Capacity Building Program

Strengthening Governance, Regulatory and Compliance (GRC) Management for Revitalizing MSMEs (Including GST, Ease of Doing Business, Make in India & Atma Nirbhar-Imperatives)

by

Indian Institute of Corporate Affairs

Ministry of Corporate Affairs

(Govt. of India)

Brief Case Study

Building MSME Core Competencies utilizing optimization of Energy Efficiency, Energy Storage & Renewable Energy in post Covid-19 Business Era

28 December,2020

Dr.Prakash Barjatia

GB Member & Director – Education & Training
Indian Society of Lighting Engineers (ISLE)
Honorary Member : ASSOCHAM GEM Green Building Council
Member : Battery Society of India
Life Member : Quality Circle Forum of India

- **Ex-Scientist ‘E’ :**

Central Institute of Road Transport, Pune

- **Ex-Director :**

MIT School of Energy & Lighting, Pune

- **Ex-Executive Director (Systems & Strategies) :**

M/s. Power Electronics, Pune

- **Lead / Technical Assessor :**

NABL, Ministry of Science & Technology, New Delhi

SWOT Analysis : Industrial Development

Strength

- Abundant Natural and Human Resources
- Young Population
- Entrepreneurship
- Cheap Labour
- Potential Market : Growing Rural Markets Post COVID 19
- Democracy
- S & P 500 Index to grow 8-9% in 2021
- Innovative Minds and Problem Solving Skills

Weakness

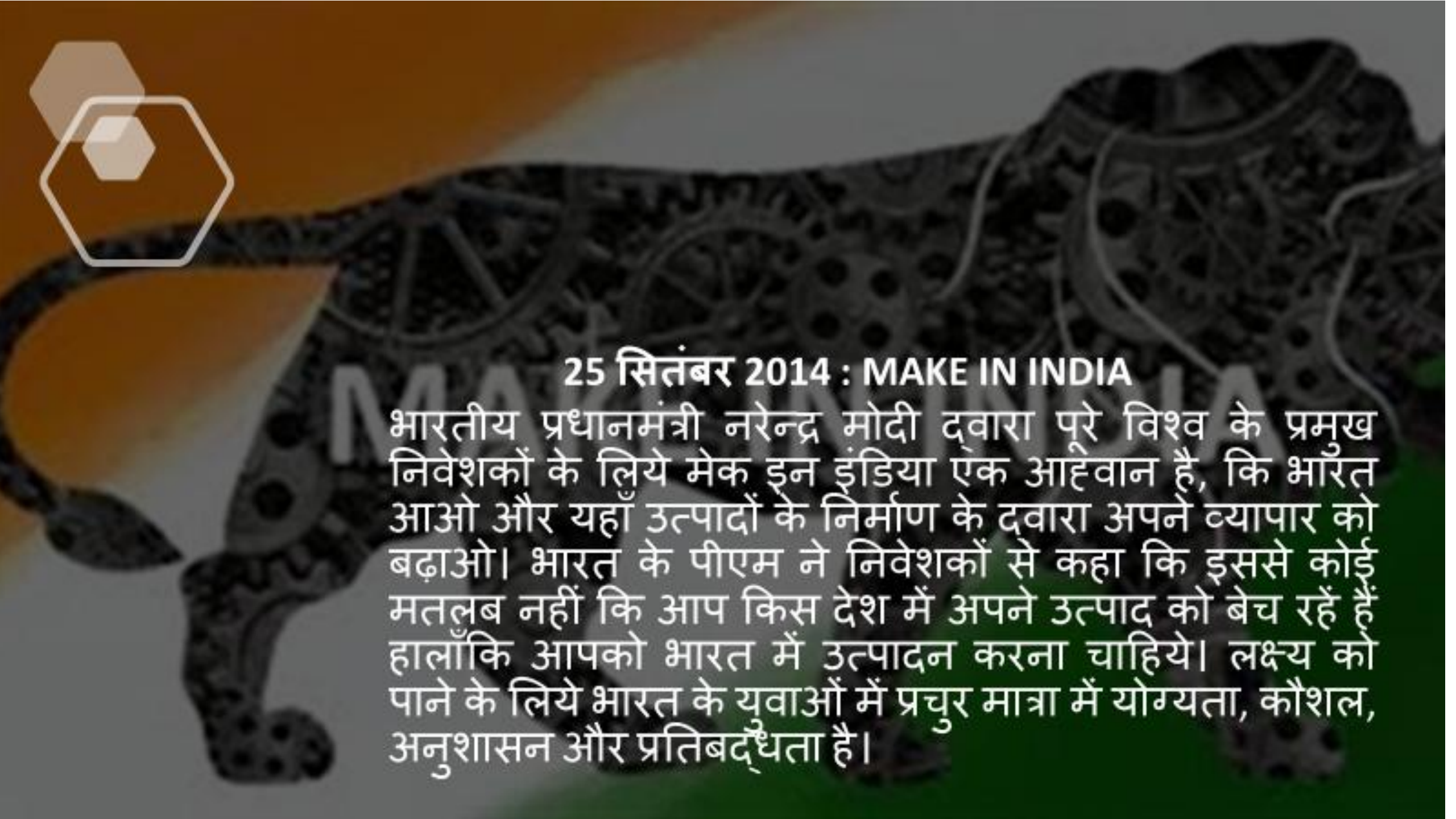
* Inadequate Risk Appetite
*Poor and Late Technological Adoption
*Mindset – Lack of Confidence
*Outdated and Unemployable Skills
*Inefficient use of Resources viz. Solar
*Inconsistent Policy Framework
*Minimal Investments in R & D
*Old Fashioned Bureaucracy

