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GNFC Neem Project: the ecosystem of shared value

Sandeep Goyal and Amit Kapoor wrote this case solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

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In [the] real sense, the Neem Project is a step towards [together with all, development for all].

Prime Minister of India Narendra Modi[[1]](#footnote-1)

A policy directive by the government of India, which allowed urea producers to produce up to 100 per cent neem-coated urea, a fertilizer component, triggered a radical change in the fertilizer industry during fiscal year (FY) 2015–16.[[2]](#footnote-2) The policy decision was made in a bid to restore the market dynamics by moving control of and access to urea away from intermediaries and industries, and toward farmers. Gujarat Narmada Valley Fertilizers & Chemicals Limited (GNFC) decided to leverage this policy directive as an opportunity to set up a fully integrated value chain for the in-house production of neem oil and other related product offerings. The decision to go ahead with an integrated value chain approach, rather than procuring neem oil from the open market, was driven by the belief that neem seed collection, being a labour-intensive activity, presented a huge income opportunity for rural women living in areas with a large number of neem trees.

Dr. Rajiv Kumar Gupta, managing director of GNFC, said,

I consider the Neem Project as a unique and successful initiative. It is one of its kind in India where the core focus is on women, besides having self-sustainable revenue streams. We have been quite successful in the last two years or so. However, there are specific challenges, which keep worrying me, like how to take care of unpredictable climatic conditions. This affects our neem seed collection targets. [Other questions are how] to set up a distribution network for neem-based products, [and how] to scale this initiative in terms of reach and impact.

BACKGROUND

After a great deal of internal deliberation and opportunity landscape analysis, GNFC officially launched the innovative, integrated, and community-led Neem Project in June 2015. It started with a backward integration process with the primary focus on creating a grassroots network of rural women for carrying out neem seed collection. This was followed by setting up an integrated value chain network for neem seed storage, transportation, and processing (extraction and expulsion).

Over the span of two years (2015 to 2017), the project benefited 225,000 rural women across 4,000 villages in Gujarat for collecting neem seeds, in addition to generating indirect employment for 75,000 rural people involved in the different activities of the supply chain, including storage, transportation, and processing. During FY2016–17, the project achieved the collection of 12,200 metric tonnes (MT) of neem seeds, thereby creating an annual supplementary income opportunity of around ₹120 million[[3]](#footnote-3) to ₹150 million for around 125,000 rural women and landless labourers. In individual terms, this amounted to an add-on supplemental income of ₹7,000 per woman during one season of neem seed collection. This was a significant amount for these rural women in the two to three months of the neem season, compared to the ₹12,000 average annual income for women farm labourers during the agricultural season.

Subsequently, the forward integration into manufacturing neem-based products added a new dimension to the GNFC portfolio in FY2016–17. The company targeted an annual turnover of ₹5,000 million by 2020–21 from neem-based product offerings for the end consumer.

The company received many accolades for the ingenious application of the government policy directive, which created a huge socio-economic impact on the lives of the rural women. The model adopted by the GNFC Neem Project motivated many other states and fertilizer companies to come forward to learn about and implement a similar approach in their respective areas.[[4]](#footnote-4)

However, among all these positive happenings were a few challenges that kept Gupta wondering about the future of Neem Project. These involved the unpredictability of climatic conditions restricting the collection of neem seeds, competing with fast-moving consumer goods (FMCG) companies, and developing both a last-mile distribution network for low-margin neem-based product offerings, and the right approach for scaling the Neem Project within Gujarat and across other neem surplus states in India.

Fertilizer industry—INDIAn TRENDS

Globally, fertilizer made a considerable contribution to the growth and sustainability of the agriculture industry. The same was true of the Indian agriculture industry—since the 1960s, the fertilizer industry in India had contributed greatly to strengthening the agro-economy of the country.[[5]](#footnote-5) Accordingly, the success enjoyed by the Indian fertilizer industry led to the sustainability and growth of the agricultural sector. Successive governments in India had therefore offered many subsidies to farmers to enhance the use of nitrogen-, phosphorus-, and potassium-based fertilizers in their plantations and cultivation processes.

Urea (a nitrogen-based fertilizer component) was one of the main types of fertilizer components that had enhanced use and appeal for Indian soil types. However, farmers had been facing a recurring shortfall of urea, forcing the government to continuously increase the import of urea from other countries (see Exhibit 1). The rate of import of urea continued to increase until 2017 despite the significant production base in India. Statistically, there was a marginal increase of 13.2 per cent in the consumption of urea in FY2008–09 to 8,044,000 MT in FY2012–13 (see Exhibit 1).

One of the reasons for the shortfall of urea faced by farmers was the unscrupulous diversion of subsidized urea for industrial use. Another reason was a lack of both awareness and education among farmers in India regarding the correct method of application of urea and other fertilizers, in terms of quantity and timing. This lack of awareness led to the over-application of urea and other fertilizers per unit of soil, thereby harming the soil and the overall environmental ecosystem. Both of these reasons reflected the need for bringing out the gradual awareness and adoption of best practices among the farmers in terms of the right application of fertilizers to their crops. A third reason was the slow pace of increase in production levels due to the regulatory control and capital-intensive nature of the fertilizer industry. The government decision regarding the 100 per cent neem coating of urea was aimed at preventing the unintended use of urea for industrial purposes, thereby making it fully available to farmers.

