



*Apeejay Tea's plantations*

## Project Details

### COMPANY

**Apeejay Tea**

### COUNTRY

**India**

### AUTHOR

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## A scalable model of biological fence in Apeejay Tea plantations

### CONTEXT

Apeejay Tea is India's third largest tea producer and also features amongst India's oldest. The company is engaged in cultivating, manufacturing and selling black tea. It has an annual turnover of approximately Rs 400 crore and employs a little over 40,000 people in a mix of permanent, casual and executives.

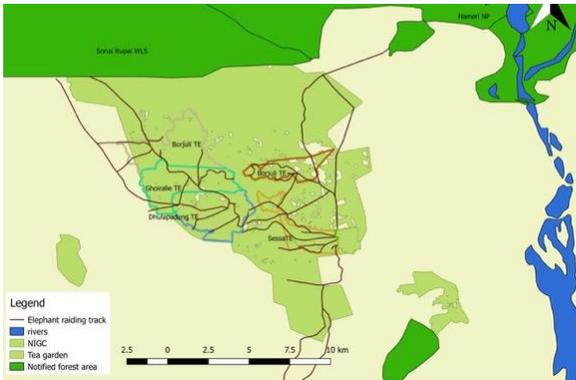
The company owns 17 tea estates in the prime tea growing areas of Tinsukia, Sivasagar and Sonitpur District of the state of Assam, spread over 50,000 acres. The estates, that date as far back as 1863, are ISO 9001: 2008 certified and are under Ethical Tea Partnership, Trustea and Rainforest Alliance certifications.

Large scale deforestation and encroachment of the forests in the Assam part of the North Bank landscape has been significant in the last decades due to a multitude of reasons, thus making Sonitpur district (where the company has four estates) a hot zone for Human Elephant Conflict (HEC).

In Arunachal Pradesh, a nearby state, the increasing need for flat land for development, combined with large scale migration of people from higher altitudes to the road heads and valleys, is eroding vital linkages connecting elephant habitats. As a consequence, HEC has been constantly on the rise in the region primarily due to increased human activities and constant pressure on the forest habitat. These circumstances have inevitably led to damage to tea growing sections, company infrastructure and loss of man hours in managing this conflict as well as grievous injury and death to residents.

Damage by elephants does not just lead to human and elephant fatalities, but also significantly impacts local livelihoods. Managing HEC is therefore critical under the goal of poverty eradication in the landscape as much as it is about conservation of threatened species. Therefore, creating a biological fence, that would deter wild elephants from entering the human zone of the tea estates while protecting sensitive zones, was part of the solution.

The project was implemented in the Sonitpur district of Assam.



The key stakeholders of the project are tea estate employees, including tea garden managers, local villagers who are not employed by the company, and our NGO partner World Wildlife Fund (WWF) India. Other key stakeholders from an institutional point of view were the Forest Department, the Agriculture Department, and also the District and the Village administrations, Panchayat members and women's groups. The major concerns of these stakeholders ranged from loss of elephant and human lives to loss of property, loss of crops and livelihood for villagers, and significant financial losses incurred by the tea estates.

**Figure 1:** Map of raiding tracks of elephants in the tea estates of Sonitpur West showing Apeejay Tea's four afflicted estates under HEC management and of which biological fence is part

