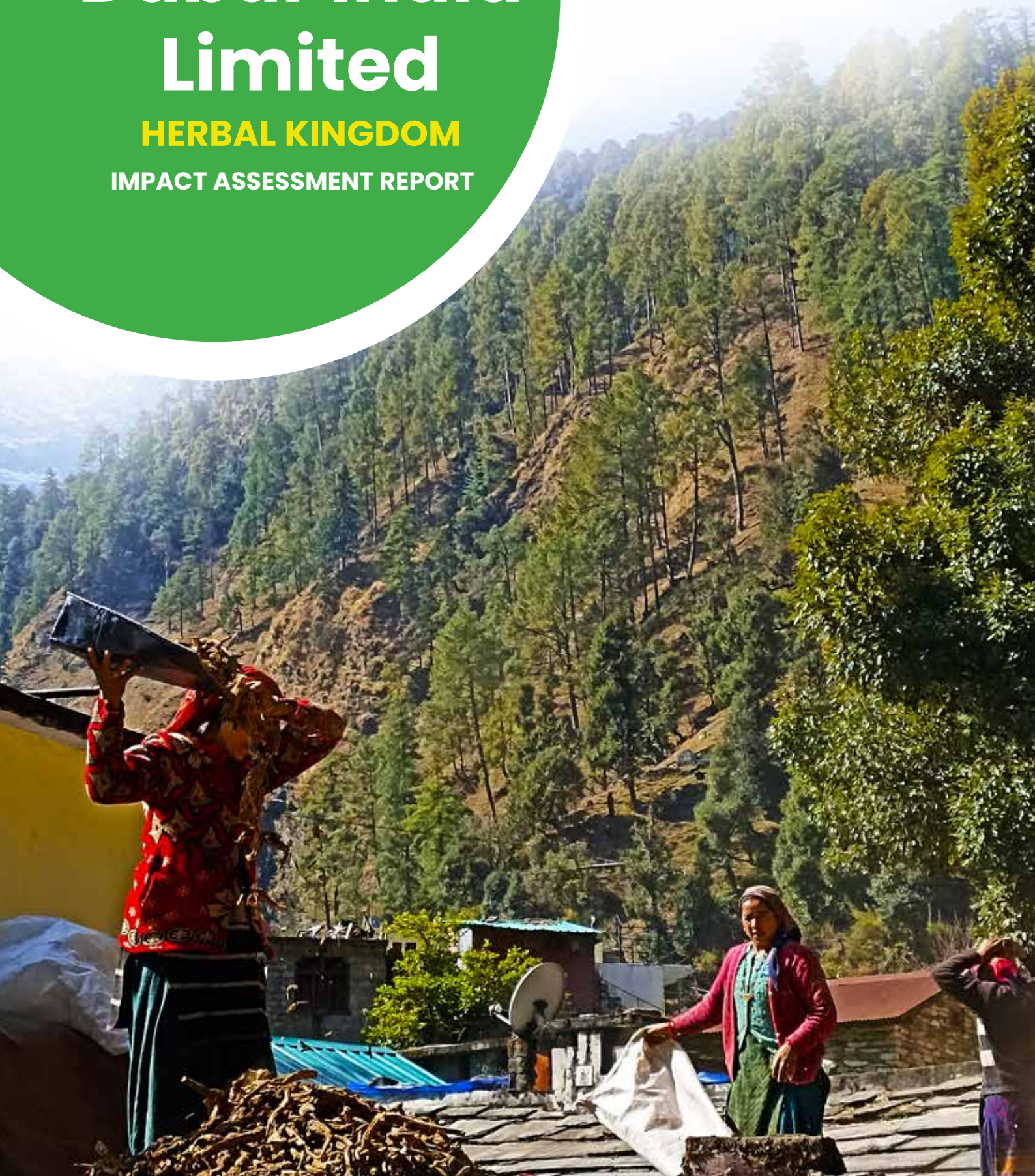




Dabur India Limited

HERBAL KINGDOM

IMPACT ASSESSMENT REPORT



PROJECT YEAR
2021-22

IMPLEMENTED BY
 **JIVANTI**
Creating and Sustainable Time

PREPARED BY
give | grants

ASSESSMENT YEAR
2023-24



Table of Contents

| | |
|---|-----------|
| Executive Summary..... | 2 |
| Introduction..... | 5 |
| Objectives and Scope of Study..... | 6 |
| 3.1 Objectives of the Study..... | 6 |
| 3.2 Limitations of the Study | 6 |
| Assessment Framework..... | 7 |
| 4.1 Theory of Change..... | 7 |
| 4.2 Logical Framework Model | 8 |
| 4.3 Three-Point Assessment Framework | 9 |
| Methodology Adopted | 10 |
| 5.1 Data Collection..... | 11 |
| 5.2 Sampling Strategy..... | 11 |
| 5.3 Sample Locations for Primary Data Collection..... | 12 |
| Analysis & Findings..... | 13 |
| 6.1 Program Design..... | 13 |
| 6.2 Program Delivery..... | 13 |
| 6.3 Impact & Sustainability | 16 |
| SWOT Analysis..... | 21 |
| Conclusion and Recommendations..... | 23 |

1 Executive Summary



Examining the Kutki plantation at Ghes

Indigenous and medicinal plants have been used by Indigenous communities for centuries for their therapeutic properties. Their conservation, hence, is essential for the well-being of both people and the planet. However, many of these species are now endangered due to habitat loss, over-harvesting, climate change, and pollution. The loss of these plants not only affects their traditional use but also jeopardizes the ecosystem services they provide in the form of soil conservation, carbon sequestration, and biodiversity conservation. Therefore, there is an urgent need to conserve and protect endangered species of herbs in India through sustainable management practices, research, and community engagement

As a part of its CSR Policy, Dabur India Ltd is supporting 12 implementing partners pan India to protect endangered species of herbs & medicinal plants through their 'Herbal Kingdom' intervention. The intervention helps establish nurseries for the cultivation of saplings of endangered/

important medicinal and aromatic plants (MAPs) and distributing the herb quality planting materials (QPM)/ sapling and seedling to farmers for subsequent cultivation. Through the course, the livelihood of tribal and small landholder farmers gets supported. These farmers are provided training on harvest techniques and ways to procure their produce. The intervention aligns with the SDGs 8 and 15 of the UN SDGs, Agenda 2030. Nationally, it targets activity (iv) of Schedule VII of the Companies Act, 2013.

The program has broad objectives:

- Conservation and restoration of forest ecosystem
- Income enhancement of farmers and associates
- Capacity building and awareness program
- On-site preservation of germplasm of these critical species for future large-scale multiplication



The program has introduced high-density medicinal plants with short rotation periods that allowed the farmers to yield a profit in a shorter duration. The intervention involved collaboration with local NGOs and forest departments which supported farmers' capacity building, risk management and marketing of products.

It has project ensured an efficient supply of high-quality saplings to the farmers. The excess stock was maintained in each nursery to manage the unexpected loss of saplings, delayed germination, etc. In addition, farmers were provided with technical assistance from these agencies on the aspects of sapling care, management and survival.