Opportunities

- FDI (Foreign Direct Investment)
- Economic Growth
- Technological Upgradation (Digital India)
- R & D (Research & Development)
- Employment
- Skill Development (Skill India)
- IPR (Intellectual Property Rights)
- Abundance Natural Resources

Threats

*Global Competition
*China Dominance
*Corruption
*Environment
*Unemployment -
Leading to Theft, Robbery,
Suicide



25 सितंबर 2014 : MAKE IN INDIA

भारतीय प्रधानमंत्री नरेन्द्र मोदी द्वारा पूरे विश्व के प्रमुख निवेशकों के लिये मेक इन इंडिया एक आह्वान है, कि भारत आओ और यहाँ उत्पादों के निर्माण के द्वारा अपने व्यापार को बढ़ाओ। भारत के पीएम ने निवेशकों से कहा कि इससे कोई मतलब नहीं कि आप किस देश में अपने उत्पाद को बेच रहें हैं हालाँकि आपको भारत में उत्पादन करना चाहिये। लक्ष्य को पाने के लिये भारत के युवाओं में प्रचुर मात्रा में योग्यता, कौशल, अनुशासन और प्रतिबद्धता है।

Make in India Program was launched by PM Modi on **25 September 2014** to encourage companies to manufacture their products in India. The basic objective of this plan was to increase the share of the manufacturing sector in the Indian GDP. Make in India was a good initiative by the Government of India and it was meant to convert India from an importing economy into an exporting economy.

Important Factors for Failure

1. INVESTMENTS

The last five years witnessed slow growth of investment in the economy. (Declined to 28.6% of GDP in 2017-18 from 31.3% in 2013-14 (Economic Survey 2018-19).

2. OUTPUT

April 2012 to November 2019 - 3% or below and even negative for some months.

3. INDUSTRIAL EMPLOYMENT

Did not grow to keep pace with the rate of new entries into the labour market.

