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A Quarterly Newsletter of **Odisha Forestry Sector Development Project**, Phase-II April-June 2025, VOL-9, ISSUE-1

From Project Director's Desk

Odisha Forestry Sector Development Project, Phase-II (OFSDP-II) is not just a project; it is a mission to mobilize resources and optimize fund utilization, with a focus on empowering community stakeholders. By strengthening their capacities and boosting income generation activities through dedicated support and convergence initiatives, the project has opened new avenues for prosperity of the forest fringe dwellers in the project areas.

One of the cornerstone achievements of OFSDP-II has been the mobilization of livelihood support to thousands of Common Interest Groups (CIGs), Self Help Groups (SHGs), and the Poorest of the Poor (PoPs). Through inter-sectoral convergence and project assistance, these groups have been able to showcase and sell their produce at prestigious platforms such as the Adivasi Mela, State Level Kalinga Herbal Fair, Adi Bazar, Pallishree Mela and now the State and District level Vikash Mela. The data reveals at least two crore rupees of revenue has been generated from the business of different state and district level fairs only in last couple of years by the participating VSSs of OFSDP-II.

As I write my last editorial for the Banayana this month, its heartening to observe the a quiet financial revolution is unfolding in the forest corridors of Odisha. The Odisha Forestry Sector Development Project Phase II (OFSDP-II), through its Revolving Fund initiative, is doing more than conserving trees—it's cultivating economic independence, social equity, and long-term sustainability in forest-fringe communities.

At Rs. 2 lakhs per Vana Surakhyam Samiti (VSS), the fund might seem modest on paper. But in reality, it's a lifeline for over a thousand villages that once relied heavily on forest resources for survival.

Along with the reports of Vikash Mela from different parts of the Forest Divisions, a comprehensive analytical report on Revolving Fund (RF) utilization and repayment is placed in this edition of Banyan.

The report's findings as of June 2025 highlight both progress and potential. Utilization is strong, repayment patterns are encouraging, and participation continues to grow. But the real story here is bigger than numbers: it's about trust—trust in communities to manage their own. I am sure this analysis will reinforce our commitment to community participation in income generation measures in a long way.

Dr Meeta Biswal, IFS
PCCF (Projects) & Project Director
OFSDS

"What we are doing to the forests of the world is but a mirror reflection of what we are doing to ourselves and to one another"



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PARTCIPATION OF OFSDP-II IN VIKASH MELA HELD IN STATE AND DISTRICT LEVELS

OFSDS Highlights Community Enterprise at State-Level Vikash Mela & Food Festival 2025

A vibrant display of Odisha's green economy and grassroots entrepreneurship

The State Level Vikash Mela & Food Festival 2025, held from June 11 to June 18 at the bustling IDCO Exhibition Ground, became a grand stage where tradition met innovation, and forest-fringe communities showcased their journey towards sustainability and self-reliance. The event, organized by the Handloom, Textiles & Handicraft Development Department, marked its debut as a state-level celebration—and the Odisha Forestry Sector Development Society (OFSDS) made a remarkable impression.

The Odisha Forestry Sector Development Society (OFSDS) participated with distinction in the first-ever State-Level Vikash Mela & Food Festival 2025, held from June 11 to 18 at the IDCO Exhibition Ground, Bhubaneswar. Organized by the Handloom, Textiles & Handicrafts Department, Government of Odisha, this landmark event brought together a diverse mix of state departments, grassroots producers, and artisan communities to showcase development initiatives and celebrate Odisha's cultural and entrepreneurial spirit.

Representing the Forest, Environment & Climate Change Department, OFSDS was allotted eight exhibition stalls. These served as vibrant showcases for forest-based livelihoods, displaying a wide variety of non-timber forest produce (NTFPs), value-added goods, and environmentally friendly crafts produced by forest-dependent communities.

A total of 13 forest divisions participated under the OFSDS banner. Of these, ten divisions represented the Odisha Forestry Sector Development Project – Phase II (OFSDP-II), while the remaining three came from the Ama Jungle Yojana (AJY). Their collective presence brought together 19 Vana Suraksha Samitis (VSSs) and 21 Self Help Groups (SHGs), all of whom contributed to the diverse and dynamic product range featured at the event.

In total, 58 participants, including 30 men and 28 women from various SHGs and VSSs, along with field-level facilitators and officials, took part in the exhibition. To ensure wider participation, the stalls were rotated across two phases, giving each batch four days of direct engagement with the public and buyers.

The results were encouraging. Total sales across the eight-day event reached Rs. 20.84 lakh, reflecting both the quality of the products on offer and the strong interest from visitors. Items such as processed millets, forest honey, herbal products, hand-crafted goods, and sustainable packaging solutions drew particular attention.

Beyond commercial success, the Mela offered invaluable learning and exposure for participants. It allowed them to hone their marketing skills, understand consumer preferences, and establish connections for future business. More importantly, it highlighted how forest-based livelihoods—when nurtured with the right support—can play a vital role in promoting sustainable development and economic self-reliance.

OFSDS's participation demonstrated a clear commitment to empowering forest-fringe communities and integrating them into the broader development framework of the state.

Glimpses of OFSDS at State Level Vikash Mela 2025





SONEPUR DMU

OFSDP-II Makes a Mark at District-Level Vikash Mela in Sonepur

The District-Level Vikash Mela, held from May 11 to 18, 2025, at Sonepur, served as a vibrant platform to celebrate and promote developmental initiatives across sectors. Among the notable participants was the Odisha Forestry Sector Development Project Phase II (OFSDP-II), which engaged the public through a mix of informative displays, interactive activities, and cultural outreach.

A major attraction at the OFSDP-II stall was the distribution of seedlings at just ₹1 each—an effort aimed at encouraging green practices among the masses. Adding a creative touch, a selfie stand under the banner "Ek Ped Maa Ke Naam" drew attention to tree plantation as a tribute to motherhood, blending environmental concern with personal sentiment.

