



# Make in Pakistan

CASE STUDY ON

**Value Chain Sustainability Model**

**National Foods Limited**

Food Manufacturing, Pakistan

# Acknowledgement

The Centre of Excellence in Responsible Business is grateful to National Foods Limited (NFL) for its continuous support to our efforts in promoting best practices for inclusive and sustainable business growth. We are extremely thankful to Mr. Abrar Hasan, CEO, for willingly agreeing for us to pen down the company's challenging journey to grow and sustain its red chilli supply chain for shared learning. This exercise has been equally supported by Mr. Zahid Majeed, Director at NFL, who accompanied the team in data gathering mission to Kunri and took out time to get the project through as this project is close to his heart. Mr. Shakaib Arif, Director Integrated Supply Chain, provided most valuable and detailed information that greatly assisted in developing a comprehensive write-up. He also accompanied in the field visit to Kunri. Sana Abbas, CSR & Corporate Communications Lead, played the vital role in liaising meetings, correspondence, sharing of information, and visits.

We also appreciate the contribution of other team members at NFL who provided and validated data and information used in the case study.

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This case study is to provide material for discussion on why businesses need to have a long-term vision for sustainability. In the existing environment when agricultural productivity is declining but demand is increasing, businesses need to remodel their production processes, redefine partnerships with suppliers, and take learning/innovation/technology to producers/growers.

The holistic involvement in the entire process cycle is helping business become more competitive. They are able to identify new market opportunities, act upon the inherent risks to their supply chains, and keep a closer look on their productivity, hence ensuring profitability. For long a business was considered successful based on its profits and its contribution to the macro indicators. The shift to sustainable practices is paving ways for equitable and inclusive development and preventing/reversing environmental degradation. The dividends are translating into widespread micro impact in socio-economic spheres.

National Foods Limited (NFL) is the leading food brand of Pakistan. The narration below walks through the company's approach to safeguarding its interest in the red chilli supply chain. The scope of this study is not to assess the quantitative impact, but rather to present a case of "why" NFL shifted from the business-as-usual approach and "how" it is making a transformative shift in its operations for long-term sustainability.

The information has been collected mostly from the company's data base, interviews/discussions with the CEO, C-Suite Executives, employees and, presentations from Pakistan Agriculture Coalition and PMX. Information was gathered from farmers by visiting Kunri on 13th November, 2018.

# The Beginnings

National Foods Limited (NFL) started its journey in 1970 when Pakistan was reaping the early benefits of the increased agricultural productivity brought about by the then Green Revolution. Starting as a spice company, the first plant was set up in West Wharf, Karachi to process a variety of spice mixes including red chillies and turmeric to cater to high end local consumers. NFL has always been driven by its value to provide quality and safe food products that are processed, prepared, and packed in hygienic conditions and are convenient to use.



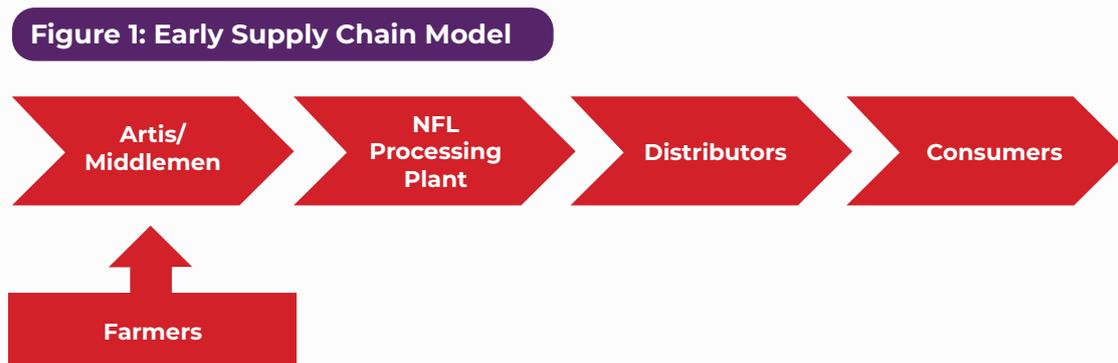
For NFL processing red chillies into powder would become the main source of its revenue. The business since the beginning has been relying mainly on the supply of the local variety of red chillies by the name of “dandicut” grown extensively in Kunri, also famous as the “capital” of red chillies in Asia for this variety. The town is located in the developing part of the Sindh province in Pakistan. Using this variety, in particular, made business sense for two reasons:

- “Dandicut” is indigenous to Sindh only and is ranked highly among the species grown in Asia
- Its exclusive taste and pungency suit local cuisine and is a choice preference of the local consumers

## Early Supply Chain Model

For long NFL had a seemingly simple supply chain as illustrated in Figure 1 below. The red chillies were directly purchased from the middlemen called “artis,” in Sindh. Artis bought chillies from producers, often mixing the lot from various sources. The buyer had no way of knowing the source of the produce. The main advantage of this arrangement was bulk procurement in a short period of time from a nearby single location. The downside, however, was that the onus of the tedious and time-consuming tasks of sorting and grading was on the buyer.

NFL would get truckloads of red chillies delivered to its plant, typically spend 48 hours to assess the lot (each lot has 7,500 kg of chillies on average), routinely reject substantial lots for substandard quality, and spend hours over lengthy and heated discussions with disgruntled suppliers whose lots were rejected.

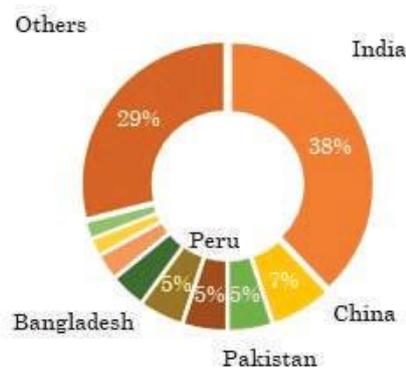


# Bringing in Foreign Investment and Business Expansion

By the 1980s the demand for red chillies in the US, Europe, and Japan increased. This provided NFL a unique opportunity to look at the export potential. In 1988 Messers McCormick & Co., the largest spice company in the world, headquartered in the USA set up a hammer mill for NFL at Port Qasim in Karachi. The business proposition was simple: NFL would procure and process the finest quality of the “dandicut” variety for McCormick in Pakistan with the latter providing technical assistance.

This arrangement started off well. The 1989 NFL Annual Report stated a 10.6 percent growth compared to the previous year. The domestic market contributed 65 percent of the overall sales, whereas exports resulted in 35 percent as per the corporate objectives despite missing the internal overall growth target the same year. Fast forward, overall the company grew its operations substantially and made more additions to its line of products. It is now the country's leading multi category food company with over 250 products in 13 categories with a vision to be a PKR 50 billion company. With quality being the core business value, NFL remains true to its commitment of upgrading and innovating internal processes and production capacity and by ensuring management excellence at all levels.

Chart 1: Country Wise Share in Chilli Production



Source: FAOSTAT

## Red Flags in the Red Chilli Supply Chain

Despite the state-of-the-art plant, the newest processing technology at its disposal, and stringent internal controls NFL struggled to meet export quality standards in its processed red chillies. Main reason being inconsistent supply of quality chillies for processing. McCormick stopped buying red chillies from NFL in 1989.

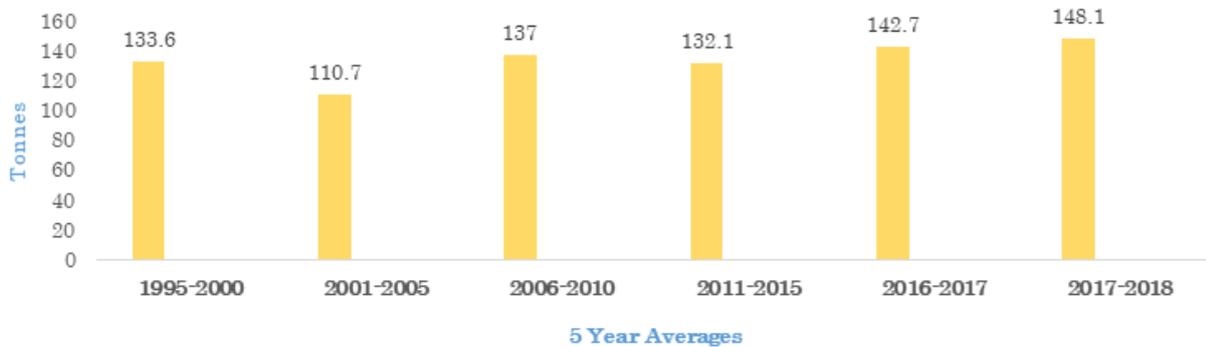
In 2004, a consignment of red chillies from Pakistan to Europe got stuck at the port for non-compliance. Lab tests reported aflatoxin levels that were carcinogenic and unfit for human consumption. The EU banned the imports of this commodity from Pakistan. With the newly identified health threat an internal assessment of processing was done. The enquiry confirmed in-plant processing was not the source of contamination. **It was the on-farm post-harvest practices.**

1) Aflatoxins are poisonous substances produced by certain kinds of fungi (moulds) that are found naturally all over the world; they can contaminate food crops and pose a serious health threat to humans and livestock (World Health Organization, 2018).