The capacity building of farmers, ensuring efficient execution and sustainable self-help was an essential component of the project. The assessment reveals that 78.6% of the farmers attended the training programs that were organized twice a year detailing each stage of the process, starting from seed collection to post-harvest primary treatments. **76.8% of these farmers found training effective in addressing their queries** at each stage. Some of these farmers who were early adopters and influential in 'snowballing' the approaches were provided with an advanced level of training, comprising technical knowledge and market opportunities of these plants.

The intervention has established an efficient system for marketing the products, which is a key determinant of the success of the program. **27% of the beneficiaries sell their products to Dabur India, 12% to Organic India, and 5% to the vendors identified by the NGOs. Cumulatively, 44.6% of the farmers are linked to the market through reliable linkages.** 43% of the farmers rely on local vendors and 13% sell directly to the local market. The interaction with the farmers revealed that the program guarantees buy-backs and established market linkages. Local vendors are still major buyers of the produce. Farmers have expressed to help them identify more such vendors.

The impact assessment further outlays that the project has created favourable environmental and socio-

The program is implemented in pan-India. However, the assessment ascertains the locations of Odisha and Uttarakhand where the prominence of this intervention is maximum. The study covered a total sample size of 204 farmers and their families, forest collectors, NGO partners and Dabur India scientists.

The assessment brings to the fore that the program is relevant to the geography and was successful in achieving its objectives effectively. The intervention has considered geographical specifications and local economic challenges in deciding its intervention pattern. It has successfully merged traditional knowledge, technological advancement and research in medicinal plant cultivation.

The program was efficient in mobilizing seeds from both local sources and Dabur's greenhouses, satellite nurseries and field stations for cultivation. They introduced *in-situ* conservation approaches in the nursery setting till replanting was done on the farmers' fields, thereby ensuring a higher survival rate. Each sapling was introduced to the villages considering the geographical terrain, altitude, irrigation facilities, soil fertility, rainfall, etc. The approach has helped in reducing over-exploitation of the minor forest produce (MFPs) or non-timber forest produce (NTFPs) and its conservation. Farmers contributed to the labour and establishment costs partially. However, the evaluation highlights that some plants such as Chirayita (*Swertia chirayita*) were introduced to low altitudes, and did not grow due to unsuitability of the terrain.

economic outcomes, both immediate and long-term. The program contributes towards the conservation of various economically important wild species of medicinal and aromatic plants, ensuring their cultivation for industrial purposes. It also fosters the cultivation of wasteland. **26.8% of farmers started cultivating the wasteland with around 73.2% of farmers able to introduce medicinal plants as an inter-crop, providing additional income sources to the farmers. 87.5% of farmers confirmed to have experienced an increase in income.** The interaction with the family members too solicits the fact.

Despite being a favourable income source, the concern of not being able to cultivate the usual harvest rules among all of them. While the cultivation of medicinal plants is a proven additional income source, the scale at which they would want is ambiguous. The cultivation of food grains and paddy remains as preferred crops.

The spike in income has resulted in an improvement in quality of life. **58.5% have improved housing, and 73.2% of them have gained/created assets.** The families of 87.5% of farmers are now investing in their children's education, including girls. 85.7% of their youth have preferred to be employed in the service industry than continuing the family occupation of farming. This indicates the choices that the families of these farmers have started to make.

The program has been designed and implemented in a way that beneficiaries and their families will continue implementing the program. They have observed the benefits and experienced changes in their quality of life. However, the key gaps that the program can look into relate to the geographical challenges and climatic vulnerabilities such as water availability, land-slides and delayed harvests, intrusion of wild animals, and soil fertility among many.

The way forward recommendations towards improving the yield of the project are:

- While most wild medicinal plants are dependent on rain-fed irrigation, it is important to improve irrigation facilities with the provision of water storage tanks and pipelines when they introduced under cultivation (*Ex-Situ* conservation)
- Establish protective fencing and/or bio-fencing for controlling grazing and wild animals.
- Regulate seedling prices. Provide saplings that are suitable for local geography.
- Since most medicinal plants' gestation periods are three to five years, extend the agreement periods to at least 3 years to ensure sustainable income and sustainability of the plant species.
- Arrange provisions for soil testing with corrective measures.



Interaction with farmers of Sarmata Village and their families

2 Introduction



HAAPRC Nursery at Kulsari, Tharali

For centuries, various cultures and communities around the world have relied on medicinal plants for their therapeutic properties. These plants are rich in biologically active compounds that can effectively treat various diseases and seasonal illnesses. Medicinal plants have uses in various forms like single herbs, poly herb combinations, decoction, powder, and infusion, incense including teas, tinctures, capsules, creams, and oils. They are versatile and have a wide range of applications, from treating acute and chronic diseases to healing wounds, improving skincare, and boosting the immune system.

The cultivation of medicinal plants can bring economic, social, and environmental benefits to communities. Unfortunately, the number of medicinal plant species is decreasing globally. This reduction is due to a variety of factors, including habitat loss, over-harvesting, climate change, and pollution. To address this issue and augment the livelihood of farmers, Dabur India Ltd. launched this program pan-India in collaboration with several NGOs. It was implemented with the goal of forest ecosystem restoration and improving the livelihood of farmers in India by providing them with an alternative source of income beyond traditional crop farming. Through the provision of

saplings, resources, and specialized training, farmers were equipped to efficiently cultivate these unique plants. The saplings provided to the farmers were indigenously grown by the NGOs in their professional nurseries that were also established as part of this program.

As part of the assessment process, the Give Grants team physically visited a sample of intervention geographies and interacted with the local farmers and tribal communities of forest collectors of Odisha and Uttarakhand who are the primary beneficiaries of the program. In addition to this, the team conducted in-depth Key Informant Interviews (KIIs) with NGO program team members and program scientists to understand the rationale behind the program activities and the intended impact of the program.

The focus of this impact assessment report is to analyze the current status of both sapling cultivation by farmers and forest collectors. Additionally, the report also provides an evaluation of the impact and sustainability of the program, the socioeconomic status of the beneficiary families, the challenges of the targeted groups, and the overall achievement of objectives. Furthermore, the report will investigate the barriers hindering the cultivation process and preventing program expansion.

3 Objectives and Scope of Study



Tej Patta saplings at HAAPRC Nursery, Kulsari

The study aims to understand the implementation pathway of the project, the impact it has had on its primary beneficiaries (farmers and forest collectors) across Chhattisgarh, Gujarat, Maharashtra, Tamil Nadu, Uttarakhand and Odisha, and the effectiveness of the interventions in improving the livelihood of the farmers and increasing the medicinal plant species count in their area through successful plantation of saplings. The impact assessment study tries to map the program implementation against the proposed plan and draws focus on how the intervention has progressed against its predefined objectives.