Various Self-Help Groups (SHGs) supported by the project showcased an impressive array of local products, ranging

from handcrafted items to eco-friendly goods, drawing considerable interest from visitors.

To visually communicate its ongoing efforts, OFSDP-II utilized LED displays and flex panels that illustrated key forestry and livelihood activities. One of the most appreciated moments came during a lively role-play performance by members of Siali VSS from Binka FMU. Their act conveyed messages on forest conservation, wildlife protection, fire prevention, and the importance of afforestation—and was recognized with a prize from the District Administration.

The DMU, Sonepur also received a Certificate of Appreciation on behalf of Forest, Environment & Climate Change Department for its impactful contribution, capping off a meaningful and well-received participation in the week-long event.



Siali VSS of Binka FMU received award from District Administration, Subarnapur towards conducting Awareness camp on Forest & Wils Life Protection at Vikash Mela-2025

BOUDH DMU

Empowering Local Enterprise: SHGs Shine at Boudh's Vikas Mela 2025-26

From June 12 to 18, 2025, the district administration of Boudh hosted the Vikas Mela 2025-26, spotlighting grassroots entrepreneurship and community-driven development. Over the course of the week-long event, six Self Help Groups (SHGs) under the Boudh DMU actively participated, turning the platform into a hub of local talent, tradition, and trade.

The SHGs exhibited a diverse range of products—from pulses and bamboo crafts to incense sticks, phenyl, vermi compost, and vermi wash. These items not only reflected the groups' deep connection with natural and locally sourced materials but also showcased their evolving entrepreneurial skills. Collectively, the participating groups recorded total sales of Rs. 62,654—a significant achievement underscoring their growing market potential.

Behind this successful engagement was steady guidance from the Divisional Forest Officer (DFO), whose hands-on support helped the groups navigate the event with confidence. The district-level officials present commended the SHG members for their commitment, creativity, and professionalism throughout the fair.

More than just a sales opportunity, the Vikas Mela served as a launch pad for strengthening market linkages, boosting confidence among SHG members, and reinforcing the role of community-based enterprises in sustainable livelihoods. Events like these continue to build momentum for inclusive rural development and help turn local knowledge into lasting economic impact.



JHARSUGUDA DMU

DMU Jharsuguda Earns Recognition at VIKASH MELA 2025

From June 12 to 18, 2025, the VIKASH MELA, organized by the Panchayati Raj & Drinking Water Department in Jharsuguda, brought together stakeholders from across the district to celebrate and showcase developmental progress. Among the standout participants was the Divisional Management Unit (DMU) of Jharsuguda, which represented the Odisha Forestry Sector Development Project – Phase II (OFSDP-II) with a strong and engaging presence.

The DMU's stall drew crowds with its well-thought-out design and clear messaging. Visual displays, banners, and audio-visual presentations highlighted the ongoing work under OFSDP-II—particularly in sustainable forest management,

biodiversity conservation, and livelihood development. The stall effectively conveyed how community-driven forestry initiatives are contributing to long-term ecological and economic resilience.

A key attraction was the display and sale of forest-based products from Self-Help Groups (SHGs) and Vana Suraksha Samitis (VSSs). Items ranged from agricultural produce and NTFPs to traditional crafts and appliquéd work, drawing strong interest and resulting in sales of approximately Rs. 15,000. These products represented the skill, effort, and enterprise of local communities working to create sustainable livelihoods from forest resources.

The DMU stall earned praise from a wide range of visitors, including senior district officials and prominent state leaders such as the Hon'ble MLA of Jharsuguda, the Minister of Revenue and Disaster Management, and the Minister of Health & Family Welfare. Their visit and appreciation were a morale booster for the team and SHG members.



BARIPADA DMU

DMU Baripada Showcases Green Innovations at District-Level Vikash Mela 2025

The District-Level Vikash Mela 2025 was held from June 12 to 18 at Chhau Padia, Baripada, organized by ORMAS under the Panchayati Raj & Drinking Water Department with the support of the Mayurbhanj District Administration. The event celebrated one year of governance under the present state administration, providing a comprehensive exhibition of development milestones across sectors.

Among the key participants, the Divisional Management Unit (DMU) of Baripada Forest Division stood out with a stall dedicated to showcasing sustainable livelihoods and forest-based innovations. The stall was inaugurated by Hon'ble Rajya Sabha MP Smt. Mamata Mohanta and Hon'ble Baripada MLA Sri Prakash Soren, in the presence of Divisional Forest Officer Sri A Uma Mahesh and ACF Sk Meherban Ali.

Two Self Help Groups—Annapurna SHG from Tulasoghutho VSS (FMU Kaptipada) and Maa Manasa SHG from Palasabani VSS (FMU Bangriposi)—presented an impressive array of eco-friendly products. These included non-timber forest

In recognition of its presentation, outreach, and impact, the DMU Jharsuguda stall was awarded Third Best Stall and received an official letter of appreciation—marking a proud achievement and further validation of OFSDP-II's grassroots impact.



products (NTFPs), herbal goods, and bamboo handicrafts. The display reflected not only the resourcefulness of the SHGs but also their commitment to conservation-based livelihoods rooted in local ecology.

To enhance public engagement, the DMU also presented a series of visual exhibits highlighting key interventions under the OFSDP-II project. Banners depicted community efforts in forest fire prevention, wildlife protection, and programs like "Ama Similipal" and "Anukampa Yojana." Evening video presentations in front of the stall drew steady crowds, sparking meaningful conversations around forest stewardship and climate resilience.

The Mela concluded with an address by Hon'ble Chief Minister Sri Mohan Charan Majhi, reinforcing the state's focus on participatory development. DMU Baripada's contribution stood as a clear example of how grassroots efforts can align with policy vision to create lasting impact.

