

When Six Tata Companies Collaborated for Addressing a National Problem

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"Catering merely to the elite is not the way a country can be made prosperous. You have to consider the base of the pyramid and develop products and services for the less privileged." ¹ - **Ratan Tata, Chairman Emeritus, Tata Sons.**



As underscored in my book 'The Tata Group: From Torchbearers To Trailblazers', Tatas have been the torchbearers of industrial patriotism contributing to industrial self-sufficiency in diverse areas as steel, power, chemicals, cement, infrastructure, hospitality, education and health even before the political independence of India. Over the last 150 years, they have institutionalizing Trusteeship as envisaged by Mahatma Gandhi and first conceptualized in the Isha Upanishad. While most corporations and their leaders considered the concept of trusteeship rather utopian, the Tatas' attempts in introducing beneficial labour welfare measures, integration of social welfare as part of its core corporate vision and mandate, standardizing ethical corporate behaviour through a detailed code of conduct, and an ownership structure that perpetuates a positive and synergistic relationship between business and society can be considered fine examples of the successful institutionalization of trusteeship over 100 years. In the years after India's economic liberalization, the Tata Group has been a trailblazer in business excellence, innovation and globalization. Between 1992 and 2017, its revenue grew 25-times, from ₹24,000 crores to ₹650,000 crores with nearly 67 per cent coming from overseas. Today, the Taj Group has emerged as one of Asia's largest group of hotels, Tata Steel ranks among the top 10 steelmakers in the world, Tata Power is India's largest integrated power and renewable energy company, Tata Chemicals is world's third-largest producer of soda ash, Tata Motors stands among the world's top ten commercial vehicle manufacturers, Tata Global Beverages prides itself as the world's second-largest tea company, and TCS has not only been acknowledged as India's most valued company but also the second largest IT services company in the world. By 2018, the Tata Group contributed 4 per cent of India's GDP and 2.25 per cent of India's total taxes. These facts and figures present before us the enormous industrial contribution of India's largest and most globalized conglomerate. Complementing these figures is the fact that Tata Trusts and the CSR contributions of leading Tata companies together invest over ₹2,000 crores every year in social welfare.

What distinguishes the Tata Group is not just their size, scale and success, but the way in which they execute their projects and deliver products and services through their businesses. This is often described as the 'Tata way of business'. Let me attempt to elaborate one such project, which was unprecedented in its scope and execution. Not only was the attempt to address the drinking water

problem of nearly 100 crore Indians, but the fact that six Tata companies collaborated to make it happen. Let's go back to the early 1990s.

Prof. P.C. Kapoor, an eminent material scientist and a professor from IIT Kanpur, joined TRDDC as a consultant. The Tata Research Development and Design Center (TRDDC) in Pune was among the earliest software labs in Asia for undertaking result-oriented R&D projects. As Prof. Kapoor had retired from active academic commitments, he brought his ongoing research projects to TRDDC. One of them focused on the use of rice husk ash (RHA) for water purification. According to his research, RHA's adsorptive and microbial propertiesⁱⁱ could facilitate this at amazingly low costs. At the turn of the millennium, India annually produced 8.5 crore metric tonnes of paddyⁱⁱⁱ, and rice husk was commonly burnt for meeting rural domestic energy requirements. RHA was thus an abundantly available natural waste in most parts of India.

A team led by Prof. Kapoor performed a series of experiments and was successful in designing a water filter using RHA, cement and pebbles. Their findings indicated that this combination was able to remove water impurities to the tune of 85 per cent. They received three patents for this discovery. With 9 out of every 10 Indians not having access to or not using water purifying mechanisms due to behavioural reasons, the water filter was considered an ideal contribution towards improving public health at a nominal cost. The water filter thus designed was named 'Sujal' (meaning good water). It cost ₹300 and the cost of replacing the filter was about ₹25. Depending on the quality of water, the filter could be used for up to six months, thereby providing reasonable clean drinking water to a family of five at less than US\$1 per month.^{iv} Tata Consultancy Services (TCS) used Sujal as part of a flagship CSR initiative in providing drinking water in the hinterland and during disaster rehabilitation. In collaboration with several NGOs, over 50,000 Sujal filters were distributed across India between 2000 and 2003. Of these, 25,000 were given during relief activities post the 2001 earthquake in Gujarat and the 2004 tsunami in coastal Tamil Nadu.

