flexibility, and operating efficiency. Allocate more resources for in-house R&D in product development.
 - Embrace technologies in business processes by investing in internet technologies (like e-commerce through b2b e-markets or private exchanges, e-procurement, e-CRM etc.) and supply chain management to provide better value to the customers (in terms of pricing and convenience), and to boost profitability by finding new avenues of sales growth and productivity gains
 - Increase emphasis on diversified product lines, customer bases, and markets [**Capital Goods Firms**]
 - Build diversified product lines to reduce business risk and mitigate cyclical pressures. New products, offering increased value to customers, enable the price base to be reset, also easing price pressures. However, Indian Capital Goods firms should guard against over-diversification, which would dilute focus and core competency.
 - Enhance service-orientation and focus on fee-based activities to optimise mix of project services and products portfolio
 - Increase presence in after-market products (used in maintenance and repair functions) as these are less sensitive to general economic conditions and may even be counter-cyclical
 - Diversify customer base to ease price pressures and protect against a sudden loss of demand
 - Expand global presence and diversify export market to help offset downdrafts in some areas by upswings in others. Export should not be seen merely as an opportunity for short-term gains. Long-term market development is must for building exports as the cornerstone for growth strategy. Indian Capital Goods companies should also tailor strategies to the needs of local markets.
 - Enhance Cost Position through improved internal controls and efficient use of assets [**Capital Goods Firms**]
 - Improve operating efficiency through constant initiatives (like vendor supply system, consortium-based purchase of imported inputs etc.) to lower pricing pressures
 - Promote subcontracting and outsourcing of non-critical activities to limit fixed-capital investment. Globally most original equipment manufacturers (OEMs) are increasingly outsourcing many products and services to focus on their core competencies and add value at the lowest cost.
 - Restructure operating units from a business-portfolio perspective to stabilise profitability through realignment or headcount rationalisation

Trade Policy Measures

- Rationalize inverted tariff structure to ensure level-playing field so that it promotes technology, manufacturing and value addition within the country. Rationalisation can be achieved through application of uniform tariff rate across imported inputs and finished Capital Goods. **[Government]**
- Suspend zero customs duty applied to project imports (for fertilizer/ coal mining/ power generation/ refinery) to alleviate the impact of cost disadvantage to indigenous Capital Goods manufacturers. The withdrawal has to be made in a pre-announced, time-bound manner so that the project goods user industry gets sufficient time to adjust to change in tariff structure. **[Government]**
- Adopt balanced policy for second-hand imports
 - Apply existing policy guideline (which appears adequate for balancing the opposing interests of Capital Goods and user industries) for second-hand Capital Goods imports selectively to each sub-segment. However, depending on the degree of import threat, guidelines could be tightened by raising the equipment age slab, imposing higher duty (upto the duty on the price of new model) and stricter approval norms. **[Government]**
 - Prevent under-reporting of second-hand equipment age by insisting on certification of age and value from institutes like SGS, Lloyds, Bureau Veritas etc. **[Government]**

Industrial Policy Measures

- Develop industry vision for Capital Goods sector. Such common strategic vision will not only provide broad signals to investors but also assist in coordinating the efforts of all concerned stakeholders in identifying targeted strategic goals for production and exports, and developing guidelines for public-private resource mobilization. **[Associations - Capital Goods Council, CII] [Government - DIPP]**
- Legislate flexible labour policy to enable manufacturers to restructure labour force in response to market needs. Given the cyclical nature of export production in Capital Goods sector, such flexible labour policy is needed for foreign investment infusion. **[Government]**
- Restructure and reorient Public Sector Enterprises (PSEs)
 - Undertake turnaround strategies and financial restructuring for failing and sick Public Sector Enterprises (PSEs) **[Government]**
 - Align and encourage successful PSEs towards export **[Government]**
 - Prepare PSEs for non-protectionist regime sans purchase preference etc. The restructuring needs of existing PSEs requires a gradualist and pro-active approach to allow these enterprises some time for “relearning” and new capability acquisition, after which they can cope with competition and establish a position in export markets. **[Government]**
- Promote capability of developing Capital Goods SME clusters by drawing up an SME master plan
 - Strengthen SME financing and provide assistance package for incubation of SMEs **[Government]**
 - Upgrade technological and managerial capability of SMEs by enhancing technology transfer from large enterprises to SMEs **[Government - SME Development Council] [Association - Capital Goods Council]**
 - Develop human resources for SMEs through institutional support for training and skill development **[Government - SME Development Council] [Association - Capital Goods Council]**

