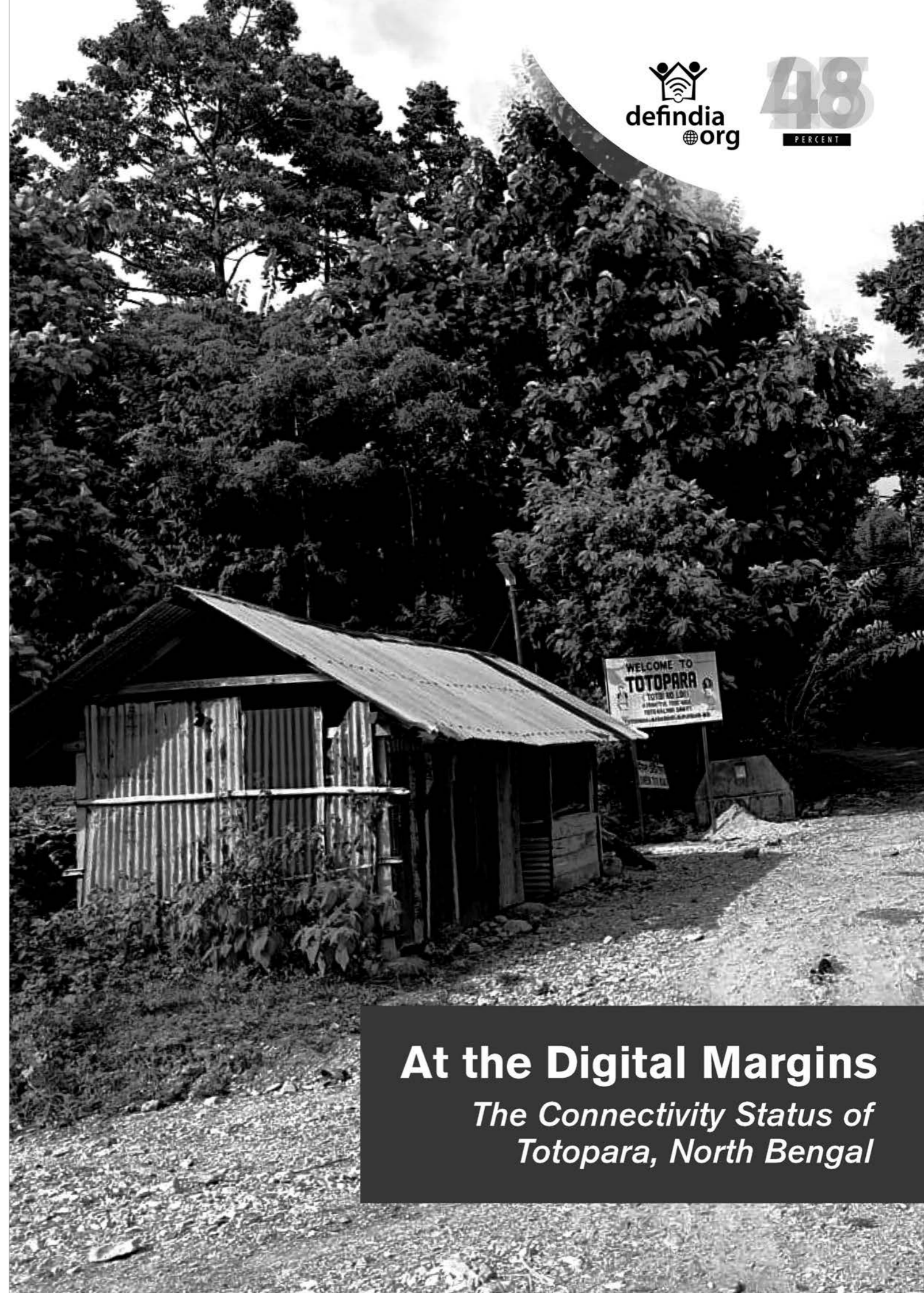


At the Digital Margins

The Connectivity Status of Totopara, North Bengal



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At the Digital Margins:
The Connectivity Status of Totopara, North Bengal

A Baseline Report

By the Research Team of Digital Empowerment
Foundation

Project: Totopara Internet Connectivity Project

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Preface

The Toto community of Totopara, one of India’s smallest and vulnerable tribal groups, resides in the foothills near the Indo-Bhutan border in West Bengal. While their identity and way of life have often been exoticized for tourism, the pressing challenges they face—economic exclusion, limited access to education, and inadequate digital connectivity—remain largely unaddressed. Recognizing these gaps, the Digital Empowerment Foundation (DEF), with the support of 48percent.org, initiated the Totopara Internet Connectivity Project to explore pathways for digital inclusion. This baseline report, **“At the Digital Margins: The Connectivity Status of Totopara, North Bengal,”** marks the first step in this journey.

The title reflects both the geographical and digital marginalization of the Toto community. It underscores our aim to document their current connectivity landscape, assess barriers to digital access, and identify opportunities for meaningful intervention. This report does not merely examine the absence of internet infrastructure but also highlights how connectivity—or the lack thereof—shapes social, economic, and cultural experiences.

The objective of this study is to provide an in-depth understanding of Totopara’s digital status, along with its socioeconomic realities and educational challenges. By establishing a comprehensive baseline, we seek to inform strategic interventions that are culturally responsive, effective, and sustainable. As digital technology continues to transform lives globally, bridging the digital divide in Totopara is not just about providing access—it is about enabling the community to preserve their heritage, improve their quality of life, and participate meaningfully in the digital era.

Acknowledgement

The Totopara Internet Connectivity Project and this report would not have been possible without the cooperation and steadfast support of many people and organizations. We would like to express our sincere appreciation to 48percent.org for providing the funding necessary to launch and continue this project. We would especially like to thank the community members who spend their valuable time to support our data collection process, allowed taking pictures and for offering valuable insights. Additionally, DEF's central team's coordination and careful evaluation of project activities have been essential to its successful execution.



This baseline study is a collaborative effort, shaped significantly by Totopara's community members whose experiences and insights form the very foundation of our understanding.

Abbreviations

CIRC	: Community Information Resource Centre
CSC	: Common Service Centre
DEF	: Digital Empowerment Foundation
FGD	: Focus Group Discussion
ICT	: Information and Communication Technology
LTE	: Long-Term Evolution
PM-WANI	: Prime Minister's Wi-Fi Access Network Interface
PVTG	: Particularly Vulnerable Tribal Group
STEM	: Science, Technology, Engineering, Mathematics
SDG	: Sustainable Development Goal
Soochnapreneur	: Information Entrepreneur



Abstract

The Totos—scheduled as Particularly Vulnerable Tribal Groups (PVTG)—resides in Totopara, a village in northern West Bengal close to the Bhutan border. Access to markets, healthcare, and education is restricted due to its remote location (just a few unreliable passes). A digital divide and low socioeconomic indicators, such as lower educational attainment, are the results of this isolation. A project to close the connectivity gap in Totopara was started by the Digital Empowerment Foundation (DEF). In order to preserve their legacy, it seeks to digitize the Toto language and oral traditions, create internet connectivity, offer training in digital literacy, and enhance access to online government services.

A baseline study using mixed methods was carried out. Interviews and focus groups provided the qualitative data. A survey of 342 villagers yielded



Despite widespread smartphone ownership, Totopara struggles with inadequate connectivity, low digital literacy, and limited productive digital engagement—challenges that hinder meaningful digital integration.

quantitative data on demographics, education, technology use, scheme awareness, and disaster experiences. This method offered comprehensive insights in addition to statistical breadth.

The socioeconomic profile of the community indicates serious difficulties. Although there are still few job opportunities, Totopara's youthful population (61% of the population is between the ages of 18 and 35) offers potential vitality. Agriculture, especially the production of betel nuts, is their main source of income, but this industry is very susceptible to seasonal variations. Long-standing gender inequality makes development even more difficult since women are largely responsible for domestic and agricultural work, which restricts their access to formal education and employment.

Totopara faces significant resource limitations in the field of education. Schools lack adequate learning resources, consistent schedules, and qualified teachers, especially in STEM and vocational education. The lack of digital literacy in the community limits their access to contemporary socioeconomic opportunities and increases their sense of isolation.

Despite the fact that many people own smartphones, internet access is costly, inconsistent, and mostly used for leisure rather than for work or education. This underuse of digital technology reveals a serious gap between meaningful use and accessibility. Administrative inefficiencies, informational delays, and physical distance continue to make government services largely inaccessible. Because of this, residents usually depend on distant intermediaries like cybercafés, which makes them more dependent and strains their finances.

Natural disasters pose a threat to Totopara's resilience as well. Severe storms, flooding, and

frequent landslides often disrupt livelihoods, infrastructure, and communication networks. Isolation is made worse by poor road conditions, which significantly affect daily life and emergency response. There is a glaring need for focused digital interventions, even though locals use social media informally during emergencies and there are no formal disaster response systems in place.

Maintaining Toto cultural identity has become a community priority in the face of external influences and modernization pressures. The integrity of their language and culture is being weakened by the growing adoption of Bengali and Nepali by younger generations, despite their strong sense of pride in their language and traditions. Furthermore, external perceptions that exoticize and misrepresent the Totos frequently reinforce stereotypes that are at odds with their lived realities.

In order to enhance digital literacy, connectivity, and cultural documentation, the Digital Empowerment Foundation (DEF) established a Community Information Resource Center (CIRC) as part of a comprehensive digital inclusion project. The majority of the community is in favor of digitizing their language, oral histories, and customs because they see these resources as empowering, preserving, and dispelling myths about them from outside sources.

As Totopara is situated at a crucial juncture between inclusive development and exotic curiosity, a holistic digital empowerment program that is grounded in local realities and driven by community participation can achieve authentic representation, cultural resilience, and long-term socioeconomic improvement. In addition to preserving its cultural heritage, the Toto community seeks to establish deep ties with the wider digital and socioeconomic environment as it transitions from marginalization to empowerment.



As a Particularly Vulnerable Tribal Group (PVTG), the Totos of Totopara highlight how geographic isolation amplifies socioeconomic vulnerabilities, exacerbating exclusion from digital advancements.

Introduction

Numerous indigenous communities can be found in India. Of the 705 Adivasi communities that are officially recognized as Scheduled Tribes (STs), 75 are categorized as Particularly Vulnerable Tribal Groups (PVTGs) by the Indian government. There are 40 different ST communities in the state of West Bengal alone, including three PVTGs (the Lodha, Toto, and Birhor). One of the world's smallest communities is that of the Toto people of Totopara. Their modest population base and slow growth are demonstrated by historical census data: in 1951, there were only 321 Totos living in 69 households; by 1991, this number had increased to 926 people living in 180 households; in 2001, there were 1,184 Totos living in 1,184 households; and by 2011, there were only 1,387 Totos (737 men and 650 women). Their small population and distinctive



Tibeto-Burman ethnicity—which is frequently cited in orientalist scholarship for its rarity—highlight the Totos’ vulnerability and the significance of maintaining their cultural identity.

