



Union Finance Minister of India Smt. Nirmala Sitharaman presented the Union Budget 2020-21 in Parliament on Feb 1st 2020

The Modi Government has emphasized that new-age technologies, including Artificial Intelligence, IoT, quantum tech and data analytics, will propel India into the future. The Union Budget 2020-21 aims to strengthen agriculture, infrastructure, textiles and technology. Finance Minister of India Smt. Nirmala Sitharaman presented the Union Budget 2020-21 in Parliament on Feb 1st 2020.



Smt. Nirmala Sitharaman, Finance Minister of India presenting the Union Budget 2020-21 in the parliament

Key highlights:

- **Digital India programme:** The Finance Minister allocated Rs 6,000 crore to the national optical fibre network, BharatNet, and Rs 8,000 crore to the national mission on quantum tech. She also announced that a policy for setting up data centre parks across the country to build data connectivity would also be announced soon. These are huge first steps towards the success of the Digital India initiative. The moves are expected to increase the adoption of technologies of the future, including IoT, analytics, and AI, leading to an unprecedented amount of data generation.
- **Smart Cities:** The government in 2020 has allocated Rs 6,450 crore for the Smart Cities Mission for the year 2020-2021.
- **Renewable Energy:** Allocation of Rs. 22,000 crores to promote renewable energy for the financial year 2020-21 has been announced. India is committed to promoting the non-fossil fuel technologies and promised that in future, the government would increase the capacity of renewables to 450 GW by 2030. As of December 2019, 86 GW of renewable energy—including 34 GW of solar and 38 GW of wind energy—has been installed.
- **Agriculture:** In a significant rural push, the government also allocated a whopping Rs. 2.83 lakh crore for agriculture and allied sectors for 2020-21.
- **MSME:** The allocation this year stands at an all-time high of Rs 7572 crore - an increase of 8% from the FY 2019-20 figures of Rs. 7011.29 crore.

For more information on Budget 2020-21, please click >> [here](#)

India will no longer be behind the 5G Technology curve, says Mr. Ram Sewak Sharma, Chairman, Telecom Regulatory Authority of India (TRAI)

India will no longer be behind the technology curve following the timely launch of fifth-generation or 5G networks, the Telecom Regulatory Authority of India Chairman Ram Sewak Sharma said. India has come to a stage where technology develops in India first. But India challenges like funds scarcity and low fibre backhaul for the deployment of the next gen technology in India. But India still faces challenges like funds scarcity and low fibre backhaul for the deployment of the next gen technology in India. There are less than a third of mobile towers connected to fibre backhaul when compared to China that has more than 80% connected. The telecom sector should be treated as "strategic" to serve citizens and that issues such as the Right-of-Way (RoW) should be set right. Key features of next generation technology include low-latency communications, huge throughput and massive machine-to-machine communication.



Mr. Ram Sewak Sharma, Chairman, TRAI addressing the Telecom Summit 2020 on Jan 22nd 2020

For more information, please click >> [here](#)

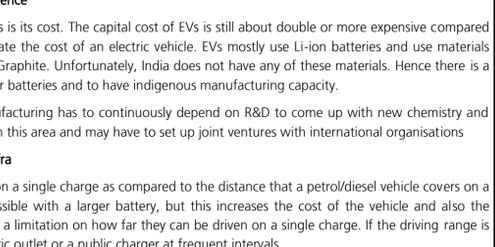
Article

Challenges for EV Adoption in India

The future of the Indian automobile industry is stuck on electric vehicles along with slowdown in Automotive sector. The government has to tackle the slowdown and invest in future-ready technology (with incentives) at the same time and create awareness for adaptation of EV's. While the India is pushing for adoption of electric mobility with its wide-ranging benefits; it faces some challenges that need to be overcome.

Comfort with the Existing System - Lack of Public Awareness

Everyone is comfortable with the current set of motor vehicles and do not see a need for change to meet their travel needs. As for the customers, ICE vehicles have served them well for over a hundred years and they are used to it. Any change means a learning curve and changing current ways of living that no one is happy about. The customer is not well aware of why it is important to make the transition towards EV. Others, who have some idea, are concerned about the limitations of the technology, safety and pricing.



