# Community Voice as Data: Affordances of Participatory Videos for International Program Development

Manika Saha
Monash University
Melbourne, Australia
Centre for Humanitarian Leadership, Deakin University
Melbourne, Australia
manika.saha@monash.edu

Tom Bartindale
Monash University
Melbourne, Australia
tom.bartindale@monash.edu

Delvin Varghese
Monash University
Melbourne, Australia
delvin.varghese@monash.edu

Stephen Lindsay
University of Glasgow
Glasgow, UK
stephen.lindsay@glasgow.ac.uk

Dan Richardson
Monash University
Melbourne, Australia
dan.richardson@monash.edu

Syed Ishtiaque Ahmed
University of Toronto
Toronto, Canada
ishtiaque@cs.toronto.edu

Patrick Olivier
Monash University
Melbourne, Australia
patrick.olivier@monash.edu

## ABSTRACT

International program development is a complex process involving many stakeholders. Current international practice affords limited, if any, opportunities for direct community-led input into the program commissioning process, resulting in programs that may not meet the specific needs of communities on the ground. Community voice is one source of data that could help focus the design of effective development programs and interventions. However, development programs are primarily formulated based on representative and often quantitative data conducted by experts from outside the community. Through a participatory video production process with disadvantaged women farmers in rural Bangladesh, we explore the opportunities for including meaningful community voices in these institutionalized processes. We present practical design implications for how community-generated voices can act as rich data, establishing confidence, community bonds and senses of accountability to inform early stages of project development, and to specifically augment and contextualize other data sources.

## CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in HCI**; **Collaborative content creation**.

## KEYWORDS

audio video, sustainability, HCI for development, qualitative methods

**ACM Reference Format:**
Manika Saha, Tom Bartindale, Delvin Varghese, Stephen Lindsay, Dan Richardson, Syed Ishtiaque Ahmed, and Patrick Olivier. 2023. Community Voice as Data: Affordances of Participatory Videos for International Program Development. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23), April 23–28, 2023, Hamburg, Germany*. ACM, New York, NY, USA, 16 pages. https://doi.org/10.1145/3544548.3581458

## 1 INTRODUCTION

In international development, there is widespread recognition of the importance of hearing the voices of those who are under-served and under-resourced in decision making [108]. The identification of community voice, their needs and challenges, is recognized globally as the key to mitigate growing inequity and strengthen underserved populations [13, 48, 62, 71, 88].

Despite billions of dollars of investment [81], international development projects (IDPs) have been unable to deliver effective, impactful, and sustainable humanitarian change [33, 35]. Thus, the absence of meaningful community stakeholder input has led to ineffective outcomes [88, 89]. Incorporating community voice in project design helps ensure that proposed interventions reflect the specific circumstances and challenges facing the host community [57, 73, 88]. Traditional evidence-based approaches, which collect community views using quantitative surveys, interviews, and focus group discussions have limited potential to capture community voices for IDP participation, and do not facilitate meaningful participation [1, 50, 88].

HCI for Development (HCI4D) practitioners have advocated the inclusion of voices from local communities: calling for democratization and end-user engagement through practices such as participatory design (PD) [19, 63, 118], and the use of media technologies to capture the voices and life experiences of marginalized people through stories that can be shared with decision makers [11, 30, 43, 121]. Participatory videos (PV) in particular have been used across a range of traditional development activities, including knowledge transfer to the community [21], community training and learning [30, 113, 114], project monitoring [70], and donor-focused evaluation [11, 116].

However, the use of PV by project designers and development practitioners to incorporate community voice alongside existing large-scale, quantitative approaches is largely under-explored. Addressing this gap, we explore the use of PV for the inclusion of community voice in project development in the context of public health and nutrition among rural women farmers in Bangladesh. We reflect on how structured PV can provide agency to a disadvantaged community to capture and edit their stories to share their needs and priorities producing community-generated data usable in program development. We present practical implications on how one can structure such a process to establish trust, confidence, community bonds and a sense of accountability.

