



SIDDHI

SELF-RELIANT INDIA: DISCUSSIONS AND DIALOGUES FOR HUMANE INNOVATIONS

ANNUAL NEWSLETTER 2021



SIDDHI Annual Newsletter

In this issue

- Introduction: Why SIDDHI?
- Editorial Team
- Aims
- Objectives
- Who are we?
- Summary of Webinars
- Speakers and Moderators
- Summary
- Collaborations
- Way Forward
- Team SIDDHI



Introduction: Why SIDDHI?

SIDDHI was started as an initiative to commemorate the 150th birth anniversary of Mahatma Gandhi. SIDDHI stands for Self-reliant India: Discussions and Dialogues for Humane Innovations. SIDDHI is a dialogue platform for Gandhian ideas such as swaraj self-reliance, self-sufficiency, self-governance, equitable, inclusive and sustainable development of all sections of India. SIDDHI aspires to understand the current needs of India and ideate on solutions for a better tomorrow.

Editorial Team

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Aims

SIDDHI is an initiative to commemorate Gandhi's model of equitable, inclusive and sustainable development. SIDDHI focuses on how technology can play a constructive role in providing solutions to problems afflicting urban and rural India. It aims to create synergies for transforming India by bringing academia-industry experts, policymakers, NGOs, social entrepreneurs, thinktanks and the general public on a single platform.

Who are we?

SIDDHI is a collaborative endeavour of faculty, researchers, and students involved with projects sponsored by Government of India under SPARC, VAJRA and socially relevant projects approved by the Government of India such as Unnat Bharat Abhiyan and New India Internship. SIDDHI is coordinated by the Office of Global Engagement, IIT Madras.

Objectives

- Taking technology to the public by engaging with various stakeholders such as students, researchers, experts, government officials, civil society, and social entrepreneurs
- Encouraging conversations on the role of technology for sustainable development
- Exploring ways of utilizing technology for inclusive development and expanding access to knowledge
- Creating a startup ecosystem in rural areas and strengthening rural supply chain
- Analyzing problems in technology diffusion and finding avenues to make technological interventions more responsive to the needs of the people
- Applying technology as a tool of mitigation during pandemics like COVID-19 and natural disasters

Food Security: Retrospect and Prospects

Speakers

Mr. P. V. S. Suryakumar

Deputy Managing Director

National Bank for Agriculture and Rural Development, Mumbai

Dr. R. V. Bhavani

Director, Agriculture-Nutrition-Health

M S Swaminathan Research Foundation, Chennai

Mr. Clifton D' Rozario

Advocate, Manthan Law, Bangalore

Moderator

Mr. A. V. Balasubramanian

Director, Centre for Indian Knowledge Systems, Chennai



The inaugural SIDDHI webinar covered food security issues confronting India, in general, and specifically, in the post-COVID phase.

According to the speakers, India needs to cut down on its import of pulses and oil to be food secure. The use of hybrid varieties and bio-pesticides can aid India in increasing its production of pulses. Promotion of palm oil and providing irrigation facilities for oilseed cultivation can bring self-sufficiency in the edible oil production. Preservation of indigenous varieties, local and decentralized sustainable models of food chains are also important to create a food secure India.

While food security is important, equal

weightage should be given to nutritional security. Massive nutrition awareness campaigns, price incentives and promotion of nutritionally rich millets can help meet the goals of nutritional security. Even under challenging circumstances such as pandemics, schemes like mid-day meals should provide food to school children at their homes. Also, providing food grains to the poor is not enough. Ration supply should include cooking oil, spices, LPG and vegetables to ensure that poor have access to nutritious food. Lastly, the ambit of food security should not only be confined to humans but also include animals.

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Gandhi in the 21st Century

Speakers

Mr. Birad Rajaram Yajnik

Digital Curator and Author

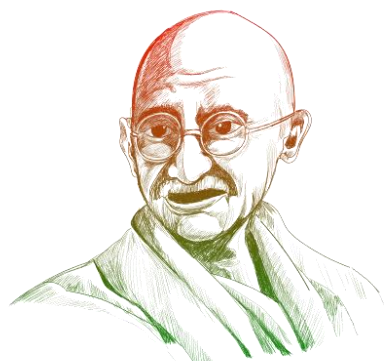
Moderators

Prof. Sanjay Mathur

Director, Institute of Inorganic Chemistry
University of Cologne, Germany

Prof. Ravi Kumar N. V

Dept of Material and Metallurgical
Engineering, IIT Madras



Gandhi's ethos and qualities, if followed in this century, can make the world a better place. In this webinar, Birad Yajnik particularly mentioned three remarkable qualities of Gandhi by giving examples from his life. He talked about how being ethical can alleviate a lot of problems related to the environment and inequality. Referring to Gandhi's talisman which says, "when in doubt one should recall the face of the poorest and the weakest person whom you may have seen and ask yourself if the step you contemplate is going to be of any use to that person", Yajnik said that if each one of us followed this talisman, then poverty and inequality would be eradicated. Talking about Gandhi's second quality, "perseverance",

