INDUSTRIALIZATION IN 21ST CENTURY:
IMPLICATIONS FOR INDIA

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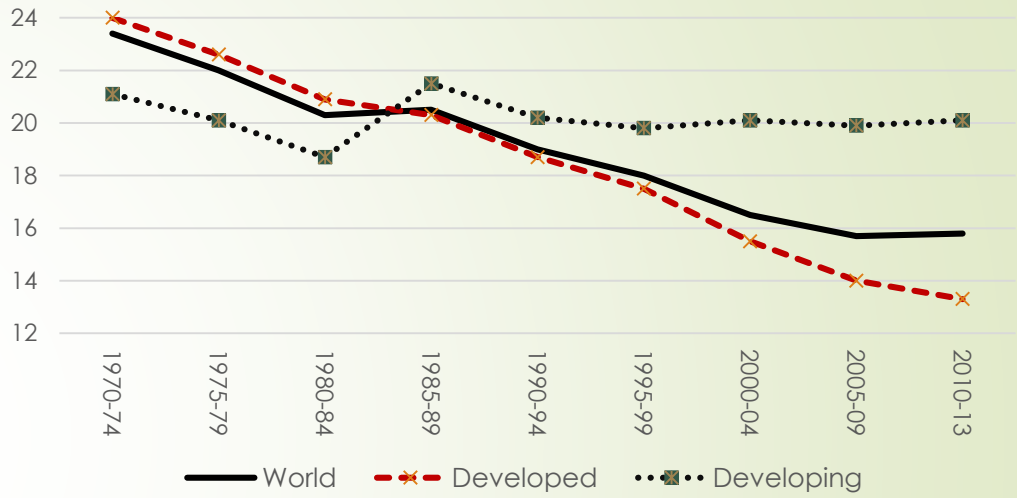
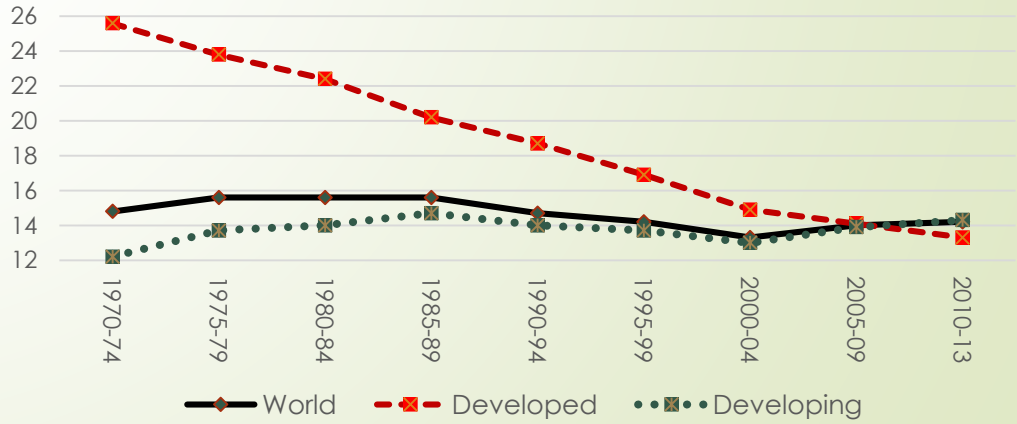
Introduction (1)
GLOBAL MANUFACTURING : OUTPUT & EMPLOYMENT

- Manufacturing shares in GDPs of world and developed countries have been steadily declining since 1970. In developing countries it has been stable since 1990 around 20 percent.
- Share of employment in manufacturing in total employment, for developed and developing countries, show opposite trends since 1970. The share in developed countries declined by almost 12% point (25.6% in 1970 to 13.3% in 2013) whereas it has increased from 12% to 14% for developing & emerging industrialized economies (DEIEs).
- A distinctive characteristic in manufacturing employment has been the growing share of informal employment, which has increased from 29% in 1970 to about 40% in 2010. This trend has been more marked in DEIEs over last three decades.

