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Building resilience through state-led asset transfers: Medium-term impacts of the national poverty graduation programme in flood-prone Pakistan

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Building Resilience Through State-led Asset Transfers: Medium-Term Impacts of the National Poverty Graduation Programme in Flood-Prone Pakistan[1]

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Abstract: This study evaluates the medium-term impacts of Pakistan's National Poverty Graduation Programme (NPGP), a large-scale, state-led asset transfer initiative aimed at lifting ultra-poor households out of poverty and enhancing resilience in flood-prone regions. Using data from 6,866 households across Punjab and Sindh and employing a Regression Discontinuity Design (RDD), the analysis reveals that 84 percent of treatment households graduated above the ultra-poverty threshold, with 57.7 percent achieving sustained well-being (PSC > 23). The programme significantly improved household income and consumption, with total consumption increasing by PKR 10,510 and income by PKR 10,367. NPGP beneficiaries also exhibited stronger climate adaptation behaviors, including improved farming techniques and water conservation, facilitated through community-led awareness. However, regional disparities persist, and the 2022 floods exposed the fragility of asset-based strategies—30 percent of beneficiaries lost their assets. Modest gains in women's empowerment and food security suggest that asset transfers alone are insufficient for inclusive resilience. The findings highlight the need for integrating climate-adaptive measures, post-graduation support, and market linkages into future programme design. Overall, the NPGP demonstrates that state-led graduation models can effectively promote poverty reduction and resilience but require sustained, context-specific, and climate-responsive interventions to ensure long-term sustainability.

Keywords: Poverty graduation, Asset transfer, Climate resilience, Pakistan

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1. Introduction

In the global development landscape, graduation programmes have emerged as a promising tool to address ultra-poverty by providing households with a combination of productive assets, financial inclusion, and skills training. Originating with BRAC in Bangladesh (Bandiera et al., 2017), the model has since been tested and refined across diverse contexts, showing consistent positive effects on income, consumption, and psychological well-being (Banerjee et al., 2015; Balboni et al., 2022). Yet, a growing body of literature cautions that these gains are often conditional on the absence of large-scale shocks. In the context of intensifying climate risks and macroeconomic instability, there is an urgent need to revisit the sustainability of graduation models. This study responds to this call by evaluating the medium-term impact of Pakistan's National Poverty Graduation Programme (NPGP), with a focus on how state-led asset transfers build resilience among vulnerable households, particularly in flood-prone areas of South Punjab.

The NPGP, launched in 2017 with support from the International Fund for Agricultural Development (IFAD), aims to support ultra-poor households through a package of livestock transfers, training, and access to interest-free loans. Our previous impact assessment (Nawaz & Iqbal, 2024), funded by the HEC/World Bank, demonstrated short-term welfare improvements two years post-intervention. However, as the literature increasingly emphasizes the importance of longitudinal evidence to understand the trajectory of poverty dynamics (Raza et al., 2023; Gandhi et al., 2022), this follow-up study examines whether these effects persist—and whether households are better equipped to withstand shocks such as the devastating 2022 floods.

The current study utilizes data from the NPGP Household Survey 2025, collected using a three-stage stratified random sampling approach. The final dataset includes 6,866 households, comprising 4,287 treatment households (NPGP beneficiaries) and 2,579 control households (BISP beneficiaries without asset transfers). The sample spans both Punjab and Sindh provinces, with 62.4% of households in the treatment group and 37.6% in the control group. The study applies a Regression Discontinuity Design (RDD), leveraging program eligibility criteria to assess causal impacts of asset transfers on key outcomes.

Our analysis reveals several important insights. First, graduation from ultra-poverty is achievable: approximately 84% of treatment households crossed the poverty scorecard (PSC) threshold of 16.17, indicating movement out of ultra-poverty. However, regional disparities persist, with Punjab outperforming Sindh—a difference potentially driven by institutional capacity, engagement of Community Resource Persons (CRPs), and baseline socioeconomic conditions. Second, beyond merely escaping poverty, over 57.7% of treatment households surpassed a PSC of 23, suggesting resilience and sustained well-being. These results are consistent with findings from Uganda and Ethiopia, where graduation effects strengthened over time when paired with strong local implementation (Raza et al., 2023; Blattman et al., 2023).

Third, the programme's impact on food security was more modest. Although treatment households experienced marginally lower food insecurity, the differences were statistically insignificant, pointing to the need for complementary interventions such as nutritional assistance or kitchen gardening schemes. Fourth, the programme made modest but notable progress in women's empowerment, with 44% of treatment women reporting joint decision-making authority in key household areas. However, entrenched social norms continue to limit the full realization of women's economic agency—a finding echoed in studies of similar interventions across South Asia (Hamad et al., 2021).

Fifth, the NPGP significantly improved climate resilience. Beneficiaries were more likely to adopt climate-adaptive practices such as modified farming techniques (+9.9 percentage points), water conservation (+5.8pp), and infrastructure strengthening (+4.0pp). Moreover, programme-linked community engagement through CRPs facilitated greater uptake of early warning systems (+4.4pp), underscoring the role of social capital in building adaptive capacity (Adhikari et al., 2022).

The sixth dimension—coping with climate shocks—provides perhaps the most sobering insight. Nearly half of all surveyed households reported being affected by the 2022 floods, with widespread crop and livestock loss. Alarmingly, 30% of treatment households reported losing their NPGP-provided asset, underscoring the fragility of asset-based strategies in the face of covariate shocks. Despite these setbacks, most households did not sell off remaining productive assets, instead relying on informal networks, savings, and temporary migration—suggesting an underlying resilience fostered by the programme.

Health-seeking behavior also shifted, with a higher share of treatment households (93.2%) utilizing formal medical services compared to controls (90.8%). This transition—from reliance on faith healers to professional healthcare—is critical for breaking intergenerational cycles of poverty and aligns with observed patterns in similar cash-plus programmes in Africa (Haushofer et al., 2020).

From a design perspective, 98% of beneficiaries reported receiving the asset they demanded, and 85% found the asset useful for livelihood generation. Yet only 60% expressed confidence in the long-term sustainability of benefits. While 70% could market their products, 30% reported facing barriers, highlighting the importance of post-transfer support and market integration.

Finally, the RDD results confirm statistically significant increases in both consumption and income. Total household consumption increased by PKR 10,510, with notable gains in food, clothing, and education. Household income rose by PKR 10,367, driven largely by salaries, agriculture, and NPGP-linked activities. However, gains in entrepreneurship and social protection income were negligible, indicating areas where the programme could be strengthened.

Taken together, these findings suggest that while the NPGP has effectively lifted many households out of ultra-poverty and fostered a degree of resilience, its current design may be insufficient to withstand large-scale shocks without additional protective mechanisms. This study contributes to the growing body of literature advocating for shock-responsive and climate-adaptive social protection (Sabates-Wheeler & Holmes, 2021; Ulrichs & Slater, 2016). In line with IGC's research priorities, it emphasizes the evolving role of the state in not just alleviating poverty but in enabling poor households to withstand and recover from adversity. By producing context-specific evidence on a large-scale, state-led graduation programme in a climate-vulnerable region, this paper offers valuable insights for policymakers seeking to scale resilience-building interventions in fragile settings.

2. NPGP Overview

The NPGP was launched by the Government of Pakistan in November 2017, with financial and technical support from the IFAD. Positioned as a flagship initiative under Pakistan's Vision 2025 and in alignment with the Sustainable Development Goals (SDGs), the programme represents

a strategic policy shift from conventional cash transfers to integrated asset-based, capability-enhancing, and resilience-focused interventions.

The programme aims to move ultra-poor and vulnerable households—particularly women and youth—toward sustainable livelihoods and self-reliance. It does so through a multidimensional graduation model built on three integrated pillars: productive asset transfers, access to interest-free loans, and community-driven capacity building. In contrast to short-term relief approaches, NPGP's model seeks to facilitate long-term upward mobility by addressing the structural causes of poverty—low asset ownership, poor financial access, skills deficits, and weak social networks.

With a total budget of US$ 132.6 million (US$ 82.6 million from IFAD and US$ 50 million from the Government of Pakistan), the NPGP spans over 7.5 years (2017–2025). It is currently operational in 307 union councils across 21 districts in four provinces of Pakistan, reaching 1,083,648 households through 9 Partner Organizations (POs) (see Appendix Figure A1). The scope and implementation progress of the programme are substantial, as summarized below (Table 1)

Table 1: Cumulative Progress under NPGP (as of 2025)

Indicator	Value
Households Reached	337,491
Productive Assets Transferred	164,932
Interest-Free Loans Disbursed	268,505
Beneficiaries Trained	220,247
Community Institutions Established	4,685

Source: NPGP Programme Unit

The core of the programme lies in Component 1: Poverty Graduation, which includes asset transfers, interest-free loans, and livelihood training tailored to local needs. Assets may include livestock, sewing machines, agriculture kits, or transport vehicles—matched with functional literacy and enterprise development training to support economic independence. Component 2: Social Mobilization and Programme Management strengthens grassroots implementation through the formation of Village Organizations (VOs), Common Interest Groups (CIGs), and the training of Community Resource Persons (CRPs), ensuring sustained knowledge diffusion and participatory development.

A distinguishing feature of NPGP is its tiered support mechanism based on the Poverty Scorecard (PSC). Households are segmented by poverty score and receive interventions proportional to their capacity and vulnerability. Ultra-poor households (PSC 0–11) receive tangible assets and basic business training. Vulnerable households (PSC 12–16.17) receive similar support with the addition of financial literacy and eligibility for loans. Slightly better-off households (PSC 16.18–18) are provided with vocational training and access to credit, while transitorily poor and vulnerable households (PSC 19–40) primarily receive loans and enterprise training. Households with scores above 41 are excluded from direct support.

Following targeting, each household co-develops a Livelihood Investment Plan (LIP) with trained officers to select appropriate economic interventions. These are context-specific and reflect local labor markets, community demand, and household preferences. All economic interventions are embedded within a broader framework of social empowerment and behavioral change, including training on nutrition, disaster preparedness, gender equity, and environmental sustainability.

Programme implementation is community-rooted and decentralized, coordinated through a network of Partner Organizations (POs) such as NRSP, SRSO, BRSP, and TRDP, with strategic oversight from the Project Management Unit (PMU) within the Ministry of Poverty Alleviation and Social Safety (MoPASS). These partners ensure both delivery efficiency and contextual adaptability, allowing NPGP to respond flexibly to local challenges—including climate-related shocks.

The objectives of NPGP are multi-fold: (1) to improve livelihoods and income-generating capacities of poor households; (2) to foster women's empowerment and nutritional security; (3) to increase access to finance and enterprise opportunities; and (4) to generate policy learning and evidence-based dialogue around pro-poor, climate-resilient development.

The design of NPGP demonstrates a progressive integration of economic empowerment with social protection. By providing the poorest households with productive resources and capacities—not just consumption support—the programme seeks to operationalize a "graduation pathway" that moves families from vulnerability to resilience. In doing so, it contributes to both national development goals and the global debate on how best to design adaptive, sustainable, and inclusive poverty alleviation programmes in the 21st century.

3. Methodology

a. Conceptual Framework

We conceptualize household behavior in a static setting, where the household maximizes utility from consumption and leisure, subject to time and budget constraints. This builds on classical utility-maximizing frameworks used in the microeconomics of poverty and labor supply decisions (Becker, 1965; Bardhan & Udry, 1999). Let the utility function of household h be represented as:

$$U_h = U(C_h, L_h) - - - - - (1)$$

where C_h is household consumption and L_h denotes leisure. Households allocate their total available time T between leisure L_h and labor l_h, such that: $T = L_h + l_h$. The household earns income through two channels: labor income wl_h and returns from productive assets $R(A_h)$, where A_h denotes the stock of productive assets received via the NPGP intervention (e.g., livestock, tools). Let P_c denote the price of consumption. The household faces the budget constraint:

$$P_c C_h = wl_h + R(A_h) - - - - - (2)$$

The optimization problem becomes:

$$\max_{C_h, L_h} U(C_h, L_h) \text{ subject to } P_c C_h = wl_h + R(A_h) - - - -(3)$$

The first-order conditions yield optimal levels of consumption and leisure as a function of asset returns, wages, and preferences. Introducing a shock ε_h such as a flood or health shock, which negatively affects both labor productivity and the return on assets, we modify the wage and asset return functions as follows:

$$w = w(1 - \delta_h{}^{\varepsilon_h}) - - - -(4)$$

$$R(A_h) = R(A_h)(1 - {\theta_h}^{\varepsilon_h}) - - - -(5)$$

The household now faces a revised budget constraint:

$$P_c C_h = w(1 - {\delta_h}^{\varepsilon_h})(\mathrm{T} - \mathrm{L}_h) + R(A_h)(1 - {\theta_h}^{\varepsilon_h}) - - - -(3)$$

Here, ${\delta_h}^{\varepsilon_h} \in [0,1]$ represents labor productivity loss and ${\theta_h}^{\varepsilon_h} \in [0,1]$ reflects asset return loss. This formulation is consistent with the vulnerability and resilience literature that explores household exposure to covariate and idiosyncratic shocks (Dercon, 2002; Carter et al., 2007). Under such a scenario, the effectiveness of asset transfers depends on household ability to mitigate δ and θ through resilience mechanisms such as savings, insurance, diversification, or community support networks (Grosh et al., 2008; Alderman & Haque, 2007). This model provides an intuitive microeconomic foundation to assess the effectiveness of NPGP-style interventions. It emphasizes the importance of asset ownership not only as a buffer for current consumption but also as an enabler for future resilience and economic participation. Moreover, it recognizes the fragility of gains from such interventions in the face of natural shocks, which may destroy physical assets or reduce their productivity (Barrett et al., 2019; FAO, 2021). This model highlights two key evaluation questions: a) Are asset transfers sufficient to raise income and consumption in the absence of shocks? b) Do asset transfers enhance the ability of households to cope with shocks (i.e., reduce δ, θ) over time?

b. Data

This study uses a three-stage stratified random sampling technique to collect data from NPGP and BISP beneficiary households across two provinces (Punjab and Sindh). We obtained relevant administrative data from NPGP project unit to develop a sampling framework. This data covers detailed information on targeted beneficiary households along with their Proxy Mean Test (PMT) poverty scores. Based on this administrative data, we devised a three-stage stratified random sampling methodology to select respondent households for the field survey.