- Secure SMEs' market through strengthening of export promotion activities for internationalisation of production **[Government - SME Development Council]** **[Association - Capital Goods Council]**
- Improve business environment for SMEs by developing information technologies and networks for SMEs, and improving standards and conformance infrastructure to promote export **[Government - SME Development Council]** **[Association - Capital Goods Council]**
- Rationalise indirect taxation structure to reduce cost disadvantage to domestic Capital Goods producers. Expedite introduction of uniform value-added tax (VAT) system to reduce the incidence of multiple taxation and hence enhance price competitiveness in export market. VAT will reduce distortions caused by double taxation and provide impetus to subcontracting activities. **[Government]**
- Scrap the existing Purchase Preference to PSEs to provide level playing field to private Capital Goods producers. This policy has outlived its utility and is likely to become redundant over a period of time due to impending disinvestment of PSEs. **[Government]**
- Initiate measures to generate domestic demand for Capital Goods
 - Expedite implementation of sanctioned infrastructure projects on priority basis to create investment-driven demand for Capital Goods industry. Necessary mechanism should be created for speedy closure and implementation of infrastructure projects. **[Government]**
 - Provide for accelerated depreciation of select indigenous Capital Goods to stimulate more investment by domestic user industry in Capital Goods **[Government]**
 - Provide special incentives to SMEs for usage of modern machinery. These incentives could include tax holidays, reduced interest rate on borrowings and excise duty relief. Such fiscal relief on Capital Goods bought by the small sector would encourage them to procure modernised machines to upgrade their manufacturing system and product quality, while bringing Capital Goods manufacturers production to high-volume/ low-cost positive cycle. **[Government]**

Export Promotion Measures

- Facilitate availability of export credit at internationally competitive rates
 - Provide competitive terms for short-term export finance to meet the pre- and post- shipment needs of Capital Goods exporters to complete the export production and sales cycle successfully **[Government]** **[Supporting Players - Banks]**
 - Facilitate availability of competitive working capital and export credit for Capital Goods companies. It must be emphasized that, generally, it is availability rather than the cost of export finance, which has acted as an export constraint. Thus, a specialised institution like Exim Bank has a crucial role to play in ensuring adequate and competitive credit flow to the export sector. **[Government]** **[Supporting Players - Banks]**
- Implement exports promotion measures. Government of India has an elaborate export promotion system in place. While the design of export promotion policies has been well intentioned, their actual implementation has often led to problems that have diluted their overall effectiveness.
 - Simplify and make transparent export subsidy schemes to enable expeditious refund of taxes to the exporters **[Government]**
 - Incentivise export market development **[Government]**
 - * Create export promotion fund for developing new export market. Reserve funds from tax-exempt income can be utilised to create export promotion fund.

- * Provide fiscal incentives to promote export-oriented Capital Goods firms to develop and deepen export markets
- Initiate Purchasers Relationship Initiatives like regular buyer-sellers meet between key purchasing executives of major global Capital Goods sourcing companies and Indian Capital Goods exporters. The objective of such intensive contacts should be to sell the image of Indian Capital Goods manufacturers as high-quality, high-reliable suppliers. **[Association-Capital Goods Council, CII-IBEF] [Government-DGFT, EEPC, Foreign Embassies]**
- Promote trade fairs, trade missions, reverse trade missions, catalogue shows etc. between foreign buyers and Indian exporters. These activities can be supported through direct fiscal support or financial incentives by the government. **[Association-Capital Goods Council, CII-IBEF] [Government-DGFT, EEPC, Foreign Embassies]**
- Diversify exports in terms of both products and markets and formulate a common promotion strategy (jointly between public and private sector) **[Association - Capital Goods Council]**
- Disseminate product and market intelligence to improve access to comprehensive information critical for exports of Capital Goods. Dissemination of information should include detailed communication regarding specific trading initiatives, product-based market prospects both at home and abroad, information referral services of prospective clients etc. Re-energise information dissemination mechanism of export promotion and other allied agencies. So far their effectiveness has been affected by various factors like dispersion of efforts among a number of agencies and lack of coordination, inadequate expertise and paucity of resources for optimal operations. **[Association - Capital Goods Council, CII] [Government - Indian Missions, EEPC] [Supporting Players - International Marketing House]**
- Promote "Made in India" label as a part of conscious strategy to project India as a world-class supplier of reliable, quality goods and services. The promotion should be two-pronged:
 - a local promotion, "Buy Indian", by which Indian manufacturers must be urged to work co-operatively to promote the values of buying Indian Capital Goods
 - a global promotion, "Made in India", targeting business overseas, country by country with one consistent message