3.1 Objectives of the Study

The major objectives of the study are as follows:

- **Assess the relevance and efficiency of the intervention** in ensuring that stakeholder challenges are addressed by the project and review the implementation pathways
- **Understand the effectiveness of the intervention:**

How each activity has led to creating the desired outcomes

- **Understand the major success factors** and challenges in the intervention
- **Find the areas of improvement** across all the factors from program design to implementation
- **Provide an assessment framework** to be able to capture impacts in a manner that is an effective recommendation

3.2 Limitations of the Study

- The impact of the intervention on the livelihoods of farmers could not be gauged properly as only a very small sample of farmers have started receiving yields from their plantations.
- Due to the lack of motorable roads in certain villages of Uttarakhand, the Give team could not conduct a physical visit to the plantations of the beneficiaries from those regions.

4 Assessment Framework



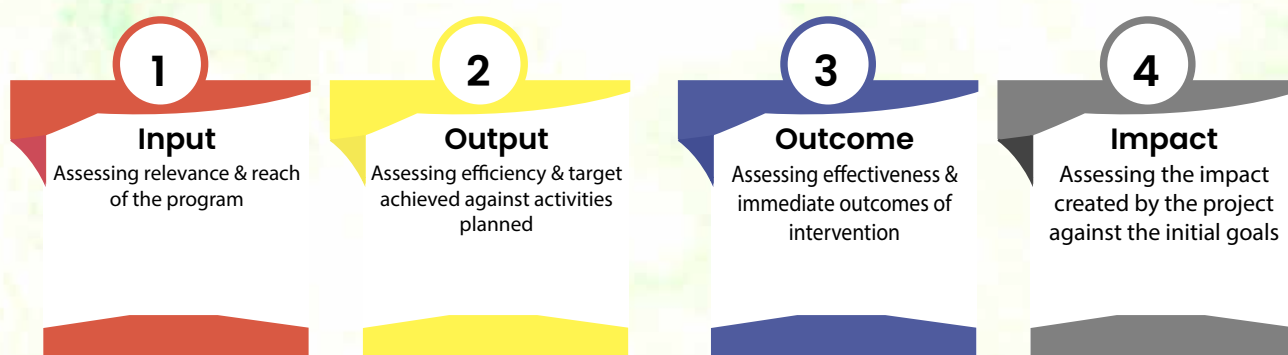
HAAPRC Nursery at Kulsari, Tharali

To create an overall framework for the impact assessment, the following activities were undertaken. We began by establishing the scope of the assessment in terms of the type of stakeholders to be engaged and the topics to be discussed with them. Based on this and the understanding of the project activities, we developed stakeholder-wise

questionnaires to ascertain factors including the rationale for supporting the program, the implementation process, challenges encountered and stakeholder feedback about the efficacy of the program. The findings and recommendations arising out of this process are mentioned in the subsequent sections of the report.

4.1 Theory of Change

The THEORY OF CHANGE FRAMEWORK (ToC) for the given program is illustrated below:



| Theory of Change (ToC) | | | | |
|--|---|--|---|---|
| Need | Input | Output | Outcome | Impact |
| Improving the livelihood of farmers and restoring the forest ecosystem by increasing the cultivation of medicinal plants | <ul style="list-style-type: none"> ➤ Establishing a sapling nursery ➤ Providing saplings to farmers ➤ Training session on cultivation method for farmers ➤ Training sessions on proper harvesting techniques and harvest time | <ul style="list-style-type: none"> ➤ Sustained supply of saplings ➤ Proper planting and cultivation of saplings by farmers ➤ Efficient wild harvesting by forest collectors | <ul style="list-style-type: none"> ➤ Healthy growth of saplings resulting in maximum yield ➤ Improvement in the income of forest collectors | <ul style="list-style-type: none"> ➤ Creating a sustainable source of income for the farmers, while also promoting the conservation of biodiversity and traditional medicinal practices. |

4.2 Logical Framework Model

A LOGICAL FRAMEWORK MODEL is created against the identified ToC to reflect the identifiable indicators, means of verification, and assumptions, as given below:

| Log Frame Analysis (LFA) | | | | |
|--------------------------|---|---|---|--|
| | Project Summary | Indicators | Means of Verification | Assumptions |
| Impact ↓ | <ul style="list-style-type: none"> ➤ Creating a sustainable source of income for farmers, while also promoting the conservation of biodiversity and traditional medicinal practices. | <ul style="list-style-type: none"> ➤ Improvement in the quality of life of farmers and forest collectors ➤ No. of saplings planted/ area brought under cultivation | <ul style="list-style-type: none"> ➤ Beneficiary survey ➤ KIIs with NGO program teams ➤ KII with Dabur Scientists' team | N/A |
| Outcomes ↓ | <ul style="list-style-type: none"> ➤ Healthy growth of saplings resulting in maximum yield ➤ Improvement in the income of forest collectors | <ul style="list-style-type: none"> ➤ % of yield per plant ➤ % increase in income of the farmers and forest collectors | <ul style="list-style-type: none"> ➤ Beneficiary surveys ➤ KIIs with NGO program teams ➤ KII with Dabur Scientists' team | <ul style="list-style-type: none"> ➤ Farmers have adequate market linkage to get a fair price for the yield |
| Output ↓ | <ul style="list-style-type: none"> ➤ Sustained supply of saplings ➤ Proper planting and cultivation of saplings by farmers ➤ Efficient collection and selling of forest produce by forest collectors | <ul style="list-style-type: none"> ➤ No. of nurseries created ➤ Mortality rate of saplings ➤ Changes adopted in forest produce collection methods and sales channels | <ul style="list-style-type: none"> ➤ Beneficiary surveys ➤ KIIs with NGO program teams | <ul style="list-style-type: none"> ➤ Climatic conditions are in favour of healthy growth of saplings |
| Input ↓ | <ul style="list-style-type: none"> ➤ Establishing a sapling nursery ➤ Providing saplings to the farmers ➤ Training session on cultivation method for farmers ➤ Training sessions on proper harvesting techniques and harvest time for forest collectors | <ul style="list-style-type: none"> ➤ No. of nurseries established ➤ No. of farmers reached. ➤ No. training sessions conducted | <ul style="list-style-type: none"> ➤ Beneficiary surveys ➤ KIIs with NGO program teams | <ul style="list-style-type: none"> ➤ Farmers have sufficient resources to cultivate saplings properly |

