

Ex post evaluation – India

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Sector: Agriculture and rural development
Project: A) NABARD V Adivasi Programme, Gujarat (1993 65 842)*
 B) Promotion of Adivasi (NABARD) ATP (2002 65 900)*
Implementing agency: National Bank for Agriculture and Rural Development (NABARD)



Ex post evaluation report: 2017

		Project A Planned	Project A (Actual)	Project B (Planned)	Project B (Actual)
Investment costs (total)	EUR million	13.29	13.29	1.5	1.5
Counterpart contribution	EUR million	0.00	0.00	0.00	0.00
Financing	EUR million	0.00	0.00	0.00	0.00
of which BMZ budget funds	EUR million	13.29	13.29	1.5	1.5

*) Project A: random sample from 2016, project B: random sample from 2017

Summary: The projects were designed to fundamentally improve the living conditions of the marginalised and severely socio-economically disadvantaged families from the tribal population (Adivasi), whose survival was previously at risk due to subsistence farming (rainfed agriculture during the monsoon period) and seasonal migrant labour. To achieve this goal, the projects aimed to enable these families to become "full-time farmers". The "Wadi" model was applied: Participating families received support in establishing and maintaining fruit orchards (Wadi) on privately owned uncultivated land until they harvested their first crop. A Wadi typically consists of 20 mango trees and 40 cashew trees on a one-acre plot (0.4 hectares) and is surrounded by a belt of trees to protect the crop from free-roaming cattle and to produce firewood and pole wood. Establishment of the Wadis was the core activity, supported by a wide array of further measures: soil and water conservation, irrigation, water supply, training, health care, female empowerment, and the further processing and marketing of cashew nuts and mangos through specially created cooperatives. The main focus was on transforming participants into full-time farmers.

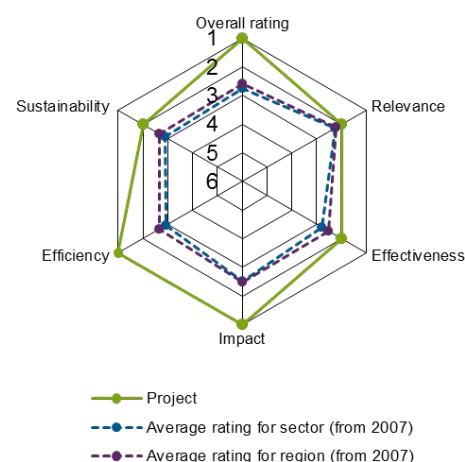
Development objectives: Programme objective: To produce and sell mangos, cashew nuts and other agricultural products; to reduce soil erosion. **Overarching developmental goal:** To increase family incomes to above the poverty line and to improve the standard of living (specified during the evaluation: 5 years following physical completion of the measures, the total family income for 70% of the participants is above the poverty line).

Target group: Around 13,500 land-owning, small-scale farming families and around 70-80,000 people living in two districts of the state of Gujarat, who belong to the tribal population (primarily Varli, Kokna and Dhodia).

Overall rating: 1 (both projects)

Rationale: For a long time, the need for seasonal migration as a strategy for survival shaped the target group's poor development prospects. The programme paved the way for them to escape poverty. The target group's economic and social situation and their health conditions improved drastically. Furthermore, the programme had a particularly positive impact on the next generation's future prospects as they can now benefit from educational opportunities as a result of families staying in one place all year round. Strengthening the potential of rural areas and providing alternatives to rural migration remain highly relevant, particularly in light of India's population pressures.

Highlights: The "Wadi" model pursued in the programme sets a good example and has since been replicated in a number of Indian states using funds from the implementing agency itself or the Indian government.



Rating according to DAC criteria

Overall rating: 1 (both projects)

Project B was created to expand and increase the area of project A; the effectiveness assessment and rating process therefore could not take place separately.

General conditions and classification of the project

The projects' area of intervention is the mountainous region in the Dharampur sub-district of Gujarat. This region covers 1,350 km² and 196 villages. The landscape is characterised by dynamic relief and is at risk of erosion. Fertile topsoil is washed away in frequent bouts of heavy rainfall, particularly in areas that have been cleared of trees and vegetation. The only areas used for intensive agricultural purposes are the richer, more fertile soils in valleys. The other, more traditional types of extensive agricultural activities, low areal productivity, a shortage of capital, a lack of knowledge and poor educational opportunities cemented the low level of development and shortage of prospects among the target group.

The National Bank for Agriculture and Rural Development (NABARD), a national development bank for promoting rural regions, was the project's executing agency. The project was implemented by the non-governmental organisation Bharatiya Agro Industries Foundation (BAIF), which has been involved in rural development since 1967 and now employs 4,500 staff.