SUNDARGARH DMU

Sundargarh Forest Division Promotes Community Enterprises at Vikash Mela 2025

As part of a state-wide initiative to highlight developmental progress and grassroots achievements, Vikash Mela 2025 was conducted at both district and state levels. The exhibition served as a platform for departments, projects, and community institutions to present their milestones from the past year and connect directly with the public.

In Sundargarh, the district-level event was held from June 12 to 18, 2025, under the guidance of the District Collector and in collaboration with the Odisha Forestry Sector Development Project – Phase II (OFSDP-II). The Sundargarh Forest Division actively participated, showcasing the contributions of Vana Suraksha Samitis (VSS) and Self Help Groups (SHGs) across forest conservation, livelihoods, and socio-economic development.

Five SHGs from various VSSs under Lephripara, Hemgir, and Ujalpur Forest Management Units (FMUs) took part in the exhibition. Their stalls featured locally processed products such as hand-pounded ragi, dried mahua flowers, and bamboo crafts—each telling a story of sustainable resource use and rural enterprise. The exhibition was not only a sales opportunity but also an awareness campaign.

SHG members and project staff engaged visitors on topics like scientific forest management, biodiversity protection, and the importance of community involvement in natural resource governance.

Over the course of the seven-day fair, the participating SHGs generated total sales worth Rs. 2,07,370 and earned a combined profit of Rs. 52,480—an encouraging outcome for grassroots entrepreneurs working at the forest-village interface.

At the state level, Vikash Mela 2025 was held from June 11 to 18 at the IDCO Exhibition Ground in Bhubaneswar. Representing Sundargarh, the Maa Santoshini SHG of Birtola VSS (Sundargarh FMU) showcased and sold hand-puffed rice, ragi, mahua, and other forest-based goods. The group reported sales of Rs. 96,160 and a net profit of Rs. 27,320 during the weeklong event.

Participants expressed deep satisfaction with the exposure and opportunities the Mela provided. Beyond profits, the event strengthened their skills in marketing, value addition, and customer engagement—laying a stronger foundation for future growth and self-reliance.



DHENKANAL DMU

Showcasing Green Enterprise: DMU Dhenkanal at District-Level Vikash Mela 2025

The District-Level Vikash Mela 2025 was held from June 12 to 18 at Mahisapat, Dhenkanal, marking the first time such an event was hosted in the district. Organized under the aegis of the District Administration, the event aimed to highlight developmental efforts and empower local communities by providing a platform to promote grassroots enterprise.

The Dhenkanal Forest Division made a notable contribution through the Odisha Forestry Sector Development Project – Phase II (OFSDP-II), with six Forest Management Units (FMUs) actively participating. A total of 11 Self Help Groups (SHGs) and seven Producers of Produce (PoPs) from various Vana Suraksha Samitis (VSSs) took part in the event on different days. Their stalls featured a wide assortment of products including incense sticks, herbal and food items, pure honey, cashew, phenyl, turmeric powder, sal leaf plates, handcrafted wooden goods, bags, jewellery and more.

To support this initiative, the District Administration allocated two stalls specifically for the Forest Department, which were managed under OFSDP-II. These spaces were decorated with banners and posters illustrating the

project's achievements in promoting income-generating activities (IGAs) and convergence-based development. The visuals served to inform the public about how sustainable forestry initiatives can simultaneously promote ecological conservation and livelihood enhancement.

The exhibition was inaugurated by the Collector and District Magistrate of Dhenkanal, who visited the OFSDP-II stalls and held interactions with SHG members. He expressed appreciation for their work, particularly in areas like honey and cashew processing, and encouraged them to continue building their skills and expanding their markets.

Over six days, the SHGs recorded sales totaling ₹1.5 lakhs, with honey and cashew alone accounting for ₹25,000. The Mela provided participants not only with economic gains but also with much-needed exposure to urban consumers, helping them better understand market demands and refine their business strategies.

This first-of-its-kind initiative in Dhenkanal proved to be a valuable experience for all involved, reinforcing the potential of community-managed forest enterprises to thrive in diverse market settings.



SPECIAL FEATURE: CASE STUDY

ANALYSIS OF REVOLVING FUND UTILIZATION AND REPAYMENT UNDER OFSDP-II

By Swayam Mallick, IFS, JPD, (CME&S), OFSDP-II

INTRODUCTION

The Odisha Forestry Sector Development Project Phase II (OFSDP-II) is a flagship initiative aimed at enhancing forest ecosystems, strengthening community institutions and improving the livelihoods of forest-dependent communities. As part of its community empowerment and livelihood improvement strategy, the project has provisioned a Revolving Fund (RF) of ₹2,00,000 for each of the 1,211 Project Vana Surakhya Samitis (VSS). This fund is designed to facilitate access to affordable credit for Self-Help Groups (SHGs), Common Interest Groups (CIGs) and the Poorest of the Poor (PoP) within the VSS, enabling them to undertake income-generating activities and reduce their dependence on forest resources.

The RF serves as an important financial instrument to promote inclusive development, foster self-reliance among

vulnerable households and enhance gender equity by supporting women-led SHGs. The fund is expected to be managed and revolved at the community level through regular repayment and redeployment of loans, thereby creating a sustainable source of livelihood finance.

This report presents an analysis of the status of the Revolving Fund across the project VSSs as of June 2025. It reviews the allocation, disbursement, utilization and repayment performance of the fund, while also examining participation patterns across SHGs, CIGs, and PoP beneficiaries. The findings aim to inform decision-making and strengthen the effectiveness of the RF mechanism in contributing to the project's overall objectives of forest conservation and community development.

METHODOLOGY ADOPTED

The dataset that was analysed is presented in TABLE NO 2. PYTHON was used for detailed analysis. The relevant numerical columns were selected and their data types were explicitly converted to numeric types to prevent potential errors during model training. The cleaned DataFrame was then used for the subsequent steps.

