

Professor Narendra Mohan – An appreciation

Professor Narendra Mohan retired at the end of February as the Director of the National Sugar Institute (NSI), Kanpur, India. Narendra's dedicated service at the NSI has undeniably played a pivotal role in its development, with far-reaching implications for the Indian sugar industry. As we wish the very best to his successor, Professor D Swain, it is worth reflecting on his significant contributions and achievements.

Noted below are reflections from eminent sugar industry executives and technologists.

Arvind Chudasama

Satish Kumar Gupta, Former Director NSI, Kanpur



I joined NSI in 1995 as a Professor of Sugar Technology. Mr Narendra Mohan was already working in the Department of Sugar Technology. As such, he came onto my radar. Soon, I recognized him as an intelligent Sugar Technologist with a keen aptitude to respond to challenging jobs with a pragmatic approach. In those days, the sugar industry was going through technological upgrades and

process transformation in a big way. Lots of new processes and technologies, viz. FFE for the steam economy, syrup clarification process, muddy juice clarification, sugar quality improvement, continuous crystallization C sugar, etc., were installed in the industry. The Institute had a challenging job of rendering advice on its optimization, making it operator-friendly. Since this was an entirely new kind of advisory services requirement of the industry, the Institute had to develop a team to respond to these requirements. It was difficult to pick up talented and able hands as most of the existing staff were unprepared to come out of inertia. However, Mr Narendra Mohan accepted the challenge, and after that, he was invariably part of the team that visited

factories for the purpose. I am glad to put on record that he accomplished the task most adeptly to the industry's satisfaction.

A few years later, a similar challenge arose when the UP Government liberalized its policy towards small-scale Khandsari sugar factories by permitting them to adopt pressure evaporation and steam boiling techniques to produce sugar. A large number of such factories started looking at institutes for technical advice. This time, again, my choice fell on him, and he proved worthy of expectations. He not only rendered advice to factories for the formulation of the projects but also ably demonstrated how to produce excellent quality specialty sugar, e.g., candy sugar, jaggery, powdered jaggery, etc. It brought appreciation and laurels to him and the Institute. The few citations noted and memories amply demonstrate that Prof. Narendra Mohan, right from the early days of his career, had the quality of accepting challenges and creating history. Ultimately, all these culminated and developed him as a passionate entrepreneur.

Prof. Narendra Mohan, who has accumulated vast technical knowledge, is a wonderful presenter, has convincing capabilities, and a vision to develop the Institute and the sugar industry in general, has achieved many milestones as Director of NSI.

A few noteworthy achievements which I am aware of are as follows:



Professor Narendra Mohan celebrated by senior staff of NSI

1. On the academic front, the curriculum of all the courses has been upgraded by the installation of pilot and bench scale unit operation plants of innovative techniques and processes in an experimental sugar factory and the by-product division of the Institute to provide on-job training to students to make them more responsive to present time need of industry which has been highly appreciated by the industry in India as well abroad. The Institute has now become a par excellence learning centre internationally. The number of international students desirous of getting admission to various courses has increased manifold.
2. The quality of advisory services and R&D activities has attained very high standards, which is amply exhibited by the signing of several MOUs with the Institutes and industries of India and abroad.
3. The Institute has played a pivotal role in promoting product diversification and energy savings in the country's sugar industry, thus improving its productivity and profitability.
4. Similarly, due to the vision and technical inputs provided by the Director NSI in formulating policy and implementing it, India's EBP program has taken off in a big way and has now attained sustainable status.

Thus, I can proudly say that during his tenure as Director NSI, Prof. Narendra Mohan has made an incredible impact on the all-round development of the institute and sugar and allied industries of India.

Sameer Sinha, CEO, Triveni Engineering & Industries Ltd



Dear friends, colleagues and members of the sugar fraternity:

This is a note straight from my heart for my close professional colleague & friend, Prof Narendra Mohan, on his superannuation from the position of Director, National Sugar Institute (NSI) and, wherein he has provided a transformative leadership and left an indelible mark. For over 40 years, Prof Mohan has been a cornerstone of the Indian sugar industry, a towering personality who has provided invaluable guidance & assistance and contributed immensely to the development of the sugar industry.

