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CII 10th Manufacturing Summit 2011: "Indian Manufacturing at a Point of Inflection"

Background Note to the Conference

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CII has taken up the agenda of "Business for Livelihood" for the year 2011-12. This converges the fundamental themes of spreading growth to disadvantaged sections of society, building skills for meeting emerging economic compulsions, and fostering a climate of good governance. In line with this, CII is placing increased focus on Affirmative Action, Skills Development and Governance during the year.

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1. Context

The CII–BCG report on the Indian manufacturing sector published in January 2010 had set a bold aspiration for the industry to grow from 16 percent to 25 percent of the Indian GDP by 2025, creating 100 million additional jobs for the economy. The report had identified key issues and proposed an action agenda for the Indian manufacturing sector to achieve this aspiration.

Over the last two years since the publication of that report, our manufacturing output has continued to grow below its true potential and remains at 15–16 percent of GDP. Demand has slowed down. Existing issues of skills, infrastructure, and depth of manufacturing continue to be germane. Older issues such as strained labour relations have re–emerged again. On the other hand, there are also several positives. For example, India's competitive position for export–oriented goods vis–à–vis China is now stronger thanks to a weak rupee and a stronger Yuan, coupled with increase in China's labour rates. Most importantly, the Indian Government has for the first time articulated a bold target of achieving 25 percent contribution to GDP for the sector in its recently released National Manufacturing Policy, which also lays down a reform agenda to achieve this target.

Given this context, it would be fair to say that the Indian manufacturing sector is at a point of inflection. We could continue with the moderate growth and competitiveness of recent years and perform below our potential, held back by the constraints we face today, or we could see the industry embarking on an aggressive growth path, driven by proactive structural and policy changes and its improved competitiveness. The CII manufacturing summit is set against this backdrop, and will feature several sessions linked to this theme of growth and competitiveness.

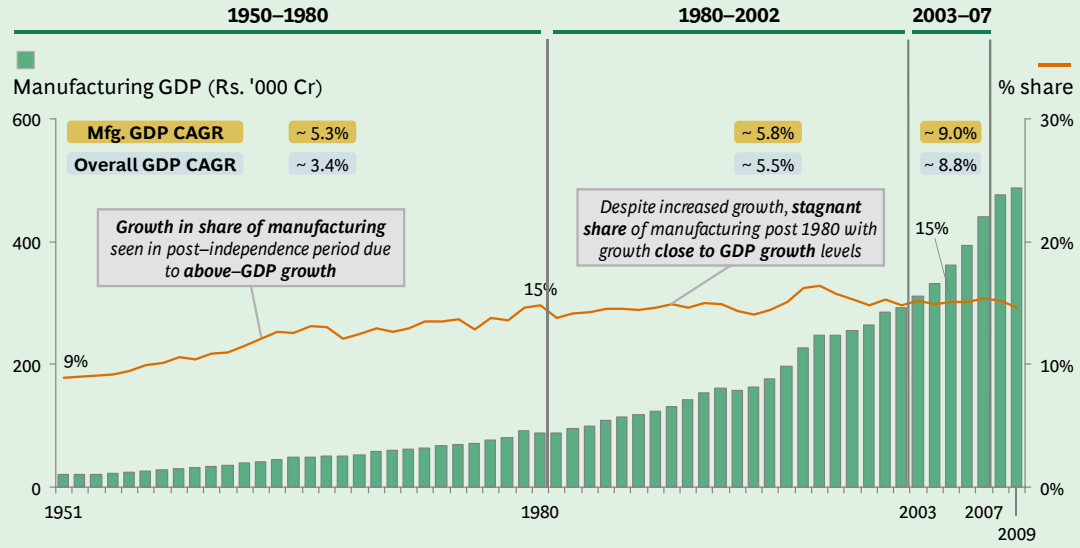
This document is intended to serve as a background note to the conference, and gives a perspective on the aspirations for the Indian manufacturing sector and the latest trends that could shape our journey to achieve these aspirations.

2. Achieving the Aspirations for Indian Manufacturing: 25 % of GDP by 2025

A. Performance of the Manufacturing Sector so far

The manufacturing sector was a growth engine for India's economy till about 1980, growing faster than national GDP by ~2 percent. Since 1980, the growth of the sector has been closely tracking GDP (as shown in Exhibit 2.1). The share of the sector to GDP has remained steady around 15–16 percent in recent years compared to a high of 40 percent for Thailand and 34 percent for China and 25–30 percent for most emerging economies. A share of 15–20 percent is far more representative of a developed economy with an established industrial base, than that of an emerging economy. Clearly India's manufacturing sector's share cannot be justified given the stage of its economic development.

Exhibit 2.1: Manufacturing was India's growth engine till 1980, but has since been tracking GDP



Source: BCG–CII–DIPP Report, CSO, MOSPI, BCG analysis.
Note: Manufacturing GDP at constant (1999–2000)prices, excludes mining.

There are some serious implications of this performance of the manufacturing sector. The most important implication is the low share of employment for the sector (12 percent) as compared to agriculture (54 percent) and services (34 percent). This compares unfavourably to other emerging economies where the share of employment in manufacturing range from 15 percent to 30 percent. Clearly the Indian manufacturing sector has a lower contribution in creating employment than that of its peer countries, and unless India can reverse this trend it will face serious social pressures given the fact that the nation needs to create over 220 million jobs over the next 15 years.

B. Changing Gears to Achieve 25 percent Share of GDP

India's manufacturing growth rate has typically tracked GDP growth, averaging 7 percent per annum over the past 15 years. If we assume that India's GDP will grow at around 7–8 percent on

an average over the next decade, the manufacturing growth has to be 3–4 percent higher to reach 25 percent share of GDP by 2025. This means that the manufacturing sector has to grow at 11–12 percent per annum for the next 15 years, a stretch target but by no means an impossible one given that the sector has witnessed 11 percent growth in some years during the last decade. This steady growth at the rate of 11 percent will also propel India into a league of select nations and place it as the third largest manufacturing sector in the world, behind China and United States (as shown in Exhibit 2.2).

Exhibit 2.2: India's manufacturing sector can become the 3rd largest globally, if it grows at 11% per annum

Comparison of manufacturing GDP[1] (2010 – 2025E[2])

2010		2025E	
Country	US$ Bn	Country	US$ Bn
United States	1,414	China	2,927
China	1,165	United States	1,924
Japan	751	**India**	**969**
Germany	523	Japan	844
Italy	262	Germany	662
South Korea	262	South Korea	442
United Kingdom	222	Italy	298
France	201	Brazil	296
India	**199**	United Kingdom	284
Brazil	163	Mexico	258
Mexico	162	France	257
Spain	149	Russia	217
Canada	135	Canada	196
Russia	128	Spain	182
Turkey	87	Turkey	163

~11%

Source: EIU, Euromonitor, BCG Analysis
Note: GDP data for FY2010 refers to India's GDP for 2009-10, but for some countries, such as China, Brazil and Russia, US, it refers to calendar year 2010. Manufacturing GDP calculated based on Real GDP (based on expenditure) data from EIU and applying 'manufacturing % (of GDP)' from Euromonitor International
1. GDP at constant prices (in 2005 US$Bn)
2. 2025 estimates based on EIU projections for all countries (except India)