The year 2003 was declared as the international year of fresh water. In the same year, Ratan Tata, then Chairman of Tata Sons, had visited TRDDC along with a senior team from Tata Sons. Among the ongoing research projects presented to him, he was impressed with the concept of Sujal. The sheer scale of drinking water problems in India made the innovation highly relevant. According to a WHO and UN study, 80 per cent of diseases and 33 per cent of deaths in India, were caused by unsafe drinking water. An estimated 500,000 children below the age of five years died every year due to diarrhoea.^v The other reason was the severely limited penetration of water purifying methods with nearly 85 per cent of people in small towns and villages using none. Mr Tata found a notable opportunity for scaling up the concept to make it commercially viable. However, he was convinced that it couldn't be done at the existing 85 per cent level of purity. It had to meet the international standards of 99.99 per cent purity. Given that TRDDC was under TCS, and the latter's expertise primarily in software industry, the idea remained in cold storage for nearly three years.

In 2006, R. Gopalakrishnan, then board member at Tata Sons and chairman of several Tata companies, visited TRDDC. Prof. Joseph Mathai, then executive director at TRDDC showcased various projects along with Sujal as a key achievement. With his four decades long experience in the consumer goods industry, Gopalakrishnan instantly perceived a fantastic opportunity of Sujal becoming a fast-moving consumer durable. He believed that Tata Chemicals Ltd. with a dedicated innovation center in Pune and larger interest in projects connected with water, would be most suitable to take it forward. It would also fit well into its living essentials product portfolio.^{vi} He consulted Homi Khusrookhan, Managing Director of Tata Chemicals, on his views about the project potential. He too welcomed its social benefits. Moreover, given that over one billion people were without access

to clean drinking water in the emerging economies, the potential for a new business around this product could be sizable.^{vii}

Making Salt for India

It was another historic opportunity for Tata Chemicals to work towards its vision of 'serving society through science'. In the early 1980s, the Government of India, in collaboration with UNICEF^{viii} was actively promoting the use of iodized salt to counter iron deficiency, especially in children. In 1984, Goitre, a disease caused due to iodine deficiency, had reached endemic proportions. Mrs Indira Gandhi, then Prime Minister of India, had approached Tata Chemicals to address this rising concern. The company took it up as an opportunity to serve communities in need. It launched a nationwide movement of salt iodisation, with India's first ever iodised salt – Tata Salt. Over the years, Tata Salt created a strong emotional connect with customers. An entire generation, including myself, grew up listening to the popular jingle 'Namak Ho Tata Ka – Tata Namak' on Doordarshan. Another ad campaign 'Desh Ka Namak Khaya Hai' launched by Tata Salt promoted the feeling of patriotism and integrity, thereby reflecting the core Tata values. When I had visited Mithapur, the salt-town established by Tata Chemicals over 75 years ago, I could not but miss the big board at the entrance of the factory which read: 'Hum Desh Ka Namak Khaten Hain, Hum Desh Ka Namak Banate Hain' (We are faithful to our country, we make the salt of India). Therefore, it's not surprising that Tata Salt commands enormous trust among its consumers. Between 2003 and 2009, it was consistently ranked India's most trusted food brand.^{ix}

By 2016, more than 70,000 metric tonnes of Tata Salt was sold in 3,000 towns through 16.6 lakh retail outlets reaching 13.5 crore households and 60-crore Indians each month, thereby making it the market leader, commanding a share of over 24.7 per cent of the national branded salt category. The stupendously selling Tata salt, made Tata Chemicals reach more consumers in India than any other Tata company.^x Capturing the essence of the Tata Salt story, R. Gopalakrishnan, former Vice Chairman of Tata Chemicals, observed, 'Taking a common commodity like salt, packaging it and making it India's largest food brand, and developing a whole ecology of a business system around it, is a huge innovation that we tend not to focus upon, because we take it for granted.'

'Make a Bulb that can be used without Electricity'

Tata Chemicals accepted the drinking water supply project as another opportunity to make a difference in the lives of India's masses. A cross-functional team of experts from TRDDC and Tata Chemicals was formed, and the experiments began at the newly setup Tata Chemicals Innovation Center in Pune. The journey from Sujal to Project WaPu (Water Purifier) had begun. Sabaleel Nandy, a young TAS (Tata Administrative Services) officer, working in the group executive office, led this team. An engineer-MBA from IIT Kharagpur and IIM Lucknow, Sabaleel had gained experience at Tata Motors as brand manager for their first sedan – Indigo, and managed sales in the western region. He was guided by Gopalakrishnan, who continued to mentor Team WaPu. During one of the first meetings, he threw an unexpected challenge at the team – 'Could they try for drinking water what Thomas Edison had done for lighting through his electric bulb?' The team thus received a mandate to create a 'bulb-like' water purifier that had to meet four distinct requirements^{xi}:

- i. Must use natural materials
- ii. Can be used by homes having no electricity or running water
- iii. Must be portable and easy for the consumer to buy and use
- iv. Must provide bacteria free water of international standards i.e. USEPA – the United States Environmental Protection Agency

Khusrookhan roped in Dr Murali Sastry, a renowned Nano-scientist who had joined as chief innovation officer at Tata Chemicals, and also headed the innovation center. A series of discussion with experts including Dr Sastry, brought Team WaPu to a conclusion that coating RHA with Nano-silver will facilitate greater removal of bacteria and help achieve the WHO^{xii} standards. The product development process continued with a series of experiments on the design of the cartridge, the concentration of silver, the Nano-coating and several other factors.