the speaker indicated that Gandhi faced many injustices in South Africa due to his ethnicity. Yet he did not swerve from the path of non-violence while fighting for dignity. In fact, during his thirty-two years-long battle for India's independence, Gandhi untiringly emphasized the principle of non-violence. The speaker also pointed out Gandhi's quality of strategic planning using which he steered mass movements like Satyagraha, Non-Cooperation Movement, Dandi March, Quit India Movement and many more such peaceful movements. The speaker also mentioned that Gandhi emphasized the concept of self-reliance, which has gained renewed importance in the current century.

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Halfdan Mahler in India 1951-61: High Modernist Planning, Social Medicine and the Road to Alma Ata

Speaker

Dr. Niels Brimnes

Associate Professor in History,
Aarhus University, Denmark

Moderator

Prof. V. R. Muraleedharan

Department of Humanities and Social
Sciences, IIT Madras



Primary healthcare can help developing countries manage the healthcare needs of its population more economically. Halfdan Mahler, Former Director-General of the World Health Organization, strongly pushed the Primary Health Care movement across the globe during his tenure in WHO. In the webinar, Dr. Brimnes discusses the features of Indian society that shaped Mahler's views on health while his stay in India as a senior officer for the BCG vaccination Programme and the National Tuberculosis Programme. Dr. Brimnes pointed out three features of Indian society which particularly influenced Mahler's thinking. One was the extensive five-year planning for the mass vaccination programmes as a part of the

large social planning exercise. The second was the belief of Indian society in the concept of social medicine, scepticism towards narrow technological fixes against single disease and preference for broad, horizontal interventions in the environment such as sanitation, clean water supply and nutrition. The third aspect that Mahler picked up from the Indian society was that health services should be seen from people's perspective and there should be popular support and cooperation in health programmes. According to Dr. Brimnes, these three features of the Indian society influenced Mahler's thought process and he recognized the need for emphasizing primary health care services across the globe.

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Emerging Trends in Smart Manufacturing

Speakers

Prof. Svetan Ratchev

Director, Institute for Advanced Manufacturing
University of Nottingham, UK

Prof. R.K. Amit

Department of Management Studies,
IIT Madras

Prof. Kulwant Pawar

Operations Management and Information Systems
University of Nottingham, UK

Prof. R. P. Sundarraj

Department of Management Studies,
IIT Madras

Moderator

Dr. U. Chandrasekhar

Program Director, Addwize, Wipro 3D



IoT, Blockchain and Artificial Intelligence are technologies that have revolutionized our way of life. New and upcoming technologies for smart manufacturing and the ways India can employ these smart technologies in its manufacturing sector constituted the topic for this webinar. The speakers pointed out that smart manufacturing can help increase productivity, cut costs, allow rapid ramp-up and downscale of systems and provide an autonomous response to disruptive events which is lacking in conventional systems. The speakers discussed three systems of

smart manufacturing platforms. First, smart manufacturing platforms based on distributed intelligence and continuous adaptation; Second, cloud manufacturing which allows putting together of different facilities from different distributed factories; and third, low-cost digital architecture and solutions for MSME. The speakers also mentioned that we currently lack skilled engineers and industry readiness, which is the bottleneck in the adoption of smart technologies in manufacturing.

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Gandhi Jayanthi Health and Environment Week Webinar Series

October 1 -4, 2020

List of Webinars:

Universal Health Coverage in India:
Where are we and the Way Forward

Designed for Independence: Enhancing Quality of Life
for Persons with Disability

Waste Water Management in the 21st Century

Sustainable Water and Waste Management in Villages

Universal Health Coverage in India: Where are we and the Way Forward

Speakers

Dr. Rajani Ved

Executive Director
National Health Systems Resources Centre, New Delhi

Prof. Dileep Mavlankar

Director
Indian Institute of Public Health, Gandhinagar, Gujarat

Dr. Girija Vaidyanathan

IAS Retd.; Former Chief Secretary, Tamil Nadu

Moderator

Prof. V. R. Muraleedharan

Department of Humanities and
Social Sciences, IIT Madras



In this webinar, the speakers gave an overview of current healthcare schemes available in India and deliberated on the future roadmap. Given the economic disparity in India, the speakers grappled with the idea if it would be worthwhile to adopt a German-type health care system where different people pay differently for healthcare based on their income

but get the same quality of care. Experts felt that tele-consulting could play a big role in the penetration of health facilities to the needy ones in remote locations. They also recommended that free medicines, outpatient consultation, dental care, eye care and physiotherapy should also be included in the healthcare package.