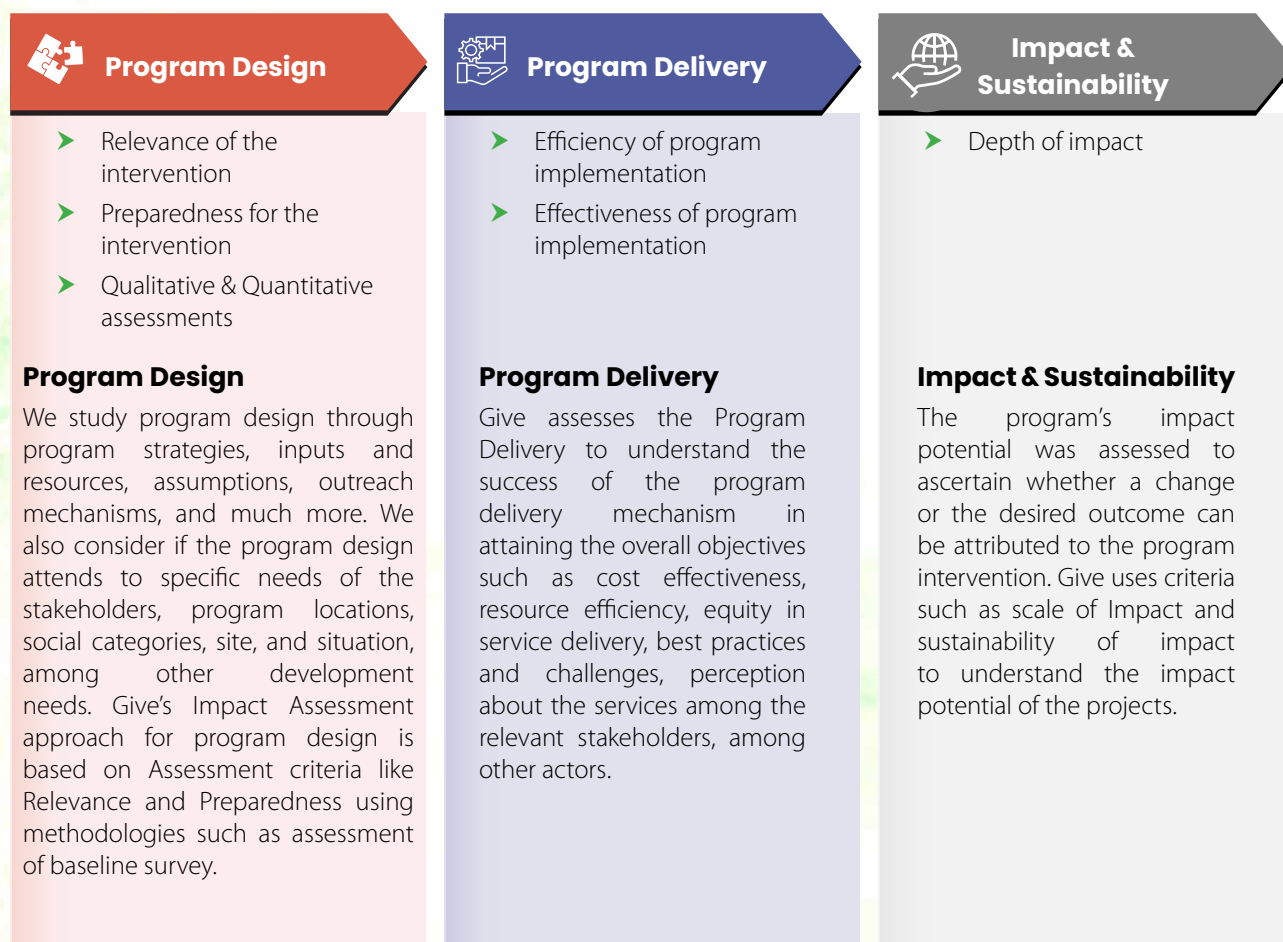


Interaction with farmers at Sital

4.3 Three-Point Assessment Framework

Based on the ToC and the LFA created, we examined the relevance of services, the preparedness for program activities, qualitative and quantitative assessments, efficiency, and effectiveness of delivery of services as well as any innovations that may have been implemented on the ground.

The impact assessment findings are further anchored around **Give's Three-point Assessment Framework** as illustrated here.



5 Methodology Adopted



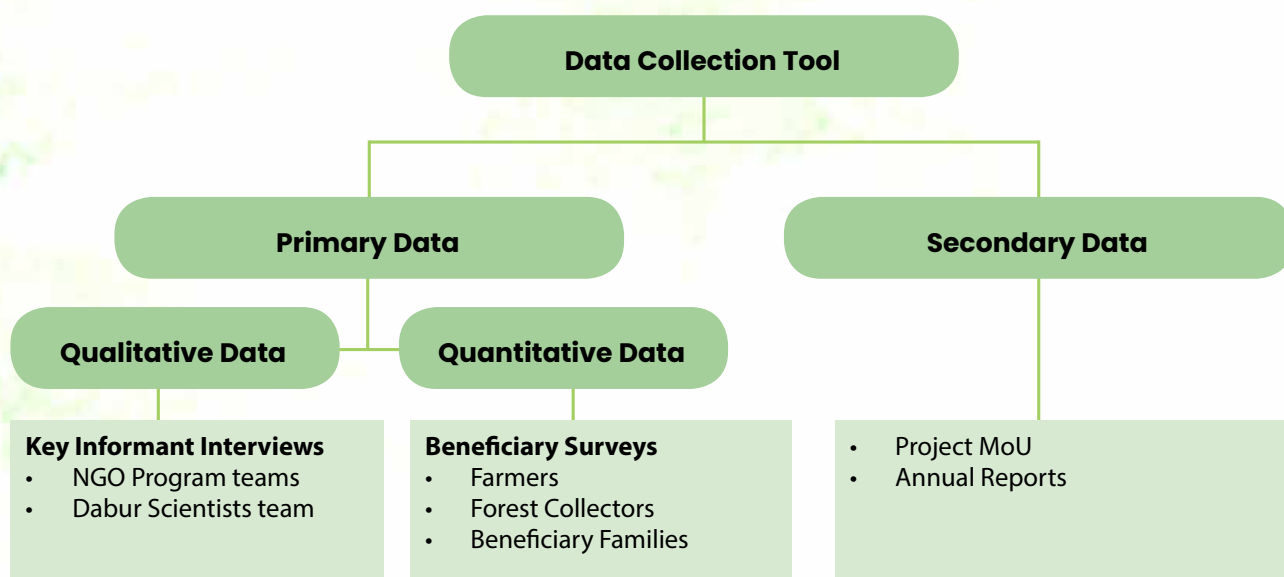
Kutki plantation in Sarmata Village

We initiated the impact assessment study by identifying the key stakeholders for the project. These stakeholders were ratified in consensus with the implementing partner. The study takes a 'mixed method' approach, which includes both qualitative as well as quantitative data capture and analysis.

The quantitative tools provide value to key indicators related to awareness, adoption, and quality. It also maps the outputs against the targets and outcomes perceived

by the beneficiaries. On the other hand, the qualitative method and approaches provide a better understanding and help to build a storyline for the achievements and gaps in the program from the lens of immediate stakeholders involved in the program implementation, other than the beneficiaries. A qualitative study gives substantiated evidence for a better understanding of the processes involved in the program implementation. Thus, the 'mixed method' approach also helps in developing a framework for gap identification and course correction.

5.1 Data Collection



Primary Data: Primary data is the key to collecting first-hand information as evidence from the beneficiaries and stakeholders on the interventions. It allows us to understand the benefits delivered, its effectiveness and key challenges to assess the impact created by the program and arrive at recommendations that enhance it.

Secondary Data: For secondary data collection, the project MoU, and annual program reports were referred. These documents gave high-level insights about the projects, including the inception and implementation phase along with the processes followed.