- Stage 1: The primary sampling units are districts covered under NPGP. As mentioned earlier, NPGP covers 23 districts across Pakistan. We purposely selected 5 districts, 3 districts from Punjab and 2 from Sindh.
- Stage 2: We have selected 14 tehsils from targeted five districts and then purposely selected total 68 Union Councils (UCs), from the selected tehsils and districts. Union councils were selected based on two criteria:
- The presence of a control group : A minimum of 20 beneficiaries per union council.
- Stage 3: From selected UCs, we randomly chose NPGP and/or BISP beneficiary households for the survey in five districts.

Data collection utilized computer assisted personal interviewing (CAPI) with android tablets, facilitated through the Survey CTO platform. NPGP provided contacts of Partner Organizations (POs) with local offices in both provinces, to obtain administrative data which

contains complete address information to enable us to select respondent households randomly. These POs also facilitated the survey teams in locating and conducting surveys with the sampled households.

We successfully interviewed 7,257 households. Around 216 households were dropped from the final sample due to various reasons such as refusal to participate, unavailability of respondents despite three visits, those who had never been beneficiaries of the BISP Programme and duplicate entries. After dropping these households, the remaining sample is 7041 households. During data cleaning stage, we excluded 175 households from our analysis because some data was missing due to issues with android application. By carefully curating this subset of households, our aim is to ensure the precision and reliability of our quantitative analysis results. The final data set consists of 6,866 households, covering 62.4% of treatment and 37.6% of control groups (Table 2). Out of the total sample of 6,866 households, 4287 are the NPGP beneficiaries (Treatment group) and 2579 households are the control group (BISP beneficiaries but with no NPGP intervention). NPGP beneficiaries are the Asset beneficiaries, IFL beneficiaries and Vocational training beneficiaries.

Table 2: Distribution of Sample Households by Province and Treatment Status

Status	Punjab	Sindh	Total
Control	1,771	808	2,579
Treatment	3,186	1,101	4,287
Total	4,957	1,909	6,866

4. Situational Analysis Based on Survey Data

This section presents a situational analysis of the beneficiaries surveyed across the five target districts of the NPGP. The data indicates that beneficiary households are relatively large, with an overall average size of 7.7 members per household. Household size is higher in Sindh (8.2) compared to Punjab (7.5). Respondents are generally middle-aged, with an average age of approximately 49.4 years, slightly higher in Sindh (50.9 years) than in Punjab (48.9 years). A significant proportion of beneficiaries are women, with an overall female share of 89.3%, and slightly higher representation in Sindh (92.8%) than in Punjab (88%). This highlights the Programme's gender-sensitive approach in targeting female beneficiaries. Despite the focus on female beneficiaries, household heads remain predominantly male 77.4% overall, with minimal variation between provinces. Additionally, nearly all household heads are married (87.2% overall), reflecting a conventional household structure that may influence intra-household decision-making dynamics, including asset control and livelihood planning. The average age of household heads is around 51 years, suggesting mature household leadership among beneficiary families.

Table 3: Beneficiary Demographic Characteristics

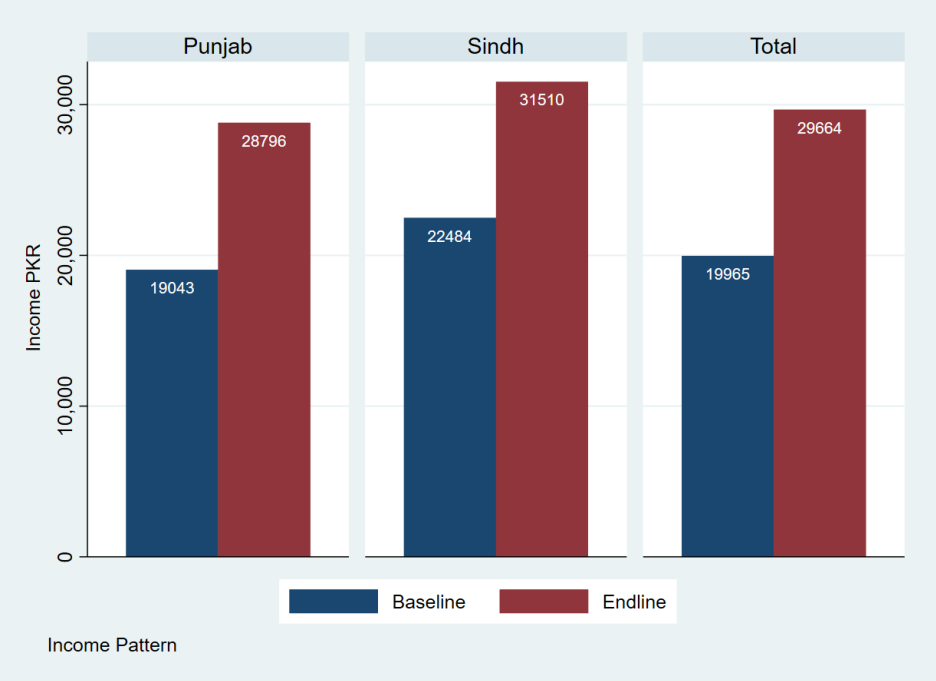
	Province level	Overall

Variable	Punjab	Sindh	All
HH Size (Average)	7.5	8.2	7.7
Age of respondents (Average)	48.9	50.9	49.4
Gender of beneficiary (Female=1)	88.0(%)	92.8(%)	89.3(%)
Gender of head (Male=1)	77.9(%)	76.3(%)	77.4 (%)
Married HH heads	87.3(%)	86.8(%)	87.2(%)
Age of HH Head (average)	51.1	50.3	50.9

Notes: Author's formulation based on Survey data. The table displays demo- graphic characteristics of the beneficiaries.

Household consumption and expenditure pattern offer critical insights about the welfare impact of poverty alleviation Programmes. Changes in these indicators provide tangible evidence about the overall effectiveness of interventions like the NPGP. Figure 1 presents average monthly income among beneficiary households. Among beneficiaries' households, the average current income amounts to Rs. 29,664 per month. Notably, the highest average monthly current income is recorded in Sindh at Rs. 31,510, while Punjab reports the lowest average monthly income at Rs. 28,796 among beneficiaries' households. Following the intervention, a substantial increase of 48.6% is observed in the average monthly income across all provinces. Notably, Punjab stands out with the highest increase, marking a significant rise of 51.23% in average monthly income post-intervention. Similarly, Sindh witnessed an approximate 40.13% increment in average monthly income subsequent to the intervention.

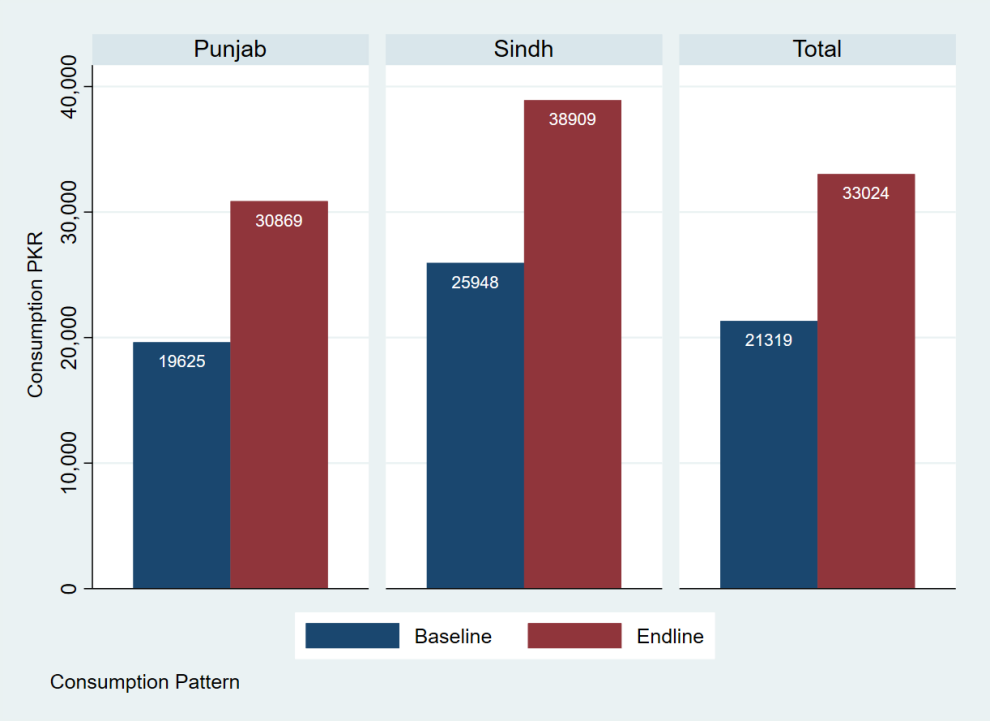
Figure 1: Income Patterns: Before and After Intervention



Source: Author's formulation based on Survey data. Self-reported nominal values are presented in PKR. It includes monthly I=income from all sources

The average monthly consumption levels among the NPGP beneficiary households in two provinces, Punjab, Sindh, and across the total sample is shown in Figure 14 below. It can be observed that in the post-intervention period households have experienced significant rise in their consumption level. Which reflects improved living standards and increased purchasing power due to Programme support. The average monthly consumption across all districts increased by 55%, rising from PKR 21,319 at baseline to PKR 33,024 at endline. At the provincial level, Punjab recorded an increase from PKR 19,625 to PKR 30,869, amounting to a 57% rise in consumption, whereas Sindh exhibited a rise from PKR 25,948 to PKR 38,909, marking a 50% increase (Figure 2). While households in Sindh started with a higher baseline consumption level, the relative gains in both provinces are notable. These upward shifts validate the effectiveness of the NPGP in strengthening household economic resilience and enabling improved consumption capacity.

Figure 2:Consumption Patterns: Before and After Intervention

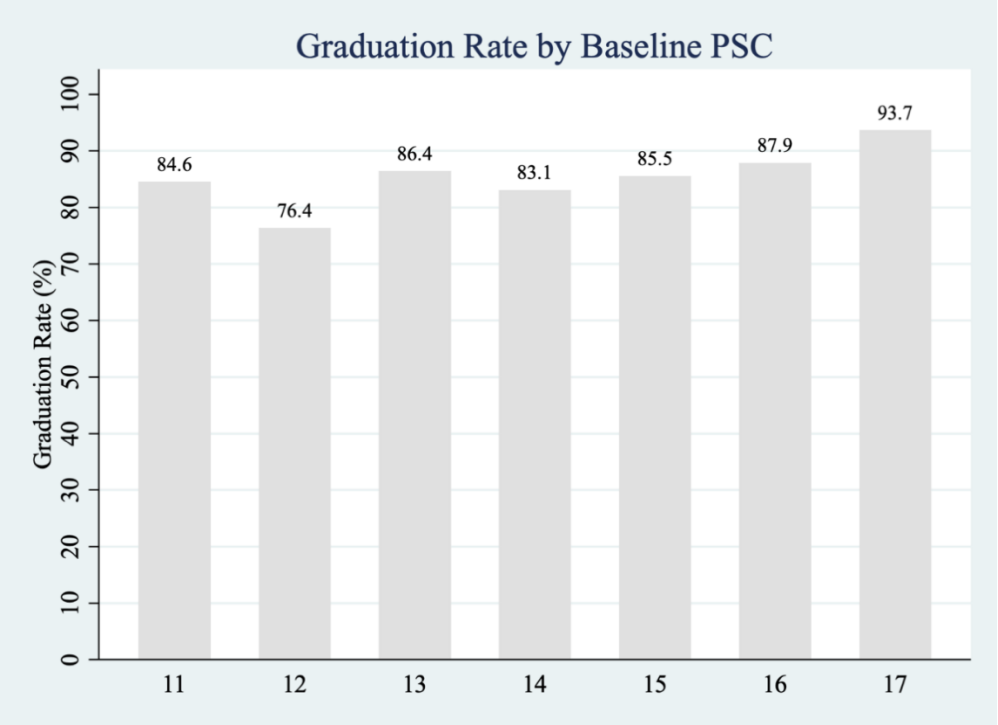


Notes: Author's formulation based on Survey data. Self-reported nominal values are presented in PKR.