Manufacturing Value Added Share in GDP



Manufacturing employment share in total employment



Source: UNIDO database

Introduction (2)
GLOBAL MANUFACTURING : EXPORTS

- Share of manufactured exports in total global exports increased from around 60% in 1960-64 to about 79% in 1996-2000 but then has subsequently declined to 68% in 2011.
- A changed characteristic within manufacturing global exports has been the growing share of developing & emerging industrialized economies (DEIEs), which has increased from 18% in 1990 to 36% in 2014, mainly driven by manufactured exports from Asia-Pacific.
- The share of medium and high tech products within manufactured exports of DEIEs have gone up 52 per cent in 2014, from 29 percent in 1990. The share of resource based and low tech exports in total manufacturing exports has declined from 71% in 1990 to 48% in 2014.

Composition of World Exports, 1962-2014

World manufacturing exports, shares by development group

	1990	2000	2010	2014
Industrialized Economies	82%	79%	66%	64%
Developing & emerging industrial economies(DEIEs)	**18%**	**21%**	**34%**	**36%**
Asia - Pacific	9%	11%	22%	24%

Source: UNIDO & data from WITS (World bank)

At the beginning of 21st Century

DRIVERS OF GOBAL MANUFACTURING (1)

Demand

- Demographic Shifts & declining demand in OECD for manufactured products
- Growth in demand in Emerging Markets

Technology

- Digitalization & Automation
- Offshoring & Reshoring
- Industry 4.0

  Internet of Things (IoT), 3D printing,

  big data analytics etc.

  Greater demand for Skilled Workers

Resource Use & Sustainability

- Trend towards a lighter GDP
- Carbon Constraints & higher Energy Costs

  Lower use of natural resources

Global Manufacturing (2)
DEMAND

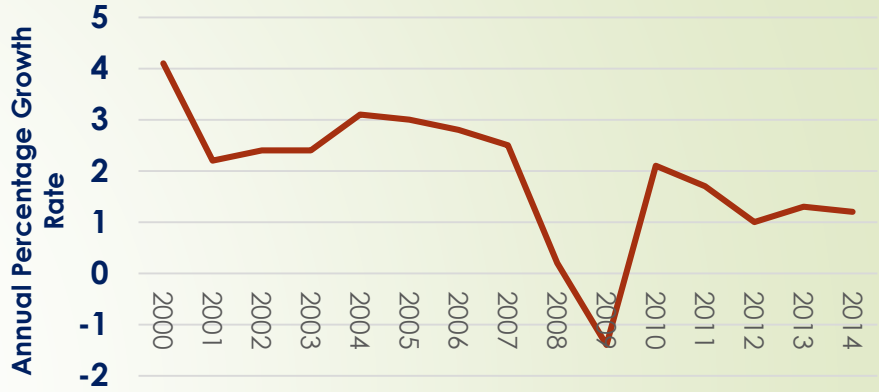
STRUCTURAL

- The role of external demand has weakened due to ageing and plateauing of consumption demand in OECD economies.
- Consumption demand in emerging economies is rising but not yet fully compensating for decline in OECD demand.
- Some emerging trends for preference for 'local produce' in OECD economies. Calls for protectionism and rolling back trade liberalisation deals.
- Investment demand for manufactured goods in OECD also not as strong.

CYCLICAL

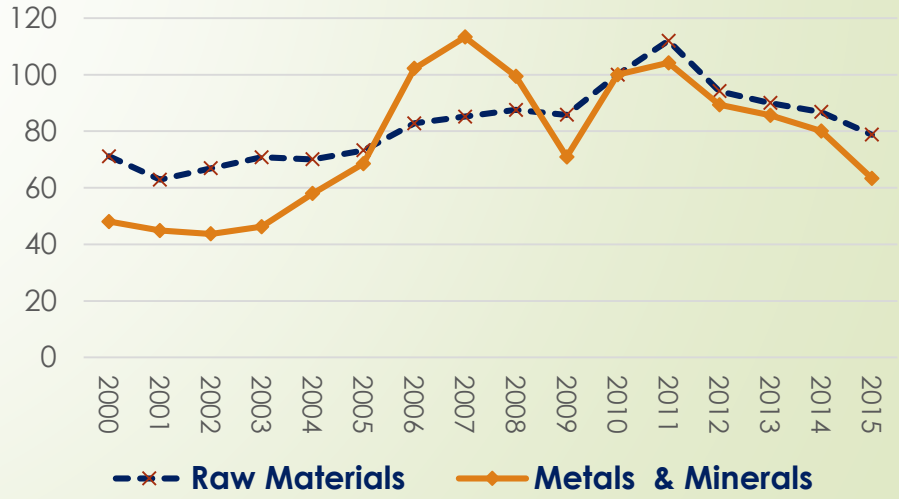
- Rising demand in DEIEs had sustained growth. Severely affected by slowdown in China and crash in global commodity prices