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Designed for Independence: Enhancing Quality of Life for Persons with Disability

Speakers

Prof. Sujatha Srinivasan

Dept of Mechanical Engineering, IIT MADRAS

Mr. Swostik Sourav

Founder, NeoMotion Assistive Solutions

Mr. S. Vaidyanathan

Founder, Touch REHAB



Moderator

Mr. V R Ferose

Senior Vice President and Head of
SAP Academy for Engineering

This webinar focused on the theme of improving the quality of life of people with disabilities. Discussing the major challenges, the speakers indicated that traditional approaches to products in the disability space have focused on low cost and one-size-fits-all devices. This has led to compromises in the lifestyle and health of people with disabilities preventing them from being equal participants in the society.

The speakers gave examples of products, like ARISE- a wheelchair that allows the

user to stand up independently- and Neobolt - a customized wheelchair that can be connected to an electric vehicle, which can improve the quality of life of the disabled. Services provided by TOUCH REHAB to people with spinal cord injuries and how it is making a huge difference by improving their living conditions was also discussed in the webinar.

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Waste Water Management in the 21st Century

Speakers

Prof. George Tchobanoglous

Emeritus Professor, Dept of Civil and Environmental Engineering, University of California, Davis

Dr. Harold Leverenz

Dept of Civil and Environmental Engineering, University of California, Davis

Moderator

Prof. Indumathi Manivannan Nambi

Dept of Civil Engineering, IIT Madras



Waste water management is an important challenge for India. A webinar was organized where world-renowned expert Prof. George Tchobanoglous shared his vision of wastewater management in the 21st century. Prof. Tchobanoglous suggested that single use of water is not sustainable and authorities should adopt

“One water approach”, in which all water including drinking water, wastewater, storm water, greywater and other waters are treated collectively as a resource and managed. Prof. Tchobanoglous ended the decentralization of the system of wastewater management as a way forward.

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Sustainable Water and Waste Management in Villages

Speakers

Prof. Ligy Philip

Institute Chair Professor
Dept of Civil Engineering, IIT Madras

Prof. B. S. Murty

Institute Chair Professor
Dept of Civil Engineering, IIT Madras



In this webinar, Prof. Ligy Philip and Prof. B.S. Murty shared their expertise on waste and water management projects done in rural areas in the state of Tamil Nadu to improve cleanliness, general hygiene and health. Based on their experience, Prof. Ligy and Prof. Murty emphasized that water supply, waste management and sanitation need to be planned together to create a sustainable model and suggested the use of site-specific technology for

efficient waste management. The experts also shared technical, social and political challenges of carrying out waste management projects in Indian villages and suggested strategies for overcoming those challenges. Prof. Ligy and Prof. Murty stressed the importance of engaging with the stakeholders who need to be invested in the success and the long term sustainability of the project.

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Building-Integrated Cooling Systems for the Hot and Humid Climate

Speakers

Dr. Bruno Lee

Dept of Civil, and Environmental Engineering,
Concordia University, Canada

Mr. Nima Bonyadi

Dept of Civil, and Environmental Engineering,
Concordia University, Canada

Moderator

Prof. Srinivas Reddy K

Dept of Mechanical Engineering, IIT Madras



This webinar discusses how India can leverage solar energy to meet its cooling demands. The speaker, Mr. Nima Bonyadi, explained that space cooling will be one of the largest consumers of energy in the future. Therefore, integrated solar-assisted cooling system, which operates with low-grade solar energy, deals

well with humidity, temperature and compatible with thermal energy storage systems, will be required. Mr. Bonyadi discussed his study on an integrated design workflow for the PV/T-assisted SDC system aimed at maximizing electrical generation while minimizing Ampere-Hour energy consumption.

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Teaching Writing Virtually

Speakers

Ms. Nancy Zafris

Former Fiction Editor, Kenyon Review, USA

Ms. Geeta Kothari

Nonfiction Editor, Kenyon Review, USA

Prof. Chris Gillen

Dept of Biology, Kenyon College, USA

Prof. Wendy Singer

Dept of History, Kenyon College, USA

Prof. David Lynn

Editor Emeritus, Kenyon Review, USA

Prof. Arunn Narasimhan

Dept of Mechanical Engineering, IIT Madras



This webinar talked discussed the distinctive aspects of Kenyon - IIT Madras Writing Workshops which are the result of a long-term collaborative effort between Kenyon College and IIT Madras. The workshop provides resources, support and community to those who write. The workshop is based on the Kenyon philosophy that all participants benefit from writing intensively in small groups, in response to creating models and instructor prompts, as well as from

reading their work aloud to each other.