12 May,2020

आत्मनिर्भर भारत की ये भव्य इमारत, पाँच Pillars पर खड़ी होगी।

ECONOMY

एक ऐसी इकॉनॉमी जो Incremental change नहीं बल्कि Quantum Jump लाए

INFRASTRUCTURE

एक ऐसा Infrastructureजो आधुनिक भारत की पहचान बने

SYSTEM

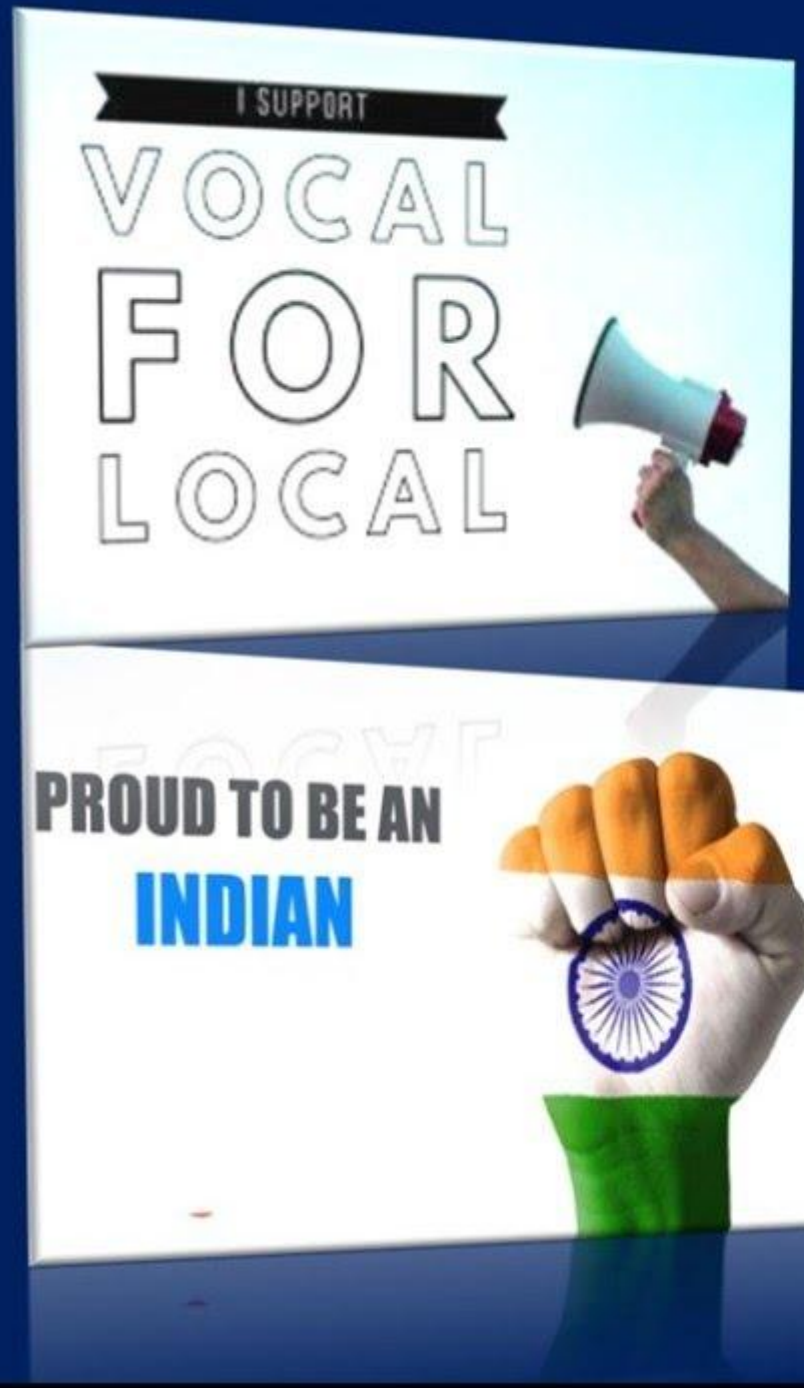
एक ऐसा सिस्टम जो बीती शताब्दी की रीति-नीति नहीं, बल्कि 21वीं सदी के सपनों को साकार करने वाली Technology Driven व्यवस्थाओं पर आधारित हो