C. Three Critical Growth Drivers

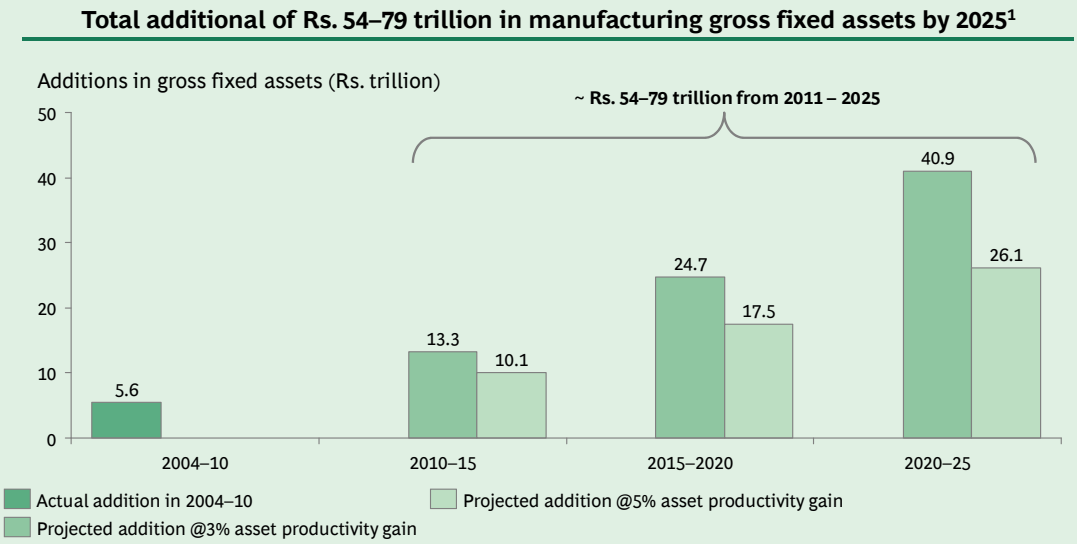
A 25 percent GDP scenario by 2025 will need three critical growth drivers:

a) Aggressive investments to the tune of Rs. 54–79 trillion between now and 2025

Our estimates suggest that between four to five times the levels of incremental investment will be required over the next fifteen years to achieve the target level of growth. A conservative estimate of 3–5 percent improvement in asset productivity improvement would mean that gross fixed assets need to increase by Rs. 54–79 trillion by 2025 to meet the 11 percent growth target (as shown in Exhibit 2.3).

Appropriate policy measures will be required to ensure that such a massive funding requirement is met through a combination of public expenditure, private and foreign investments. Specific efforts will need to be made to attract higher FDI into the manufacturing sector.

Exhibit 2.3: Large investments required to achieve aspirations



Source: CSO, ASI, Capitaline, EIU, BCG analysis.
Note: At 1999–2000 constant prices, FY2008 base of gross fixed assets is nearly Rs. 13 trillion, and additions required will be Rs. 6–10 trillion.
Asset productivity is defined as revenues generated per gross fixed asset.
1. At current market prices; nominal value projections.

b) ~39–68 million incremental manufacturing workforce

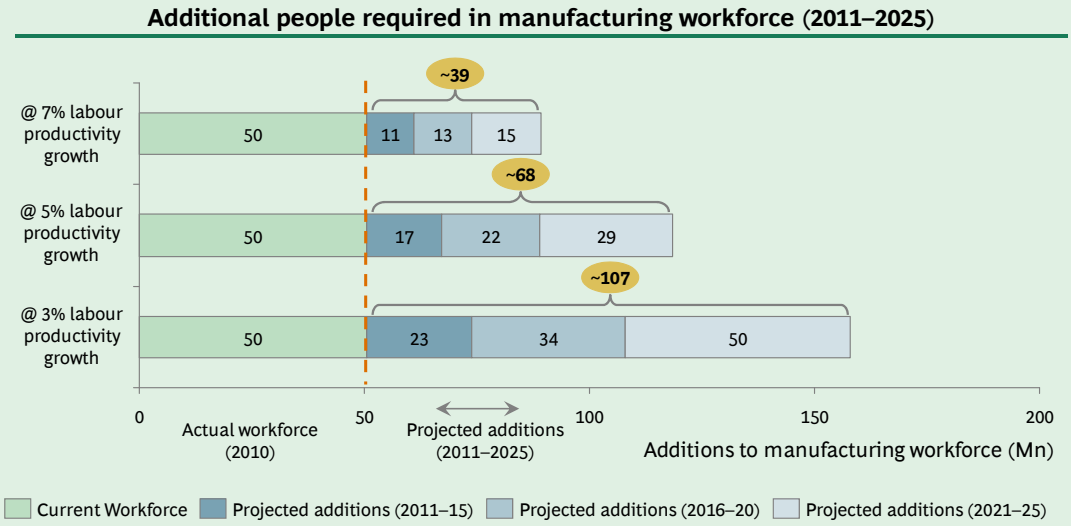
In 2010, the manufacturing sector is estimated to have employed about 50 million people, or 11 percent of total workforce[1]. We expect that Indian manufacturing sector will embrace a higher level of automation and other technologies and, combined with improved operational processes, will improve its productivity faster.

Even if we assume that the manufacturing labour productivity will improve at 5–7 percent per year between 2011 and 2025, the manufacturing workforce would need an additional 39–68 million trained people by 2025. This number would increase to over 107 million if the productivity improvement is lower at 3 percent (as shown in Exhibit 2.4).

This represents a substantial growth from current levels and represents a much higher share of the total workforce in India. Given the current state of the skill training infrastructure, this represents a significant challenge. We anticipate a substantial part of the incremental workforce to come by way of migration from rural–agriculture to urban–manufacturing. Hence, it becomes imperative that appropriate polices are adopted to make this workforce employable with the right set of skills and qualifications.

[1] NSSO Report: Key Indicators of Employment and Unemployment in India 2009–10

Exhibit 2.4: Significant workforce requirements to achieve aspirations



Source: NSSO Report: Key Indicators of Employment and Unemployment in India 2009–10, BCG analysis.
Labour productivity is defined as real manufacturing GDP / worker employed in manufacturing sector.

c) 14–18 percent growth in exports

It is also important to recognize that an 11 percent manufacturing growth rate cannot be achieved without rapid growth in exports. If the domestic manufacturing sector can grow at around 8 percent, in line with or slightly higher than the overall GDP growth rate over the period of 2010–2025, exports will need to grow at 14–18 percent annually. This target is not impossible given the global trends and recent export growth of high double digits. The last two decades have seen large scale migration of industrial capacity from developed countries to RDEs. This trend is expected to continue — we estimate that by 2025, RDE production will account for over 55 percent of global production compared to 36 percent today.

Hence over the next 15 years, there will be a massive shift of manufacturing capacity from the developed to the developing countries. India has to exploit the opportunity to capture a disproportionate share of this shift, thereby accelerating its exports growth rate. At the same time, India's traditional goods exports (textiles, rubber, petroleum, metal products) will need to fire on all cylinders.