His journey has been one of exceptional accomplishment. It began with his postgraduate studies in Sugar Technology. This was followed by his inspired teaching again at NSI, wherein a large chunk of the present Indian sugar technologists would

have been his students, mentored by him, or did research under him. He has published a whopping over 150 research papers in prestigious journals and authored several books, constantly pushing the boundaries of knowledge and innovation.

Prof Mohan's leadership as Director of NSI for the past 11 years has been legendary. He spearheaded the modernization of NSI, ensuring this national institute remains at the forefront of research & education, and which knowledge he also wished to be disseminated to the "Sugar South" through various agreements/MOUs entered into by NSI with institutions in many countries as part of his outreach programme; along with various international conferences organized by him at NSI.

We are all aware of Prof Mohan's significant contribution beyond the walls of NSI—his participation in prestigious scientific societies, his work as a visiting scientist and keynote speaker, and especially his contribution to "realistic & progressive" policy advocacy as a member of various important government committees (some of which he chaired) engaged in important policy formulation.

No wonder he has been bestowed with innumerable prestigious honours and awards. Prof Mohan has ensured that the Indian sugar industry modernized

and kept pace with the changing times. His focus on "waste to resource" solutions is a testament to his commitment to a sustainable future for the industry.

The banks of Ganga, our holy river, were his karma-bhoomi. He also contributed to reducing/recycling the wastewater of the sugar industry through his innovative and practical schemes for optimizing water consumption in sugar processing.

Through this, he contributed to a cleaner Ganga, which has also been a priority policy for the Government of India. Simultaneously, he had been goading and pushing the Indian sugar industry to move up the value chain. He ensured NSI carried out relevant research and demonstrated futuristic technologies, which laid out a path for the development of this industry in the years to come.

Prof Mohan's leadership, vision & unwavering dedication have inspired all. We are confident that his wisdom & experience will continue to guide the industry, perhaps in an advisory role. This may be a farewell to his role as Director, but it is not a goodbye. The legacy of innovation, sustainability, and excellence he leaves behind will continue to inspire the coming generation. On behalf of the sugar industry and fraternity, I wish him all the very best for the future.

Pankaj Rastogi,
CEO, Dalmia Bharat Sugar &
Industries Ltd.



Prof. Narendra Mohan is a true example of living up to his name, which means the leader of men in Hindi. My relations with Prof. Narendra Mohan are more than a decade old. At the outset, I can say he is a true leader in all respects, a teacher of great repute, a technologist par excellence, an able administrator, a motivator, and a visionary. He took over as Director in 2013, at a time when the Indian Sugar Industry was fighting for its survival. His ability to identify troublesome areas and provide workable solutions acceptable to all stake-

holders turned things around. He enjoyed and still enjoys great respect from all related to the Indian Sugar Industry, as a result of which some landmark policy decisions, viz., differential pricing policy for ethanol and minimum selling price for sugar, could come into existence. His contribution to the Indian Sugar Industry shall be written in golden words. He brought about major improvements in the functioning of the otherwise dying Institute, and with the passage of time, it became a reputed name across the various sugar-producing countries as an institute providing meaningful and effective teaching and training in Sugar Technology, Sugar Engineering, and Alcohol technology-related disciplines. The author of seven books and more than 200 research papers published in various reputed journals speaks for his credentials as an academician. He has also remained an innovator with “out-of-the-box Thinking.” His passion for developing innovative technologies for the production of

value-added products from the sugar industry’s by-products remained incredible. He is also highly credited with changing the country’s sugar quality production landscape, which now produces plantation white, raw, refined, and specialty sugar. His vision of converting sugar factories from “single product factories” to “hubs of green energy” to “bio-refineries” has been widely acclaimed. Today, the Indian Sugar Industry is looking for greater diversification to exploit the entire sugarcane value chain. We at M/s Dalmia Bharat Sugar & Industries have always enjoyed his patronage and benefitted from his useful advice. I am greatly influenced by his passion, hard work, knowledge and as a person who knows how to execute. Last but not least, a teacher whose respect amongst students cannot be expressed in words. I hope he continues serving the sugar industry as he was doing or with more vigour, and we are there to support him in this noble cause.