GNFC

GNFC had established itself as India’s leading enterprise, gaining a significant presence across diverse businesses such as chemicals, fertilizers, imports and trading, agricultural services, and information technology (IT) (see Exhibit 2). It was incorporated on May 10, 1976 as a joint-sector enterprise promoted by the government of Gujarat and Gujarat State Fertilizers & Chemicals Limited. The enterprise began the commercial manufacturing and marketing of ammonia–urea fertilizers in 1982.

GNFC was driven by the vision of creating sustainable value, explicated as follows: “To be a technology driven, environmentally responsible joint-sector company manufacturing fertilizers, commodity, and specialty chemicals; maintaining [the] highest standards of operational excellence and innovation for creating sustainable value for all stakeholders.”

During 1982–2016, GNFC became one of the most profitable government-promoted enterprises in the country, having a diversified product portfolio comprising two fertilizer products and 12 industrial product offerings. It became the sole manufacturer of calcium ammonium nitrate in India; the only manufacturer of toluene diisocyanate (TDI) in all of Southeast Asia; and the largest producer of formic acid, acetic acid, methanol, and aniline in India. It created a leadership position in certain product segments, and it diversified into different streams of chemicals, fertilizers, and allied product offerings via horizontal integration. The company collaborated with global technology suppliers to implement global practices at its fertilizer and chemical plants (see Exhibit 3). This led to a consistent increase in overall production and sales of fertilizers and chemicals year on year (see Exhibits 4A and 4B). The company’s export network spanned more than 22 countries.

Regarding agricultural services, GNFC empowered the farming community by offering a comprehensive range of products and services to farmers. The range of offerings involved providing education on advanced cultivation technologies, setting up a tissue culture laboratory for providing high-quality seeds to farmers, and setting up a network of retail agri-market structures (see Exhibit 5).

Regarding IT, GNFC offered a range of Information Technology (IT) services including the issuance of Digital Signature Certificates; setting up data centres for different government enterprises; facilitating e-tendering and e-auctions; and providing a range of e-governance, security, and surveillance solutions.

GNFC set up a research and development centre in 1986 to focus on product, process, and technology development related to the manufacturing of chemicals and fertilizers as well as to undertake effluent treatment and environment improvement studies. The focus on research-and-development-based innovations led to the granting of more than 13 product and process patents over the years.

Regarding corporate social responsibility initiatives, GNFC set up two entities—known as NARDES (Narmadanagar Rural Development Society) and NEST (Narmada Education & Scientific Research Society)—and spent more than ₹750 million (during 2007–2013) for different social initiatives in the areas of education and health care (see Exhibit 6). Environmentally, the enterprise focused on the recycling and reuse of industrial wastes, the conversion of carbon monoxide effluents into useful products like formic acid and TDI, the planting of 145,000 plants, and other initiatives.

Financially, GNFC performed exceptionally well, as evidenced by the growth in its sales and profitability over the years across different product segments (seeExhibit 7).

the Neem Project

Overview

India was primarily an agrarian economy where around 58 per cent of the population, particularly the people living in rural areas, depended on agriculture for their livelihood.[[6]](#footnote-6) During FY2013–14, agriculture, along with allied sectors, contributed around 14 per cent to India’s gross domestic product (at constant 2004–05 prices).[[7]](#footnote-7) The government of India had always supported the growth and sustainability of agriculture and its allied sectors through liberal policy decisions and institutional support because of the engagement of a large proportion of the Indian population in these sectors. Besides focusing on the availability of basic infrastructure for agriculture, such as water, electricity, seeds, and market-based linkages, the government of India focused on enhancing the productivity and income levels of farmers by creating awareness and enabling access to fertilizer components (nitrogen, phosphorous, and potassium) at subsidized pricing. Since India’s soil was highly deficient in nitrogen, the government gave a major push toward making urea (a molecule that included nitrogen) available to farmers at subsidized prices. Despite the government’s intent and efforts, however, Indian farmers faced issues in getting timely access to urea due to the prevalence of malpractices such as the diversion of subsidized urea for industrial gains.

The genesis of the GNFC Neem Project was attributed to the policy initiative undertaken by the Indian government in 2015—in a bid to enable the rightful access of subsidized urea to farmers. During the 69th Independence Day celebrations (i.e., 2016) in India, Prime Minister Narendra Modi announced the need for 100 per cent neem coating of urea to prevent its illegal diversion for industrial use as well as to enhance the productivity of the soil and yield for the farmers. This announcement led to the policy directive, which allowed urea producers to produce up to 100 per cent neem-coated urea and made it mandatory to produce a minimum of 75 per cent of domestic urea as neem-coated.[[8]](#footnote-8)

GNFC looked on the policy directive as a significant socio-economic opportunity to create an inclusive business model, which created a positive impact on the lives of millions of rural women in Gujarat. GNFC deliberated over two possible alternatives for complying with the government mandate of 100 per cent neem-coated urea. The first involved buying the neem oil from the market for coating the urea; the second involved creating an integrated value chain comprising the procurement of neem seeds, the extraction of neem oil, and the distribution of neem-based fertilizers and neem-coated urea to farmers. The company pursued the latter option and launched the Neem Project on June 5, 2017. The decision to launch the project was based on the following considerations: the availability of neem seeds; the availability of infrastructure for neem collection, storage, transportation, and processing; and seasonal fit (see Exhibit 8).