Decline in Household Final Consumption in OECD



Source: OECD data base (www.stats.oecd.org)

World Commodity Price Indices *



*World Commodity Price Indices, Real 2005 US Dollar, Source: World Bank Commodity Price Data (The Pink Sheet)

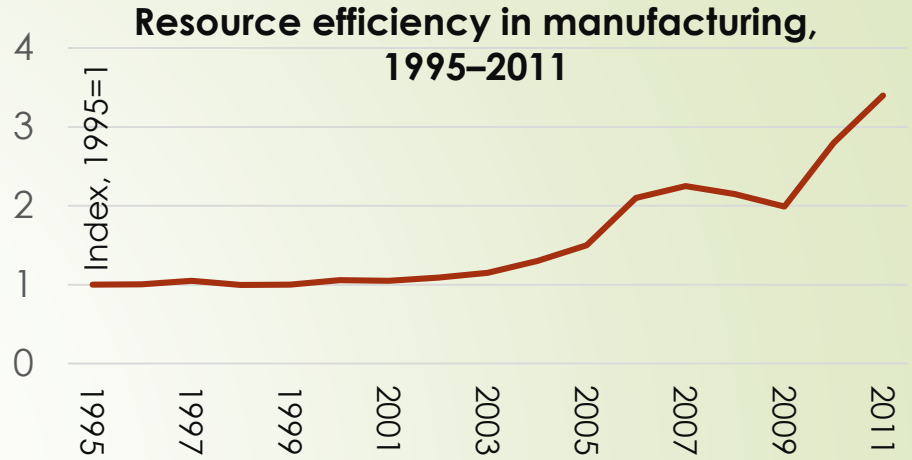
Global Manufacturing (3):
TECHNOLOGY TRENDS

- Sharp increase in use of digital and networking technologies and robotisation are making manufacturing highly technology intensive.
- Also skills required are changing. No more able to absorb unskilled labour being released from agriculture.
- Industry 4.0 incorporates and reflects all these features.
- The imperative of achieving global competitiveness in an open, liberal and globalizing economy implies that new manufacturing capacities even in emerging economies have to incorporate cutting edge technologies. These are generally not in sync with employment maximization.
- The markedly rising share of intra-industry trade in manufacturing sector and emergence of vast regional and global production networks, poses a challenge to the extant notions of comparative advantage.
- Disaggregation of production chains implies greater share of logistics related services in manufacturing even in emerging economies.

Global Manufacturing (4):
RESOURCES USE & SUSTANIABILITY

- The world economy today uses around 30% fewer resources to produce one Euro or Dollar of GDP than 30 years ago* . This shows the trend towards **lighter GDP.**

- The manufacturing growth has been benefited by the increase in resource efficiency. For instance, resource efficiency has grown by 3.5 times over 1995-2011.



- **Carbon constraints** would make energy rationing, to adopt energy mixes, less usages fossil fuel sources for electricity generation.

- Economic costs for industrialization under carbon constraints are going to be challenging, especially for developing & emerging industrialized economies.

- Changes in demand structure due to rising incomes and the impact of global industrial competitiveness push economies to specialize in medium- and high-tech activities and to increase the demand for highly **skilled workforce**.

- So, abundant skill workforce in a nation is increasing determinant of competitiveness of their manufacturing sectors.

* Sustainable Europe Research Institute (SERI), Austria, 2009

Resource efficiency is measured as the ratio of value added globally at basic prices divided by the total input in manufacturing in current prices. Source: UNIDO elaboration based on World Input-Output Database (Timmer and others 2015).