In this paper we present: i) documentation of a structured PV process, *Our Story*, run with 26 women farmers in rural Bangladesh over the course of 3 days including video of their wider community and a presentation to the community at the end of the process; ii) a thematic analysis of the video and metadata associated with making it highlighting situational insights, quotidian life, local knowledge and the participants reflections on the process; and iii) a reflection on the practical benefits for international project development of accountability, trust and empowerment, and design considerations for HCI4D supported PV processes.

## 2 RELATED WORK

### 2.1 Evidence-based data in international development

Large-scale data gathering and analysis exercises are the mainstay of evidence-based decision-making in international development [36, 37, 129]. These exercises involve interaction between multiple large stakeholders, including academics and research organizations; diverse government sectors such as agriculture, health, and finance; donors; international NGOs; and the United Nations (UN) [14, 52]. Within Bangladesh, influential initiatives are predominantly informed by large-scale data analysis [79, 87], with Bangladeshi citizens having limited opportunities to share their own understanding of their needs, challenges, priorities, or community-led solutions in problem identification [88]. Colonial influences, centralized and top-down research practices, problematic power dynamics, and uneven participation have not provided space for grassroots voices in agenda setting [1, 25, 38]. This is in sharp contrast to the development literature showing 'participation is power'[26] - citizens' involvement in decision-making discussion creates sustainable solutions for policy-makers and citizens [26, 48].

According to the World Bank [48], citizen participation in program development is crucial to problem identification and solution implementation. Development programs conduct citizen engagement using traditional mechanisms, such as qualitative focus groups and surveys, to engage local communities for needs assessment in program and research development [61]. For instance, Participatory Rural Appraisal (PRA) has been widely used to engage local and marginalized communities identifying challenges and suggestions for developmental programs [67] and research projects [64]. However, these traditional approaches have problematic top-down, hierarchical designs and associated power dynamics [74, 88, 89]. Within these power structures, participants tend to respond to outsiders according to what they believe the outsiders desire to hear [74] and these are often documented in Monitoring and Evaluation (M&E) practices including community stories to satisfy donors [125].

Moreover, for many (especially marginalized) communities, presenting quantitative and text-based qualitative data to communities is meaningless as many members of these communities have limited education, and cannot interpret the presented data or understand how it could help them. Despite this data originating from citizen engagements, citizens have limited ability to contribute data through their own understanding and to be heard. Thus, excluding relevant citizen participation in decision-making processes leads to program outcomes that do not reflect real-life priorities of communities [1, 50]. There is a clear need for community engagement methods for working with marginalized communities, to better understand their needs and priorities, contexts, experiences, knowledge, community-led solutions, and suggestions to address the problems they face based on their own understandings, expressions, and voices.

Rural Bangladeshi women are disadvantaged and marginalized [60], experiencing poor health and nutrition, food insecurity, high maternal mortality, limited access to education and limited power to make decisions at household and community levels [60, 93]. More than 50% are involved in agricultural production but gain limited benefits from their work [93]. In programs responding to this, their participation has been limited to quantitative, country-level surveys or interviews and focus group discussions with a minimal community agency or understanding [104]. As such, there is a pressing need for research around better community engagement within this context.

### 2.2 HCI for Global Development in Marginalized Communities

There is a lack of understanding of how to expose community needs and relevant social, cultural, economic, and political factors to inform appropriate technology design [8, 53, 56, 115, 120]. Schelenz and Pawelec [101] critiqued a "lack of user-centric design of projects [and] insufficient participation/ inclusion of users," which should be core underpinnings for the sustainability, scalability, and accessibility of technology practice in the Global South. The relationship between voice, agency, and empowerment in disadvantaged communities [51] can be explained using the critical lens of Paulo Freire's *"Pedagogy of the Oppressed"* [39], which argues that for real empowerment, marginalized communities need agency in sharing their voice, emphasizing listening to community voices to better understand their lived experiences, perceptions, and reactions. In this paper, we define agency as the freedom and opportunity of communities to self-represent needs, challenges and priorities.

