# Introducing Goat-rearing in Balliguda

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***Using SHGs as the base to explore different ways of building traditional livelihoods-generation activities such as goat-rearing becomes a worthwhile journey for the tribals of Kandhamal district, who adopt scientific methods with the help of trained para-vets of the community, bringing hope to those struggling for survival***

PRADAN commenced its work in Balliguda block of Kandhamal district, Odisha, in 2000, with the objective of building the community's human, social and financial capital. PRADAN initiated the formation of women's Self Help Groups (SHGs), primarily comprising women from relatively poor households, and helped them start savings and credit activities, providing a forum for regular discussion on issues related to livelihoods and household well-being.

Balliguda block is located 700–1,000 m above sea level and is largely inhabited by Kandha tribals. The region receives an annual rainfall of 1,200–1,600 mm. The area is surrounded by dense forests, which are a source of livelihood for families that collect non timber forest produce (NTFP) such as *sal* (Shorea Robusta), *siali* (Bauhinia Vahlii) and *tendu* (Diospyros Melanoxylon, also known as the East Indian Ebony) leaves, and *mahua* (Madhuca Longifolia) seeds and flowers. The other sources of livelihood comprise rain-fed agriculture, daily wage labour, brick-making, and poultry and goat-rearing. The land-holding pattern ranges from 50 decimals (0.2 ha) to one hectare (2.47 acres). Agriculture is rain-fed and primarily meets subsistence needs. Paddy and turmeric are the main crops grown in the *kharif* season. The average size of a family is five to six members.

PRADAN initiated goat-rearing as a livelihood activity in Balliguda for the relatively poor and landless households. The initiatives on goat-rearing have largely been concentrated in the Sudra *gram panchayat* because it is surrounded by a dense deciduous sal forest, which has a large number of seasonal plants and shrubs that are a good source of fodder for goats. Goat-rearing interventions were initiated in Sudra in four village clusters—Ma Laxmi (five villages), Patkhonda (two villages), Ma Tulsi (one village) and Ma Manikeswari (two villages). The intervention has been extended to seven villages in Solaguda *gram panchayat* now.

The local goat reared in the region is called the Kandhamal goat, or Phulbani, which is as yet not registered by the National Bureau of Animal Genetic Resources (NBAGR). The Phulbani is similar in appearance to both the Ganjam and the Black Bengal goat breeds. It has stout legs, is slender in shape and can easily climb mountains. The twinning rate is high. An adult buck may weigh close to 30 kg whereas a doe weighs an average of 25 kg. It has a milk yielding capacity of 300–500 ml per day.

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The Balliguda region, however, is characterized by high morbidity and mortality of goats due to inadequate access to health care services, poor breed selection, and unscientific husbandry and rearing practices. This livelihood activity, therefore, resulted in low incomes. Through an innovative community-centric model, PRADAN demonstrated an institutional framework, with the SHGs as the foundation, to facilitate access to preventive health and vaccination services, and knowledge-sharing on improved rearing and husbandry practices.

In its goat promotion activities, PRADAN decided to follow the village cluster approach to facilitate the provision of services (such as de-worming and preventive vaccination) and regular monitoring through trained para-vets. A village cluster usually falls within a single watershed, making it easier to create an immune zone through regular vaccination.

## ISSUES IN GOAT-REARING

During the initial years, PRADAN focused on building the capacity of SHG members through regular group meetings. Subsequently, a number of activities to improve livelihoods were identified and introduced gradually in the villages. These included promoting the System of Rice Intensification (SRI), providing support for tomato cultivation, establishing irrigation wells, introducing land and water conservation programmes, comprising lift and gravity flow irrigation and field-bunding, up-scaling NTFP activities, and offering support for goat and poultry-rearing.

In discussions with the community, it emerged that households that had previously reared two to three goats had, over time, given up this activity on account of the high levels of morbidity and mortality (averaging 25 per cent of the adult goats and 50 per cent of the kids). Further, based on the feedback from the SHG meetings and PRADAN's own technical reviews, the following constraints emerged in goat-rearing.