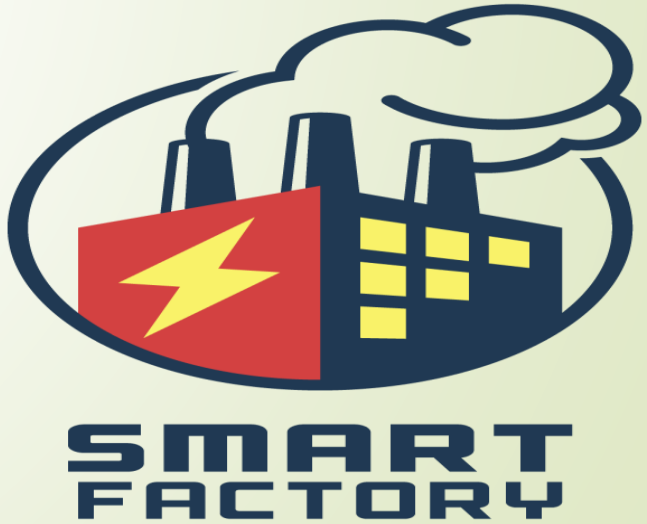
Global Manufacturing (5):
RESOURCES USE & SUSTANIABILITY

- Globally, three major goals under sustainability are energy efficiency, recycle and reuse , and waste reduction.

- Eco-innovations can be incremental or radical and disruptive. Example- Fast development of global solar photovoltaic sector has lowered prices from around $4 in 2008 to $0.8 per watt in 2012. There is forecast to drop to $0.40 per watt by 2035. (IEA 2014b).

- Production under Industry 4.0 framework is with the concept of smart factories with emerging new technologies and energy efficiency. This leads to more responsive and responsible manufacturing for sustainability.

- Third Industrial Revolution- distributed production of energy, manufactured products and knowledge: will change the economic and manufacturing landscape

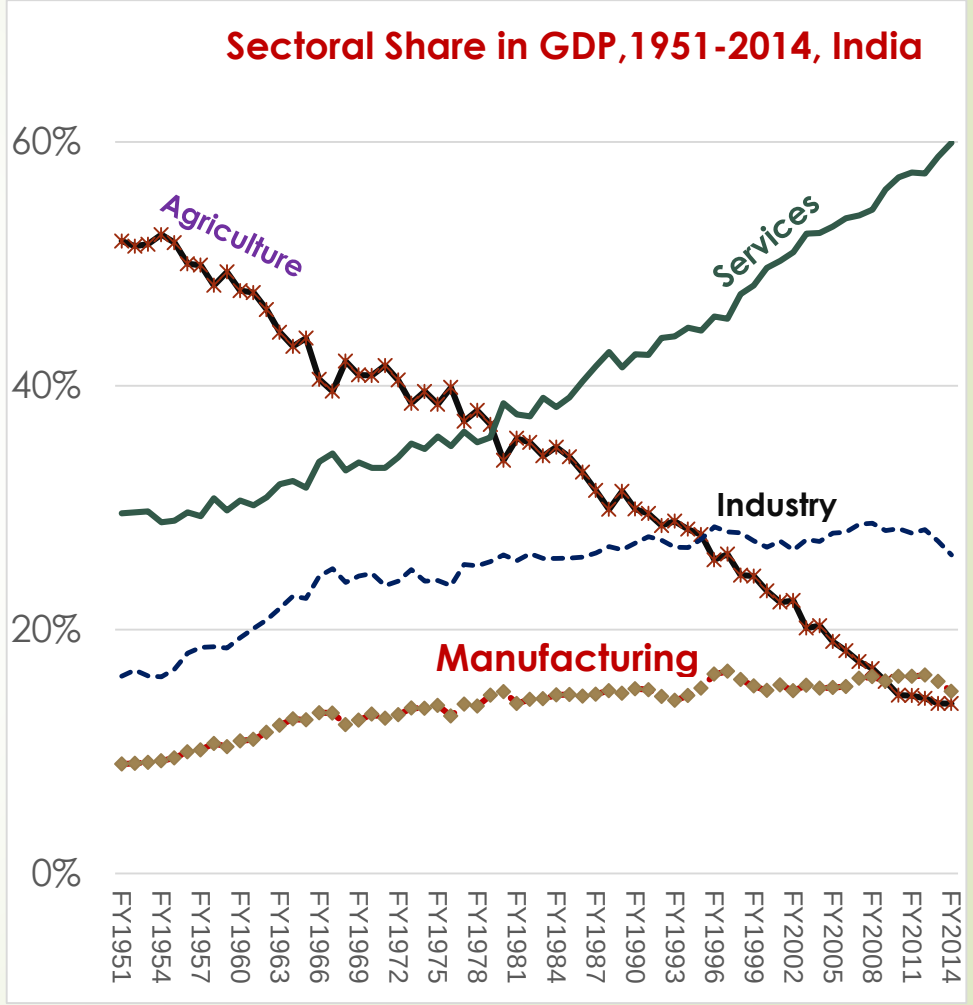


IEA- International Energy Agency

Manufacturing in India (1) : CHALLENGES

- The share of the manufacturing in GDP was around 9% in 1950, moved up to 15% in 1983-84 but has since virtually stagnated**.
- Industrial policy changes, reforms and trade liberalization since 1980 and even those after the 1991 reforms, have made little or no difference to the share of manufacturing in GDP in India !!
- Clearly the fundamental or structural constraints affecting the sector have not been addressed.
- Major Constraints are :

