

## PRAN Dairy Hubs (Tetra Pak)

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Bangladesh

Promoting Dairy Hubs to help 10,000 smallholder farmers increase their productivity, sourcing their milk, and generating revenues from the sales of processed dairy products

### Key insights

**Direct sourcing from smallholder farmers, producing <10L milk per day, can be sustainable with a dense network of collection centres associated with a compelling value proposition:** >90% of dairy farmers in Bangladesh own less than 5 cows and produce very small quantities of milk that do not justify long distance transportation. Tetra Pak and Tetra Laval Food for Development inspired and supported PRAN in launching a Dairy Hub (DH) model that could be sustainable in such context. Today PRAN runs 3 DHs and each of them counts 20-25 milk collection centres in a radius of 15-25km, i.e. one centre for every 1-2 villages. This enables even the smallest farmers to come and deliver their milk twice a day. Sustainability for PRAN requires a minimum daily volume of 40-50,000L milk per DH, which they achieved in their first DH thanks to penetration of 60%, improved productivity, and strong loyalty. PRAN indeed offers a compelling value proposition to farmers, which guarantees them to collect 100% of milk at market price, ensuring them a steady source of income and encouraging investments.

**In order to convert farmers to better practices, DH need to offer improved products and services at doorstep and offer continuous incentives:** PRAN not only trains farmers on how to optimize their productivity, it also provides them with the products and services needed to do so. For instance, within each DH, dedicated teams provide on-call veterinarian and artificial insemination services, and local shops for quality cattle feed and other inputs. Continuous incentives ensure that best practices are applied over time: first, DHs not only rewards farmers who provide more milk, but also those who provide higher quality milk (fat content), as a result of improved practices. Second, PRAN recently launched an incentive scheme that rewards loyalty and consistency in hygienic practices for farmers who deliver non-bacterial milk every day in clean recipients, consecutively during one month.

**DH make sure that farmers have already adopted improved practices before they invest, to create trust and ensure successful investments:** For new farmers, the initial training focus on improving productivity with better cattle management and feeding practices, e.g. continuous water availability or smart feed selection, which can be done at no cost. Once farmers have taken the first steps right, PRAN encourage them to invest in techniques (e.g. veterinary care) and equipment (e.g. milking machine) that may require credit. At this stage, farmers have already adopted improved practices that ensure they will fully benefitted from their investment, and have sufficient trust to do so. This hence ensures full satisfaction for these farmers and positive word-of-mouth.

**Promotion activities are needed even before DH opening to achieve fast penetration ramp up and recover capital investments:** Each DH needs at least \$1 million investment in equipment (20-25 chilling tanks, electric generators, buildings, weighing equipment, motor bikes, computer systems etc) and \$0.5 million in operations per year (80-90 staff) – thus requiring to reach a critical size quickly to become viable. PRAN actually starts its promotion during site selection, going door-to-door to survey farmers about their interest in joining a DH, organizing village meetings and tours of successful farmers who managed to increase their revenue with DH sourcing and improved practices (veterinary care, feeding, attendance to meetings, etc.) Infrastructures are installed only when a sufficient number of potential early adopters are identified. The 1st DH achieved >60% penetration within 2-3 years. Penetration is however growing more slowly in the 2nd DH and PRAN will receive grant support to cover operations costs in the new DHs that it plans to open.

## Description of the project

### History / Key milestones:

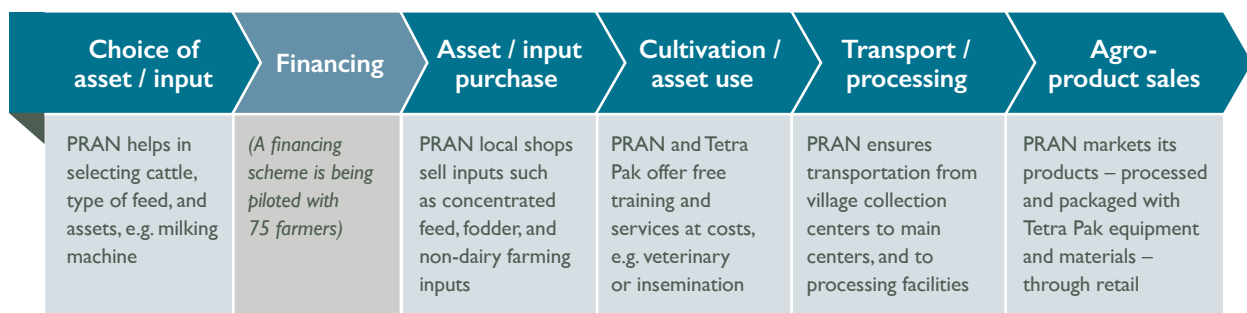
Tetra Pak, part of Tetra Laval Group, is a global leader in processing and packaging equipment and materials and has more than 50 years of experience of helping governments to implement school milk programmes, as a way to create demand for locally produced and processed quality milk in parallel with improving the health and learning capacities of school children. In year 2000 the Food for Development initiative (FfD) was set up to more systematically provide expertise to governments about school milk and school feeding programmes and to link these programmes to dairy development programmes. In year 2008 as a response to the food crises Tetra Pak took the initiative to develop the Dairy Hub concept as a way to help customers in developing countries get access to more locally produced milk and better quality milk. In 2009 the first DH was initiated in Pakistan with a local partner, Engro Foods. FfD with support of sister company DeLaval, a world leaders in systems for milk production, further developed the Dairy Hub Concept, and introduced the concept to PRAN in Bangladesh.