As discussed above, the Neem Project and the approach followed by GNFC for implementing it turned out to be fairly successful and sustainable, with tremendous scope for scalability and replication across India. The Neem Project showcased to other fertilizer companies a sustainable and high-impact framework for complying with the government directive. It created a significant socio-economic impact in the lives of diverse stakeholders, such as rural women, transporters, and loaders, by providing them an opportunity to earn supplementary income during the lean agricultural season.

The success of the Neem Project was attributed to the inclusive business model’s clear connect between value offering, forward and backward integration, and value capture in terms of social impact, outreach, and economic returns.

Target Segments and Value Offerings—Integrated Demand and Supply Network

Very early into the launch of the Neem Project it was realized that the success of the initiative was mainly dependent on the ability to build a network of rural women on the supply side and a large network of farmers and individual consumers on the demand side. In fact, the collection of neem seeds was so critical to the whole mission and sustainability of the Neem Project that targeting the rural women, and training and engaging them in the value chain for neem seed collection became the key deciding factor for the overall initiative.

The Neem Project defined its target segments across three categories. The first category included grassroots organizations and the rural women of the villages of Gujarat. Grassroots organizations—non-governmental organizations (NGOs), *Pani Samitis* (water committees), *Sakhi Mandals* (self-help groups), milk co‑operatives, and others—had developed a long association, last-mile connect, trust, and acceptance with the rural women in Gujarat. The Neem Project targeted this ecosystem for developing a widespread network for neem seed collection.

Gupta commented on the initiative, saying, “[The] Neem Project is a unique socio-economic initiative in India, where we bring together the women self-help groups, rural poor and other marginalized communities for the collection of neem seeds.”

The second category comprised the farmers who faced a perennial shortage of subsidized urea due to its diversion for industrial use by intermediaries. The Neem Project ensured the availability of 100 per cent neem-coated urea for farmers. The use of neem-coated urea rather than normal urea reduced the relative consumption of urea by 10 per cent, resulting in net savings of ₹13.50 per bag for the farmers. Also, the use of neem-coated urea increased land productivity by 10 to 15 per cent.[[9]](#footnote-9) Besides offering neem-coated urea, GNFC offered allied value propositions to farmers such as a banana tissue culture laboratory for improving the quality of seedlings, an agri-mart for providing farmers with a one-stop solution for all of their agricultural needs, a demonstration farm of around 50 acres for showcasing scientific irrigation techniques, and a soil testing laboratory for analyzing soil water samples.[[10]](#footnote-10)

The third category involved consumers of FMCG who required day-to-day items such as soap, hand wash, and oil. There were few neem-based products in the FMCG market, so when the Neem Project undertook the forward integration of neem-oil production into the manufacturing of high-quality neem-based items, it addressed these under-served consumer needs. The project offered high-quality neem-based consumer products such as organic pesticides for household use, oil, soap, and other day-to-day items.

Creating A Last-Mile Channel, Awareness, Trust, and Acceptance

The Neem Project attributed its success to a strong connect with diverse stakeholders, especially on the supply side (the collection of neem seeds), through multiple channels creating awareness and reach. This involved persistent actions and initiatives toward building awareness and interest among the grassroots organizations (NGOs, Pani Samitis, milk co-operatives, Sakhi Mandals); landless labourers, including rural women; and other intermediaries for participating in the neem seed collection initiative.

The first action involved participating in regional festivals and events for farmers and agricultural companies, like *Krushi Mahotsav.*[[11]](#footnote-11) This created a positive buzz, and encouraged grassroots organizations and associations (self-help groups, Pani Samitis, and co-operative societies) to promote the initiative among their network of women labourers as a supplementary income opportunity. More and more women joined the network as news spread of the potential supplementary income, type of work, and benefits.

B. N. Joshi, senior marketing manager at GNFC, explained the connect and orientation at the grassroots level as follows:

One of the key ideas behind [the] in-house Neem Project is to prevent exploitation and enhance the empowerment of the rural women by encouraging them to become a part of the network for neem seed collection. We believe that women empowerment, especially those belonging to the low-income segment in rural areas, creates a catalytic impact on the overall socio-economic status of the rural household. The children start getting the education. . . . health care becomes possible. The supplementary income is also invested by these rural women in fulfilling their personal wishes as well as [in] starting small businesses like dairy, stitching of clothes, etc. Earlier, they were exploited and used to get only ₹2–3 per kg [kilogram] from private entities, whereas with GNFC getting involved, now they are getting much better prices, in the range of ₹5–12 per kg depending upon the quality and moisture content.

The second action involved the intensive engagement and participation of GNFC’s top management team with grassroots organizations and the rural women in their network across the villages. Engagement involved educating and sensitizing the organizations and the women about the objective of the initiative, the nobility of the cause, the opportunity for supplementary income, and the ideas of social recognition and women empowerment.

Jamnaben, a neem seed collector in Vedaj village in the Bharuch district of Gujarat, explained the rationale behind joining the Neem Project:

I joined [the] neem seed collection initiative due to two reasons. One, GNFC people are very helpful.They provided me [with] all the support and encouragement in the collection of neem seeds [that I needed], checking the quality, doing the packaging, and transporting the same to their premises. For example, jute bags and transportation charges are very high here. These people helped me with the availability of jute bags for packaging and [with getting a] truck for transportation at [a cheaper rate]. This has led to increased savings. Second, when I verified . . . them with my NGO, I got . . . positive feedback, which led me to join this initiative.