The Totos’ only village, Totopara, is located in the Alipurduar district of West Bengal, close to the Indo-Bhutan border, in a remote foothill of the Eastern Himalayas. It is impossible to exaggerate how remote Totopara is geographically—an outsider can only get to the village by crossing multiple rocky riverbeds along a river’s path. A single bus and a few motor vehicles provide transportation to the village, but during the monsoon season, swollen rivers and flash floods frequently render these options unusable. Historically, the community’s access to outside resources, markets, healthcare, and education has been restricted by its isolation. Because communication technology infrastructure has not kept up with urban and plains areas, it has also contributed to a digital divide. PVTGs frequently face these geographic obstacles in addition to socioeconomic marginalization, which causes their literacy and development metrics to be much lower than the national average. In addition to displaying so called “distinct” cultural characteristics and needs, the Toto community of Totopara reflects many of these more general patterns of exclusion.

The Digital Empowerment Foundation (DEF) launched a specialized program in Totopara to address these issues and help the Toto community overcome its communication and connectivity gaps. In order to facilitate greater access to information, government services, and educational resources, this project was designed as an intervention that would periodically grant community members internet access and training in digital literacy. The project aims to lessen the effects of physical isolation and give the Totos greater access to socioeconomic and



Bridging Totopara’s digital divide demands interventions that move beyond connectivity, encompassing community-specific solutions in education, governance access, disaster resilience, and cultural preservation.

educational opportunities by increasing connectivity. As part of this initiative, named as Totopara Internet Connectivity Project (supported by 48percent.org), a Community Information Resource Center (CIRC) is planned to act as a central location for digital learning and access.

Overview of the Project

Establishing dependable internet access in Totopara and fostering digital literacy among the Toto tribe’s members are the project’s main objectives. Five essential elements make up the multifaceted strategy that has been developed to accomplish this goal:

Infrastructure for Internet Access: To increase connectivity in the village, install LTE signal boosters and make use of the government’s PM-WANI (Wi-Fi Access Network Interface) program.



It is anticipated that this technological solution will overcome signal weaknesses, allowing those within range to access high-speed internet with few disruptions once boosters are installed.

Community Information Resource Centre (CIRC): Create a digital resource centre in the middle of the city with internet-connected PCs, tablets, smartphones, printers, scanners, and biometric equipment. A qualified local “SoochnaPreneur” (Information Entrepreneur), a member of the community who has received training to help others access online services, will oversee the CIRC. Residents will receive guidance through the CIRC on how to access a variety of government programs and benefits through a specialized application (DEF’s MeraApp), which houses an up-to-date database of welfare programs. By bringing essential e-governance services to Totopara, this center hopes to lessen the need for villagers to travel far for routine paperwork or program enrollment.

Conduct organized workshops for community members on digital literacy. The curriculum will cover the fundamentals of using personal computers and smartphones, the internet, and common productivity tools (like Microsoft Office applications). Importantly training materials will be translated into Toto (or presented in a combination of Toto and other well-known languages) to guarantee understanding and local relevance. Through the development of fundamental digital skills for both genders and age groups, the program aims to enable the Totos to use online resources for communication, information, and services on their own.

STEM Education and Makerspace: Establish a kid- and teen-focused creative makerspace at the CIRC. Through interactive kits and potentially immersive educational technologies like virtual reality, this



The study systematically maps out existing gaps in education, connectivity, access to government services, and cultural preservation, providing critical insights for targeted interventions.

area will introduce young people to robotics, coding, and STEM (Science, Technology, Engineering, Mathematics) education. This is a valuable supplemental resource because local schools lack science labs, as will be covered later in this report. The project aims to fill some of the gaps in formal education and ignite young learners’ interest in science and technology by involving them in practical experiments and problem-solving.

Digitization of Indigenous Language and Culture: Put in place a program to digitize the Toto language and cultural heritage, which have traditionally been passed down orally. The Toto language was only given a written script in 2015, which is



noteworthy and illustrates how urgent preservation efforts are. Together with creating digital content (like e-books or an online dictionary) in Toto, this component will entail documenting and preserving oral histories, folk songs, stories, and other forms of cultural expression in the language. In addition to helping to preserve an endangered language, the project makes it possible for younger generations to access and learn about their cultural content through contemporary media by establishing digital repositories of Toto heritage.

The project's overall design acknowledges the necessity of digital inclusion for tribal communities in the contemporary world. It is anticipated that giving Totopara access to the internet and digital tools will make previously unattainable opportunities for communication, healthcare, education, and employment possible. Beyond socioeconomic advancement, the Toto people can be empowered to protect and promote their indigenous culture online through increased connectivity and digital literacy. Essentially, the program supports the larger national objectives of promoting inclusive growth in underserved areas and closing the digital divide between rural and urban areas.

Objective of the Baseline Study

A baseline study was carried out in Totopara as an initial step to help guide the intervention. The goal of the study was to document the community's current state and issues from a number of project-related angles. The baseline study was guided by the following main research questions:

Education and Digital Literacy: How popular are STEM and digital literacy among the Toto people, and what is the state of education in Totopara right now? This entails evaluating the degree of formal



Through qualitative dialogues and quantitative surveys, this mixed-method approach ensures a nuanced understanding of Totopara's realities and digital needs.

education attained, the accessibility of educational materials (such as computer instruction and science education) for kids and teenagers, and the degree of digital literacy and proficiency in the neighborhood.

Internet connectivity: Are residents of Totopara experiencing “meaningful connectivity” and how dependable and easily accessible is internet connectivity there? This entails assessing network speed, availability, usage trends, and the extent to which connectivity—or lack thereof—affects opportunities and day-to-day living.



Access to Government Programs: To what extent do Totos have access to government benefits and welfare programs, and what obstacles stand in their way? In this question, awareness and practical accessibility are examined, along with the effectiveness of current channels (such as visiting block offices or using online portals) and digital versus non-digital ways of accessing schemes.

Cultural and Linguistic Preservation: To what extent do the Totos value the preservation of their language and culture, and are they open to taking part in digitization and documentation projects? This looks at how the community views their heritage, how the Toto language is used in everyday situations and online, and how interested they are in projects that document or teach the language and cultural customs.

From socioeconomic circumstances to digital access and cultural identity, these research goals address a wide range of topics that are connected. When taken as a whole, they offer a thorough picture that can guide the customization of the DEF intervention to meet the needs of the community and create baseline indicators that can be used to gauge future advancements.

Methods and Procedure of the Study

In order to guarantee both quantitative breadth and qualitative depth in comprehending the circumstances facing the Toto community, the baseline study used a mixed-methods research design. Participatory discussions and survey data were combined in this method:

Qualitative Component: To obtain information on experiences, perceptions, and goals in important areas like education, livelihoods, technology use, and cultural practices, two Focused Group



The baseline study in Totopara explored what truly matters: how people learn, connect, access welfare, and hold on to culture. By combining local voices with survey data, it lays the groundwork for interventions that are not just digital—but deeply human and community-driven.



Starting with focus group discussions and guided by local voices, the baseline paired lived experience with structured data from 342 respondents—ensuring the insights are both community-rooted and statistically strong.

Discussions (FGDs) consisting of male and female community members were held in August 2024. Intentionally separating participants by gender allowed them to talk freely about subjects like gender roles, which might be more openly discussed in a single-sex setting. Furthermore, a thorough interview was conducted with the local SoचनाPreneur, who is anticipated to oversee the CIRC. The village's communication gaps, preparedness for digital initiatives, and possible implementation challenges were all helpfully viewed by the SoचनाPreneur, who was an insider. The team was able to investigate topics beyond what a structured questionnaire might record during these qualitative sessions, which were directed by the research questions. Examples of these topics included in-depth descriptions of how schools operate, first-hand accounts of internet usage, or tales highlighting the value of cultural customs for example.

Quantitative Aspect: A structured questionnaire survey was created to quantitatively evaluate household-level data and individual behaviors based on the project's goals and the insights gained from the first qualitative phase. Demographics, socioeconomic status, education levels, device access, internet usage patterns, government scheme



awareness, disaster experiences, and language use were among the topics covered in the survey conducted in between October-December, 2024. To get a variety of opinions, it was given to a large sample of the community. After data cleaning (removing inconsistent or incomplete entries), 342 of the 350 responses that were gathered were judged complete and suitable for analysis. Given the size of the Toto population (i.e., around 1300), this sample is significant and offers a high level of assurance regarding the findings' representativeness.

Descriptive statistics (frequencies and percentages) for a variety of indicators were generated through the analysis of survey data. To identify any discrepancies, disaggregation was carried out by gender, age group, or other categories where appropriate. In the meantime, key themes and direct quotes were incorporated into the findings through the transcription and thematic analysis of the qualitative data from FGDs and interviews. The study improves the validity of results and guarantees that numbers are interpreted in the appropriate sociocultural context by triangulating quantitative data with qualitative narratives.

It is crucial to remember that the baseline study focuses on particular development and digital inclusion themes that the project aims to address rather than providing a comprehensive study of the Toto community. However, in doing so, it touches on a wide range of topics related to lives at Totopara, including the state of their indigenous language, how people make a living, and how they deal with natural disasters. The results of the baseline study are described in detail in the sections that follow, which are arranged thematically. The quantitative survey results are presented in each section along with qualitative insights, and then they are analyzed and interpreted.



The study improves the validity of results and guarantees that numbers are interpreted in the appropriate sociocultural context by triangulating quantitative data with qualitative narratives.

Totopara's Socioeconomic Profile

Contextualizing the opportunities and challenges found in this study requires an understanding of the socioeconomic background of the Toto community. The demographics, livelihood patterns, income levels, and social structure of Totopara are described in this section, with an emphasis on how these elements may affect access to development, education, and technology funding.

Community composition and demographics

Totopara consist mostly of young population with both potential demographic benefits and challenges,



as evidenced by the skewed age distribution of its population. 61.11% of survey participants are young adults (18–35 years old). Youth prominence has the potential to infuse the community with aspirations and receptivity to change, which is encouraging for initiatives introducing new training and technology. But it also means that in order to effectively engage this sizable younger generation, job opportunities and skill development are desperately needed. Adults between the ages of 36 and 50 make up 27.19% of the population, while those over 51 make up just 11.7%. The comparatively less elderly population raises the possibility that traditional languages and knowledge may not be transmitted, which makes cultural preservation initiatives—discussed later—even more important.

Although there is a slight male majority among respondents (53.22% male and 46.78% female), the sample is roughly balanced in terms of gender and reflects a relatively balanced representation given the fact that the sex ratio is around 882 as per the census of 2011.

Totopara is an isolated tribal community with a unique identity, as evidenced by the fact that nearly all of its residents identify as members of a Scheduled Tribe (ST), in this case the Toto tribe. The vast majority of people (97.37%) identify as Hindu, while only a tiny minority (roughly 2%) practice Christianity or other religions.

Employment and Livelihoods

Totopara's economy is primarily agrarian and rural, with little room for diversification. According to the survey's employment data, roughly 71.64% of participants are working or involved in economic activity. Any work that generates revenue or subsistence resources falls under this category



Totopara's predominantly youthful demographic suggests potential vitality, yet also highlights critical demands for employment, education, and cultural preservation strategies.