Relevance

The Adivasi families who took part in the programme typically owned 1.5 – 5 acres (0.6 – 2 hectares) each, most of which were on degraded land. In the region's climate, which is shaped mainly by the monsoon and dry seasons, the land could only be cultivated on a seasonal basis. Prior to the start of the project, the families' survival depended on additional seasonal migration labour (lasting several months during the dry season) as rainfed agriculture was not enough to ensure their subsistence.

Before the start of the project, the target group was extremely poor and lived below the poverty line both by Indian and international standards. Most family members suffered from malnutrition and poor health, were illiterate and never had the opportunity to improve their agricultural skills and knowledge or obtain additional, formal qualifications.

Originally, the evaluation mission had considerable reservations regarding the viability of a model that was based on alleviating poverty for an entire family through improved cultivation of an agricultural area of just one acre (4,000 square metres). The mission also had doubts concerning the concept of alleviating poverty by planting trees, which would not yield fruit or income until reaching an age of 4 to 7 years... These reservations could be dispelled during the evaluation. The concept's underlying chain of effects can therefore be rated as valid.

At the start of the project in 1993, the programme concept was both innovative and very ambitious. Prior to its launch, it had only been implemented by BAIF in a much smaller pilot project in the 1980s.

In the beginning, no further donors were active in the region. However, BAIF succeeded in forming synergies with various national programmes set up by the Indian government during the course of the implementation phase.

The project complemented the national strategy to strengthen and develop rural regions (reducing push factors and rural migration).

The promotion of groups known as "scheduled tribes" was set out in the Constitution of India in 1950 and has been a goal of all Indian governments ever since.

Alleviating poverty is the most important goal in German development cooperation.

In summary, a high level of relevance can be ascertained.

Relevance rating: 2 (both projects)

Effectiveness

According to the project appraisal report, the project's aim was to "increase soil productivity and secure regional potential". To make these objectives easier to "grasp", they were reformulated during the evaluation: "To produce and sell mangos, cashew nuts and other agricultural products, and to reduce soil erosion".

The project's objectives were measured using the following five indicators:

Indicator with target value	Ex post evaluation
(1) In over 65% of the Wadis, the status is better than "poor" or "drop out" (as a proxy indicator for the utilisation of Wadis that were created during the project).	Achieved. 70% according to rating by BAIF/Dhruva
(2) Average yield from 1000 kg of mangos per acre (approx. 50 kg per tree) over ten years and 600 kg of unpeeled cashew nuts per acre (approx. 15 kg per tree) over eight years after planting.	Only partially achieved for the majority of Wadis; however, this has been more than offset by an increased production of vegetables and other crops, which were also promoted, as well as by real price increases, particularly for cashew nuts.
(3) Sold at market prices	Achieved; products are either sold to cooperatives established during the project or private vendors.
(4) Water conservation and reduction of soil erosion	It is plausible that the programme has contributed to a reduction in erosion and water conservation to a limited extent through smaller-scale erosion protection measures (construction of contour dams, water trenches, etc.). Individual measures of ground water levels show a slight increase (despite extraction for irrigation).
(5) Increase in vegetation coverage	A total of 600,000 fruit trees and several million forest trees for timber production (firewood, construction material) were planted during the project and still exist today. At points, the density of vegetation has been visibly increased.

The creation of the Wadis has visibly increased the density of vegetation at points; however, the scale is still moderate due to the low proportion of Wadis (52 km²) in relation to the total programme area (1,350 km²). The Wadis therefore form small green islands (particularly during the dry season) in a landscape shaped mainly by rainfed agriculture and sparse forest cover.

The main production goals for mangos and cashew nuts were only partially achieved for a number of different reasons (water shortage, soil quality, vermin, differences in cultivation intensity, and maintenance of the Wadis). However, this was more than balanced out by the irrigation concept introduced during the project, the transition from one to two or three harvests per year, and the sale of other promoted crops and "intercropping" (mixed crops/planting between fruit trees).

Designing an "open" project also proved to be a suitable approach to allow the requisite changes to be made during the implementation phase.

Effectiveness rating: 2 (both projects)

Efficiency

Production efficiency: Approx. EUR 1,000 was invested per Wadi (or family). This was suitable in view of the extremely difficult circumstances. Considering that around 50% of the funds were used for non-agricultural measures, the actual investment costs per Wadi were even lower.

Approximately 20% of the FC funds were used for management, administration, supervision and monitoring of the programme by NABARD and BAIF. This is justified in view of the need for comprehensive and ongoing supervision of participants by BAIF. This strong supervision was provided over several years (particularly during the planting period, but also in the subsequent years).