Sample Size:
204

Tools of Data Collection:

- Questionnaire Survey
- Focus Group Discussion
- Key Informant Interviews

Successful Interaction:

- Farmers
- Forest Collectors
- Beneficiary families
- Scientists
- Trainers
- Program team members.

5.2 Sampling Strategy

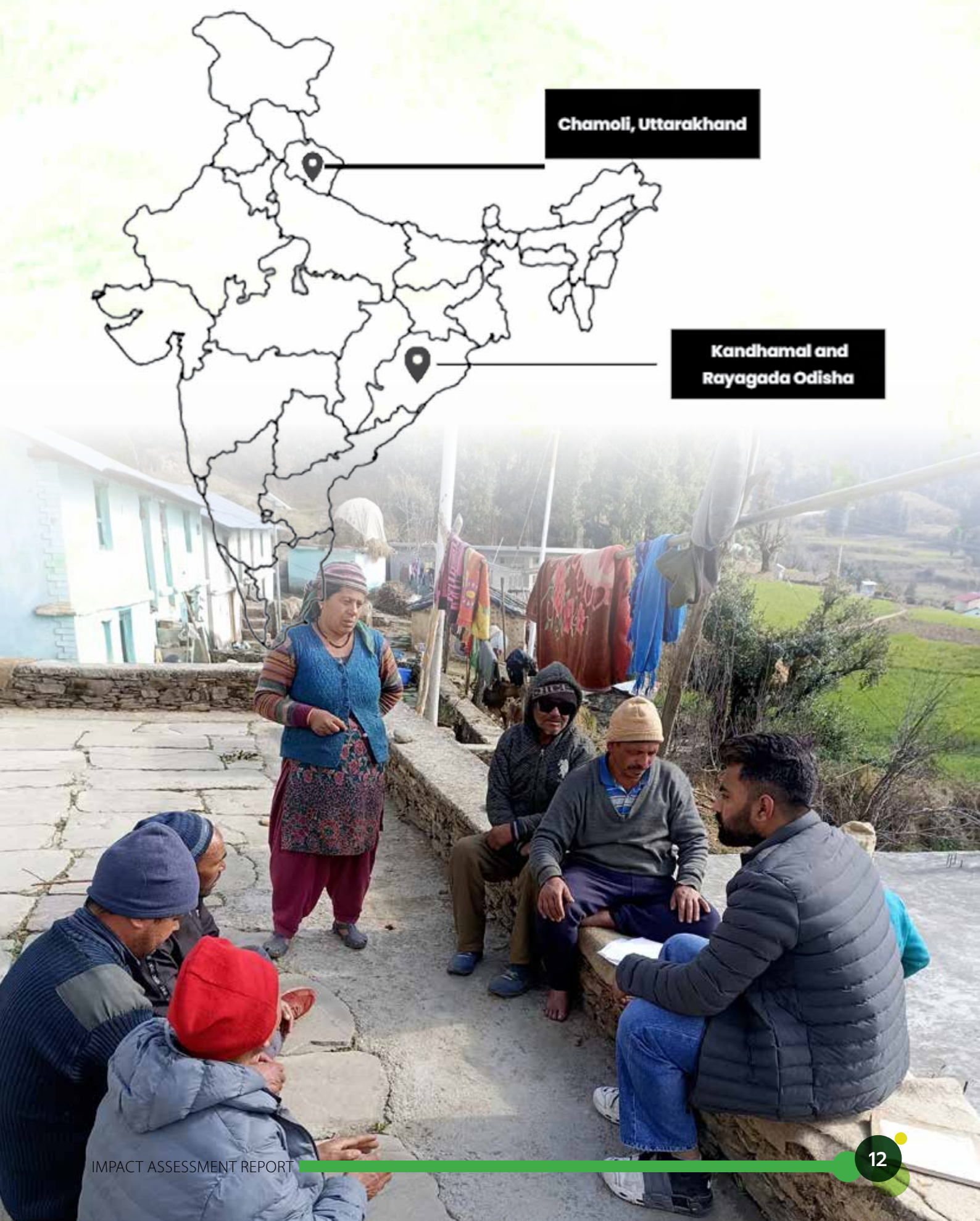
The beneficiary sample size is further distributed across a sample of program location as per the following Table:

| Location | Direct and In Direct Beneficiaries | Sample size achieved |
|--------------|------------------------------------|----------------------|
| Odisha | Forest Collectors | 90 |
| | Farmers | 15 |
| Uttarakhand | Forest Collectors | 15 |
| | Farmers | 41 |
| | Beneficiary Families | 37 |
| Total | | 198 |

Additionally, Key informant interviews is undertaken with key program stakeholders to capture crucial program insights:

| Stakeholders | Sample size achieved |
|------------------|----------------------|
| NGO Program Team | 4 |
| Scientists | 2 |

5.3 Sample Locations for Primary Data Collection



6 Analysis & Findings

Descriptive statistics (basic features of the data including frequencies, counts, and percentages), comparative analysis (before and after comparisons), and content analysis (for qualitative data to interpret and analyze unstructured textual content into manageable data) were done to analyze and interpret the data collected. Qualitative data were analysed using a thematic analysis approach. The findings for the program are organized as per the three-point assessment framework described earlier.

6.1 Program Design

The evaluation assessed the relevance of the project design and the interventions to the local context and the specific needs of the community. It studied how the project incorporates risk management processes and how efficiently various stakeholders were engaged in the process.

The interaction with the NGO partners has brought to the fore that the project aims at restoring the targeted species in the forest and becoming a means of the nutrition and wellness industries' value chain. In addition to the conservation of medicinal plants, it focused on reduced forest collection of the plants but created a sustainable source in the farming area. The evaluation identifies that the

project rationale was relevant to the geographical location, and the livelihood profile of the community is relevant as it contributes to the economic development of the families while conserving some of the medicinal plant species.

The project approach of introducing high-density plants with short rotation was appropriate as it provides short-term benefits for the farmers. The project selection of beneficiaries considering their ability to support establishment and labour cost with the suitability of the terrain and availability of irrigation facilities were relevant to the project and the beneficiaries. In addition, project linkage with technical agencies and marketing contributed significantly to the success of the project.

6.2 Program Delivery

The efficiency of the intervention is analyzed based on how well resources were used in terms of the activities conducted. Effectiveness is analyzed based on the extent to which the intervention has achieved its objectives as outlined in the project proposal. The lens adopted for the scope of the impact assessment is to analyze both efficiency and effectiveness through each of the project objectives.



Interaction with the Project Team at their office in Bhubaneswar



Farmer overseeing Kutki plantation in Kanol village

Efficiency and Effectiveness

► Mobilization of seeds from local sources and technical partners with in-situ conservation of saplings before transiting to the agri-field

The project has used locally available seeds (mainly propagated through the greenhouse, nursery and in-house facilities) and the plant species supplied by Dabur India Limited for cultivation. It has also used the technical knowledge of research agencies and scientists to improve the services to the farmers.