(farming, labouring, service jobs, etc.). Accordingly, about 28% of respondents do not participate in economic activities; this group probably consists of homemakers, students, the elderly, and perhaps unemployed people. In tribal communities, where formal retirement is uncommon and subsistence agriculture necessitates the participation of the majority of household members, the comparatively high labour force participation rate (nearly 72%) is typical.

The low earnings, however, indicate economic vulnerability. A startling 79.2% of respondents who are employed say they make less than ₱15,000 (about USD 180) per month. A sizable portion of those make significantly less, putting many households close to or below the poverty line. There are few well-paying jobs in Totopara, as evidenced by the fact that only 5.2% of respondents earn more



than ₹20,000 (USD 240) per month. This type of economic instability can affect people's capacity to pay for technology, healthcare, and education. It also implies that any expenses related to digital devices or internet access (covered in a later section) may be very onerous.

These economic trends are partly explained by the qualitative research to complement the quantitative findings. The livelihood system described by the FGD participants was based on agriculture and related activities. In accordance with the seasons, the Totos have historically grown millet, maize, and betel nut. A member of the community described the cyclical farm calendar as follows:

“Every season, we have crops. During the rainy season, women are especially busy. Millet is very important to us. It's used during festivals and weddings. After this season, comes the maize season. Maize is also very important. Then comes the betel nut season. After harvesting betel nuts, we clear the jungle to maintain the land. So, women don't have much free time either. They're always engaged”.

The production of betel nuts, also known as areca nuts, was emphasized as a vital revenue stream: *“We sell it to manage for the whole year during betel nut cultivation.”* This suggests that one or two cash crops account for a large portion of cash income, putting families at risk in the event that those crops falter or prices change. Some households keep goats and pigs as financial safety nets in addition to their cultural significance. When asked about women's livelihoods, one participant mentioned that *“animal husbandry helps in times of crisis. They can be sustained by pigs and goats”.*

Wage labor and government jobs have a limited role outside of farming. A small number of people



With nearly 72% of Totopara's adults engaged in farming and labor, work is not scarce—but stable income is. Most families rely on seasonal crops like betel nut and maize, and earn under ₹ 15,000 a month. When harvests fail or prices fall, even basic needs, like education or internet, become difficult to afford.



The reliance on seasonal agriculture, particularly betel nut cultivation, underscores the community's economic precarity and vulnerability to market and climatic uncertainties.

have found employment in the government or military. The interview reveals about successful community members who went on to become IPS officers, army personnel, or police officers, but these are the exceptions, and those people usually leave the village. It is uncommon to find steady-paying jobs in the area, such as teaching, small business ownership, or contract work for government programs. One individual who participates in government programs as a contractor is mentioned in the baseline, suggesting that there may be some employment opportunities through public projects (such as construction under rural development schemes). However, the main image of Totopara or the surrounding area is one of self-employment in agriculture and a dearth of organized sector jobs.

There are significant ramifications for these socioeconomic circumstances. Poverty and low disposable income are caused by a heavy reliance on subsistence and seasonal income, which can limit a household's capacity to invest in education (by paying for books and school fees), buy digital gadgets, or cover the expenses of outside transportation. The lack of savings and the requirement to stretch profits from a single harvest over the course of the year further highlight the community's vulnerability. The opportunity costs for people with limited time and resources must be taken into account in any intervention that aims to implement new practices (such as paying for internet data or setting aside time for training).

Gender Dynamics and Social Structure

The Toto community demonstrates a blend of modern governance and traditional social structure. After India's Panchayati Raj (local self-government) system was implemented in the region, the village's

traditional “Keji” was replaced by elected officials such as the Sabhapati (block-level chairman) and Gram Panchayat Pradhan (village head). According to the interviews, Totopara is currently administratively separated into three Gram Panchayats: Dawalama, Kanchangurum, and a third. Informal leadership and influence are still important in spite of this formal framework. Respected people like Ashok Toto, who is probably an activist or community elder, continue to have an impact by communicating with government programs and advocating for the needs of the community, according to the FGDs. Any development project should collaborate with both the official panchayat leaders and the unofficial community influencers in order to secure widespread support and guarantee sustainability because of this dual system of governance.

Although gender roles in Totopara are well-defined, they can be both equitable and unequal depending on the situation. As mentioned, both men and women make substantial contributions to daily labor, albeit in different areas. The amount of work that women do, including childcare, farming, and household chores, is significant. Given that historically fewer girls pursued higher education, the baseline qualitative data indicate that women’s literacy and educational attainment may lag behind men’s.

“There aren’t many ways to earn money [locally],” said one of the male participants. “... there aren’t enough facilities for education, boys are sent out to study while girls manage the house, the land, and the family. Boys go outside to earn money. That’s how it works.”

This reflects a traditional perspective in which daughters are supposed to take on household duties while sons’ education is given priority when funds



Traditional gender roles significantly impact educational and economic opportunities for women in Totopara, perpetuating gender inequalities that digital empowerment initiatives must address.

are limited. A gendered approach like this can result in long-term inequalities because women are less likely to have formal education, which can impact their employment prospects and confidence when interacting with technology or public issues. Since women may have greater needs (due to historically lower exposure to digital tools) and higher potential multiplier effects (a literate, connected mother can significantly influence her children’s education), programs like digital literacy training will need to ensure that women are equally included going forward.

Festivals and Cultural Traditions

Festivals and customs that strengthen the Toto community’s identity and bring them together make up their rich and distinctive cultural life. Gender roles and socioeconomic life are also impacted by these customs.

One well-known celebration is “Wat,” which takes place after Holi and before the rainy season begins. The fact that Wat is a ceremony exclusively for men—even excluding female deities from its rites—makes it stand out. Certain customs, like not eating jackfruit until the end of the festival, are observed during Wat as a sign of respect for customs and communal discipline. Wat’s male-centricity may be seen as a ritual preservation of male roles in the community’s spiritual protection, a pattern observed in certain other tribal cultures where certain ceremonies are gender-specific. However, gender hierarchy in ritual power—a component of the community’s cultural reality—is also reflected in the exclusivity.

Another important event is “Goria,” a festival that honours a protector spirit by offering animal sacrifices (pigeons, cocks, and hens) inside a home’s

“cool room” or sacred area. Even though the majority of the population identifies as Hindu, local deities and spirit worship are an essential part of their belief system, making Gorja a prime example of the animistic aspects of Toto religion. Offerings and sacrifices highlight the significance of gratitude, fertility, and protection in their agrarian life cycle. Gorja is closely followed by the “*Ongchu*” festival, which has strong ties to kinship and social structure. Three days after Gorja, *Ongchu* is a festival dedicated to enhancing social bonds, especially those forged through matrimonial alliances. The Toto custom of formally acknowledging a child’s birth by bringing the infant to the home of the mother’s maternal uncle emphasizes the importance of the maternal uncle, or mother. This acknowledgement ritual is probably performed during *Ongchu*, which emphasizes the preferential marriage custom in which men frequently wed the daughter of their maternal uncle (cross-cousin marriage). In order to maintain strong familial ties within the community and guarantee that property and lineage remain in familiar circles, this custom connects marriage and kinship networks.

Another festival, “*Naiyyu*,” is celebrated at a location known as *Damsang* (Damsar), which is a sacred grove or site rather than specific residences. The use of two sacred drums that are played exclusively during *Naiyyu* is one of its highlights. Tradition dictates that these drums, which are symbolically gendered (one male, one female), must be ritually married to one another. The belief that the community maintains a reciprocal relationship with their gods through music and ritual performance is demonstrated by the drumming’s intended purpose of amusing the protector spirit, the deity *Shenza*. How deeply the ideas of balance and union are embedded in Toto cosmology is demonstrated by the ritual



Cultural rituals, such as Wat, Gorja, and Naiyyu, strengthen community bonds yet also reveal persistent gender hierarchies and external pressures challenging traditional practices.



Festivals still pulse through Totopara’s rhythm, but the language that carries its meaning is slipping away. As younger generations blend into dominant cultures, the Totos face a quiet erosion of identity—where even the word for “potato” signals what may be lost.

“marriage” of the drums, an intriguing cultural component that reflects human social structures (marriage) in the spiritual realm. Folk songs, which are probably performed during these festivals and serve as a means of amusement as well as the oral transmission of values and history, are also an essential component of Toto cultural expression.

There are various ramifications to these cultural customs. Every festival and ritual reinforces the Totos’ identity and the ways in which each generation ties to the past, giving them a strong sense of continuity and identity. The community members themselves, however, have voiced worries about whether these customs will endure in the face of external influence and modernization. “*Many kids who leave the village forget our language... we are losing our language,*” remarked one young participant. To preserve it, we’ll have to make a dictionary-like document. Others noticed changes like children not learning Toto due to marriages with foreigners (like the Nepali community) and even small changes like the use of Bengali or Nepali words for things (“*nowadays, even at home... in shops, people don’t ask in the Toto language... they use the word ‘potato’... we say ‘potato’ and then it becomes common at home, too*”). These quotations draw attention to a dynamic tension between cultural preservation and erosion. Even though festivals like Wat, Gorja, *Ongchu*, and *Naiyyu* are still celebrated today, both the language used to describe them and young people’s awareness of them are in danger.

Implications for Development Initiatives

These specifics highlight the need for cultural sensitivity in any developmental project in Totopara for readers who are scholars or policymakers. Instead of unintentionally undermining such traditions, interventions (educational programs,

digital content creation, etc.) should ideally encourage their documentation and celebration. Thankfully, the project's cultural digitization component fits in nicely with the community's wishes to preserve their legacy. These cultural characteristics also help determine what content should be given priority in digital preservation (e.g., recording the folk songs of the Naiyyu drums or documenting the Ongchu procedures for posterity).

Totopara's socioeconomic and cultural profile shows a young, close-knit community that is proud of its history, but it is also economically vulnerable and undergoing rapid change. Their cultural life is rich but under threat from neglect and assimilation; their social norms are traditional but gradually changing; and their livelihoods are straightforward and independent but unstable. This background lays the groundwork for comprehending how the community uses technology and education, which we address in the following section.



In Totopara, traditions like the Naiyyu drum rituals and folk songs are not just culture—they are memory and identity. For any intervention to succeed, it must begin with what the community values. Preserving these practices digitally isn't just helpful—it's what people are asking for.



While nearly one-third of Totopara's residents finish high school, higher education is rare—less than 9% have a college degree, and only 0.5% pursue postgraduation. The education pyramid narrows fast, revealing deep gaps beyond basic schooling that limit long-term opportunity.

Digital literacy and education

Digital literacy and educational attainment are important markers of a community's ability to engage in contemporary socioeconomic life. Totopara's educational difficulties have been exacerbated by its historical isolation and inadequate infrastructure. The degree of formal education attained by community members, the condition of local educational facilities, and the degree of digital literacy and computer usage are all examined in this section.

