

Kick-starting a leap in productivity for smallholder livestock farmers

One initiative of the MDF programme in Pakistan

SLIDE 1: Overview

Fodder for the future Pakistan

How MDF kick-started a leap in the productivity of 40,000 small-scale livestock farms

Interventions
Technical & financial innovations for small-scale silage businesses to produce year-round fodder

System Change
Emergence of a new layer of services and investment that support smaller livestock farms

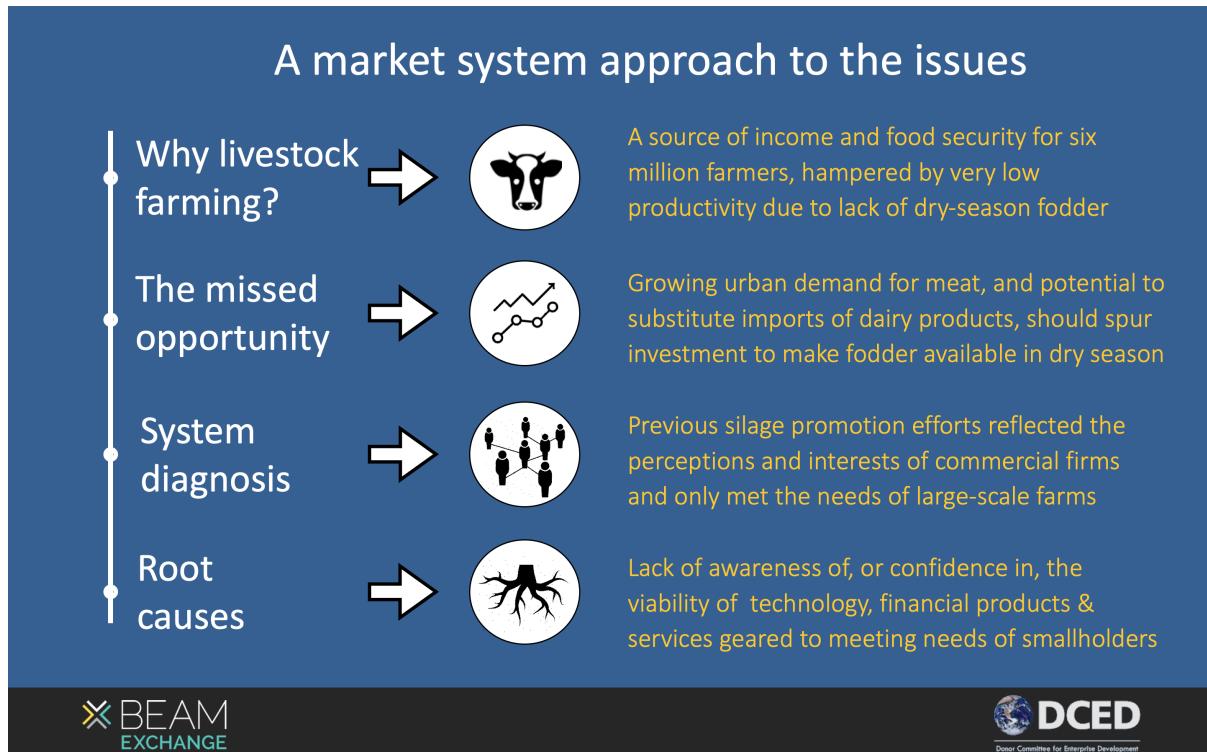
Impact
Increased and more stable income from livestock farming for 40,000 rural households

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- This presentation tells the story of one successful initiative between 2013 and 2017, by the MDF programme in Pakistan.
- The initiative kick-started a revolution in small-scale production of silage (a non-perishable form of animal fodder). This enabled at least 40,000 small-holder farmers, many women, to significantly increase productivity of livestock and hence incomes.
- It involved innovations and investment in appropriately-scaled silage technology and related services, driven by engagement with machinery suppliers, a bank and silage entrepreneurs.
- Year-round access to affordable silage and significantly increase meat production. It also saves up to two hours daily labour for the women who mostly care for livestock.
- These changes are being taken up so widely across Pakistan that an entire system of silage entrepreneurs, machine suppliers, rental companies and financial services has emerged.