D. Key Enablers

No discussion about growth of the manufacturing sector will be complete without a mention of (a) enabling infrastructure like roads, railways, power, airports, etc., to support the sector and, (b) simplified government procedures and policies to reduce the transaction costs of doing business in India. The challenges on both these fronts are well known and it is not the purpose of this note to do more than highlight their importance. The National Manufacturing Policy announced recently seeks to address some of these challenges and is discussed later in this note.

E. Conclusion

Currently, there are over 25 Indian manufacturing companies with annual revenue in excess of US$ 1 billion. To achieve our growth aspirations for 2025, this number will have to grow by nearly 3–4 times. By 2025, India would need 70–80 manufacturing companies achieving annual revenue in excess of US$ 1 billion, and 4–5 firms with annual revenue in excess of US$ 100 billion (assuming company growth rate at par with overall manufacturing growth rate).

Achieving this will be no mean task and will call for visionary leadership and management talent of a different order.

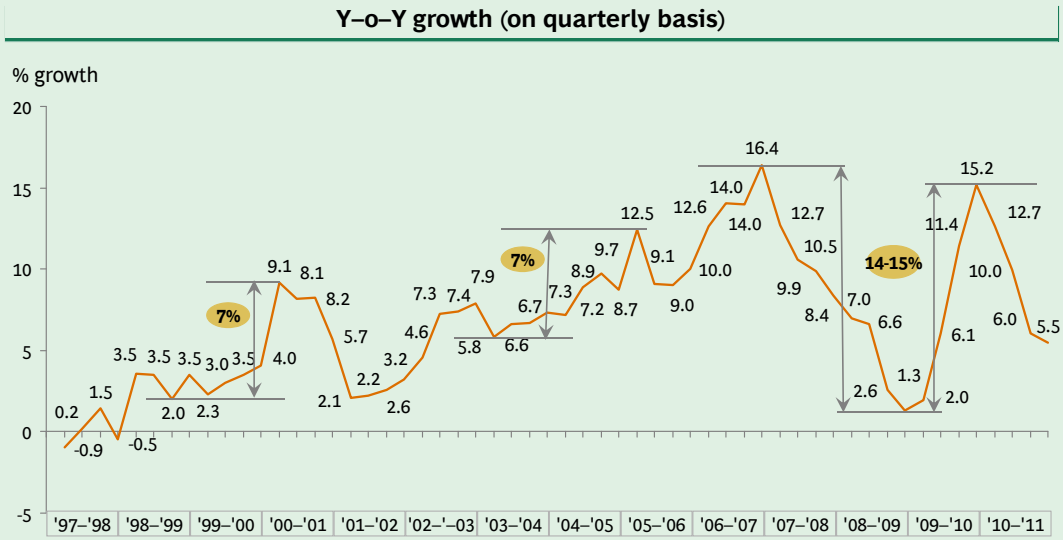
3. Recent Challenges: Volatility, Cost Pressure, Falling Investment

While there are several structural issues that continue to ail the Indian manufacturing sector (skills deficit, poor infrastructure, rigid labour policies etc), three recent challenges have emerged, that are creating considerable headwinds to Indian manufacturing's growth story — demand volatility, cost pressures, and falling investments.

A. Demand Volatility:

Volatility in performance of the manufacturing sector has become more pronounced over the last five years. As depicted in Exhibit 3.1, over the last five years, Y–o–Y growth (measured every quarter) has varied from a high of 16 percent in '07 to a low of 1.3 percent in '09, and back to a high of 15 percent in '09. In no other period of growth (either 2000–2005 or even earlier) has the volatility been as high as 15 percentage points.

Exhibit 3.1: Volatility in manufacturing sector has tangibly increased over last 2 years



Source: MOSPI, BCG analysis

Implications: In the face of increasing volatility, manufacturing companies will have to make their operations more flexible. Flexibility in manufacturing systems can be introduced in all aspects of the production process: product flexibility that allows rapid change and upgradation in models and simultaneous production of a broader variety; volume flexibility; lead time flexibility; process flexibility as well as financial flexibility in the investment strategy. Several levers can be used to increase flexibility. A few models that companies utilize to enhance flexibility include:

- ◊ Flexible Automation: Companies can use automation to increase the flexibility of their manufacturing operations. These can vary from low cost 'smart' automation to advanced robotics. For example, automotive plants have used advanced robotic tools to produce several models on the same assembly line, allowing them to respond quickly to changing demand patterns.

- Flexible Labour: For handling short term volatility (within the year), companies can use annualized labour contracts and / or mix of permanent and temporary labour. An Indian appliance company, in its refrigerator plant (whose demand rises significantly during summer months), handles in–year volatility by deploying temporary labour to address demand peaks. The proportion of temporary labour can vary from a low of 10 percent in troughs to as high as 50 percent in peaks. A continuous 'skill–proofing' approach has been implemented in the production system to create low–skilled positions in which the temporary labour can be deployed — thus managing demand peaks without affecting productivity.
- Modular systems with a broad network of suppliers: Companies often create highly modular products that can be quickly customized or tweaked, by changing a few parts or modules to meet changing consumer preferences at low incremental costs. This modularity can be extended to the supplier network.
- Multi–location production: Manufacturing locations spread across geographies allow companies to address volatility in freight and factor costs as well as respond efficiently to changing demand across markets. A global automotive OEM leverages 'network scale' with 11 plants manufacturing similar models of utility vehicles across Asian, South American and European RDEs. This serves as backup for other plants and also caters to regional markets. To maintain the right balance of local sourcing and global scale, the company has dedicated Centres of Excellence (CoEs) to ensure quality of critical components.
- Deferred customization: It is often hard to predict the exact specifications that your end user will demand. Carrying unwanted inventories can become extremely costly, while waiting to produce on demand will make you unresponsive. A global power equipment company uses 'deferred customization' to address this challenge. Almost 85 percent of their global production originates from 3 low-cost large-scale plants in RDEs which manufacture ready–to–configure kits for high-end products. Final configuration is performed at high–cost plants located close to customers, thus offering quick response times, and highly customized products.
- Disposable factories: These plants are the opposite of large scale plants with expensive flexible automation. They use simple, inexpensive single product assembly lines that can be setup and dismantled at very low costs. This dramatically reduces the cost of entry and production, and enables the manufacturer to move in and out of changing markets with low risk. For instance, a major specialty chemical producer expanding in Asia had traditionally relied on few massive multipurpose plants catering to the entire region leading to high investment in storage facilities, EHS protections and transport infrastructure. For its new expansion, it shifted its strategy to building many small, close–to–customer plants. This led to dramatic reductions on environmental impact and investment costs.

Each of these models offer different levels of flexibility and different trade–offs between risk management, cost and speed to market. There is no one right answer. Players will need to make choices based on their own starting positions in terms of financial priorities and engineering capabilities as well as the extent of volatility in their product markets.