Despite the general recognition of the need for the inclusion of community voice to inform programs and policies, there have been few investigations in the HCI4D domain as to how external digital innovations can provide agency to disadvantaged community voices in project design. Investigations into how technologies can assist traditional reporting systems for data collection have shown they support programs, policies, and top-down interventions attempting to identify the needs of citizens for global development. Examples include: data collection through numeric paper forms for NGOs [106]; replacing paper-based data collection with digital

tools, such as CAM [84]; and collecting survey responses through sensor events such as MyExperience [41] and Commcare [32].

Many ethnographic researchers have focused on including unheard people's voices to better understand marginalized contexts and mitigate the digital divide [5, 6, 58]. For example, Sultana et al. explore the context of marginalized women in the patriarchal culture of rural Bangladesh to inform woman-centric design for research, programs, and policies [109]. Participatory design [19, 118], co-design, and co-creation projects [9, 42, 85, 128], provide rich understanding of how local communities' perspectives can enrich ICT design solutions. Researchers such as Ho et al. have critiqued the use of traditional community engagement methods, as, in reality, top-down approaches, with limited entry points for under-served populations to contribute to design to share their own understanding and experiences. They assert that community consultation has been used as propaganda and served preconceived agendas: *"Who decides on the overall aims of a participatory project? How might someone in the beneficiary community be able to change focus of the project? Who will judge the project's success or failure?"* [58]. In response to this gap and HCI4D's focus on bottom-up approaches to community empowerment, our work aims to support the meaningful capture and inclusion of community voice in program development.

## 2.3 Using Participatory Videos to Capture Marginalized Community Voices

Participatory design and co-design are core to HCI for development research and empowering marginalized communities' voices [17, 68, 76, 86, 127]. Participatory video builds upon a rich tradition of storytelling in HCI4D and, specifically, in participatory design work. The necessity of dialogue and storytelling to involve marginalized communities for meaningful engagement and interaction to share their voice for development is widely recognized [94]. Work has focused on critical race theory using a story-telling approach emphasizing values for understanding people, user-centeredness and hearing underrepresented voices [82], used cultural probes' to gather rich personal information to inform heritage site design [102], and used biographical prototyping and "counter-storytelling" to capture voices of people living with disabilities [12].

The audio-visual nature of PV has potential affordances that enable disadvantaged communities to create knowledge and disseminate it by enhancing their critical agency. For instance, using Sen's capability approach, participatory videos enhanced marginalized Zambian women's agency to determine their development including identifying root causes of their inequality in society and informing their critical agency to change it [94]. User-generated video content (UGVC) can also be seen on social media, YouTube, Tik-Tok and other video blogs (Vlogging) for different purposes including sharing information, education and entertainment [47, 122]. However, capturing value-centric and meaningful grassroots communities voices require different production structures that consider the production contexts, heterogeneous motives, levels of consent and social dynamics within the communities [47].

Before video was widely available, photos and audio offered new resources for practices that give communities' a sense of identity and continuity that members acquire in relationships with each other, their environment and history, capturing speech, gesture, song, music, drama, ritual, skills or crafts [15]. Photovoice, for example, realized three goals: to enable people i) to record and reflect their community's strengths and concerns, ii) to promote critical dialogue and knowledge about personal and community issues through large and small group discussions of their photographs, and iii) to reach policymakers [121]. However, video can capture details that are lost in photos, though, for example, Bidwell et al. note the artificiality of photo capture in their work in Liberia [16]. In the last several years, user-centered approaches have highlighted several opportunities, including the need for creativity, giving power and agency to the end users and encouraging participants through theater [102, 117], art [29], culture and heritage [24]. Vasiliou and Schofield present a co-design activity to strengthen basic technical skills in directing and engaging young adults as artists and creatives to boost their confidence and trust in their abilities [117].