Levels of Educational Achievement

A picture of modest educational advancement interspersed with notable gaps can be seen in the baseline data. Approximately 30.7% of respondents have completed education up to Class XII (high school), indicating that many Totos have attained basic schooling. In contrast to previous generations where such opportunities were less common, this indicates that almost one-third of adults (18 and older) did manage to complete secondary school, which is encouraging. However, higher education is still very uncommon in Totopara. Just 0.58% of respondents have pursued postgraduate studies (Master's or higher), and only 8.48% have earned a graduate (Bachelor's) degree. A concerning 16.08% of respondents, on the other hand, stated that they had no formal education at all. These numbers illustrate a pyramid of education, with a wide base at the primary level, a sharp narrowing at the secondary level, and a tapering to nearly nothing at the tertiary level.

Even though this distribution is common in isolated tribal areas, it is still concerning. Totopara has a

comparatively high primary school attendance rate in recent decades, which is probably due to the national push for universal elementary education (thus a majority have some schooling). However, the sharp decline after Class 10 or 12 suggests a number of factors, including the lack of nearby postsecondary educational institutions, financial limitations, early marriage or employment obligations, and perhaps a lack of academic readiness among students as a result of subpar education. Remedial adult education efforts are still necessary to address the problem of illiteracy, as evidenced by the fact that over 16% of people—likely older adults or those from particularly disadvantaged families—have no education at all.

Barriers and School Infrastructure

The condition of the local educational resources and infrastructure in Totopara must be taken into account in order to comprehend the context behind these educational outcomes. The baseline results present a dismal image of school infrastructure.

Absence of Resources for Advanced Learning: A resounding 96% of respondents said that there aren't enough science labs in the schools. As a result, science instruction probably stays theoretical since students are never given the opportunity to carry out experiments or see how scientific ideas are demonstrated. This deprivation contributes to the low uptake of science streams in higher education by stifling interest in science subjects as well as making it difficult to understand and perform well on tests.

Limited Technical and Vocational Training: Of the households with children enrolled in school, 31% reported that their children did not have access to computer or vocational training. This indicates



Educational attainments reflect stark inequalities—while basic schooling has improved, very few advance beyond secondary education, limiting overall socioeconomic growth.



During the rainy season, classes don't happen because they can't travel. Schools aren't functioning properly. Not all subjects have teachers, so kids are lacking in subjects like math.

that during their school years, almost one-third of kids do not receive any kind of computer education or training in practical skills. It is evident that computer literacy is not being systematically taught in the educational system when anecdotal evidence is added, indicating that the remaining 69% probably have only limited exposure.

Teacher Absenteeism and STEM Education Gap:

Surprisingly, 97% of parents who responded to the survey stated that these subjects are not taught in the local schools at all, despite 75% of them saying they would be willing for their kids to participate in STEM (Science, Technology, Engineering, Mathematics) education if it were offered. Parents understand the importance of modern and technical education, but the system is not providing it, which illustrates a significant disconnect between aspiration and reality. Students are ill-prepared for many modern jobs and higher education pathways because STEM subjects are either not taught in the curriculum or there are not enough teachers to teach them. The difficulties in the educational system are further described in the FGDs with community members:

“There hasn't been recruitment here for many years. There are only one or two permanent teachers. Most are temporary and from outside. During the rainy season, classes don't happen because they can't travel. Schools aren't functioning properly. Not all subjects have teachers, so kids are lacking in subjects like math. This problem exists at the primary level too. The outside teachers can't make it, and only one or two local teachers are here. Classes happen for just an hour or two”

There is a serious lack of human resources in education, as this account shows. Consistency and quality of instruction suffer when there is a lack

of permanent staff and a reliance on temporary teachers, many of whom travel from far-off towns. For weeks on end, schools are literally closed due to inaccessible roads during the monsoon season. Some subjects—like science and math, perhaps—have no qualified teachers at all, so students move through the grades without ever becoming proficient in them. To illustrate the learning deficit accumulated over years of poor education, the following anecdote was presented: “*Kids in Class 10 don’t know how to multiply... They don’t know geography... That’s how bad it is.*” Due to some local initiatives, this has only slightly improved in recent years, but the issue is still very serious.

Poor Infrastructure: There is also a lack of equipment and infrastructure. The higher secondary school “*has computers, but no one knows how to use them because there is no teacher to teach,*” according to



Persistent issues, including teacher absenteeism, lack of science labs, and inadequate infrastructure, severely constrain the quality of education available to Totopara’s youth.

one young person. Children handle simple tasks like turning things on and off or applying paint. Smart classrooms are necessary because they would simplify instruction. This suggests that the lack of qualified teachers makes even tangible resources, such as computers, all but worthless. Although encouraging, a single computer class that was just introduced was teaching a small number of students very basic skills (typing, MS Paint, and a little Excel). This is far from sufficient digital education. Furthermore, the only way to enroll in advanced courses (six-month or one-year diplomas in computing) is to travel about 37 km from Totopara, which is too far for most people to travel, both financially and logistically.

Lack of Motivation: Information and motivation are two more systemic obstacles. Due to a lack of awareness or the pressing need for kids to help out around the house, many families have historically placed a low priority on education. “*Before [the last couple of years], there was no guidance... I’m really concerned about education,*” said the interview participant, who founded an NGO for education. It implies that although attitudes in the community are changing to place a higher value on education, they still require outside assistance to turn that into results.

Children in Totopara do attend school (in fact, 79% of respondents reported that they have children in their households, and 97% of those said their children attend school, indicating high enrollment at least at the primary level); however, the quality of that education is compromised by a lack of teachers, erratic class schedules, subpar facilities, and a narrow curriculum. Low learning levels, early dropout rates, and few transfers to higher education are the outcomes of these supply-side problems.

Device Access and Digital Literacy

The baseline examined the community's digital literacy, which is partially a result of exposure and partially a result of education, in the context of low levels of formal education. The results demonstrate that, aside from cell phones, owning a digital device is rather rare, and even among people with access to computers, proficiency levels are extremely low:

94% of people do not own a computer/laptop. Merely 13% of those surveyed said they could operate a computer. This implies that only one out of every eight people is proficient in using a computer. The phrase only refers to "ability to use," which probably includes very basic skills, rather than proficiency. This equates to perhaps 150–170 people with any computer literacy in a community of about 1300, which most likely resulted from either individual initiative, exposure outside the village, or infrequent school sessions.

Among the few who can operate a computer, 94% have never had any official training. To put it another way, they learned their skills on their own or informally. Additionally, almost all of the few people (6% of the 13%, or less than 1% of all respondents) who did receive some training had to travel more than 18 kilometers to do so. The fact that residents of Totopara must spend time and money traveling outside, which few can afford, further highlights the lack of local training facilities and the difficulty of learning digital skills.

Some people may have a basic understanding of using smartphones to access the internet because of the high reliance on mobile phones for digital access (explained in more detail in the next section on connectivity). However, there is a significant lack



While mobile phones are common in Totopara, computer ownership and basic digital skills remain extremely limited. Less than 15% can operate a computer—mostly self-taught—and formal training requires costly, long-distance travel, highlighting the urgent need for accessible local digital education.



Despite high mobile phone penetration, true digital literacy remains minimal, constraining the community's ability to fully engage with digital opportunities.

of deeper digital literacy, such as the ability to use productivity software, make purchases online, or create content. Notwithstanding these difficulties, the survey also shows that the people who use technology regularly are acutely aware of the risks associated with it. For example, a staggering 94.15% of respondents (presumably internet users) stated that they check to see if the information is from a reputable website, 36% cross-check with other sources, etc., and 94% are aware of online scams and financial frauds. Furthermore, almost everyone knew about the fundamentals of cybersecurity, such as privacy settings and two-factor authentication. Responses from the online subset are probably responsible for these high percentages; survey priming may also have an impact (the act of asking may make people claim awareness). However, it demonstrates that Totopara internet users are not completely ignorant of it, perhaps as a result of awareness growing on social media or through word-of-mouth following incidents. Qualitative insights further detail the community's digital awareness and vulnerabilities. Participants described how scams frequently occur despite growing awareness:

"Many people in our village have fallen victim to scams like 'Deposit this much money, and you'll get this much in return.' People see these offers and fall for them. On Facebook, we are spreading awareness about such scams."

However, challenges remain as fraud techniques evolve, often confusing residents between genuine and fraudulent calls: "We can't figure it out. Even the genuine ones sound the same."

Instances of severe economic impact were recounted vividly:

“Many people sold their land and invested money, thinking they’d get it back later. Then the phone on the other end got switched off.”

Totopara’s educational and digital literacy environment is marked by lofty goals but limited opportunities. The community’s expressed interest in STEM education and awareness of digital issues demonstrate a strong desire to educate their children and integrate into the digital world. However, real progress is severely limited by systemic flaws, such as understaffed schools and a lack of local training. Therefore, any intervention in this area should be comprehensive, including not only training teachers and providing resources to schools, but also offering additional learning opportunities (such as the suggested makerspace and workshops on digital literacy), making sure that content is available in the local language, and attending to practical needs (such as teacher transportation or housing, solar power backups, etc.).

Alongside the skills dimension covered here, the next section will explore Totopara’s current internet connectivity and usage situation, which is the flip side of the coin for digital inclusion.



From digital scams to broken schools, Totopara’s journey toward digital inclusion is shaped by deep structural challenges. While families dream of STEM education and tech-enabled futures, the lack of trained teachers, local training, and practical infrastructure keeps opportunity just out of reach.

Internet Access and Utilization

A key component of digital inclusion is internet access and usage patterns. By connecting locals to the outside world, internet connectivity has the potential to be a huge equalizer in Totopara, where physical connectivity (roads, transportation) is lacking. This section looks at Totopara’s internet access availability and quality, the gadgets and technologies people use to connect, the cost of maintaining a connection, and the usage trends of the Toto community. Knowing these elements makes it easier to spot any gaps that the project plans to close with better training and infrastructure.

Device Access and Network Connectivity

The great majority of Toto households have access to at least simple communication tools, mainly cell phones, despite their remote location. 96% of respondents to the baseline survey said they owned a mobile phone, with 93% of them being smartphones. 95% among the female and 96% of the male respondents reported that they have mobile phones. This is an extremely high smartphone penetration rate, indicating that even residents with low incomes place a high value on owning a device with internet access, probably due to its multifunctionality (for communication, entertainment, information, etc.).

In terms of network capability, the phones are up to date; roughly 89% of the smartphones support 5G, and 10% support 4G. This is intriguing because it shows newer models, but it should be mentioned that if there is no network infrastructure, even a

phone with 4G or 5G capabilities cannot guarantee those speeds.

According to 94% of respondents, internet access is “almost everywhere” in their homes, and all smartphone owners currently have some kind of internet connection (probably through cellular data plans). On the surface, this indicates that Totopara has reasonably good cellular network coverage—people can usually get a signal at home. Given the previous claims of isolation, this is a little surprising, but it’s possible that one or two telecom companies have towers that extend to the area around Totopara. But as we will see in a moment, coverage is not the same as quality.