As for manufacturers, they have made heavy investments in car manufacturing facilities and any change in technology will need significant additional investments. Oil companies have also invested heavily and stand to lose the entire investment if motor vehicles move to electricity. Retail outlets will also lose their investments or will have to invest in charging/swapping facilities as a new line of business. There is a large auto repair industry that stands to lose business as electric vehicles have fewer parts and therefore, fewer breakdowns. As a result, there is resistance to change and unwillingness to get out of the current comfort zone.

High Vehicle & Battery Costs - Import Dependence

One of the major barriers for switching to EVs is its cost. The capital cost of EVs is still about double or more expensive compared to petrol/diesel variants. The Batteries dominate the cost of an electric vehicle. EVs mostly use Li-ion batteries and use materials like Lithium, Cobalt, Nickel, Manganese and Graphite. Unfortunately, India does not have any of these materials. Hence there is a concern relating to the import dependence for batteries and to have indigenous manufacturing capacity.

Cell-technology is complicated and cell manufacturing has to continuously depend on R&D to come up with new chemistry and processes. Unfortunately, India is not strong in this area and may have to set up joint ventures with international organisations

Driving Range - Recharge Time - Charging Infra

EVs can only be driven for a limited distance on a single charge as compared to the distance that a petrol/diesel vehicle covers on a single filling. The higher driving range is possible with a larger battery, but this increases the cost of the vehicle and also the weight that the vehicle has to carry. EVs have a limitation on how far they can be driven on a single charge. If the driving range is limited, it becomes important to find an electric outlet or a public charger at frequent intervals.

Very few charging stations are installed in last year. A Wide network of battery charging (compatible RE integration) and swapping stations is yet to come up. India needs policy measures and standards that enable creation of a high-density network of swapping and public recharging infrastructure.

Outlook:

The Indian consumer is very cost conscious, the high ambient temperatures and low Indian driving speeds as compared to other countries, are other unique features that have to be kept in mind while designing a transition strategy to e-mobility. Also the driving range, charging time, energy density and life of batteries are major tech aspects are concerned. The heavy vehicle segment is still untouched for EV. There is also a question of what to do with used batteries. The battery disposal or recycling is also big concern as batteries involves hazardous materials; which needs to be addressed.

EV manufacturing at low cost remains a challenge but the biggest challenges is financing for these vehicles. Many feel that the creation of demand for EVs and its adoption is the job of the vehicle manufacturers and government. The government had initially focussed on vehicle standardisation with FAME, which was side-lined for an emphasis on manufacturing. The government is also planning to tax non-electric vehicles heavier even if the sales of electric vehicles might not justify such a forced transition. And this has put undue pressure on automobile OEMs.

According to NITI Aayog the EV industry needs to invest in building 50-60 GWh of battery capacity by 2025. However, raw materials needed to make these batteries are in short supply. Despite the limitations, the startup industry bets high hopes on the future of EV with the current infrastructure and relevant technology available, the problem comes when companies try to scale up.

References: DHI, NITI Aayog, WRI REport, IIT Madras

Article by Mr. Sanmati Naik, Manager - Energy (RE), Fraunhofer Office India. He can be contacted at sanmati.naik@fraunhofer.in for specific enquiries and support.

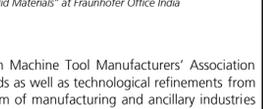
Recent events / Activities

Jan 13th - 22nd 2020: On-site assessment of Kochi under the project "Kochi Smart City Innovation lab"

A delegation of experts from Fraunhofer, Frankfurt School of Finance, University of Stuttgart and National Institute of Urban Affairs (NIUA) visited Kochi from Jan 13th - 22nd 2020 to conduct on-site assessment of the city under the cooperation between Fraunhofer and Cochin Smart Mission Ltd. (CSML) for the project "Kochi Smart City Innovation Lab". Dr. Marius Mohr, Head of Group Bioprocess Engineering and Circular Economy, Fraunhofer IGB led the delegation. He is also the leader of this project. This was a very fundamental activity in the project, in which the experts interviewed the key stakeholders in Kochi in the following sectors of focus water, energy and building to draw an analysis of the city profile and define the critical areas of intervention in against climate change. The on-site assessment concluded with a "Smart City Project Development Workshop" on Jan 22nd 2020, where the results of the assessment were presented and the measures that CSML should embrace against climate change were discussed. The composition of experts delegation is as follows:

1. Dr. Marius Mohr, Head of Kochi Smart City Innovation Lab & Head of Group Bioprocess Engineering in Water Management and Circular Economy, Fraunhofer IGB
2. Dr. Markus Schwegler, Senior Project Coordinator, Morgenstadt Global Smart Cities Initiative, University of Stuttgart
3. Ms. Anandi Iyer, Director, Fraunhofer Office India
4. Mr. Gerhard Stryl-Hipp, Expert for Smart Cities and Sustainable Energy Systems for Cities and Districts, Fraunhofer ISE
5. Mr. Matthias Winkler, Dept. of Hygrothermal Building Analysis, Fraunhofer IBP
6. Ms. Sabine Gimgler, Dept. of Hygrothermics, Fraunhofer IBP
7. Ms. Ernesta Maciulyte, Research Assistant, University of Stuttgart
8. Mr. Sanjeev Stojilkovic, Senior Project Manager International Advisory Services, Frankfurt School of Finance
9. Mr. Marjan Tamhane, Senior Climate Finance Specialist, Frankfurt School of Finance (Mumbai Office)
10. Dr. Debjani Ghosh, Associate Professor, National Institute of Urban Affairs, Govt. of India.

Mr. Aditya Fuke, Manager - Smart Cities & IoT, Fraunhofer Office India coordinated this activity with support of CSML.



Ms. Anandi Iyer delivering a special address on "Indo-German cooperation in Smart Cities" and Fraunhofer's initiatives in India in smart cities

Dr. Marius Mohr presenting the key developments and results of the on-site assessment

Discussion with stakeholders on the project ideas for Water, Energy and Housing sectors

Jan 13th 2020: Workshop on Mathematical Modelling of Complex Industrial Problems at Fraunhofer Office India

Fraunhofer Office India had coordinated a workshop on "Mathematical Modelling of Complex Industrial Problems and Development of Efficient Algorithms (Simulation)" for Dr. Jörg Kuhnert from Fraunhofer ITWM on Jan 13th 2020 with senior representatives of Indian automotive and allied industries like Sundaram Clayton, Continental, Wipro-GE Healthcare Systems to name a few. The workshop was organized to introduce the competencies of Fraunhofer ITWM to Indian industry and explore opportunities for potential collaboration.



Dr. Jörg Kuhnert delivering presentation on "Mesh-free Numerical Methods in Solid Materials" at Fraunhofer Office India

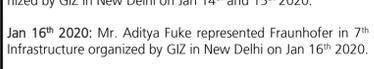
Jan 23rd - 28th 2020: Indian Metal Cutting Machine Tool Exhibition (IMTEX) 2019

IMTEX is a flagship event for the Indian metal cutting industry organized by Indian Machine Tool Manufacturers' Association (IMTMA). It is South and South East Asia's apex exhibition showcasing the latest trends as well as technological refinements from India and other global players. The mega event attracts visitors from a wide spectrum of manufacturing and ancillary industries including key decision and policy makers as well as industry captains who are keen to source latest technologies and manufacturing solutions for their product lines.

For the last 6 years, Fraunhofer has been showcasing its capabilities in lightweight materials, forming technology and additive manufacturing along with select exhibits at IMTEX, and every year, Fraunhofer has received a constructive reciprocation for its capabilities from the organizers IMTMA. Fraunhofer Office India had held a booth in IMTEX 2020 and showcased the capabilities of Fraunhofer IWU in lightweight automobile components, forming technology, forging technology and additive manufacturing.

Dr. Andreas Sterzing, Division Director "Bulk Metal Forming", Fraunhofer IWU was invited as a guest speaker by IMTMA at International Seminar on Forming Technology during IMTEX 2020. He delivered a presentation on "Advancement in Forming Technology and Lightweight Approach", which was well received by the audience, who represented a wide cross section of the metal cutting and forming industry.

Mr. Rohit Rohilla, Manager - Production Technology, Fraunhofer Office India coordinated the participation of Fraunhofer in IMTEX 2020. He also coordinated some important meetings for Dr. Sterzing with Rucha Engineers Pvt. Ltd. and Precision Steel Pvt. Ltd.