Moreover, community-led participatory video methodology has been used to share agricultural techniques, training, and knowledge with disadvantaged farmers [30, 43, 113, 114], disseminate health and nutrition-related education with marginalized women [21], build awareness of climate change [54] and assist in M&E of climate-related indicators [70], where an external video production team mainly led the video production. These initiatives demonstrate that communities can utilize their existing media literacies through the use of everyday technologies to share their stories of participation. Recent work focuses on providing agency to the community for their empowerment: shifting from expert-led PV to giving the camera to communities, allowing for more participant-led practices [103] capturing what they see as crucial [44, 99]. Cellphones allowed rural school teachers to capture various communication videos ("cellphilms") by themselves [77] providing agency to participants in capturing their own voices, but altering the existing power dynamics related to device ownership and video recording. Youth groups had full agency to capture their voices through a well-structured PV method that trained participants to use a professional camera on a tripod [31]. However, the video editing process was not included: a step in video production commonly regarded as being one of the most impactful in terms of constructing a story or message [40]. Crystal Tremblay and Jayme [111] demonstrated the potential of a well-structured PV "shoot to edit" method, training their participants to capture videos by themselves. However, post-production editing was done by the researchers alongside the participants and was so time-consuming it delayed sharing the data, taking 12 months to complete.

While PV has considerable potential, it has notable constraints: the equipment is costly, the community needs to be taught how to use it, and participants often have limited opportunity to edit the final version. Bartindale et al. [11] claimed to successfully address these issues through the "Our Story" process: a workflow successfully used for M&E purposes by the International Federation of Red Cross and Red Crescent Societies (IRFC) in several countries, including Indonesia, Egypt, and Namibia [11, 116].

We argue that, instead of simply being used to share end-data with the decision makers, authentic voice should be included within program design and decision-making for development. Within this broader goal, this research explores the first step: focusing on how a structured PV method such as "Our Story" can provide agency

to disadvantaged communities to share their needs and priorities, capture and edit their stories, and produce data that is in a form that can be used in the program development process.

While previous PV work highlights many development opportunities for community-generated voice, including education, training, sharing information, monitoring and evaluation; there is little work that can guide practitioners and HCI4D researchers on how a structured process can bring disadvantaged communities' rich voices into project design. Moreover, we do not know how using a structured participatory process and giving the community more agency (such as when shooting, editing and reviewing video) might play out in the results we capture. Consequently, further practical and design implications, such as where and how PV can be used to generate community voices as data to be incorporated in program development, have also been under-explored.

# 3 METHODOLOGY

We describe the approach taken in our study, beginning with a description of the field site, participant recruitment, authors, field research activities, the *Our Story* PV methodology, data collection and finally our analytical approaches (data analysis and reflection).

## 3.1 Field Sites and Participant Recruitment

We conducted our study in the Rangpur district of northwestern Bangladesh, at a project site managed by our partner organization - the WorldFish Bangladesh and South Asia Office. Our participants were from Parbotipur Upazila, where WorldFish has been working with marginalized women farmers. Two field project workers from that project site helped us select our participants. They played the role of guides and gatekeepers, introducing us to the community and helping us select participants for our study. The first author, a Bangladeshi-origin researcher and practitioner, conducted and led the workshop facilitation with the participants in this fieldwork. The third author and a Bangladeshi research assistant also helped to complete the fieldwork. Our selection criteria were to engage with women farmers or women with knowledge of agricultural activities. Twenty-six participants from separate households were selected in the community of Parbatipur Upazila.