(I) Linear Regression Model Development and Evaluation

A linear regression model was developed as depicted in TABLE NO. 1. This was used to predict 'REPAYMENT PERCENTAGE' based on the selected independent variables. The model was trained on the entire cleaned dataset. The performance of the trained model was evaluated using key regression metrics:

R-squared Score: The model achieved an R-squared score of approximately 0.884. This metric represents the proportion of the variance in the dependent variable ('REPAYMENT PERCENTAGE') that is predictable from the independent variables. An R-squared of 0.884 suggests that the model explains a substantial portion of the variability in repayment

percentages, indicating a reasonably good fit to the data. However, it also implies that about 11.6% of the variance remains unexplained by this set of predictors, suggesting that other factors not included in the model might also be influencing the repayment percentage.

Mean Squared Error (MSE): The Mean Squared Error (MSE) of the model is approximately 40.64. MSE is the average of the squared differences between the actual and predicted values. It provides a measure of the average prediction error. A lower MSE indicates better model performance. The value of 40.64 suggests that, on average, the squared difference between the actual and predicted repayment percentages is around 40.64. The Root Mean Squared Error (RMSE), which is the square root of MSE (approx. 6.37), can be interpreted as the typical magnitude of the prediction errors in the original units of 'REPAYMENT PERCENTAGE'.

(II) Interpretation of Model Coefficients

TABLE NO 1 depicts the model coefficients from the computed linear regression model.

TABLE NO 1: MODEL COEFFICIENTS OF THE FEATURES

Variable	Coefficient
Amount received by VSSs	1.604446e-06
Total Amount Sanctioned	-4.693672e-06
Total Amount Disbursed to Borrowing Entities	-4.911821e-06
No of SHG Recieved Loan from RF	-1.294603e-01
SHG Amount	-1.885001e-06
No of PoP recievied RF	-1.047368e-02
POP Amount	-2.105175e-06
No of CIG recievied RF	-3.733542e-02
CIG Amount	-9.216439e-07
MALE PERCENTAGE	-1.310629e-02
FEMALE PERCENTAGE	1.310629e-02
Repayment Amount	1.872713e-05



The coefficients from the trained linear regression model provide insights into the estimated change in 'REPAYMENT PERCENTAGE' for a one-unit increase in each independent variable, assuming all other variables are held constant. The coefficients are as follows:

Based on these coefficients:

Amount received by VSSs: The positive coefficient suggests that a higher amount received by VSSs is associated with a slightly higher repayment percentage.

Total Amount Sanctioned: The negative coefficient indicates that a higher total amount sanctioned is associated with a slightly lower repayment percentage. This could warrant further investigation to understand if larger sanctioned amounts are associated with higher risk or other factors affecting repayment.

Total Amount Disbursed to Borrowing Entities: Similar to the sanctioned amount, a negative coefficient here suggests that higher disbursed amounts are associated with lower repayment percentages. The strong positive correlation between sanctioned and disbursed amounts (as seen in the correlation matrix) means these coefficients should be interpreted together.

No of SHG Received Loan from RF: The negative coefficient

implies that a higher number of SHGs receiving loans is associated with a lower repayment percentage. This finding is significant and requires further exploration to understand potential reasons, such as the capacity of SHGs to manage repayments or the types of projects funded.

SHG Amount: The negative coefficient here, coupled with the negative coefficient for the number of SHGs, further supports the observation that increased financial involvement with SHGs might be linked to lower repayment rates.

No of PoP received RF and POP Amount: Both of these variables have negative coefficients, suggesting that a higher number and amount associated with PoP (Producer Organizations/Promoter Organizations) receiving funds are related to lower repayment percentages. This also warrants further investigation.

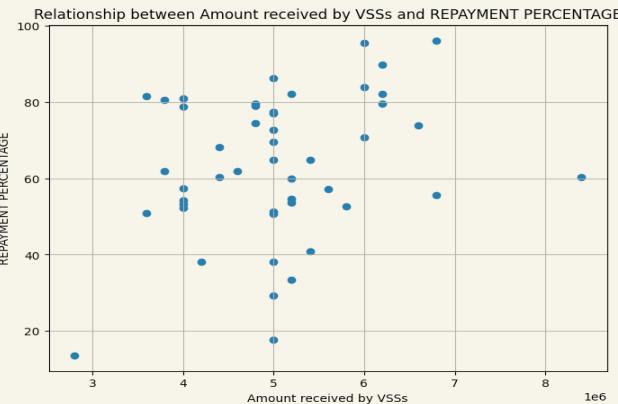
No of CIG received RF and CIG Amount: These variables also show negative coefficients, indicating a potential inverse relationship with repayment percentage for CIGs (Common Interest Groups).

MALE PERCENTAGE and FEMALE PERCENTAGE: The coefficients for male and female percentages are notable. The positive coefficient for 'FEMALE PERCENTAGE' and a negative coefficient of similar magnitude for 'MALE

PERCENTAGE' strongly suggest that a higher proportion of females in the borrowing group is associated with a higher repayment percentage. This finding aligns with some studies suggesting better repayment behaviour among female borrowers in microfinance contexts.

Repayment Amount: The positive coefficient for 'Repayment Amount' is expected, as a higher repayment amount is directly related to a higher repayment percentage. However, it's important to note that this variable is closely tied to the dependent variable and might reflect the outcome rather than being a purely independent predictor in a causal sense.

FIGURE 1: Scatter Plots of Amount received by VSSs vs. REPAYMENT PERCENTAGE

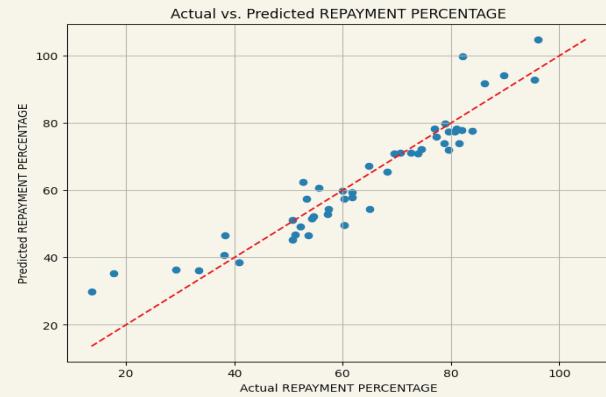


(III) Visualizations and Additional Insights

The scatter plots of amount received by the VSSs vs. Repayment percentage and actual vs predicted repayment percentage are provided in FIGURE 1 and 2 respectively.

