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THE EDITOR'S NOTE

COLLECTIVE PARTICIPATION AND CONTRIBUTION FOR VIKSIT BHARAT@2047!

**Dear Readers
Greetings!**

The idea of 'Viksit Bharat @2047', calls for an inclusive economic participation of all citizens, to make India a developed nation by 2047 (marking the completion of 100 years of India's Independence!). For this, it envisions economic growth, sustainable development, improved infrastructure, improved ease of living and doing business, and sustained social welfare. Also, it sees a lot of potential for manufacturing and digital technology sector to achieve its vision. Infact, this journey will have its own set of possibilities as well as challenges, but the way ahead will certainly depend on the collective consideration and participation of all stakeholders.

In this backdrop, the April (2024) edition of EcoTech Talks presents perspectives on India's aspiration and vision of Viksit Bharat@2047, especially in the context of its journey towards manufacturing and digital transformation. We are hopeful that these insights will motivate and educate all the concerned stakeholders, especially youth, to take part and contribute towards this transformational journey.

Infact, to mark the very first anniversary of EcoTech Talks, we have conceptualised this April (2024) edition on the given theme, so as to make a small yet humble contribution from our side towards the vision of Viksit Bharat@2047. We are indeed very grateful to all the green contributors and green warriors for joining us and making it a collective endeavour.

Have a happy reading!

Warm regards



Dr. Renu Sharma
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GREEN CONTRIBUTORS AND THEIR EXPERT OPINION

VIKSIT BHARAT AND MANUFACTURING SECTOR: POSSIBILITIES, CHALLENGES AND WAY AHEAD FOR ELECTRONICS/IT/TELECOM SECTOR



Shri S. Krishnan
Secretary
Ministry of Electronics and
Information Technology (MeitY, GoI)

The strategic initiative 'Viksit Bharat' is the government's endeavor to propel India into a developed nation by 2047. Central to this mission is fostering inclusive economic participation. A key objective is to position India as the world's third largest economy within five years. This requires concerted efforts in economic growth, sustainable development, infrastructure enhancement, ease of living and business, and social welfare.

The Ministry of Electronics and Information Technology (MeitY) released the "National Strategy on Additive Manufacturing" on 24th February 2022. The strategy is focused on creating a conducive environment for the design, development, and implementation of additive manufacturing technologies in India. Its goal is to overcome technical and economic challenges, attracting top global additive manufacturing companies to set up operations in India, along with ancillary support services. This effort aims to strengthen the domestic market and increase India's presence in the global market for additive manufacturing.

Additive manufacturing, often referred to as 3D printing, stands out as a transformative technology with significant green contributions in manufacturing. By fundamentally altering traditional production methods, additive manufacturing minimizes environmental impact in several key ways. Firstly, its precise layer-by-layer construction allows for the optimization of material usage, drastically reducing waste compared to subtractive manufacturing processes. Additionally, additive manufacturing enables on-demand production, which diminishes the need for large-scale inventory storage and transportation, thereby lowering carbon emissions associated with supply chains. Moreover, the localized nature of 3D printing facilities can further reduce transportation-related pollution. Overall, additive manufacturing plays a crucial role in promoting sustainability by conserving resources, minimizing energy consumption, and mitigating environmental harm across various industries.

Potential of AM Ecosystem in India presents an opportunity for India 3 (individuals or households that fall within the lower-income bracket or economically disadvantaged group) to transition into Industry5.0 from industry3.0/2.0 for green products. Primary issues for AM deployment

are affordability of the technology to India 3 and market accessibility to India 1/global market. The way ahead is to lower cost of printable material, 3D printers, software license cost in Indian AM ecosystem so that manufacturing using AM can be taken up by micro-enterprises. Green products like clay kulhad, mud house etc. can play a big role here as material cost will be zero. E-commerce at an affordable rate to India 3 will provide necessary market access.

Indian Women in 3D Printing (IW3DP) facilitates collaboration and innovation among women in the additive manufacturing (AM) sector, with a focus on creating an inclusive environment and empowering women to thrive in AM. They have pioneered technology for clay Kulhad Manufacturing, utilizing freely available soil as the primary material and a 3D clay printer. Given India's status as the largest exporter of Kulhad, this innovation opens up global market opportunities for branded clay kulhad. AM here eliminates the need for new molds for customized designs.

A pioneering instance of AM in construction site was seen in Spain, where the first prototype utilizing clay and 3D printing techniques was developed. The TOVA structure exemplifies this sustainability ethos, constructed with clay sourced onsite, complemented by a substructure of polymers and a wooden roof. In clay house construction, labor accounts for 60% of the total cost, while materials make up the remaining 40%.