*3.1.1 Research ethics.* We obtained the consent of participants to take part both in our workshop and in video production. The Institutional Research Board of the authors' host institution reviewed the project method and materials and granted full ethical approval for the work. Of note, participants needed to understand that their videos were going to be shared with their local community so, discussions of sensitive issues and personal disclosures would be seen by their families and communities and give consent for this. Participants also gave their consent for us to use their photos, names and videos in our research, papers, reports and documentation and expressed a preference to be credited for their contributions. In addition, our participants approached several other local community members to include their knowledge and skills in the films they made - we followed the same consent process with them, recording their consent through video. We respect their wishes of everyone shown in the video and use their names in this document. To ensure these issues were clearly conveyed, we prepared a visual consent form following guidance in [97], with both written and illustrated depictions of our research goals with the intent of engaging participants with the PV process, and explaining the considerations above as well as including data sharing, privacy, withdrawal, risk, and benefits of the study. This was key as we were aware of the limited literacy of the marginalized community we had in mind.

## 3.2 Field research activities

The goal of our workshop was to engage participants in an interactive way where community members are able to share their views and capture their stories and have a voice. Keeping nutrition-sensitive agriculture program development in mind [96], four interconnected themes from the food system framework [80], agriculture, health and nutrition, gender and digital technology, were chosen to explore the needs, challenges, and priorities of women in the community. A set of open-ended questions were developed under each theme to invite participants to brainstorm and share their views for PV production. For instance, common queries under each theme asked about the challenges they face in agriculture, health, and nutrition, their experience as women in their setting, their priority issue in their community, and the main things that they would like to change to enhance development opportunities.

The research process explored participants' perspectives and experiences through their stories on the topics following the PV-making process. Our field-level research activities took place over three days of workshops with participants, which included participatory video-making activities. Fieldwork schedules were planned based on their preferences and convenience, and the duration of their participation with our study aimed to be realistic and not harm their other activities. Our two gatekeepers (as mentioned above) at the community level helped us in this regard. Participants were: i) young adult women (aged 18 – 45), ii) older adult women (aged over 45), and iii) adolescent girls (aged less than 18) from farming families involved in agricultural work. We divided the participants in terms of age group to have similar experiences and create a comfortable group environment to address hierarchy and power dynamics [109]. For instance, many of our older adult women were mothers-in-law in their families. In contrast, all of our young adult women were married young women who were like their daughters-in-law, where traditional power dynamics and hierarchical issues are significant in rural Bangladesh [109]. Among the 26 participants, groups one and two each consisted of 9 participants and group three consisted of 8 participants. All the women in groups 1 and 2 were married with children and most of the women in group 2 had grandchildren as well. Two girls from group 3 were married, and all of them except one attended high school during the study. Most of the participants from group 1 had completed primary school, two of them had studied up to grade 8, and one participant had started college education but could not finish. Most of the older adults were illiterate - three of them had not completed primary school and one of them completed high school.

## 3.3 The *Our Story* Method

*Our Story* is an existing participatory video-making toolkit and workflow designed to capture meaningful community voices to empower marginalized communities [11] and was specifically designed to support monitoring and evaluation of community-based

projects. '*Our Story*' uses a video-feedback methodology supported by consumer technology (mobile phone/ tablet applications) available in the field, to allow community members with low levels of literacy to share their views through video without media production skills, expensive equipment, and internet access. It is a user-friendly participatory video-making toolkit to capture meaningful community voices to empower marginalized communities. *Our Story* minimizes the need for expert external support (such as PV practitioners), by guiding participants (via training materials, facilitation guides, field resources and a mobile application) through six phases: *familiarization, ideation, prototyping, capturing, creation*, and *playback to the community*.

These six steps were adopted by the *Our Story* team from traditional production cycles and existing PV practice [31, 111]. *Our Story*'s 'playback to the community' step is particularly significant as participants decide what they want to tell their family and community about their lived experiences and needs to be navigated with some sensitivity and awareness. In our discussion, we propose extending this process by adopting a 'prioritization' step to better frame the communities' participation in the creation of content better suited for the project planning process.