PRAN, part of PRAN-RFL Group, is the largest food processing company in Bangladesh, and one of the leading national dairy players. It produces UHT milk (60% of total dairy activity), pasteurized milk (20%), milk powder, and other dairy products (cheese, butter, etc.). PRAN opened a first DH in 2010 in Western Bangladesh, a second in 2011 and a third in 2013. Tetra Pak has been providing in-kind expertise, and recently helped PRAN secure a grant for replication from the Swedish development agency (SIDA).

Today, PRAN sources daily 90,000L of milk from 10,000 farmers in 3 DHs. With 45kL per day, the 1st DH actually enables PRAN to source at lower costs than its traditional agent-based channel, which demonstrates the strong profitability potential of the model. PRAN is also building a new processing facility to support its growth.

### Business model:

- **Role of key stakeholders in the value chain:**



- **Value proposition:**

- » DHs guarantee farmers to collect 100% of their milk production at market price at their doorstep, and pay them weekly in cash or on a bank account. The market price is set by PRAN depending on market trends – there are usually one or two adjustments per year within  $\pm 10\%$  – and is roughly equivalent to the prices offered by the other major national dairy players, BRAC and Milk Vita. This varies around \$0.50 per L, which is 20% above the price offered by middlemen. Farmers get a bonus (or penalty) of \$0.01 for every 1/10th percentage point of fat above (or below) 4.0%.

- » The DH staff provides free training to farmers on a bi-monthly basis, in order to help them increase their yield, milk quality, and income. These trainings are organized directly in the farms, at the DH 'headquarters', or in a recently launched Dairy Academy. Topics include feeding, breeding, disease management, calf rearing, etc.
  - » The DH staff also sells a range of on-site services, e.g. vaccination (\$6 for a 5-year vaccination), worms treatment (\$1.8 per year), or artificial insemination (\$3.6 for 300 days). Each DH also counts 2-3 shops, where farmers can purchase concentrated feed (\$0.5-2.5 per cow per day depending on cattle type), fodder, or non-dairy farming products such as seeds and fertilizers. Services and products are sold at costs to ensure affordability for farmers and provide another distinctive advantage to encourage them to join the DH.
  - » Lastly, DHs encourage farmers to make asset investments such as milking machines, for which PRAN negotiated a price of \$1,000 with suppliers, or bio-digesters that farmers would purchase locally.
- **Operations:**
    - » PRAN leads DHs operations, and has been supported by a Tetra Pak-sponsored full-time dairy expert until 2014.
    - » Each DH covers a 15-25km radius, and sources milk from 2,000-5,000 farmers. It counts one main collection centre – serving as 'headquarters' and equipped with several larger cooling tanks and a total cooling capacity of 25,000L (50,000 per day) – and 20-25 village collection centres – a single-room building hosting 1,000-2,000L chilling tanks and quality control equipment, covering 1-2 villages (100-200 farmers) each. In addition, 2-3 collection centres including the main one serve as local shops for agricultural inputs.
    - » Farmers bring their milk production (4-10L daily) to their closest village collection centre twice a day, where it is tested for fat, bacterial content, and added water, sugar, starch, etc. It is then transported to the main collection centre, where it is tested once again and finally sent to PRAN processing facilities (near Dhaka).
    - » The total PRAN headcount for a DH is 80-90. Each village collection centre employs 2 full-time staff each, and there is 1 Extension Service Officer (supervisor) for every 2 centres. In addition, 4 technicians are in charge of artificial insemination and veterinary services, and 15 employees are responsible for quality controls and administration together with additional staff for maintenance, technical services, cleaning and security. The DH manager monitors the whole value chain according to a set of performance indicators, such as volumes of milk collected, quality (fat and bacteria) of collection, number of farmers trained, services delivered, sales of inputs, etc.
  - **Revenue model:**
    - » PRAN generates margins on processed dairy products only. Services and products provided to farmers are either given away for free or sold at cost.
    - » DH is a capital-intensive model that requires high volumes of milk collection to be sustainable. The grant of SIDA will specifically support the operations of the new DHs until they increase their volumes to the break-even point, which has been estimated between 40,000 and 50,000L per day.  
This break-even point however depends on consumer price and associated margins. With the support of Tetra Pak, PRAN is leading marketing campaigns to promote UHT milk, a fairly new product for Bangladesh. By fostering demand, PRAN hopes to progressively increase its selling price, currently around \$1 per L, to the levels of South East Asia, around \$1.5 per L.