The workshop covered three genres of writing - science, fiction, and non-fiction with a focus on providing an immersive hands-on environment where participants engage in prompt-based writing on a daily basis. It is helpful for scientists, students and scholars who wanted to communicate more effectively to lay audiences.

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The Write Thoughts

Speaker

Prof. Arunn Narasimhan

Dept of Mechanical Engineering, IIT Madras



In this webinar, Prof. Arunn Narasimhan discusses various genres of writing such as academic, fiction, non-fiction, science fiction and popular science and elements specific to each genre.

The speaker emphasized the need to know the target audience, their age and background to ensure that communication is effective.

The speaker emphasized that writing should be clear, concise and interesting.

He also stressed the need for good science communication especially in times of a pandemic.

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Education Week Webinar Series

January 8 – 10, 2021

List of Webinars:

Importance of School-University Partnership:
Case study of a Grade K-12 Graduate Fellows Project

What Differentiates Those Who Change
the Course of Human History

Mentoring in Nation Building

Importance of School-University Partnership: Case study of a Grade K-12 Graduate Fellows Project

Speaker

Dr. Rajesh Ganesan

Associate Professor

Systems Engineering and Operations Research

George Mason University, Fairfax, Virginia, USA



In a talk titled “Importance of School-University Partnership”, Dr. Rajesh Ganesan shared a case study of “Grade K-12 Graduate Fellows project” carried out by George Mason University, USA where Universities partnered with K-12 schools to increase the interest of students in STEM. Under this program, graduate fellows supported science teachers and school students to kindle their interest in Science.

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What Differentiates Those Who Change the Course of Human History

Speaker

Dr. Ashish Jaiswal

Associate Fellow
Oxford Centre for Higher Education Policy Studies, UK



This webinar introduced the audience to the concept of fluid thinking, that is, the ability to reason and think flexibly. Dr. Ashish Jaiswal focused on the need for an education system to be interdisciplinary in nature as the novel ideas are born when people break the discipline boundaries. The expert gave examples of various eminent personalities such

as Steve Jobs, Leonardo da Vinci, C.V. Raman and Francis Crick who have also made important contributions in the field unrelated to which they were trained, Therefore, education should not confine students in commerce, science and humanities disciplines but set them free to think without boundaries

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Mentoring in Nation Building

Speaker

Dr. Pijush Ghosh

Associate Professor
Dept of Applied Mechanics
IIT Madras



In this webinar, Dr. Pijush Ghosh argues that mentoring Indian youth on an intellectual, social and emotional level will help them achieve their full potential.

Taking examples from his own work, Dr.

Ghosh explains three mentoring models:

1 Lab 1 school where one lab adopts one

rural school to provide them hands-on

training in the lab; TREND (Training in

engineering devices) where the scholars

disassemble devices to teach students

about

the function of each part and working of the device, C minus 4 where a trained and mentored student studying in class C will be able to mentor and teach a class of students 4 years junior to them; and Mentor India where students of a premier institute of the country mentor rural school students towards overall personality development with particular emphasis on social awareness and social contribution.

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Gandhi & Cities: Challenges of Affordable and Sustainable Growth

Speaker

Dr. Sunita Narain

Director General
Centre for Science and Environment, New Delhi

Moderator

Prof. Sudhir Chella Rajan

Department of Humanities and Social Sciences,
IIT Madras



This webinar discusses the future roadmap to make Indian cities sustainable. While Gandhi is mostly known for his vision for rural India, Dr. Narain highlighted an instance when Gandhi was asked about his vision for urban India. Gandhi said that he did not want India to follow a developed country like Britain because to make Britain what it was, required the suffering of half of the world from which it derived its resources. Evidently, as Indian cities mimicked the path of development of the western world, they compromised on their livable quotient. Toxic air, unmanageable sewage, water woes, traffic, resource scarcity and inequity reflect the grim realities of various metropolitan cities of India. The webinar posed an important question on how we can create cities that are both sustainable, affordable and livable?

According to Dr. Narain, a well-connected transport system which that is affordable for the poor yet convenient for the rich can help decrease the pollution and traffic congestion of metro cities giving people a right to walk and breathe pollution-free air. Also, better waste management through well-laid sanitation and sewage systems is the need of the hour. As rural India becomes more vulnerable to floods, droughts and other natural disasters due to climate change, villagers are shifting to cities for better livelihood opportunities. Therefore, making rural India resilient to disasters will ensure that distress migration slows down and cities do not come under increased pressure. Finally, to make Indian cities environment-friendly and livable, we may have to create a more sustainable model of modern cities.