When applying the *Our Story* workflow in our context, the first day of the workshop consisted of *familiarization* and *ideation*; the second day reviewed the previous day, offered brief training on how to efficiently use *Our Story* for video making activities, and participants started capturing video; and the third day consisted of capturing more videos, reviewing among groups, and sharing the videos with the wider community. Each day had seven hours of work, including breaks. We provide brief descriptions of each stage below to document how we engaged the community and how they captured their voices.

*3.3.1 Familiarization: Day One.* On day one, participants were shown pictures, based on agriculture, health and nutrition, gender and digital technology [80] to encourage reflection on their daily life. This visualization process helped them documenting their daily life activities. Each group walked around to explore, to become familiarized with, and to connect the photo themes with their daily life experiences (see Figure 1 left photo.)

*3.3.2 Ideation: Day One.* The ideation phase was divided into three activities (See Figure 1, right photo). We gave each group the list of questions (See examples under section 4.3) shared through color-coded cards. First, there was a discussion within each group to brainstorm their daily challenges based on the four areas. Flip charts were then distributed to record their points. These pages were then hung on the wall. After identifying challenges under each theme, each group prioritized them. For instance, under the gender theme, 'Early marriage' came as the highest priority while other challenges included 'obstacles to studying', 'working', 'going out', 'selling their products at the market', and 'sharing in decision-making' (see Figure 1, middle photo).

*3.3.3 Prototyping: Day One.* Based on the priorities, each group used made a plan for capturing videos, with the structure including an introduction, priority areas to discuss under each theme, and recommendations to policymakers to meet their needs (see Figure 1, right photo). Each group wrote their plans on flip charts which they carried whilst capturing videos. This resulted in three plans that were then ready to be filmed at the end of the workshop day.

**Figure 1: Field photos of the familiarization, ideation and prototyping phases.**

**Figure 2: Field photos during the capturing, creation, and playback of the videos to the community.**

*3.3.4 Capturing: Day Two and Three.* At the start of the second day, each of the three groups was given a Samsung Galaxy Tab A Android tablet pre-loaded with the '*Our Story*' app and a small portable microphone. This stage included basic training on the tools, practice using the *Our Story* application to take videos, and real video capture following their plans (see Figure 2, left photo). They continued to capture videos for about one and half a days. Participants were allowed to take as many as videos as they wanted and could check their videos instantly on the tablet.

*3.3.5 Creation: Day Three.* This phase consisted of reviewing, curating, and editing the videos. The *Our Story* app is available for tablets and mobile phones, and is designed to capture videos that are easy to edit, combine, tag with themes, and to add background music too. *Our Story* simplifies the process of sorting, trimming, and filtering videos to produce a final story where participants can preview and select any video shot by themselves. After capturing videos, in the middle of day 3, each group sat together to reflect, check, and review the videos on their devices, and had the opportunity to capture more videos if they wanted to improve the content of their videos. They edited their work, incorporating the community's own analysis to decide which elements they would keep by putting together the clips they intended to use in their final video story.

The review process was done by the three groups by: i) tagging the videos with the four themes; ii) sorting the videos according to preferences; and iii) editing to make their final videos including cropping clips, adding sorted videos together, and incorporating background music and their names as contributors to the videos. At the end of this, the three groups each had a 10 minutes video which shared their needs, challenges and priorities around the given four themes. The consequence of the ease of use of the *Our*

*Story* app is that the entire process from ideation to video creation (which includes evaluating to produce the final videos) was done by the participants with minimal influence from outsiders (such as researchers) influence during the fieldwork.

*3.3.6 Playback to the Community: Day Three.* After editing, each participating group played their final videos to the community. We took a portable video projector to playback videos to the community at the end of the workshop day. This wider community includes their family members, neighbors and the participants themselves. At the end of the day, we collected all devices to upload all of the videos to our storage platform. The final community videos were given to the community on a USB stick for the community to keep. Thus, our participants retained ownership of their own data (see Figure 2, right photo).