Implementation of additive manufacturing (AM) techniques offers a substantial reduction in both labor and material expenses, rendering the manufacturing of clay kulhads and construction of clay houses more economically accessible for individuals in India 3 and similar regions of the global south. Embracing AM is essential to expedite construction schedules while lowering expenses, thereby enhancing sustainability by utilizing locally-sourced materials.

In essence, 'Viksit Bharat' strives for a prosperous, sustainable, and inclusive India. Leveraging additive manufacturing, India aims to boost its economy while promoting environmental sustainability. Expansion of initiatives like Indian Women in 3D Printing (IW3DP) and innovations in construction is expected to increase additive manufacturing's potential for inclusive economic growth and a greener future.

INDIA'S DIGITAL REVOLUTION: EMBRACING THE FUTURE WITH INNOVATION

In the heart of South Asia, India is experiencing a profound metamorphosis, shedding old paradigms to embrace the limitless possibilities of the digital age. Spearheaded by the visionary Digital India initiative, this transformation is propelling the nation into a vibrant tech-powered society, poised to conquer the challenges of the 21st century and seize its thrilling prospects. Let's delve into this captivating journey, celebrating the milestones achieved and the promising horizons that await.

The Digital India vision emerged from a critical need – to bridge the vast digital divide and foster inclusive growth across the nation's diverse landscape. At its core, this ambitious initiative aims to establish digital infrastructure as a fundamental utility for every citizen. The result? On-demand governance and services, empowering individuals to actively engage in the digital fabric of our times. This comprehensive agenda sets the stage for a revolutionary era in India's technological voyage.

Central to India's financial inclusion strategy is the ingenious JAM Trinity: Jan Dhan-Aadhaar-Mobile. This innovative framework integrates Jan Dhan bank accounts, Aadhaar unique identification numbers, and mobile connectivity. The impact? Streamlined delivery of welfare benefits to millions, a lifeline evident during the unprecedented challenges of the COVID-19 pandemic. This approach not only enhances efficiency but also expands the reach of crucial government services.

The digital wave has catalysed a remarkable surge in e-commerce across India, reshaping consumer behaviour and empowering small enterprises to connect with a broader market. Startups are flourishing, driving innovation, and creating exciting job prospects. India's vibrant startup ecosystem underscores the nation's burgeoning tech talent and its potential to emerge as a global innovation hub.

While India's prowess in software and IT services is well-known, the hardware manufacturing sector is poised for transformation. Recent government initiatives aim to revitalize this sector, nurturing local production and positioning India as a key player in electronics manufacturing. This strategic pivot promises new avenues for growth and innovation.

India's strength in semiconductor design is globally recognized, with a significant presence in integrated circuit design. Strategic partnerships and supportive policies are poised to consolidate India's role in the global semiconductor value chain, fostering indigenous innovation and bolstering competitiveness on the world stage.

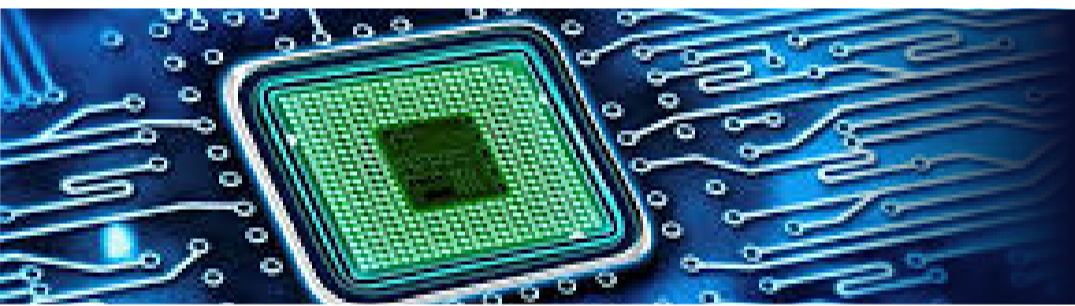
Despite these strides, challenges persist. Digital literacy gaps in rural areas and cybersecurity concerns demand attention. Bridging these divides is crucial to ensure equitable access and a secure digital ecosystem. Equipping citizens with digital skills through targeted educational programs in coding, data science, and cybersecurity is imperative for a future-ready workforce.

India's digital evolution is a saga of resilience, innovation, and inclusivity. This ongoing transformation promises a future where technology empowers every citizen. As this remarkable journey unfolds, India's trajectory in the digital realm holds the potential for transformative impact, both domestically and internationally.