- Delay in castration of unviable bucks led to in-breeding and frequent abortions, and the birth of weak and unhealthy kids that were susceptible to endemic diseases. The non-availability of good quality bucks was another constraint that emerged during the group meetings.
- Vaccination and de-worming was never practised. In many remote villages, vaccination is still considered a taboo. In addition, veterinary services were available only at the veterinary dispensary, located at the Barakhama *gram panchayat* that was 6–7 km away from these villages. On account of the hilly terrain and dense forests, households are remotely located and are difficult to access.
- Due to the lack of proper shelter, the goats were attacked by wild animals from the surrounding forests. In addition, the goats

were susceptible frequently to diseases from exposure to cold and rain.

- Grazing in the surrounding forests was the only source of feed and fodder for the goats. No additional supplementary food was provided. With forests and grazing areas located at higher altitudes, it was difficult for pregnant and lactating goats to graze, and this further contributed to the high levels of mortality.
- On account of recurrent diseases, distress sale of goats was high; as a consequence, rearers could not bargain for remunerative prices with goat traders.

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## THE IMPLEMENTATION STRATEGY

In 2002-2003, PRADAN commenced its goat-rearing programme, with a focus on strengthening the existing goat units as well as encouraging new households to take up goat-rearing. At that time, 30 women SHG members had taken loans against the savings made by them in their respective SHGs and had bought two to three goats each. In addition to loans against savings, each SHG member was given a small one-time grant of Rs 2,000 from the experimental funds available with PRADAN, to purchase goats from the local market. Support was provided for the construction of goat sheds, using locally available material. The construction of a goat shed, as per specifications provided by PRADAN, was an important criterion for becoming a member of the goat-rearing groups within the SHGs. Goat sheds were constructed on a raised platform to avoid direct contact with the earth, had to have two windows for good ventilation and had to be limed/disinfected on a monthly basis. Considering that an adult goat requires 5–10 sq ft of open space, the goat shed was also designed to avoid overcrowding of goats.

Because of the remoteness of the region, PRADAN recognized the importance of training a community representative in basic health care, who would provide doorstep health services to goat-rearers. In 2004, a few villagers were unanimously nominated by the SHG members to undergo a four- to five-day training conducted by PRADAN. The training curriculum comprised both theoretical and hands-on training sessions, focusing on the provision of first aid, administering vaccination and de-worming, performing buck castration as well as providing detailed information on disease symptoms in goats. The training was conducted in the field and at the PRADAN office in Balliguda by a goat-rearing expert from PRADAN, along with an experienced retired veterinarian, who was paid an honorarium. During this initial period, goat-rearers were reluctant to pay for the services provided by the trained para-vets.

In 2005, refresher training programmes were organized for the trained para-vets. Of the ten trained para-vets, six dropped out in search of more lucrative jobs. During the same year, a major outbreak of PPR (*Peste Des Petits* Ruminants), also known as goat plague, was reported in Balliguda block. The area was not considered prone to PPR; hence, vaccines were not available at the block veterinary hospital. PRADAN approached the Indian Veterinary Research Institute (IVRI) to conduct tests, which proved that the disease was indeed PPR. Following this, the district hospital began to stock PPR vaccines.

Between 2006 and 2008, refresher training programmes were conducted for trained

para-vets; new para-vets were inducted and trained too. Concurrently, SHG members conducted regular follow-ups on timely vaccination and de-worming of all goats.

In 2009–11, PRADAN received a grant of Rs 5,00,000 for its goat-rearing programme from Navajbai Ratan Tata Trust (NRTT). In view of the progress in the goat-rearing activities in Sudra *gram panchayat*, the grant prioritized support for goat-rearing in this village Cluster. Seven high quality bucks of the Ganjam and the Beetal breeds were purchased from the local market in Ganjam district and from the government farm in Chiplima in Sambalpur district, respectively. In addition, each goat-rearer from the five villages in the Sudra *gram panchayat* received financial support for the purchase of one goat, on condition that each goat-rearer would purchase an additional goat from their own savings. A total of 120 goat-rearers purchased two goats each from Bolangir, Kalahandi, Boudh and Ganjam district markets.