Based on the project's positive impact (see Impact), the allocation efficiency is rated as very good. Typically, the participating families generate incomes between 30,000 to 100,000 Indian rupees from agriculture and gardening. The investment's internal rate of return is around 35% when including high-yield vegetable cultivation, which was not possible until the introduction of irrigation. This calculation also factors in the fact that around 30% of Wadis are cultivated with lower intensity.

Efficiency rating: 1 (both projects)

Impact

The overarching developmental goal was to increase the families' income to above the poverty line and to improve the standard of living. The following indicators were used for the evaluation:

Indicator	Ex post evaluation
(1) At least 70% of the families receive an income above the poverty line	Achieved: surpassed in many cases
(2) Significant fall in seasonal migrant labour for reasons of survival	Achieved. Local people no longer migrate for work to ensure survival. The period of migrant labour per family fell from up to 8 months (according to the feasibility study, baseline) to 32 days per year (according to a BAIF study (2013)) based on a random sample of 2,135 families (before/after comparison).
(3) Significant improvement to the standard of living: economic and social situation, health, education	Achieved: All of the families surveyed in the evaluation reported significant improvements. Data are available concerning the improved health and nutrition situation. The participating families live in brick houses; they invest in their children's schooling and further education; the majority of them appear healthy and well-looked after and own cattle, scooters, mobile phones, etc.
(4) Increased ecosystem services	There is only very little data available concerning the development of vegetation coverage, erosion and the water table over time. A moderate positive effect appears plausible. Carbon sequestration (climate protection): Capturing of approx. 88,800 t of CO ₂ (forest belt not factored in)

According to surveys by BAIF, substantiated by interviews with the beneficiaries, the annual proceeds from sales "typically" increased to INR 30,000 to 100,000 (corresponds to EUR 430 to 1400) as a result of the project's intervention. This includes the sale of Wadi produce and the increased production of staple foods (particularly rice, sorghum), legumes and vegetables, which were also promoted during the project. The introduction of irrigation enables up to three harvests to be achieved per year.

In 2012, the poverty line in rural areas of India was INR 816 (EUR 11) per month and INR 9,792 (EUR 139) per year. With an average of 6 members per family and taking into account the residential value of owned property and natural income (self-sufficiency with food), it is to be assumed that over 70% of the participating households exceed the Indian poverty line.

The positive result of significant increases in income also applies for families with small areas of 1 to 2 acres. Households with 3 to 5 acres, fertile soils (typically on the valley floor) and good management profited even more and reported net incomes of INR 200,000. In exceptional cases, incomes of up to INR 400,000 were reported (from the production of mango seedlings).

According to research by BAIF, the increase in income fits in with the mission's observations: Wadi owners benefit from drastically improved nutrition and health. Many households own solid brick houses, televisions, mobile phones, scooters, and oxen and/or dairy cattle.

The reasons why around 30% of the participating families failed to achieve the income targets varied from family to family. Reasons include both poor soil conditions (on steep slopes and hills), a shortage of water, vermin and poor management practices, as well as a loss of workforce within the family due to illness or death.

Investments by the Indian government, particularly in the power supply and improvements to the road network in the project area, further reinforced the impact of the Wadi programme. For instance, they improved market access for agricultural products and provided power for irrigation. Conversely, the production of cash crops enabled the target group to purchase electrical appliances, motorbikes, irrigation pumps, mobile phones, etc. for the first time.

Seasonal migration: The "anchoring" effect of the Wadis was an essential factor, enabling the participating families to make a fundamental change to their lives. On the one hand, the ongoing presence of the farmers was especially important for the first three years after the Wadis were planted. On the other hand, the increased income from the agricultural and gardening activities made seasonal migration unnecessary. The increased income led to further investment and diversification. All of the families surveyed emphasised that their children go to school and that they invest a significant portion of their income in their children's education and other associated costs. Any seasonal migration that still occurs is not obviously needed for survival but occurs at certain points in the year when agricultural activities require less manpower and one member of the family has the chance to generate additional income from other areas.

A focus group discussion with the inhabitants of a "comparable" village that did not take part in the programme but was similar to the programme villages gave the impression of the very difficult conditions for families who still depend primarily on seasonal migration.

As described under Efficiency, the programme's economic return is high, as the participants produce high-value cash crops.

One very impressive impact of the programme, the scope of which was not anticipated in the programme appraisal, is the large-scale replication: As part of the Indian-German FC, the project is being replicated in Gujarat (ADPG II) and Maharashtra. As part of the Tribal Development Fund (TDF, established in 2005), NABARD pursues the same approach on a large scale in almost all Indian states (25 of 29). Under the replication process, the model has also been enhanced: For example, new, additional crops have been introduced and cattle breeding has been incorporated. The approach has also been rolled out even further without external support. For instance, families have expanded their Wadis or new Wadis have been created for families who did not originally take part in the programme.