B. Factor Cost Inflation

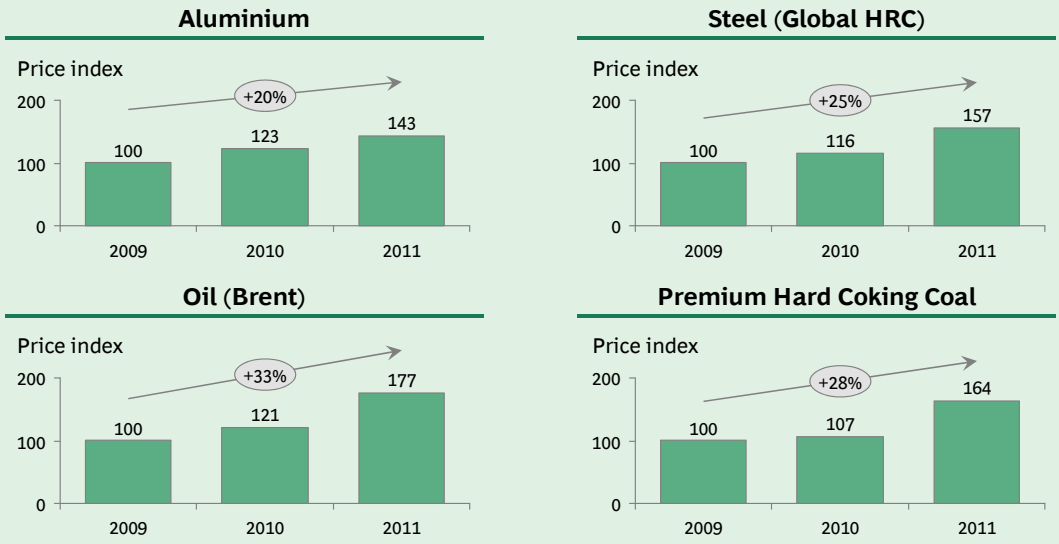
The last 3 years have seen dramatic inflation in multiple commodities and labour. Besides, the impending policy changes are likely to make land considerably more expensive than before as well.

Land: We expect the proposed Land Acquisition, Rehabilitation & Resettlement (LARR) Bill to adversely impact the development of the Indian manufacturing industry. The new bill can make it difficult to acquire large tracts of land for manufacturing purposes, owing to its features of having the buyer pay annual payments to original owners for the next 20 years, identifying and paying all those who are affected by the acquisition, paying 10 per cent of capital gains to the original owners for the next 10 years, and ensuring the development of basic facilities in the acquired areas.

Preliminary analysis indicates costs of land acquisition could also go up to about 3.2–4.6 times its current costs (increase in market value by a factor of 1–2, solatium increase from 30 percent to 100 percent, increased rehabilitation costs and tenure of rehabilitation).

Commodity inflation: A quick look at the price trends of key commodities (as shown in Exhibit 3.2) indicates that prices of most commodities (Exhibit 3.2 shows trend for Steel, Aluminium, Coal and Oil) have increased rapidly over the last 3 years.

Exhibit 3.2: Steep rise in key commodity prices over last three years



Source: Analyst reports, BCG analysis.

Power cost inflation: The power sector is currently reeling under several structural issues. SEBs have a large and growing pool of accumulated losses (currently around Rs. 1 trillion). With over 28 percent T&D losses and subsidized electricity supply to agricultural sector (another 25 percent of output), they are left to rely on tariff increases on the remaining 50 percent of their output to tide over this situation. Add to this the recent challenge posed by higher input costs (driven by increase in coal prices of the IPPs) that will put further pressure on electricity tariffs. The cost of merchant power, reflective of the marginal price that the market is willing to pay, has zoomed significantly over the last few quarters (an increase of 80 percent from Rs. 2,344 / MWH on 2 Dec 2010 to Rs. 4,285 / MWH as on 2 Dec 2011). It could only be a matter of time before another round of tariff increases hit the industry.

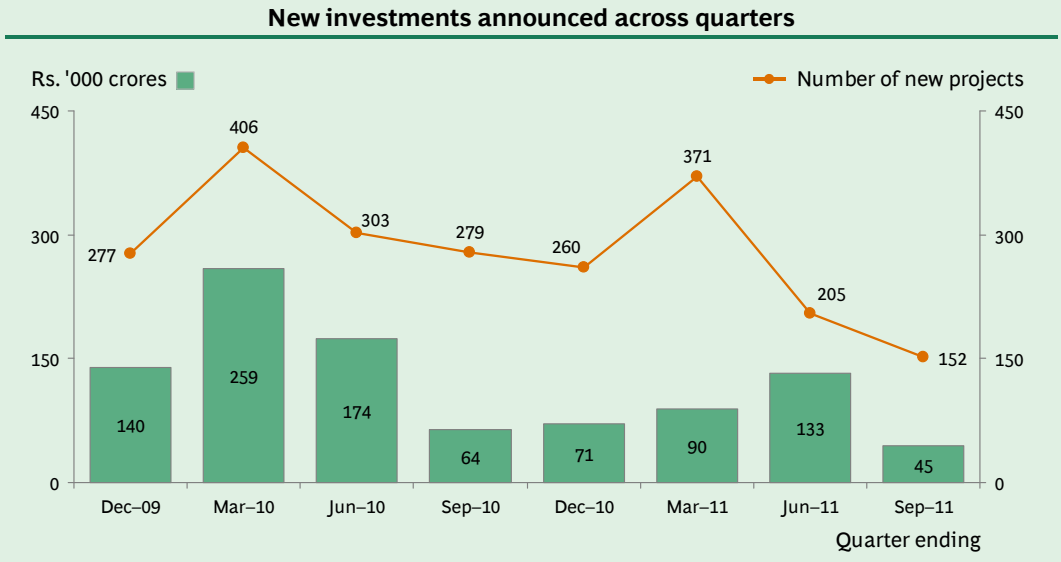
Implications: Need to improve manufacturing competitiveness: In the face of increasing factor costs, companies have to ramp up the efforts to improve competitiveness and productivity of their assets and labour. China is a clear benchmark on this parameter and its growth in productivity is far steeper than India's. This has helped China to retain its competitiveness, despite increasing wage costs. EIU data suggests that for the last 15 years, Chinese productivity increase has been on average about 12–13 percent per year, about double the rate of productivity increase in India.

Indian manufacturing companies will have to use several levers to improve their labour productivity and overall competitiveness – (a) Increased capital: To move up the value chain / access higher skilled workforce and / or increase the level of automation to drive higher productivity. (b) Clusters: Strong clusters which provide a variety of productivity benefits and overcome impact of wage increase. A strong cluster can improve margins from 5 to 15 percent compared to a stand–alone plant. (c) Scale: Higher scale of operations to achieve scale benefits in manufacturing operations. (d) Resource intensity — Companies will have to closely monitor and reduce the resource intensity of their manufacturing operations by implementing sustainable practices across the value chain (discussed in more detail in the next section).

C. Falling Investments

Manufacturing investments have fallen continuously over the last year. Exhibit 3.3 shows that the fall has been considerable, both on 'number of new projects announced' and in the value of these projects.

Exhibit 3.3: Falling investments in the manufacturing sector



Source: CMIE, BCG Analysis.