PRADAN motivated goat-rearers to vaccinate their goats regularly and also follow regular vaccination schedules. It was at this time that annual activity calendars were developed, to ensure that all goat-rearers followed the same management schedule. Vaccination of the entire village herd was organized on a single day and para-vets were paid directly from the SHG goat-rearing fund. Likewise, first-aid medicines were also purchased from SHG funds. Medicines and vaccines were initially purchased at subsidized rates from the government veterinary dispensary in *Barakhama panchayat* or from the block veterinary hospital in Balliguda. However, gradually contact was established with wholesale dealers, who were ready to deliver medicines to the village, if ordered in bulk.

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Between 2002 and 2012, PRADAN trained a total of 80 para-vets. Of these, only 18 continue to remain associated with this programme. Due to sporadic interventions, neither did the goat-rearers benefit from the improved access to health care nor did para-vets receive adequate monetary benefits to enable them to continue to provide these services. Most of these trained para-vets are, however, running their own goat-rearing enterprises successfully.

Following a review of its para-vet programme in 2012, PRADAN introduced changes in its approach. The focus shifted to training women SHG members as para-vets. They are referred to as SHG para-vets. Second, training and subsequent refresher training of goat-rearers was prioritized, following the realization that goat-rearers needed to be sensitized to the value of the services provided by the para-vets. Goat-rearers were also trained to identify the characteristics of good quality goats, through regular interactions with the traders selling goats.

To facilitate monitoring and accountability of both the goat-rearers and the para-vets, and to track the health and management practices adopted by them, PRADAN introduced the concept of a Cluster *munshi,* or a Cluster para-vet. The main responsibility of the Cluster *munshi* was to collect data from the goat-rearing families on a bi-monthly basis. The data would include the number of goats (bucks, does and kids) in each household, and details regarding vaccination, de-worming, other health services availed of, kidding, mortality and sale of goats/kids, etc.

## UNNATIPATH: A GOAT-REARERS' FEDERATION

In 2010, SHGs in the Ma Laxmi Cluster were federated into an apex institution, a goat-rearers' Federation called Unnatipath (or the pathway to progress), comprising 180 members (one member from each goat-rearing family). The Federation was established with the objective of strengthening goat-rearing activities at the *gram panchayat* level and, thereby, creating a sustainable model. Currently, the responsibilities of the goat-rearers' Federation comprises managing and training the Cluster and the SHG para-vets, co-ordinating a collective fund for the purchase of goat-related inputs such as vaccines and feed, identifying and implementing other related livelihood activities, which complement the goat-rearing initiative, and identifying neighbouring villages to promote goat-rearing activities. These activities are closely monitored and facilitated by the PRADAN team. When a large number of households take up goat-rearing in the Sudra *gram panchayat*, it is envisaged that the Federation may also make inroads into the collective marketing of goats.

The Board of the Unnatipath Federation comprises a President and 12 Board Members, one each from the 13 SHGs in this Cluster. The President is nominated by the representatives of the SHGs, and has a term of three years. Membership to the goat-rearers' Federation depends on the following criteria:

1. A member should be willing to acquire/ invest in goat-rearing or have a minimum of five does.
2. A member should be willing to invest time for training and skill-development.
3. A lifetime membership fee of Rs 100 will be the contribution towards the collective fund of the Federation.