5. Graduation: Impact Analysis

Graduation from ultra-poverty is the cornerstone objective of the NPGP. Graduation is defined as a household's transition from a PSC score of ≤16.17 (ultra-poor) at baseline to >16.17 at endline. This transition reflects not just income gains, but improvements across multidimensional welfare indicators embedded within the PSC framework. In addition, we analyze households crossing the higher threshold of PSC > 23, indicative of enhanced resilience and more sustainable poverty exit. The analysis reveals a substantial shift in the welfare trajectory of targeted households. Approximately 83.6% of ultra-poor households (as defined by the baseline PSC) successfully graduated above the 16.17 threshold at endline. Figure 4 clearly demonstrates a positive correlation between the baseline PSC and the graduation rate. Households that began with a higher initial PSC indicating they were relatively better off within the ultra-poor bracket had a significantly greater probability of graduating above the threshold. Notably, households with PSC 17 had the highest graduation rate at 93.7%, confirming that even marginal improvements in baseline conditions can significantly enhance the efficacy of asset transfer and livelihood support programmes.

Figure 3: Graduation Rate by Baseline PSC



Source: Author's Formulation based on survey data

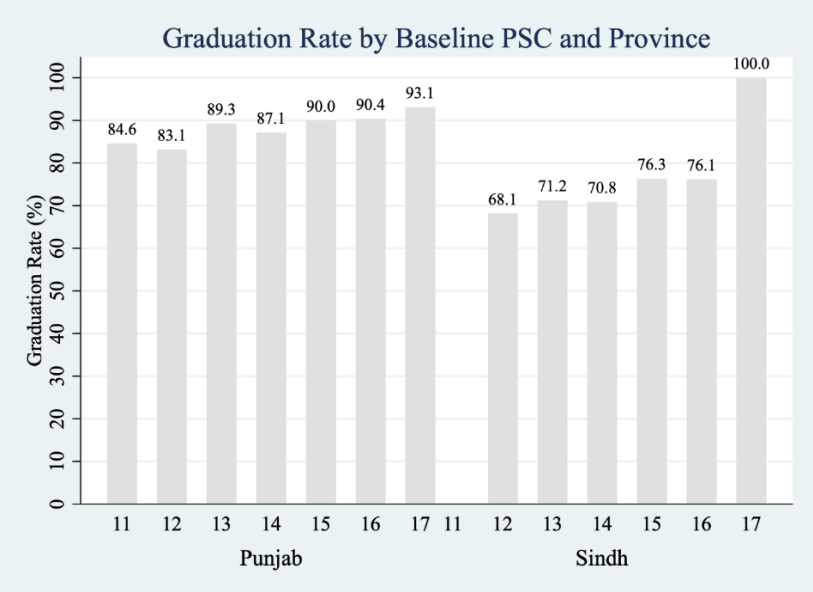
a. Provincial Variations

Figure 5 illustrates province-wise graduation rates from ultra-poverty by baseline PSC, highlighting significant disparities between Punjab and Sindh. Punjab consistently exhibits higher graduation rates across all baseline PSC scores. For example, at PSC 13–16, graduation rates in Punjab range between 87% and 93%, while Sindh lags behind with rates between 71% and 76%. The lowest graduation rate is observed in Sindh at PSC 11 (68.1%), whereas even the lowest in Punjab (PSC 12) remains above 83%. A notable exception is seen at PSC 17 in Sindh, which reports a perfect 100% graduation rate, though this may reflect a smaller, potentially non-representative sample. The possible reasons for provincial disparities are:

- Infrastructure and Market Access: Punjab has better infrastructure and market connectivity, enabling quicker monetization of assets and better income-generating opportunities.
- Implementation Quality: Programme delivery in Punjab may have benefited from stronger local governance, community organization (like CRPs), and monitoring systems.
- Agricultural Productivity: Punjab's agriculture-dependent households likely have better yields and diversification opportunities compared to Sindh's flood-prone or water-scarce areas.
- Disaster Exposure: Sindh faced more intense climate shocks (e.g., floods), which may have undermined asset effectiveness and slowed household recovery.

- Baseline Vulnerabilities: Households in Sindh may have deeper socio-economic vulnerabilities, including lower education, landlessness, or social marginalization, requiring more intensive support.

Figure 4: Graduation Rate by Baseline PSC: Provincial Variations

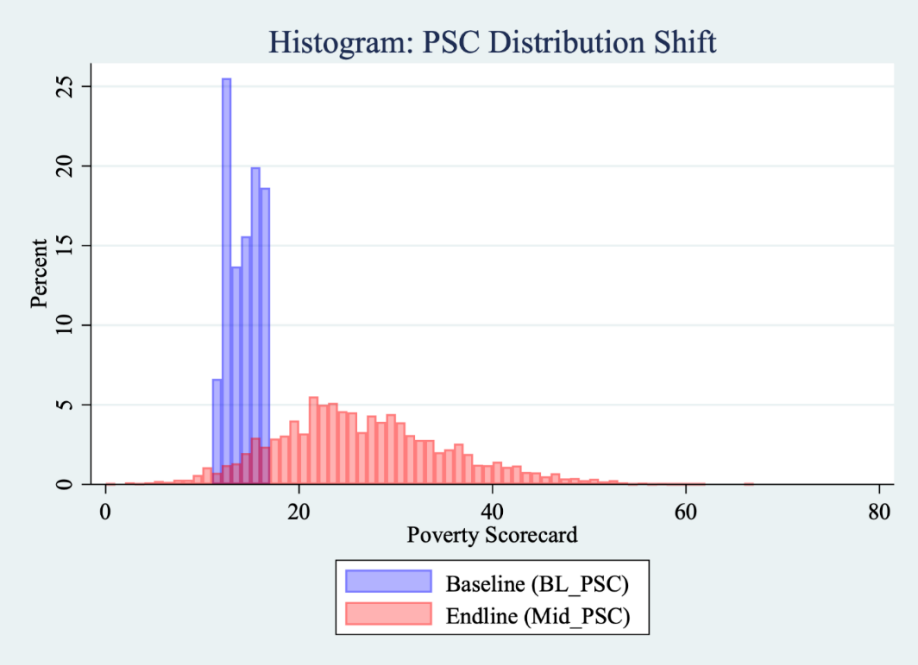


Source: Author's Formulation based on survey data

b. Shifting Out of Ultra-Poverty

Figure 6 and Figure 7 jointly illustrate a strong positive shift in poverty scores among the NPGP beneficiary households, signaling meaningful movement out of ultra-poverty. The histogram of PSC distributions demonstrates a stark contrast between baseline and endline scores. At baseline, the distribution was tightly clustered between PSC 11 and 17, as per the Programme's inclusion criteria. By the endline, the distribution broadens significantly, with the density curve pushing rightward and flattening an indicator of both upward mobility and increasing heterogeneity in economic well-being. Importantly, a substantial proportion of households moved above key PSC thresholds such as 16.17 (graduation from ultra-poverty) and 23 (enhanced well-being and resilience).

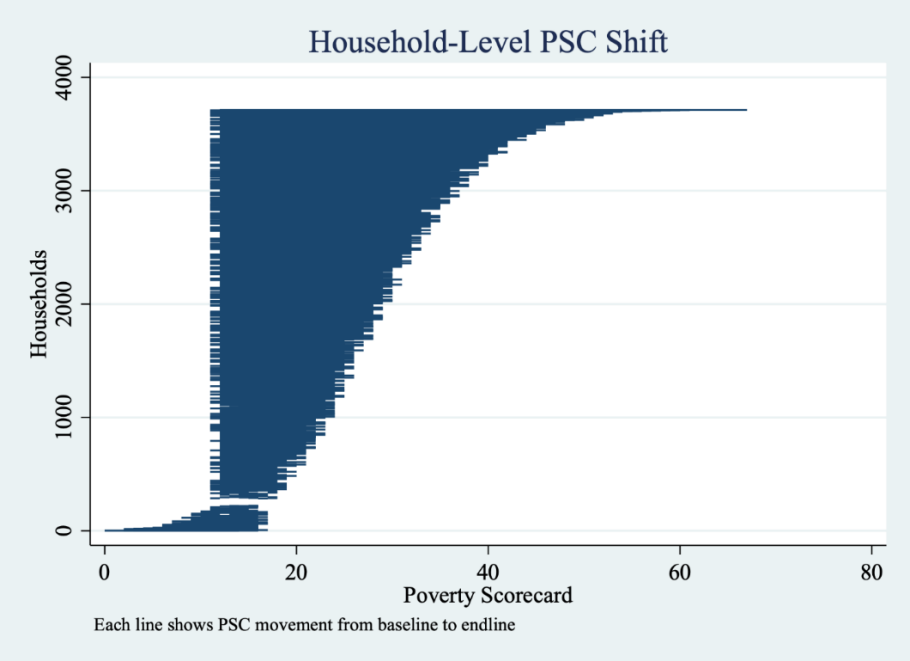
Figure 5: Distributional Shift in Poverty Scorecard (PSC) Values



Source: Author's Formulation based on survey data

The household-level PSC shift graph offers a micro-level view of these transitions. Each line represents a household's journey from its baseline to endline PSC, emphasizing the individual variability in outcomes. While the majority of households show upward movement many rising above 30 and even 40, a non-trivial minority have seen either stagnation or a decline in their PSC. This tail of declining scores signals potential vulnerabilities or adverse shocks such as floods, economic losses, or health emergencies that may have offset programme gains. These exceptions underscore the need for adaptive support mechanisms even within targeted asset transfer models. Collectively, these visualizations highlight both the effectiveness and limitations of the graduation approach: a large share of ultra-poor households can shift meaningfully upward in a relatively short time, but a uniform trajectory cannot be guaranteed especially in the face of contextual risks and pre-existing deprivations.

Figure 6: Household-Level PSC Transitions from Baseline to Endline

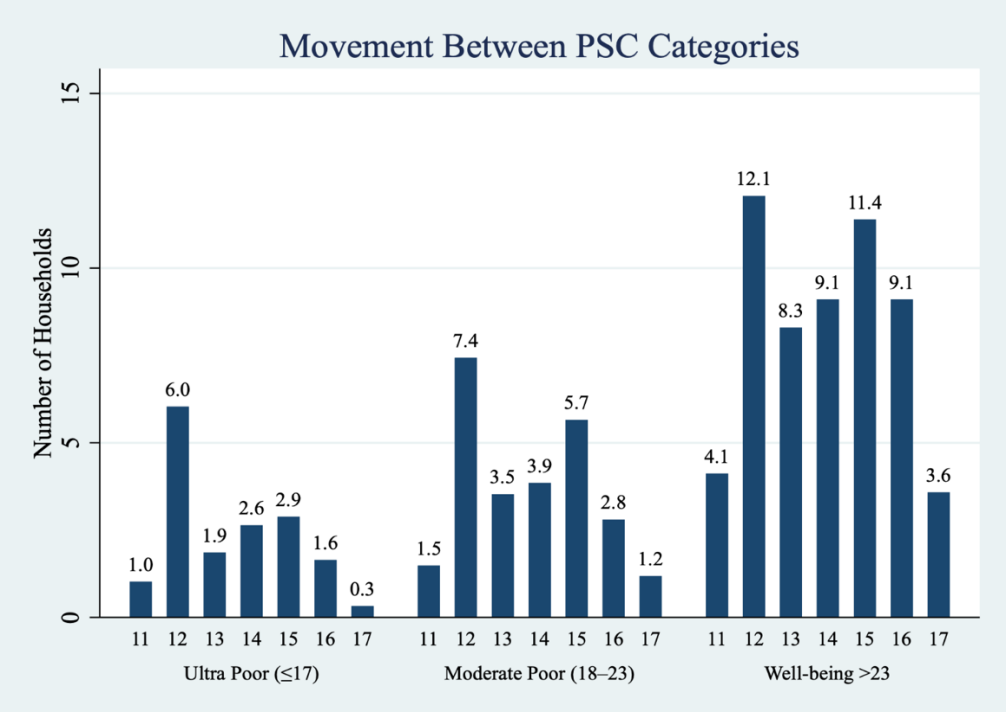


Source: Author's Formulation based on survey data

c. Resilience Through Sustainable Graduation (PSC > 23)

A key benchmark for sustainable graduation from ultra-poverty under the NPGP framework is achieving a PSC above 23. This threshold indicates that households have not only exited ultra-poverty but have transitioned into a state of improved well-being and relative resilience. According to the figure 8, a significant proportion of households initially classified as ultra-poor (PSC between 11 and 17) moved to higher categories at endline. For instance, 12.1% of households that started with a PSC of 12 reached the well-being threshold (PSC > 23), while 11.4% of households beginning at a PSC of 15 crossed into this category. Notably, even households at the lowest PSC level (11) recorded upward mobility, with 4.1% crossing the sustainable graduation threshold. These movements reflect the transformational potential of NPGP asset transfers and complementary support mechanisms, especially for those closer to the upper end of the ultra-poverty threshold.