For a long time, Team WaPu had envisaged just 'a bulb without electricity' that could be used in earthen pots in the hinterland. However, marketing inputs indicated that a complete purifier would be much appreciated by prospective customers as it would give them a sense of ownership.

R. Mukundan who took over from Khusrookhan as Managing Director of Tata Chemicals in 2008, was insistent that the external aesthetics of the final product were equally important. To match these requirements, the designers put together a two-part product design. The upper container where the bulb would fit, and a lower container where the water would be collected – both made of sturdy and attractive plastic material. With the design and technical thresholds crossed, the challenge of automated assembly for mass production of filters loomed large. That's when Gopalakrishnan suggested that the team could partner with the precision equipment manufacturing division at Titan Company for mass manufacturing of the production assembly equipment. Thus, a third Tata company entered the project.^{xiii}

By early 2008, Project WaPu had become Project Swach, a name that emerged through an in-house survey. Meaning pure in Hindi, Swach became a choice by consensus.^{xiv} Later that year, the final version of the filter was sent to prominent international laboratories in UK and Netherlands for quality and performance tests. The team was delighted when the results were positive. The Swach filter was able to achieve the mandated 99.99 per cent purity levels. To test whether the filter proved effective on different water types, pilot testing of 500 filters was done for over six months in the states of Uttar Pradesh, Tamil Nadu, Maharashtra and Odisha, practically all four corners of India. Once again, results were positive.

A high-tech Product for the low-end Consumer

The next challenge before the team was to facilitate a mechanism that indicated the 'end of life' for the cartridge for an illiterate rural consumer. Various options – chemical, electronic and mechanical were analysed and tested. The team ultimately decided to design a tablet that could dissolve at a controlled rate choice. When the tablet became too small, the water flow would automatically get cut-off, thereby indicating the need to change the filter. A Tata Swach lock included in the design ensured that only a genuine Tata Swach bulb could fit into the purifier. A series of designs and technical innovations inspired the team to apply for 14 patents and 13 design registrations.^{xv} It was high-tech innovation for the benefit of the low-end consumer. More importantly, the entire core team working on the project was built from within the Tata Group. This was especially noteworthy as Tata Chemicals had no previous experience in manufacturing consumer durables. The 'noble cause' behind the product acted as the binding glue and provided constant inspiration for the

team. The senior leadership from Tata Chemicals and Tata Sons regularly encouraged the team by participating in review sessions and provided valuable feedback.

The manufacturing unit for Swach was located within the Haldia plant of Tata Chemicals in West Bengal. This proved efficient for two reasons. Firstly, in terms of cost effectiveness and savings on infrastructure and land acquisition. Secondly, from a logistical perspective. Most of the rice growing regions were in the southern and eastern parts of India. The location in West Bengal thus reduced logistical expenses to a significant extent. While the plant had the capacity to produce 1,000 filters a day, the manufacture of external plastic containers was outsourced to vendors in Talegaon (Maharashtra). Though the initial capex was estimated at ₹9 crore, the team had effectively delivered within ₹1.5 crore.^{xvi} This was excluding the initial development costs borne by TCS. All these enabled Swach create a new benchmark in the low-cost offline water purifier market. The product was priced at ₹1,000 per unit. This was 50 per cent less than the closest competitors – HUL's Pureit and Eureka Forbes' Aquasure. The cost of the replacement filter cartridge was ₹300. This combination made Swach the lowest cost water purifier in the world with a cost of 10 paise per litre for pure drinking water.

During a conversation with Mukundan at the Tata Chemicals headquarters in Bombay House, Mukundan shared with me a key dilemma of the Swach Team. He recollected, 'We had a deliberation that if you make it 90 per cent purifying capacity, we can hit all the numbers we want in terms of cost. But we said no, we must hit the same cost at the USEPA guideline. It took us a year more, but we finally got the solution. Many times, a dilemma is about 'either-or', but I decided to settle for 'and', and that is a very-very big issue for which the leadership must stay firmly rooted.'