Recently, the goat-rearers have started depositing 10–20 per cent of the total amount earned by them from the sale of goats with the Federation. For example, if goats are sold by a member for Rs 6,000, Rs 600 to 1,200 is placed in the SHG goat-rearing fund, with clear record of which member has made this contribution. The Federation's collective fund is growing gradually and, at present, the total savings are approximately Rs 75,000, to be utilized for the purchase of good quality bucks and for the bulk purchase of medicines and vaccines. In 2011 and again in June 2013, the Federation sold goats collectively, to meet the bulk orders of one-and-a-half quintals of goats. These goats were purchased from member-rearers. In 2011, only the sale price of goats was realized; in June 2013, every goat-rearer who sold her goats through the Federation, earned a commission of Rs 100 per goat, in addition to the sale price. This commission was also deposited in the Federation's collective fund.

In 2012, on account of the success of the goat-rearing programme in the Ma Laxmi Cluster, the Orissa Tribal Empowerment and Livelihood Programme (OTELP) offered to extend their support for a similar initiative in the Palami and Kambarkiya villages in the Patakhonda Cluster in Sudra *gram panchayat*. Under this programme, each beneficiary would receive an amount of Rs 22,000 (Rs 15,000 for the purchase of goats and Rs 7,000 for the construction of the goat shed, specifically for the purchase of asbestos sheets for the shed). In addition to the support under the OTELP programme, each beneficiary would have to invest Rs 10,000 to Rs 12,000 of her own money for the remaining construction of the goat shed, which costs approximately Rs 20,000–22,000.

## TRAINING AND SUPPORT

From 2009–12, the annual cost incurred by PRADAN on training (basic course and subsequent refresher training) of para-vets and goat-rearers, amounts to Rs 2,80,400. Whereas the basic training is for four days, a two-day refresher training for para-vets is conducted once every month. As the programme expands to other villages, these trained para-vets also travel to these villages to provide training to newly inducted para-vets and goat-rearers. The target is to conduct at least eight training programmes a year. These para-vets are paid up to Rs 800 for providing training services, and also sharing information and data regarding health care services provided to the goats of SHG members.

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## SHGS AND THEIR ROLE IN UP-SCALING GOAT-REARING IN THE AREA

Every week, during the SHG meetings, women deposit some money in any one or all of the three savings boxes (general savings, savings for agriculture-related activities and savings for goat-rearing) and a record of their contribution is made by the SHG para-vets (also referred to as *didis*). As the vaccines and medicines, including for de-worming, are collectively bought from the funds in the goat-rearing group, SHG para-vets also keep records of the expenses incurred by each SHG member on regular vaccination and de-worming of goats. This data is presented to SHG members during the weekly SHG meetings. SHG para-vets are also responsible for the care and maintenance of the improved quality buck, whose services are availed of by both group and non-group members without any charge.

### SEBATI DIGAL FINDS GOAT-REARING A LUCARATIVE BUSINESS

Sebati Digal is a resident of Jargi village in Sudra *gram panchayat*. She stays in a joint family, comprising her father-in-law, husband Ramesh Digal and three children, studying in classes IX, VII and VI. The family owns 1.65 acres of land. Paddy is the only crop grown; it is barely sufficient to meet household needs. Sebati's husband works as a wage labourer to support the family. Goat-rearing, initiated by Sebati, contributes to the household income. Sebati owns 24 goats—14 does, six kids, three castrated bucks and one improved Beetal buck—at present. Last month, Sebati *didi*, as she is referred to in the village, sold three goats for Rs 12,500 and six kids for Rs 7,200. "I maintain 20–25 goats at a time, and based on their health and appearance, I sell two to three goats every year. The main criteria for judging market readiness of the goats is the weight gain in six months. If, in spite of de-worming and feeding of *bokashi* (a kid is fed 30–40 mg of this multi-nutrient supplement each day), the weight of the bucks remains less than 4 kg, these are considered unviable for further reproduction

and are castrated. The does are reared and bred until they are three to four years old, after which they are usually sold. A good quality goat gains approximately 7–8 kg of weight within six months." Sebati also says that whereas the kid of a cross between the local goat and the Ganjam buck shows good initial growth, the kid from a cross of a local goat and a Beetal buck has a problem standing in the initial days after its birth. It, however, gains very good weight later on. Castrated bucks are sold at the age of a year-and-a-half to two years for Rs 5,000 by which time they gain approximately 30 kg. Sebati has also been rearing *desi* poultry birds for the past seven to eight months. "I started with five poultry birds and now have a flock of 40 birds; four or five of these have been gifted to me by goat-rearing households in lieu of the services provided to them over the past year." The time interval between each clutch is two to three months and almost 10–12 eggs are laid per clutch. These eggs are largely consumed within the home.