Reasons for this slowdown seem to be both policy–related and economic:

- A slowdown in policy–making / clearances has clearly made Indian entrepreneurs cautious about new investments and to seek opportunities outside India. This is unfortunate, given that India's long term growth story is still very much intact and therefore, rightfully investments should chase this opportunity.
- New investments have witnessed a drop due to the high cost of capital caused by monetary tightening measures of RBI, and a fall in foreign investments due to the global liquidity crunch. Most businesses relying on credit to fund the next round of investment (as against internal accruals), have found the cost of capital too high at the current levels, to warrant an immediate deployment.
- The slowdown in near term demand has also forced entrepreneurs to push back capex plans in many sectors, e.g. the cement industry, which saw a lot of activity last year, now has more capacity than demand.

Implications: Falling investments could result in a supply–side crunch over the next 3–5 years when internal demand picks up again, and this in turn could further fuel inflation that could constrain the next wave of growth. Companies need to be cognizant of this and ensure that appropriate investments are made, or alternate supply sources are thought through. Government / policy makers should also look to resolve the overall policy impasse and the tightening monetary situation, which are evidently having an adverse impact on industry investment levels.

4. Four Trends that will Shape our Journey to 25% of GDP

The world has changed dramatically since the economic crisis of 2008. Several trends have emerged which have the potential to fundamentally impact the destinies of manufacturing companies around the world. In this section, we profile four of these defining trends.

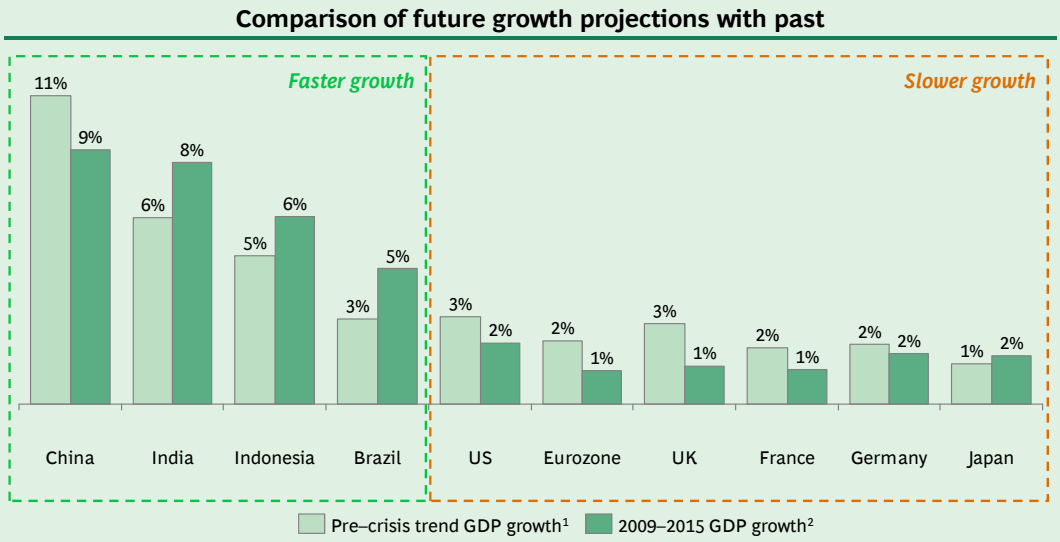
A. New World Order: A Two–Speed World

The World Economic Outlook report published in April 2009 by the International Monetary Fund (IMF) found that two types of recessions are particularly long and severe: those preceded by financial crises and those that are globally synergized. The current recession meets both these criteria. In addition, in its World Economic Outlook: Crisis and Recovery report published in October 2009, the IMF shared medium–term implications of the last 88 financial crises in developed, emerging and developing countries. According to the report, even after seven years after a crisis, economies tend to have a significant output gap — that is, a deviation of actual output from the extrapolated precrisis trend growth. On average, this gap is –10 percent.

In line with the IMF report and findings, we expect the overall growth scenario to remain depressed over the coming years, but with significant regional differences. We term this emerging scenario as the "Two–Speed World".

A Two–Speed World is characterized by slow growth in developed economies and relatively high growth in many of the so–called rapidly developing economies (RDEs) (as depicted in Exhibit 4.1). Most of the RDEs that were previously seen as sources of cheap labour are emerging as big markets with plenty of consumers and population with the demographic advantage of age and education. These economies are now host to a new generation of competitors — the so–called global challengers — who are emerging stronger from the crisis. These companies have the advantage of being based in comparatively fast–growing markets with relatively undamaged

Exhibit 4.1: A two–speed world emerging



Source: Economist Intelligence Unit; BCG analysis.
Note: Trend for Indonesia computed from 1999–2007 due to Asian crisis.
1. 1990–2007 trend growth.
2. Latest projections by EIU (downloaded 2 December 2011).

economies. Building on their cost advantage and growing technological competence, they will increase the competitive pressure on established companies.

The growth in the developed world, on the other hand, is expected to remain subdued owing to a host of problems ailing these economies such as economic uncertainty, high government deficit, high debt levels, banking system under pressure, aging population and growing levels on unemployment. And since the developed world still accounts for such a large slice of the pie (the United States, the European Union and Japan account for around two–thirds of global GDP), the overall global growth numbers will remain depressed for some time to come.

Further, if the world is entering a period of prolonged slower growth, it is matter of concern to business leaders. In order to grow, companies will have to gain market share. The management and strategies of all companies — especially poorly run ones — will come under enormous stress. This will accelerate industry restructuring. Tough economic times will expose structural weaknesses. Poorly grounded business models and excess capacity, among other problems, will force companies — especially those in mature industries — to adjust to or exit the market.

Over much of the last 20 years, it was possible to be successful simply by riding market growth. For many companies, future prosperity will require gaining share in the face of significantly increased competition, triggered by slow growth — a challenge that many executives will not have faced till now. For other companies, success will come because their business models allow them to share in the prosperity of the growth haves in the Two–Speed World.

Implications: We expect that Two–Speed World will impact the Indian manufacturing sector in the following manner:

- A subdued growth in most of the developed world will adversely affect the demand emerging from these economies and will put pressure on the manufacturing exports of the RDEs. Thus India's exports will come under immense stress. To be successful, the Indian manufacturing sector will need to clearly differentiate itself from other RDEs through more competitive costs, quality or lead times.
- While developed world is expected to grow at a subdued pace, RDEs such as India and China are expected to grow at a rapid pace fuelled by burgeoning domestic demand. On the one hand, this will provide the manufacturing sector with an opportunity to break out of historical patterns and position itself for the next decade of growth. On the other, competition for domestic market share will increase hugely as multi–national companies will look at growing markets in Asia to meet their growth aspirations. Indian manufacturing will therefore need to prepare itself, to better address this competition.