SLIDE 2: The market systems perspective



The MDF programme chose to work on issues in livestock production because:

1. Livestock are a vital source of food and supplementary income for six million rural households (in which women often play a main livestock husbandry role).
2. Urban market demand for meat and dairy products is strongly expanding, with significant potential to substitute imports if reliable year-round production could be established.
3. Pakistan has the 5th largest livestock population in the world, 80% owned by small-holder farmers, typically with 5 – 10 animals. However, small-holder production and income is low, and massively hampered by scarcity of animal fodder during the two annual dry seasons causing productivity to crash. Animals may lose weight and milk-production literally dries-up for several months.
4. Previous efforts to promote year-round access to fodder through ‘silage’ production focussed on commercial farmers with large herds, and missed the potential for small-holders to participate and benefit.

Silage (green foliage crops preserved through fermentation in air-tight bales) is widely used in livestock farming globally. However, conventional bales weigh 300 - 1000kg and require specialised machinery for production and handling. So until recently, silage-technology (choppers, trolleys, balers, wrappers and related knowledge), and the benefits of affordable year-round access to a non-perishable fodder were unavailable to small holders in Pakistan.

The underlying reason for this was a failure by machinery suppliers and livestock extensionists to recognise the potential of small-holders livestock farmers (many women) as viable customers, and an unwillingness to take risks to develop and modify technology to suit their needs. Hence no strategy or investment plan to reach them.

SLIDE 3: Interventions that catalysed innovation and behaviour change

MSD interventions that catalysed innovation & behaviour change



Test technology & viability of silage business
MDF co-invested with small-scale entrepreneurs to purchase silage balers, related machinery and pioneer the marketing of fodder in small bales



Financial innovation to stimulate investment
MDF engineered a novel three-party agreement between bank, equipment supplier and entrepreneurs that helped de-risk loans for silage-producing businesses



Kick-start rental for silage-related machinery
MDF worked with equipment supplier to confirm viability of rental services to enable rapid growth in supply of silage



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MDF Pakistan had a vision for lasting change with widespread impact. This centred on engaging suppliers of silage baling equipment and also relatively local entrepreneurs to produce and market smaller 60kg silage bales to small holder farmers. Once the new silage technology, product and business model were proven, MDF looked to engage banks and agri-machinery rental services to further scale up. The three main interventions were:

1. Testing baling technology & the viability of silage production as a business (starting 2015)

Starting in Punjab, and in other provinces after initial success, MDF partnered with small agri-entrepreneurs willing to co-invest in balers, wrappers and the marketing needed to sell small silage bales. A seed company promoting silage-suitable maize varieties acted as a technical partner, helping new silage makers ensure the quality of their product.

Animal husbandry tends to be a female task, and purchasing silage reduces their workload. Female silage entrepreneurs proved more successful at selling bales to female farmers. Each entrepreneur's outreach was small, hundreds of farmers at best, but the pilot demonstrated the viability of the silage-as-business model..

2. Financial innovation to stimulate investment (from 2016)

Next MDF took a step back. Instead of sharing costs of silage equipment, MDF negotiated a three-way agreement with a leading private bank and Cattlekit (the only small bale silage machinery supplier in Pakistan at that time). Cattlekit reduced the bank's risk by guaranteeing loans for silage equipment, making the loans cheaper for entrepreneurs.