While selecting the geographical area, the project has considered the geographical features (altitude, temperature, rainfall, terrain, soil, etc.) and the irrigation facilities available. It ensured that the land was available for a period of 2 years, considering the rotation period

of various plants. A scientific process was followed during the process to ensure the survival of saplings. It is observed that the seeds germinated and grown in a central nursery system for 3 3-month period. The saplings were handed over to the farmers in polypods and were instructed not to go for immediate farming in the agricultural field. These measures significantly contributed to the survival of the saplings. In-situ conservation of the saplings before introducing them to the agri-field added to their survival to a great extent. -Plants supplied by Dabur India were also supplied in pots with proper instructions to the beneficiaries.

Farmers' willingness to support labour costs and establishment expenses was a prime criterion in providing saplings to them. It helped ensure a sustainable transition of saplings to the field.



Interaction with a farmer and his family in Sital

However, in the farmer's survey, farmers suggested that the Chirayita saplings supplied by Dabur India did not survive as the terrain and altitudes were not considered while selecting the geographical areas. The plant requires a high altitude and slopy terrain, which was not met in real situations.

➤ Introduction of high-density medicinal plants with a short rotation period

Except for a few species, the rotation period of saplings was less than 24 months and the introduction of high-density medicinal plants with short rotation periods ensured immediate income for the farmers. A sustainable and eco-friendly livelihood option was established that has the potential enough to protect the forest resources from exploitation.

➤ Collaboration with local NGOs and forest department for technical support and marketing

The project was implemented in collaboration with the state forest department and the implementing agencies that work on forest sector development in Odisha to render technical support for the beneficiaries.

Agencies like HRDI (Herbal Research and Development Institute), Organic India, Humana India, and Udyogini supported the project in Uttarakhand, both in technical expertise and market linkage aspects. The state forest department of Uttarakhand remained as a technical expert, whenever needed.

| State | Plant Varieties |
|--------------------|---|
| Odisha | Shyonak (<i>Oroxylum indicum</i>), Padal (<i>Stereopsrmum suaveolens</i>), Bel (<i>Aegle marmelos</i>), Agnimoth (<i>Premna integrifolia</i>) and Gambhari (<i>Gmelina arborea</i>) |
| Uttarakhand | Kutki (<i>Picrorhiza kurroa</i>), Atish (<i>Aconitum heterophyllum</i>), Kuth (<i>Saussurea costus</i>), Jatamasi (<i>Nardostachys grandiflora</i>), Kapoor Kachari (<i>Hedychium spicatum</i>) |

Risk Management Systems

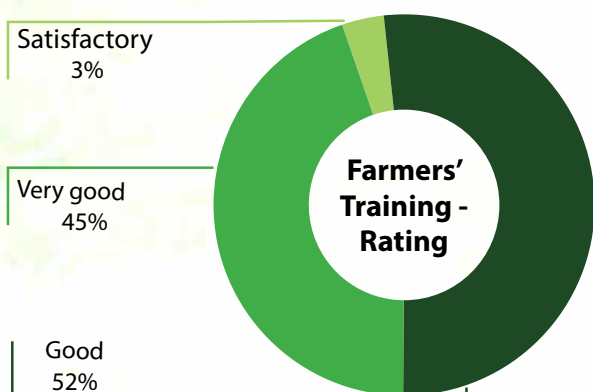
➤ Extra stock: Keep additional saplings.

Both the project locations kept extra saplings against the actual requirements considering the vulnerabilities. This approach could overcome the risks of slow germination and damage during transportation and transplantation. Such damaged saplings were immediately replaced with excess stock.

➤ Regular monitoring visits: The NGO program teams conduct monitoring visits (mostly monthly) to ensure that the farmers are cultivating the plants properly. WhatsApp is used as a medium for monitoring plantations through photos/ videos. Baitarani and High Altitude Plants Physiology Research Centre (HAPPRC) have deployed community resource persons/ field staff in the beneficiary locations for regular monitoring. For villages in Uttarakhand that are inaccessible by motorable roads, telephonic monitoring is undertaken. At each plantation site, apart from beneficiaries, the

implementation team and community mobiliser visit these sites. From the state office, the state coordinator and Dabur scientists also make field visits and monitor the whole process. Dabur senior scientists and forest dept officials also monitor the whole process and provide technical support.

Training for Farmers



The farmers were trained on the planting, management and harvesting before the distribution of samples. A few of them were oriented on the processes of nursery rearing as well as to ensure local management of resources for long-term sustainability. The interaction with the farmers revealed **only 78.6% of farmers confirmed their participation in the orientation meetings/training**. However, the training missed discussing the harvest process in detail. Only 76.8% of participants shared that the training cleared all their doubts regarding the end-to-end cultivation cycle of herbs/medicinal plants.

The trainings were organized twice a year comprising basic and advanced level workshops. The advanced-level workshops at different locations were targeted to selected farmers who have been early adopters and are influential in adapting the techniques oriented by the scientists of Jivanti Trust and researchers from the Forest Research Institute. Such training provides an opportunity to learn more about the process and interact with the experts and the buyers. It helps them understand the market and its advantages. The training covered nursery rearing, forest in-situ conservation, harvesting and primary processing post-harvesting. The trained farmers were involved in seed treatment, preparation of mother bed, seedling raising, plantation and harvesting activities, as reported by the farmers.

Market Linkages and Guaranteed Buy-Backs

Support in marketing the products was an essential component of the project that contributed to the push factor in the economic benefits. Cumulatively **44.6% of the farmers are linked to the market** through some reliable sources such as Dabur, Organic India and NGOs to name a few. The NGO helps in the identification of vendors however, **12.6% go for direct sales in the local markets**. 48.2% of the farmers affirmed that the NGOs assisted them in market linkages. NGO partners also confirmed market linkages and buy-back policies. In addition to Dabur India, other actors like Emami, Zandu and Himalaya also buy the produce from the farmers.

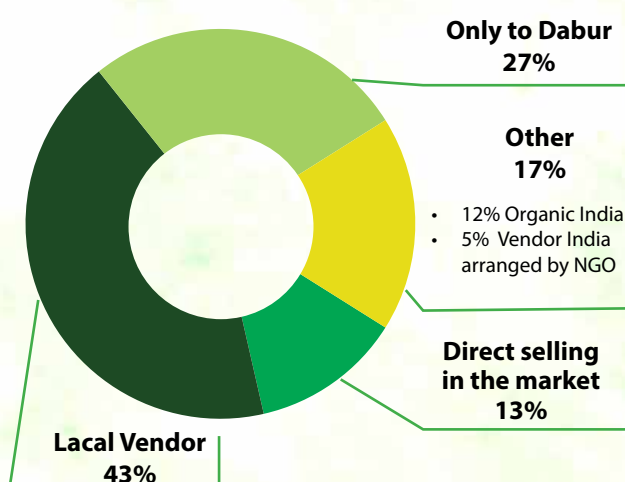
Market linkage was attributed as a value addition to the program by the stakeholders and the family members, which had significantly influenced economic growth.

Farmers suggested direct vendors from the company buying the produce to avoid exploitation of price from the middlemen.

6.3 Impact & Sustainability

The Impact Assessment identifies that the project has created significant & sustainable impacts on environment conservation, besides the economic development process identifies short-term and long-term impacts of the project that significantly influence the quality of living of the beneficiaries while contributing to the availability of sustainable agriculture produce and conservation of wild-varieties of medicinal plants.