Though still ranked as one of the top producers in the world, Pakistan has not been able to capitalize on the export potential for the red chilli commodity. Whereas the share of India and China in the global market continues to increase.

The declining quality of red chillies continued to remain a major concern for the company, but by 2000s the production of the crop in Sindh also started seeing fluctuations. In 2001, it plummeted to 110 tonnes only. The most unnerving moment came in 2010 when the unprecedented heavy monsoon rains in Pakistan extensively damaged vast expanses of agricultural land and infrastructure along the Indus. The aftermath of floods continued to impact the land in later years, resulting in lower production of chillies. In 2011, NFL could not fulfil its chilli requirement from within Pakistan. Between 2011-2012 the overall chilli production in Pakistan stood at 47.2 tonnes only<sup>2</sup>. “We couldn’t buy even a kilo from our open market,” reminisced Shakaib Arif, Director Integrated Supply Chain. On a fire fighting footing, imports were made from India to meet the demand. As NFL primarily used chillies uniquely grown in Sindh, much effort had to be put in to get the closest and acceptable variance of powdered chillies for stand-alone use and the popular recipe mixes.

Chart 2: Chilli Production in Pakistan

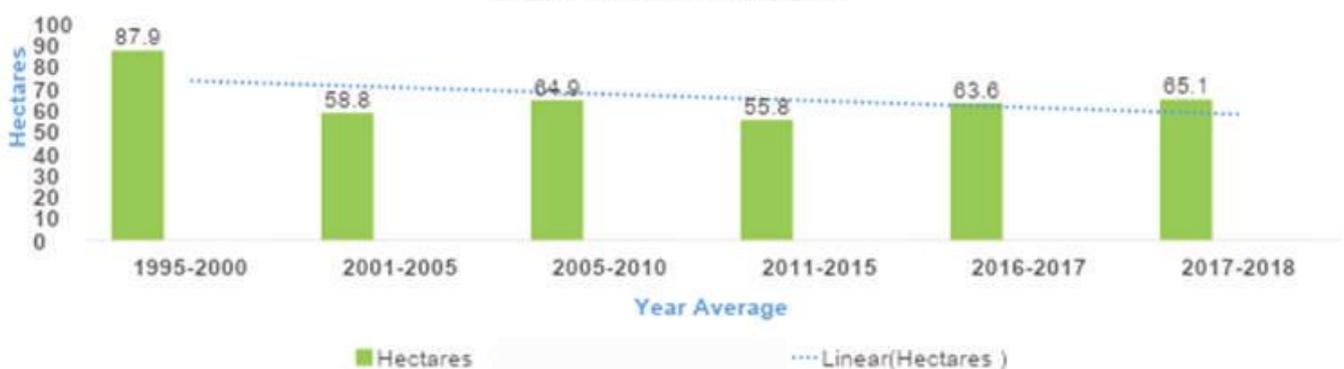


Source: Agriculture Statistics Pakistan and Agriculture – Ministry of Finance

2010 was a difficult year for many Pakistanis. Hundreds of thousands of persons were reportedly displaced and rendered homeless because of the floods. As part of its CSR initiative a senior management team visited Kunri to provide relief to the desperate population. The visits provided an opportunity to discuss the common farming practices. These discussions made it amply clear that chilli growers and middlemen lacked the simplest of understanding of agronomics, followed practices that degraded soil, chilli species, and post-harvest crops.