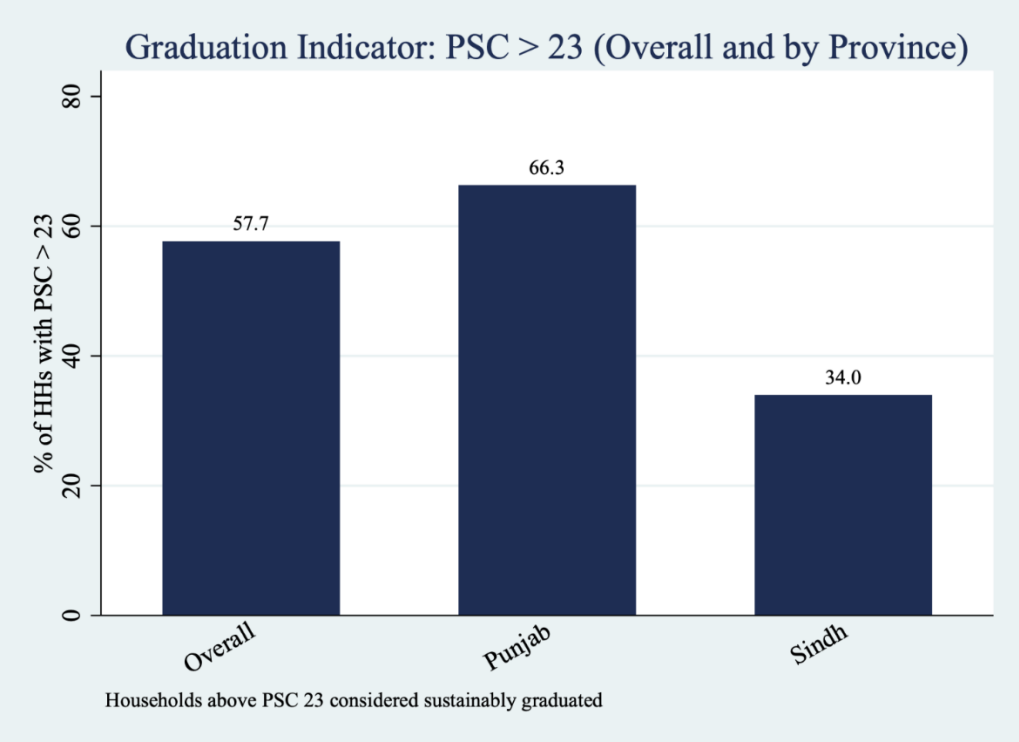
Figure 7: Movement of Households Across PSC Categories



Source: Author's Formulation based on survey data

A deeper look into provincial differences, Figure 9 reveals striking disparities. Nationally, 57.7% of NPGP beneficiaries reached or exceeded the PSC 23 mark. However, when disaggregated, Punjab emerges as the clear outperformer, with 66.3% of its households crossing the sustainable graduation threshold. In contrast, only 34.0% of households in Sindh managed to reach this benchmark. These provincial differences may stem from several factors including local economic structures, asset productivity, programme delivery efficiency, and exposure to climate shocks. Punjab's better infrastructure, access to markets, and more diversified livelihoods could explain its higher graduation rates. Conversely, Sindh's relative vulnerability due to recurring floods, less productive land, and weaker local institutions may have constrained the pace of upward mobility. This divergence calls for tailored programme design, recognizing that resilience-building strategies must be context-sensitive and adaptable to regional disparities.

Figure 8: Percentage of Households Achieving Sustainable Graduation (PSC > 23)



Source: Author's Formulation based on survey data

6. Multidimensional Wellbeing

Beyond income and poverty graduation, the NPGP was envisioned to catalyze transformative change across multiple dimensions of household well-being. This section evaluates the broader impacts of the programme on key non-monetary outcomes, including food security, women's empowerment, and climate resilience. These indicators reflect not only immediate welfare improvements but also the programme's potential to build sustainable capabilities and reduce long-term vulnerabilities. By adopting a multidimensional lens, we assess whether the intervention fostered inclusive and resilient pathways out of poverty, particularly among women, climate-affected households, and the ultra-poor. The analysis uses both quantitative data and self-reported behavioral changes to capture the extent of transformation across targeted communities.

a. Improvement in Household Food Security

Food security is a foundational indicator of household resilience and well-being, especially in contexts where poverty and vulnerability intersect with climatic and economic shocks. The NPGP sought to reduce the risk of hunger and malnutrition by enabling ultra-poor households to stabilize their incomes and improve food access through asset transfers, capacity-building, and community engagement. To assess food security, five core questions adapted from the Food Insecurity Experience Scale (FIES) were asked, focusing on various dimensions of food stress experienced over the past 12 months. These included concerns over food sufficiency, inability to access nutritious food, meal skipping, running out of food, and prolonged periods without eating.

Survey Items for Food Security Assessment

- S8Q1: Worry about not having enough food due to lack of resources.
- S8Q2: Inability to eat healthy or nutritious food.
- S8Q3: Skipping meals due to insufficient food.
- S8Q4: Running out of food in the household.
- S8Q5: Going a whole day without eating.

These indicators capture different dimensions of food insecurity ranging from anxiety about food availability to extreme deprivation such as going without food for an entire day. Each question reflects a specific stage of food insecurity and aligns with global standards used in food security assessments Each variable is binary and constructed such that:

- A value of 1 indicates that the household experienced a specific form of food insecurity, and
- A value of 0 means the household did not experience that form of deprivation, and is therefore food secure for that dimension.

Thus, lower mean values for these variables imply better food security. To assess whether households in the treatment group (those receiving asset transfers) experienced better food security than the control group, we conducted two-sample t-tests for each indicator. The results are presented in the table below:

Table 4: Impact of NPGP Asset Transfers on Household Food Insecurity Indicators

Question Code	Description	Treatment Mean (μ_1)	Control Mean (μ_2)	Mean Diff ($\mu_1 - \mu_2$)	p-value
S8Q1	Worry about food availability	0.614	0.624	-0.010	0.443
S8Q2	Unable to eat nutritious food	0.632	0.651	-0.019	0.121
S8Q3	Skipped meals	0.488	0.489	-0.000	0.983
S8Q4	Ran out of food	0.454	0.466	-0.012	0.353
S8Q5	Went without eating for a day	0.331	0.343	-0.012	0.326

Source: Author's Formulation based on survey data

Across all five food insecurity indicators, treatment households, those that received asset transfers under the NPGP consistently report slightly lower mean values compared to the control group. Since these variables were constructed such that a value of "1" represents food insecurity (e.g., worrying about food availability, skipping meals, or going an entire day without eating), lower means indicate better food security outcomes. For example, the proportion of households in the treatment group reporting concern over food availability (S8Q1) is 61.4%, compared to 62.4%

in the control group. Similar trends are observed for indicators such as inability to eat nutritious food (S8Q2), meal skipping (S8Q3), and running out of food (S8Q4). These results suggest that the NPGP asset-based support may have provided a modest buffer against food-related vulnerabilities.

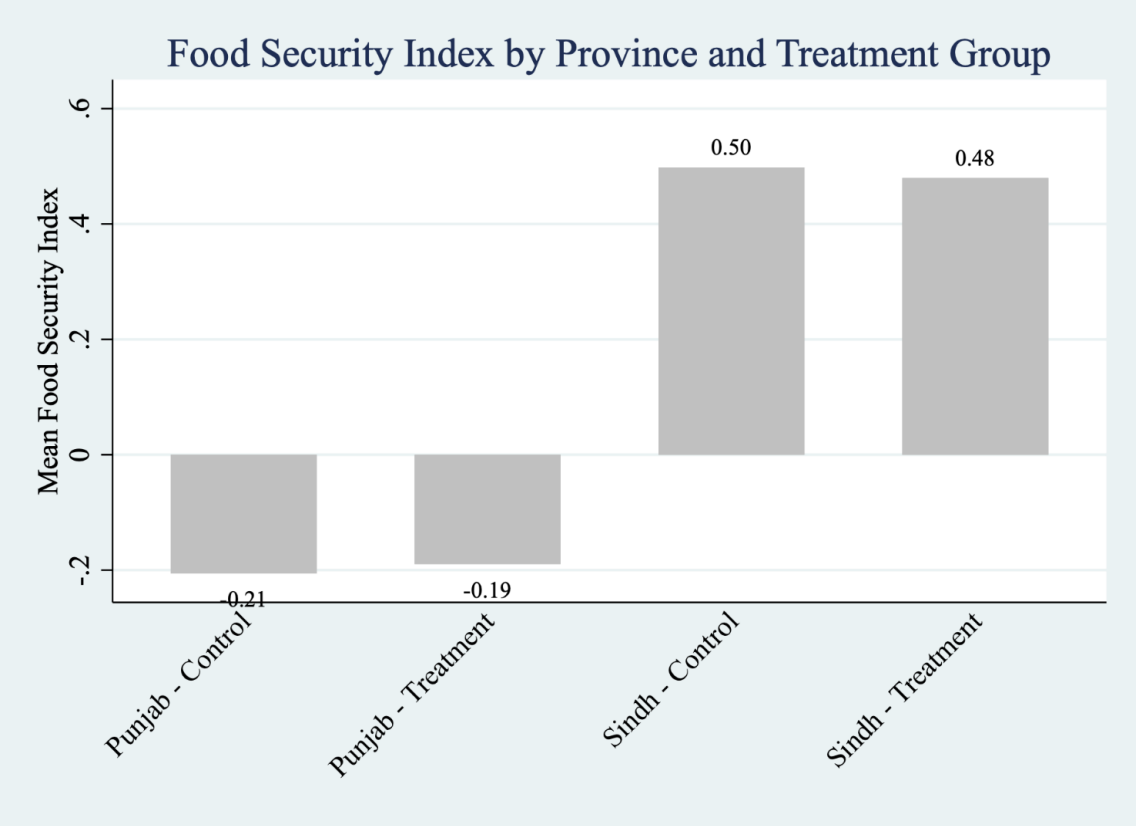
However, the observed differences across all indicators are relatively small and not statistically significant at the conventional 5% level. The p-values associated with the mean differences range from 0.121 to 0.983, indicating that we cannot conclusively attribute improvements in food security to the NPGP intervention alone. This lack of statistical significance may be due to the short time span between asset transfer and measurement, the influence of external shocks such as inflation or climate events, or the limited scale of complementary support like food or cash top-ups. It is also possible that the Programme's design, which focuses primarily on asset transfers and livelihood promotion, is not sufficient on its own to produce rapid improvements in food security indicators.

These findings highlight the complexity of addressing food insecurity among ultra-poor households. While asset transfers can play a critical role in generating income and enabling consumption smoothing, they may need to be complemented with nutrition-specific interventions, such as targeted food assistance, awareness campaigns on dietary diversity, or linkages with agricultural extension services. In contexts of high vulnerability, particularly where shocks such as floods or food price inflation are common, a standalone graduation model may not deliver meaningful gains in food security without additional investments in resilience and safety nets.

To comprehensively assess the impact of the NPGP asset transfer on household food security, we developed a composite Food Security Index using five key indicators of food insecurity in Figure 22. To aggregate the information from the five binary variables into a single standardized index, the Inverse-Covariance Weighted (ICW) Index method was chosen because it accounts for the correlation structure among the individual indicators, assigning higher weights to less correlated variables, thereby reducing noise. In Punjab, both treatment and control households exhibit negative values on the index, suggesting relatively higher levels of food insecurity. However, the difference between treatment (-0.19) and control (-0.21) is minimal, indicating that the intervention had only a marginal effect on food security outcomes in this province (Figure 9).

In contrast, Sindh shows substantially better outcomes overall. Both control (0.50) and treatment (0.48) groups display positive index values, denoting relatively better food security conditions. Interestingly, treatment households in Sindh exhibit slightly lower average index scores compared to control, which may suggest regional anomalies, differences in baseline vulnerability, or potential spillover effects.