Age-related access disparities are a significant nuance: the majority 60% of mobile phone owners are younger adults (18–35), while 10% of respondents over 50 do not own one. This suggests that the older generation is a little behind in terms of mobile access, which could be brought on by cost concerns, a lack of perceived need, or technophobia.

Regarding shared or public access points, Totopara hardly ever uses public Wi-Fi. In the village, just 1.2% of people reported using public Wi-Fi. Since the project’s PM-WANI-based Wi-Fi would be the first of its kind, the lack of public hotspots is to be expected. Everyone therefore depends on their own mobile data to stay connected.

Connectivity Quality and Economic Burden

It is one thing to have a connection in theory; it is quite another to have a connection that is dependable and usable. The majority of internet quality is below ideal, according to the survey, on a 5-point rating system, just 10% of users said their connectivity was “very good.” Over 20% gave it an



While nearly universal smartphone ownership is encouraging, Totopara faces significant connectivity challenges, undermining potential benefits and restricting meaningful internet use.



In Totopara, internet access comes at a high cost and low quality—only 10% rate their connection as “very good,” while most spend ₹ 250–300 monthly on data. For lower-income households, this means sacrificing 5% of their income for unreliable access, often chasing signals far from home just to stay connected.

average to poor rating, with the remaining 70% likely falling into the middle or “good” category. It suggests that reliable, fast internet is uncommon in Totopara if only 10% of people think it’s very good. Community members regularly travel to specific locations seeking better signals, often distant from their residences. “Boys go to places with internet to play games. We go wherever the signal is available,” described one participant, highlighting the inconvenience.

About 60–70% of respondents said they must travel to specific places, such as the Panchayat office, a school, or a coaching center, in order to find better connectivity because they are unable to consistently get a strong signal at home. These locations are probably nearer the network signal source or a little higher. Sadly, those locations are “far from their residences,” so simply using the internet requires effort (and possibly standing in lines or crowds). This situation is common in villages, where groups of young people may be gathered near a tree or corner with a stronger phone signal.

Another significant problem is the financial cost of connectivity. Due to their reliance on mobile data, which in rural areas frequently entails purchasing prepaid recharges, the expense is substantial in comparison to their income: 94% of respondents spend more than ₹250 a month on mobile data recharges, and 97% of respondents use monthly recharges (not depending on any intermittent or free source). A monthly expenditure of ₹250–300 for connectivity per person represents 2.5–3% of income for an average household earning, say, ₹10,000. According to the baseline, people who make less than ₹5,000 a month ultimately spend more than 5% of their income on connectivity. In order to pay for data, many people may view the internet as a luxury they can hardly afford or they

may put themselves through relative hardship in other areas (such as cutting back on spending on necessities or even leisure).

Furthermore, the money spent provides less utility if the connectivity is inadequate. In essence, the current trend is that each user pays for a poor-quality mobile connection on their own. By offering a potentially stronger signal that can be shared, ideally at a lower per-user cost, and more conveniently at home, the project's community Wi-Fi seeks to address this inefficiency.

Internet Use Patterns

It should come as no surprise that Totopara's internet usage is disproportionately focused on leisure and basic tasks rather than transactional or productive ones given the difficulty of connectivity. 91% of respondents who use the internet stated that they use it for entertainment, such as scrolling through social media or watching YouTube videos. This makes entertainment the most common use-case. In fact, according to the interviewee, *"most every house has at least one smartphone. It's mostly used for watching videos on YouTube, or Instagram"*.

86% of people communicate online, mostly via messaging apps and social media. In actuality, a large percentage of respondents—92%—are active on social media. Facebook is used by 98% of them, Instagram by 76%, and WhatsApp by 96% of them. These platforms function as sources of information as well as communication. *"Mobile phones, social media, and TV news channels... Older people mostly watch TV. Newspapers aren't used much,"* reported a participant. WhatsApp is so widely used that local information, such as updates on government programs or emergency news, frequently spreads through group chats. This



Villagers spend disproportionately on poor-quality internet services, often compelled to travel considerable distances to secure stable connectivity—further burdening limited incomes.



In Totopara, most internet users consume content but rarely use it for learning, earning, or local expression. With only 14% using it for education and 6% for business, the digital potential remains largely untapped—especially in a community where online tools could support livelihoods, disaster preparedness, and cultural voice.

is a casual but crucial channel when there is no trustworthy official outreach.

The majority are content consumers, but only 37% reported posting content on social media, and only 6% use it for any kind of business-related purpose. As a result, very few are using these platforms for sales, entrepreneurship, or the promotion of local goods, if any. This suggests a lack of use of digital tools for financial gain. Only a few community members produce culturally significant digital content—*"People from the village go to them for work, like making videos about the Toto community, Toto dances, and Toto songs. They upload these on YouTube,"* indicating nascent digital content creation initiatives.

The incredibly low percentages of people who use the internet for work, education, or vital information are perhaps the most alarming findings. 86% of people have never used the internet for learning (e.g., tutorials, e-learning). This indicates that only 14% have ever attempted to learn something online, which is a missed opportunity in a time when there is a wealth of free educational resources available. Lack of knowledge, a lack of instruction on what to learn, or the fact that entertainment uses up most bandwidth and leaves little for other purposes are probably the causes. 94% of people have never used it for job searching. This is important considering the high rate of underemployment and unemployment. It might indicate that people rely on traditional networks for work (which is typical in rural areas), don't know where or how to look, or think relevant jobs won't be posted online. 98% of people do not check the weather online, which is crucial in areas that are prone to disasters. Literacy in using weather apps or alerts can help close this gap, particularly for the farming community.

Similarly, 98% of people do not purchase tickets online, probably due to the fact that travel is rarely done and counter or local agent bookings are more common. 93% of people have never used the internet to access health information or make digital payments. Just 24% of respondents said they had made payments using any digital platforms. The majority still most likely use cash for transactions and physically visit a bank or ATM (if available) for any banking needs. 99% of people have bank accounts (likely as a result of government programs like Jan Dhan), and the low percentage of people who use ATM cards (53%) and online banking suggests that there may be problems with access or trust when using digital finance. Just 1% of people have applied for any government job online. In essence, digital governance has not yet reached the general public in Totopara, which connects to the following section on government initiatives.

Community members reported challenges such as limited local support for device repairs—*“We have to go outside Totopara for repairs... Minor fixes we can manage, but bigger issues require traveling to Madhari.”* Such barriers exacerbate the digital divide by increasing costs and inconvenience.

The current scope of internet use in Totopara is limited—most people use it for social connections and entertainment, but not yet for education, business, or government. In terms of digital adoption, the community is still in the early stages of connecting and becoming accustomed to basic features and they realize and acknowledge meaningful benefits better internet connectivity can bring:



Internet usage in Totopara heavily favors entertainment and communication, leaving essential services such as education, employment searches, and e-governance largely untapped.



In Totopara, internet access is growing—but mostly for chatting and videos. Without better infrastructure and digital training, the full power of the internet for learning, jobs, and rights remains just out of reach.

“We can learn about distant matters while sitting here. We can send documents, do school work, or get government job notifications. WhatsApp has made things easier, especially for video calling.”

Initial fears about internet use have significantly diminished: *“Initially, when it was new, there was some fear. But now, even kids know how to use it.”* Totopara has taken the first step into the digital era by purchasing devices and joining mobile networks, but there is still more work to be done before connectivity is converted into real advantages. Interventions, thus, requires to necessitate capacity building so that the internet is viewed as a tool for learning, earning, and accessing rights – not just for entertainment – as well as improved infrastructure (the project’s LTE boosters and community Wi-Fi), which will lessen the burden of cost and poor signal. One of those crucial use cases—access to government programs and services—will be covered in the next section. At the moment, the absence of digital use necessitates expensive offline workarounds.

Availing Government Programs and Services

Socioeconomic development relies heavily on effective access to government programs and services, particularly for vulnerable communities that depend on welfare programs, subsidies, and legal documents (such as IDs, job cards, etc.) to access opportunities and entitlements. Physical distance and a lack of digital expertise make it difficult to access these services in Totopara. How the Toto community currently uses government programs, the obstacles they encounter in obtaining these benefits, the function of middlemen like cybercafés and Common Service Centers, and the proportion of digital versus traditional service delivery methods are all covered in this section. Designing interventions (such as the CIRC with the MeraApp) to enhance community governance outcomes requires an understanding of these factors.

Obstacles to Obtaining Rights

According to the baseline study, the Toto community faces numerous hurdles in accessing government benefits such as pensions, scholarships, job applications, and ration cards. These obstacles include:

Transportation and Distance: The block office's distance was mentioned by roughly 71% of respondents as a significant obstacle. Many services are concentrated at the block office (administrative center), which is frequently 20–25 kilometers away. Traveling this distance is difficult, time-consuming, and occasionally impossible in inclement weather due to Totopara's terrain and subpar roads.



For the Toto community, basic rights like pensions or scholarships are often out of reach—not because they don't qualify, but because offices are 25 km away, roads are rough, and information arrives too late. Distance and delay keep entitlements just out of grasp.

Furthermore, 47% of respondents cited inadequate transit options as a deterrent. Even if someone is willing to travel, there might not be a ride available due to the limited number of vehicles and the single bus, or renting a jeep could be very costly. The community is physically separated from the service delivery locations by these factors.

Delays or Lack of Information: 18% of respondents cited a problem with the inability to obtain timely information about schemes. People in isolated villages frequently learn about government opportunities (like a new job opening or subsidy) after the deadline has passed. “*Many children miss out because they don't get information in time,*” one participant noted. The deadline has already passed by the time they find out.



Bad Weather: According to 12% of respondents, bad weather makes it difficult to access schemes. Seasonal floods and heavy rains can isolate Totopara for prolonged periods, interrupting opportunities for administrative outreach or timely submission of documents. One participant emphasized this by saying, “During the rainy season, if I have an exam on the 15th, I have to leave by the 1st.”

Difficult Procedures and Documentation: It can be challenging to organize the necessary paperwork, even if one is able to apply in person. According to the baseline qualitative data, “there is no facility here, so we have to travel to nearby towns or even Siliguri” for something like an Aadhaar card (national ID). Similarly, it frequently takes several trips to obtain income certificates, tribal certificates, etc. Totopara’s isolation exacerbates the bureaucratic complexity that is a barrier everywhere. “If we don’t find out in time, we miss the opportunity... For example, a government job opening in irrigation came out... we didn’t find out [until it was too late]” was stated in one FGD excerpt. Another pointed out that processing forms “legally” requires a lot of time and requires constant follow-up.

Restricted Local Administration Presence: Totopara has a Gram Panchayat office, though it might not offer all the services. A degree of carelessness or a capacity problem at the local governance level is implied by the statement that the GP office “doesn’t promote [the online system]... It’s their job to inform people, but they don’t.” It’s possible that local officials themselves lack the motivation to engage in proactive outreach or are ill-prepared to use digital systems.

Deliberate Withholding or Misinformation: Although it was stated that deceptive information was not a major problem, it is implied that people who



Totopara residents face systemic obstacles in accessing government entitlements, hindered significantly by geographic isolation, lack of timely information, and cumbersome bureaucratic processes.