The third action involved ensuring easy access to the last-mile seed collection network, transparency in quality assessment, fair pricing of the neem seeds, and timely payments to the seed collectors. Regarding pricing, the Neem Project ensured a fair and transparent assessment of the neem seeds in terms of quality and pricing. There was a slow and steady increase in prices during 2015–17, from ₹5 per kg to ₹12 per kg, as the initiative started gaining scale. This empowered the neem seed collectors, who earlier had been paid as low as ₹2 per kg by private dealers. The association with GNFC’s Neem Project empowered the rural women to negotiate prices and get better payment terms for their neem seeds from the market. The Neem Project created a multi-tiered neem seed collection network comprising 69 Narmada Khedut Sahay Kendra (NKSK) outlets, 2,200 village-level collection centres (VLCCs), and 400 service providing partners (SPPs). The VLCCs transported the neem seeds to the SPPs, who carried out the screening, weighing, and bagging of the seeds, and arranged for their temporary storage and for their transportation to the expeller/extraction unit for processing.[[12]](#footnote-12) This multi-tiered collection network ensured that last-mile neem seed collectors received their payments on time when making a delivery to the collection centre (see Exhibit 9).

N. J. Patel, another senior marketing manager at GNFC, explained the multi-tiered collection network as follows:

We have created a large network of neem seed collectors across 4,000 villages in Gujarat as of now. Also, we have set up a [multi-tiered] network of NKSKs [that have links] with SPPs and VLCCs for carrying out the screening, weighing, bagging, and [arrangement of] temporary storage and transportation of neem seeds to [the] expeller or extraction unit for processing. Our fertilizer distribution and retail outlets . . . also act as neem seed collection centres, thereby providing flexibility and comfort to the neem seed collectors to sell [to] us directly as they feel [it is] convenient. There are adequate checkpoints from collection to payment to extraction, thereby ensuring fair pricing and timely payments to seed collectors.

The actions listed above attracted landless labourers, especially rural women, to become part of the initiative. This resulted in word-of-mouth publicity, with an increasing number of women joining the seed collection network as news spread of the type of work, benefits, and potential supplementary income opportunity.

Adopting a Convergence-Based Approach

One of the keys to the Neem Project’s success was the decision to pursue a convergence-based approach. GNFC had a firm belief in leveraging the goodwill and last-mile network of grassroots organizations across the villages in Gujarat. The project focused on building partnerships and collaborations with the diverse stakeholders as a way of leveraging their expertise and the trust and acceptance they had forged among the low-income people for creating an inclusive ecosystem. The management of the Neem Project initiative invested considerable amount of time and effort in building awareness and sensitizing the grassroots organizations about the win–win opportunity to enhance the skills and income levels of rural women.

The collaborative approach proved beneficial in multiple ways. First, it led to the rapid scale up of the network of rural women for neem seed collection across the villages, primarily because these women had a long, trust-based association with NGOs, milk co-operatives, Sakhi Mandals, and Pani Samitis. Once these organizations were convinced about the win–win situation and the benefits for their women members, it became easier to attract more and more rural women to join the seed collection activity. During 2015–17, the project engaged more than 225,000 rural women across more than 4,000 villages in Gujarat.

Anurag Srivastava, project manager with GNFC, commented,

We have always been conscious of the fact that collaboration with grassroots organizations like dairy co-operatives, [the] Atapi Seva Foundation, Pani Samities, [and] Sakhi Mandals . . . would be the ideal way to scale up the network for neem seed collection. This belief and approach have really helped us on the ground in attracting more and more rural women to the seed collection activity.

Chandrika Makwana, project leader with the Atapi Seva Foundation, commented on the merits of association with the Neem Project:

Once we became convinced about the social and economic benefits of this project, we decided to engage the women in our network. We started the awareness program, and along with GNFC, we held meetings at [the] cluster federation level, followed by cluster level sessions. We communicated the benefits of [the] Neem Project to around 25 women and they, in turn, discussed the project in their respective self-help groups, thereby reaching more than 2,500 women in our network. Among those, around 400 women came forward and . . . [became] engaged in the Neem Project.

Second, collaboration with grassroots organizations and the local engagement of rural women generated a lot of buzz and word-of-mouth publicity, thereby widening the base of neem seed collectors. This gave a positive push toward building the project’s brand as having a unique socio-economic initiative.

Third, as the women engaged in neem seed collection earned social respect and attractive income add-ons, many of them volunteered to take on greater responsibility and started operating as VLCCs in their respective villages. This enabled the initiative to set up a structure and process for ease of seed collection and of payment to seed collectors. This, in turn, attracted more women for seed collection, and led to success stories like those of Jamnaben in Vedaj village, Ratna Ben in Kesarpura, and Amishben Patel in Gajera village, among others. These women operated as VLCCs in their respective villages, and in doing so, enhanced their supplementary income significantly and became role models for other women in their villages.

Patel said,

Collaboration and partnerships have really helped in building a seed collection network. For example, Jamnaben in Vedaj village dispatched the neem seeds for the first time after getting . . . assurance from [the] Atapi Seva Foundation. Now, she is one of the success stories, in terms of doing one of the largest neem seed collections in her village.