Figure 9: Food Security Index by Province and Treatment Group



Source: Author's Formulation based on survey data

b. Women's empowerment

Women's empowerment is a critical dimension of sustainable poverty graduation and inclusive development. This analysis draws on four variables from Section 10 of the endline survey questionnaire, focusing on women's role in household decision-making:

- Dummy: Complete say in small purchases for self – Equals 1 if the respondent reported having complete say in personal purchases (e.g., clothing); 0 otherwise.
- Dummy: Complete say in purchases for others – Equals 1 if the respondent reported having complete say in making purchases for children or other family members.
- Dummy: Complete say in child education/health decisions – Equals 1 if the respondent has full autonomy in decisions regarding their children's education and health.
- Dummy: Complete say in child marriage decisions – Equals 1 if the respondent has full decision-making power over their children's marriage-related choices.

Each variable is constructed as a binary (0/1) indicator and compared across treatment and control groups using mean difference analysis via two-sample t-tests. This allows us to identify whether asset transfers under the NPGP have had a statistically significant impact on women's decision-

making capacity in these key domains. Table 5 presents the average values of each dummy variable for the control and treatment groups, the difference between them, and the associated p-values to determine statistical significance.

Table 5: Women Empowerment

Indicator	Treatment ($\mu 1$)	Control ($\mu 2$)	Difference ($\mu_1 - \mu_2$)	p-value
Dummy: Complete say in small purchases for self	0.436	0.421	0.015	0.263
Dummy: Complete say in purchases for others	0.448	0.431	0.016	0.221
Dummy: Complete say in child education/health decisions	0.443	0.426	0.017	0.197
Dummy: Complete say in child marriage decisions	0.406	0.385	0.021	0.111
Observations		5,739		

Source: Author's Formulation based on survey data

Across all four indicators, women in the treatment group consistently reported slightly higher levels of empowerment compared to those in the control group. The treatment group was more likely to have a complete say in household financial and social decisions, including education and marriage of children. However, the observed differences are modest and not statistically significant at conventional levels ($p > 0.05$). These results indicate that while NPGP has contributed marginally to enhancing women's agency, particularly in household domains, the Programme's standalone impact on empowerment may be limited. Cultural norms, structural barriers, and the time frame of asset utilization may influence the degree of behavioral and normative shifts observed. Further empowerment gains might require complementary investments in education, gender awareness, and community-level social norm transformation.

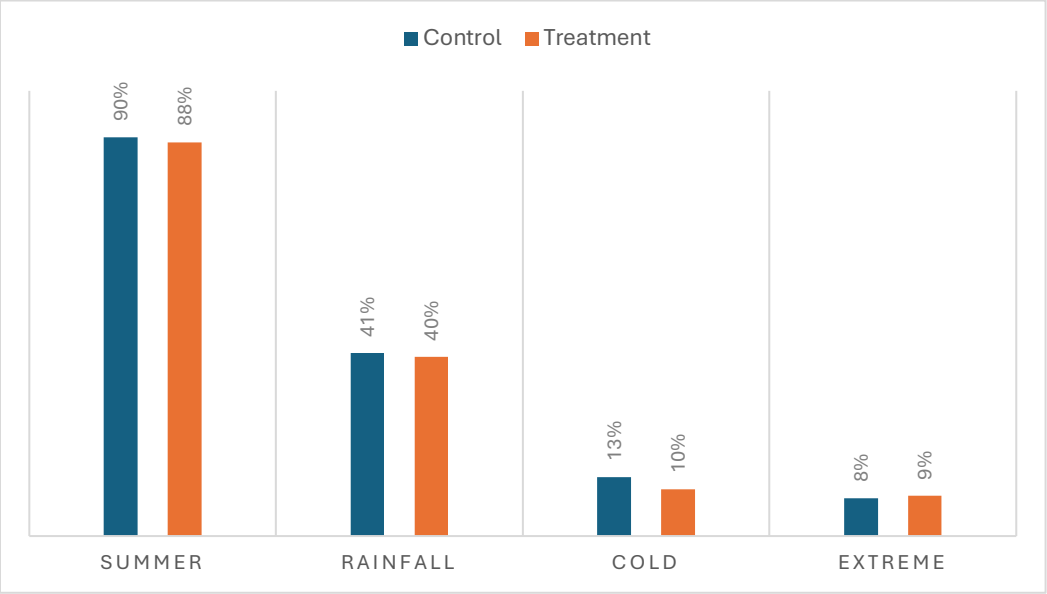
7. Climate Change and Household Responses

Climate change poses increasing risks to rural livelihoods, particularly in vulnerable regions such as Pakistan's flood-prone districts. This section draws from the NPGP endline survey, which included a dedicated climate change module to assess beneficiaries' perceptions, experiences, and adaptations. The survey explored five key themes: observed climate changes, impacts on livelihoods, household adaptation practices, awareness sources, and future expectations. Based on this structure, we present three interlinked sub-sections that correspond to the questionnaire design and thematic analysis.

a. Perceived Changes in Climate Patterns

Respondents were asked whether they observed any changes in climate patterns or seasons in recent years. Those who responded affirmatively selected from a list of potential changes, including: long summers, excessive heat, increase or reduction in rainfall, excessive cold winters and fog, heavy floods, and prolonged droughts. The response options also allowed for multiple selections except "None" and "Others." Figure 10 presents the distribution of household responses to perceived changes in weather patterns across treatment and control groups. Respondents were asked whether they had noticed any climatic changes in recent years, and if so, what type of changes were observed (Figure 10). To simplify and better interpret the findings, individual responses were grouped into four major categories: Summer-related changes, Rainfall-related changes, Cold-related changes, and Extreme events (including floods and droughts).

Figure 10: Perceived Climate Pattern Changes by Treatment Status



Source: Author's Formulation based on survey data

Summer-related changes (e.g., longer and hotter summers) were by far the most commonly reported perception, cited by 90% of control households and 88% of treatment households. This overwhelming consensus highlights widespread awareness of rising temperatures and prolonged summer seasons, suggesting that heat-related stress is a shared environmental concern. Rainfall-related changes (increase or reduction in rainfall) were reported by around 41% of control and 40% of treatment households. This finding suggests mixed or variable experiences of precipitation patterns, possibly indicating shifts in monsoon timing or intensity across regions. Cold-related changes (e.g., excessive cold winters or fog) were mentioned by 13% of control and 10% of treatment households. While less frequently observed, these perceptions still indicate some awareness of seasonal volatility. Extreme events (including floods and prolonged droughts) were reported by 8% of control and 9% of treatment households, indicating relatively lower—but still notable—concerns about disaster risks tied to climate variability.

Overall, the distribution across categories shows high consistency between treatment and control groups, indicating that both sets of respondents are equally exposed to and aware of climate changes. These perceived changes form the foundation for understanding household vulnerability and subsequent adaptation behavior, explored in the next sub-sections.

b. Climate Impacts and Household Adaptations

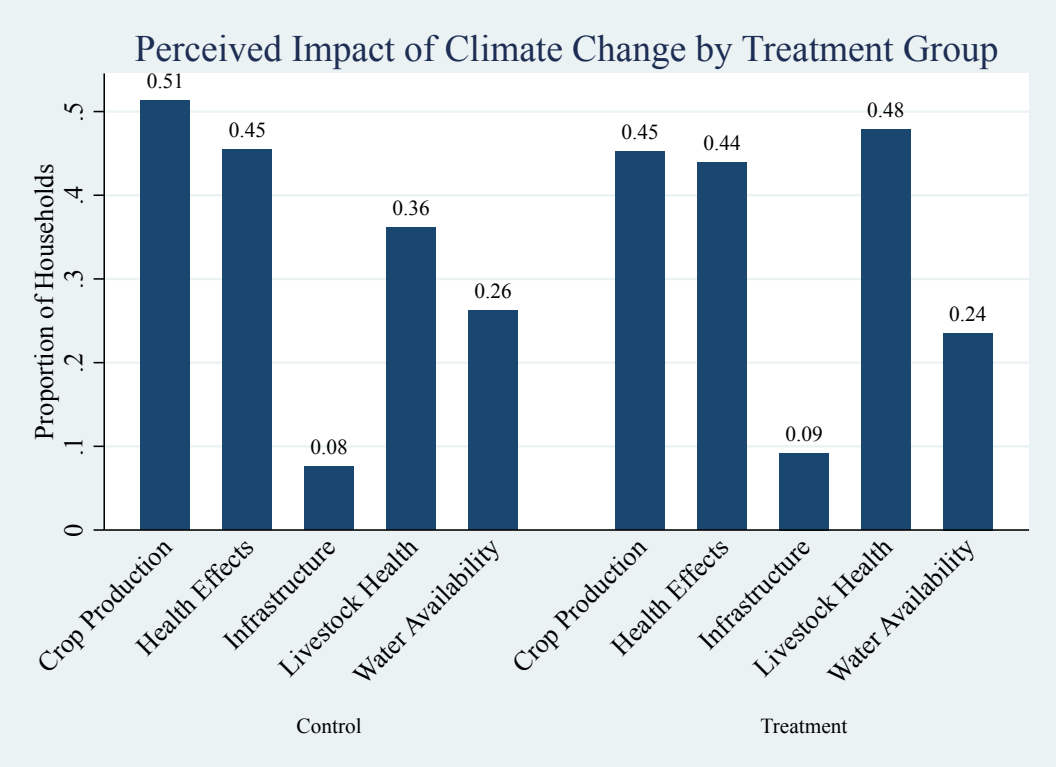
Households who reported changes in weather patterns were further asked how these shifts affected their livelihoods. Major effects included reduced crop yields, declining livestock health, water scarcity, health issues such as heat stress, and infrastructure damage due to flooding. This illustrates the multidimensional nature of climate vulnerability. Figure 11 visualizes the proportion of households that reported experiencing each of the five major types of impacts: crop production, livestock health and productivity, water availability, health, and infrastructure damage. The responses were recorded as binary indicators (dummy variables) and analyzed by treatment status, separating the responses of households that were part of the NPGP intervention from those that were not (control group).

For each impact category, we calculated the mean value of the binary response, representing the share of households who reported experiencing that particular issue. For example, approximately 51% of control group households reported that crop production was affected by climate change, compared to 45% in the treatment group. This difference of six percentage points suggests a slightly lower perceived impact among programme beneficiaries.

Similarly, the perceived impact on health outcomes was almost the same between the two groups—45% for the control group and 44% for the treatment group. This indicates that while the programme may offer financial resilience, its effect on health-related vulnerabilities may not be significant. On the other hand, 48% of treatment households reported impacts on livestock health, which is significantly higher than the 36% in the control group. This 12-percentage-point gap may reflect either heightened sensitivity among treatment households or the exposure of new livelihood assets (e.g., livestock) to climate stressors.

Water availability and infrastructure damage were less frequently reported across both groups. Approximately 26% of control group respondents noted climate-related impacts on water availability, versus 24% in the treatment group. Infrastructure damage was reported by 8% of the control group and 9% of the treatment group, showing minimal difference. Overall, the data demonstrates that while the programme may have had some buffering effects in key areas such as crop production, significant vulnerabilities remain, especially regarding livestock and health outcomes.

Figure 11: Perceived Impact of Climate Change by Treatment Group



Source: Author's Formulation based on survey data

To cope with these impacts, households reported adopting various adaptation practices. These included:

- Modifying farming techniques (e.g., drought-tolerant crops)
- Water conservation (e.g., rainwater harvesting)
- Livestock management changes
- Infrastructure strengthening
- Using early warning systems and climate-resilient technologies

Table 6 summarizes mean differences in climate adaptation practices between treatment and control households. Treatment households, who benefited from the NPGP intervention, show significantly higher adoption rates for adaptive practices such as changing farming methods, conserving water, strengthening infrastructure, and using early warning systems. These results underscore the importance of the NPGP in enabling households to adopt safer, more sustainable responses to climate-related challenges. Through a combination of productive asset transfers, training, and financial services, NPGP has helped households build resilience and reduce their vulnerability to climate shocks. These adaptive behaviors are crucial not just for household survival, but also for supporting long-term graduation from poverty.

Table 6: Adoption of Climate Adaptation Practices: Mean Differences by Treatment Group

Adaptation Practice (Short Name)	Treatment Mean (μ_1)	Control Mean (μ_2)	Mean Diff ($\mu_1 - \mu_2$)	p-value
Changing Farming Practices (Farming)	0.402	0.304	0.099	0.000
Water Conservation (Water)	0.236	0.178	0.058	0.002
Livestock Management (Livestock)	0.227	0.247	-0.020	0.312
Strengthening Infrastructure (Infra)	0.166	0.127	0.040	0.016
Early Warning Systems (Warning)	0.115	0.071	0.044	0.001
Climate-Resistant Technologies (Tech)	0.064	0.047	0.017	0.102
No Adaptation (None)	0.287	0.314	-0.027	0.208

Source: Author's Formulation based on survey data

c. Sources of Awareness, Barriers, and Future Adaptation Plans

Among those who adopted adaptation strategies, respondents were asked about the source of their awareness. Table 7 comparison between treatment and control groups regarding their sources of awareness about climate adaptation practices. Key observations include:

- A higher percentage of treatment group households reported receiving awareness through local leaders, which was statistically significant.
- Media and government Programmes were equally accessed by both groups without statistically significant differences.
- Personal experience remained the dominant source of awareness, indicating organic adaptation knowledge shaped by lived experiences.