But this journey demands collective commitment. By prioritizing digital inclusivity, fostering robust infrastructure, and investing in skilling initiatives, India can ensure that the dividends of the digital era reach every corner of the nation. Empowering citizens to thrive in the digital economy will propel India towards a future defined by technological prowess and inclusive prosperity. The call to action is resounding: equip, bridge, and embrace the boundless potential of a tech-driven India.



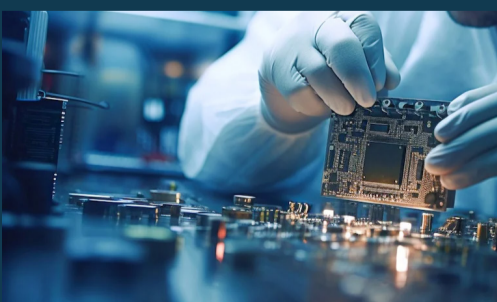
Col. (Retd.) Suhail Zaidi
Director General
MAIT



VIKSIT BHARAT AND ELECTRONICS SECTOR



Prof. (Dr.) Anurag Mishra
Professor of Electronics
Dept. of Electronics
Deen Dayal Upadhyaya College, DU



On 13th March 2024, the Hon'ble Prime Minister of India Shri Narendra Modi ji spelled out his vision on the electronics manufacturing in India in the presence of learned and respected dignitaries. He said – "Today marks a historic occasion as we embark on a journey to create history and take a significant stride towards a brighter future. The foundation stones for three major projects, collectively worth approximately Rs 1.25 lakh crore, dedicated to semiconductor manufacturing, have been laid. These semiconductor facilities, located in Dholera and Sanand in Gujarat, and Morigaon in Assam, will contribute to positioning Bharat as a major global hub for semiconductor manufacturing. I extend my heartfelt congratulations to all fellow countrymen for this significant initiative, marking a pivotal beginning and a decisive step forward. It is noteworthy that our friends from Taiwan have also participated in this programme virtually. These efforts by Bharat are also exciting me tremendously!"

In view of his aforesaid statement, Bharat is now geared towards manufacturing of semiconductor materials and devices, more specifically chips for advanced applications. This event was organized at such a mega scale that participants from more than sixty thousand educational institutes, colleges and universities participated in this program. This has set a new world record for the time to come. Bharat is already a world power in Space, Nuclear Science and Digital Transactions. The next research domain is certainly semiconductor manufacturing and fabrication of chips and devices. Bharat is poised to excel in this field as well. To this end, more than 40000 compliances have been removed to ensure "Ease of Doing Business". The Foreign Direct Investment is now being invited more vigorously to facilitate huge investments in this sector. As semiconductors find their applications in many areas, few sectors are identified to be promoted.

These are – Defence, Telecom and Insurance sectors. Presently this country is second largest world manufacturer of mobile or hand-held devices. This sector is also dependent on chips. Additionally, the entire luxury segment car industry is dependent on chips and sensors, and their IoT based application. Similarly, one major area of chips is medical electronics and instrumentation. Not a single sensing device used for medical investigations can operate without chips. Artificial Intelligence and Machine Learning is the software backbone to drive these chips in the most optimum manner. Therefore, the interlinking of these thrust areas and their development for various uses of the society is the need of the hour.

Obviously, there are many challenges way ahead. Bharat lacks in quality experimental research in universities in this area. The major research geared in this direction is based on device simulation which is very difficult to be reproduced under clean room conditions where these devices are manufactured. Good clean room facilities are seldom available in universities. The faculty of universities and colleges has limited access to national level research institutes where these facilities do exist. The priority should be from prototype development to efficient device fabrication. In such a scenario, the Ministry of Electronics & IT (MeiTY) has an important role to play. The policy framework should be made such that it begins with providing good funding for research projects in this domain in higher educational institutions. When the students and faculty are involved in this process, the vision propounded by the Hon'ble Prime Minister will surely see the ray of light.

The stride taken by the Government of India in general and MeiTY in particular is a good step in this direction. We are pretty sure that it has the potential to lead the nation and eventually Bharat will become a world power in this area.

OUR GREEN INITIATIVES AND ACTIVITIES

#BEAGREENWARRIOR: OUR GREEN CAMPAIGN FOR MOBILISING THE YOUTH

Our Sustainability Campaign
Year-2024

#BeAGreenWarrior



A Sustainability Initiative
Towards A Greener Planet

Save Environment
&
Be A Change Maker!