Other than fluctuations in yields the data by Agriculture Statistics Pakistan<sup>3</sup> and Ministry of Finance<sup>4</sup> started showing decline in area under cultivation for red chillies from 2001-2002 onwards

Chart 3: Area Under Cultivation



Source: Agriculture Statistics Pakistan and Agriculture – Ministry of Finance

# Going to the Roots of the Problem

Back at the Head Office discussions took place and the realization started sinking in that the company itself had to make interventions at the farmer level to address aflatoxin and quality issues. Focus was to promote locally produced variety of dandicut. Problems were aplenty and many beyond the scope of NFL's operations. It was important that the company stayed focused on issues which could be addressed by its team. Problems for which the company could use the internal expertise or identify partners were managed first.

The age-old practice for drying chillies has been to spread them in open grounds. In Pakistan this is still common. The contact with direct soil and manure favours mould growth for aflatoxins to thrive. The dead and decaying produce invades the overall lot and leads to high levels of contamination. Chillies that are exposed at the ends during picking are more susceptible. For long nobody considered changing these practices as chillies were bought by the middlemen at flat rates and the middlemen were more interested in volumes rather than quality. The growers never saw an incentive in sorting or grading chillies nor were they aware of serious health hazards of the low quality produced.



Chilli Drying in Open grounds

The declining production of the dandicut variety since the 1990s continued to pose a long-term business risk to the company. Agriculture Statistics confirmed yield drop from 2 tonnes/acre to an average of 1 tonne/acre. Many factors contributed to it but the primary cause was the degradation of the dandicut variety. In the absence of formal seed suppliers, dandicut was being openly pollinated. Farmers obtained seeds by crushing chilli pods. With no concept of sorting, grading, or seed treatment the local variety was compromised. Seeds of contaminated and degraded fruits made the plant and chillies less resilient to pests and diseases. Compounded by reduced water from upstream, farmers started reporting that the yield per acreage was halving.

Fearing loss in incomes, farmers turned to the hybrid varieties which were first introduced in 2009. Dandicut areas were replaced with hybrids that were yielding 3 to 3.5 times more per acre but were of lower quality and fetched less rates. Only those farmers who could not afford hybrid variety seeds continued to sow dandicut. Moreover, buyers, other than the spice processing companies, shifted to hybrids because of low purchase prices. This further reduced the interest of farmers in preserving and cultivating the native variety. For NFL, the unsustainable farming practices became a business problem.

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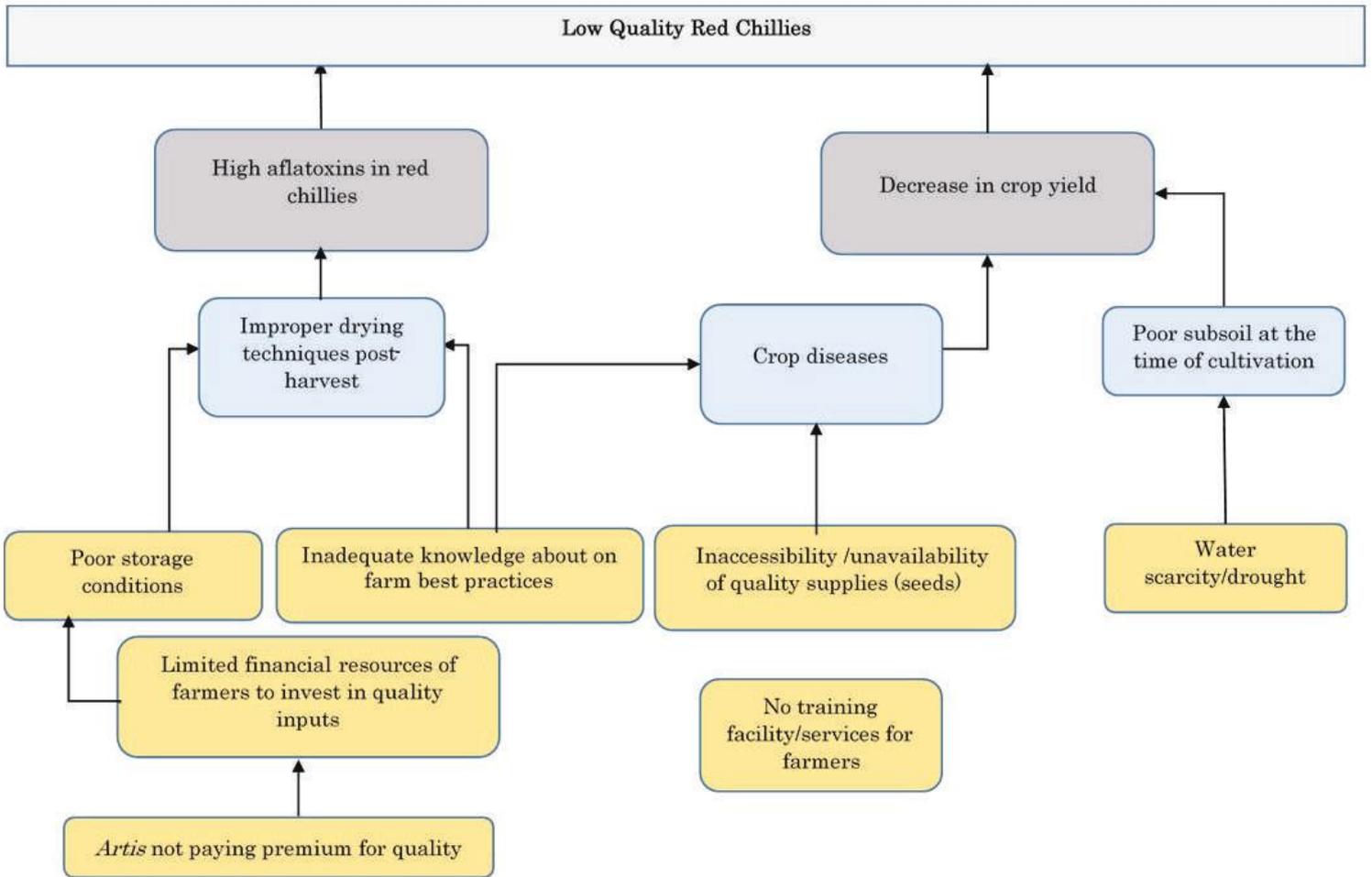
2) Available at: [www.finance.gov.pk/survey/chapters\\_13/02-Agriculture.pdf](http://www.finance.gov.pk/survey/chapters_13/02-Agriculture.pdf)