Dr. Andreas Sterzing delivering a presentation in International Seminar on Forming Technology during IMTEX 2020

Fraunhofer booth at IMTEX 2020. Dr. Andreas Sterzing (L), Mr. Rohit Rohilla (R)

Important meetings

Jan 14th 2020: Ms. Anandi Iyer, Director, Fraunhofer Office India is a national committee member of Confederation of Indian Industry (CII) National Committee on Urban Development and Smart Cities 2019-20. On behalf of her, Mr. Aditya Fuke represented Fraunhofer in the second meeting of the CII's National committee on Urban Development and Smart Cities held in New Delhi on Jan 14th 2020.

Jan 14th - 15th 2020: Mr. Aditya Fuke represented Fraunhofer in two Indo-German Workshops "Role of Standards Developing Organizations (SDOs)" and "Standards for Industry 4.0 in India and Germany - Exploring opportunities for harmonization" organized by GIZ in New Delhi on Jan 14th and 15th 2020.

Jan 16th 2020: Mr. Aditya Fuke represented Fraunhofer in 7th Annual Meeting of the Indo-German Working Group on Quality Infrastructure organized by GIZ in New Delhi on Jan 16th 2020.

Jan 23rd 2020: Ms. Anandi Iyer met with Mr. PNC Menon, Chairman, Sobha Ltd. to discuss the opportunities of collaboration in sustainable habitat in reference to Fraunhofer's smart city project in Kochi.

Jan 31st 2020: Mr. Sanmati Naik and Mr. Aditya Fuke represented Fraunhofer in Indo-African Workshop of GIZ project Green Innovation Centre organized by GIZ- Green Innovation Centres for the Agriculture and Food Sector (GIC). During the workshop, Mr. Sanmati Naik met with Ms Julia Jung, Advisor and Mr. Sashi Kumar, Senior Advisor of GIZ-GIC to discuss the next steps in ongoing cooperation between Fraunhofer and GIZ in Argo-PV.

Upcoming

Feb 4th 2020: **Large Industry 4.0 Summit - Organised by Maratha Chamber of Commerce, Industries & Agriculture (MCCIA), Pune**
Ms. Anandi Iyer, Director, Fraunhofer Office India has been invited as a speaker in this summit.

Feb 17th - 10th 2020: **Visit of Mr. Michael Kasper, Head of Cyber Security, Fraunhofer Singapore to India**
Fraunhofer Office India is coordinating meetings for him with top-IT companies.

Feb 20th 2020: **Fraunhofer International Day.**
Visit of Ms. Anandi Iyer to Fraunhofer HQ for the International Day.

Mar 2nd - 8th 2020: **Visit of Dr. Markus Wolperdinger, Director, Fraunhofer IGB to India**
Dr. Markus Wolperdinger will visit Pune, Mumbai and New Delhi for business meetings with high-level potential clients. He will also participate as a speaker in International Business Summit - Organised by Maratha Chamber of Commerce, Industries & Agriculture (MCCIA) on Mar 2nd 2020 in Pune.

Mar 18th 2020: **Meeting of the German Organizations in Bangalore, hosted by Invest in Bavaria**

Apr 24th - 25th 2020: **RenewX 2020, Hyderabad**
RenewX intends to accelerate the growth of the South Indian Renewable Energy Industry and contribute to the country's sustainable economic development. RenewX will provide an excellent platform for organisations to capitalise and penetrate this lucrative market. The event will bring together stakeholders from the sector and will help set a growth agenda for the future.
For more details about the event, please click >> [here](#)

Apr 25th - 28th 2020: **Hannover Messe 2020**
Activities of Fraunhofer Office India in Hannover Messe 2020 tbc.*

Apr 28th - 30th 2020: **WINDENERGY India 2020, New Delhi**
WINDENERGY India 2020 is organised by Indian Wind Turbine Manufacturers Association (IWTMA) and PMA Trade Fairs Pvt Ltd, the 3-day trade fair and conference will provide a vibrant platform to meet, interact and engage with policymakers, regulatory authorities, international and domestic technology, solutions and service providers from the wind power industry.
For more details about the event, please click >> [here](#)