In Totopara, digital exclusion is deepened not just by distance, but by unequal access to timely information. When scholarships or job notices surface, they often reach only a select few—leaving others to rely on costly cybercafés or travel 20 km to access what should be public services.

possess information occasionally choose not to share it, possibly in order to preserve favoritism or nepotism. If a scholarship is announced, for example, it’s possible that only the disseminator’s close relatives will be informed in a timely manner. The lack of equitable access to information is more of a social dynamics and trust issue. One participant shared:

“For example, a government job opening recently came out... we didn’t find out. Educated individuals could’ve applied, but the authorities only informed their acquaintances.”

Dependency on Middlemen: Common Service Centers and Cybercafés

The community has created workarounds in response to the aforementioned difficulties. The usage of cybercafés and adjacent Common Service Centers (CSCs) in more connected towns is a noteworthy example:

Cybercafés: A startling 95% of respondents said they had traveled to cybercafés, which are typically 20 kilometers away, in order to use government benefits or services. The importance of these middlemen is demonstrated by this statistic. The closest digital access point for completing online forms, printing documents, or scanning and uploading papers may be a cybercafé in a town like Madarihat or Jaigaon. In order to complete tasks, people probably travel together, possibly spending a full day and some cash (for travel and service fees). In the absence of local facilities, cybercafés effectively act as the de facto providers of digital services.

Common Service Centers (CSCs): CSCs are digital kiosks that are supported by the government and are intended for use in rural areas. However, because

the closest CSC is also more than 20 km away, only 7% of respondents said they rely on them. Therefore, even though CSCs are meant to lower barriers caused by distance, they are too far away to be of much assistance in Totopara's situation. Perhaps because private cybercafés are easier to reach or because the CSC's service is sluggish or overloaded, people prefer them.

Gram Panchayat and Visiting Camps: When available, visiting government agencies or Gram Panchayat offices in the village are relied upon by roughly 60–65% of the population. Officials may occasionally set up a camp in Totopara (for instance, to register voters for voter ID or Aadhaar during election drives). Villagers attempt to immediately meet their needs when such opportunities present themselves. However, these are rare and not a reliable source for every need.



The community's reliance on distant intermediaries such as cybercafés underscores the urgent need for accessible local solutions to streamline access to basic government services.



Despite growing use of ATMs and mobile transfers, most in Totopara struggle to navigate digital finance alone. With 71% finding online loan applications difficult, costly reliance on far-off agents and cybercafés remains the norm—highlighting the urgent need for local, secure digital financial support.

Services provided through intermediaries: The most frequent tasks performed at cybercafés/CSCs are photocopying (98% of respondents mention this), obtaining caste or reservation certificates (93%), and conducting financial transactions such as money transfers (73%), or biometric withdrawals (65%). This suggests that even though 99 percent of people have bank accounts, many access them through unofficial channels (such as visiting a cafe that might also serve as a banking correspondent agent). The need for printing and documentation is obviously very high; for example, the absence of a photocopier or printer in the village means that almost everyone must travel in order to make copies of documents for applications.

Digital financial services: 53% of people use ATM cards, and 23% have made digital money transfers (probably with assistance or through agents). This indicates a basic level of adoption of digital finance. 10% have applied for loans online (perhaps through bank websites or microfinance apps with help), and 21% have obtained insurance. Even though these figures are small, they demonstrate that some members of the community are using digital finance, most likely with help. Remarkably, 71% of respondents believe that applying for a loan online is “difficult or very difficult,” which probably has something to do with both actual obstacles (such as a lack of collateral or credit history in traditional banking) and navigational challenges.

The FGD further underlines villagers' frustrations with inefficient services and delays. A participant mentioned:

“I applied for a certificate for my son here twice, but it hasn't come yet... Voter IDs get made quickly during election time. When there's no voting, it takes time.”

This situation makes it clear that, although at a price, third-party intermediaries bridge the service delivery gap. Individuals must pay service fees, endure hardships during travel, and entrust these outsiders with their private information. Dependency is another problem; villagers suffer with few options if the cafe employee is dishonest or the CSC operator is inept.

Traditional vs. Digital Routes

Traditional offline pathways and possible online pathways for accessing schemes are contrasted sharply in the baseline: At the moment, the standard procedure is offline, involving physical travel, paper form submission, in-person follow-up, etc. Just 5% of respondents claimed to be able to use their phone to apply online for entitlements. This small percentage demonstrates the insignificant adoption of self-service digital.

Lack of awareness (88%), inadequate skills (73%), and slow internet speed (12%) were found to be the main deterrents to using online applications. Even if the internet were flawless, most people would still struggle because they would not know the steps or that there are online options. Skills and awareness are crucial. Some people may believe that interacting with the government is too complicated to handle on their own, or they may have doubts that an online submission will be handled impartially.

Trust in results is another subtle factor. One quote implied that people feel their applications are lost in the system otherwise, stating that only around election time do things get done quickly. Therefore, unless they physically go and push for it, they may believe that their online submission will languish. It is difficult to alter this way of thinking without systemic responsiveness improvements.



A locally managed digital resource center combined with targeted digital training and awareness programs can empower Totopara residents to independently access essential services, reducing their reliance on distant intermediaries.



Reliable local access to digital services through a village-based CIRC can reduce costly travel and delays. With a trusted SoचनाPreneur and tools like MeraApp, Totopara residents could shift from waiting for help to confidently accessing schemes, documents, and forms from within their own community.

It is acknowledged that having better local support would lessen the necessity of going outside: *“The most important thing is that we shouldn’t have to go outside for work. Our goal is to be able to do things on our own.”* The desire for self-reliance through knowledge or local resources is summed up in this quote from an interviewee.

Possibilities for Digital Solutions

The results point to a number of areas where focused digital interventions could ease present issues:

Local Digital Facilitation (CIRC): Since almost everyone currently travels for digital services, the proposed CIRC was established in direct response to this reality. More than 90% of households could save time and money if the village itself offered online form filling, scanning, and printing services. Instead of operating an outside cafe, the SoचनाPreneur could serve as a reliable middleman who is ideally more answerable to the community. Residents clearly value this, expressing, *“If online work can get done here, that would be good. It is good for the students. It is good for us.”*

Awareness Platform (MeraApp): The problem of information delay might be addressed by a carefully selected collection of programs (such as MeraApp) that are available in the local tongue. Residents of Totopara could learn about schemes on time and with the right details if it were updated frequently and people were encouraged to check it, which would increase uptake.

Workshops can be held to teach common procedures (such as how to fill out an online form for a scholarship) if 73% of applicants lack the skills necessary to apply online. Those individuals can assist others or at the very least lessen dependency on outsiders, even if only a small portion learn.

Better Connectivity: The project's efforts to provide better internet are essential, as 12% of respondents did mention slow speed as a barrier. Online procedures become less annoying and more people are inclined to try them if the network gets faster and more stable.

Mobile-Based Services: Given the widespread use of mobile phones, creating user interfaces that are optimized for mobile devices or even utilizing services like WhatsApp chatbots to provide government information could reach people where they are. Official communication channels can benefit from the community's extensive usage of WhatsApp.

Reducing Document Hassles: People won't have to constantly retrieve and copy physical documents if digital lockers (DigiLocker) or at the very least scanning and storing documents at the CIRC can be promoted. With permission, the CIRC could keep a file for every family that can be used right away for any purpose.

Overall, residents of Totopara are largely reliant on traveling to obtain services because their ability to participate in government programs is currently restricted by geography and a lack of digital literacy. Digital solutions have the potential to bring some changes, bringing services to Totopara instead of the other way around. The community could change from being passive recipients who frequently lose out to active claimants of their rights and benefits by increasing awareness, developing digital capacity, and offering local connectivity and support. As they access the welfare programs, employment opportunities, and scholarships to which they are entitled as a PVTG-designated group, this would also greatly enhance their socioeconomic status.



Digital tools can help transform Totopara residents into active participants in their own development—accessing welfare, applying for scholarships, and responding to emergencies—through better connectivity, mobile-based platforms, and everyday digital training rooted in local realities.



88% of respondents cited landslides, 60% cited flooding, and notably, 63% have cited human-driven risks (like mining) as the most important hazard.

Disaster Response and Preparation

Totopara is vulnerable to natural disasters because of its location in the foothills, close to rivers, and in an area that experiences a lot of monsoons. Resilience and disaster readiness within the community are critical to maintaining development progress. The disaster types that most impact Totopara are examined in this section, along with the difficulties the community faces during these occurrences and the potential contribution of media and communication technology to disaster response.

Important Risks and Effects

88% of respondents cited landslides as the most important hazard. Another natural hazard mentioned by 60% of respondents is flooding. The riverbeds surrounding Totopara are subject to flash floods, which often destroy access points. During monsoon, intensity of flash floods is more frequent and damaging.

Notably, 63% of respondents pointed to disturbances from nearby mining or construction activities, implying human-driven risks such as landslides and unstable terrain resulting from activities like limestone mining. A community member emphasized this concern:

“Mining is a big issue. It needs to be stopped. It increases the chances of landslides and floods. We managed to stop one mine after a lot of protests, but another one on the Bhutan border is still running. We're still fighting to stop the other one.”

One participant in a FGD underscore the severity of seasonal storms or “strong winds blow.” It was mentioned that:

“Strong winds blow. Storms come during the rainy season, and they’re very dangerous. Houses are damaged, betel nut crops fall, and wires break. It takes 15 days to fix them. Sometimes, trees fall. People come to check on it themselves, or sometimes the village leaders call. Our Pradhan also calls; he’s from our village and is part of the Toto community. Even the Sabhapati calls sometimes. But they also get stuck on bad roads, make videos about it, and yet nothing improves.”

Given that betel nut is a vital cash crop, its fall is both hazardous and detrimental to the economy. The statement that it takes 15 days to repair damaged power lines following storms suggests that emergency response times from agencies such as the power department are slow. Together, these risks put Totopara at constant risk of disruptions to infrastructure, livelihoods, and daily life. The already poor roads get worse or become impassable.

Issues with Infrastructure and Communication in Disaster Situations

Emergency response and efficient communication are essential during disasters. The baseline data reveals a number of pressing issues in Totopara during disasters: roads become inaccessible, phones may not function, and power is out. People are basically on their own or dependent on very local methods.

According to 95% of respondents, roadblocks are a significant issue during emergencies. Rescue efforts or the ability to get to hospitals may be delayed if flash floods strike or fallen trees block the accessible passes. A participant described the severity:



Totopara is highly vulnerable to natural disasters like landslides and floods, exacerbated by inadequate infrastructure and human-induced environmental stressors such as mining activities.



In emergencies, Totopara’s fragile infrastructure—marked by impassable roads, disrupted communications, and recurrent power outages—drastically delays response efforts and intensifies community vulnerabilities.

“Communication is a big problem. During the rainy season, roads get bad. This problem has persisted since my grandfather’s time, with no solution.”

Telecommunications also fail frequently, with 93% noting disruptions during disasters. Power cuts, reported by 90% of respondents, further compound communication breakdowns. Emergency helplines were inaccessible for 73% of respondents during crises, rendering them effectively isolated when immediate assistance is most crucial.