Just as in designing and manufacturing, Tata Chemicals had limited experience in the marketing, distribution and after sales service of consumer durables. That's when three more Tata companies joined the project. Rallis, a subsidiary of Tata Chemicals had a huge network of 30,000 retailers. It was roped in for distribution to complement Tata Kisan Sansar, Tata Chemicals' own distribution network that was spread across 23,000 villages with a reach of 23 lakh farmers. Two other Tata companies – Tata Business and Support Services Ltd. and Tata Teleservices Ltd. became a part of Swach to provide call center and toll-free number facilities for Swach customers. Thus, Swach became a platform for six Tata Group companies to work synergistically by providing research, design, manufacture, distribution and after sales service facilities – an unprecedented initiative, which itself became an innovation. It demonstrated the collective power of the Tata Group.

It was a moment of fulfilment for the team members and the six associated companies when Swach was launched by the Group Chairman Ratan Tata at a glittering ceremony on December 7, 2009. The response to the product was encouraging. In the first 200 days, Swach was sold to 200,000 households in four states of India. A year later, two new versions - Tata Swach Smart and Tata Swach Smart Magic were launched with smaller storage capacities at ₹749 and ₹499 respectively, thus breaching the price barrier again.^{xvii} By 2013, more than 10-lakh units of Swach were sold across 20 states of India, of which more than 80 per cent were first time users. Several national and international awards poured in.^{xviii}

Citing Tata Group's efforts in launching Swach, Professor David Alhstrom from the Chinese University of Hong Kong observed that 'by concentrating on bringing lower-end disruptive innovation to the market, firms can do untold good for consumers, particularly those in developing economies, while creating sizable new businesses that facilitate economic growth.'^{xix} During the launch of Nano, when Ratan Tata was asked about the area he would like to see the next big idea emanate from, his answer was 'water'. In the year 2012, when he stepped down as Executive Chairman of Tata Sons, Swach, a product jointly delivered by six Tata companies, was voted the 'Product of the Year 2012'.^{xx}

- i Interview with Christabelle Noronha in July 2017, Tata.com
- ii It consisted of 80 to 85 per cent activated silica, 5 per cent activated carbon and hence could facilitate the removal of bacteria, suspended particles, fluorides and hazardous metal-ions from water.
- iii Figure from the All India Rice Exporters Association sourced from the Directorate of Economics and statistics
- iv Das, Kalyan, "Rice Husk to the Rescue" in Research by Design Innovation and TCS, Edited by Shivanand Kanavi, Rupa and Company, 2007.
- v UN Study on Sanitation and Health in Developing Nations, 2006-07.
- vi Tata Chemicals' focused on its LIFE product portfolio. Here, L stood for Living Essentials – products that provided nourishment and nutrition to retail consumers. I stood for Industry Essentials – products that provide sustainable inorganic chemistry solutions to industrial customers. FE stood for Farm Essentials - multiple farm inputs to improve crop health and productivity.
- vii "For the want of a drink: A special report on water", The Economist, May 22, 2010.
- viii Founded in 1946 and headquartered in New York, the United Nations Children's Fund is a United Nations programme that provides humanitarian and developmental assistance to children and mothers in developing countries.
- ix The Economic Times Brand Equity's 'Most Trusted Brands' survey conducted by AC Nielsen.
- x Kamath, Gayatri, 'Bridges are for building', Tata Review, July 2015.
- xi Duvedi, Chitra, Vijay Parikh and Milind Pandit, "Swach: Taking Concept to Business Reality", Case Study No.: CS/2010-03, Tata Management Training Center.
- xii Founded in 1948 and headquartered at Geneva in Switzerland, the World Health Organisation is a specialized agency of the United Nations that is concerned with international public health.
- xiii Several technical details about the project were shared with me by Sabaleel Nandy during online communication.
- xiv Dhanaraj, Charles, Prasad Vemuri, Monidipa Mukherjee, Vijay Parikh and Chitra Duwedi, "Tata Swach: Pure Water for The Indian Household", 9B11MO58, Richard Ivey Business School, 2011.
- xv Chattopadhyay, Amitava and Jean Wee, "Making Clean Water Affordable in India", 07-2015-6154, INSEAD, 2015.
- xvi Duvedi, Chitra, Vijay Parikh and Milind Pandit, "Swach: Taking Concept to Business Reality", Case Study No. CS/2010-03, Tata Management Training Center.
- xvii Rodrigues, Cynthia, "Water for all", Tata Review, January 2011.
- xviii Its awards include WSJ Asian Innovation Awards, Hong Kong, ICIS Best Product Innovation Award, the UK, 'Gold' IDSA Design of the Decade Awards, the US and IF Product Design Award, Germany.
- xix Alhstrom, David, "Innovation and Growth: How Business Contributes to Society", Academy of Management Perspectives, Vo. 24, No. 3, August 2010.
- xx Based on an independent survey conducted by Nielsen with 30,000 consumers across 36 markets in India.