#### **Demand creation and user adoption strategies:**

- **Farmer acquisition:** See Key Insights section
- **Farmer retention:** The guarantee of daily purchase along with comprehensive servicing is a unique value proposition that no other competitor could offer in the DH area, which enables PRAN to retain its farmers.

### Regulatory and ecosystem issues:

- Market distortions: The two main competitors of PRAN on the Bangladeshi dairy market are Milk Vita, which is supported by the government, and BRAC Dairy, which is supported by donors. Subsidies and grants allow them to work on tight or negative margins. PRAN hence needs to constantly innovate and differentiates its offer – it was the first player to introduce UHT milk and is still leader on this market.
- Political instability: Bangladesh is frequently going through major political strikes that impede transportation across the country. This creates tensions for PRAN business and its 100% collection engagement with farmers.

### Is the project impactful?

#### Improvement of productivity and incomes:

- For 95% of farmers in Bangladesh, dairy is the second source of income after agriculture. The DH projects however enabled 60-65% of the farmers in the project to turn dairy production into their primary source of income.
- In its 1st DH, PRAN recorded an average increase in farmers' monthly revenue from dairy of 100-150% from \$100 to 230 per month, driven by:
  - » Purchase of new cattle and replacement of low-productive local cattle (2-4L per day) with cross breed cattle (6-12L per day)
  - » Improved breeding, feeding, veterinary, and cattle management practices that enable to increase yield for a given cattle by 50-100%, and milk fat content by 10-15%
  - » Increase in sales price, from \$0.40 per L with middlemen to \$0.50 with DHs
  - » Guarantee to sell 100% of production whatever volume they produce vs. uncertainty of the traditional middlemen channels – in addition, very smallholder farmers used to sell their milk production at local markets opened only 5 days per week.

**Other additional benefit and social impact:** Replacement of imported milk powder by locally produced milk

#### Scale and reach

- **Total number of farmers reached:** 10,000 farmers are selling to DHs, including 3,000 in the 1st DH, 5,000 in the 2nd DH, and 2,000 in the 3rd DH.
- **Rate of penetration in target communities:** Around 60% within 3 years for the 1st DH.
- **Growth rate:** The number of farmers has grown on average by 41% per year in the 1st DH and 29% per year in the 2nd DH
- **Ability to reach the poorest:** >80% smallholder farmers with less than 5 milking cattle
- **Farmer satisfaction and loyalty:** No dropout. Rare cases of farmers discontinued by PRAN for petty corruption cases.

**Acceptance and usage:** NA

## Is the project (economically) sustainable?

### For smallholder farmers:

Farmers can apply best practices to their existing cattle. The following describes the opportunity for a farmer investing in one cross breed cow and applying improved practices.

- **Initial cost (\$):** \$1,500 investment for one cow offering 5 years of high milk yield
- **Recurring cost (\$/year):** \$900 annual expenses (fodder; artificial insemination, veterinary care) that enable high yield at 12L per day (300 days per year), sold at \$0.50 per L to the DH (net income per year: \$600)
- **Additional in-kind support received at farmer level:** Training
- **Cost of best alternative(s) and savings made thanks to project:**
  - » Local cow with unimproved practices: \$500 investment and \$100 annual expenses, yield of 2-3L per day sold at \$0.40 per L to middlemen (net income per year: \$50-150)
  - » Cross breed cow with unimproved practices: \$1,500 investment and \$500 annual expenses, yield of 6-8L per day sold at \$0.40 per L to middlemen (net income per year: \$100-300)
- **Affordability:** The initial investment often represent >50% of farmers' total annual income, hence financing solutions are often required. PRAN started to pilot credit guarantee but only to a subset of <100 farmers.
- **Additional income generated by solution:** PRAN registered monthly income increase from \$100 to \$230 after 3 years.
- **Net additional income:** ~\$10m (assuming lower impact for new farmers)
- **Breakeven and payback for farmer:** Farmers pay back their investments in cross breed cows within 1.5 years instead of 2.5 years under former practices