It is important to note that even though only 4% of respondents said that misinformation or fake news is a common problem during disasters. Rumors that may or may not be true, such as “the bridge has collapsed” or “a big flood is coming,” can spread in an atmosphere with little official information, leading to panic or a misallocation of resources.

Social Media and Digital Platforms’ Function in Disaster Response

The baseline asked how people use social media during disasters, despite the connectivity problems. The findings show a discrepancy between the potential and actual use of these tools, which is somewhat contradictory:

In times of crisis, a staggering 96% of respondents said they use social media to disseminate information, and 76% said they use it to raise money. Those with access try to post updates on Facebook or WhatsApp, and they might even share requests for aid if someone’s house was damaged. These numbers probably reflect an ideal or intended use. It demonstrates the existence of the idea of leveraging networks.

Nonetheless, there aren’t many specific applications of social media for coordinated disaster response.

Merely 0.58% of respondents said they used it to get information about infrastructure support or post-disaster reconstruction. This suggests that hardly anyone is using social media to coordinate reconstruction efforts. Just 0.29% of respondents said they used it for mental health support. Just 2.63% of respondents said they used it for social cohesion and solidarity (such as collective advocacy and community encouragement).

These low numbers in specialized fields suggest that social media use is more ad hoc, for instant news, and perhaps for friend fundraising than for organized disaster relief. For instance, someone may share a video of the broken bridge on Facebook to draw attention to the problem (which apparently also happens with tourists and YouTubers), but that does not guarantee that authorities will act.

Lack of knowledge or training on how to use social media for disaster response in a way that goes beyond simple posting or messaging could be one factor contributing to the low level of organized use. Another is that, as previously mentioned, during major disasters, the internet may malfunction, causing these channels to go offline just when they are most needed.

Community members highlighted chronic infrastructure neglect, exacerbating their vulnerability. One resident expressed frustration:

"... I was born here, will live here, and my children will also live here. We'll die here. Since my grandfather's time, the road has been the same. I've been driving since 2001, 23 years now. Nothing has changed, and it's very difficult. We get stuck. Visitors and YouTubers come and comment on how bad the roads are, asking why we don't demand change. But how many times can we demand?"



While villagers actively utilize social media informally during emergencies, structured digital disaster response and effective information dissemination remain largely absent.



Community frustration was further emphasized regarding external perceptions of government assistance: "Outsiders say there are facilities for the Toto community. There's no facility—none at all. We just need basic things—a proper road, good schools, and good teachers."

Another emphasized broader infrastructural deficits, including inadequate drainage and water management:

"A bigger issue is the bridge, which only the government can build... beside roads, the drainage system isn't good... There's a risk of landslides. The drains aren't built properly and are affecting people's land. Drinking water is supplied through a motor and borewells. If there were water harvesting, it would have been better."

It's interesting to note that one participant expressed frustration that, if directed (for example, through a Twitter campaign or contacting the media), could potentially become online advocacy by asking why political leaders have not guaranteed at least a decent road for commuting despite being aware of the situation.

Community frustration was further emphasized regarding external perceptions of government assistance: *"Outsiders say there are facilities for the Toto community. There's no facility—none at all. We just need basic things—a proper road, good schools, and good teachers."*

Documenting these risks and data thus become necessary to support policymakers and participate in national initiatives for building rural disaster-resilient infrastructure. Both infrastructure development (better roads, flood defenses, emergency shelters) and communication network improvement (so that warnings and help can flow quickly) would be necessary to strengthen disaster preparedness in Totopara. By making sure that at least one location (the CIRC) has backup power and connectivity to act as an emergency communication center and by providing training on fundamental digital disaster response techniques, the digital initiative can especially help with the latter.

Preservation of Language and Culture in the Digital Age

The Totos are conscious of the need to protect their language, customs, and storytelling as a result of modernization and outside influences. This section explores the Toto language's current state, community sentiments regarding its preservation, the difficulties in preserving it, and the potential benefits of digital tools for cultural preservation. It also discusses cultural confidence, which reflects the vibrancy of a person's cultural identity. For example, it discusses how at ease people are using their language in public.

The Toto language, spoken by the indigenous Toto community, only received an official script in 2015, making its preservation an urgent concern. One of the objectives of this intervention is to digitize the Toto language, oral history, and cultural traditions through documentation and storage. This effort aligns with the broader research question: *What do the Totos think about preserving their culture and language? Are they willing to document and digitize the same?*

According to the baseline survey, all respondents (100%) think it is important to preserve the Toto language, with 92.11% stating it is "very important" and 7.89% stating it is "important." This consensus, which is uncommon in surveys, demonstrates a strong sense of shared appreciation for the language. The community acknowledges that language is a crucial component of who they are; in fact, 98% of respondents stated clearly that they wish to keep their language in order to maintain their identity.



The Toto language, spoken by the indigenous Toto community, only received an official script in 2015, making its preservation an urgent concern.



The Toto community universally values preserving their language, recognizing that language retention is fundamental to sustaining their cultural identity amidst external pressures.

Additionally, 97% of respondents think that it is critical that the younger generation continue to be interested in studying and using Toto. This suggests some concern that the young people may be straying from the language. Elders worry about a transmission break if they observe that children prefer speaking Bengali or Nepali. In essence, everyone in the community agrees that the language must be preserved by the next generation or it may become extinct.

It is also encouraging to note that 97% of respondents stated they feel "very comfortable" speaking Toto in settings other than the village, such as markets or schools. This implies that people are not embarrassed to use the language in public and that there is little stigma associated with it. Comfort suggests a strong sense of linguistic pride, but they probably switch to other languages when necessary. This is encouraging because speakers of minority languages frequently suffer when they are ashamed to use them in public. It appears that Totopara takes pride in speaking Toto and does so whenever it is feasible.

Obstacles to Preservation

Respondents were asked in the survey what they believed to be barriers to language preservation. 95% of respondents cited a lack of resources as their biggest challenge. Resources in this context could include books, teachers, financial assistance for language programs, educational materials in Toto, etc. 85% of the youth cited a lack of interest. Although young people may not be overtly antagonistic toward their language, apathy may be fueled by the attraction of dominant languages and possibly a belief that Toto is not "useful" for social or professional advancement. Speaking Bengali or Hindi may just be more convenient for many young

people, particularly if they are studying outside.

83% of respondents mentioned the influence of other languages, such as Bengali or Nepali. A FGD participant mentioned,

“The language has mixed with others, like Nepali and Bengali. People are forgetting their own language. Many have married into the Nepali community, so their children speak Nepali, not Toto.”

Totos are also pushed to use Bengali terms by social pressure, such as attending school in Bengali or interacting with Bengali officials on a daily basis. Utility can override tradition in language choice, as demonstrated by the story of shopkeepers using “potato” in everyday speech rather than “betru,” the Toto word, because they don’t understand it. Such borrowing has the potential to weaken Toto’s distinctive vocabulary over time.

Interest and Willingness of the Community in Preservation Initiatives

The Totos exhibit a willingness to act in order to preserve their heritage in spite of obstacles. According to 91% of respondents, they would like to learn more about the Toto language by taking part in educational programs. However, just 2.34 percent said they would be interested in teaching the language. This shows that the demand for teachers is much higher than the supply. Extremely low interest in teaching could be the result of either a lack of confidence or a simple desire for someone else to assume that responsibility. It highlights the urgent need for community language teacher training or for encouraging fluent speakers to tutor others. Elders may not be skilled teachers, despite the widespread belief that they should be. This gap between teachers and students needs to be closed, perhaps by integrating the Toto language into the



Limited resources, coupled with external linguistic influences, pose severe challenges for effective language and cultural preservation, demanding community-focused digital strategies.



92% of respondents said they would like to occasionally share stories with their kids or grandkids in Toto. 97% of respondents expressed interest in documenting and conserving oral histories, stories, songs, etc.

curriculum so that teachers will take it up or by holding workshops to train volunteer Toto language teachers.

92% of respondents said they would like to occasionally share stories with their kids or grandkids in Toto. In fact, they stated that they do want to, suggesting that many people already do. One essential way to transmit language and values is through storytelling. This is still widespread, which is encouraging for the survival of oral tradition.

In Toto, 97% of respondents expressed interest in documenting and conserving oral histories, stories, songs, etc. The project’s objectives are perfectly aligned with this extraordinarily high number. It implies that the community is not only receptive to but also eager for digital preservation; they want their songs, voices, and elders’ stories to be preserved. Because of this willingness, the project is likely to find enthusiastic participants for tasks like creating a Toto audio archive or recording folklore.

The respondents clearly stated the types of digital resources they would like to see available in their native tongue. 72% of respondents want language-learning apps that can learn Toto. 93% of respondents want audio recordings, most likely of stories, songs, or even just spoken words in Toto. All members, even those who are illiterate, can listen to the audio. 72% of people in Toto would prefer e-books. Digital versions of written materials, such as stories and possibly even textbooks, could significantly improve literacy.

64% are willing to participate in language preservation activities overall, 18% are willing to help with digital recordings (possibly handling equipment or technical aspects), and 83% are willing to contribute oral history (talking about

their lives or community history). These are positive figures that show a large number of people are willing to donate their time and expertise to any project that seeks to document their culture.

Public Perception and Cultural Identity

The baseline also discussed how outsiders perceive Toto culture and the community's sense of identity in that regard. A FGD participant mentioned that:

“Yes, about 10,000 people come yearly, mostly from Kolkata during summer. Around ten vehicles come daily. They also come in winter. Tourists staying in lodges are told to visit Totopara, so they come here. They struggle with these roads, look at our trees, and make comments about betel nuts and other things.”

Although tourism can be a source of pride or revenue, it also introduces misunderstandings. According to one interviewee, visitors arrive with “weird notions” such as that Totos are short or live in grass huts, which they discover are untrue when they arrive. This suggests that the Totos are being exoticized. Although not specifically related to language, it has an impact on cultural confidence because the community may feel pressured to rectify self-perceptions. The participant of the interview mentioned:

“It wasn't like this before. People used to come here with a story in mind, but once they arrived, they saw something different. A lot of bad things have been written about us. Some time ago, we restricted that. People used to write random things before 2021. I was away then. After that, things changed, and I stopped it. I've read many articles where they've written lies. For example, such as what Suchita Sinha wrote—saying that girls get pregnant



The strong cultural pride and willingness to publicly speak Toto demonstrates high cultural confidence, essential for successful heritage preservation and digital documentation.



They see digitization not merely as preservation but as empowerment, potentially offering meaningful employment and keeping youth positively engaged.

first and then marry, which isn't true. They wrote anything. My brother has those articles, and if you want, I can share them with you”

Given such conditioning, they value creating their own narratives through digital media because newspapers have previously published “lies” about them. They can project a genuine image to the world and combat false information from outsiders by digitizing culture according to their own terms. Digital cultural preservation thus essentially accomplishes two goals: it preserves the culture within itself and appropriately educates the outside world, encouraging respect and support rather than miscommunication. Community also hopes for digital initiatives are also pragmatic: “The youth will get employment through the Internet... If they have work, it'll be good.” They see digitization not merely as preservation but as empowerment, potentially offering meaningful employment and keeping youth positively engaged.