DEMOGRAPHY

दुनिया की सबसे बड़ी Democracy में हमारी Vibrant Demography हमारी ताकत है, आत्मनिर्भर भारत के लिए हमारी ऊर्जा का स्रोत है

DEMAND

हमारी अर्थव्यवस्था में डिमांड और सप्लाई चेन का जो चक्र है, जो ताकत है, उसे पूरी क्षमता से इस्तेमाल किए जाने की जरूरत है



MADE IN INDIA

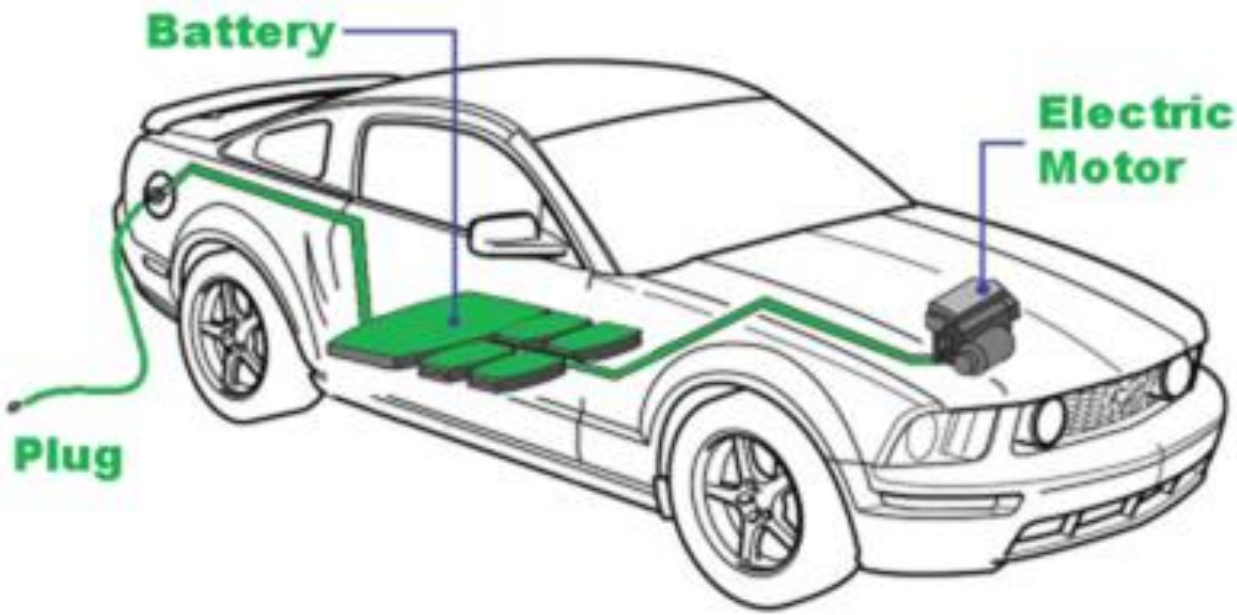
Be 'vocal' about 'local'