**BUILDING A CHAIN OF
GREEN WARRIORS FOR
MISSION LIFE!**

H.M.E.'s Green Resolution - 2024 is to
Mobilise 1 lakh green warriors to take
up LiFE Actions and Green Lifestyle for
Environment.

AWARENESS WORKSHOPS FOR ENGAGING AND SENSITIZING THE YOUTH

During January- March (2024), team H.M.E has collaborated with six new Green Warrior Institutions/Organisations and conducted awareness-cum-sensitization workshops for the youth and professionals on the theme of 'Mission LiFE and E-waste Management', by involving multiple resources and pedagogies.

GREEN WARRIOR INSTITUTIONS JOINING OUR GREEN CAMPAIGN #BEAGREENWARRIOR



12th January, 2024: Awareness Workshop for the Trainee Teachers of Department of Education and Humanities, Manav Rachna University (Faridabad, Haryana), to mark the celebration of National Youth Day



27th February, 2024: Awareness Workshop for the Project Manager, Site Engineers and Plant Operators of Bhagirathi Water Treatment Plant (Larsen & Toubro Constructions C/o Delhi Jal Board, Gokulpuri- Delhi)



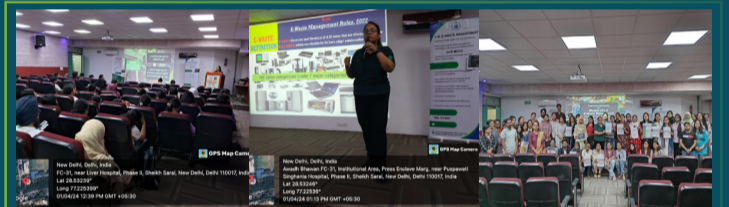
21st February, 2024: Awareness Workshop for the Trainee Teachers and Teacher Educators of Department of Educational Studies, Jamia Millia Islamia (Jamia Nagar, Delhi)



29th March, 2024: Awareness Workshop for the Legal, Commercial and Customer Service Team of Casio India Co. Private Ltd. (Mathura Road, Delhi) to mark the celebration of International Day of Zero Waste.



24th February, 2024: Awareness Workshop for the students of Ram Lal Anand College (RLAC), University of Delhi



1st April, 2024: Awareness Workshop for the Trainee Teachers of Institute of Vocational Studies (IVS- recognised by NCTE, affiliated to GGSIP University and SCERT, Delhi) to mark the celebration of International Day of Zero Waste.

GREEN MESSAGE SHARED BY GREEN WOMEN LEADERS (INSPIRING YOUTH OF BHARAT TO TAKE UP GREEN LEADERSHIP AND ACTION)



#BeAGreenWarrior

World Water Day

22 March, 2024

GREEN MESSAGE BY GREEN WOMAN LEADER

“Water is an invaluable gift of nature essential to sustain life on the planet. As we commemorate World Water Day on March 22nd, we are reminded of the critical importance of water conservation and sustainability. India's traditions in water harvesting are rich and glorious. Every region had its own engineering system to manage water scarcity and plenty. We need to learn from these traditions and make them part of water future.”



Dr. Sunita Narain
Director General
Centre for Science and Environment

Global Recycling Day

GREEN MESSAGE BY GREEN WOMAN LEADER

Theme: Recycling Heroes



Dr. Renu Sharma

Head, Research And Advocacy
H.M.E- Waste Management
(An E-waste Recycler Authorised by CPCB)



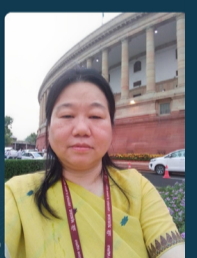
“Globally, a major chunk of our e-waste is collected and recycled outside the formal sector, which not only has adverse environmental implications but also pose severe health risks, especially to the people (including children and women) working in this sector. So, there is certainly a need to transform (and not abolish) this informal sector into a formal one, by providing infrastructural, technological and financial support, along with labour development, skill upgradation and social security support, to the people working in this sector. In fact, the inclusion and integration of these 'Invisible Green Warriors' or 'Recycling Heroes', into the formal sector will be crucial for an Inclusive Circular Economy! Also, I urge the Youth of Bharat to reflect on their own lifestyle (especially consumption and disposal of smart gadgets/ devices) so that these invisible green warriors do not have to put 'their' health and wellbeing at stake for managing 'our' e-waste!”

Happy Women's Day

8th March, 2024

Special Message By
Woman In Leadership Role

“Nature is a precious gift for all the life forms on Earth. Nature nurtures and renews our bond with its creations, in all its beauty. As co-creators, I would urge the youth to bring environment consciousness in every little thought and action to make the lives more sustainable. Our young girls and women as empowered individuals must be supported to ensure a sustainable environment.”