These findings underscore the importance of leveraging local leadership for awareness dissemination. Additionally, while general outreach via media and government programmes has a uniform reach, efforts to formalize and brand programme-led awareness initiatives can improve visibility and attribution among beneficiaries.

Table 7: Awareness About Adaptation Practices: Mean Differences by Treatment Status

Source of Awareness	Treatment Group (mu_1)	Control Group (mu_2)	Difference (b)	p-value
Government Programmes or initiatives	0.310	0.289	0.021	0.398

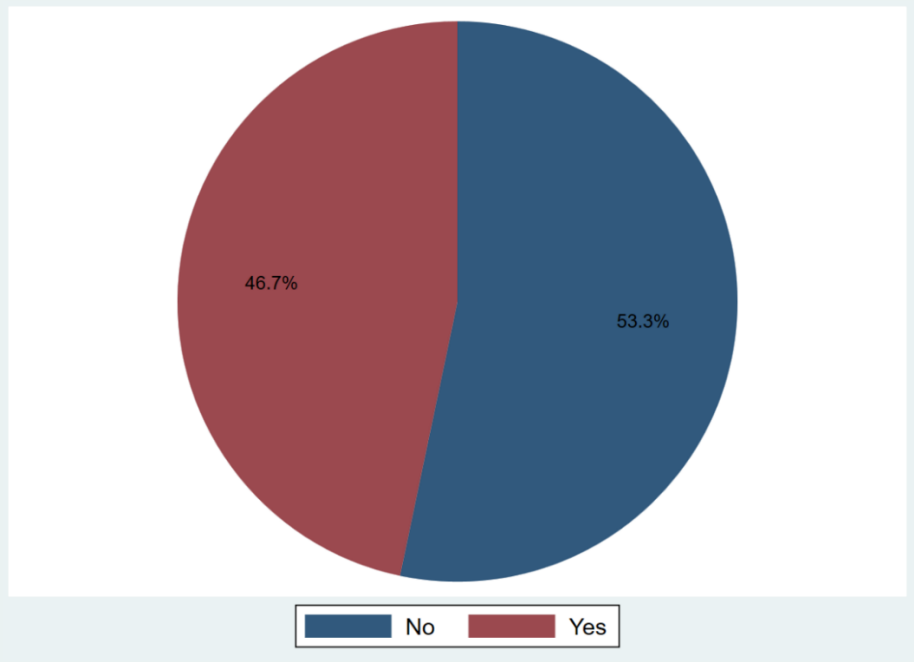
Media (TV, radio, online sources)	0.123	0.105	0.018	0.296
Local Leaders	0.207	0.132	0.074	0.000
Personal Experience	0.403	0.426	-0.023	0.377

Source: Author's Formulation based on survey data

d. Flood Fallout: Community Experiences and Consequences

The beneficiaries not only recognize the presence of a wide range of climate-related shocks but also report direct exposure to recurring floods. When asked "whether their area was affected by the 2022 floods", a substantial 46.7% of respondents confirmed experiencing flooding in their locality. This pattern is visually depicted in Figure 12.

Figure 12: Flood Affected Households



Source: Author's Formulation based on survey data

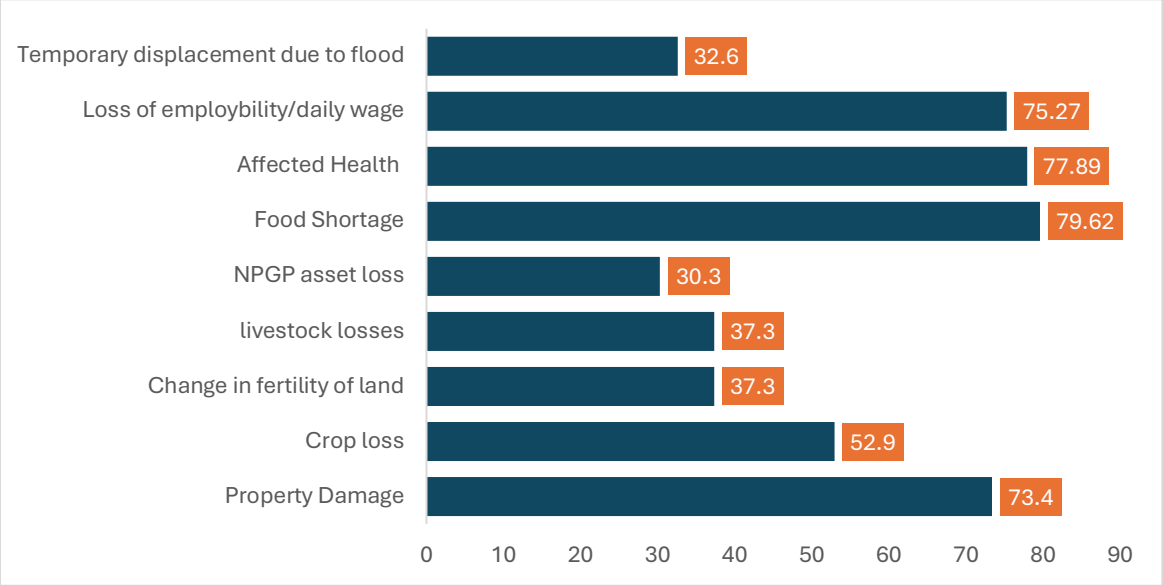
The beneficiaries have been significantly affected by the flood shocks, which have impacted multiple dimensions of their lives and livelihoods. Figure 13 offers insight into the various mechanisms through which these flood shocks have influenced well-being.

- Property Damage/loss: Among the 46.7% of surveyed households who reported being directly affected by the 2022 floods, the majority experienced severe and multi-dimensional disruptions to their lives, assets, employability and livelihoods. A significant 73.4% of affected respondents reported property damage, with 65.96% of them classifying the damage as major, followed by 19.62% reporting moderate, and 14.42% minor damage

(Figure 14). These figures highlight the widespread destruction of housing and essential infrastructure, leaving households in vulnerable conditions.

- Crop Loss: In terms of livelihoods, 52.9% of flood-affected respondents reported suffering crop losses, which directly undermines their food security and income sources. Of those, an overwhelming 72.1% indicated experiencing major crop loss, pointing to extensive agricultural devastation. The impact extended beyond immediate harvests, 37.3 % reported change in their land fertility, of those 67.84% reported major change, threatening longer-term productivity and resilience.
- Livestock loss: Livestock, another key livelihood asset, was also severely hit, with 72% of affected households reporting major losses in animals reflecting both economic and emotional trauma for rural families. Furthermore, only 30% of the beneficiaries reported some losses to NPGP assets during the flood.

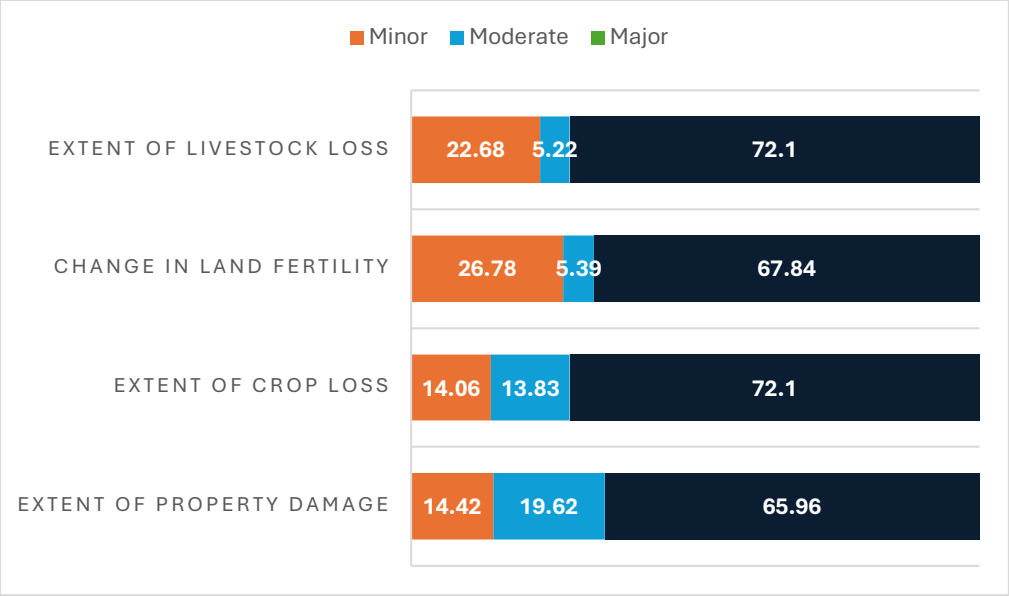
Figure 13: Effects of Flood Shocks



Source: Author's Formulation based on survey data

Flood shocks have significantly impacted employability, leading to reduced working hours and decreased daily wages for 75.27% of the beneficiaries. This reduction in employability highlights the challenges faced by individuals in maintaining stable employment due to recurring flood disruptions. Among the beneficiaries affected by the 2022 floods, 32.6% reported being temporarily displaced or forced to migrate from their homes. This displacement not only disrupted their daily lives but also exposed them to increased vulnerability, including lack of shelter, food insecurity, disrupted education for children, and limited access to healthcare and income sources. It often leads to social and psychological stress and can hinder the recovery process, especially for poor and marginalized households with limited coping mechanisms.

Figure 14: Extent of losses due to flood shocks



Source: Author's Formulation based on survey data

The provided information emphasizes the severe threat posed by flood to the beneficiaries, significantly impacting their essential sources of livelihood including agriculture, houses, livestock, and daily wages. These vulnerable populations heavily rely on these resources for sustenance, making them particularly vulnerable to climate-induced disruptions. The adverse effects on income, livestock, and crops not only jeopardize their immediate well-being but also erode their long-term prospects, further exacerbating their precarious conditions. Climate shocks play a pivotal role in worsening the already vulnerable situation of these individuals, highlighting the multifaceted challenges posed by climate change in both the short and long term.

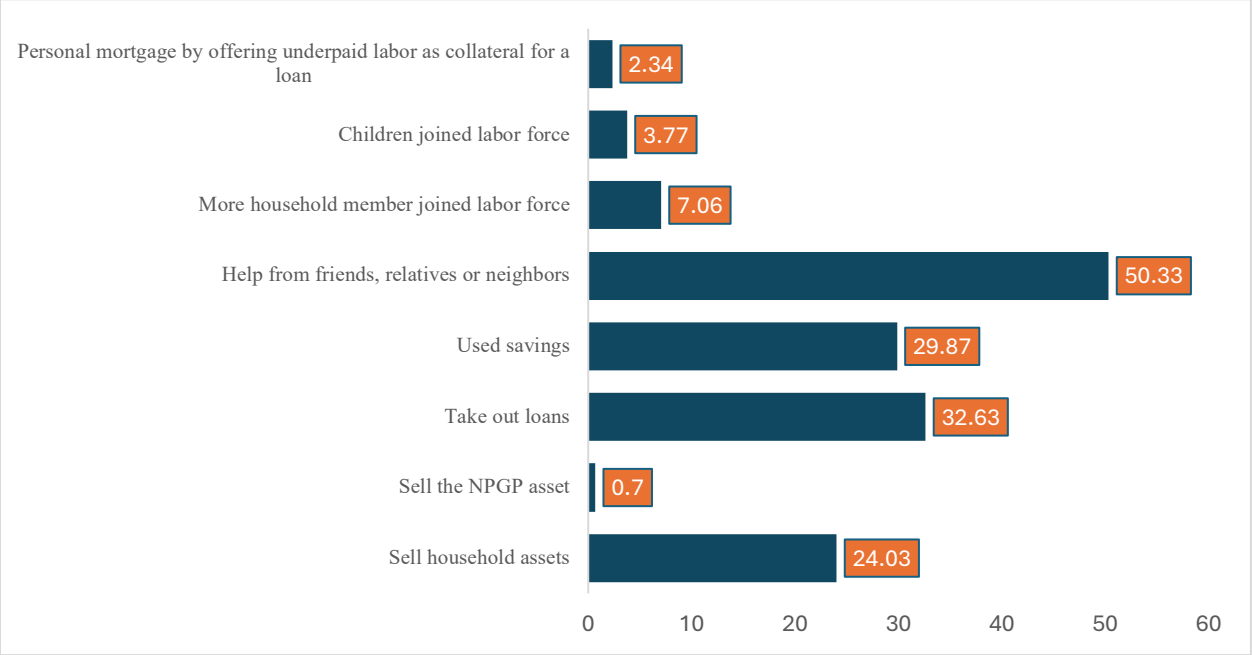
e. Coping strategies during Floods

Figure 15 provides a list of coping strategies adopted by the beneficiaries in response to the challenges posed by floods. A diverse range of strategies has been reported, reflecting the multifaceted efforts to mitigate the impacts of climate-induced shocks.