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Interdisciplinary Research for Maternal and Child Health

Speaker

Prof. Shinjini Bhatnagar

Professor of Eminence

Translational Health Science and Technology Institute

Moderator

Dr. Himanshu Sinha

Associate Professor, Dept of Biotechnology, IIT Madras



In this webinar, Prof Shinjini Bhatnagar from Translational Health Science and Technology Institute (THSTI) addresses the implications of preterm pregnancies and the key challenges associated with it specifically within the Indian context.

Preterm births have been the main cause for increased infant morbidity and mortality rates, at both global and national levels. According to Prof. Bhatnagar, it has been difficult to arrive at effective solutions to tackle PTB since it is a complex syndrome involving multiple etiologies. She proceeded to shed light on Garbh-Ini, a cohort study on pregnant women initiated by the Department of Biotechnology of the Govt. of India.

Acknowledged as one of the Atal Jai-Anusandhan biotech missions, this visionary project aims to devise an algorithmic model to predict and identify probable risk factors leading to preterm

births during early pregnancy itself and counter the adverse outcomes of preterm pregnancies. The initiative was launched with a bench to bedside and back transition in mind: to integrate and streamline data obtained from research to the healthcare industry, and facilitate further clinical trials. While discussing the challenges associated with predicting preterm births, Prof. Bhatnagar elaborated on the collaboration with IIT Madras which provided vital data science support. Risk prediction models developed as part of this collaboration proved that the dating formula developed to cater to the Indian setting worked more efficiently than the preexisting western formulae. In accordance with Prof. Bhatnagar's stance, Garbh-Ini is more than just a study; it is a platform with the potential to pave the way for more hypothesis-driven research to take place.

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Azadi ka Amrut Mahotsav: The Southern Revolt, 1806

Speaker

Prof. K. A. Manikumar

Professor of History (Retd.), Manonmaniam Sundaranar University, Tirunelveli

Moderator

Prof. Jyotirmaya Tripathy

Dept of Humanities and Social Sciences, IIT Madras

Prof. K. A. Manikumar's webinar on "The Southern Revolt, 1806" throws light on the sequence of events leading up to the Vellore mutiny, which may be viewed as a precursor to the Sepoy Rebellion of 1857. As part of the 75 week-long programs to commemorate the 75th year of Indian Independence, this webinar offers a comprehensive account of the conception of the mutiny, the subsequent subjugation of the rebels, and the impact it had on the neighbouring cantonments in South India such as Walajabad, Palayamkottai, Nandidurg, and Hyderabad. The introduction of military reforms, particularly the revised dress code, was responsible for fueling the mutiny, for it deeply offended the religious sentiments of the Hindu and Muslim soldiers. Prof. Manikumar proceeds to explain how the timely arrival of Colonel Gillespie marked a turn of the tide in the rebellion and countless Indian soldiers were massacred while the surviving few were tried by the martial court and punished by the British government. According to Prof. Manikumar, the historical significance of the Vellore rebellion has been generally overlooked by mainstream narratives of freedom movements and hegemonic annals of history. Though many historians and scholars proclaim that the revolt was part of a greater conspiracy, Prof. Manikumar asserts that it emerged out of patriotic sentiments and the desire to overthrow the colonial rulers. As the first act of rebellion against British imperialism, the mutiny of 1806 sowed the seeds for future political upheavals that eventually brought freedom to the nation.

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A Panorama of Affordable Innovative Technologies and Solutions for Rural Development

22 March – 01 April, 2021

List of Webinars:

Innovative Technology for Sustainable Food Production
(Post Harvest Technology) - Value Addition

Technologies Enhancing Productivity of Small Farmers

Technologies Facilitating Access to Value Chains and Markets

Technologies Supporting Financial Inclusion Panel Discussion

Policies and Initiatives Conducive to Development
and Transfer of Technologies from Lab to Farm

Technologies Facilitating Collectivization,
Bulk Purchase of Inputs and Traceability

Intellectual Property Rights (IPR) and Technology Transfer

Developing Institutions for Rural Technologies

A Panorama of Affordable Innovative Technologies and Solutions for Rural Development

As part of the collaboration with AARDO (African-Asian Rural Development Organization), IIT Madras organized an eight-day e-training program on “A Panorama of Affordable Innovative Technologies and Solutions for Rural Development”. The objective of this program was to promote sustainable and efficient technology that would aid rural development.

An assemblage of policymakers, senior-level executives from government departments and ministries, agricultural engineers, scientists, and researchers engaged in policy formulation and implementation, planning and appraisal from AARDO member countries attended the e-training program. Team SIDDHI played a documentary during the inaugural, providing the context for the collaboration with AARDO and emphasized the significance of rural technologies and their role in transforming the socio-economic status of developing nations.

