

MAIT Response: TRAI Consultation Paper on Telecom Manufacturing

Question 1. Large number of initiatives have been taken by the government to promote electronics manufacturing, while these initiatives have succeeded in attracting significant investments in other sectors like LED, consumer electronics, mobile handsets, automotive electronics etc., they have failed to attract investments in telecom equipment sector e.g. PMA has worked very effectively in LED sector but did not work so effectively in telecom. Please enumerate the reasons with justifications for the poor performance of local telecom manufacturing industry in spite of numerous initiatives by the government/industry.

We are outlining the following reasons for lack of growth and investment in Telecom manufacturing:

- Lack of sufficient demand and volumes (for LED, government acted as demand aggregator and captive demand is enough for mobile/handset manufacturing. Hence for rest of all other products, “India for the World strategy” can unlock that demand)
- We also need to understand the dynamics of each product segment. The complexity grows and volume decreases while we move from consumer to enterprise segment as depicted through below infographic. Hence product/segment specific approach can help.
- The CVD or BCD route can only help for products for which large market exists in India, however, for long term sustainable solution we need to understand the dynamics of each product before providing any tariff recommendations. A better approach to focus on export-oriented strategy that will guarantee volumes and competitiveness at the same time.
- Currently exports are not financially viable (please refer below explanation on cost disparity of exports of India vis-à-vis existing global nodes)
- We also need to understand why PMA has not given returns as envisaged (due to unrealistic value add norms based on BOM% rather than globally accepted substantial transformation norm)

Electronics industry can be decomposed into following spectrum addressing specific industry verticals:

Consumer Vs Enterprise Product-



**Complexity defined by # of layers on a printed circuit board; # of components on the board; % of semi-conductor; Bill of Material cost, ...



Generally speaking, **consumer products are easier to localize**. Given the high volume and low complexity of such consumer products, one can find more examples of consumer electronics being localized. The manufacturing footprint strategy for consumer products is hinged upon:

- Lowest operating cost – labor, freight, facilities, electricity, etc.
- Proximity to customer base

On the other end of the spectrum are products procured by Enterprise & Service Providers. The **manufacturing for Enterprise / Service Provider products can be characterized as high complexity and low volume**. The manufacturing footprint strategy for Enterprise / Service Provider products is hinged upon:

- Operating cost in balance with operating capabilities – industry maturity; technical talent; new product introduction capabilities; etc.
- Proximity to key suppliers & key customers – esp. for smooth product launches and transitions

Due to high complexity in enterprise telecom manufacturing, it is imperative for companies to establish manufacturing at global locations that can cater to as large a market as possible to achieve economies of scale by maximising volumes.

India for the World strategy

The need for large market and scale directly translates into the necessity for increased focus on an **India for the World strategy** for telecom manufacturing instead of relying only on an India for India strategy. To put the rationale for India for the World strategy in perspective, it is worth noting that India’s Domestic Demand for electronic goods was approximately \$64 billion in 2014-15. In comparison, the world market in 2014 was \$2 trillion.

Consequently, keeping an India for the World strategy at the front and centre of pragmatic policy making – enabling cost parity and market-access measures (such as PMA-G) need to be used in a judicious combination to provide the required stimulus for both domestic and foreign-owned manufacturers to exponentially increase production in the country.

The increased production and simultaneous capability build-up will also have added benefit of opportunities to Indian SMEs to grow as component manufacturers and suppliers to local factories.

Rationale for poor growth in telecom manufacturing:

1. **Unviable Exports:** There is about **5% cost differential** in manufacturing in India for Exports.

There is a cost disparity of exports of India vis-à-vis existing global nodes (e.g. Malaysia, China).