Sebati joined the Ashadeep SHG in 2008 and received her first SHG training in 2009—a one-day practical training in goat-rearing. She was subsequently selected by the members of her SHG to attend the para-vet training programme the same year and subsequent refresher trainings every month. Since her nomination as the SHG group para-vet, Sebati has been regularly providing vaccination and de-worming services, and carrying out castrations of unviable bucks in her village. She is able to earn Rs 800–1,000 every month through her services as a para-vet. She has a good reputation in the neighbouring villages as well, where she has imparted training to newly inducted goat-rearers and group para-vets. "I prepare *Bokashi* (multi-nutrient supplement) at home for my own goats and it costs me Rs 18 per kilogramme." Sebati also maintains the health records of goat-rearing households in her village. This includes individual health cards issued to goat-rearers, in addition to a register, which she maintains and presents during the SHG meetings. Sebati is completely dedicated to the promotion of goat-rearing and ensuring the health of the goats raised in the area. She visits neighbouring villages, to support her fellow para-vets during the goat health camps organized by them. Sebati is also an active member of the Board of the Unnatipath Federation.

"My family provides all the support to allow me to participate in these community institutions. My husband takes care of the household chores while I go out for training for one or two days. He also helps with maintaining the goats and the goat shed when I am engaged with various group meetings and training programmes. The response and respect I receive from villagers is very encouraging and I try to persuade the women from other villages also to take up goat-rearing. Goat-rearing has not only been an additional source of income for most families here but has also created a strong bond among the women members in the SHG," says the smiling Sebati while she is busy taking notes from the goat-rearing expert during the health camp at Pippali village.

## THE ROLE AND RESPONSIBILITY OF THE SHG AND CLUSTER PARA-VETS

Based on the 'goat-rearing activity calendar', collectively developed by PRADAN and the goat-rearers, a day and date is finalized by the SHG members for the vaccination and de-worming of goats. The requisition for the vaccines and de-wormers is submitted

by the SHG group para-vet to the Cluster para-vet (Cluster *munshi*), who delivers the stock to the SHG para-vet's house on the day of the vaccination. The goat-rearers, who are informed a day before, bring their goats for vaccination or de-worming to the SHG para-vet's house. The cost of the vaccine and de-wormer is divided among the goat-rearers, and depending upon the number of goats vaccinated/de-wormed, the amount is

**GROUP PARA-VET AT PIPPALI VILLAGE IN BALLIGUDA BLOCK**

Pushpita Malik is the group para-vet for Supath SHG in Pippali village in Balliguda block. She lives with her husband and two children, a son and a daughter, who are six years and six months old, respectively. Pushpita was trained as a group para-vet three years ago and since then has been in regular practice. She has completed her Higher Secondary (Class X) education and her family owns one acre of land on which paddy is cultivated during the kharif season. For the remaining months, her husband works as a wage labourer under the NREGA programmes. Pushpita earns Rs 600–700 every month by providing health care services to the goats of the rearers, who are members of Supath SHG. The services provided include first aid, vaccination de-worming and castration of bucks.

Pushpita was the first woman in Pippali to take up goat-rearing; even today, she is the only woman para-vet in her village. "The villagers were initially extremely resistant to get their goats vaccinated or de-wormed, and were not willing to pay for any services for their livestock. The situation has completely changed today because the number of goats over the past three years has increased from 20 to 350 and the people now voluntarily bring their goats for treatment, vaccination/de-worming and even castration," she says. Pushpita is especially known for her skills as a vaccinator (she can vaccinate a record 150 goats in just two hours).