Pursuing Forward Integration

After gaining traction in neem seed collection and self-sufficiency in the manufacturing of neem oil for 100 per cent neem-coated urea, the Neem Project decided to expand its socio-economic impact in 2016 by diversifying into manufacturing other neem-based consumer offerings such as soap, hand wash, and organic pesticide.

The Neem Project decided to leverage the value chain set-up for the collection of neem seeds, and the expulsion and extraction of neem oil into manufacturing neem-based product offerings for individuals. Here again, the Neem Project adopted the convergence approach and leveraged the existing state-level programs under the national Skill Development Mission for providing certified training to rural women and engaging them in the manufacturing of neem-based products for the end consumer. Diversification into neem-based consumer goods led GNFC to enter the highly competitive business-to-consumer FMCG market. However, GNFC maintained that the objective of diversifying into neem-based consumer goods was to empower women and provide them with increased opportunities, as well as give consumers access to high-quality neem-based product offerings at affordable prices. Due to the social objective and economic pricing, GNFC faced many challenges in gaining the support of retailers and distributors.

During FY2016–17, GNFC’s Neem Project manufactured more than 5,000 pieces of neem soap every day. The soap-making unit employed around 21 low-income women for these activities, after having them certified by the National Skills Development Corporation, enabling them to gain both a sustained livelihood and empowerment. Despite offering low margins, GNFC developed extensive distribution and delivery set-up across India. The value delivery network involved tie‑ups with retailers Big Bazaar, Star Bazaar, and Kendriya Bhandar; NKSKs; fertilizer retailers; and other retail stores across different regions of India.[[13]](#footnote-13) The brand name and socio-economic mission acted as the pull factor for a segment of the retailers and distributors, despite low margins. The company found many synergies and opportunities to scale in manufacturing neem-based household products, and projected a sales turnover of more than ₹5,000 million by 2020.

Gupta explained the rationale for pursuing forward integration in consumer products:

The continuous efforts towards neem seed collection have enabled us to produce surplus neem oil today. So, we have decided to enhance the socio-economic impact on the rural women as well as end consumers by diversifying into the manufacturing of neem-based household products like soap, hand wash, organic fertilizer, [and others]. This segment has immense potential to scale in terms of volumes, impact, and reach. We are mainly driven by the focus on maximizing the socio-economic impact on the masses rather than considering this as a core business.

The Way Ahead—Challenges and Focus Areas

The project gave a new direction to the corporate social responsibility strategy of GNFC, aimed at making a difference in the lives of the under-served segments of society. The project focused on empowering rural women by designing and implementing a scalable and self-sustainable innovative business model. The success of the business model was evident from the fact that it affected the lives of more than 225,000 rural women during 2015 to 2017. The Neem Project led to the collection of 10,000 MT of neem seeds in FY2015–16, which were processed to extract around 810 MT of neem oil and 6,700 MT of neem cake.[[14]](#footnote-14) The next year, 12,200 MT of neem seeds were collected, producing around 900 MT of neem oil and 7,500 MT of neem cake.[[15]](#footnote-15)

Despite the adulation and recognition given to GNFC for the Neem Project, Gupta believed it was just the tip of the iceberg. And while he was confident about the huge potential for the initiative’s scale, reach, and impact, he remained concerned about the specific challenges in scaling the initiative.

The first challenge involved difficulty in making accurate projections regarding the collection of neem seeds in a particular season. Gupta wanted to scale the initiative at a rapid pace in terms of volume and reach. The project set a collection target of 35,000 MT of neem seeds in FY2017–18. However, the actual collection was around 25,000 MT in FY2017–18. The difference between planned and actual collection was attributed to the arrival of early monsoon in July 2017, thereby reducing the number of actual days available for neem seed collection. The risk of early monsoon and unpredictable nature of rains every year posed a big challenge in scaling up the collection of neem seeds in the coming years.

The second challenge was around setting up the last-mile network for selling neem-based product offerings to the end consumer. The Neem Project operated on low margins, as it had been taken up primarily as a social mission. However, FMCG distributors and big retailers demanded a margin of 30–35 per cent for selling GNFC neem products. How should GNFC structure or optimize the value chain for maximizing the tie-ups with last-mile channels without increasing prices for the end consumer? This question became a sustainability challenge for GNFC due to the conflicting priorities between the social orientation of GNFC and the profit margins demanded by distributors and retailers.

The third challenge involved the decision of whether to scale the project across other states in India. This would require effort in terms of understanding the socio-economic dynamics across states, collaborating with grassroots organizations in the states, creating awareness, engaging rural women, and investing time and money in creating the entire supply chain across different states of India—from neem seed collection to processing to creating the finished neem-based products. What was the best option for replicating the model: self-expansion or mentoring others? GNFC set up the launch of the project in five other Indian states in 2017 using the self-expansion approach, but it was not sure if this approach was the best way forward.