B. Resurgence of American Manufacturing

U.S. economy and its consumers have been the fuel that has driven the global growth in the last decade. In turn, this has fuelled the growth of China (mainly) along with India, Mexico, Eastern Europe and countries of South East Asia. These economies have become the hub for manufacturing companies around the world wanting to reduce their cost of production and feed the U.S. market. In fact, in the decade since it entered the World Trade Organization (WTO) in 2001, China has essentially become the default option for companies wishing to outsource production in order to lower costs. From 2000 to 2009, China's exports leapt nearly fivefold, to US$ 1.2 trillion, and its share of global exports rose from 2.9 percent to 9.7 percent, according to United Nations Conference on Trade and Development data. In the U.S. meanwhile, the loss of

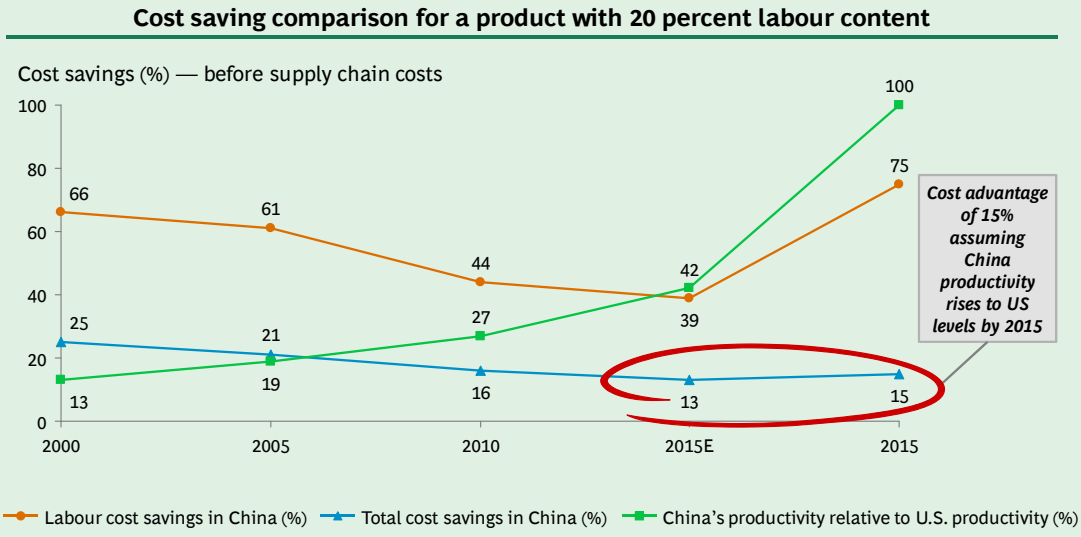
some 6 million manufacturing jobs and the closure of tens of thousands of factories over the past decade has fanned frequent warnings of a manufacturing crisis.

However, we observe that a combination of economic forces is turning the direction of this tide. These forces are fast eroding China's cost advantage as an export platform for the North American market and making manufacturing of many goods in America cheaper than ever before. Rising wages, shipping costs, and land prices — combined with a strengthening Renminbi — are rapidly eroding China's cost advantages. The U.S., meanwhile, is becoming a lower–cost country with declining or moderately rising wages, weakening dollar (against Yuan), increasing workforce flexibility, and continuously improving labour productivity.

Our analysis concludes that, within five years, the total cost of production for many products will be only about 10 to 15 percent less in Chinese coastal cities than in some part of the U.S., where factories are likely to be built (as shown in Exhibit 4.2). In fact, when shipping, inventory costs, and other considerations are taken into account, certain U.S. states, such as South Carolina, Alabama, and Tennessee, will turn out to be more competitive production sites as compared to some of the RDEs such as China. As a result, we expect companies to begin building more capacity in the U.S. to supply to North America. The early evidence of such a shift is mounting:

- NCR moved production of its ATMs to a plant in Columbus, Georgia, that will employ 870 people in 2014.
- Ford Motors Company is bringing up to 2,000 jobs back to the U.S. in the wake of a favorable agreement with the United Auto Workers that allows the company to hire new workers at US$ 14 per hour.
- Peerless Industries will consolidate by moving back all manufacturing of audio–visual mounting systems to Illinois, in order to achieve cost efficiencies, shorter lead times, and local control over manufacturing processes.

Exhibit 4.2: RDEs' cost advantage diminishing because of rising labour costs



Source: BCG analysis.
Note: Labour cost savings in China (%) = Total labour cost in China divided by total labour cost in the U.S.

Amongst the various reasons behind such a shift is the factor of labour wages and productivity. Labour wages in RDEs have grown at a much faster rate than the labour wages in U.S., while the labour productivity in RDEs has not risen commensurately to offset the wage increases. This has reduced the cost arbitrage long enjoyed by the RDEs by a significant extent.

To exacerbate the scenario, the costs of power and industrial land have also been going up in the RDEs. We also expect that rising oil prices, falloff in new shipbuilding, and projected shortage in container port capacity in 2015 will result in further rise in the ocean freight rates. In addition, there are the many costs and complexities associated with extended supply chains such as inventory expenses, quality control problems, unanticipated travel needs, and the threat of supply disruptions due to port closures or natural disasters. Other major concerns with some of the RDEs are threat of intellectual–property theft and trade disputes.

As a result, reducing cost differential and rising overhead costs and concerns are slowly turning the direction of the tide and encouraging more and more companies to explore the option of shifting manufacturing back to America. In fact, federal government and many U.S. states are also encouraging such a move. Governments in Asia and Europe have long used generous financial incentives to persuade multinational companies to build high–tech plants in targeted industries. Frequently, they offered terms that the U.S. could not match, such as ten–year holidays from corporate taxes, cash grants, and cheap loans. However, in recent years, the federal government and many U.S. states have closed the gap with aggressive incentive packages, making the U.S. more competitive in the chase for manufacturing facilities. Examples of such government interventions include:

- Global Foundries — The Company is receiving US$ 1.3 billion in cash reimbursements and tax breaks over the next 15 years from the State of New York to build a US$ 4.2 billion state–of–the–art silicon–wafer plant in Malta, New York.
- Nissan — The company received a US$ 1.45 billion loan under the Advanced Technology Vehicles Manufacturing Program managed by the U.S. Department of Energy that covered most of the company's US$ 1.8 billion investment in a new plant in Tennessee.

We believe that even though the reallocation of production is still in its early stages, it will accelerate in the years ahead. The impact of the changing cost equations will vary from industry to industry. Companies will re–evaluate their options for supplying to the North American market in case of products in which labour accounts for a small portion of total costs and in which volumes are modest. Examples of such products include construction equipment, appliances, and select auto parts. But the manufacture of goods with relatively higher labour content that are produced in high volumes will likely remain in RDEs. Finally, companies that make mass–produced, labour–intensive products, like apparel and shoes, may move production from China to other low–cost nations. This means that when it comes to building new production capacity, companies will likely choose to explore alternatives instead of automatically opting for China. Over the next five years, we believe that the U.S. will be the optimal choice for many manufacturing investments aimed at serving the North American market.

Implications: This shift provides both opportunities and challenges for the Indian manufacturing sector in its journey to become 25 percent of GDP by 2025. On the one hand, more and more manufacturing activities are expected to move back to America, on the other hand, there is opportunity to attract business away from the Chinese market by offering either cheaper or differentiated alternatives. There is also the ever present opportunity of learning from China's approach / mistakes in addressing this shift.

C. Rise of Sustainable Manufacturing

Another important trend that we have observed is the move towards sustainable manufacturing or what we call "Green Manufacturing". Green initiatives aim to minimize the impact of human activities on the environment. It is estimated that even if every factory, power plant, car and aeroplane is shut down, the average global temperature would still increase by 0.6°C in this century. 'Green Manufacturing' or sustainable industrial activity is therefore a critical need and no more an empty slogan.