Pushpita owns 17 goats—12 does, four castrated bucks and one improved Beetal buck. She also owns six local poultry birds, the eggs of which are consumed at home. "I intend to sell four castrated bucks in a month's time and expect to receive at least Rs 5,000 for each," she says. She also maintains the records of all the goat-rearing households and the details of health services provided to them. She shares these with the members during the SHG meetings. The vaccines and medicines are supplied at her doorstep by the Cluster para-vet, Upendra Mallick. She charges Rs 5–15 for any first-aid services, Rs 30 for castration of bucks, Rs 2–3 for de-worming and Rs 50 for administering one vial of vaccine of 100 doses, sufficient to vaccinate 90 goats.

Although she is a mother to an infant daughter, Pushpita has been regularly providing health services to village livestock and attending training programmes. "Although there is no one at home to take care of my younger daughter, my group members are very helpful and look after her while I go for training or am providing health care services to their goats," says Pushpita. During a health camp organized in Pippali village in April 2013, Pushpita could be seen actively attending to goats, injecting medicine for common cold and assisting the Cluster para-vet, Upendra Mallick, with buck castration.

deducted from the account of the respective goat-rearer. The SHG para-vets also maintain the improved buck, the cost for which is met from the savings in the SHG goat-rearing fund. There is no service fee charged. Usually, a buck provides service for five to six years after which it is sold in consultation with the SHG members, and the sale proceeds are deposited in the collective fund of the Federation. The SHG para-vets earn an average of Rs 800-1,000 every month from the services provided by them. This also includes the honorarium received for training other goat-rearers and para-vets.

*In addition, a goat health camp is organized once a month in each of the five villages, wherein all the goat-rearers are asked to assemble at the SHG para-vet's house*

The Cluster para-vet, however, makes an earning of Rs 3,500-4,000 per month because, in addition to the services provided to the goat-rearers, she also earns an income from selling vaccines and medicines bought at a wholesale price and are sold either at the Maximum Retail Price (MRP) or at a price slightly lower than this. She also prepares and supplies the feed supplement. The inputs are purchased at Rs 15 per kg.

The Cluster para-vet is also responsible for 'surprise' monitoring visits to programme villages, to ensure that goat-rearers are following the practices listed in the 'goat-rearing activity calendar'.

In addition, a goat health camp is organized once a month in each of the five villages, wherein all the goat-rearers are asked to assemble at the SHG para-vet's house. This health camp is organized and convened by two SHG para-vets and a Cluster para-vet. Most often, the goat-rearing expert and the Project Executive from PRADAN are also present. The SHG para-vets may be from the same village or from a neighbouring village. The goat-rearing expert, together with the Cluster and the SHG para-vets, take stock of the situation by examining each and every goat, and then make a list of the major health problems observed among the flock. This is followed by administering the required medication. If a certain problem occurs frequently, a briefing session is conducted with the goat-rearers. For example, at the Goat Health Camp in Pippali village in April 2013, a few goats were found to be infested with ecto-parasites. These goats were retained and the goat-rearers were asked to thoroughly sponge their goats with the disinfectant solution prepared by the SHG para-vet. In addition, a list of these rearers was prepared to enable the Cluster para-vet to visit and review the condition and cleanliness of their goat sheds.

## VACCINATION

Almost all the vaccines except for Enterotoxemia (ET) are procured from wholesale dealers in neighbouring districts such as Behrampur, Phulbani or Bhubaneswar at a distance of 180, 100 and 280 km, respectively. A portable freezer is used to store and transport these vaccines, thereby maintaining the cold chain. The Cluster para-vet has also been provided with a refrigerator and a generator through funding from OTELP in 2010. As a norm, vaccinations are undertaken within a day or two of purchase of the vaccines.