- Help from Friends, Relatives, or Neighbors: A notable 50.3% of households sought support from their social networks, emphasizing the critical role of community ties in navigating climate-induced hardships.
- Taking Out Loans: About 32.6% of respondents coped with losses by borrowing money, highlighting the reliance on informal or formal credit systems during times of distress.
- Used Savings: Around 29.9% of households drew from their savings to meet urgent needs, reflecting some level of financial preparedness but also indicating depletion of safety nets.
- Sell Household Assets: Nearly 24% of the respondents sold household belongings to cover essential expenses, revealing the severity of financial strain brought on by the shocks.

- More Household Members Joined the Labor Force: About 7.1% of households increased labor participation by involving additional members in income-generating activities, a common but unsustainable coping mechanism.
- Children Joined the Labor Force: Although limited, 3.8% of households reported child labor as a response to financial pressure, a troubling sign of deep economic vulnerability.
- Personal Mortgage Through Underpaid Labor: A small but concerning 2.3% of respondents reported offering underpaid labor as collateral for loans, suggesting exploitative lending practices during crises.
- Selling the NPGP Asset: Only 0.7% of households reported selling the asset provided under the National Poverty Graduation Programme, indicating a strong tendency to preserve productive assets even under extreme pressure.

Figure 15: Adaptive measures to cope flood shocks



Source: Author's Formulation based on survey data

These coping strategies reveal the restricted scope within which beneficiaries navigate climate shocks. Predominantly relying on available resources and local knowledge, these approaches lack high-tech solutions, emphasizing the barriers these individuals face in accessing advanced technologies to counter the impacts of climate shocks.

8. Health Impacts of NPGP

Understanding the health impacts of poverty alleviation interventions is essential to evaluating their overall effectiveness. This section explores the health-related outcomes among

surveyed households in the NPGP, particularly focusing on the prevalence of common illnesses like fever or cold and the subsequent treatment-seeking behavior.

a. Prevalence of Common Illnesses

Respondents were asked whether they or any of their family members experienced fever or common cold in the past three months. The results show a high prevalence of common illnesses, with 87.44% of households reporting at least one member suffering from fever or cold in the past three months. This highlights the widespread exposure to health-related vulnerabilities among these populations.

b. Treatment-Seeking Behavior

Among those who reported illness, responses to the follow-up question, "Where do you go for treatment?" reveal a substantial and statistically significant shift from informal and traditional sources of care to formal medical facilities in the treatment group as compared to the control group. The proportion of respondents who visited hospitals was 93.2% in the treatment group, compared to 90.8% in the control group. Though the difference may appear small, it is statistically significant ($p < 0.01$) and meaningful when interpreted in the context of rural poverty and traditional reliance on informal care systems.

c. Decline in Informal Care Use:

Visits to faith healers dropped from 3.2% in the control group to 1.9% in the treatment group, indicating a 40% reduction ($p < 0.01$). Similarly, use of homeopathic medicine and medical store/pharmacist remedies also declined among the treatment group (Table 8). These trends demonstrate a clear behavioral shift away from practices rooted in cultural norms, economic constraints, or low awareness, toward institutional care with higher efficacy. This transformation can be attributed to multiple interconnected factors induced by NPGP:

- Increased household income and economic stability through asset transfers and livelihoods support allows beneficiaries to afford formal healthcare.
- Greater awareness about health and sanitation promoted through NPGP's CRP-led community sessions encourages families to prioritize qualified medical treatment.
- Improved trust in institutions as beneficiaries engage with formal structures such as financial services and public health systems during the Programme implementation.

Table 8: Health Treatment Seeking Behavior

Treatment Option	Treatment Group Mean	Control Group Mean	Difference (b)	P-value
Hospital	0.9320	0.9088	0.0232	0.0019
Hakeem	0.0340	0.0416	-0.0076	0.1509

Homeopathic Medicine	0.0049	0.0099	-0.0051	0.0359
Faith Healer	0.0190	0.0316	-0.0127	0.0040
Medical Store/Pharmacist	0.0861	0.1039	-0.0178	0.0277
Traditional Tips	0.0247	0.0307	-0.0060	0.1875

Source: Author's Formulation based on survey data

The implications are profound. Not only does this shift led to better health outcomes, but it also fosters long-term resilience. Households that rely on medical professionals are better equipped to handle common illnesses before they evolve into severe health crises that further entrench poverty. In essence, NPGP is not only alleviating poverty but also catalyzing a quiet health revolution at the grassroots level, one where the poor are empowered with both the means and the mindset to seek better healthcare, breaking cycles of neglect and reliance on ineffective treatments.

9. Market Relevancy

This section delves into how beneficiaries perceive asset impacts, particularly in terms of asset relevancy, utility, asset sustainability, and overall programme satisfaction. The graduation-based approach to poverty reduction distinguishes itself by providing tailored interventions that address the specific needs of targeted beneficiaries. This evaluation explores the perceptions of NPGP beneficiaries regarding the relevance of the assets they received. The NPGP places significant emphasis on aligning asset provision with the economic needs of beneficiaries.

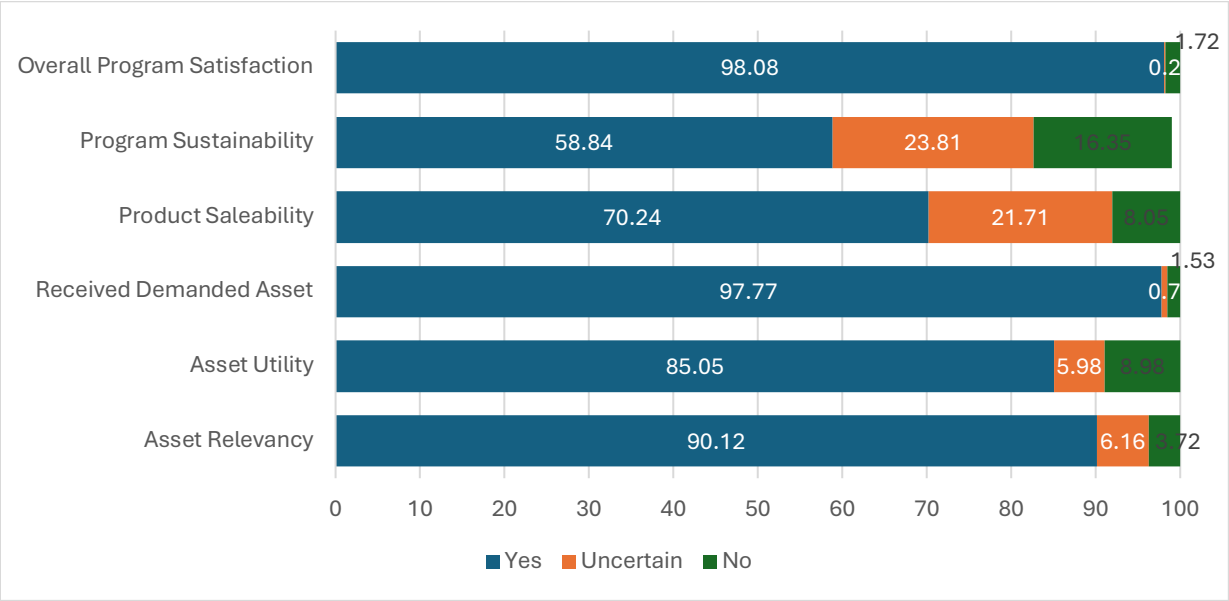
- Asset Utility: Refers to how helpful the provided asset was in meeting the livelihood needs of the beneficiaries. A large majority (85.05%) of beneficiaries reported that the asset significantly supported their income generation or helped sustain their daily economic activities, highlighting its practical relevance. However, 5.98% were uncertain about its usefulness, and 8.98% felt it was not helpful—suggesting a need to assess asset relevance in some cases.
- Received Demanded Asset: Measures whether beneficiaries received the specific asset they had requested. Nearly 98% confirmed they got the asset they actually demanded, indicating a highly responsive and need-based approach in asset allocation. About 1.73% were uncertain, and only 0.29% reported not receiving the demanded asset.
- Asset Relevancy: Indicates how well the asset matched the beneficiary's economic context and local environment. Over 90% said the asset was appropriate for their situation. Around 6% were uncertain, and 3% found it mismatched reflecting mostly effective targeting with minor room for contextual improvement.
- Product Sale ability: Shows whether the products made using the asset were easily sold in the local market. Around 70% reported good market access for their products. However,

22% were uncertain about sale ability, and 8% struggled to sell them, pointing to a need for better market linkages and post-asset business support.

- Programme Sustainability: Reflects perceptions about the long-term viability of the programme's impact. Just under 60% believed the programme would be sustainable. About 24% were uncertain, while 16% disagreed—indicating a lack of confidence in long-term outcomes and the need for follow-up support mechanisms.

Overall programme Satisfaction: Captures the general satisfaction of beneficiaries with the programme. An overwhelming majority (98%) were satisfied, showing that despite some gaps, the programme was highly valued. Only 1.15% expressed dissatisfaction, and 0.86% were uncertain. The findings suggest that the asset support programme was largely successful in addressing immediate livelihood needs, with high satisfaction and relevance levels across most indicators. This noteworthy level of satisfaction underscores the effectiveness of the programme in meeting the needs and expectations of the beneficiaries. It signifies that the programme has not only been successful in providing tangible benefits but has also managed to foster a positive and contented sentiment among those it aims to assist.

Figure 16: Programme Relevancy to meet livelihood needs



Source: Author's Formulation based on survey data

10. Regression Discontinuity (RD) Analysis

This section presents the results of the Regression Discontinuity (RD) analysis evaluating the impact of the NPGP intervention on various categories of household consumption. The analysis uses a bandwidth-based approach around the eligibility cutoff defined by the Poverty Scorecard (PSC), allowing a quasi-experimental comparison between the treatment and control groups. The results highlight the estimated treatment effects on total consumption and its components,

including food, education, health, utility, and clothing expenditures. Column (1) represents total household consumption, while columns (2) through (6) represent specific sub-categories of spending.

Table 9: Impact of NPGP on Consumption: Regression Discontinuity (RD) analysis

Outcome	Treatment Effect (b)	Std. Error	Control Mean	Observations
Total Consumption	10,510	(4,832)	32,237.16	6292
Food Consumption	3,728	(2,830)	18,262.82	6292
Education	1,733	(847)	1,823.38	6292
Health	862	(1,940)	4,959.41	6292
Utilities	830	(669)	1,430.62	6292
Clothing	2,120	(1,078)	2,478.28	6292

Source: Author's Formulation based on survey data

The RD estimates suggest a statistically significant increase in total household consumption due to the intervention. Treated households, on average, spent PKR 10,510 more than control households, significant at the 5% level. Notably, food and clothing consumption also increased significantly, indicating that the programme has improved basic welfare. The increase in education and health expenditures, although smaller, suggests a potential shift towards long-term human capital investment. Overall, the RD analysis affirms that NPGP effectively improves economic well-being by increasing consumption across key household needs.

The RD estimates demonstrate that NPGP has significantly increased total household income, particularly through salary and agricultural income channels. Income from NPGP itself shows a notable rise, confirming direct monetary transfers or asset gains. No significant change was observed in business or social support income. This underscores the programme's strength in enabling livelihood stability through productive activities and employment opportunities.

Table 10: RD Estimates of NPGP Impact on Income

Income Category	Treatment Effect	Std. Error	Significance	Control Group Mean	Observations
Total	10367	4841	**	28726	5294
Salaries	8602	4906	*	12956	5340
Business	-629	1972		1873	5336
Agriculture	4303	2201	*	2609	5340
Social Protection	978	1391		2951	5340

NPGP	2039	1182	*	27	5340

Source: Author's Formulation based on survey data

11. Evolution of Impacts: Panel Analysis

This section presents the trajectory of program impact using panel data collected from 3,676 households across three districts in South Punjab, capturing three points in time: the baseline (pre-intervention), the short term (two years post-intervention), and the medium term (four years post-intervention). The baseline survey was conducted prior to the roll-out of interventions, followed by the first follow-up round in 2023 (after two years of implementation), and the second follow-up round in 2025 (four years after the program began). This longitudinal structure enables a robust assessment of how household conditions evolved over time and whether observed gains were sustained or expanded. We begin this analysis by examining the PSC and its key indicators, which capture a multidimensional view of household well-being—including education, housing quality, asset ownership, sanitation, and economic dependency. These indicators provide a comprehensive snapshot of welfare progression, beyond simple income or consumption metrics, and help us understand the depth and breadth of transformation achieved through the program over both short- and medium-term horizons.

