Climate Change Story

Driving a low-emission transformation in fertiliser

The fast read

Sri Lanka's smallholder farmers are facing worsening climate shocks (erratic rainfall, drought and rising temperatures) that disrupt planting calendars, affect soil health and reduce yields.

Unchecked use of conventional 'straight' fertiliser drives nutrient loss and greenhouse gas emissions, reinforcing a cycle of vulnerability and environmental harm.

A major shift came in 2022, when the government replaced its fertiliser subsidies with cash transfers, introducing an opportunity for improved, climate-smart fertiliser.

MDF is partnering with leading firms and SMEs to strengthen last-mile distribution and build farmers' trust in improved products.

Early momentum is strong: in 2025, MDF's partners sold USD7.3 million (AUD10.3 m) worth of improved fertilisers, supporting additional rice production of over 26 million kg, which is the equivalent to the annual rice consumption of 232,000 Sri Lankans.

Sri Lanka's farmers are on **the frontline of climate change**.

Rising temperatures, erratic rainfall and prolonged droughts are disrupting farming calendars, degrading soils and reducing yields. These shocks have the greatest impact on the country's 1.65 million smallholder farmers, who supply nearly 80 per cent of Sri Lanka's food.

At the same time, agriculture remains a significant contributor to greenhouse gas emissions, including nitrous oxide, a potent greenhouse gas released through inefficient fertiliser use. This creates a reinforcing cycle where farming systems, already vulnerable to climate stress, are also contributing to the problem. Breaking this cycle is critical for ensuring long-term resilience, productivity and sustainability in Sri Lanka's agriculture sector.

Why change was needed

For decades, Sri Lanka's fertiliser market has been largely defined by government subsidy programs that focused on conventional chemical products. These subsidies, while designed to support farmers, limited incentives for private-sector engagement and innovation, as companies were primarily selling to the government instead of developing competitive retail markets. This system weakened the link between fertiliser suppliers, agri-retailers and farmers — there was little motivation for companies to invest in improving products.

Farmers, in turn, had limited access to information, quality products and advisory services that could help them adapt to changing climatic conditions. This led to widespread overuse of conventional single-nutrient ('straight') fertilisers, increasing nutrient loss, worsening soil health, and driving higher emissions and environmental runoff. A shift towards efficient, climate-smart fertilisers was overdue.

What is a 'straight' fertiliser?

Straight fertiliser contains a single nutrient critical for plant growth (such as nitrogen, phosphorus or potassium). It is often applied in larger quantities, with a significant share lost to the environment (as emissions or runoff) rather than being absorbed by the crop. Straight fertilisers generally do not include components that support soil health, and constant inefficiency contributes to declining soil fertility and productivity.

In 2022, Sri Lanka's economic crisis triggered a major shift in agricultural policy, replacing decades of direct fertiliser subsidies with cash transfers to farmers. This reform marked a turning point. For the first time, farmers could decide which fertiliser to purchase at the retail point, rather than receiving products distributed through government channels.

This shift introduced competition into the market. Fertiliser companies had to differentiate themselves based on product performance, availability, service and farmer trust. Importantly, it allowed for the creation of climate-smart fertiliser solutions — products designed to deliver higher yields while minimising nitrogen loss.

Unlocking a new market for climate-smart fertiliser

This transition presented an opportunity to reshape Sri Lanka's fertiliser market towards sustainability and resilience. MDF supported this shift by partnering with leading national players, such as Baurs, CIC and DIMO, as well as innovative SMEs including Sassrika Lanka and Lanka Bio Fertiliser. Together, these partnerships aimed to mainstream higher-performing, climate-resilient fertiliser solutions within commercial value chains, driving both environmental and economic outcomes. The goal was to strengthen the resilience of farming communities to climate pressures while enabling smallholder farmers to improve their productivity.

Since most fertiliser companies were accustomed to working primarily through government channels, MDF focused on strengthening their retail distribution networks and capacity to engage directly with farmers.

Through these efforts, MDF is helping the sector transition from a subsidy-led system to a market-driven model, one where business incentives align with climate resilience, efficiency and long-term productivity.

Climate-smart fertilisers – why they matter

Climate adaptation

Improved formulations and more balanced nutrient delivery to plants can help maintain soil fertility and help crops perform better under climate stressors such as drought and heavy rainfall. They can also support stronger plant development, lower susceptibility to pests and disease, and more stable yields, which are critical when seasonal predictability is declining.

Climate mitigation

Improved fertilisers, such as hybrid, slow-release and high-efficiency products, reduce nitrogen losses that drive nitrous oxide emissions. MDF supports companies to commercialise these fertilisers locally, enabling farmers to increase productivity with less nutrient wastage, and so greenhouse gas emissions decrease.

Farmers mixing fertilisers.

Catalysing a new market for **climate-smart fertiliser**

MDF's support spans the entire value chain:

Product Innovation

Identifying fertiliser products with higher efficiency, fewer emissions, better resilience.

Distribution and Retail Expansion

Expanding rural access to improved fertiliser through new retailers and stronger distribution networks.

Farmer Engagement

Demo plots, training, and promotions at village level.

Behaviour Change

By strengthening innovation, last-mile access and evidence-based farmer trust, MDF is scaling up climate-smart fertilisers that cut emissions while building resilience and yields.

A local fertiliser shop, Sri Lanka.