Scatter Plots of Independent Variables vs. REPAYMENT PERCENTAGE: These plots visually confirmed the varying degrees of linear relationships suggested by the correlation matrix. Some variables, like 'Repayment Amount', showed a clearer linear trend, while others appeared to have weaker or less distinct linear associations with 'REPAYMENT PERCENTAGE'. These plots are helpful in identifying potential outliers and understanding the spread of data points. One such plot has been depicted in FIGURE 1.

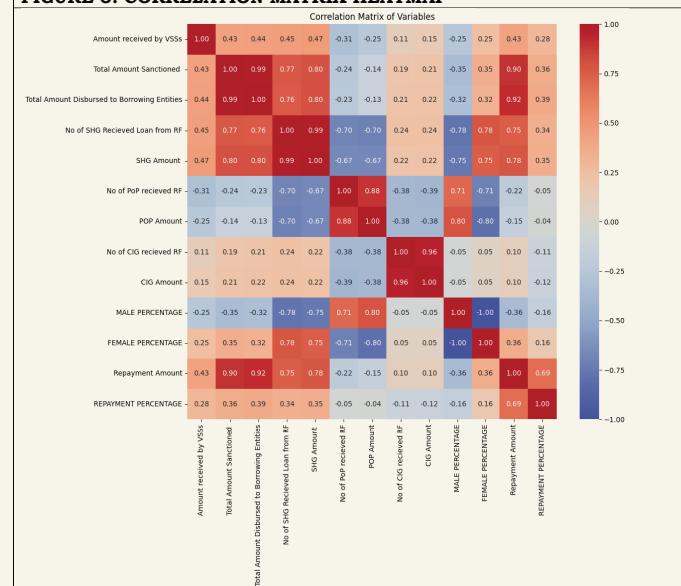
FIGURE 2: Actual vs. Predicted REPAYMENT PERCENTAGE Plot



Actual vs. Predicted REPAYMENT PERCENTAGE Plot: This plot shown in FIGURE 2 serves as a visual representation of the model's performance. The closer the points lie to the diagonal red line, the better the model's predictions align with the actual values. The plot suggests that the model is generally making reasonable predictions, but there is still some scatter around the line, indicating room for improvement.

Correlation Matrix Heatmap: The heatmap has been provided in FIGURE 3. This provides a comprehensive view of the linear correlations between all pairs of numerical variables. While 'REPAYMENT PERCENTAGE' showed moderate positive correlation with 'Repayment Amount', its correlations with most other variables were relatively low. This reinforces the earlier observation from the R-squared that a simple linear model might not fully capture all the underlying relationships and that non-linear or more complex models could potentially yield better results. The heatmap also revealed strong correlations among some independent variables themselves (e.g., between 'Total Amount Sanctioned' and 'Total Amount Disbursed'), which could indicate multicollinearity, although with only 13 predictors and 48 data points multicollinearity is less likely to be a problem.