3) Available at: [http://www.pbs.gov.pk/sites/default/files/agriculture\\_statistics/publications/Agricultural\\_Statistics\\_of\\_Pakistan\\_201011/tables/table37.pdf](http://www.pbs.gov.pk/sites/default/files/agriculture_statistics/publications/Agricultural_Statistics_of_Pakistan_201011/tables/table37.pdf)

4) Available at: [www.finance.gov.pk/survey/chapters\\_12/02-Agriculture.pdf](http://www.finance.gov.pk/survey/chapters_12/02-Agriculture.pdf)  
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The Constraints Tree below gives a snapshot of the cause and effect relationship adversely impacting the back end of the red chilli supply chain of NFL in 2010.

Figure 2: Constraints Tree



# Taking Action

## Introduction of Geotex

The first and the foremost task at hand was to work on reducing aflatoxin levels. It was important to introduce simple and easy to use tools and practices for farmers to adopt. As the team looked into options, they came across a similar situation faced by tomato growers in Turkey. There, a USAID project was helping farmers improve their tomato crops.



Chilli Drying on Geotex

Keeping in view the good agricultural practices in Australia, NFL decided to use “Geotex,” a special synthetic sheet for drying chillies on. The sheets prevented direct contact with soil and at the same time allowed air to circulate for drying through elevation. In 2010 sample geotex sheets were imported from Australia and tested. In daytime the sheets were used to dry chillies and in the evening one part of it was used to cover the crop to prevent it from dew. This inhibited not only the growth of aflatoxins, but also reduced the drying time. Farmers were also incentivized through a premium of Pak Rupee 15/kg for the lots having less than 10 PPB (Parts Per Billion) aflatoxin, that was in addition to the market price of what the middlemen were offering. As the sheets proved to provide better results, NFL approached the Textile Institute of Pakistan (TIP) to indigenize these sheets using local materials.

In 2013, NFL partnered with the Market Development Facility (MDF) Australia. Through this arrangement a Research and Development farm was setup for improving chilli seeds to resist diseases. Roughly a year after launching the partnership MDF found that most share-croppers were following the advice of NFL’s staff and improving their cultivation techniques.

Building on the success in 2014, under the USAID project, over one thousand farmers were provided 4 rolls of geotex sheets. This was followed by the World Bank assisted Sindh Agriculture Growth Project (SAGP) in which the same sheets were provided to farmers at subsidized rates by the Government of Sindh between 2016 - 2017.