Landed cost element	India vs. China / Malaysia / Thailand (May 2016)

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a)	Bill of Material (BoM)	 India comparable <ul style="list-style-type: none"> Global pricing list Global pricing for components
b)	Inbound freight for shipping components into India factory	 3% unfavorable (Sized as <u>3%</u> of Bill of Material cost) Compared to global/regional benchmarks, India is farther away from component factories and the shipping rates are more expensive due to lower volume flowing into India specific transportation lanes vs. the ones going to “mega factories” in Malaysia, Thailand, Mexico,
c)	Transformation cost / Conversion (raw material into finished goods)	 India comparable India factory lack scale compared to China factories; Advantageous labor rates in India are offset by fully burdened cost of facilities & electricity
d)	Outbound freight for shipping out finished goods	 2% unfavorable (Sized as <u>2%</u> of Bill of Material cost) Due to low export volumes compared to global benchmarks, the logistics rates are slightly higher. Higher exports volume is needed to offset.

This cost disparity needs to be addressed for India for the World strategy to be successful. For example – through export incentives.

2. Policies such as Telecom PMA- Government procurement (PMA – G) do not incentivise production scale-up (volume):

One of the main themes of Telecom PMA policy is focus on high local value-addition norms (50%+) calculated in terms of Bill of Material (BoM) percentages.

To quote from NITI Aayog’s Report on Electronics Manufacturing (May 2016) – “A common belief among policy makers is that the higher the domestic value added in a product the better. This belief often leads countries to curb the exports of primary inputs (for example cotton and iron ore in the case of India) and protect the final good (for example, cotton clothes and steel). This is an erroneous approach. **High value added is not virtue in itself if the product is not competitive in the world markets.** It will simply not get produced on a large enough scale to make a dent in employment. On the other hand, a product may have only a small value added but if it is globally competitive, it can be produced on a mass scale with large number of jobs created. China is sometimes derided for adding just \$7 to the iPhone, which then



sells for several hundred dollars. But it is forgotten that China produces hundreds of millions of these phones, which add up to a significant number of good jobs for its workers. **It is not important how much value per unit of a product a country adds. What matters is how much total value it adds.”**

Current Telecom PMA policy value-addition is based on Bill-of-Material (BOM)%. However, the majority of components are semiconductor origin (about 80% of BOM) which do not have component manufacturing ecosystem in the country (details below). Hence, PMA value-addition norms of 50%+ for telecom products are unrealistic and unachievable.

3. Lack of portfolio approach:

The PMA policy prescribes domestic manufacturing criteria at a ‘product’ level. Currently manufacturing all the products in India may not be feasible or possible from a technology, infrastructure and commercial parameter for any investor or manufacturer willing to Make in India. Global supply chain implies that no site manufactures the entire portfolio of products and only a set of products are manufactured at each facility based on defined parameters

Evolution of the supply-chain & manufacturing eco-system in mature countries allude to the fact that products with very high-end technology, complex manufacturing processes and low volume would continue to be imported until the required supply and manufacturing ecosystem is developed and fully evolved to support local manufacture of such hi-end products and demand growth makes manufacturing viable.

To enable Export-oriented electronics manufacturing, PMA policy needs to change the value-add norms (currently based on BOM%) to allow market access to manufacturers based on achieving the following stages (based on globally accepted norms of “substantial transformation”) which can be physically verified as:

- Stage 1: Final Assembly & Test (FA&T);
- Stage 2: Printed Circuit Board Assembly (PCBA); and
- Stage 3: Local sourcing of components (based on cost, delivery, quality parity)

Achieving Stage 1 of substantial transformation would allow qualification under PMA. The OEMs would commit to develop the manufacturing process over the following three stages over the course of next few years’ dependent on the evolution and maturity of the component ecosystem. Also, presence of such global manufacturers in India will create a large pull-effect towards promotion of Indian component eco-system. It’s important to note that we need to achieve significant volumes in Stage 1, which will catalyse movement to Stage 2 and encourage component manufacturing (due to large end-product volumes) leading to Stage 3 and higher value-addition.

Question 2. What policy measures are required to be instituted to boost Innovation and productivity of local Telecom manufacturing in our country? Please provide details in terms of Short-Term, Medium-Term and Long-Term objectives.