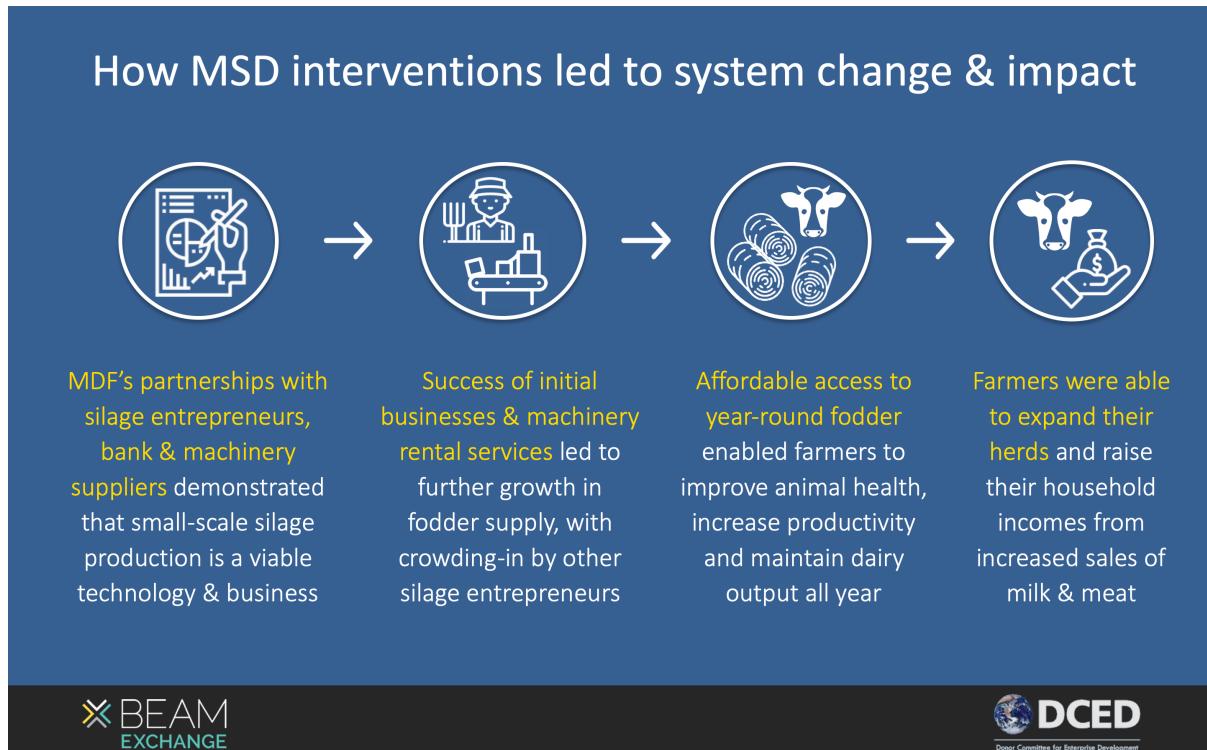
MDF bolstered the agreement by subsidised Cattlekit's rural outreach to engage farmers and promote silage use. This included two rural promotion centres for servicing and providing information about silage-making equipment.

3. Kick-starting machinery rental services for silage-production (from 2016)

Within two years, silage entrepreneurs had started experimenting with the business model: expanding maize cultivation, subcontracting maize farmers, and renting out their silage equipment to increase utilization rates.

MDF encouraged Cattlekit to enter the machinery-rental business. A small pilot was set up to demonstrate viability and whet appetites, with sets of machinery made available for rent. Demonstrating the rental model through a supplier gave more farmers access to the machinery. Once successful, Cattlekit were well placed to increase the number of machines available.

SLIDE 4: The logic of how MDF's MSD interventions led to systemic change and impact



MDF's theory of change for this MSD initiative in Pakistan incorporated the following logic:

- A. MDF's initial partnership with silage entrepreneurs, bank and machinery suppliers demonstrated that small-scale production of silage is a reliable technology and a viable business. This gave all parties involved some insight and confidence.
- B. The initial success of small-bale silage-producing businesses (and later of machine rental service) in Punjab, led to further growth in fodder supply with significant crowding in by other silage entrepreneurs and in other provinces.
- C. Affordable access throughout the year to nutritious animal fodder enabled farmers to greatly improve animal health, increase productivity of meat and maintain dairy output through the dry seasons.
- D. As a result, farmers were able to both expand their herds and increase output per animal. Household incomes increased significantly as sales of milk and meat expanded.