Through public-private partnerships NFL has been able to popularize and scale up the use of geotex sheets which has significantly helped in reducing aflatoxin levels in red chillies.

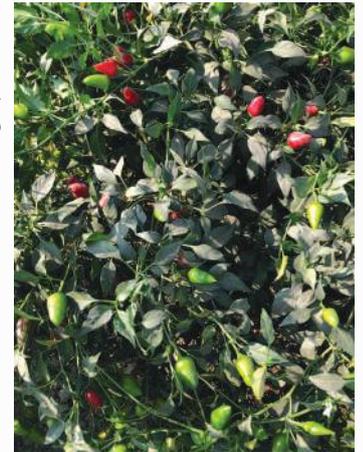
## Improving Quality Systems and Market Access

For quality checks at source a mobile lab was set up by NFL to do grading and quality assessment through the National Foods Chilli Center (NFCC) in Kunri. Payments were made directly to farmers through bank accounts, eliminating middlemen. This resulted in a faster and transparent process for NFL and farmers alike who liked to benefit from quality trading. Artis on the other hand continued to leverage the flat rate formula that made it convenient for farmers to sell their entire lots, even low quality, to one buyer without the hassle of sorting.

Over the years NFCC took on the role of R&D. In a protected land acquired by NFL, dandicut and other hybrid varieties of chillies are grown and tagged. The plants are studied for resistance to current and emerging plant diseases and pests, drought tolerance, and taste. Healthy seeds from these plants are preserved and kept at NFCC. Currently, the NFCC plays a vital role in maintaining a healthy seed bank of a variety of indigenous and hybrid red chillies. Packets of best dandicut seeds are made and distributed to farmers.

## NFL Facilitates Online Trading

The NFCC experience taught NFL to make use of local and grassroots initiatives for its quality awareness drive and sensitization. In an attempt to scale up and incentivize farmers for quality production, NFL stopped commercial trading at NFCC and instead forged a partnership with Pakistan Agriculture Coalition (PAC) to create awareness and manage overall coordination for trading of dry red chillies on the Pakistan Mercantile Exchange (PMEX) through a designated agent. PMEX is an electronic trading platform and the only regulated futures exchange in the country providing global access through 21 hours operations a day for six days a week. PMEX facilitates pre-test and weighing at farm gate collection center/warehouse. Quality assessments are done by SGS. Upon requisite clearance PMEX issues an Electronic Warehouse Receipt (EWHR). The farmer/seller places an offer price as per EWHR. If trade is executed EWHR is transferred in the name of the buyer subject to the availability of funds in the buyer's account. PMEX sends the dispatch order to the warehouse and goods are dispatched to the buyer.



For NFL, an average of 32% (for the period 2017-2018) of pre-tested red chillies procurement was done through PMEX with Arif Habib Commodities as a trading partner. This reduced the dependence on “artis” and transferred quality control inspection to a reliable certifying body. It also resulted in drastically reducing the time spent to test chillies. Farmers who have benefitted from these changes have now evolved into vendors now directly supplying to NFL. Moreover, the source of chillies is tagged to the farm and the farmers, increasing transparency in the process.

## Seed Purification & Farming

Under the MDF advisory, two acres of land for nursery was acquired in Kunri for the purification and revival of the dandicut variety in early 2015. Shaukat Arain, a retired Research Officer of Sindh Agriculture Department with an experience in open pollination varieties was hired to manage the research station. Proper nursery, sowing, controlled pollination, plant tagging, and seed selection method were applied to preserve and revive the local variety.



Seed Purification & Revival Project

After 2 years of research and testing NFL was able to distribute 60kg Dandicut seeds among 30 farmers in 2017. In the following year over 200kg seeds were provided to 65 farmers. In 2019 the demand for the dandicut variety grew in farmers and around 100 farmers were given 320kg of purified seeds through the NFL nursery which is now spread over 8 acres.

Finding a business opportunity, one seed supplier by the name of Beacon Seeds procured from farmers the purified dandicut seed lot in 2017. The seed pods were graded by the supplier. From selected pods, seeds were obtained and further graded, packed and marketed in 100gram sachets by the seed company. In 2018, this seed was reportedly sown over 2500 acres with a harvest of approximately 5000 tonnes of the dandicut variety. In 2019, the same company sold seeds for around 3500 acres.