Vivek Pittie,
Chairman, M/s Harinagar
Sugar Mills Ltd. and Ex-President,
Indian Sugar Mills
Association

Prof. Narendra Mohan has become one of the stalwarts of the Indian sugar industry and has been an integral part of its growth through his innovative ideas and foresight. Due to his approachable nature, he has had excellent relations with all sugar industry stakeholders, i.e., farmers, millers, consumers, bureaucrats, politicians, etc. I feel this is one of the main reasons he has been able to uplift and change the face of the National Sugar Institute (NSI) to a Global Sugar Institute. When he first took over the responsibility as a Director of this Institute in 2013, it was in dire straits, but now this Insti-

tute has become a pride of India. By building state-of-the-art infrastructure within the Institute and modernizing its testing facilities, this Institute is witness to many pilot plants such as green hydrogen, bio-ethanol, specialty sugars, and wastewater treatments. He has renovated and upgraded student hostel facilities, which has facilitated more students showing their willingness to study sugar technology and implement their theoretical knowledge practically within the Institute itself in its modern laboratory facilities and revamped experimental Sugar Plant. He has

ensured the industry is in good stead by guiding the sugar industry by interacting with all its stakeholders in various seminars and through his clear and lucid policy recommendations. Abiding by his mantra that change should be the only constant, he has steered the industry through turbulent waters and kept it afloat. Professor Narendra Mohan is leaving a legacy for everyone to follow and a void that would be very hard to fill. All the best for your future endeavours, Sir, and may your candid approach take you to even greater heights in whatever you undertake.

R V Dani,
Advisor & Head, Department
of Sugar Technology, VSI,
Pune, India



Prof. Narendra Mohan, Director, NSI, Kanpur, is a good administrator, admirable researcher and great motivator to the youngsters carrying out R&D and other works related to sugar and allied industries at the Institute. Before he took charge as Director of NSI, the Government of India constituted a revival committee to improve activities at NSI. But its recommendations were not implemented. After Prof. Narendra Mohan took charge as Director of NSI, a second revival committee was formed in which he was one of the members, including myself, wherein he worked dynamically and implemented the recommendations of the committee, which resulted in accelerating the activities and performance improvement of NSI.

He has played a key role in converting the Indian sugar industry into a clean and green industry, producing biochemicals, other bioproducts, and bioenergy in addition to sugar. During his tenure, he played a vital role in decisions made regarding policy matters by the Ministry of Consumer Affairs, Food & Public Distribution, and the Department of Food and Public Distribution. He especially contributed significantly to the price fixation mechanism for ethanol made from different feedstocks, the minimum selling price of sugar, and other associated matters. Under the dynamic leadership of Prof. Narendra Mohan, NSI achieved many milestones nationally and internationally. He showed keen interest in conducting various R&D projects to make the sugar industry a hub of sugar & bio-products to produce, viz. Bio-plastic, Paper, Cutlery, Apparel fabrics, Particle Board, Graphene Oxide, Vanillin and Surfactant from Bagasse, Bio CNG, Bio Wax, Bio Manure from Filter cake and Potash Rich Fertilizer from Spent wash etc. Various books and research papers he published symbolize his passion and interest towards improving the sugar and allied industries.

He has done a commendable job restarting the Institute's experimental sugar plant and converting it into a modern sugar refinery. Installing dual feedstock ethanol plant, brewery and specialty sugar units was also carried out for meaningful, practical training. These major initiatives helped the students of NSI to have hands-on experience in producing raw sugar, refined sugar and ethanol manufacturing initiatives. He has been instrumental in taking the Institute across the globe and extending its services to various sugar-producing countries. He visited various developed and developing countries, delivered lectures and provided technical consultancy.

He also suggested that the Government of India take some constructive steps, like the diversion of feedstocks for ethanol, which improved the financial health of sugar mills and farmers.

His merit and commendable work improving the productivity of the sugar industry have been acknowledged globally and conferred with many prestigious awards, such as the Dr Bansi Dhar Gold Medal, the Industry Excellence Award, the ISSCT Excellence Award, and the Innovative Leader of Asia Award.

Roshan Tamak,
Executive Director & CEO,
DCM Shriram – Sugar and
Ethanol business



My association with Prof. Narendra Mohan spans over more than 20

years, and I can attest to the invaluable cooperation and wise counsel he has consistently provided. His guidance has been instrumental in our collective journey, and its impact will be felt for years.