## FEED AND FODDER

Based on an assessment, undertaken by PRADAN, of the carrying capacity of the surrounding forests, each family has access to approximately 5 to 6 ha of grazing land in the forest, in addition to 10–50 decimals of land in and around the homestead area where poultry is also raised. For six months after the *kharif* crops have been harvested,

adult goats graze on fallow agricultural land whereas the kids are stall-fed within the homestead area. During the *kharif* cropping season, goats are taken for grazing to the surrounding forests. PRADAN introduced the practice of stall-feeding goats, in addition to providing nutritional supplements prepared by the Cluster para-vets. Stall-feeding and the nutritional supplement were, in particular, beneficial to bucks, and pregnant and lactating does.

PRADAN was approached by Maple Org Tech (India) Ltd., a company that supplies nutritional supplements for livestock. The supplement, priced at Rs 80 per kg, was fed to goats on a trial basis for two months, resulting in visible improvement in the health of the goats. The goats had a healthy looking coat and there were very few incidents reported of the common cold and diarrhoea. The cost of the purchased nutritional supplement was very high; PRADAN, therefore, requested the company to provide the probiotic EM formula only so that the feed could be locally manufactured, using the available material and crop residues. After much negotiation, the company agreed to supply the probiotic EM solution, which the Cluster para-vets used to make a nutritional supplement and sold to goat-rearers at an affordable price of Rs 18 per kg. An adult goat is fed 50 gm of this nutritional supplement every day; a kid, however, is fed a lesser quantity. Goats are also fed on crop residues of *arhar* (pigeon pea), horse gram, black gram, maize and the leaves of jackfruit, subabul, sesbania, ficus and sycamore trees.

## BREED IMPROVEMENT

The maximum weight gained by the local Kandhamal breed is 25–30 kg at the age of one-and-a-half to two years. Whereas their milk yield is good, the goats are largely reared for meat. With the objective of upgrading the existing local breed, PRADAN decided to introduce bucks of relatively more productive breeds such as the Jamunapari, Marwari, Sirohi, Beetal and Ganjam. Bucks of these breeds were introduced by PRADAN in the five goat-rearing villages of Sudra *gram panchayat*. These breed improvement trials were scattered and continued over a period of eight years. The performance of these breeds vis-à-vis goat-rearers' perceptions was closely monitored during this time. Owing to their adaptability, feed requirement and kidding results, positive feedback was obtained only with regard to the Ganjam (which is also indigenous to the area) and the Beetal breeds of goats (a one-and-a-half- to two-year-old Beetal buck weighs 40–45 kg). Based on the learning, the focus now is only on the promotion of the Ganjam and Beetal breeds, and on the selection of improved bucks of the local Kandhamal goat.

## GOAT CRÈCHES

In January 2012, PRADAN initiated the practice of goat crèches in which an enclosure made of wooden planks or bamboo sticks was built in front of a selected house and goat kids of the SHG members were kept there during the day when adult goats were let out for grazing. The practice, however, was not considered viable by goat-rearers on account of two reasons–it was difficult for one person to manage goat kids of different members and, second, the lactating does came back to their respective houses to feed their kids at noon and either had to be escorted to the crèche or the kids were deprived of the afternoon feed. This had an adverse effect on the health of the goat kids. Based on the learning from this initial pilot, goat-rearers decided to construct a fenced area around their own houses for goat kids, to decrease the risk of predation.

## SALE OF GOATS

The sale of goats is, at present, done by each individual household because the demand for healthy goats is more than the supply. Buyers from neighbouring districts frequently visit these villages to buy healthy goats, and these visits have increased after the launch of the goat-rearing programme. Owing to an increase in the number of people taking up goat-rearing, there will likely be larger numbers available for sale and more distant markets may need to be tapped. At that time, the Federation may take up a larger role in marketing. For now the women goat-rearers have been trained to calculate the best price for their goats, based on the market price. Each SHG para-vet has been provided with a weighing balance and the goat-rearers weigh their goats a day or two prior to the sale. This facilitates negotiations with traders because the goat-rearers are aware of the weight of their stock.