Ms. Indra Mallo, IAS
Joint Secretary
National Authority Chemical Weapons Convention (NACWC)
Cabinet Secretariat, Govt of India

Happy Women's Day

8th March, 2024

GREEN MESSAGE BY GREEN WOMAN LEADER
ROLE OF WOMEN IN BUILDING HARIT VIKSIT BHARAT



“Women-led Green Development is crucial for a Harit Viksit Bharat. TERI's field initiatives have shown that women had a higher propensity to take up and sustain their role as energy entrepreneurs. Women should be seen as agents of change who can be key to channelizing and providing last-mile solutions.”

Dr. Shailly Kedia
Senior Fellow and Associate Director
Centre For Sustainable Development Research
and Leadership (TERI)

National Science Day

GREEN MESSAGE BY GREEN WOMAN LEADER

Dr. Livleen K Kahlon
Associate Director (Environment Education and Awareness Division; TERI)
Adjunct Faculty (Department of Natural and Applied Sciences; TERI SAS)
Member of IUCN's CEC & CEESP



“Our youth should understand the power of inter-generational dialogues, specially in the context of transmission of ancestral wisdom to combat the environmental problems. A combination of scientific advancements along with traditional knowledge can help in conservation of biodiversity. Respect for our culture is just not a behavioural value but can pave a way for adaptive management practices. An early introduction to diversity of languages, culture and life forms will help youth to view the diversity of flora, fauna, habitats and ecosystems through the lens of their seniors and in the process lead to a social cohesion.”

National Youth Day

Special Message For Youth

“Our wellbeing is inherently linked with the well-being of our planet!”

Prof. (Dr.) Aruna Broota

Eminent Clinical Psychologist (Delhi, India)



“It is very important to understand that mindless consumption and exposure to 'smart' gadgets are going to impact the brain health and also the health of other sensory organs. Moreover, the unregulated usage of gadgets is leading to psychological addiction, across all age groups, but more specially among the adolescents and youth. Students and the younger population are ignoring their focus from studies and work. They are developing irritability and intolerance if reminded to move away from their gadgets, and social media or gaming. Also, if you change your devices very often, you are also increasing the load on the planet. So, every time you buy a new gadget, be conscious & mindful of its necessity, usage and impact. Instead, each time you want something new to buy, do buy a plant as well if you are on the upper ground floors. If you are on the ground floor, buy a small tree and plant it outside. If you have a garden or a park near your house, plant a tree or a flower there. Do you know that gardening itself is very soothing in stress? The green colour takes away stress. So, do try this & let me know! Moreover, it will contribute not just to your own well-being but also to the well-being of our planet!”

GREEN ADVOCACY AND CAMPAIGNING THROUGH OUR DIGITAL SPACE

Through regular social media creatives and informational videos, our digital space has been actively contributing and advocating the cause of sustainability and Mission LiFE.



OUR NEXT PLAN

- Celebrating World Environment Day (5th June, 2024) by strengthening green collaboration with various educational institutions.
- Continuing awareness - cum - sensitization workshop on 'Mission LiFE and E-waste Management', along with integrating e-waste collection drive with it.
- Distributing e-waste collection bins among the participating green warrior institutions.
- Promoting the participation and engagement of youth (especially teachers, teacher educator and trainee teachers) for wider green impact.

JOIN H.M.E.'S CAMPAIGN 2024



SPECIAL THANKS TO OUR SUSTAINABILITY PARTNERS



GRATITUDE TO ALL THE GREEN WARRIOR INSTITUTIONS: 2024

MANAV RACHNA UNIVERSITY
Department of Education & Humanities (Manav Rachna University, Faridabad)

Jamia Millia Islamia
Department of Educational Studies, F/o Education (Jamia Millia Islamia, Delhi)

UNIVERSITY OF DELHI
Department of Environmental Studies, Ram Lal Anand College (University of Delhi)

LARSEN & TOUBRO
Bhagirathi Water Treatment Plant (L&T Constructions C/o Delhi Jal Board, Gokulpuri)

ACE
Institute of Vocational Studies (Affiliated to GGSIPU & SCERT, Delhi)

CASIO
Casio India Co. Private Ltd. (Mathura Road, New Delhi)

H.M.E- WASTE MANAGEMENT (An E-waste Recycler Authorised By CPCB)



ALL-IN-ONE STOP FOR YOUR E-WASTE MANAGEMENT NEEDS



Let us take a step towards sustainable future!

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