Although the initial impetus has to come from the government, such strategic communication campaign requires a high degree of grassroots support from the manufacturers/ exporters - owned and operated entirely by business community. **[Government - National Competitiveness Council, Ministry of Commerce] [Association - CII-IBEF Team]**
- Establish a dedicated, nodal Capital Goods export trading house to cater to medium and small-scale exporters who lack the resources and infrastructure to export effectively. The export house should also play a leading role in implementing and operationalising export promotion strategies in close collaboration with export promotion agencies and industry associations. **[Association - Capital Goods Council] [Government - EEPC, DGFT]**
- Adopt multi-fold strategies to reduce export transaction costs. Simplify existing procedural complexities by automating and systematising the procedures. Government should keep abreast with the technological developments (like UN EDIFACT etc.) to reduce documentation to the minimum required level. **[Government - National Competitiveness Council]**

Technology Initiatives and Policies

- Develop and restructure technology infrastructure to support firms striving to improve their technological capabilities and competitiveness.
 - Drive public R&D institutes and laboratories to become more demand-driven and service-oriented, and make the resource allocation (government budgetary support) more performance driven. R&D institutes should acquire international accreditation for granting product certification in India and for providing, in competition with private consulting firms, effective technological extension services in order to help firms improve their manufacturing and design capabilities. **[Government - Department of Science & Technology, National Competitiveness Council] [Supporting Players - R&D Institutes]**
 - Improve coordination among R&D programs through merger and consolidation of institutions that work in similar areas to create "Centres of Excellence". Institutionalise use of peer and technical panel reviews of public R&D proposals and programs to promote joint public/ private sector R&D activities for better monitoring and evaluation systems. **[Government - DST, NCC] [Supporting Players - R&D Institutes]**
 - Promote strong linkages between R&D institutes, universities, industrial extension agencies and manufacturing enterprises. Emphasize on international cooperation between R&D institutes and build linkages for technology development and technology transfer. Equip national institutes for providing contract R&D services to international Capital Goods players. **[Government - DST, NCC] [Supporting Players - R&D Institutes, Universities etc.]**
 - Promote Capital Goods industry networks for a consortium approach to industry R&D activities and integrated development of new product designs and production processes, with the intensive involvement of and collaboration with suppliers.**[Association - Capital Goods Council, CII] [Capital Goods Firms]**
- Focus on selected manufacturing technologies and products
 - Encourage Capital Goods firms, through the dissemination of relevant information, to acquire arms' length technology through technology licensing, technology transfer agreement, reverse engineering and adaptation to build their own capabilities **[Association - Capital Goods Council] [Government - TIFAC] [Capital Goods Firms]**
 - Establish **Technology Trackers** in leading Capital Goods countries (Germany, Taiwan, Japan and USA) to track development of technology in key segments **[Association - Capital Goods Council]**
 - Encourage application of technologies (like business-to-business e-commerce, CRM, TPM, TQM etc.) at the enterprise level through rapid build-up of awareness of need, diagnosis of critical technological requirements, technology transfer management, and monitoring and forecasting of technology, as well as entrepreneurship development. **[Government - National Competitiveness Council] [Association - Capital Goods Council] [Capital Goods Firms]**
 - Promote technology-based FDI partnerships between foreign and local enterprises especially in medium-scale SMEs with the view of developing India as global outsourcing and subcontracting base **[Government - SME Development Council]**
 - Establish entrepreneurship development programs at engineering and R&D institutes for goal-directed promotion of business ideas **[Government - National Competitiveness Council] [Capital Goods Firms] [Supporting Players - Universities]**
 - Maintain competitive pressures on the demand side by adopting a well-formulated competition policy and intellectual property protection regime. Promote application of environment-friendly and safety standards to upgrade the standardisation level to global level and hence promote export

competitiveness **[Government - National Competitiveness Council]** **[Association - Capital Goods Council]**

- Upgrade Technological capabilities of Capital Goods SMEs
 - Provide an effective outreach program to SMEs through designated public R&D institutes, starting with effective dissemination of information on standards to help SMEs improve technological capability **[Government - SME Development Council]** **[Association - CII, Capital Goods Council]**
 - Develop subcontracting and encourage integration of SMEs in the overall Capital Goods sector, through vendor improvement and certification programs, as suppliers of raw materials, intermediate inputs and components **[Government - SME Development Council]** **[Association - Capital Goods Council]**

- Provide fiscal benefits to Capital Goods firms for R&D
 - Provide tax exemption and other incentives for R&D and in-plant technical training by using any of the following instruments: tax credits for R&D expenses, and accelerated depreciation and reduced import duties for investments in R&D facilities **[Government]**
 - Utilize Technology Development Fund (TDF) to finance indigenous R&D activities. Energize Technology Upgradation Fund (TUF) by extending this grant to select non-textile industry and providing flexibility in its usage **[Government]**