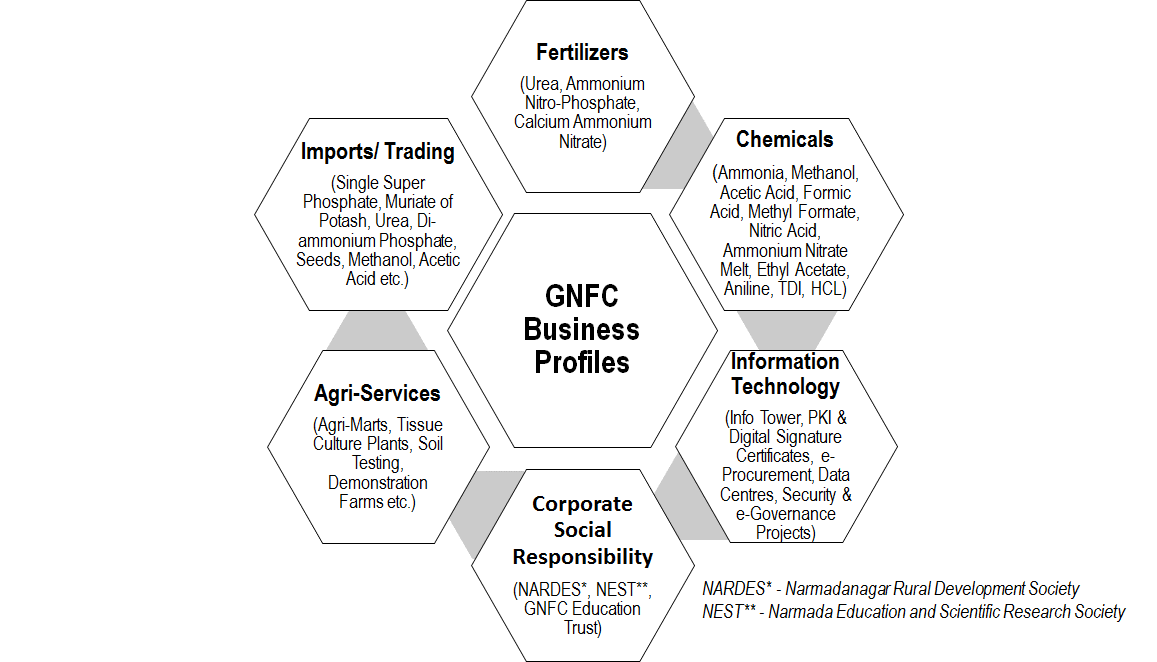
EXHIBIT 1: UREA—ANNUAL PRODUCTION, IMPORTation, and CONSUMPTION

(Million METRIC TONNES)

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Production** | **Import** | **Consumption** |
| 2008–09 | 19.92 | 5.67 | 26.65 |
| 2009–10 | 21.11 | 5.21 | 26.45 |
| 2010–11 | 21.88 | 6.61 | 28.21 |
| 2011–12 | 21.98 | 7.83 | 29.39 |
| 2012–13 | 22.57 | 8.04 | 30.16 |

Source: Created by the authors from the Department of Fertilizers, Ministry of Chemicals and Fertilizers, Government of India, *Indian Fertilizer Scenario 2013*, 2013, accessed July 11, 2017, <http://fert.nic.in/sites/default/files/Indian%20Fertilizer%20SCENARIO-2014.pdf>.

Exhibit 2: GNFC Business PROFILE



Source: Company documents.

Exhibit 3: GNFC PRODUCTION capacity and technology partners

|  |  |  |  |
| --- | --- | --- | --- |
| Category | Plant | Annual Capacity  (MT) | Technology Partners |
| Fertilizers | ammonia | 445,500 | Linde-Germany, Texaco-USA, BASF-Germany, Haldor Topsoe-Denmark |
| urea | 636,900 | Snamprogetti-Italy |
| ammonium nitrophosphate | 142,500 | BASF-Germany |
| calcium ammonium nitrate | 142,500 | UHDE-Germany |
| Chemicals | methanol | 268,700 | ICI-UK, Linde-Germany |
| methyl formate | 22,800 | Kemira OY-Finland |
| formic acid | 10,000 | Kemira OY-Finland |
| acetic acid | 100,000 | BP Chemicals-UK, Linde-Germany |
| weak nitric acid | 347,500 | UHDE-Germany |
| concentrated nitric acid | 116,000 | Plinke-Germany |
| nitrobenzene | 47,250 | Chematur Engineering AB-Sweden |
| aniline | 35,000 | Dupont-USA |
| toluene diisocyanate | 14,000 | Chematur Engineering AB-Sweden |

Source: Company documents.

**Exhibit 4a: GNFC FERTILIZER AND CHEMICAL PRODUCTION AND SALES**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **2009–10** | **2010–11** | **2011–12** | **2012–13** |
| Fertilizers (Production in MT) | 870,872 | 908,203 | 1,012,933 | 1,016,091 |
| Chemicals (Production in MT) | 741,016 | 796,141 | 855,453 | 877,980 |
| Fertilizers (Sales in MT) | 920,260 | 9,00,189 | 986,307 | 1,007,919 |
| Chemicals (Sales in MT) | 444,619 | 481,101 | 490,699 | 423,277 |

Note: MT = metric tonnes

Source: Company documents.

EXHIBIT 4B: Individual product level sales for FISCAL YEARS (in Metric Tonnes)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Product** | **2009–10** | **2010–11** | **2011–12** | **2012–13** |
| **Fertilizers** | urea | 637,479 | 632,816 | 680,072 | 706,631 |
| ammonium nitro-phosphate | 169,816 | 163,987 | 194,217 | 199,979 |
| calcium ammonium nitrate | 112,965 | 103,386 | 112,018 | 101,309 |
| **Chemicals** | methanol | 111,511 | 125,595 | 108,614 | 48,874 |
| methyl formate | 838 | 1,237 | 677 | 1,012 |
| formic acid | 16,477 | 18,727 | 19,020 | 20,367 |
| acetic acid | 142,914 | 153,322 | 155,199 | 146,854 |
| weak nitric acid | 96,526 | 100,063 | 119,793 | 89,142 |
| concentrated nitric acid | 29,311 | 23,873 | 27,722 | 55,551 |
| nitrobenzene | 48 | 1,440 | 2,013 | 2,901 |
| aniline | 33,825 | 39,687 | 40,017 | 41,459 |
| toluene di-isocyanate | 13,169 | 17,157 | 17,644 | 17,117 |

Source: Company documents.