The concept of “substantial transformation” can help in boosting gradual and phased productivity of the sector and eventually in boosting innovation and productivity.

Question 3. Are the existing patent laws in India sufficient to address the issues of local manufacturers? If No, then suggest the measures to be adopted and amendments that need to be incorporated for supporting the local telecom manufacturing industry.

Promotion of manufacturing are separate issues with different drivers and should not be conflated. It should also be noted that lack of IP creation has not been a limiting factor in countries becoming a manufacturing hub. Ex. – Vietnam, Thailand, etc. Good point

Several large global organisations have made India the home for their R&D and design which can spur the local eco-system and local companies. This investment in local talent, capability build-up for R&D and design should be promoted further.

Moreover, in a global company, a product IP is comprised of several components and developed through collaboration of multiple teams in multiple geographies.

Question 4. Is the existing mechanism of Standardisation, Certification and Testing of Telecom Equipment adequate to support the local telecom manufacturing? If not, then please list out the short-comings and suggest a framework for Standardisation, Certification and Testing of Telecom Equipment.

Again, quoting from the Niti Aayog’s Manufacturing paper (May2016) - “Before we rush to forcing our standards in the domestic market, we need to create a business-friendly ecosystem and grow larger. Premature adoption of standards can scuttle the growth of the industry prematurely. One way to see this is to ask whether the adoption and enforcement of a local standard in mobile telephony in the early 2000s would have permitted the phenomenal expansion of mobile phones that we saw in the last decade.”

It is critical that for an **India for the World** strategy to succeed, Indian standards, certification and testing mechanism are harmonised with global standards and best practices. Otherwise, standard-setting in siloes will hamper the growth of Indian Telecom Manufacturing.

Furthermore, it is important that government incentivises setting up a good testing lab infrastructure in the country which are capable of certifying to international standards and practices. STQC-International Common Criteria Certification Scheme is one such example where India can grant international Common Criteria certificates on security aspects.



Sometimes, security is cited as the primary reason for need of local testing and certification. It is worth noting that companies are responsible for end-to-end supply chain security independent of the location of manufacturing of product/ components.

Question 5. Please suggest a dispute resolution mechanism for determination of royalty distribution on FRAND (Fair Reasonable and Non-Discriminatory) basis.

N.A.

Q.6 Are the current fiscal incentives sufficient to promote the local telecom manufacturing? Please suggest the fiscal incentives required to be instituted along with the suitable mechanism for implementation of these incentives?

- 1) There is an urgent need to correct the Cost disparity of about 5% for exports for an India for the World manufacturing strategy to succeed through relevant interventions which has been stated above. Export Incentives of 5% would help exports from India become competitive. Such as through the MEIS scheme of the government.
- 2) All available incentives available to manufacturing are capex based incentives. What we need, is throughput based incentive (on what we manufacture), both for domestic and export for 3-4 years' timeframe, based on the extent of value addition by a manufacturing unit. Thus, the higher the value addition, the higher the subsidy and vice versa.

Q.7 Are there any issues under ITA which need to be addressed for making the local Telecom Manufacturing more competitive and robust

N.A.

Q.8 Should an export oriented/promotion approach be adopted in the telecom equipment manufacturing sector? If yes, please suggest the steps to be taken to create suitable environment to attract foreign investment players for setting up establishments which in turn can result in technology dissemination, innovation, generation of jobs, skilled labour force, etc.?

There is about **5% cost differential** in manufacturing in India for Exports as highlighted above. This cost disparity needs to be addressed for India for the World strategy to be successful.

Yes, an export-oriented strategy is essential for the high-end telecom manufacturing sector to achieve the necessary volumes to be globally competitive, thereby creating larger number of jobs, building capabilities within the country and creating pull for local component suppliers to establish and grow.

There is a Unique value-addition of advanced global telecom manufacturing coming into the country. The co-location of R&D and high-tech manufacturing leads to a fly-wheel effect, resulting in faster product development and accelerated time-to-market. This builds the eco-system and achieves self-sustainable continuous growth.