- Develop technical education and training facilities
 - Revive interest for existing higher technical education towards core engineering stream by revising outdated curriculum, adopting interdisciplinary approach and increasing relevance to industrial application. Capital Goods industry should strive to attract and retain the best engineering talents. **[Government - Department of Science & Technology]** **[Association - Capital Goods Council]** **[Capital Goods Firms]** **[Supporting Players - Universities]**
 - Encourage private sector to establish and operate demand-driven technical training centres through financial and other incentives, under carefully designed industry initiatives, supported and coordinated by government, for quality control and accreditation systems **[Government - Department of Science & Technology]** **[Association - Capital Goods Council]**

- Promote quality culture
 - Encourage widespread adoption of quality management standards like ISO 9000 for export markets through a concerted campaign combining finance, publicity, technical assistance, training and equipment provision **[Government - National Competitiveness Council]** **[Association - Capital Goods Council]** **[Capital Goods Firms]**
 - Encourage application of total quality and productivity programs like Total Preventive Maintenance (TPM), Continuous Improvement Program (CIP), minimum waste of energy, materials and time, zero defects and other aspects of quality to reduce production inefficiencies and enhance the competitiveness of firms. To reach out to companies, productivity centres and technical institutes and centres should be in a position to provide effective and competent extension services. **[Government - National Competitiveness Council]** **[Capital Goods Firms]**
 - Align Indian Capital Goods certification standards to international standards. The existing testing and certification agencies like Bureau of Indian Standards (BIS), Central Power Research Institute (CPRI) etc. should be equipped and upgraded to qualify for international accreditation **[Government - Department of Science & Technology]**

Global Capital Goods manufacturing and subcontracting hub

India as Capital Goods Subcontracting Hub

Subcontracting opportunities are highest for standardised supply, and standardised modules and components of customised supply. Integration of global markets and growing price pressure has increased the potential for global subcontracting.

In this context European Union and US Capital Goods companies have pioneered international subcontracting, as the growing labour costs has induced a relocation of labour-intensive production to other countries. Most global companies have shown stronger disposition for subcontracting to Asian countries, especially China and India that also happen to have fairly deep and wide range of capabilities in Capital Goods manufacturing. Though Chinese Capital Goods sector is much larger (over five times) than that of India, the latter holds a distinct edge in terms of stronger supplier and related industries.

Strategy for India as global subcontracting hub

- Encourage and create infrastructure for subcontracting through Subcontracting Exchange Network. Both government and industry should take initiative to attract subcontracting business from international OEMs and make India a major destination for Capital Goods subcontracting. Growth of the units taking up contracting activities as above should be promoted through Brand Equity funds and other measures and incentives.
[Government - SME Development Council]
[Association - Capital Goods Council]
- Promote and upgrade SME clusters for Capital Goods components and standardised modules. The subcontractors' production technology and production organisation has to match global standards to gain acceptance with international Capital Goods OEMs.
[Government - SME Development Council]
[Association - Capital Goods Council]
[Supporting Players - UNIDO]

India as Capital Goods Manufacturing Hub

The growing propensity for international relocation of manufacturing facilities is driven by the need for proximity to major markets and vertical specialisation based on location factor advantages. Our analysis of segment-wise export destinations reveals that Asia (mainly Middle East, ASEAN and China) is the fastest growing market for Capital Goods.

Another driver for international relocation is the difference in the product standards prevailing in European and US markets. For example, EU follows IEC standards for electrical engineering goods, while USA has adopted NEMA standards. Such technical compulsions have driven US Capital Goods companies to relocate manufacturing facilities to standards-neutral countries like India from where they can export IEC-compatible engineering goods to Europe. India can exploit opportunities arising out of trade barriers.

Strategy for India as global manufacturing hub

- Devise policies to attract FDI for setting up export-oriented units (EoU) **[Government - National Competitiveness Council, FIPB]**
- Establish Special Economic Zones (SEZs) with favourable infrastructure, export-oriented policies and necessary tax benefits for reducing transaction costs, providing single window of clearances etc.
[Government]
- Developing competitive business environment as detailed in this chapter **[Government]**
[Association - CII, Capital Goods Council]
- Build capacities and capabilities in series/ standardised supply. The migration of most European and US companies up the value chain into customised supply will provide a big opportunity for Indian Capital Goods industry. **[Capital Goods Firms]**