On an average, a goat-rearer earns a gross profit of Rs 3,000–3,500 from each goat and the net profit is Rs 2,300–2,800 because the annual recurring expenditure is approximately Rs 790. The following Table provides a break-up of the cost incurred on goats each year. This excludes the cost of shed construction and the costs of goats purchased. (After four to five years, the cost of a goat is recovered from its sale price. Additionally, the number of kids produced by a female doe over four to five years more than makes up for the cost at which it was initially purchased. A goat starts reproducing at the age of one-and-a-half years).

**Table 1: Cost of Rearing One Goat Per Year**

| Component | Details | Annual Expenditure for Raising One Goat |
|---|---|---|
| Feed and fodder for goats | 15 kg Bokashi (muti nutrient supplement) @ Rs 18 per kg (quantity 50 gm per day) | Rs 270 |
| | Other supplements such as dry leaves, oil cakes in case of buck | Rs 80 |
| | Grazing cost for six months @ Rs 120 per goat (paid in kind either through paddy or poultry bird at the end of the year) | Rs 120 |
| Goat shed | Repair works, liming or disinfecting | Rs 120 |
| Vaccines and Medicines | Vaccines for PPR (administered annually, including a booster dose for goats not vaccinated the previous year), Goat-pox, FMD, ET@ Rs 8 per vaccine per year<br>Medicines for common diseases such as cold, dysentery, bloating etc.<br>Mifex (a multi-mineral mixture of calcium, magnesium and phosphorus, fed to pregnant and lactating does @ 25 ml per day). | Rs 200 |

## OUTCOMES AND IMPACT

PRADAN's goat-rearing interventions in Kandhamal district were designed with the twin objectives of increasing household income from goat-rearing by reducing mortality and morbidity, and by improving management and rearing practices, and facilitating the establishment of community institutions and processes to ensure sustainability of these interventions. The adult and kid mortality in goats has come down to 8 per cent and 15 per cent from the earlier 25 per cent and 50 per cent, respectively. In view of the reduction in mortality and morbidity on account of regular vaccination and de-worming, goat-rearers are willing to pay for these services now.

Regular training and knowledge-dissemination to both para-vets and goat-rearers are major factors that led to the adoption of improved rearing and management practices, and contributed to an increase in the number of households taking up goat-rearing. The SHGs and their Federation demonstrate the institutional framework, to access inputs collectively and strengthen goat-rearing activities, in addition to regular monitoring and data-collection that enables an understanding of trends in goat-rearing and incomes earned by goat-rearers. The positive outcomes observed by the women goat-rearers have further strengthened their willingness to not only up-scale their existing goat-rearing enterprise but also to encourage women from neighbouring villages to join the goat-rearing groups.

## THE ROAD AHEAD

There is a definite focus on increasing the number of families practising goat-rearing, a viable livelihood activity in the region. In addition to the Sudra *gram panchayat*, the goat-rearing programme is also being extended to four other *gram panchayats*, namely Solaguda, Barakhama, Bataguda and Parampanga. With the objective of sustaining this initiative over time, PRADAN is planning to organize a training of trainers programme whereby the SHG and the Cluster para-vets will be further groomed to take on the training of newly inducted para-vets and goat-rearers. This will also be a source of additional income for para-vets.

New households taking up goat-rearing will be linked to the Unnatipath Federation, which is expected, in due course, to take up the collective marketing of goats. Most households also rear local poultry birds, the eggs and meat of which are usually consumed within the home. Many goat-rearing families exchange poultry birds instead of cash for the services provided by the para-vets. During recent SHG meetings, many members expressed their willingness to expand their poultry enterprise to augment family income. In this regard, PRADAN has already initiated discussions with SHG members, to strengthen the existing poultry units by ensuring regular vaccination and de-worming, proper housing and feed supplementation for poultry birds.

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*This article is an excerpt from "Case study of Interventions Supported by PRADAN in Balliguda" conducted by South Asia Pro Poor Livestock Policy Programme (SA PPLPP) in September 2013.*