Prime Minister Narendra Modi Vocal for Local 12 May,2020

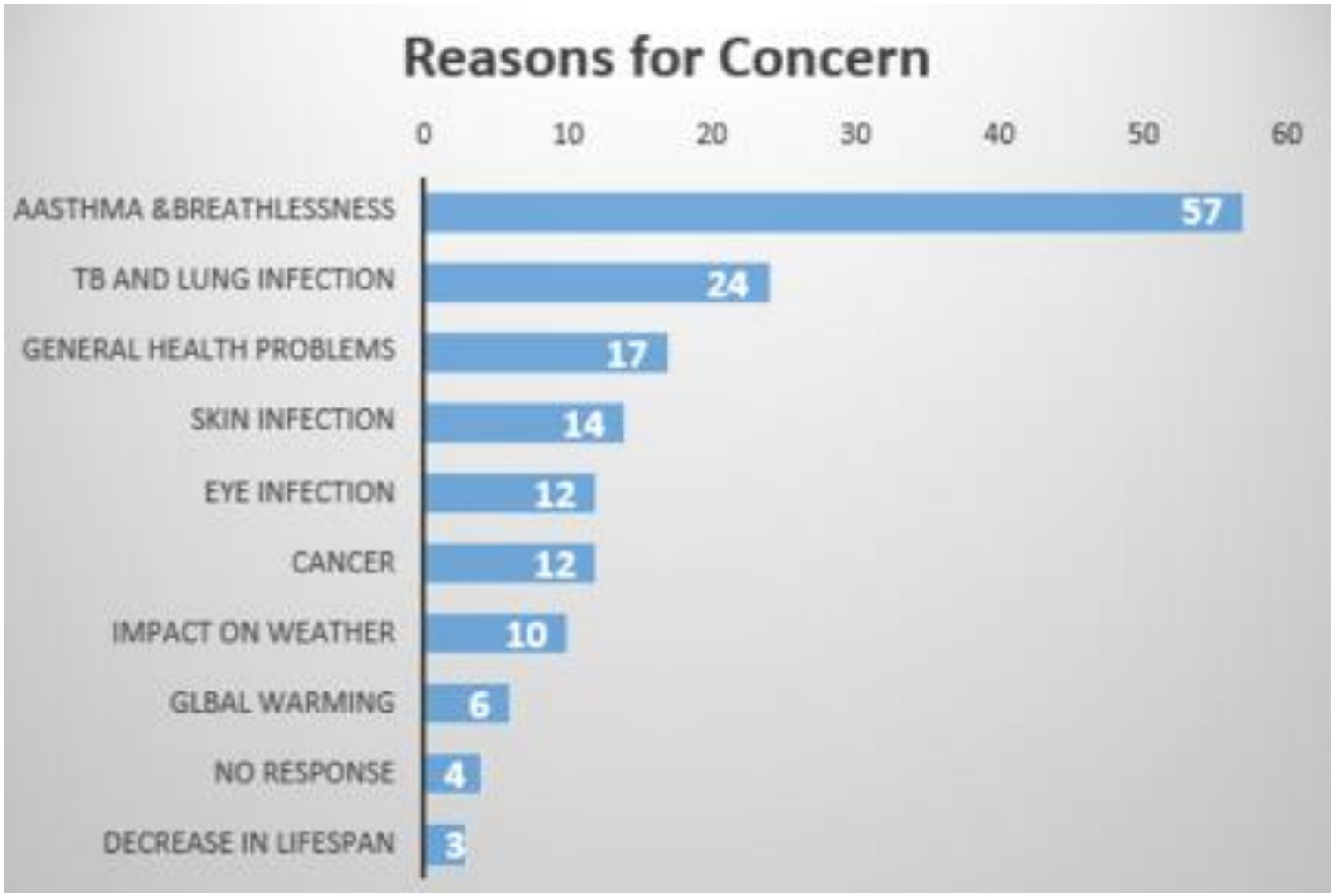
Indian Prime Minister Narendra Modi addressed the nation about the importance of local manufacturing and supply chains amid the COVID-19 crisis. Coining the phrase, “Vocal for Local”, he asserted that it is the need of the hour for the nation to come together to encourage local businesses and products.

He coined a new slogan 'vocal for local' which means to not only buy local products but be vocal about promoting them proudly. He wants Indians to make local the mantra of their lives. The PM recalled the response of people when he had given a call for them to buy khadi to support the handloom workers.