Market Linkage Options





Interaction with farmers and forest collectors at Kandhamal, Odisha

Environmental Impacts

► **Conservation of wild varieties of medicinal plants and promoting their cultivation for industrial purposes**

The theory and design of the project propose the conservation of the genetic pool of medicinal plants, promoting its cultivation in scale for commercial purposes, to meet the needs of the Ayurvedic medicine industry. In addition to the seeds that were supplied by Dabur, project implementation agencies promoted collecting seeds from the forest. The saplings were preserved under nursery conditions and were given to the farmers considering the geographical contexts. In addition to ensuring a sustained supply of medicinal plants for the industry, it preserved the wild varieties of plants as well.

On a long-term basis, this approach can reduce dependence on forest sources for the plants that are essential for the preparation of ayurvedic medicines and related products.

► **Increase in cultivation land, suggesting alternatives to the traditional cultivation modes**

The project has made a significant contribution to expanding the total area under cultivation. It has

converted the wasteland as well as individual farmland, as part of common property resource (CPR) (according to the Forest Rights Act, 2006) into agrarian land. According to the implementing partners, every year additional 15% of land turning out to be around 15 acres in a village gets added to the project. Farmers and their families solicited this finding.

“Area of cultivation is increasing every year as farmers produce their own saplings and cultivate it”.

- A farmer in Ratgaon, Tharali, UK



Interaction with forest collectors in Rayagada, Odisha

Per interactions with farmers, 26.8% of the farmers have converted barren land into cultivable land under the project. Whereas **73.2% of farmers used their cultivable land for medicinal plant farming**, either as an off-season crop or as an alternate crop. For 2.7% of farmers, this is the value addition of the project.

However, they have also expressed their concern about the diminishing area available for usual cultivation. The agreements with the companies to harvest a certain amount of medicinal plants per season affect usual farming. Hence, approaches/models inclusive of inter-cropping would be more preferred than cropping cycles.

➤ **Reduced use of chemical fertilizers**

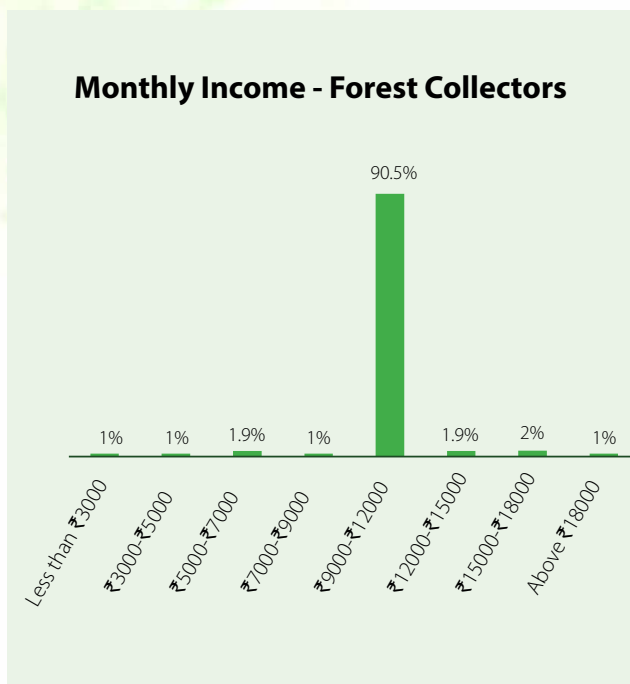
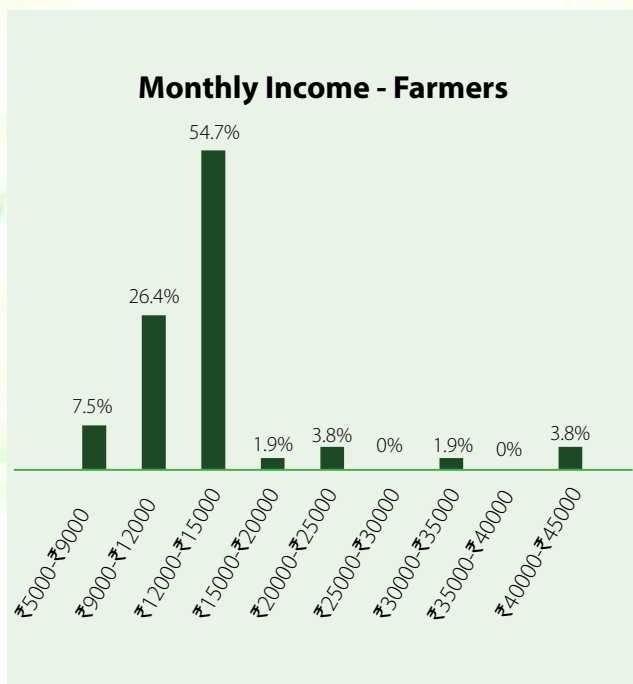
The farmers adopt organic farming practices with no usage of chemical fertilizers. All farmers use manure (cow dung, plant waste) as fertilizers. The practice enhances the market value of the produce and plays a critical role in environmental conservation, reducing chemical contamination of soil, and secondary pollution of water and air. Hence, the adverse effects of farming on the environment are mitigated.

Economic Benefits

➤ **Reporting increase in income with diversified income sources**

Cultivation of medicinal plants with assured market linkages and buy-back policies and the rise in cultivation area has resulted in an increased income for the farmers. **87.5% of farmers reported that they have an increase in income on average by 11%.** The interaction with their family members further validated the finding of 21.6% of respondents stating a spike in their income was a project success. Furthermore, 5.4% suggested that their family income sources diversified with the introduction of the cultivation of medicinal plants. The direct outcome of the income spike has led to investment in education and asset accumulation as part of the change in the quality of life. In addition to farming, villagers are into petty businesses and educated children have joined private sector jobs.

NGO partners also affirmed an increase in income for farmers. Representatives from Baitarani Initiatives, Bhubaneswar, stated that the project ensures an additional income with an average 20% increase for



individual farmers, which accounts for ₹25,000 a year. Comparative analysis of monthly income for farmers and forest collectors also verifies increased income for farmers.

From the graph, the monthly income for farmers ranges between ₹5,000 to ₹45,000 whereas the monthly income of forest collectors ranges between ₹2,000 to ₹18,000. High-income forest collectors do not opt for forest collection as their primary income source. Farmers income ranges are higher compared to the forest collector and only 33.9% earn less than ₹12,000 a month.

► Improved Quality of Living and Education status of children

With its potential contributions towards household economic development, the project has resulted in enhancing the quality of life for the target population and its beneficiaries. The KII with NGO partners affirmed that most of the farmers invested additional income on family expenses, household assets and children's education. **73.2% of the respondents** shared that they **could create new household assets with increased income liquid and productive assets** that can improve their economic status and quality of life. In addition, **58.9% of farmers reported that they have upgraded their housing, in most cases from a kutcha house to a pucca house.**

A significant and long-term outcome of the project is the increased investment in children's education. **85.7% of the farmers stated that they have used the additional income for educating their children, including girls.**

Families suggested that most of the young adults are pursuing their higher education and some of them are studying in prestigious institutions. They also affirmed that most of the educated youth are now working, contributing towards HH's economic development sustainably. It is important to note that the primary dependence on the agrarian sector is reducing as young adults prefer to enter the service sector, per the interaction with families.