SLIDE 5: Indicators of lasting market system change & impact

Signs of lasting market system change

Silage producers are successful businesses		Over 100 small bale silage producers established by 2017 (incl. many run by women)	• Approximately 300 new full time jobs created in silage production
Supplementary feeding has become widespread		40,000 extra farmers using supplementary fodder by 2017	• Doubled acreage of maize grown for silage, incl. under contract
Major benefits realised for livestock farmers		Average milk yields doubled, with associated increases in household income	• 2 hours less manual labour each day for women keeping livestock
Increased investment in related activities		Equipment suppliers are importing a wider range of products & innovating their financial offers	• Farmers now investing more in animal welfare e.g. nutritional products & health treatments

The following results indicate how well MDF's intervention in the fodder sector worked:

Silage producers have become successful businesses

- By 2017, over 100 small-bale silage enterprises had started operations (copying the initial 12 businesses that MDF supported)
- These businesses had created approximately 300 new full-time equivalent jobs, just in silage production.

Supplementary feeding has become widespread

- By 2017, MDF calculated that already 40,000 farming households were using silage fodder to supplement forage during the dry seasons (1.2 million bales sold within 2 years). Projections indicated this would grow to over 100,000 by 2020.
- The acreage of land under maize for forage, including land sub-contracted by silage entrepreneurs, had doubled in this time.

Livestock farmers are realising major benefits

- Milk yields for livestock that are fed silage during the dry seasons, typically doubled, with evidence of income benefits going towards additional livestock and household essentials.
- Women who husband livestock were typically freed from two hours labour each day.

Investment in related farm-activities has increased

- There was noticeable systemic impact, with investment by suppliers, a wider range of products (machinery, seed varieties) and services (rental) entering the market, and a diversification of business activities.
- Farmers, also are changing their behaviour, with greater investment in animal welfare, health treatments and nutritional products.

SLIDE 6: Extra background information about MDF

Market Development Facility (MDF) Phase 1 in context



First phase of a multi-country MSD programme of Australia's Dept. for Foreign Affairs and Trade (DFAT), implemented by Cardno Emerging Markets.

Countries

Fiji, Timor-Leste, Pakistan, Papua New Guinea, Sri Lanka

Economic sub-sectors

Agriculture, Livestock, Tourism & Manufacturing

Total Budget

US \$36 m, between 2011 – 2017 (Phase 1)

Aggregated Impact (in Pakistan alone)

- Income beneficiaries (by 2016) 24,000 women & men
- Future projected beneficiaries: 150,000
- Attributable income increases (by 2016): US \$13.3 m
- Future projected income increases: US \$72 m



MDF (Phase 1) was a multi-country, market systems development programme, working in Fiji, Timor-Leste, Pakistan, Papua New Guinea and Sri Lanka. It was funded by the Australian Dept. for Foreign Affairs and Trade (DFAT), and implemented by Cardno Emerging Markets.

MDF supported businesses and other market actors with innovative ideas, investment and regulatory reform that will improve business performance, stimulate economic growth and provide benefits for poor women and men as workers, producers and consumers.

The programme's Results Measurement system was successfully audited as meeting the DCED Standard in 2018.

Achievements in Pakistan (starting from 2014)

- 24,000 income beneficiary households by 2016,
- Beneficiaries projected to increase to 150,000 by 2020
- US \$ 13.3 million generated in aggregated net attributable direct and indirect income for farmers, businesses and employees
- Projected income increases estimated at US \$ 72m by 2020

Main references

Owen-Edmunds, L. (2017), *Systemic Change in the Fodder Market for Smallholder Farmers in Pakistan*, MDF Case Study No. 4. Market Development Facility, September 2017.

www.beamexchange.org/resources/1141/

Miehlbradt, Kelly & Warner (2018) *Promoting systemic change in shallow markets: lessons from Phase 1 of the Market Development Facility*, MDF

www.beamexchange.org/resources/1155/

Market Development Facility (2017) *MDF Phase 1 Activity Completion Report*, Cardno Emerging Markets, DFAT

www.beamexchange.org/resources/1124/

Market Development Facility (2014) *Pioneer Pakistan Seeds Limited*, Intervention Detail Sheet, October 2014.

Tariq, R. (2018), *Personal Communication*, September 24 2018.