Manufacturing companies across sectors are deploying green strategies along the following three dimensions:

a) Green energy — Green energy strategies primarily involve deploying renewable energy sources such as CNG, wind, solar and biomass. Successful examples of Indian companies that are using green energy include the state–owned Delhi Transport Corporation (DTC), which has become the world's largest operator of environment–friendly CNG buses. A similar focus across the country has resulted in a 30 percent increase (over 2009) in the number of CNG–powered vehicles to reach 1 million in 2010. Another example is the power generation companies who are using super–critical technology in most of the new power plants under construction. The technology is expected to help power generation companies in improving efficiency, and reducing fuel consumption and emission by about 4 percent.

b) Green products — Many companies have started creating greener products that have a positive impact on the environment. Successful examples of Indian companies that produce green products include Mahindra Reva Electric Vehicles Private Limited which is involved in designing and manufacturing of compact electric vehicles, and appliance companies who are promoting greener ACs / refrigerators with lower energy consumption (higher 'star–rating' on the BEE energy consumption scale).

c) Green processes in business operations — Implementing green processes in operations entails efficiently utilizing key resources, reducing waste generation through lean operations, bringing down the carbon footprint and conserving water. These levers improve operational efficiency and lower costs. Successful examples of Indian companies that have implemented green processes include Essar Group with its Clean Development Mechanism (CDM) projects to reduce CO2 emissions in its upcoming blast furnace project in Hazira, ITC with redesign of its paper plant at Bhadrachalam to consume less water, and Shree cement with its usage of air–cooled condensers to reduce overall water usage.

Governmental policies are a major driving force behind this green drive (besides company–level activism). The Government has taken a series of measures such as creating the National Solar Mission; setting aggressive targets for hydro and nuclear power generation; providing various sops such as tax holidays, soft loans, subsidies and other incentives for renewable energy projects; and setting up organizations to support the cause — Indian Renewable Energy Development Agency (IREDA), The Bureau of Energy Efficiency (BEE), and National Clean Energy Fund (NCEF). These efforts were also recognized by a report by the UN Environment Program (UNEP) — 'Global Trends in Sustainable Energy Investment 2010' released in July 2010 — where India was ranked seventh in the world in terms of investment in sustainable energy.

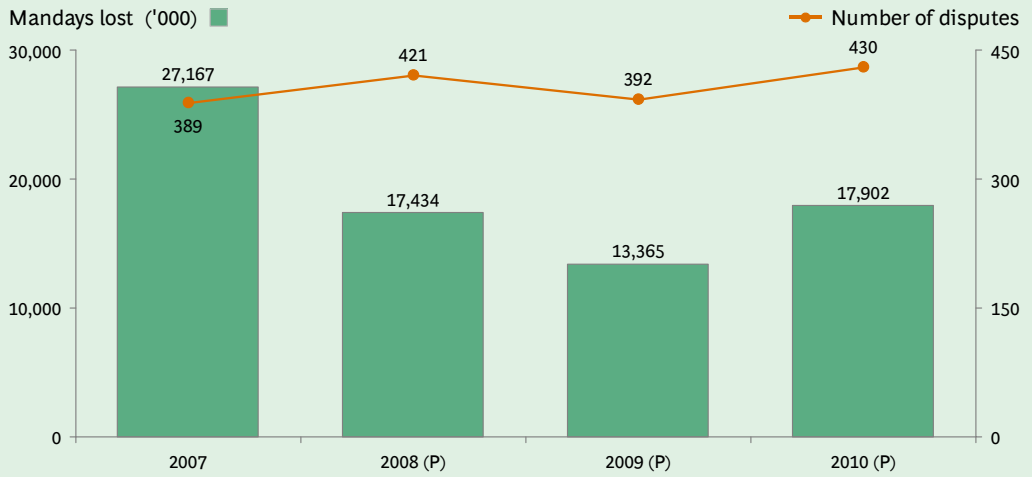
Implications: The first and all–important step for manufacturing companies is to define the overall sustainability agenda for the company i.e. identifying what process, products, and energy options need to be availed of. Very often, company's efforts are either very fragmented (e.g.

kaizens / initiatives at shop floor level) or they end up remaining as a broad agenda without specific action items. Many companies have started defining a comprehensive agenda and setting aside appropriate management resources for pursuing the agenda. For e.g., the Godrej Group has set up a 'Mission on Sustainable Growth (MSG)' task force led by a very senior leader of the firm and constituting of senior executives representing each operating division. The mandate of the task force is to make processes and products more sustainable. Besides agenda and execution, ensuring that the right communication happens is critical to realizing the full benefits of the green drive. External publicity, customer education programs, and internal awareness programs are some of the key communication levers that are used by companies in this area.

D. New Models of Workforce Engagement

The recent instances of labour unrest — especially the highly publicized labour strike at Maruti's plant at Manesar — takes us to another shift being faced by the India manufacturing sector — the need for a new engagement model with the workforce. While the latest data for 2011 is still provisional, a comparison of data pre–2011 indicates that the mandays lost due to disputes and lockouts have started rising again after having dropped over a two–year period (as shown in Exhibit 4.3).

Exhibit 4.3: Industrial disputes on the rise again?



Source: Ministry of Labour and Employment, Government of India; BCG analysis.

Several issues are seen as contributing to the deterioration of labour relations.

a) Increasing disparity between worker pay and management pay: As inflation continues to rise, the need for pay–hikes is felt stronger by the shop–floor employees and labourers, who have lesser accumulated savings to rely on to serve as a buffer. While the government has continued to increase national floor rates at the rate of industrial worker inflation, the disparity between senior management salaries and shopfloor wages seems to be as high as ever. A study by the Hay Group, states that India ranks #14 in a list of 50 countries in terms of

pay gap between senior management and the clerical / blue–collar workers. A worker's aspirations has increased many–fold over last two decades with easier access to information and visible signs of consumption by the rich, creating grounds for industrial action.

b) Growth of contract labour: In the last decade, the share of contract workers has grown rapidly as companies grapple with the rigid labour laws on the one hand and increasing output volatility, which we saw earlier, on the other. Estimates suggest that even in organized sector, this share can be as high as 60–70 percent on some plants. These workers feel discriminated against, compared to the permanenent workers, once again creating opportunities of industrial unrest.

c) Alternative employment options: The low skilled jobs in Indian manufacturing plants have always been filled from workers migrating from rural areas in search of better paying jobs. With the implementation of MGNREGS, and the assurance of pay higher than the national minimum floor (e.g. national minimum floor–rate is now Rs. 115 / day, while MGNREGS minimum guaranteed pay is between Rs. 120 / day to Rs. 130 / day in most states), labourers have little incentive to continue at an underpaid job far away from their home town. This is not only creating an acute labour shortage in many sectors and regions, but also putting pressure on the manufacturing wage rates.

Implications: There are two sets of implications. First, there is a need for making structural changes in the policies for labour. Second, companies have to find more effective ways to engage with today's workers.