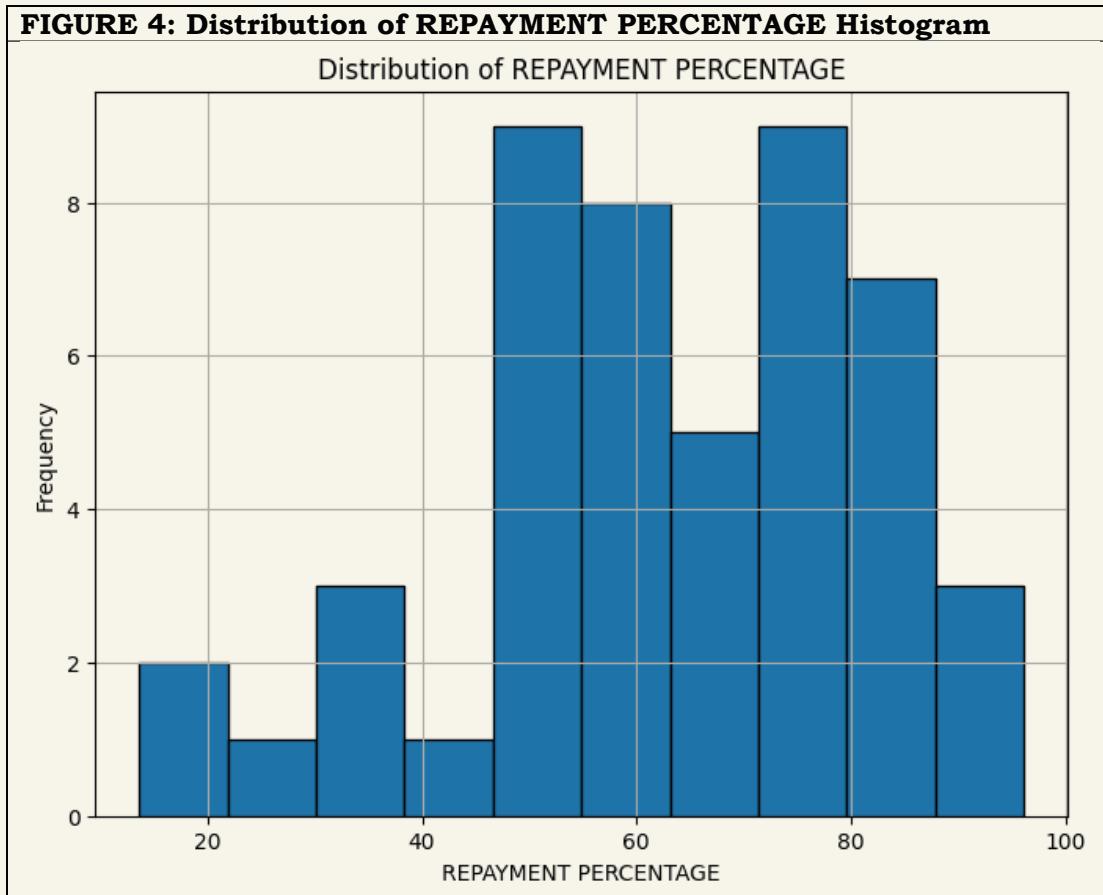
FIGURE 3: CORRELATION MATRIX HEATMAP



Distribution of REPAYMENT PERCENTAGE Histogram: The histogram of 'REPAYMENT PERCENTAGE' showed the frequency distribution of the dependent variable. Observing the distribution helps in understanding the typical range of repayment percentages and identifying any skewness or

unusual patterns. The observed distribution, which appears somewhat skewed, might suggest that transformations of the dependent variable could be considered in future modelling attempts to better meet the assumptions of linear regression or improve model performance.

FIGURE 4: Distribution of REPAYMENT PERCENTAGE Histogram



RESULTS AND DISCUSSION

Data in TABLE NO 2 provides a granular view of the Revolving Fund (RF) status across various Forest Management Units (FMUs), highlighting both successes and areas requiring attention. The initial allocation of Rs. 2,00,000 per VSS as a revolving fund aimed at fostering local economic activities and empowering community-based organizations (SHGs, PoPs and CIGs). The data has been discussed under the following points.

(I) Financial Performance and Disbursement Efficiency

The "Amount received by VSSs" column generally reflects the intended two lakh rupees per VSS (e.g., Athmallik, Madhapur, Boudh, etc., all show multiples of Rs. 2,00,000, indicating the aggregate received by VSSs within that FMU). However, discrepancies between "Total Amount Sanctioned" and "Total Amount Disbursed to Borrowing Entities" are

notable in several FMUs. For instance, Athmallik sanctioned Rs. 46,14,000 but disbursed Rs. 44,14,000, indicating a minor gap. More significant disparities are observed in Dhenkanal (sanctioned Rs. 95,42,776, disbursed Rs. 77,61,600) and K Nagar-East (sanctioned Rs. 74,31,000, disbursed Rs. 64,56,000). These gaps warrant investigation to understand the reasons behind non-disbursement, which could range from administrative bottlenecks to lack of viable proposals from borrowing entities.

Conversely, several FMUs like Duhdiani, Karanjia, Dhama, Padiabahal show 100% disbursement against sanctioned amounts, indicating efficient fund flow from the FMU to the borrowing entities. This suggests effective demand generation and streamlined processes in these areas.

(II) Loan Distribution Across Beneficiary Groups

The RF is designed to benefit SHGs, PoPs and CIGs. The data reveals varied patterns of loan distribution:

a. Dominance of SHG Lending: In many FMUs, SHGs are the primary recipients of RF loans. Dudhiani, Dhama, Padiabahal, Dhenkanal, K Nagar-East, K-Nagar-West and Hemgiri, for example, show substantial "SHG Amount" and "No of SHG Received Loan from RF." This aligns with the project's emphasis on empowering women through SHGs. Dudhiani, with 172 SHGs receiving Rs. 1,08,40,000, stands out as a prime example of successful SHG engagement.

b. Significant PoP/CIG Engagement: While SHGs are prominent, some FMUs show strong engagement with PoPs and CIGs. Athmallik and Madhapur have a high number of PoPs receiving loans with substantial amounts. Kantamal notably disbursed a significant amount (Rs. 19,66,000) to 87 CIGs, indicating a diverse approach to beneficiary engagement. Sadangi also demonstrates a large amount (Rs. 33,70,000) disbursed to 87 CIGs.

c. Limited Diversification: In contrast, several FMUs like Thakurmunda, Padiabahal, and Udal show almost exclusive reliance on SHGs or PoPs, with little or no engagement with CIGs. This might indicate a need for further awareness and capacity building for CIGs in these regions to access the RF.

(III) Gender Inclusion

The "FEMALE PERCENTAGE" consistently outweighs the "MALE PERCENTAGE" across almost all FMUs, with many showing female participation above 90% (e.g., Dudhiani, Karanjia, Dhama, Padiabahal, Thakurmunda, Hemgiri, Baragaon, Sundargarh, Lephripara, Ujalpur). This strongly suggests the RF is effectively reaching and empowering women, which is a significant achievement given the project's likely gender-inclusive objectives. FMUs like Sadar, Bangriposi, Betnoti, and Kaptipada, however, show a higher male percentage, indicating areas where gender targeting might need further review or where specific male-centric activities are being funded.

(IV) Repayment Performance

Repayment is a critical indicator of the RF's sustainability and the economic viability of the funded activities. The "REPAYMENT PERCENTAGE" varies significantly across FMUs:

a. High Repayment: FMUs like Baragaon (95.44%), Lephripara (96.11%), Hemgiri (89.78%), Mujagada (86.17%), Thakurmunda (81.52%), and Athmallik (80.95%) demonstrate excellent repayment performance, indicating robust loan management and successful enterprises among beneficiaries.

b. Moderate Repayment: A large number of FMUs fall into the 50-70% repayment range, which is generally acceptable but suggests room for improvement in collection mechanisms or business support for beneficiaries.

c. Low Repayment Concerns: FMUs like Manamunda (17.76%), Manada (13.63%), Binika (29.27%), Sonepur (38.20%), and Badampahar (33.43%) exhibit significantly low repayment percentages. These cases warrant immediate attention. Some of the potential reasons could include: (i) Inadequate project appraisal and viability assessment: Loans might have been granted to ventures with low potential for returns. (ii) Lack of effective follow-up and monitoring: Insufficient support or pressure on borrowers to repay. (iii) External factors: Unforeseen market fluctuations, natural calamities or other challenges impacting beneficiary livelihoods. (iv) Capacity building gaps: Borrowers might lack the necessary financial literacy or business management skills.