Prof. Mohan joined the National Sugar Institute in 1988. After serving at different levels at the Institute in the Department of Sugar Technology, he rose to Director in May 2013.

It is difficult to list his accomplishments in a few words. However, I will summarize them in the following buckets.

Global positioning

During his tenure, the Institute remained vibrant due to multiple activities, including hosting the "International Conference & Sugar Expo." The event witnessed participation from Australia, England, Iran, China, Indonesia, Fiji, Sri Lanka, Thailand, and many other countries. With a focus on the Institute's primary teaching, research, and consultancy activities, his efforts to make it an institute of global presence continued. The Institute signed MoUs, with ICIDCA, Cuba and Fiji to help

their sugar industries by developing value-added products and conducting training programs for their technical personnel and assist in modernization.

Contribution to policy making

He has been instrumental in devising a mechanism for the diversion of B Heavy, Syrup, Juice, and sugar to ethanol and assessing production to increase indigenous ethanol production under the Government of India EBP program.

A committee constituted by CPCB under his Chairmanship prepared a charter for sugar mills for pollution control norms, which facilitated sugar and distillery units' successful implementation of the charter.

Industry-academia interface

A true visionary of the Sugar Industry and a passionate Educationist who carried forward the legacy of the National Sugar Institute in India and abroad, which produces hundreds of Technocrats every year and bridges the gap between education and the industry. His vision, leadership, and encouragement enabled students to succeed in the marketplace. The Experimental Sugar Factory on the campus was made operational, and the latest technologies were showcased to provide hands-on experience for students. 100% Campus Recruitment and Placement were carried out at NSI, Kanpur.

Apart from regular programs of the Institute, he organized various short-term flagship programs for industry professionals for capacity building of working professionals.

Research and knowledge dissemination

He is a researcher par excellence who has published more than 150 papers in various reputed journals, written five books, and written many other book chapters.

1. An Insight into Sugar Manufacturing
2. Clarification of Sugarcane Juice
3. Evaporators & Evaporation Techniques
4. Analytical Handbook for Cane Sugar Industry
5. Sugar and Sugar Derivatives- Changing Consumer Preferences

Conceptualization of bio-refinery

The concept of "Bio-refineries" was put forward by Mr N Mohan at every forum, supported by various R&D work done by the Institute. Apart from particle board, 2G Ethanol and bio-fractionation facilitate bulk consumption. Some niche products derived from bagasse, particularly, are Dietary fibre, Nanomaterials, Surfactants and Bio-plastic as polyethylene substitutes. Producing low G.I. liquid sugar, Vitamin-A Fortified Sugar and Essential Oil Extraction from molasses are other path-breaking innovations.

He has a keen interest in the Economics of various models of bioenergy production in the sugar industry, like Compressed Biogas (CBG) from Pressmud and other biowaste and the valorization of bagasse. He has played a pivotal role in converting the sugar industry into a clean and green industry, producing biochemicals, other bioproducts, and bioenergy in addition to sugar.

Infrastructure development

During his tenure, various infrastructure improvements were made at the Institute, like the construction of the Training Centre cum Convention Hall. N.A. Ramaiah Sports Stadium, Girls Hostel, Library, New Hostel cum Guest House. Also, the Institute has obtained ISO 9001:2008 Certification to provide educational and consultancy services and supply sugar standards to the sugar industry.

Overall, Prof. N Mohan's dedication to education and industry advancement and fostering connections between education and industry have made a significant, long-lasting impact. His efforts to facilitate campus recruitment and placement, organize short-term programs, and enhance infrastructure further illustrate his commitment to the Institute's growth and development.

He is associated with many prestigious scientific societies and organizations, such as ISSCT, ICUMSA, IAPSIT, STAI, DSTA, and SISSTA, etc. and actively participates in all forums. He has been conferred with many prestigious awards, including Dr. Bansi Dhar Gold Medal, Industry Excellence Award, Innovative Leader of Asia Award, Outstanding Academic Leader of the Year, Best Director of the Year award, ABP News Award, and Noel Deerr Gold Medal to name a few. We extend our deepest gratitude to Prof. Narendra Mohan for his enduring support and invaluable contributions to the industry. We wish him continued success in his future endeavors, confident that he will carry on the mission with the same passion and commitment.