Interactions with families also found that the women are engaged in agrarian activities and thereby there is an increase in several people engaged in livelihood activities, hence adding to the income of the family. In addition, the infrastructure development of the state with improved road connectivity, increased market access, ensured income and reduced risks of crop spoiling after harvest.

Families identified diversification and multiplication of the income sources as the key value addition of the project. As medicinal plants were introduced, crop diversity was introduced, guaranteeing additional income. The market value of the products is ensured with assistance in market linkages and buy-back policies. The farmers could earn more, save more and invest in their children's education.

Sustainability


The assessment observes a high level of community awareness and ownership of project activities and impacts. 97.3% of the respondents acknowledged that they are aware of the program and the activities of the implementing NGO. They could relate to the short-term and long-term impacts of the project as well. Assessing the facts, it can be inferred that the sustainability of project activities and their impacts are likely to be sustained.

Since farmers generate their saplings and cultivate them without depending on the agencies to provide them, the continuity of the project is likely. Around 18.2% of the farmers have stated that they can manage farm-related challenges on their own or with the help of fellow farmers. They stated that their experience in farming and the training helped

them to self-help in farm-related challenges, ensuring the sustainability of project activities on agency withdrawal.

Market linkage opportunities exist, and more players prevail on the ground than the implementation agency. While **26.8% of the farmers sell their products only to Dabur**, 42.9% have access to local vendors and 12.5% sell them directly in the open market. Other NGO actors support marketing for 17.9% of farmers.

In addition, the system for technical support including the research team is well established in the project sites. NGOs have established a good network with the divisional research teams and other NGO actors that can support research and technical solutions for the farmers.



A farmer explaining the Kutki plantation process

7 SWOT Analysis

A SWOT analysis is carried out to understand the program's strengths, weaknesses, opportunities, and threats. It was conducted from the responses received

from the program team and other implementation-level stakeholders, at the same time considering the beneficiary feedback.

| Strengths | Weakness |
|--|---|
| <p>Promotes cultivation of indigenous herbs and thereby helps maintain the ecological balance.</p> <p>Possesses the potential to increase farmers' income by 15%-50%.</p> <p>The program has been successful in establishing sapling nurseries and a huge majority (~90%) have also attained in-situ seed production in the nurseries.</p> <p>The program has been successful in augmenting the income of forest collectors.</p> | <p>There is potential to improve the sapling transplantation process to ensure all saplings are delivered in good condition.</p> |
| Opportunities | Threats |
| <p>The program should identify climate-resilient species of herbs based on the target geographies that can be cultivated, will require minimal supervision, and bear a fairly profitable market price.</p> <p>Establishment of nurseries near the beneficiary villages to reduce the mortality of saplings during transportation.</p> | <p>Mortality of saplings due to unavailability of resources (water for irrigation, fertilizers/insecticides) required for proper care of the saplings</p> |



Plantation at HAAPRC Nursery, Kulsari



8 Conclusion and Recommendations



Interaction with forest collectors in Rayagada, Odisha

Give feels that the achievements of the project in FY 2021-22, such as establishing sapling nurseries and planting trees, can contribute significantly to its long-term objectives of restoration of the forest ecosystem and augmenting the income of farmers.

By establishing sapling nurseries, the project has ensured a continuous supply of tree saplings, which can be used to restore degraded forests and enhance forest cover. As these trees grow, they can provide several ecosystem services, such as carbon sequestration, soil conservation, and biodiversity conservation.

Furthermore, when the plants and plant produce are ready for harvest as per their gestation periods, the farmers can enhance their income and increase their economic resilience. Depending on the type of plant species planted such as herbs, shrubs and trees, farmers can gain income from their produce like timber, fruits, nuts, seeds, stems,

leaves, flowers roots and young roots sometimes whole plant parts in the form of high-value non-timber forest produce (NTFP).

The high-altitude Himalayan plant species e.g., Kuth (*Saussurea costus*), Kutki (*Picrorhiza kurroa*), Atis, (*Aconitum heterophyllum*), Chirayita (*Swertia chirayita*) Sugandhbala (*Valeriana wallichii*), Jatamasi (*Nardostachys grandifolra*) and Talishpatra (*Taxus wallichiana*) that belong to the red list category of IUCN and CITES will pay great source of local livelihood to the farmers, while the low-altitude species like Bael (*Aegle marmelos*), Agnimontha (*Premna integrifolia*), Syonak (*Oroxylum indicum*), Padal (*Stereospermum suaveolens*), Gambhari (*Gmelina arborea*) will also help enhance income. This income diversification can reduce their dependence on a single crop or activity, which can be vulnerable to market fluctuations or climate variability.

Overall, the activities conducted in this project, if sustained over the long term, can lead to a significant restoration of forest ecosystems and the augmentation of farmers' income. These outcomes can improve the well-being of local communities, enhance ecological sustainability, and contribute to global efforts to address climate change and biodiversity loss.

Gaps/challenges

- The locations are water-scarce areas and hence the primary challenge in irrigation and post-harvesting primary processing includes washing away the produce. Canals, the primary irrigation source, are old and are blocked with silt. Farmers still depend on rainfall mostly and follow rain-fed agriculture.
- Landslides during rainy seasons affect transportation and marketing. Some plants such as Kutki (*Picrorhiza kurroa*) are labor and cost intensive.
- Chirayita (*Swertia chirayita*) plants require slopy terrains and high altitudes, so the plants did not grow in other geographical locations. Saplings should be distributed considering the geographical features.
- Since the agriculture fields are located close to the reserve forests, wild animals usually enter the fields and destroy the saplings.
- Soil fertility is an important factor in determining production and profit. The soil is not fertile and organically, it requires proper soil treatment for better yields.

Recommendations

Most of the challenges are specific to the geographical area and hence require long-term intervention to address them by engaging government and non-government partners.

- Improve irrigation facilities by providing pipes and tanks for water storage.
- Establish fences for grazing control and protecting saplings from wild animals
- Regulate seedling prices with MSP and reduce nursery costs. Provide saplings that suit the geographical features
- Extend contract periods to 3 years and arrange provisions for soil testing. Engage with Krishi Vigyan Kendra (KVKs) for nursery-to-farm replanting of herbs/medicinal plants.
- Linking farmers with the relevant state government schemes should be an integral part of the MoU with each implementation partner.
- Establish collaborations with industries and research organizations. Generate research reports based on the demands of the field and disseminate the findings for the benefit of the beneficiaries.
- The CSR team of Dabur India should pay periodic monitoring visits on the ground to understand the programmatic challenges or a need for mid-course correction. Dabur India deploys regional resources for such visits.



Interaction with forest collector at Ghes, Tharali





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