Niti Aayog's Manufacturing paper also points out that "...import substitution is unlikely to lead to rapid enough expansion of our electronic industry. If we want rapid transformation, we must adopt an export-oriented strategy and work towards creating an ecosystem in which the industry can be globally competitive without import protection."

The rationale for the importance of an **India for the World strategy** at the front and centre of policy-making have been detailed in Answers to Question 1 and 2 above which is reiterated below:

Due to high complexity in enterprise telecom manufacturing, it is imperative for companies to establish manufacturing at global locations that can cater to as large a market as possible to achieve economies of scale by maximising volumes. The need for large market and scale directly translates into the necessity for increased focus on an **India for the World strategy** for telecom manufacturing instead of relying only on an India for India strategy.

To put the rationale for India for the World strategy in perspective, it is worth noting that India's Domestic Demand for electronic goods was approximately \$64 billion in 2014-15. In comparison, the world market in 2014 was \$2 trillion.

Consequently, keeping an India for the World strategy at the front and centre of pragmatic policy making – enabling cost parity and market-access measures (such as PMA-G) need to be used in a judicious combination to provide the required stimulus for both domestic and foreign-owned manufacturers to exponentially increase production in the country.

The increased production and simultaneous capability build-up will also have added benefit of opportunities to Indian SMEs to grow as component manufacturers and suppliers to local factories.

To quote from Niti Aayog's Report on Electronics Manufacturing (May 2016) – "A common belief among policy makers is that the higher the domestic value added in a product the better. This belief often leads countries to curb the exports of primary inputs (for example cotton and iron ore in the case of India) and protect the final good (for example, cotton clothes and steel). This is an erroneous approach. **High value added is not virtue in itself if the product is not competitive in the world markets.** It will simply not get produced on a large enough scale to make a dent in employment. On the other hand, a product may have only a small value added but if it is globally competitive, it can be produced on a mass scale with large number of jobs created. China is sometimes derided for adding just \$7 to the iPhone, which then sells for several hundred dollars. But it is forgotten that China produces hundreds of millions of these phones, which add up to a significant number of good jobs for its workers. **It is not important how much value per unit of a product a country adds. What matters is how much total value it adds.**"

Q.9 Does the existing PMA policy require any change? If yes, then please provide complete details with justifications.

We present a high-level overview of the current challenges in the PMA faced by the ESDM sector and potential solutions/enablers:

1. High Value Addition Norms:

Challenges

The PMA policy, in general, prescribes the following conditions for the government departments for procurement of electronic goods:

- Specified percentage of procurements from domestically manufactured goods
- 25% to 50%+ of the BOM is made of domestically manufactured goods
- Automatic increase of 5% on domestic value addition from year 2 onwards
- Requirement of complete local manufacturing for certain products from year 3 onwards

However, given the industry infancy, the component supply base is practically non-existent in India. See below illustrative BOM table for a set-top box for reference -

An ILLUSTRATIVE Set To Box Bill of Material (BoM)

Commodity category	Component	Suppliers (incl. global leaders)	Present in India – Y/N	Indicative Sizing
1 Plastics & mechanicals	•Mechanical fabrication (base cover, sheet metal, ...)	•Flextronics, Supreme	•Y	} 15% of costed BoM
	•Plastic fabrication	•Rosti, G-Plast, Nypro	•Y	
	•Cables / wires	•Amphenol, Molex, FCI, Volex	•Y	
			•Y	
2 Electro-mechanical (elect + specialty)	•Caps & Resistors (thru-hole)	•Vishay	•Y	} 5% of costed BoM
	•Heat sinks	•Auto ancillary (e.g. Jindal extruders)	•Y	
	•Batteries & power supplies	•Laird Tech, Murata	•Y	
	•Connectors	•Tyco, Molex, FCI, Amphenol	•Y	
	•Printed Circuit Brd. (2-4 yrs)	•AT&S, Epitome, Ascent	•Y	
	•Caps & resistors (SMT)	•Belfuse, Delta, Lineage, Panasonic	•N	} 80% of costed BoM
	•Inductors & magnetics	•Delta, Jan Mao	•N	
3 Semi-conductor (aka Silicon)	•Communications module	•Broadcom, Marvell, Maxim	N	} 80% of costed BoM
	•Diodes	•Diodes Inc, Fairchild, ST Micro, ...		
	•Linear Voltage Regulator	•Maxim, TI, National Semi, Linear Tec.		
	•Logic, Memory	•NXP, Hynix, Samsung, Fairchild, TI		
	•Chipsets; Logic devices	•Freescale, Fairchild, Broadcom, PMC		
	•Timing devices	•Maxim, Pericom, Kyocera, Analog		
	•Transistor	•Fairchild, Central Semiconductor		