Exhibit 5: AGRI-SERVICES—BANANA TISSUE CULTURE SAPLING SALES

|  |  |
| --- | --- |
| Fiscal Year | Saplings |
| 2007–08 | 535,979 |
| 2008–09 | 530,232 |
| 2009–10 | 561,500 |
| 2010–11 | 723,465 |
| 2011–12 | 900,510 |
| 2012–13 | 931,185 |

Source: Company documents.

Exhibit 6: GNFC’s CSR CONTRIBUTION (in ₹ MILLIONS)

|  |  |
| --- | --- |
| Fiscal Year | CSR Funding |
| 2007–08 | 40.0 |
| 2008–09 | 33.4 |
| 2009–10 | 185.5 |
| 2010–11 | 174.0 |
| 2011–12 | 164.7 |
| 2012–13 | 160.0 |

Note: CSR = corporate social responsibility; ₹ = INR = Indian rupee; ₹1 = US$0.0155 on July 1, 2017.

Source: Company documents.

Exhibit 7: Financial Analysis (2010–17)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | 2010–11 | 2011–12 | 2012–13 | 2013–14 | 2014–15 | 2015–16 | 2016–17 |
| Total Income (₹ Million) | 28,458.9 | 38,620.1 | 42,525.7 | 4,8471.9 | 46,415.2 | 50,982.2 | 51,696.7 |
| Total Expenses (₹ Million) | 25,896.5 | 34,411.1 | 38,078.7 | 4,3760.4 | 45,408.4 | 48,305.2 | 47,468.5 |
| Profit before Tax (₹ Million) | 3,814.1 | 4,174.0 | 4,224.0 | 4,238.3 | (4,520.7) | 2,677.0 | 7,150.5 |
| Profit after Tax (₹ Million) | 2,665.3 | 2,838.4 | 2,731.1 | 2,922.7 | (4,520.7) | 1,726.8 | 5,213.0 |
| Earnings Per Share (₹) | 171.5 | 182.6 | 175.7 | 188.1 | (290.9) | 115.7 | 340.2 |
| Segmental Revenue (₹ Million) | | | | | | | |
| *- Fertilizers* | 14,943.5 | 22,663.5 | 24,034.1 | 23,696.1 | 21,902.7 | 19,779.5 | 16,851.2 |
| *- Chemicals* | 13,030.1 | 15,266.3 | 17,726.2 | 23,792.8 | 23,181.5 | 27,041.4 | 30,616.5 |
| *- Others* | 485.3 | 690.3 | 765.4 | 983.0 | 1,331.0 | 1,637.6 | 1,980.4 |
| Segmental Profitability (₹ Million) | | | | | | | |
| *- Fertilizers* | 379.6 | 1,225.0 | 1,352.8 | 740.2 | (392.6) | 994.6 | 55.0 |
| *- Chemicals* | 3,471.7 | 2,999.3 | 3,208.6 | 3,914.5 | (1,775.6) | 3,107.8 | 8,178.9 |
| *- Others* | 83.2 | 159.3 | 267.1 | 235.3 | 205.3 | 325.0 | 436.4 |

Source: “Annual Report,” Gujarat Narmada Valley Fertilizers & Chemicals Limited, *Annual Reports 2010–17*, accessed August 26, 2017, <https://www.gnfc.in/annual-report.html>.

Exhibit 8: NEEM project—decision logic

**Availability of Neem Seeds**

\* FY 2009–10: Around 30 million neem trees in Gujarat with each tree yielding 15-20 kilograms of neem seeds every alternate year.

**Infrastructure Availability**

\* Extensive distribution network of GNFC and positive brand image, which can be leveraged for setting up the collection, transportation and processing network for neem seeds in Gujarat.

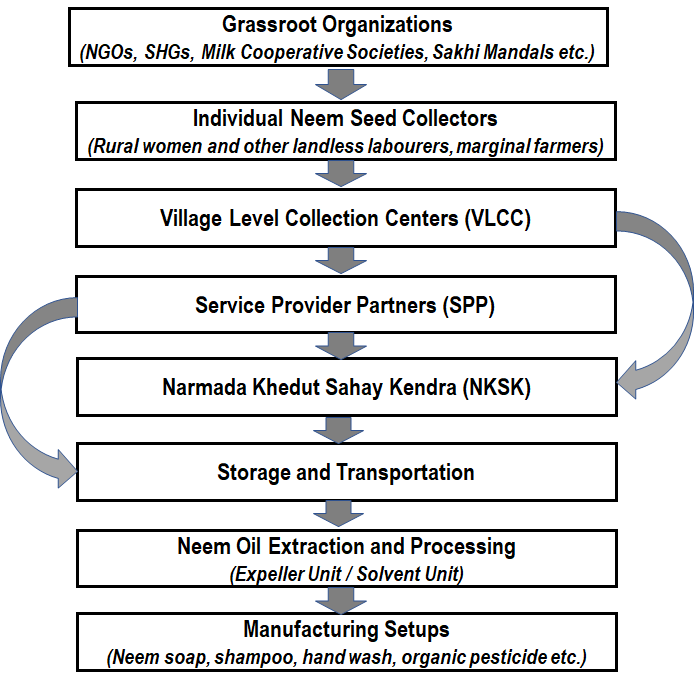
\* Widespread network of NGOs and entities like Pani Samitis, Sakhi Mandals, and Milk Cooperatives having trust and presence among the millions of rural women in Gujarat