## 3.4 Data collection and analytical and reflective approach

A critical lens of development practice was used to analyze the information available from traditional reporting and qualitative data to identify the unique benefits the PV methodology brings to program development, informed by [83]. We took a social-constructivist approach [27], to help us understand the grounded challenges of our participants [46]. Our own perspectives and biases on the data are mixed. The authors are experienced in international development, HCI4D, and qualitative research. The first author is a Bangladeshi with more than five years of experience as a public health nutritionist in international program development and the second Bangladeshi author has more than 12 years of experience conducting ICTD and HCI4D research in Bangladesh. Three other authors have been involved extensively in the development and deployment of low-cost, user-friendly PV methodologies in marginalized communities within nine different countries in the Global South.

The data analyzed in this paper are field observation notes and photos, metadata used to plan and make the videos (participants' written notes on cards and flip charts, shot lists and timing and tagging information entered on video clips), and the community-generated participatory videos. All the raw data were translated from Bangla into English by the first author, and cross-checked by the second Bangladeshi author. Field notes were taken in English and include descriptions of settings and participants' body language. All of these different types of data were thus in a text format for open coding. Data were analyzed following a Thematic Analysis approach as described by Braun and Clarke [20]. We followed interpretive methods that allowed us to consider "video interaction analysis as interpretation" to understand "what is going on" [66]. After the first round of data interpretation, the first author discussed and presented the initial themes generated, using specific vignettes and excerpts from transcripts to justify each theme. Then several iterative sessions were conducted within the research team to check the data and refine the initial themes. For instance, the video transcriptions and other data were scrutinized, and units of meaning were identified and combined into meaningful groups [75, 110]. This process was then repeated twice, as we refined our higher-level themes and categories we described below.

# 4 FINDINGS

The data analysis suggested several affordances that community media (participatory video, in particular) offers to practitioners working with local communities in international development. These are presented alongside vignettes from videos to demonstrate the rich potential of visual media for community inclusion in program development.

## 4.1 Situational Insights

Through the steps of PV, notably familiarization, ideation, and prototyping, participants share a range of insights particular to their situation which may not be apparent to those outside that community. For example, participants presented nuanced details about their social position, political views, and cultural and environmental contexts. The captured footage of their village, where and how they live, and their surroundings, provided us with rich information and visual insights into the demographic, and social and economic conditions of the participants' community.

As seen in Figure 3, participants travelled around almost the whole village community to capture their videos, providing us with rich information and visual insights into the demographic, social, and economic conditions of the participants' community. For example, participants were able to evidence their economic conditions by highlighting their material infrastructure, such as their mud houses and the limited number of sanitary latrines at their disposal.

Our field site, Rangpur district, is known as an area in Bangladesh prone to extreme weather events [59]; participants pointed out annual "excessive rains," "floods," "cyclones," and "droughts" as major disasters that negatively affect their agricultural livelihoods. Participants also documented their pervasive engagement in agriculture by listing and showing the crops, vegetables, and fruits they grow. Our participants also showed their small-scale aquaculture and livestock management (see Figure 3). The women shared some of the social challenges they face in their agricultural activity, especially their lack of access to good seeds, fertilizers, insecticides, and pesticides.

Participants referred to patriarchal norms and traditions that discriminate against women in different aspects of their basic rights. For instance, participants shared that, compared to male farmers, they have less access to markets and receive less money from selling their agricultural products. For example, even without explicit mention of religion, the videos represent a Muslim community and religious sensitivities that are reflected through dress codes, such as covering their heads with scarves, wearing long sleeves, and dressing to cover the body. The videos also presented the religious context and values of the community, providing viewers with a sense of how participants communicate and interact with others. However, from the videos, we also observed aspects of their lives over which they have some control or ability to effect change, including their social and cultural environment.