(V) Findings of the linear regression model

The linear regression analysis provided initial insights into the factors associated with 'REPAYMENT PERCENTAGE' in the dataset. The model demonstrates a reasonable ability to explain the variance in repayment percentages, but the analysis also highlights areas for further investigation and potential model improvement. Amount received by VSSs' and 'Repayment Amount' are positively associated with 'REPAYMENT PERCENTAGE'. Variables related to the number and amount associated with SHG, PoP, and CIG show negative associations, which warrants further investigation. A higher proportion of females is associated with a higher repayment percentage. While the linear model provides a good starting point, the correlation analysis and the distribution of the dependent variable suggest that exploring non-linear relationships, interactions or different modelling techniques might be beneficial.

(VI) Overall Observations and Recommendations

The data indicates that the Revolving Fund is broadly achieving its objective of reaching community-level organizations with a strong emphasis on women's empowerment. However, the uneven performance in disbursement and more critically, in repayment percentages, suggests a need for differentiated strategies. FMUs with high repayment rates can serve as models for best practices in loan appraisal, monitoring and recovery. Conversely, those with low repayment rates require targeted interventions, including: (i) Detailed portfolio review: Analysing individual loan performance to identify common challenges. (ii)

Enhanced capacity building: Providing training in financial management, business planning and market linkages to beneficiaries. (iii) Strengthening monitoring mechanisms: Implementing more rigorous follow-up with borrowers. (iv) Addressing external shocks: Developing strategies to mitigate the impact of unforeseen events on beneficiary enterprises. (v) Reviewing disbursement policies: Ensuring that sanctioned amounts are fully disbursed and that any bottlenecks are removed. By addressing these points, the Odisha Forestry Sector Development Project Phase II can further optimize the impact and sustainability of the Revolving Fund, ensuring its long-term benefit to the VSSs and the communities they serve.

Recommendations for Next Steps after linear regression:

In-depth Investigation of Negative Correlations: Qualitative or further quantitative analysis need to be conducted to understand the reasons behind the negative associations with SHG, PoP and CIG related variables. This could involve looking at the characteristics of these groups, the types of activities they undertake or external factors influencing their repayment capacity.

CONCLUSIONS

The analysis of the Revolving Fund (RF) status data, utilizing a linear regression model, offers robust conclusions critical for the Odisha Forestry Sector Development Project Phase II. The model's high explanatory power (R-squared of 88.4%) underscores the significance of the identified factors in predicting repayment success.

Findings confirm that a higher 'Amount received by VSSs' is positively correlated with increased repayment percentages. This is an expected outcome, suggesting that substantial and efficiently collected funds contribute directly to the financial health of the RF.

A particularly noteworthy conclusion is the strong positive association between 'FEMALE PERCENTAGE' and repayment percentage. This aligns with well-documented trends in microfinance, where women consistently demonstrate superior repayment discipline. This reinforces the success of the project's gender-inclusive approach, indicating that empowering women through the RF not only fosters community development but also significantly enhances the fund's sustainability.

Conversely, the analysis revealed a negative association between variables related to the number and amount of

Advanced Modelling Techniques: Alternative regression techniques such as polynomial regression or tree-based models (e.g., Random Forest, Gradient Boosting) need to be explored that can capture non-linear relationships and interactions between variables.

Feature Engineering and Selection: New features that might be more predictive of repayment percentage need to be created. Techniques for feature selection need to be considered to identify the most impactful variables and potentially reduce model complexity.

Outlier Detection and Handling: The scatter plots and data need to be examined for potential outliers that might be unduly influencing the model results and accordingly appropriate methods for handling them need to be considered.

Additional Data Collection: If possible additional data need to be considered on factors that are not currently included in the dataset but could potentially influence repayment percentage (e.g., economic conditions, specific project details, borrower demographics beyond gender).

loans disbursed to SHGs, PoPs and CIGs and the overall repayment percentage. While seemingly counter-intuitive, this finding warrants immediate, in-depth investigation. It could signal potential over-lending, insufficient support for a larger number of diverse groups or challenges in managing increased outreach. This suggests a need to scrutinize the quality of loan appraisals and the efficacy of post-disbursement support as the number of beneficiary groups increases.

In essence, the RF is largely successful in its objective, particularly in empowering women beneficiaries. However, to ensure the long-term sustainability and maximize the impact of the RF, the project must critically examine the inverse relationship observed with the growth in SHG, PoP and CIG engagements. Future strategies should not only focus on expanding access to funds for these groups but also on bolstering their capacity, refining project viability assessments and strengthening monitoring and support mechanisms. Further exploration using non-linear models could provide even deeper insights into these complex relationships.