Institutional Strengthening Measures

- Develop and upgrade overall domestic infrastructure through prioritised implementation given the limitation on resources. The private sector involvement in the provision of infrastructure services should be encouraged through the establishment of a supportive regulatory framework for private investment, and the commercialization and privatization of existing transport, telecommunications and energy generation assets. **[Government - National Competitiveness Council]**

- Strengthen industry associations like CII Capital Goods Committee and other Capital Goods segment associations.
 - Establish National Competitiveness Council (NCC) as an advisory body to for steering the global competitiveness agenda. **[Government] [Association - CII]**
 - Establish Capital Goods Council, an apex organisation, with the primary objective to act as catalyst for competitiveness of the Capital Goods sector. Capital Goods Council will be a clearly accountable group with well-defined roles for various cells such as export promotion, technology, industry affairs and communication. **[Government] [Association - CII-Capital Goods Committee]**

Implementation Mechanism

Implementation Plan

With ongoing initiatives competing for scarce resources, there is a need to clearly define the implementation themes to help mitigate the dangers of sub-optimized success. The key initiatives have, therefore, been prioritised on the basis of 'ease of implementation' and 'benefit impact' mapping to identify quick hits and pain points.

The implementation plan for strategic initiatives is actionable only if accompanied by roadmap indicating the mechanisms, time-scales and responsible stakeholders for achieving the desired objectives. In consonance with the above philosophy, key initiatives have been mapped into clearly actionable projects.

Table: List of High-Priority Strategic Initiatives

Projectised Initiatives	Non-Projectised Initiatives
<ul style="list-style-type: none"> • Establish Capital Goods Council • Develop industry vision for CG sector • Develop Global Manufacturing Hub • Develop Global Subcontracting Hub • Promote SME clusters • Develop and restructure Technology Infrastructure • Reduce Export Transaction costs • Create and Nurture "Made in India" Brand • Strengthen linkages between Institute & Industry • Adopt focus Product-Market strategies • Focus on select technologies • Establish International Marketing set-up • Develop Information dissemination system • Initiate Purchasers Relationship initiatives 	<ul style="list-style-type: none"> • Establish National Competitiveness Council • Create adequate Infrastructure • Facilitate competitive Export Credit • Adopt flexible Labour Policy • Rationalise Indirect Taxation Structure • Implement Infrastructure Projects • Incentivise Export Market Development • Simplify and promote Export Subsidies • Provide fiscal benefits for R&D • Develop technical education • Allow accelerated depreciation of Capital Goods • Adopt balanced policy for second-hand imports

Implementation Structure

Currently the CII-Capital Goods Committee provides the voice to the sector, along with a number of other Capital Goods segments associations. The role of CII-Capital Goods Committee has largely been limited to representing and consolidating the concerns of the sector at various government fora. Also the dispersion of efforts among a number of agencies and lack of co-ordination has impacted the effective implementation of various initiatives.

Key to successful implementation, therefore, is to institute a permanent, apex organisation - Capital Goods Council, which will be a clearly accountable group with the maximum stake, incentive and information to "get it right". The primary objective of Capital Goods Council should be to act as catalyst for competitiveness of the Capital Goods sector.

The role of various cells within the council should be well defined in terms of accountabilities, performance measures and the inter-cell relationships. Each cell has been designed with the need to champion critical and different spheres of actions like export promotion, technology, industry affairs and communication. This must be supplemented by integrating mechanism to provide cohesion to the council's actions.

The Capital Goods Council should be managed as a not-for-profit organisation and led by a full-time President. Each of the above cells should be headed a full-time director, who will, in turn, report to the President of the Council. The Council should be chaired by the chairman of the existing CII-Capital Goods Committee (in the interim structure) or nominated representative of National Competitiveness Council.

The initiatives pursued by the Capital Goods Council have to be in line with the industrial policies, trade policies and regulations governing the overall industrial climate in India. It is, therefore, imperative that an advisory body is created to spearhead the overall competitiveness efforts. India needs to adopt global competitiveness as its national agenda and constitute an advisory body, National Competitiveness Council (NCC) to "consider issues relating to the government's broader economic policies, in particular measures to improve productivity and global competitiveness of the Indian economy". Capital Goods Council will be designated as a sub-council, under the aegis of NCC, to spearhead the competitiveness of Capital Goods sector. The membership of NCC should have a wide-range representation from ministers and senior levels of government, select industry leaders from the private and public sector, and technical institutions.

In order that the implementation plan is successfully implemented, the Capital Goods Council should be given sufficient teeth to spearhead the efforts towards guiding the competitiveness of the industry. Also the action of various players must be orchestrated to achieve a harmonised growth towards creating a globally competitive Capital Goods sector.