  - Difficult business environment;
  - Rigidity and legacy issues related to labor;
  - Extensive infrastructure deficit;
  - High cost of capital ;
  - Poor access to credit, technology and markets for micro, small and medium enterprises (MSMEs).



Sectoral Composition of GDP at factor cost, constant prices, 2004-05.
Source: Central Statistical Organisation (CSO), India

** The share of manufacturing in GDP under new series data on the basis of Gross Value Added (GVA) at basic price with base year 2011-12 is being reported at 18% for 2014-15. But,the adjusted data with long time series are not available for past years.

Manufacturing in India (2) : CHALLENGES

- India is perhaps one of the few emerging economies which has seen a decline in the share of manufactured exports from around 81% in 1999-2000 to 67% in 2014-15.
- This is on two accounts. One, The country cashed in on China induced iron ore price boom during the late 90s and 'noughties'. Two, Indian firms so far have failed to participate in regional or global production networks.
- The share of non-petroleum (manufactured) exports in total exports has declined from around 81% in 2000 to around 50% in 2015.
- Share of petroleum exports in total merchandise exports increased from less than 1% in 2000 to around 18% in 2014.
- However, an increase in share of manufacturing employment though marginal from 10.9% in 1991to 12% in 2014 could imply that pessimism about manufacturing's job generating prospects may be overstated.

Share (%) of Manufacturing in GDP, Total Employment and Exports for World, China and India*

	World	China	India*
1991			
GDP	19	33	15.0
Total Employment	14.4	13.9	**10.9**
Exports (Merchandise)	71	76	72
2014			
GDP	15.8	31	15.2
Total Employment	11.5	11.7	**12**
Exports (Merchandise)	67.3	94	67

*Source: Indian National database , CSO & DGCI&S for India & world bank data base for world and China

Manufacturing in India (3) :
PRINCIPAL CHARACTERISTICS

Structural issues– in the light of Global Competitiveness

- A marked dualism has come to characterize the Indian manufacturing sector. This is reflected in the huge gap in terms of productivity, investments, output and the distribution of employment between the organized and unorganized sectors of manufacturing.

- Output share of unorganised or informal sector in Total manufacturing has declined from 70% in 1950s to 30 % in 2010s,

  Employment share has increased from around less than 30% to about 80% in 2014. India has the largest informal employment in manufacturing globally.

- The preponderance of micro, small and medium sized units that operate in the unorganized sector could be a reason for India's inability to engage in global production networks. This has also been called the problem of the 'missing middle'.

Manufacturing in India (4) :
POLICY INITIATIVES SINCE 2000

Manufacturing under UPA government

- United Progressive Alliance (UPA) (2004-2014), established the National Manufacturing Competitiveness Council (**NMCC**) in 2004 and announced the **New Manufacturing Policy (NMP) in 2011.**
- One of major goal was to raise the share of manufacturing in GDP to 25% by 2022. The establishment of manufacturing facilities for domestic and export led production, along with associated services and infrastructure was envisioned with the creation of National Manufacturing and Investment Zones (**NMIZs**).
- Manufacturing sector growth has averaged 6.6% over 2004-2014, which is lower than aggregate economic growth (GDP growth) of 6.8% during the same period. As a result, the sector's share has marginally come down (15.2% in FY2004 to FY15% in 2014) despite the government plans and policies!

Manufacturing in India (5) :
POLICY INITIATIVES SINCE 2014

Manufacturing brought center stage for economic growth by the present NDA government

- National Democratic Alliance **(NDA),** government in office since May 2014, has focused on 'Indian Manufacturing'. It has virtually adopted all the goals envisioned under UPA's NMP 2011.
- Major thrust for growth in manufacturing has been under **'Make in India'** program (MIIP). **'Skill India'** ; **'Digital India'** ; **'Start up India'** and **'Smart Cities'** along with MIIP are of some of crucial programs of the central government that in collaboration with various state governments have the potential to reinvigorate the manufacturing growth in India.