Name of FMU	Amount received by VSSs	Total Amount Sanctioned	Total Amount Disbursed to Borrowing Entities	No of SHG Received Loan from RF	SHG Amount	No of PoP received RF	POP Amount	No of CIG received RF	CIG Amount	MALE PERCENTAGE	FEMALE PERCENTAGE	Repayment Amount	Repayment Percentage
Athmallik	4000000	4614000	4414000	3	75000	469	4339000	0	0	37.47495	62.5250501	3734814	80.945
Madhapur	5000000	7265000	7155000	23	824000	692	6331000	0	0	33.221851	66.77814939	5590390	76.95
Bamur	5800000	3730000	3170000	8	390000	269	2780000	0	0	38.108883	61.89111748	1967525	52.749
Boudh	4000000	4550000	4520000	36	1725000	433	2755000	2	40000	27.294886	72.70531401	2398920	52.207
Kantamal	5200000	6485000	6441000	87	4270000	36	205000	87	1966000	21.334432	78.66556837	3482431	53.7
Manamunda	5000000	3209800	3209800	44	2029800	52	310000	30	870000	25.55205	74.44794953	570084	17.761
Dudhiani	8400000	11440000	11440000	172	10840000	8	40000	12	560000	1.7012228	98.29877725	6891734	60.242
Karanjia	4000000	2515000	2515000	44	2375000	3	15000	5	125000	5.4441478	94.45585216	1340800	53.312
Thakurmunda	3600000	4935000	4935000	86	4875000	0	0	2	60000	0.7984032	99.20159681	4022900	81.518
Dhama	4000000	7783000	7783000	137	7258000	57	525000	0	0	1.894452	98.10554804	6125810	78.708
Padiabahal	5000000	7016000	7016000	145	6686000	24	330000	0	0	0.4481434	99.55185659	4553860	64.907
Sadar	6000000	4965000	4965000	10	500000	393	4445000	1	20000	57.51503	42.48496994	3508031	70.655
Rengali	5000000	6386200	6386200	72	4452000	94	1354200	24	580000	11.076605	88.92339545	4632024	72.644
Buguda	4600000	5215000	5215000	39	2140000	397	2905000	7	170000	33.579336	66.42066421	3224061	61.823
Badagada	4000000	4905000	4905000	20	970000	365	2805000	51	1130000	51.28866	48.71134021	2664100	54.314
Surada	4400000	4302560	4302560	28	1612560	431	2610000	4	80000	28.038674	71.96132597	2593494	60.278
Badampahar	5200000	4745000	4745000	44	2610000	155	1535000	11	600000	27.835052	72.16494845	1582200	33.429
Bahalda	4200000	4345000	4310000	32	1555000	256	2675000	3	80000	27.411168	72.58883249	1655288	38.096
Bisoi	3800000	4180000	4180000	29	1730000	257	2350000	4	100000	32.50444	67.495555	2583550	61.807
Manadda	2800000	3226692	2843292	39	1099792	309	1663500	3	80000	18.041958	81.95804196	439688	13.627
Rairangpur	5400000	4919000	4914000	43	2198000	469	2636000	4	80000	32.863341	67.13665944	2010462	40.871
Bangriposi	4000000	7065000	7035000	4	180000	368	6855000	0	0	64.460784	35.53921569	4051103	57.34

Dukura	4400000	4920000	4920000	23	1150000	342	3770000	0	0	45.172414	54.82758621	3353834	68.167
Betnoti	3800000	5490000	5490000	8	355000	528	5135000	0	0	59.539474	40.46052632	4426029	80.62
Kaptipada	4800000	4378300	4378300	3	148300	404	4230000	0	0	60.138249	39.86175115	3262415	74.513
Pithabata	5000000	6069000	6069000	1	45000	362	6024000	0	0	71.045576	28.95442359	4222724	69.579
Udala	5000000	7325020	7325020	2	50000	471	7275020	0	0	56.619145	43.3808554	3756563	51.284
Dhenkanal	5000000	9542776	7761600	110	5926600	178	1835000	0	0	63813814	93.61861862	4842463	50.745
K Nagar-East	5200000	7431000	6456000	85	4836000	209	1620000	0	0	12.836625	87.16337522	4453300	59.942
K-Nagar-West	5200000	6165000	5565000	93	4810000	70	755000	0	0	5.8823529	94.11764706	3365050	54.583
Kapilash	3600000	4071400	4066400	39	1923400	124	1048000	29	1095000	29.555896	70.44410413	2068643	50.809
Sadangi	5600000	8500000	8150000	87	4370000	36	410000	87	3370000	35.651537	64.34846266	4863870	57.222
Hindol	5400000	8498896	7564584	95	6024584	128	1490000	1	50000	6.6788655	93.32113449	5508548	64.815
Mujagada	5000000	8147000	8147000	54	2980000	573	5167000	0	0	30.700976	69.29902396	7020272	86.17
Jagannathprasad	4800000	7223000	41	2570000	509	4703000	0	0	35.690968	64.30903156	5742098	78.951	
Central	5000000	8405000	8405000	114	6050000	256	2355000	0	0	5.157531	94.84240688	6502737	77.367
Tarasinghi	5200000	5418000	5418000	84	4798000	103	620000	0	0	4.1710115	95.82898853	4445550	82.051
Ullunda	6800000	4271960	4271960	9	245200	290	3906760	3	120000	44.139651	55.886034913	2372375	55.534
Binika	5000000	4229000	4229000	8	360000	390	3869000	0	0	35.625	64.375	1237720	29.267
Sonepur	5000000	3840000	3840000	2	100000	315	3740000	0	0	46.153846	53.84615385	1466825	38.199
Hemgiri	6200000	7598000	7598000	130	6788000	12	70000	16	740000	6.7901235	93.20987654	6821684	89.783
Baragaon	6000000	5474000	5326000	103	5266000	9	60000	0	0	0.5535055	99.44649446	5224395	95.44
Sundargarh	6000000	4684200	4684200	90	4219200	43	215000	13	250000	72507553	92.74924471	3928814	83.874
Lepripara	6800000	8072000	8072000	144	7337000	12	60000	28	675000	5.992268	94.00773196	7758305	96.114
Ujalpur	6200000	16277000	16242000	263	15389000	16	83000	29	770000	3.1038173	96.89618266	13374872	82.17
Bagdih	4800000	3559000	3514000	12	507000	443	2975000	1	32000	74.915254	25.08474576	2831316	79.554
Belpahar	6200000	530920	61	3305920	301	2065000	0	0	14.503817	85.49618321	4296350	79.548	
Kolabira	6600000	4734000	4734000	72	3415000	174	1209000	4	110000	12.910284	87.08971554	3515158	73.941

Glimpses of State level Viskah Mela & Food Festival - 2025



**Please send
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