### OBJECTIVE AND PROJECT OVERVIEW

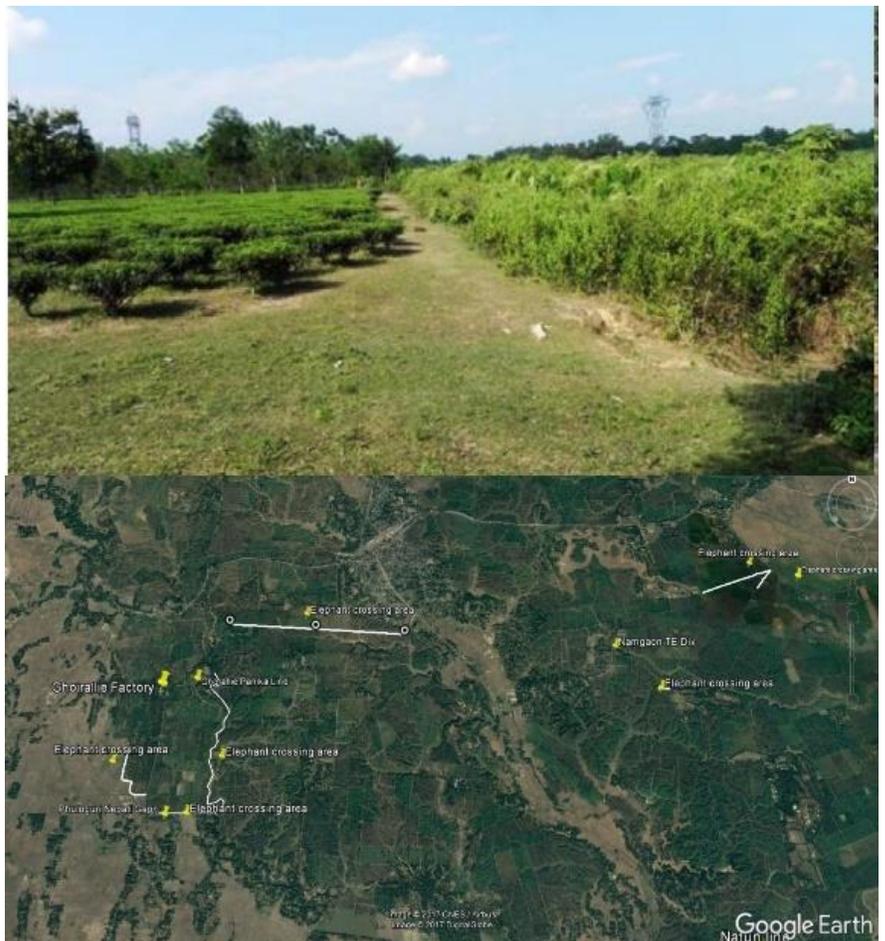
The primary objective of the project was to effectively manage HEC starting with a pilot project in selected Apeejay Group tea estates in the Sonitpur district of the North Bank landscape.

The project aimed to create a pioneering and scalable model of bio-fence that would deter wild elephants from entering the vulnerable sections of tea estates.

The plant species used as a bio-fence should have certain qualities i.e. thorns or spikes, etc. *Bambusa bamboo* (thorny bamboo) was identified as the best option because it's a strong indigenous species that grows thick and can be a source of fuel and livelihood for the local community if harvested in a sustainable manner.

With a view to planting bamboo as a natural barrier to deter elephants, the company planned to train about 40 workers from their tea estates in raising nursery and other techniques of the bamboo plantation.

By the end of July 2017, an eight-kilometer bio-fence in two Apeejay gardens was built and when mature will allow the elephants to move freely while protecting the garden human zone at the same time.



**Figure 2:** Elephant movement path adjacent to Sessa TE & Bio fences on Elephant movement paths in Ghoirallie and Namgaon TE Division

### THE BUSINESS CASE

It takes five years for a newly planted tea section to reach full maturity. Tea bushes remain productive for about 70 years. The implementation of these activities aims for the following possible results:

1. Reduction in damage to tea bushes and infrastructure assets of the company caused by elephants straying into the estates and a decrease in both human and elephant mortality;
2. A positive change in the conditions under which the work force and resident population of the tea gardens have to live and work;
3. Stabilization of labour productivity and reduction in losses in terms of man hours by preventing disruption of work or schedules;
4. A better understanding of solutions as well as good practices to minimize HEC-related damage will create a positive attitude and a behaviour change among local residents towards wild elephants and other wild life. Looking at the long-term sustainability of the project, WWF-India will lobby with the Assam state Government to ensure such effective HEC management measures are implemented in similar vulnerable areas of the state.

### DECISION MAKING PROCESS

The choice of a bio-fence over grey infrastructure was a clear one. Biological fence is a non-aggressive, permanent and low-maintenance solution to the changing patterns of elephant movement in the North Bank landscape of Assam and perhaps other landscapes in other states of India. Bio-fence as a natural barrier makes long-term economic sense in tea gardens because it’s long surviving – and effectively harnesses the natural ecosystem services. On the other hand, the grey infrastructure alternative is a hard-electric fence, which costs between Rs 1.5 – 2.5 lakhs (US \$2,349 - \$3,915) for constructing one kilometer of fence and doesn’t resolve the dynamic nature of the problem (elephant being an intelligent mammal who finds ways to quickly adapt to manmade obstructions like electric fences/ trenches etc). As a result, construction of an electric fence involving such high costs would have ultimately led to a loss as the elephants would inevitably find ways to break the barrier.