Aug 2020: **6th Fraunhofer Innovation and Technology Platform (FIT), Bangalore**

ARTIFICIAL INTELLIGENCE – EVOLUTION OF AN INTELLIGENT AGE | **AUGUST 2020 | BANGALORE**

FOCUS AREAS: HEALTHCARE, AGRICULTURE, EDUCATION, SMART CITIES & INFRASTRUCTURE, SMART MOBILITY & TRANSPORTATION

The Flagship event of the Fraunhofer – Fraunhofer Innovation and Technology Platform (FIT), held once in every two years focuses on different thematic fields and showcases Fraunhofer's cutting edge technologies, innovations and futuristic solutions, and is typically attended by more than 200 delegates from India and abroad. It is conceptualised to draw attention to the topics of relevance in the field of research and innovation, engagement and in constructive dialogue with Indian Industry, Government and Research Institutes to find solutions for challenges in these areas. The 6th FIT Platform will focus on Artificial Intelligence across Healthcare, Agriculture, Education, Smart Cities & Infrastructure and Smart Mobility & Transportation, and catalyse collaboration in this very important field between India and Germany.

Sept 9th - 12th 2020: **The 3rd Global RE-Invest, New Delhi**
The 3rd Global RE-INVEST Renewable Energy Investors Meet & Expo, organised by the Ministry of New and Renewable Energy (MNRE), Government of India. It is a platform for International Solar Alliance (ISA) Partnership and Renewable Energy Investors Meet and Expo. The 3rd Global RE-INVEST will also host the Second Meeting of the ISA Assembly and the ASEAN Ministerial Meet. For more details about the event, please click >> [here](#)

Sept 23rd - 25th 2020: **Renewable Energy India (REI) Expo, New Delhi**
Over the years, REI has been established as the most comprehensive, reputed and Asia's largest expo in this domain where the green community congregates to discuss the trends, addresses challenges and showcases the best and most innovative technological solutions available to overcome them.
For more details about the event, please click >> [here](#)

Dec 15th - 17th 2020: **Intersolar India 2020, Mumbai**
Intersolar is the world's leading exhibition & conference series for the solar industry. As part of this event series, Intersolar India in Mumbai is India's most pioneering exhibition and conference for India's solar industry. It takes place annually and has a focus on the areas of photovoltaics, PV production and solar thermal technologies.
For more details about the event, please click >> [here](#)

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- [Sennheiser launches Ambeo Soundbar with Dolby Atmos, smart control app in India](#)
- [New Li-S Batteries Far Exceed Li-Ion Capacity](#)
- [German firm Steag Energy opens centre in Kerala](#)
- [Global 5g Technology Market 2020 – AT&T, Lucent, Telefonica, Orange, Fraunhofer-Gesellschaft, Qualcomm](#)
- [How the world's most efficient lithium-sulphur battery works](#)

Automotive

- [Lower GST, incentive-based scrappage policy tops the auto sector's wish list](#)
- [How Can The Indian Auto Industry Recover In 2020?](#)
- [Scheme to boost electronic manufacturing will aid EV production](#)
- [China's expectations of Auto Inc from Union Budget 2020](#)
- [Top demand for Jaguar, Land Rover boosts India's Tata Motors](#)



Manufacturing

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- [Poor liquidity, market slump, Chinese goods behind job cuts in manufacturing sector](#)
- [India's industrial production rebounds 1.8% in November 2019](#)
- [Making 'Make in India' work](#)
- [Manufacturing, construction to take down economy this year: govt estimates show major fall in growth](#)



Renewable Energy

- [Rooftop solar: Contribution to the manufacturing sector](#)
- [Why India is the new hotspot for renewable energy investors](#)
- [India's renewable energy generation registers lowest growth in 4 years](#)
- [Overshadowed: Will wind power lose out to solar energy in India](#)
- [India Added 50 Gigawatts Of Renewable Energy Capacity In Last Five Years](#)



Smart Cities

- [Kerala Automobiles fails to roll out e-auto rickshaws for Smart City in Thiruvananthapuram](#)
- [Thalainomics' to Smart Cities – All About Economic Survey 2020](#)
- [India To Take The Lead In Digital Revolution, Says Gujarat Energy Minister Saurabh Bhai Patel](#)
- [The balancing act Chennai must perform to become truly 'smart'](#)
- [Smart City Lab inaugurated at GIFT City](#)



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Economy

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