Following the success of Beacon Seeds, other seed companies and local farmers have started processing from NFL's purified variety and through them more than 500 farmers have reverted to planting dandicut along with hybrid varieties (This estimate is based on feedback from NFL's contacts in the community. It does not factor in the unreported use by other farmers/suppliers).



# Impact

Pricing of all chilli varieties in Kunri is benchmarked against the price of the dandicut variety. It is observed from the Kunri wholesale market auction register that hybrid chilli price is 10-20 percent less than dandicut.

Estimates by the NFL field team suggest that farmers were incurring a loss of approximately PKR 150,000/acre due to the reduction in dandicut yield, which amounted to cumulative income loss of PKR 3.83 billion per annum.

In the absence of quantitative data, it is difficult to assess the overall impact on farming practices and farmers' income, but observations and empirical evidence shows that NFL's interventions are reversing the trend of preference of hybrids over dandicut. Local variety is not only being preserved but proliferated as business service.

Moreover, by bringing in PMEX, farmers have now access to a wider network of buyers. Grading is done by SGS at source. Direct interaction with farmers is leading to information sharing, R&D, and capacity development of farmers in better agricultural practices.

In 2018 a consignment of 300 kilograms of chilli was sent to Europe which met the export compliance standards.

## A New Player: Accumulator

As NFL got closer to farmers and community, strong relationships developed in which large farmers saw monetary benefits in selling directly to the company. Mian Muhammad Saleem owns approximately 100 acres in Kunri. He has been advised and supported for the past 10 years by NFL on how to improve yields, control post-harvest losses, and is the recipient of quality seeds. As Mian Saleem carried forward new knowledge and practices to his relatives and other farmers in Kunri, many started selling their harvest to NFL through him. This earned him the title of "accumulator" by NFL and now farmers commonly refer him to the same as well.

Working closely with farmers, especially small ones, the "accumulator" has been able to secure dandicut supply directly from source for NFL. In 2019, Mian Saleem provided around 30 tonnes of dandicut chillies from his own and other farmers to NFL.