### For PRAN DHs

- **Revenues:**
  - » 1st DH: ~\$15m (~15mL UHT milk at \$1 per L)
  - » 2nd and 3rd DH: ~\$8m (~8mL UHT milk at \$1 per L)
- **Operational profits (EBITDA):**
  - » 1st DH: 0-5% EBITDA margin on processed product sales with 3-5% DH costs over sales thanks to approximately 45,000L collected per day
  - » 2nd and 3rd DH: <0% EBITDA margin (volumes are too low)
- **Additional in-kind support:** SIDA will fund operations of the new DHs (see below)
- **(Planned) breakeven date:** 2-4 years per DH
- **Repayment rates:** NA
- **Financing:**
  - » The capital investment in a DH is ~\$1 million and covered at 100% by PRAN. PRAN is financed through its own operations, and a number of Bangladeshi banks and the IFC
  - » The yearly costs of operations of ~\$0.5 million which have so far been covered by PRAN, will be partly covered by SIDA for the new DHs in the coming 5 years.

**Positive externalities:** NA Job creation also outside the farm, for instance with sale of inputs, veterinarian drugs, etc as well as in connection with the processing & packaging of the milk, distribution and retail of the milk etc.

### Is the project environmentally sound?

**Environmental sustainability strategy:** PRAN is implementing wastewater treatment solutions such as ponds in its main centres to safely dispose of the water used for cleaning jars and pots that are used to transport milk to the chilling tanks. PRAN is also promoting bio-digesters among DH farmers (300 sold to date).

**Observed impact of the project:** NA

### Is the project reinforcing the local social capital?

**Involvement and empowerment of local organizations and their leadership:** NA

**Involvement and empowerment of women:** In 2014, 8% of farmers in DHs were women. SIDA has set gender equality in its top priority for Bangladesh, and PRAN plans to implement specific monitoring.

### Is the project scalable and replicable?

#### Key challenges and possible solutions to scale further

- **Ensuring successful replication:** While the 1st DH is a clear success, the 2nd DH is taking more time to reach profitability. It has been settled in a more challenging area that had not been historically involved into dairy production and where farmers have mostly low-productive local cows contrary to the 1st DH. Large initial capital investments however constrain PRAN to quickly reach high volumes, which is more difficult in this context. Another challenge is consistent staff performance: in order to ensure sharing of best practices, PRAN decided to transfer 50% of its experienced staff from existing to new DHs.
- **Financing equipment and manpower at scale:** PRAN targets 20 DHs by 2020. Considering losses in the first 2-4 years of each DH, this would represent at least \$40m in capital investment. DHs are also skilled-labour intensive. PRAN has started a Dairy Academy that trains staff, farmers, as well as 200+ students per year; among which ~50% are recruited by PRAN. PRAN also experienced that training staff adequately significantly limits churn.
- **Providing financial and insurance services:** The lack of credit is a clear limitation for farmers who want to grow their cattle, invest in equipment such as milking machines, or re-structure debt from moneylenders to sell to DH instead. Those three cases would allow the volumes of DH collection to grow faster. PRAN has started a pilot with 75 farmers, linking them with banks and offering a corporate guarantee.
- **Increasing revenue per farmer:** PRAN is already selling inputs, assets and services to farmers, however not generating any margin. In particular, PRAN is buying ingredients to produce concentrated feed in a 2T per day factory. This could be an opportunity to sell products at low but positive margins – and enhance the DH model sustainability while still offering low prices to farmers.
- **Avoiding petty corruption:** In order to avoid petty corruption between PRAN staff and farmers (e.g. recording of higher fat contents or quantities as actual production), PRAN has set up a strong IT-based monitoring and auditing system. Beyond control, this helps PRAN in managing the DHs' performance.
- **Fostering demand for UHT milk:** Along with DH costs, the other key lever to PRAN sustainability is the consumer price of UHT milk.

#### External pre-requisites for the project to replicate in a new country

- **Strong project set up:** Tetra Pak and PRAN are two leading corporates involved on the whole downstream dairy chain, who can influence policies and markets and invest in the long-term.

- **High density of smallholder farmers:** Doorstep collection, which is central in this DH model, is possible only in a setting where it is needed – i.e. farmers' production is too small to justify transportation costs – and possible – i.e. there is a sufficient density of farmers to cover high volumes in a small area.
- **Government infrastructures:** The lack of appropriate infrastructures, in particular roads for transportation, and electricity for milk chilling plants – is a big challenge for PRAN and may limit its ability to replicate in new areas.

### Sources

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