The Government has to implement four inter–related policy measures. The first set of measures should focus on driving manufacturing employment. These should include creating mega–manufacturing zones, making policies which make it easier to set up new factories, and directly or indirectly incentivizing new job creation (implementing the National Manufacturing Policy will be a good beginning). The second set of measures has to focus on improving employability through better training and skill development programmes. While the government has launched multiple initiatives on this front, the key is to ramp them up and align their activities with the other labour policies and not run them independently. The third set of policy changes have to bring in greater flexibility for the businesses to deal with changing market conditions while protecting worker rights. These could include institutional arrangements to provide direct cash support to laid–off workers, job–loss insurance, re–training and re–deployment. Finally, the government has to completely revamp the employment exchanges to create a more efficient way to match demand and supply.

Companies need to start thinking of competitiveness improvement as not just a one–off implementation of a TQM / Lean–manufacturing program but integrate into it a new approach that takes the shopfloor employee along in the transformation journey. Indian industry saw the launch of Total Quality Management (TQM) movement in 1980s and 1990s which developed into the 'Lean' programe of the 2000s. The challenge with many of these Lean efforts is their short–term focus which at best have created well functioning plants, but missed on integrating the people dimension into the initiative. Two approaches that companies are adopting to address this issue are laid out below:

a) Adopting a people–centric approach to competitiveness improvement: A 'people–centric' approach starts with shared aspiration and vision of the plant around quality and cost leadership, and builds a strong engagement model with capability building across levels, integrated with the usual tools and techniques of a typical 'lean' methodology. It becomes a

'way of operation', a part of everyday life through appropriate changes in the organisational structure and role definitions, rather than a one–off initiative. Companies need to build specific capabilities for problem solving and analysis through training and coaching, and ensure an increasing level of leadership and workforce engagement. BCG experience shows that such an approach can increase labour productivity by as much as 20 percent, build sustainable transformation and drive substantial value along multiple dimensions of cost, quality, safety and cycle time while engaging the workforce. A leading cement company's transformation program achieved 10 percent cost savings within the factory, mainly because of bottom–up initiatives suggested and led by shopfloor workers. Several of CII's cluster programs typically involve spending the first 6 of the 24 month journey in employee engagement and morale improvement (e.g. through 5s initiatives of shopfloor organization, and TEI (Total employee involvement approaches)).

b) Including worker welfare / involvement within sustainability agenda: Several companies that have embarked on the sustainability drive have also included worker welfare / engagement as a key pillar of their sustainability, to ensure that there is visibility, rigour and management attention in ensuring worker engagement.

5. The NMP: A Step in the Right Direction

After several rounds of iteration, the Government of India (GoI) has released a new National Manufacturing Policy. The policy is a mix of several new bold moves, few re–stated rules. A central policy initiative of the NMP is about creating NIMZs (National Investment and Manufacturing zones) which will drive break–out manufacturing growth through a mix of favourable policies and quality infrastructure.

NIMZs are envisaged to be huge clusters, of significant size (the minimum size of an NIMZS is 5000 hectares), with progressive and industry–friendly policies such as reducing transaction costs by moving towards self certification, easier exits of companies, ability to reduce workforce more easily, and significantly better infrastructure (NIMZ level planning, sufficient quantity of power, roads, ITIs catering to local skills etc).

There are clearly multiple positive facets to the NMP:

a) Boldness of and specificity in vision: The vision that the NMP has set for the country is bold. Ramping up from 16 percent to 25 percent of GDP in the face of a fast growing services sector necessitates a more rapid growth rate in manufacturing than ever achieved in the recent past. The mission to create 100 million jobs through this growth is even bolder. While there are questions about India's ability to accelerate at the implied rate, the boldness and specificity of vision provides a benchmark to measure all subsequent sub–policies / circulars of the NMP.

b) Clusters (rightly) as the core to growth: In various reports, we had indicated that clusters could drive cost advantage of upto 10–15 percent of sales through a mixture of various levers such as local scale, shorter supply chains, access to talent and allied services (e.g. tool repair vendors in case of engineering clusters). The GoI has explicitly recognized the benefits of clusters and used the cluster–concept as the central piece of its policy.

c) Far–reaching policies in critical areas: The boldness in policy change is also tangible. The move to rationalize regulatory procedures, provide an exit mechanism including the setting up of a job–loss policy, asset re–deployment policy is commendable.

d) Emphasis on local special purpose vehicle (SPV) governance: The NIMZ will be managed by a local SPV with a governing board. This SPV is for all practical purposes, the nodal body for the NIMZ, and is empowered to take several decisions from planning of the NIMZ, to infrastructure development (and contractor appointment), decision on type of skill development and partner, to magnitude of usage charges from 'renters' etc. The NMP has also mandated that the CEO of the SPV board will be a senior government official, and that the board will also have representation from the local pollution control / environmental authorities. In providing this clarity, the government has effectively empowered the board in several areas responsible for local development at the cluster level.

e) Sops: Multiple sops to encourage investment in NIMZ, such as the TADF (Technology Acquisition and Development fund) and incentives for green investments (several capital and interest subsidies), are part of the NMP. Though sops are never the primary driver of investment, they do play a role in sweetening specific investment cases.

There are also several risks and challenges in the implementation of the NMP:

a) Intent to implementation: The NMP is, at the end of the day, a policy of intent and it is expected that individual ministries take the cue and develop more specific rules and

regulations to be followed at the local level. Any slippage in time or dilution in quality of the direction set by the NMP, would therefore be a significant dampener. For e.g. the policy lays out a bi–annual state industry ministers' conference as a forum for continuous dialogue and also states than an MIPB (Manufacturing Industry promotion board) be setup to drive this further. Tracking how these immediate term implementation monitoring mechanisms are setup could give us a good lead–indicator of how rigorous the implementation will be.

b) Over dependence on state, especially for Land: The NMP mandates the state to be the primary authority in key decisions such as land acquisition, power / water supply etc. While this is in a way good, and practical, it also limits the potential impact that NIMZ could have, to a few states with large parcels of land and local political will.

c) Funding – Largely unaddressed: Funding of the internal infrastructure within SPV is an issue largely left unaddressed, with the NMP only referring to the existing modes typically available. Viability gap funding and soft loans are talked about in a high–level manner, while ECB route was anyway available to erstwhile SEZ developers and hence was expected anyway to be made available to NIMZ developers.

In the balance, the NMP has the potential of becoming a 'game changer' for the industry if implemented in its entirety.

6. Conclusions

India's manufacturing sector is now the second fastest growing in the world after China's. The government has set an ambitious target of achieving 11–12 percent growth per annum and increase the share of the manufacturing sector to 25 percent of GDP from 16 percent. The new National Manufacturing Policy, if implemented properly can be a game changer. The two–speed world and declining competitivenss of Chinese manufacturing vis–à–vis U.S. manufacturing provide a window of opportunity for India's manufacturing companies to increase their share of the global manufacturing trade. The growth of Green Manufacturing provides an opportunity to re–tool products and processes. At the same time, the sector faces several challenges in terms of increasing volatility of demand; growth in factor costs like land, labour and power; decreasing attractiveness for new investments; and growing alienation of labour.

The steps that the government and the industry will take over the next decade will determine whether we continue to grow at 7–8 percent and closely track GDP growth as in the past decades, or break–out from our past and chart a a new 'normal' of double digit growth. Indian manufacturing is clearly at a point of inflection and the next few years will determine its future for years to come.

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