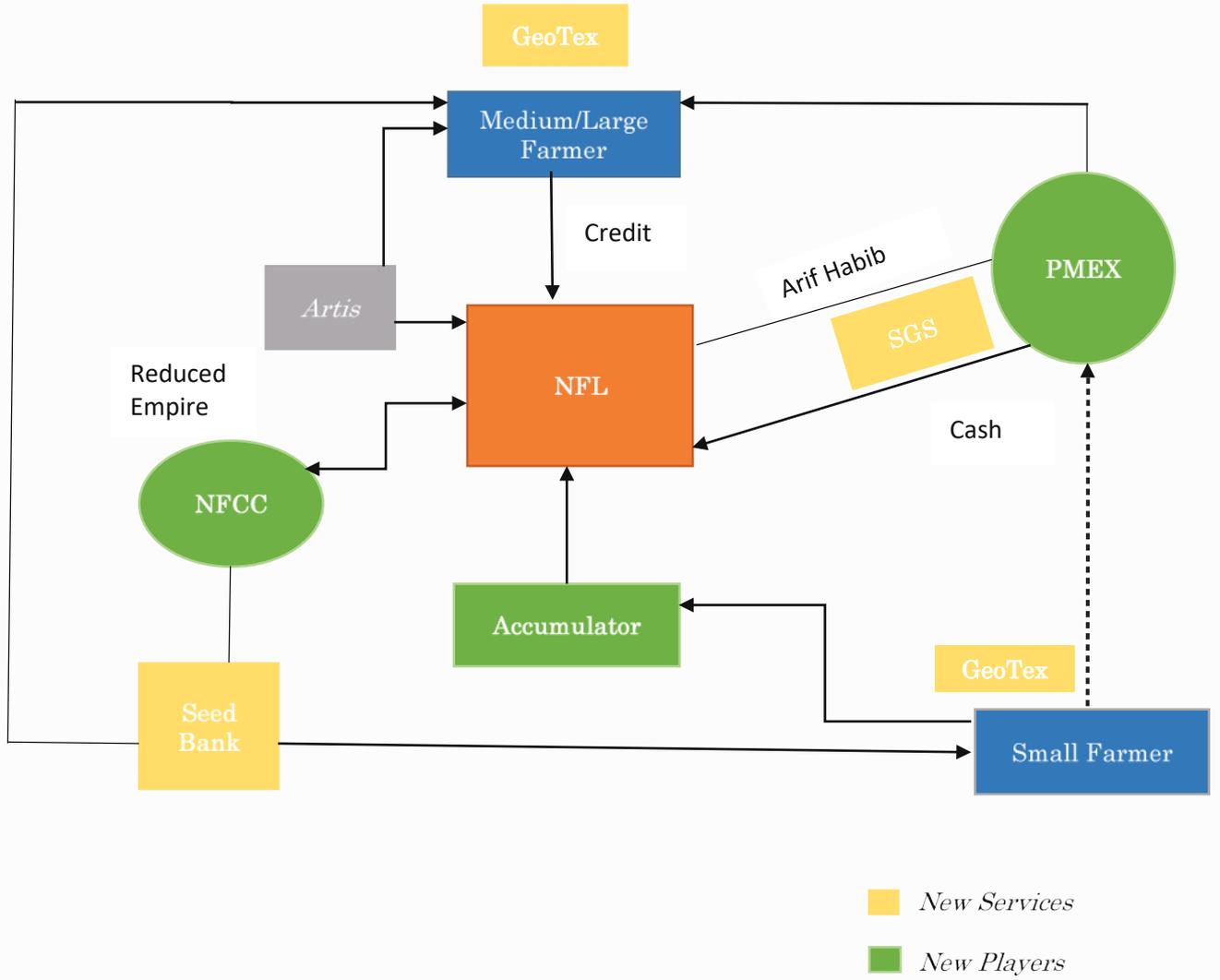
## Making Business Sustainable

Much of NFL's success and growth is attributed to the company's ability to learn and to translate that learning into action. To gain a competitive advantage changes were made in the business model as illustrated in Figure 3.

This new business model has key aspects of inclusive and sustainable growth as more business partners are being integrated in a high value chain. New job opportunities and business development support services are being created. Monetary incentives are higher and better for farmers as they have access to multiple buyers.

For NFL these investments mean securing raw material sources for long term and increasing productivity and efficiency in its red chilli supply chain in short and medium terms.

Figure 3: New Business Model





# About The Pakistan Business Council

The Pakistan Business Council (PBC) is a business policy advocacy platform, established in 2005 by 14 (now 82) of Pakistan's largest private-sector businesses and conglomerates, including multinationals. PBC businesses cover nearly all sectors of the formal economy. It is a professionally-run organization headed by a full-time chief executive officer. The PBC is a not-for-profit entity, registered under Section 42 of the Companies Ordinance 1984. Though it is not required under the law to do so, the PBC follows to the greatest extent possible, the Code of Corporate Governance as applicable to listed companies. The PBC is a pan-industry advocacy group. It is not a trade body nor does it advocate for any specific business sector. Rather, its key advocacy thrust is on easing barriers to allow Pakistani businesses to compete in regional and global arenas. The PBC conducts research and holds conferences and seminars to facilitate the flow of relevant information to all stakeholders in order to help create an informed view on the major issues faced by Pakistan. The PBC works closely with the relevant government departments, ministries, regulators and institutions, as well as other stakeholders including professional bodies, to develop consensus on major issues which impact the conduct of business in and from Pakistan. The PBC has submitted key position papers and recommendations to the government on legislation and other government policies affecting businesses. It also serves on various taskforces and committees of the Government of Pakistan as well as those of the State Bank, SECP and other regulators with the objective to provide policy assistance on new initiatives and reforms.

## About The Centre of Excellence in Responsible Business

The Centre of Excellence in Responsible Business (CERB) is the first of the Pakistan Business Council's outreach initiatives to build capacity and capability of businesses in Pakistan. CERB's vision is to assist Pakistani businesses in Pakistan. CERB's vision is to assist Pakistani businesses to pursue long term sustainability and value creation, and its mission to contribute towards inclusive social development. As part of its strategic objectives, CERB engages with businesses and industry leaders to provide a clear direction towards conducting responsible business in Pakistan. It leverages private sector growth as a means for development and poverty reduction by following the United Nations Sustainable Development Goals framework. CERB comprises two interdependent units:

- Inclusive and Sustainable Development Forum: this will focus on generating livelihoods, promoting women's empowerment and decoupling growth from impact on the environment;
- Ethics, Values and Governance Forum: this will promote responsible practices which strengthen the formal sector in pursuit of sustainable value creation.

Both these forums aim to raise awareness of responsible business practices that ensure a fair and competitive economic environment central to sustainable business, economic growth and national development.