**Seasonal Fit with Traditional Agriculture**

\* Seasonal availability of neem seeds for 2-3 months during May–July. This time period is characterized by lean farming season thereby enabling availability of many rural women looking for mode of supplementary income during these 2–3 months.

Source: Created by the authors.

Exhibit 9: NEEM SEED COLLECTION SUPPLY CHAIN



Source: Created by the authors.

1. “Neem Project: A Socio Economic Project Undertaken by GNFC,” Gujarat Narmada Valley Fertilizers & Chemicals Limited, The Neem Project, accessed August 26, 2017, <http://gnfcneem.in/projects/neem-project-a-socio-economic-project-undertaken-by-gnfc/>. [↑](#footnote-ref-1)
2. “Approval to Comprehensive New Urea Policy 2015,” Press Information Bureau, accessed March 10, 2018, http://pib.nic.in/newsite/PrintRelease.aspx?relid=121666. [↑](#footnote-ref-2)
3. ₹ = INR = Indian rupee; all currency amounts are in INR unless otherwise specified; ₹1.00 = US$0.02 on July 1, 2017. [↑](#footnote-ref-3)
4. Maulik Pathak, “GNFC’s Neem Project Set to Be Introduced in Six More States,” Livemint, May 22, 2017, accessed August 26, 2017, [www.livemint.com/Politics/mPOKKDdY3gS1SEwO8vTTAN/Gujarat-govtbacked-neem-project-set-to-be-introduced-in-six.html](http://www.livemint.com/Politics/mPOKKDdY3gS1SEwO8vTTAN/Gujarat-govtbacked-neem-project-set-to-be-introduced-in-six.html). [↑](#footnote-ref-4)
5. Renuka Kholkute, “Indian Fertilizer Industry: A Brief Overview,” *Arab Fertilizer Magazine* 66 (n.d.): 38–40. [↑](#footnote-ref-5)
6. “Agriculture in India: Information about Indian Agriculture & Its Importance,” India Brand Equity Foundation, accessed August 11, 2017, <https://www.ibef.org/industry/agriculture-india.aspx>. [↑](#footnote-ref-6)
7. Himanshu Kaushikl, “Agriculture Has a Poor Share in State’s Economy,” *Times of India*, November 4, 2016, accessed August 12, 2017, <http://timesofindia.indiatimes.com/city/ahmedabad/Agriculture-has-a-poor-share-in-states-economy/articleshow/55233099.cms>. [↑](#footnote-ref-7)
8. “Approval to Comprehensive New Urea Policy 2015,” op. cit. [↑](#footnote-ref-8)
9. “Neem-Coated Urea Mandatory for 75% of Domestic Production,” *Hindu Business Line*, March 30, 2015, accessed August 18, 2017, [www.thehindubusinessline.com/economy/agri-business/neemcoated-urea-mandatory-for-75-of-domestic-production/article7049075.ece](http://www.thehindubusinessline.com/economy/agri-business/neemcoated-urea-mandatory-for-75-of-domestic-production/article7049075.ece). [↑](#footnote-ref-9)
10. 1.00 acre = 0.41 hectares. [↑](#footnote-ref-10)
11. “Krushi Mahotsav” was launched by the State Government of Gujarat in 2005 to share the best agriculture-related practices with farmers. It was held every year in Gujarat. The underlying objective was to double the income of farmers every five years. During this event, village-level connections were established through a mobile exhibition called “Krishi Rath.” The experts accompanied the “Krishi Rath” and shared expert inputs and advice with farmers for their farming-related issues. This event brings together NGOs, progressive farmers, cooperatives, and private institutions on a common platform to provide guidance and solutions to the diverse needs of farmers; Government of Gujarat, “Krushi Mahotsav,” Directorate of Agriculture, accessed April 16, 2018, https://dag.gujarat.gov.in/krushi-mahotsav.htm. [↑](#footnote-ref-11)
12. Startup India, *Innovations*, Department of Administrative Reforms and Public Grievances, accessed August 18, 2017, <http://darpg.gov.in/sites/default/files/Innovation%20-%20Case%20Studies.pdf.> [↑](#footnote-ref-12)
13. “Store Locator: GNFC Neem Products Available at Following Locations,” Gujarat Narmada Valley Fertilizers & Chemicals Limited, The Neem Project, accessed August 19, 2017, <http://gnfcneem.in/store-locator/>. [↑](#footnote-ref-13)
14. “Project at a Glance,” Gujarat Narmada Valley Fertilizers & Chemicals Limited, The Neem Project, accessed August 27, 2017, <http://gnfcneem.in/project-at-a-glance/>. [↑](#footnote-ref-14)
15. Ibid. [↑](#footnote-ref-15)