Manufacturing in India (6) :
POLICY INITIATIVES UNDER 'MAKE IN INDIA'

- Government has adopted focused approach for 25 productive sectors in which eleven sectors are from manufacturing :
- Manufacturing sectors are, 1. Auto Components; 2. Automobiles; 3. Biotechnology; 4. Chemicals; 5. Defence Manufacturing; 6. Electrical Machinery; 7. Electronic System Design and Manufacturing; 8. Food Processing; 9. Leather; 10. Pharmaceuticals and 11. Textiles & Garments.
- Focussing on ease of doing business and improving business environment. Example- Self certification, third party inspection provision, single window clearances, combing 18 application forms into one, applications for Industrial License are accepted online (24X7) etc.
- Better inter-government coordination and government trying to become a more proactive partner
- State governments now on board for being ranked on 'ease of doing business'. World bank has helped to develop a 98 point evaluation criteria for assessing 'ease of doing business environment'. First ranking was announced in September 2015 and expected annually.
- Work in progress on simplifying labour laws
- Action plans and focus on upgradation of industrial infrastructure
- Further liberalization in FDI in sectors like Defence – 49 % can go up to 100 % in case of modernization and state of art technology, 100% FDI under automatic route permitted in Brownfield Airport projects; 100% FDI under automatic route permitted in construction, operation and maintenance in specified Rail Infrastructure projects ; 74% FDI under automatic route permitted in brownfield pharmaceuticals. FDI beyond 74% will be allowed through government approval route etc.

Manufacturing in India (8) :
SECTORAL INITIATIVES – TEXTILES & APPAREL

- Rigid labour rules, among others, caused Indian apparel exports to grow at a much slower rate. This resulted in Bangladesh exceeded India in apparel exports in 2003 and Vietnam in 2011. Apparel exports, the most labour intensive product, are flat around US$17 billion in last two years (2014 & 2015) from India.
- Therefore, a slew of measures needed, which stands as labour friendly and would promote employment generation, economies of scale and boost exports.
- New Textiles & Apparel policy of 2016 is with production & employment (generation) incentives and labour reform (an important step that can potentially be replicated in other industries, for instance, automobiles).

Manufacturing in India (9) :
SALIENT FEATURE OF 'TEXTILES & APPAREL POLICY 2016'

Policy Decisions	Expected Impact
Increase in the capital subsidy for investments in apparel sector , from 10% to 25% under technology upgradation fund scheme* for 2016-19 (3 years)	Expected to increase investments in garment segment by US$ 7 billion, employment by 1.225 million & in exports by 2.6 billion US$ in three years (upto 2019)
Government to bear entire 12% of Employee Provident Fund Scheme contribution of employer (For all new employees for first three years; with salary up to Rs. 15,000 per month)	Expecting the more employment in formal sector, that is, shift away from trend of more informlization. (over 90 % of employees are in the informal apparel sector)
Flexibility in Labour Laws to increase Productivity : Introduction of Fixed Term Employment under Sub section 1 (15) of the Industrial Employment (Standing Order) Act, 1946	Expected to increase in investments in garment segment by US$ 4.2 billion, employment by 0.175 million & in exports by 1.4 billion US$. Allows textile companies to hire workers for a fixed period, instead of offering permanent employment.
Enhanced duty drawback coverage	Expected to increase the competitiveness of Indian exports

*one time capital subsidy for investment in the employment and technology intensive segments of the textile value chain.

Manufacturing in India (10) :
SECTORAL INITIATIVES –National Capital Goods Policy

- Some of major issues affecting the capital goods production in India are:
- **Technology depth:** Significant challenges and gaps exist in high-end, heavy-duty, high-productivity and high precision technologies across sub-sectors.
- **Cost competitiveness:** Indian manufacturers are still challenged with respect to cost competitiveness compared to their global peers due to a skewed and state-wise variation in tax and duty structure and high infrastructure and logistics cost.
- Some of significant Policy Measures under **National Capital Goods Policy 2016** are **:**
- Strengthen existing capital goods scheme: The policy recommends increasing the budgetary allocation & scope of the present 'Scheme on Enhancement of Competitiveness of Capital Goods' which include setting up of Centers of Excellence, Common Engineering Facility Centers, Integrated Industrial Infrastructure Park and Technology Acquisition Fund Program.
- To launch a Technology Development Fund under the PPP model to fund technology acquisition, transfer of technology, purchase of IPRs, designs & drawings as well as for commercialization of such technologies of capital goods.