MDF worked with the businesses to strengthen their distribution and retail systems through new retailers and incentive schemes. This was complemented by engaging directly with farmers using demonstration plots and training, alongside presenting farmers with field-level evidence to show that improved fertilisers can achieve higher yields with the same or lower input use.

This integrated approach has increased private sector competition and climate responsiveness. Improved fertilisers also bring higher profit margins, giving companies a long-term commercial incentive to diversify away from environmentally damaging products.

Critically, MDF supports behaviour change within fertiliser companies, helping them move away from mass-market advertising towards evidence-led, trust-based engagement with smallholders. By anchoring adoption in real field results rather than promotional claims, companies build credibility, farmers reduce risk and climate-smart fertilisers begin to expand as a commercial norm.

To support production, MDF enables local manufacturing and value addition of improved varieties of high-efficiency fertilisers. These locally produced varieties are designed to complement the improved fertilisers that Sri Lanka imports, improving overall availability for farmers. Together, these changes are catalysing adaptation in the market to deliver productivity and emission reductions at scale.

Greater adoption – greater impact

The shift is already taking root. MDF's partner companies cover nearly 90 per cent of Sri Lanka's fertiliser market, creating a strong foundation for sector-wide innovation. Companies are now investing more in climate-friendly products and expanding rural engagement, signalling sustained systemic change.

Farmers using improved fertiliser report:

- Higher overall yields compared to the previous season
- Improved grain quality (e.g. fewer empty paddy seeds, improved grain colour and uniformity)
- Same or lower input quantities to achieve better harvests
- Stronger, more uniform plant growth
- Improved soil biology/ biodiversity (increased soil organisms).

Signs of reduced nitrogen use:

- Of the farmers applying improved fertilisers, 69% reported a reduction in urea usage. This drop in nitrogen-based fertiliser use is a key indicator of lowering nitrogen losses and reduced nitrous oxide emissions.
- Equivalent emissions reductions: 4,520,817 kg CO_2e (equivalent to avoiding 2,260 return flights between London and New York).
- Sri Lanka's 2035 NDCs* aim to improve fertiliser-use efficiency by 15% and raise paddy productivity to 2,266kg/acre.
- MDF-supported farmers have already achieved an estimated 20% reduction in nitrogen-based fertiliser use and an average productivity of 2,367kg/acre (in Yala 2025), surpassing the 2035 productivity benchmark.

*NDCs (Nationally Determined Contributions): Sri Lanka's NDCs outline the country's commitments to reducing greenhouse gas emissions and strengthening climate resilience under the Paris Agreement. Please see the latest NDC submission (2026–2035) **here**.

Over **97,500** people have benefitted to date, generating more than USD13.7 million (AUD19.3 million) in additional income through improved yields and reduced input costs. There are projections to reach another 100,000 more farmers over the next two years.

In 2025, MDF's partners sold USD7.3 million (AUD10.3 million) worth of improved fertilisers, supported additional rice production of over 37 million kg, which is the equivalent to the annual rice consumption of **330,00** Sri Lankans, or about 1 per cent of the population.

Farmers report the early signs of strengthened resilience to climate variability. Many have already achieved higher yields and improved grain quality than those using straight fertiliser — even with increasingly unpredictable weather — reducing their income volatility. Stronger and more uniform plant growth suggests greater tolerance to short dry spells and sudden rainfall, helping protect production during climate-impacted seasons.

Importantly, farmers also observe healthier soil, in the form of increased biological activity — reporting more visible soil organisms such as earthworms. This improvement in soil health is a critical foundation for long-term resilience, as better soil structure enhances water retention, nutrient availability and sustained productivity over time.

"I observed a significant improvement in the paddy crop, particularly stronger plant stalks. Within the first month of using Bio Super Phosphate fertiliser, plant growth was clearly visible, and the greenery was sustained throughout the season." — A. Jameen, paddy farmer, Sassrika Lanka.

"The farmer feedback has been overwhelmingly positive — they're noticing healthier plants and stronger vigour when using improved fertiliser. From our side, we have seen that farmers can reduce their urea use by around 50 per cent while still maintaining or increasing yields. Even with limited quantities released over just two seasons, the market response has been far stronger than expected. This has given us the confidence to rapidly scale up our production." — Dakshina Hettiarachchi, Manager R&D, A. Baurs & Co. Pvt Ltd.

A fertiliser market for a climate-challenged future

Today, Sri Lanka's fertiliser sector is undergoing one of its most significant transitions in decades. With the dominant market players now investing in improved fertiliser production and sales, the sector is on a strong trajectory toward widespread adoption. From this momentum, MDF expects that at least 11 per cent of paddy farmers will be using improved fertiliser by 2028, which is expected to feed around 6 per cent of the national population.

What began as a policy-driven shift away from blanket subsidies has evolved into a private-sector-led movement toward low-emission, high-efficiency agricultural inputs. MDF's role has been catalytic in reducing the risks for companies to innovate, building farmer trust and embedding climate considerations into core business decisions.

This transformation reflects how commercial objectives can go hand-in-hand with improving incomes for smallholder farmers while reducing agricultural emissions and strengthening climate resilience. As the sector continues to evolve, MDF is expanding its work to influence policy and embed climate-smart fertiliser use into national recommendations, ensuring that the gains achieved today continue to shape a greener agricultural future for Sri Lanka.