Conclusion and Suggestions

The socioeconomic circumstances, difficulties, and goals of the Toto community are all thoroughly covered in this baseline study. The Totos have a strong sense of social cohesiveness, a strong devotion to cultural heritage, and a strong interest in education and digital connectivity despite their economic vulnerability. But structural obstacles impede their advancement. The DEF intervention, which prioritizes internet access, digital literacy, and cultural preservation, effectively meets these needs. To ensure the initiative's success and direct more extensive policy actions, the following recommendations are crucial.

Socioeconomic Development

Young people make up the majority of the Totos of Totopara, who participate in the labor force at high rates but have low incomes (nearly 80% make less than ₱15,000 per month). Women play a significant role in domestic work and agriculture, but they frequently do not have the same access to education or career opportunities as men. Social stability and cultural richness are provided by enduring traditions like endogamous marriage and distinctive festivals. Isolation is exacerbated by the lack of basic services and physical infrastructure, particularly roads and bridges.

Recommendations:

- Prioritize all-weather road connectivity to improve access to education, healthcare, and commerce.
- Promote sustainable livelihood initiatives, such as enhanced betel nut marketing, horticulture,



Effective digital solutions must recognize and address the broader socioeconomic realities of Totopara, enhancing economic opportunities alongside digital inclusion.



Addressing educational challenges requires comprehensive investments, including teacher training, improved infrastructure, and targeted digital literacy programs responsive to local contexts.

animal husbandry, and self-help groups for women.

- Integrate PVTG villages like Totopara into rural infrastructure and tribal development schemes.

Education and Digital Literacy

After primary school, Totopara's educational attainment drastically declines; only about 9% go on to college, and 16% never attend school. Chronic teacher shortages, a lack of labs and computer training (97 percent say STEM is not taught), and weather-related disruptions are all problems in schools. Just 13% of people are computer literate, and nearly none of them have received any local training. However, there is a lot of interest in education: 75% of parents want their children to pursue STEM, and many parents believe that education is the way of the future for young people. The community also sees digital skills as essential, despite their present lack.

Recommendations:

- Address teacher shortages by offering incentives such as housing or hardship allowances.
- Improve school infrastructure with science labs, functional computer labs, and ICT-trained teachers.
- Provide remedial education for struggling students and integrate digital literacy into the curriculum.
- Offer targeted digital literacy training: women-only classes, youth courses in coding/graphic design, and elder-friendly sessions.
- Leverage national programs like Digital Saksharta Abhiyan (DISHA) to enhance digital engagement.

Digital Access and Internet Connectivity

96% of households own a smartphone, indicating that they are prepared to connect. However, the quality of connectivity is low (10%) and expensive (most spend more than ₹250 per month on data). Most people only use the internet for social media and entertainment; important services like e-commerce, e-governance, and online education are hardly ever used (more than 90% have never used them for such purposes). In essence, Totopara lacks the digital dividends because of infrastructure and skill gaps, but it does have the devices.

Recommendations:

- Expedite the community Wi-Fi network and LTE booster; consider VSAT-based internet if required.
- Subsidize data costs through vouchers or free access at the CIRC.
- Promote productive internet use by training residents in accessing local-language health, market, and agricultural information.
- Encourage youth to pursue online certifications and support digital entrepreneurs in launching online microbusinesses.
- Enhance local WhatsApp/Facebook groups for knowledge-sharing on government services and digital skills.

Access to Government Schemes

It is evident from the baseline that many Totos are unable to access entitlements due to distance and a lack of digital literacy. Only 5% of people use online resources themselves, and many travel more than 20 km to cybercafés to complete simple



Local digital facilitation hubs can reduce dependence on intermediaries, empowering residents through simplified and transparent access to critical government services.



Strengthening disaster resilience in Totopara requires reliable infrastructure, robust emergency communication systems, and comprehensive digital preparedness training.

paperwork. Lack of knowledge (87%) and the ability to apply online (73%) are the biggest obstacles. From Aadhaar enrollment to job applications, crucial documents and services are frequently overlooked or delayed. The community, however, is eager for local help and timely information; they stated that they do not want to have to go outside for every minor task.

Recommendations:

- Establish the Community Information Resource Centre (CIRC) as a one-stop digital facilitation hub, staffed by a trained SoochnaPreneur to assist with government schemes and applications.
- Organize quarterly outreach camps for Aadhaar enrollment, voter ID processing, and banking services.
- Implement a multi-channel information system, including WhatsApp broadcasts, notice boards, and loudspeaker announcements, to disseminate updates on government schemes.
- Promote self-sufficiency by encouraging youth to apply for schemes online under supervision.
- Advocate for hybrid service delivery (digital + assisted) to enhance accessibility.

Disaster Preparedness and Response

Inadequate infrastructure and communication breakdowns exacerbate Totopara's vulnerability to frequent natural disasters (88% citing landslides, 60% citing floods), which are exacerbated by 93% losing networks during emergencies and 95% encountering obstacles. The community is primarily isolated during emergencies and lacks outside help and early warning systems. Social media is used

informally to share news, but there is no formal system in place for emergency communication or relief.

Recommendations:

- Develop a disaster response plan in coordination with local authorities.
- Establish an emergency communication hub at the CIRC with ham radio or satellite phones.
- Train a Village Disaster Response Team to manage debris clearance, vulnerable group assistance, and rescue coordination.
- Implement structural mitigation measures such as retaining walls, footbridges, and elevated community shelters.
- Integrate traditional knowledge with scientific disaster preparedness techniques.

Cultural and Linguistic Preservation

A compelling argument for cultural preservation is the Toto community's near-unanimity on the matter. They place a high value on language preservation (99+%) and are willing to actively participate in documentation (83% are ready to provide oral histories). Due to problems like resource scarcity, the Toto language is in danger, but there is a lot of interest in using digital tools like apps, e-books, and recordings to preserve it.

Recommendations:

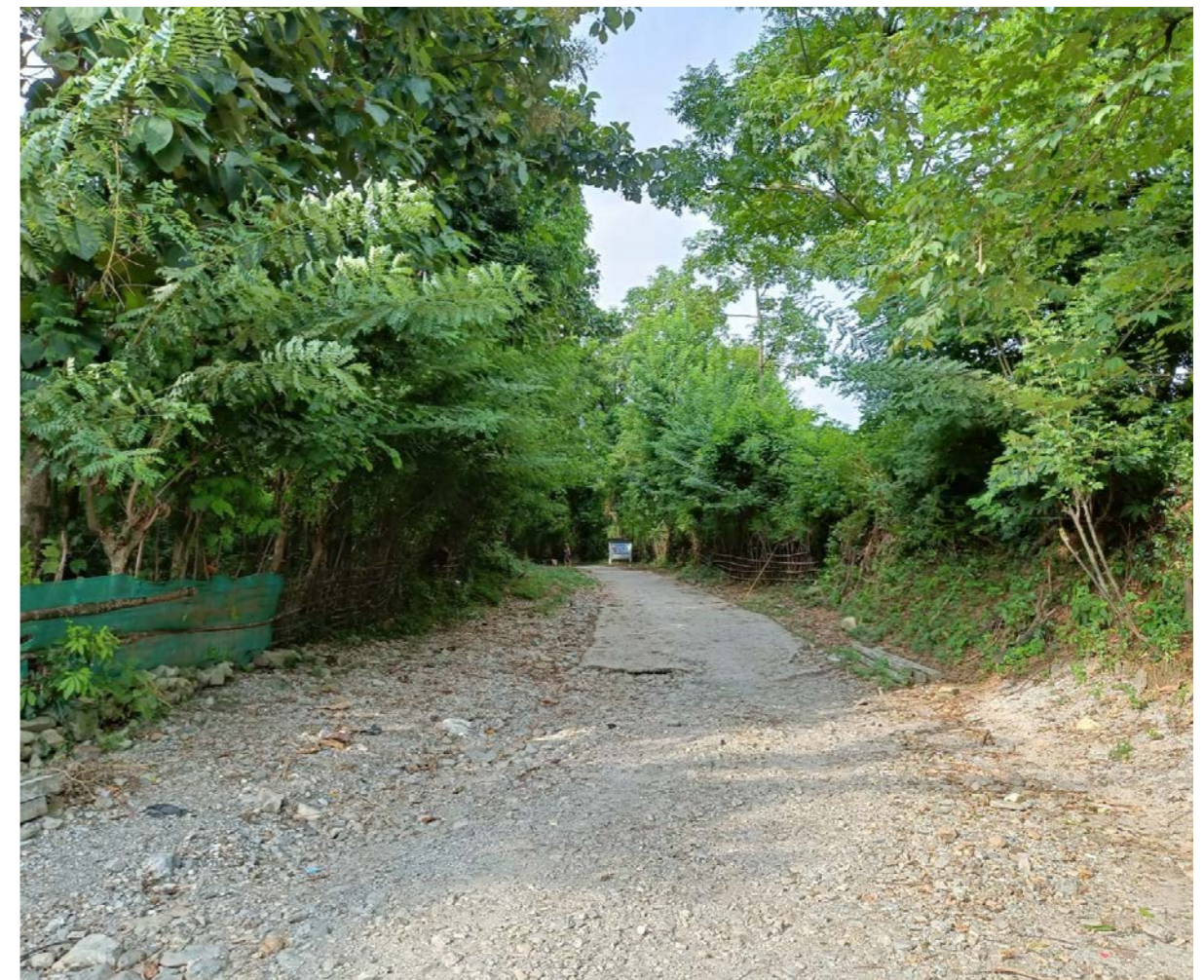
- Launch a Toto Language and Heritage Digitization project, training community members in digital documentation techniques.
- Organize cultural events like "Folklore Nights" to record oral histories, songs, and rituals.



Holistic digital initiatives to document and disseminate Toto culture are vital, ensuring cultural heritage preservation amidst ongoing external pressures and influences.

- Develop bilingual Toto-Bengali/English educational materials such as e-books, storybook apps, and language guides.
- Partner with linguistic research organizations to build a structured Toto language corpus.
- Encourage youth to create modern Toto-language content (e.g., rap songs, YouTube vlogs) to ensure language continuity.

By addressing these challenges through targeted interventions, Totopara can emerge as a model of digitally empowered tribal development. The success of these initiatives could provide valuable insights for policy frameworks aimed at integrating remote PVTG communities into India's socioeconomic and digital transformation landscape.



At the Digital Margins: The Connectivity Status of Totopara, North Bengal

The Toto community of Totopara, a vulnerable tribal group in remote West Bengal, faces isolation that limits access to education, healthcare, and digital services. Despite widespread smartphone use, poor connectivity and low digital skills hinder progress. Agriculture remains their main livelihood, while cultural identity faces threats. The Digital Empowerment Foundation's project aims to improve connectivity, digital literacy, and preserve culture through a local resource center, fostering inclusive development.



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