Prof. Raghunathan Rengaswamy, Dean of Global Engagement, IIT Madras, initiated the session by introducing SIDDHI and AARDO. Prof. Raghunathan announced the future objectives of SIDDHI and how it initiated a process of collecting technological information from all over the world in order to serve the rural population.

The second speaker, Mr. Paul Mahal, Founder and CEO of Standard Ventures, expressed his interest in working with IIT Madras and AARDO in developing and disseminating innovative technologies to rural areas. While highlighting the contributions of IIT Madras to rural development and social entrepreneurship, Prof. Bhaskar Ramamurthi, Director of IIT Madras, emphasized that the ultimate objective of this program should be to share experiences and exchange knowledge. The chief guest of the event, His Excellency, Dr. Manoj Nardeosingh, Secretary-General of AARDO, highlighted the goals for sustainable development and the impact it would have on the rural economy.

Innovative Technology for Sustainable Food Production (Post Harvest Technology) - Value Addition

Speaker

Prof. Shankar Krishnapillai

Department of Mechanical Engineering, IIT Madras

Moderator

Prof. Abhijit P. Deshpande

Department of Chemical Engineering, IIT Madras

Prof. Shankar Krishnapillai spoke on the concept of post-harvest technology and elaborated on the development of five types of low-cost technological solutions such as the Portable Cableway, a Monorail-based agriculture transportation system, Household Cold-Press oil expeller, Table-top Coir Rope machine and Industrial machine improvement and automation, developed with funds from Industries and Rural technologies Cell at IITM.

These technologies enable farmers to overcome everyday farming rigours, facilitate employment of women workers, enhance the economic conditions of farmers, and promote the general growth and well-being of small-scale industries. Prof. Krishnapillai concluded the session with the challenges of working with rural technologies, particularly the ones involved in large-scale implementation.

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Technologies Enhancing Productivity of Small Farmers

Speakers

Prof. Satyanarayanan R. Chakravarthy

Department of Aerospace Engineering, IIT Madras

Prof. Sridharakumar Narasimhan

Department of Chemical Engineering, IIT Madras

Moderator

Dr. Palaniappan Ramu

Associate Professor, Department of Engineering Design, IIT Madras

Prof. Sathyanarayanan R. Chakravarthy's lecture focused on the integration of drone technology with agricultural spraying for smart farming and highlighted the need to create a customized spraying technology that would benefit around 84% medium-scale farmers in India.

Prof. Chakravarthy explained the spray characteristics of various types of chemicals used in farming, such as pesticides, weedicides and fertilizers. He indicated that Broadcast spraying was found to be a commercially viable method of integrating spraying with drone technology and emphasized how drone spraying can optimize chemical usage and protect farmers from heavy exposure to chemicals.

Prof. Sridharakumar Narasimhan's presentation unveiled the research focus, current operation and the software and product development trajectory in Water Distribution Networks (WDN).

Prof. Narasimhan talked about the current status of WDNs in India and cited systemic infrastructural and operational reasons for the poor performance of WDN in India. The speaker also drew attention to the approach to retrofit existing manually operated valves with electric actuators and his work in the Multi village scheme at Sugave, Maharashtra.

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Technologies Facilitating Access to Value Chains and Markets

Speakers

Dr. Satyanarayanan Seshadri

Associate Professor, Department of Applied Mechanics, IIT Madras

Major (Retd) Ved Prakash Sharma

Co-founder and CEO, Gratitude Farms Private Limited, Puducherry

Moderator

Mr. Sreenivas Chigullapalli

Project Officer, RuTAG, IIT Madras

The two presentations on day 3 focused on technologies capable of facilitating access to value chains and markets.

Dr. Satyanarayan Seshadri discussed a few solutions for the challenges faced by cultivators during the post-harvest handling phase and argued that affordable technologies and market linkage together would help increase product values and farmer income. Dr. Seshadri explained the technology behind the torrefaction of biomass and highlighted the value addition project of high-efficiency solar dryers employed by Gratitude farms.

Major (Retd) Ved Prakash Sharma

promoted the scalable and replicable technology of solar dryers to reduce

agricultural waste, release a near-zero

carbon footprint, and prevent the

perishability of agricultural produce

sustainably besides providing ex-

servicemen and rural women a chance to

improve their livelihood. Major Sharma

mentioned two ongoing solar drying

projects at Pondicherry and in four

districts from the Jammu and Kashmir

province.