Based on a 10-year-old mango or cashew nut tree's capacity to store 0.04 t of carbon, 24,000 t of carbon or 88,800 t of carbon dioxide have been removed from the atmosphere after 10 years (by 600,000 fruit trees). On top of that, a large amount of additional carbon is captured by various plants within the forest belt.

In summary, the mission rates the impact as very good, particularly due to the broad replication of the approach beyond the 13,000 families originally involved.

Impact rating: 1 (both projects)

Sustainability

At the time of evaluation, the planted trees had already reached an age of between 5 and around 20 years and were already well established. Their survival rates and therefore sustainability are rated as very good. Furthermore, the trees have exhibited good resistance to fluctuating rainfall so far: Some farmers reported a loss of yield from cereal crops over the past few years as a result of unusual dry periods during the monsoon season; in contrast, the fruit trees sustained no damage.

Many families see the Wadis as a type of pension. Even when they are cultivated with a low level of intensity, the trees provide a steady source of income. Realistically, it can be expected that these trees will continue to bear fruit for a further 20 years (at least).

The beneficiaries' change in behaviour in relation to migration labour can be seen as sustainable unless income from agriculture dries up (as a result of a drastic drop in returns or prices).

The sustainability of the Wadis as the heart of a "family farm" could be threatened by the division of inheritance. However, education and the access it provides to other careers offer additional alternatives to agroforestry.

The sustainability of the cooperatives established cannot be rated as guaranteed. Some cooperatives suffer from pressure of competition with private vendors (which may have a positive result for the farmers) and some cooperatives lack the liquidity to purchase 60 tones of cashew nuts per season, which would correspond to the capacity of the cashew processing operations. In light of this, one positive point to mention is that BAIF has recruited a qualified consultant for the cooperatives.

At water catchment area level, water resources are not managed systematically. At the moment, some groups who use the same well coordinate with each other and arrange, for example, not to plant any water-intensive crops (sugar cane, etc.) from March onwards. On the one hand, more intensive irrigation holds huge potential for increased production and income, as water currently appears to be a restrictive factor. On the other hand, water resources are limited, meaning that competition occurs in some cases. For example, barrages restrict the flow of water downstream and new borewells reduce the availability of water in existing wells. As an increasing number of farmers can afford pumps and have better access to water due to improved power supply, the demand for sustainable water management is becoming increasingly poignant.

Sustainability rating: 2 (both projects)

Notes on the methods used to evaluate project success (project rating)

Projects (and programmes) are evaluated on a six-point scale, the criteria being **relevance, effectiveness, efficiency** and **overarching developmental impact**. The ratings are also used to arrive at a **final assessment** of a project's overall developmental efficacy. The scale is as follows:

Level 1	Very good result that clearly exceeds expectations
Level 2	Good result, fully in line with expectations and without any significant shortcomings
Level 3	Satisfactory result – project falls short of expectations but the positive results dominate
Level 4	Unsatisfactory result – significantly below expectations, with negative results dominating despite discernible positive results
Level 5	Clearly inadequate result – despite some positive partial results, the negative results clearly dominate
Level 6	The project has no impact or the situation has actually deteriorated

Rating levels 1-3 denote a positive assessment or successful project while rating levels 4-6 denote a negative assessment.

Sustainability is evaluated according to the following four-point scale:

Sustainability level 1 (very good sustainability): The developmental efficacy of the project (positive to date) is very likely to continue undiminished or even increase.

Sustainability level 2 (good sustainability): The developmental efficacy of the project (positive to date) is very likely to decline only minimally but remain positive overall. (This is what can normally be expected).

Sustainability level 3 (satisfactory sustainability): The developmental efficacy of the project (positive to date) is very likely to decline significantly but remain positive overall. This rating is also assigned if the sustainability of a project is considered inadequate up to the time of the ex post evaluation but is very likely to evolve positively so that the project will ultimately achieve positive developmental efficacy.

Sustainability level 4 (inadequate sustainability): The developmental efficacy of the project is inadequate up to the time of the ex post evaluation and is very unlikely to improve. This rating is also assigned if the sustainability that has been positively evaluated to date is very likely to deteriorate severely and no longer meet the level 3 criteria.

The **overall rating** on the six-point scale is compiled from a weighting of all five individual criteria as appropriate to the project in question. Rating levels 1-3 of the overall rating denote a "successful" project while rating levels 4-6 denote an "unsuccessful" project. It should be noted that a project can generally be considered developmentally "successful" only if the achievement of the project objective ("effectiveness"), the impact on the overall objective ("overarching developmental impact") and the sustainability are rated at least "satisfactory" (level 3).