Apart from the plastics & mechanicals and electro-mechanical components that contribute only about 15% to Bill of Materials (BoM) for some of the low value products, there is no presence of specialty electronics and semi-conductor products which contribute about 80% to BoM. The current system of computing value addition for PMA or every product may not be feasible as the prescribed levels of value addition may not be achievable given the depth and breadth of manufacturing in India.

The current PMA qualification threshold will constrain the major electronics manufacturers from qualifying for the PMA. Existing global supply agreements with significant existing investments in supply-chain and yet to develop local ESDM supply & manufacturing ecosystem, make the current PMA value addition norms un-achievable for any manufacturer seeking to make serious investment.

Enablers:

Revising the policy of PMA-G by incorporating the substantial transformation rules for value-addition as per global norms and deemed domestic manufacturing credits i.e. Allowing \$ for \$ to qualify for PMA-G in lieu of exports.

Aligning value-add to the concept of substantial transformation through operational steps of technology assembly basis the stage of eco-system development. The Substantial transformation norm for this policy would mean:

- Goods transformed through final assembly and testing.
- The OEM commits to develop the manufacturing process over the following three stages spread over a period of 5-15 years dependent on the evolution and maturity of the ESDM ecosystem.
 - (i) Stage 1: Final Assembly & Test (FA&T);
 - (ii) Stage 2: Printed Circuit Board Assembly (PCBA); and
 - (iii) Stage 3: Local sourcing of components (based on cost, delivery, quality parity).

2. Manufacture of select portfolio in India and Import of other products

Challenges

The PMA policy prescribes domestic manufacturing criteria at a 'product' level. Currently manufacturing all the products in India may not be feasible or possible from a technology, infrastructure and commercial parameter for any investor or manufacturer willing to Make in India.

Global supply chain implies that no site manufactures the entire portfolio of products and only a set of products are manufactured at each facility based on defined parameters

Evolution of the supply-chain & manufacturing eco-system in mature countries allude to the fact that products with very high-end technology, complex manufacturing processes and low volume would continue to be imported until the required supply and manufacturing ecosystem is developed and fully evolved to support local manufacture of such hi-end products and demand growth makes manufacturing viable.

Enablers

The product portfolio & technology composition, domestic & global demand, existing global manufacturing base, stage of evolution of the domestic manufacturing ecosystem, global access & export feasibility etc. are factors that would determine the eligible share of product portfolio that can be manufactured in India and those which would have to be imported into India.

Government of India ("GoI") to take note of the fact that all the products prescribed for PMA may not be feasible to be sourced from the domestic Indian market given the technological, infrastructural and commercial constraints.



The Original Equipment Manufacturers (“OEMS”) should be granted a deemed domestic manufacturing credit for 100% of their manufacturing volume – independent of product, export / domestic consumption. The credit can be used for supply of imported portfolio products against PMA contracts.

Q.10 Any other relevant issues that needs to be addressed to encourage local telecom manufacturing in our country.

Ease-of-business climate in the country is a big limiting factor in decision-making by large manufacturers to enter India. While the government has taken substantial measures to provide fast-tracking and ease-of-business for companies looking to invest in the country, similar focus and urgency is needed to resolve day-to-day operational issues companies face while dealing with the Government.