ELECTRIC VEHICLES



Pollution due to Diesel / Petrol Smoke



Likely Diseases by Smoke

Benefits of Electric Vehicles

- **Cost Effective**: With advent of advance technology and dedicated R&D, both cost and maintenance of electric vehicles has gone down. Government is incentivizing the use of Electric Vehicles by providing subsidies and lower motor taxes on EVs.
- **Environment Friendly**: Electric Vehicles are 100 percent eco-friendly. They do not emit toxic gases or smoke in the environment which leads to global warming and helps to reduce pollution.
- **Energy Security**: As electricity is majorly produced from either renewable sources or from sources that emit no greenhouse gases thus EVs help in maintain energy security by shifting dependence from non-renewable resources to renewable resources.
- **Less Maintenance**: Electric vehicles require less maintenance than conventional vehicles as there are fewer fluids (like oil and transmission fluid) to change and fewer moving parts. Where an Internal Combustion (IC) Engine car has around 10,000 moving parts, an average EV has around 20.
- **Reduction in Noise pollution**: Electric vehicles are quieter to operate than gasoline-powered vehicles, leading to reduction in noise pollution.

INDIAN SCENARIO

- India is a coal driven country and so most electricity required for EVs is supplied from thermal plant.
- Two wheelers are seen more on road due to its fuel efficiency. India is 2nd largest 2W market after China, and will remain the preferable choice till 2035.
- People in India are more concerned about the mileage, maintenance free, durable, immediately accessible and service oriented vehicles.
- Market of EV in India is about 1% over the decade.

PRE COVID 2019 : EMPHASIS AREAS

- Development of 4-Wheeler with Secondary Focus on 2/3 Wheelers
- Use of Li-Ion Batteries as Power Source
- Due to non-availability of raw materials in India for Li-Ion Batteries, focus was on Import of Raw Materials
- Due to non-availability of Technology in India for Li-Ion Batteries, focus was on Import of Technology
- As such MAKE IN INDIA was almost side lined

INDIA TV
COVID-19
CRISIS
• LIVE

15 June,2020
20 Indian soldiers martyred at the Line of Actual Control at eastern Ladakh

POST COVID 2019 SCENE

- Migration of Low / Middle Class Population from Overseas
- Mostly to Rural Areas
- Since mostly are coming from effluent nations, their expectation for minimum comfort levels
- Availability of Cheap 2/3 Wheelers for Personal / Public Transport
- Expectations – Speed : 40 KMPH # Maximum Distance per Charge : 40 KM

PRESENT SITUATION

Need	Need to Focus on MAKE IN INDIA
Need	Need to Focus on Cheap 2/3 Wheelers
Power	Power source based on raw material and technology available in the country

Segment wise analysis - EV Penetration			
Segment	**Sub segment**	**EV Penetration %**	
		2025	**2030**
2W	Scooters	15 - 25%	50 - 70%
	- B2B	40 - 60%	60 - 80%
	- B2C	13 - 18%	40 - 60%
	Motorcycles	1 - 2%	10 - 20%
	Overall	**7 - 10%**	**25 - 35%**
3W	**Overall**	**35 - 45%**	**65 - 75%**
4W - PV	Personal	1-3%	10-15%
	Commercial	5-10%	20-30%
Buses	STUs	15%-25%	25%-40%