	Cost in USD for one kilometer	Cost in USD for eight kilometers
<b>Grey infrastructure – hard electric fence</b>	Between 2,349 and 3,915	Between 17,792 and 31,321
<b>Natural infrastructure – bio fence</b>	Between 1,838 and 2,205*	Between 14,704 and 17,640

\*cost of sapling + cost of plantation + cost of replacement 25 to 50%

The Chairman of Apeejay Surrendra group, Karan Paul, who is also Chairman of the Board of Directors of Apeejay Tea, initiated the HEC project and approved the objectives, of which one of them was incubating the idea of a biological fence. The CSR Committee of Apeejay Tea also approved the project as a whole and oversees it with the local Garden Management taking ownership. HEC is managed at both estates and landscape levels. The project is reviewed periodically by the Group’s corporate CSR team.

Despite some obstacles faced in Year 1 and 2 with regards to coming up of industrial centres near Sessa Tea Estate and the slow growth rate of thorny bamboos, the project is in its third year now with full support of the Chairman.

WWF was involved as the planning and implementing agency since it has been working on conservation of elephants and management of HEC in North Bank landscape for over 15 years.

### PROJECT DETAILS

In India, there have been very limited attempts to develop a bio-fence using thorny bamboo at this scale, so this was a pioneering activity which will generate both environmental and social benefits. The bamboo serves as a

source of fuel and livelihood for the villagers as it can be used for cooking purposes and can be made into furniture and crafts that can be sold in the market. In addition, the bio-fence also serves as a habitat for small mammals, birds and reptiles.

Possible locations for planting bio-fences were identified on the basis of protecting tea sections, including young tea sections, and keeping in mind the routes taken by the elephants that come inside the tea gardens.

The bio-fence project was financed by Apeejay Tea and has until end of FY 2016-2017 in April 2017 incurred a cost of about INR 500,000 (US \$7,830) which is part of the overall HEC project. The land for nurseries has been given to WWF by Apeejay Tea. In FY 2017 (April 2017- March 2018), about INR 10,000,000 (US \$15,659) have been allocated towards procurement of new bamboo saplings and costs related to plantation, nursery, maintenance and monitoring.

When the project started in 2015, the target was to plant at least 40,000 saplings over three years.



**Figure 3:** Raising bio fencing at Sessa TE, Sonitpur

The bio-fence will become effective once it develops into reasonable thickets, well enough to physically prevent wildlife intrusion which might take a considerably longer period of time (eight-10 years). Keeping this time frame in mind, the company has, in the meantime, concentrated its efforts in developing non-confrontational practices for mitigation of HEC. People are trained in putting these fences up and maintaining them, if destroyed by elephants. In addition, trainings are used to raise awareness among the communities on how to avoid conflicting situations with elephants.

## LESSONS LEARNED

Key lessons learned from this project include:

- The variables outside the project area have a far greater impact than understood at the outset. Adaptation is not quickly or easily achieved. One of the major challenges in this has been procurement of bamboo. These seeds are in short supply, and until 2016, only five kilograms of seeds had been procured and did not germinate. The only source of plants for the bio-fence was cuttings, which were also available in limited numbers.
- Considering the long timeframe of the project, planting material for bio-fencing on a much bigger scale would have been desirable.
- Human Animal conflict is an entrenched reality and will become more intense in vulnerable geographies. The problem cannot be solved unless actioned at a landscape level.
- If other companies in the same landscape and facing similar issues were to join hands and embark on similar efforts, then the scale of the project would multiply manifold thereby immediately increasing its success ratio. This would favour exchange of good practice and solutions for conserving wildlife, protecting assets and people from damage and or destruction – a problem faced by all afflicted companies with tea plantations or crop production in conflict-prone zones.

## FUTURE IMPLEMENTATION AND NEXT STEPS

The work is going on rapidly. By the end of August 2017, it was expected that a further five kilometres of bio-fencing would be added to the current eight kilometres. Apeejay Tea has initiated the practice of convening tea garden managers meeting across companies in the region to provide advice on innovations and share best practices, and will continue doing so through further Stakeholders Meetings conducted monthly.

The scope of the overall project being implemented by WWF has been widened in FY 2017 to encompass gardens adjoining Apeejay Tea's four tea estates and select other Apeejay Tea estates in other HEC afflicted districts of Assam. The gardens range from small tea growers to nearby gardens of large tea companies such as McLeod Russell.

## ABOUT THE WORLD BUSINESS COUNCIL FOR SUSTAINABLE DEVELOPMENT (WBCSD)

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