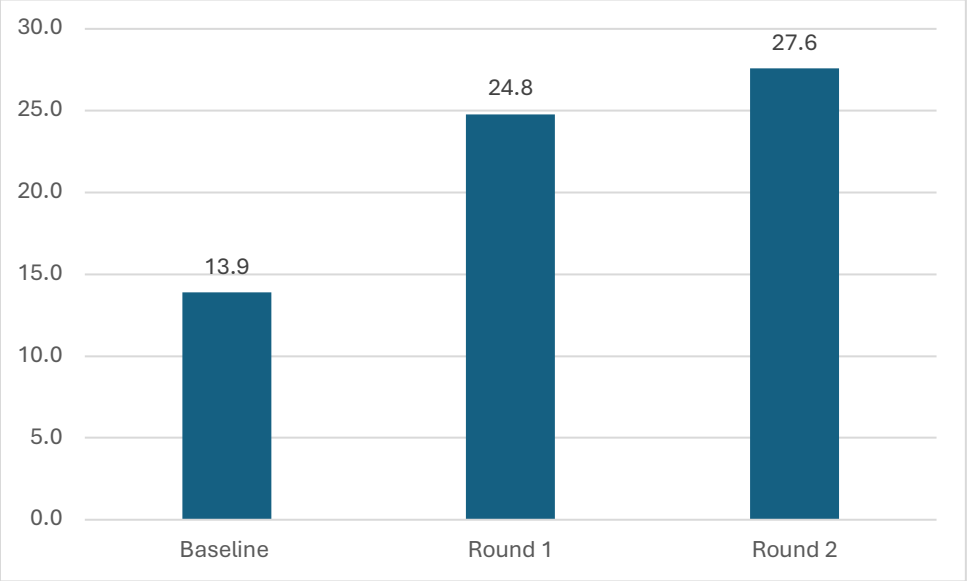
a. Growth in Overall Poverty Scorecard (PSC)

The PSC is a composite measure capturing a household's multidimensional well-being, including education, housing conditions, asset ownership, and access to basic services. The average PSC score across the panel of 3,676 households shows a clear and substantial improvement over time (Figure 17). The corresponding graph illustrates a steep increase in the PSC score in the short term, with the average rising from 13.9 at baseline to 24.8 within the first two years of program implementation. This sharp growth suggests that the interventions—primarily asset transfers, capacity-building, and community mobilization—had an immediate and transformative impact on household living conditions. By the medium term (2025), the average PSC rose further to 27.6, indicating continued improvement and sustained gains. Although the rate of increase between Round 1 and Round 2 was less steep than the initial jump, the upward trend suggests that initial gains were not only maintained but slightly deepened, reflecting medium-term resilience among beneficiary households.

This pattern is encouraging, as it demonstrates that the early impacts of the program were not temporary. Instead, they catalyzed a longer-term progression, possibly through improved capacity to generate income, accumulate assets, and invest in household welfare. The flattening slope of the curve between Round 1 and Round 2 also reflects a natural maturation of the program's impact: while the initial support sparked rapid change, sustaining progress may now depend more on systemic linkages to markets, services, and productive opportunities. This finding reinforces

the importance of sequencing and layering interventions—with initial capital support providing the base, and subsequent ecosystem support needed to maintain upward mobility.

Figure 17: Growth in Overall Poverty Scorecard (PSC)



Source: Author's Formulation based on survey data

b. Growth in Per Capita Nominal Consumption

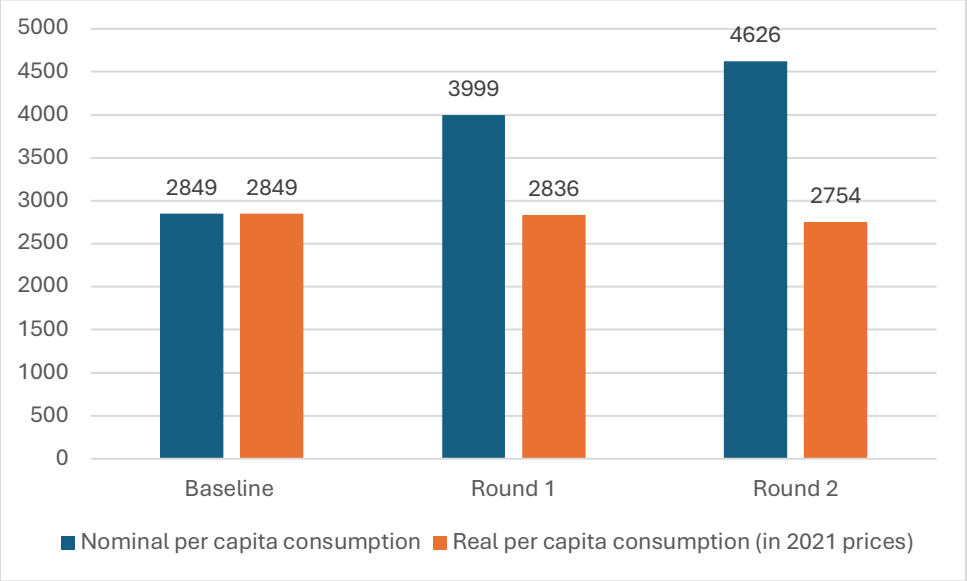
Per capita consumption serves as a direct proxy for household welfare, reflecting access to goods and services and the material living standard of individuals. Analyzing changes in nominal per capita monthly consumption over the panel period provides insight into how the program influenced household economic capacity. Between baseline and the first follow-up in 2023, average per capita consumption increased by 40%, rising from PKR 2,849 to PKR 3,999 (Figure 18). This significant jump indicates that the intervention had an immediate positive effect on household purchasing power, likely driven by increased income from productive asset utilization, reduced reliance on distress sales or borrowing, and better food and basic commodity access.

By the second follow-up in 2025, average per capita consumption further rose to PKR 4,626, showing a 16% increase over Round 1, and a 62% increase from the baseline. This medium-term growth, while less steep than the initial jump, points to sustained improvements in household income-generating capacity and a strengthening of the economic base. It also suggests that many beneficiary households were able to convert short-term gains into medium-term stability, likely through improved livelihood diversification, better financial planning, or reinvestment of profits.

The upward trajectory in consumption reinforces the effectiveness of the program's core design: enabling households to move from subsistence to a pathway of economic empowerment and resilience. However, the slower growth rate in the medium term also highlights the need for

market linkages, skill upgrading, and access to financial services to support continued upward mobility beyond the initial program period.

Figure 18: Growth in Per Capita Nominal Consumption



Source: Author's Formulation based on survey data

While nominal per capita consumption is a useful indicator of household income and expenditure patterns, it must be adjusted for inflation to understand changes in actual purchasing power. Figure 18 presents both nominal and real per capita monthly consumption, with real values deflated to constant 2021 prices[2]. The nominal per capita consumption rose steadily from PKR 2,849 in 2021 to PKR 3,999 in 2023 and PKR 4,626 in 2025, showing an overall increase of 62% over four years. However, once adjusted for inflation, the picture shifts: real consumption declined slightly, from PKR 2,849 in 2021 to PKR 2,836 in 2023 (a marginal drop of 0.5%), and further to PKR 2,754 in 2025 (a cumulative decline of 3.3% from the baseline). This subtle yet important divergence suggests that although households appeared to be consuming more in nominal terms, their purchasing power remained stagnant or slightly eroded over the medium term due to sustained inflationary pressures. These findings underscore the need to interpret income and consumption improvements in real terms, especially in inflation-prone contexts like Pakistan during the study period.

12. Conclusion

2 Real per capita consumption is calculated by deflating nominal monthly consumption using cumulative inflation indices with 2021 as the base year. The inflation index values used were 100 (2021), 141.4 (2023), and 168.0 (2025), corresponding to inflation multipliers of 1.414 for 2023 and 1.68 for 2025. Nominal consumption values for Round 1 and Round 2 were divided by these multipliers to obtain real values in 2021 prices.

The findings from this study underscore that Pakistan's National Poverty Graduation Programme (NPGP) has delivered substantial welfare improvements, validating the effectiveness of state-led asset transfer models in enabling ultra-poor households to escape poverty. Nearly 84 percent of beneficiaries successfully graduated above the ultra-poverty threshold, with more than half moving beyond the sustainable well-being benchmark (PSC > 23). These gains demonstrate that when productive assets are complemented by training, financial inclusion, and community engagement, they can generate meaningful and lasting improvements in household welfare. Yet, the regional disparities—particularly Punjab's higher graduation rates compared to Sindh—highlight the role of institutional quality, infrastructure, and contextual vulnerability in shaping programme outcomes.

The evidence also reveals that poverty reduction through asset transfers must go beyond income generation to address multidimensional resilience. While households experienced measurable improvements in income, consumption, and access to formal healthcare, progress in food security and women's empowerment remained modest. This points to the need for layering livelihood support with nutrition interventions, social norm transformation, and gender-sensitive programming. Importantly, the study shows that NPGP strengthened climate resilience: beneficiary households were significantly more likely to adopt adaptive farming, conserve water, and utilize early warning systems. However, the devastating 2022 floods exposed the fragility of these gains, with 30 percent of beneficiaries losing their assets. Despite these losses, households demonstrated strong asset retention behavior, suggesting enhanced awareness of productive asset value and a growing culture of resilience.

The Regression Discontinuity results confirm statistically significant increases in household income and consumption, reinforcing that the NPGP successfully boosted economic capacity in the medium term. However, real consumption growth—when adjusted for inflation—remained constrained, signaling macroeconomic vulnerabilities that can erode micro-level gains. Moreover, the slower pace of welfare improvement in later years suggests that initial momentum must be sustained through systemic linkages to markets, access to credit, and continuous skill upgrading.

For policymakers, the implications are clear. Pakistan's social protection architecture must evolve from static poverty alleviation to dynamic resilience building. The NPGP model offers a strong foundation for this transition, but future phases should integrate climate insurance, disaster-contingent financing, and value-chain linkages to protect and grow household assets. Regional implementation strategies must be context-specific, with greater focus on flood-prone and climate-vulnerable areas. Embedding market facilitation, post-graduation mentoring, and adaptive safety nets will be crucial for ensuring sustainable pathways out of poverty.

In essence, the NPGP demonstrates that when designed and delivered effectively, state-led graduation programmes can do more than lift incomes—they can empower communities, enhance adaptive capacity, and strengthen social resilience. As Pakistan faces compounding economic and climatic pressures, scaling up this evidence-based, climate-integrated graduation approach represents a critical step toward achieving inclusive and shock-responsive social protection for all.

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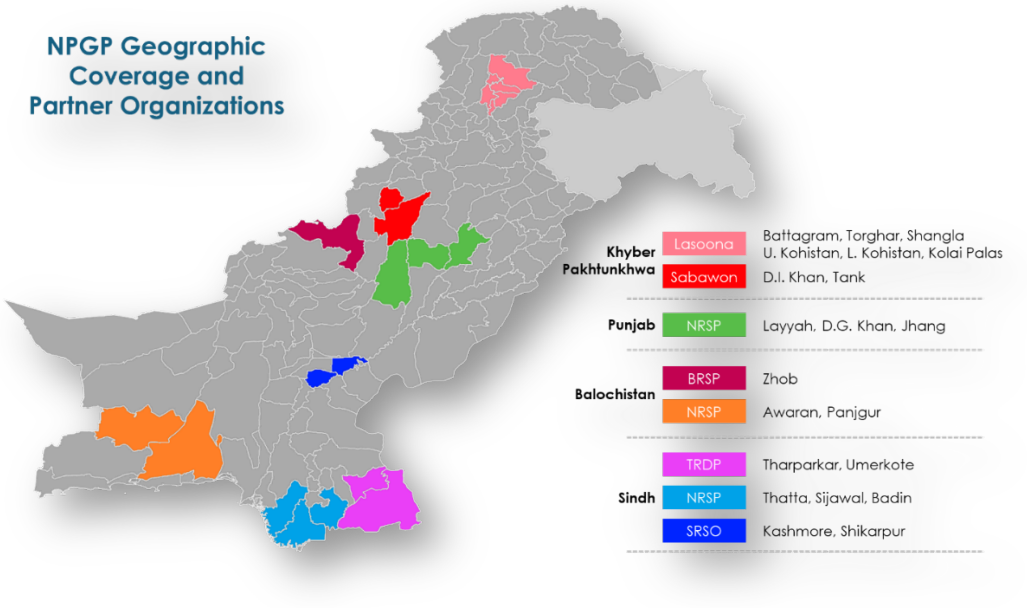
Annexture

Figure A19: NPGP's geographic coverage and partner organizations



Appendix Table 1: NPGP Targeting and Tiered Support Mechanism

Poverty Score Range	Poverty Classification	NPGP Assistance
0–11	Ultra-poor/Extremely Poor	Tangible assets, literacy, business training
12–16.17	Vulnerable/Chronically Poor	Tangible assets, IFL, EDT, financial literacy
16.18–18	Vulnerable (Slightly Better Off)	Vocational training, IFL, EDT
19–23	Transitorily Poor	IFL, enterprise and financial literacy
24–40	Transitorily Vulnerable	IFL, financial literacy only
41+	Non-Poor	No support (referred to conventional microfinance)

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