

# **MAKE IN INDIA: ROLE OF ENGINEERS & TECHNOLOGISTS**

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**ARE WE PREPARED TO TAKE  
CHALLENGES?**

## **We often Hear**

**“ India has around 70% population below the age of 35. We have largest talented pool of skilled manpower in the world. At a time when many leading developed western countries are ageing very fast and many have negative population growth rate we are in a advantageous position.”**

## We also know

**“Make in India” is government’s new major policy push and has potential to transform India. Skilled talented human resource , technology, research, innovation, infrastructure, land , labor & taxation policies are major areas which needs attention apart from others.**

**BUT**

**DO WE KNOW?**

## **DO WE KNOW ?**

- **Most students join engineering not because of interest or passion but for better job prospects.**
- **Majority of them wants to join computer science based courses.**
- **Each year 13.5 lacs students appear for JEE (main entrance tests) . Many appear in other state /private entrance tests as well.**
- **We have more than 4000 engineering colleges in India with **annual intake of 1. 67 million (2015).****

## **DO WE KNOW ?**

- **We have approx. 50,000 seats in IITs, NITs, IIITs, & CFTI's. We may consider another 35000 seats in other reputed state and private institutions (having ranks in top 120 or so in India).**

### **Where others go?**

- **Last year large number of seats in many engineering colleges were vacant. Many colleges have applied to close down.**



## **DO WE KNOW ?**

- **AICTE has decided to cut down UG engineering seats by as much as 40% over the next few years by allowing some colleges to close down and also by reducing the student intake.**
- **India is producing 1.5 million engineers each year. It is more than the total number of engineers produced by USA and china combined together.**
- **As per NASSCOM studies 17.5 % were employable.**
- **Employability varies from 12 to 42% in various states.**

## **DO WE KNOW ?**

- **Only 7% were fit for core engineering jobs.**
- **Only 11% find job in knowledge intensive sectors ( 74% due to language issues and 58% due to poor analytical and quantitative skills).**
- **90% of engineering graduates wants jobs in mechanical, electrical, electronics & civil but only 7.49% were employable.**
- **In non tech roles most engineers find employment in BPO's.**
- **Only 11.5% engineers even qualify for business analyst jobs.**

## **DO WE KNOW?**

- **Several engineers end up working as sales executive.**
- **About 20-30% graduates run the risk of not getting the job at all.**
- **Large % of unemployable but qualified candidates is sure recipe of disaster and social instability.**
- **Make in India is key but adding engineers in to market without empowering them is dangerous. If we don't skill the nation we are going to kill the nation.**

# **DO WE KNOW?**

- **At present majority of engineers have inadequate preparation in the domain area. 91.8% of computer/IT engineers & 60% in other branches fall short of domain knowledge.**
- **They lack ability to apply basic principles to real world problems.**
- **There is gap in teaching & learning pedagogy being followed in majority of colleges.**
- **There is hardly any research or innovation environment in our institutions. Which is evident from number of papers published in peer reviewed journals, citation index and patents. We don't figure in top ranks.**

## **DO WE KNOW?**

- **Very few % of students consider doing masters degree.**
- **Very few engineering graduates from top institutions opt for core engineering jobs.** They prefer other high paying options. Even if they think of doing masters or doctorates they prefer universities abroad.
- **Majority of students doing masters in top institutions are graduates from tier 2 or 3 colleges.**
- **There is severe shortage of competent faculty in academic institutions.** Even in old IITs faculty shortage is as under:  
**Kharagpur 42% , Bombay 39%, BHU 53%,Roorkee 42%, Delhi 33% and Guwahati 26%.**

## **DO WE KNOW?**

- **Majority of our engineering organizations also do not have structured way of preparing these fresh engineers for the job. However we need to create an enabling environment for proper training ,up gradation of skills and knowledge .**
- **We need to build indigenous capability for developing world class products in India. Building products under license can be a great catalyst for developing the right type of capability but it must be seen as a stage on the journey not an end goal in and of itself.**

## **DO WE KNOW?**

- **Engineering profession is also grappling with several professional issues particularly related to qualification ,competence , registration & regulation.**
- **We do not have any standard definition of “Engineer.” Every local body, department has its own definition of engineers.**
- **Architect’s Act is being misused to make engineering subservient to architects.**

## **DO WE KNOW?**

- **Engineering profession has no legal backing. Engineering is in fact not considered a profession as per legal terminology.**
- **Building bye-laws & policies affecting engineers are being framed without consulting practicing engineers.**
- **An Engineer is required to register at each municipality to practice and each one has different set of requirement. You are even not sure of your eligibility .**



## **DO WE KNOW?**

- **How can engineering grow in such a state of uncertainty ? Can we attract talent to core engineering?**
- **In brief, the entire eco system of engineering professional practice is not at all conducive for the development of engineering profession.**

## DO WE KNOW?

- **The Engineers Bill has been having a painfully torturous journey in the legislative process by the Government.**
- **An institutional mechanism must be there to ensure that engineers adhere to best ethical standards, and opportunity is provided for their career and professional knowledge development. This is not only in the interest of the engineers but it is required for the safety and welfare of the society as a whole including for "Make in India".**

## **DO WE KNOW?**

- **There are large number of professional associations/Institutions including ECI & IEI(I) making it difficult to have a unified strategy .**
- **We can't imagine success of 'Make in India' without focusing on quality of engineering education, training , professional development and regulation of the engineering profession.**

- **Are we not dealing with ill prepared influx of Engineers & Technologists?**
- **Is government or our profession is taking corrective steps in this direction?**

- **Who will work to resolve professional issues confronting our profession?  
ECI, IEI(I), EAG ???**
- **Are we really prepared for taking challenges posed by “Make in India”?**

**It's a big opportunity for  
us to grow and move  
ahead. Lets grab it.**

THANK YOU