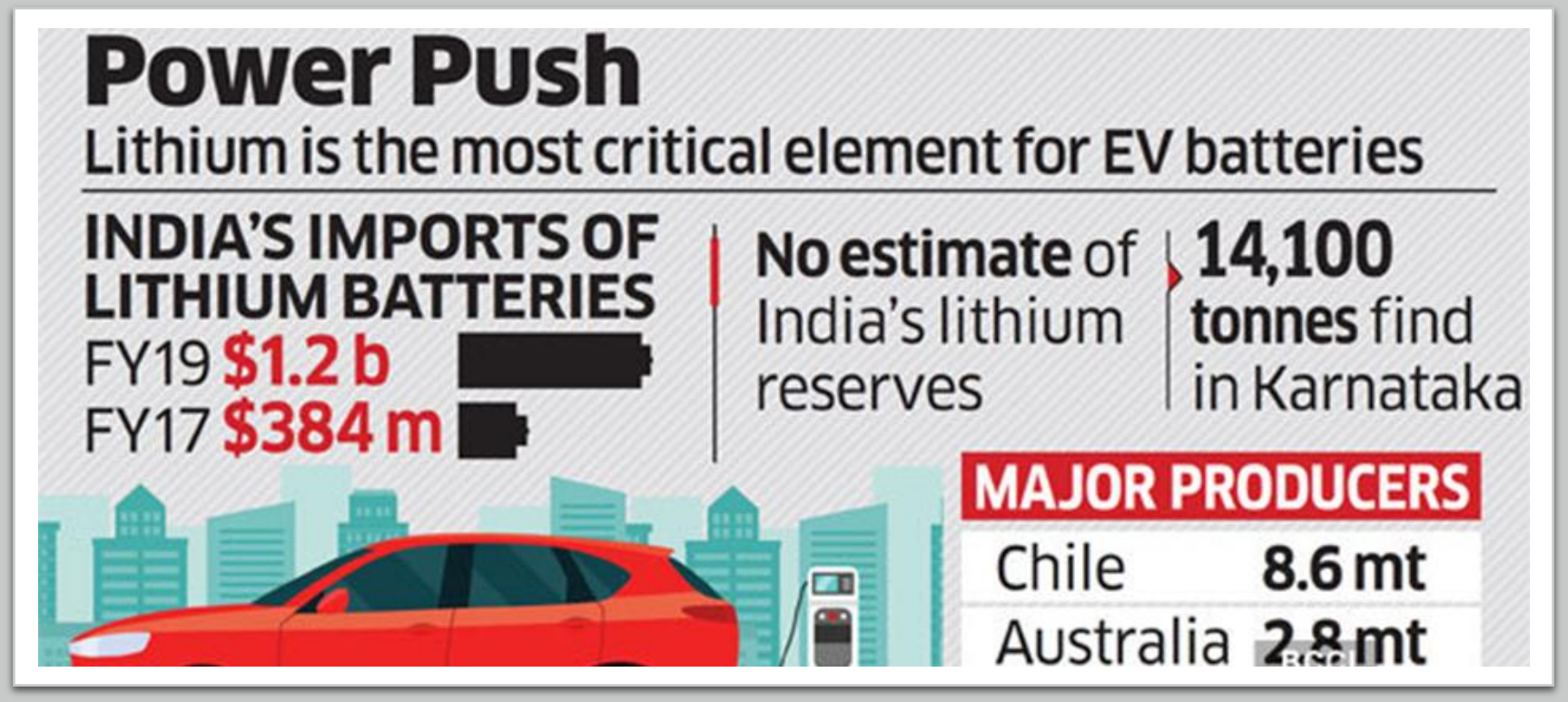
SEGMENTWISE ANALYSIS – EV PENETRATION

GAPS : 4-W v/s 2/3-W

- Insufficient Battery Promise
- Low Performance
- Non-availability of Charging Eco-System
- Limited number of Models

Availability of Li in India ???

- Chile - Largest Reserves
- Bolivia
- Australia
- Argentina
- China



BATTERIES

	Lead-Acid	Lithium-Ion
Construction	Lead Dioxide (PbO_2)	Lithium Metal Ions
Performance/ Maintenance	Undesirable	Desirable
Energy/Weight Ratio	Low	High
Applications	Non-weight, Space critical applications	Low weight, low space consumption

Advantages & Limitations of Lead Acid Storage Batteries

Advantages

- Inexpensive and simple to manufacture
- Low cost per watt-hour
- Low self-discharge - lowest among rechargeable batteries
- High specific power, capable of high discharge currents
- Good low and high temperature performance