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Technologies Supporting Financial Inclusion

Speakers

Mr. S. S. Bhat

CEO, Friends of Women's World Banking (FWWB), Ahmedabad

Mr. K. Kalyanasundaram

Programme Leader, DHAN Foundation, Madurai

Dr. K. Vijayalakshmi

CEO, Sempulam Sustainable Solutions, Chennai

Moderator

Mr. A. V. Balasubramaniam

Director, Centre for Indian Knowledge Systems, Chennai

On day 4, the panel discussion by Mr. S. S. Bhat, Mr. K. Kalyanasundaram, and Dr. K. Vijayalakshmi was centred on the efficacy of fintech solutions in the agricultural, financial, and microfinance sector to enable financial inclusion and aid women's empowerment.

Mr. S. S. Bhat mentioned how Friends of Women's World Banking intends to enhance the livelihood of low-income households, improve their economic status through capacity building and credit support, and referred to the Pradhan Mantri Jan-Dhan Yojana, Aadhar system, and Mobile phones to explain financial inclusion in the Indian context. Mr. K. Kalyanasundaram described financial inclusion as the access to basic financial services via an affordable digital banking system.

The speaker claimed that the DHAN foundation strives to support women self-help groups to promote women empowerment and specified that the Direct benefit transfer of subsidies and payment apps were technologies that enable financial inclusion.

Dr. K. Vijayalakshmi elucidated the efforts taken by SEMPULAM Solutions for the conservation of indigenous rice varieties with pest and disease resistance properties. She mentioned how such rice varieties are profitable as they demand less agricultural inputs, provide genetic material for the development of future rice varieties, and asserted that financial support and buy-back arrangements could prevent the decline of these rice varieties.

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Policies and Initiatives Conducive to Development and Transfer of Technologies from Lab to Farm (Transfer of technologies from lab to farm to set up micro-enterprises)

Speakers

Dr. J. V. Rao

CEO, Textile Sector Skill Council , New Delhi

Moderator

Mr. Kannan Lakshminarayanan

Professor of Practice, Department of Engineering Design,
IIT Madras

Dr. J.V. Rao gave an appraisal of the cotton cultivation prospects in the African and Asian countries and opportunities for Value addition and Micro-textile enterprise. The speaker affirmed that the current market conditions were favourable in these countries and stressed that the economic feasibility of exporting value-added cotton products from third-world countries would generate increased revenue and employment opportunities.

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Technologies Facilitating Collectivization, Bulk Purchase of Inputs and Traceability

Speaker

Dr. Nagesh Kolagani

Senior Consultant, Tamil Nadu e-Governance Agency

Moderator

Prof. Abhijit P. Deshpande

Department of Chemical Engineering,

IIT Madras

In his presentation, Dr. Nagesh Kolagani explored the technologies of Participatory Modelling and Public Participation Geographical Information Systems. Dr. Kolagani referred to two case studies and identified well interlinking as the solution for overexploitation of aquifers in India and increasing recharge via rainwater harvesting; regulating discharge with participatory water accounting; Public participation of Geographical Information System and tubewell interlinking as solutions to avert groundwater crises.

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Intellectual Property Rights (IPR) and Technology Transfer

Speakers

Prof. Ravindra Gettu

Dean - ICSR, IIT Madras

Prof. T. S. Natarajan

Retired Professor of Physics, IIT Madras and IIT Tirupati

Dr. Anant Raheja

Director, FIB-SOL Pvt Ltd.,

Dr. Kavitha Sairam

Director, FIB-SOL Pvt Ltd.,

Moderator

Prof. Chandra TS

Professor Emeritus, Department of Biotechnology,
IIT Madras

Prof. Ravindra Gettu described IIT Madras' tried-and-tested approach to successful industrial collaborations - acknowledge, facilitate and incentivize. Prof. Gettu discussed IITM's approach towards Intellectual Property Generation and monetization, IITM's IP ecosystem and Intellectual Property Management, and policies involving Non-Disclosure and Joint Development agreement and Licensing of Patents.

Prof. T. S. Natarajan's presentation focused on Electrospun Nanofibers and about enabling research in labs and industries with commercial and indigenous lab-scale equipment. Prof. Natarajan explained the process of electrospinning of nanofibers and the mechanism behind it as well as

the open-design for a coaxial nozzle. He also discussed the scalability and commercial applications of Electrospun Nanofibers.

Dr. Anant Raheja addressed the scope for scaling nanofiber technology within an agricultural context to increase production rate and scale up the technology. The speaker presented a technology roadmap involving the product classes of microbials, biochemicals, fertilizers, and pesticides and showed how FIB-SOL's innovations, whether insourced or outsourced, will reach the farming community.