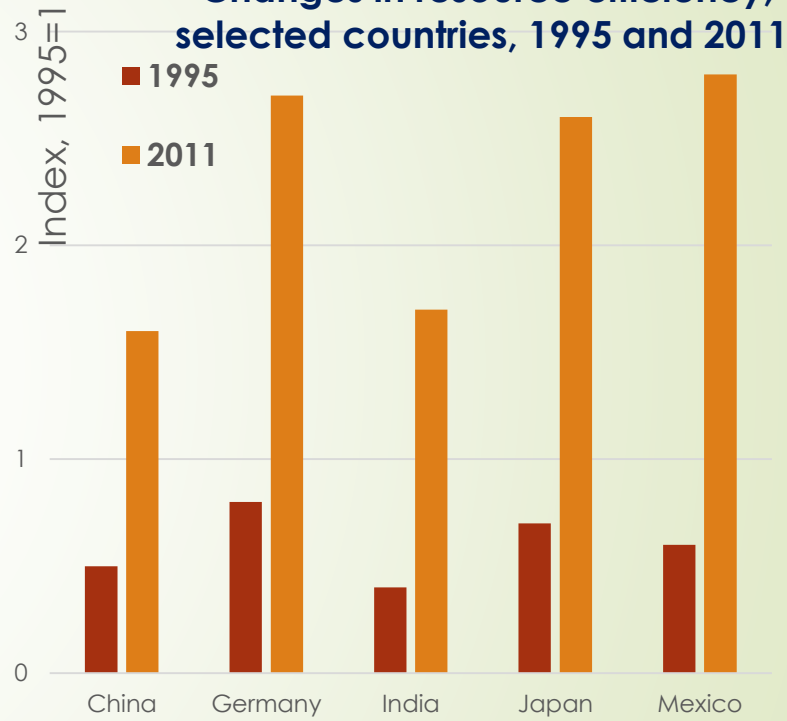
Manufacturing in India (11) : SUSTAINABILITY & RESOURCE EFFICIENCY

- ***Zero Defect, Zero Effect***

"Let's think about making our product which has 'zero defect; so that it does not come back (get rejected) from the world market and 'zero effect' so that the manufacturing does not have an adverse effect on our environment" said the prime minister of India, Mr Modi, while delivering his maiden Independence Day speech in 2014.

- Resource efficiency in India is still lower than China, Mexico, Japan, Germany (see chart A). However, rate of improvement between 1995 to 2011 has been better in India (10.1%)** in comparisons to China (8.1%), Germany (8.4%) and Japan (9.1%). The rate of improvement in resource efficiency of Mexcio was 10.8% over 1995-2011.
- India adheres the target of 20-25% reduction in emissions per unit of GDP (excluding agriculture sector) from 2005 level by 2020 as pledged targets under the UNFCCC [1].

Chart-A.
Changes in resource efficiency, selected countries, 1995 and 2011



Source: UNIDO elaboration based on World Input-Output Database (Timmer and others 2015).

1. United Nations Framework Convention on Climate Change 2011. **CAGR- Compound Annual Growth Rate

Way Forward

- Global manufacturing output share in world GDP is declining.
- The employment intensity also declining with productivity , efficiency and technology improvements, with present trend of lighter GDP.
- These present a rather difficult external environment for India to expand its manufacturing output.
- The imperative of achieving global competitiveness in an open, liberal and globalizing economy implies that new manufacturing capacities in India have to incorporate cutting edge technologies, which may not be employment intensive.
- Government will therefore have to work closely together with private industry to identify niches within manufacturing where labour intensive capacities can be expanded. This will require focused, in-depth and trust based collaboration between the Government and private business. This may be difficult.
- Special policy attention will have to be focused on development of MSMEs. These have hitherto received a lot of rhetoric but not real attention to release their binding constraints.
- Physical infrastructure deficit along with skills deficit has to be overcome urgently
- Rules and procedures for FDI may have to be further liberalized for India to effectively become participate in regional and global production networks and encourage intra-industry trade.

Thank You !

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