Limitations

- Low specific energy; poor weight-to-energy ratio
- Slow charge; fully saturated charge takes 14-16 hours
- Must be stored in charged condition to prevent sulphation
- Limited cycle life; repeated deep-cycling reduces battery life
- Flooded version requires watering
- Transportation restrictions on the flooded type
- Not environmentally friendly

CONCLUSIONS

1. **Less Distance Covered (About 40-50 Kms/Charge)**
2. **Limited Speed – 40-50 Kmph**
3. **Frequent Charging**

Comparison of Lead-Acid and Li-Ion Batteries for 2/3-W Electric Vehicles

PARAMETER	LEAD ACID	LITHIUM – ION
Design	Matured	Upcoming
Specific Energy (Wh/Kg)	34	140
Safety	Comparative	Fire Hazard
Distance covered per charge	40-50 KM	About 100 KM
Max. Speed (KM/Hr)	40-50	100
Raw Material & Technology Availability in India	Available	Not Available
Charging Infrastructure	Not Required	Separately Required
Cost	Economical	Expensive

CONCLUSION

Considering the availability of Raw Materials, Technology and Manufacturing facility available in the country we need to Focus at the moment on –

- **MAKE IN INDIA**
- Development of 2/3 Wheelers with Improved Version of Lead Acid Batteries
- Restricting Vehicle Speed to 40-50 KMPH
- Capability of operating within a distance of 40-50 KMs per Charge.
- After validation of Design and Verification of Product Quality through Field Trials, they can be offered to public.

Wednesday, 12 Aug.,2020 : MoRTH - GoI Decision

- The Road Transport and Highways Ministry on Wednesday issued a notification allowing the **sale of electric two- and three-wheelers without a pre-fitted battery** in a bid to bring down the upfront cost of the cleaner vehicles making them more affordable.
- Batteries account for **almost half the cost of an EV,** making them vastly more expensive than a combustion engine vehicle of similar performance. If the cost of batteries is delinked from that of the vehicle, electric two- and three-wheelers could cost **less than fossil-fuel-powered vehicles,** the Ministry of Road Transport & Highways (MoRTH) said.
- The ministry said the vehicles without batteries can be **sold and registered based** on the type approval certificate issued by a test agency. It said there is no need to specify the make/ type or any other details of the battery for registration.

HIGHLIGHTS

- MoRTH will allow the sale and registration of Electric Vehicles without batteries.
- As per rule 126 of the CMVA, 1989, testing of the prototype will still be required.
- Registration certificates may be issued without specifying the model/type of the battery.
- Battery Swapping Model Practice

The Road Ahead….

- Though hurdles such as long charging times, short travel ranges, and heavy batteries remain, they are being addressed by a slew of innovators.
- Challenges arise in safety of electric charge and in costs of installation, as well as operations during conditions of fast-moving traffic.
- Government and industry are forging stronger partnerships for domestic and international growth of electric vehicles.
- It will need significant manufacturing prowess for key components, ranging from battery cells and semi-conductor modules to micro-processors and controllers. This extends from prototyping to large-scale low-cost manufacturing.
- Where an Internal Combustion (IC) Engine car has around 10,000 moving parts, an average EV has around 20. In sum, with all the convoluted parts gone and availability of major components in the world market, new challenger Start-Ups need to emerge on a larger scale. Many vehicle manufacturers could become simple assemblers of vehicles rather than complex engineering companies.

Where There is Vision & Passion - Things Fall in place.

Thank You

&

Let Us Together Build A Sustainable Green World

Any Question?
?

Thank you….

Dr.Prakash Barjatia, FISLE

Governing Body Member

Director – Education & Training

Associate Editor – Light India International (Lii)

Indian Society of Lighting Engineers (**ISLE**)

I-604,Rohan Nilay-1,Aundh,Pune-411007(India)

Cell : 9850630326

E-mail : pbarjatia@gmail.com

www.pune.isleind.org

www.pune.isleind.org