Dr. Kavitha Sairam spoke about the commercialization of FIB-SOL's cost-efficient, lightweight and eco-friendly alternative to conventional biofertilizers. She proclaimed that FIB-SOL's customized nanofiber and gel-based agricultural inputs could be utilized in seed coating, drip irrigation, and agricultural spraying, and as a platform technology, it had the potential to develop biocontrols, bacterial and nonbacterial products.

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Developing Institutions for Rural Technologies

Speaker

Mr. Ranjith Mukundan

CEO and Co-founder, Stellapps Technologies

Moderator

Dr. K. K. Sharma

Chief Scientist, Shri A.M.M. Murugappa Chettiar
Research Centre (MCRC), Chennai

Mr. Ranjith Mukundan's presentation revolved around the journey of Stellapps Technologies in employing deep technologies to digitalize the dairy supply chain end to end, thereby amplifying the income of farmers.

Mr. Ranjith elaborated on the Digital Access Network system employed by Stellapps Technologies to increase the quality, productivity, and traceability of the dairy industry.

Staying true to the words of AARDO's Secretary-General, the feedback from international and local participants proved that the training program turned out to be a platform to encourage rural transformation and explore the untapped potential of affordable and innovative technologies.

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Summary



46

International & National
Speakers



2210

Participants

SIDDHI webinar series involved a total of 46 national and international speakers, 17 moderators and garnered participation from 2210 participants in a short span of its launch. The series focused on various pertinent issues that are challenges to India's sustainable future and suggestions to overcome these issues by eminent experts in the respective fields. The platform acted as a stage for generation of novel ideas, insights and collaborations.

Seventeen webinars and one workshop have been conducted under SIDDHI series so far. In future, more webinars, seminars, conferences and workshops will be conducted under this series. SIDDHI and African- Asian Rural Development Organization (AARDO) jointly hosted a two weeklong training workshop for 47-member countries of AARDO in March 2021.

Speakers and Moderators



Mr. P. V. S. Suryakumar



Dr. R. V. Bhavani



Mr. Clifton D' Rozario



Mr. A. V. Balasubramanian



Mr. Birad Rajaram Yajnik



Prof. Sanjay Mathur



Prof. Ravi Kumar N. V.



Dr. Niels Brimnes



Prof. V. R. Muraleedharan



Prof. Svetan Ratchev



Prof. R.K. Amit



Prof. Kulwant Pawar



Prof. R. P. Sundarraj



Dr. U. Chandrasekhar



Dr. Rajani Ved

Speakers and Moderators



Prof. Dileep Mavlankar



Dr. Girija Vaidyanathan



Prof. Sujatha Srinivasan



Mr. Swostik Sourav



Mr. S. Vaidyanathan



Mr. V. R. Ferose



Prof. George Tchobanoglous



Dr. Harold Leverenz



Prof. Indumathi Manivannan Nambi



Prof. Ligy Philip



Prof. B. S. Murty



Dr. Bruno Lee



Mr. Nima Bonyadi



Prof. Srinivas Reddy K



Ms. Nancy Zafris

Speakers and Moderators



Ms. Geeta Kothari



Prof. Chris Gillen



Prof. Wendy Singer



Prof. David Lynn



Prof. Arunn Narasimhan



Dr. Rajesh Ganesan



Dr. Ashish Jaiswal



Dr. Pijush Ghosh



Dr. Sunita Narain



Prof. Sudhir Chella Rajan



Prof. Shinjini Bhatnagar



Dr. Himanshu Sinha



Prof. K. A. Manikumar



Prof. Jyotirmaya Tripathy



Prof. Shankar Krishnapillai

Speakers and Moderators



Prof. Abhijit P. Deshpande



Prof. Satyanarayanan R. Chakravarthy



Prof. Sridharakumar Narasimhan



Dr. Palaniappan Ramu



Dr. Satyanarayanan Seshadri



Major (Retd) Ved Prakash Sharma



Mr. Sreenivas Chigullapalli



Mr. S. S. Bhat



Mr. K. Kalyanasundaram



Dr. K. Vijayalakshmi



Dr. J. V. Rao



Mr. Kannan Lakshminarayan



Dr. Nagesh Kolagani



Prof. Ravindra Gettu



Prof. T. S. Natarajan

Speakers and Moderators



Dr. Anant Raheja



Dr. Kavitha Sairam



Prof. T.S Chandra



Mr. Ranjith Mukundan



Dr. K. K. Sharma

Exciting Collaborations



Way Forward



SIDDHI webinar series has generated a number of ideas. These ideas can be used as a platform for developing new research proposals. The international collaborations forged during the webinar series can be further nurtured

through joint research endeavours like student and faculty exchange programs, joint degree programs, internships, seminars and workshops, joint research proposals and policy inputs to the Central and State Government institutions.

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