***A vignette of women's agricultural activity:***

During the ideation phase, the participants listed and prioritized their main challenges concerning agriculture. In one video, we see six women in front of a green paddy with their homes in shot,


**Figure 3: Contextual visual presentations by the participants. Screenshot (a) shows their roads and paddy lands, (b) shows how rural women catch fish from ponds, (c) shows plants and trees of a participant during her explanation to the challenges on horticulture and (d) shows poultry management by one of the participants (permission to use images was granted by participants).**

sharing the crops they grow by listing their names and mentioning the disasters that challenge them:

> We harvest different types of crops during the whole year. When we harvest these, we face problems. For instance, we always face natural disasters like drought, floods, and storms. [Elderly group, Rangpur, Bangladesh]

The videos were able to capture contextually rich, real, and naturalistic visual data while providing unique insights into the participants' reality. For instance, in the picture on the far right (see Figure 3), one participant showed how she cares for her ducks at her house. Then, in the same way, in the second picture from the left two women demonstrated how they catch fish from their ponds. In the second picture from the right (see Figure 3), one shows her pond, domestic animals, plants, and trees around her dwelling. She shares some of the challenges of aquaculture (pond and fish disease management) and crops and tree planting (lack of information and support, fertilizers, and pesticides). Their experience presents to us the complexities that are an everyday part of their situation. They also voiced the socio-cultural obstacles they face as women in the practice of agriculture:

> ...we do not get that much in crops. Because we don't get good-quality seeds, insecticides and fertilizers. We cannot put fertilizer on time ... For all these reasons, we do not get good amounts of crops ... Moreover, whatever the amount of crops we get, we never get actual prices for them in our market as we are women farmers. We have less access to the market as well. [Elderly group]

These presentations of their situational insights result in rich, community-generated audiovisual data which can be used as inputs for effective food and agriculture program development.

## 4.2 Documenting quotidian life

The PV methodology helped our participants to share their daily life experiences. Participants shared (seemingly mundane) examples from their daily lives using their natural expressions and voices, allowing them to exert agency over their narratives. These narratives provided rich examples, which could be used as discussion points for NGO practitioners who design project implementation plans around the need to respond to community practices. Participatory videos generated by participants displayed critical experiences through their subjective perceptions and feelings. During the ideation phase, participants brought up their highest-priority issues among their lists of challenges from the familiarization phase through engaging in discussions and arguments within each group. They shared how lived experiences are intertwined with their life stories, feelings and expectations.

Participants prioritized the issue of child marriage clearly above all others in their discussion, attributing it to extrinsic drivers such as "society," "parents," "family," "discrimination," "lack of equal rights," and "patriarchy". The next sets of issues they identified and prioritized stemmed from this: 'dowry systems," "early pregnancy," "childbirth," and "mother and child health issues". The other issues they described also touch on cultural expectations of women including "limited opportunities for education", "income inequality", lack of "personal freedom" and "limited finance control" and "no household decision-making power". The following vignettes reflect these different types of lived experiences:

***A vignette of lived experiences of early marriage:***
Participants pointed to extrinsic drivers of their lived experiences of early marriage, including the social attitudes and expectations of the women in the community, and shared the impacts on their health and well-being. For example, the group of eight adolescent girls shared that the head of their family frequently makes alternative arrangements for secret weddings, so that girls can be married before the legal minimum age of 18 without their consent (a frequent practice in Bangladesh [124]). One participant highlights why marriage is a top-priority challenge for them. Israt is a 16-year-old girl enrolled at school in the 10th grade. She loves to study and dreams of being a teacher. Israt spoke in front of the camera on behalf of other girls in her group and community. Like other girls, she is afraid that her family might marry her off forcefully at any time. In the video, Israt explained how their society, community, and family expectations create a power imbalance between males and females and prevent women from living up to their full potential.

Participants generally spoke of a lack of decision-making rights at the household level; discrimination against women by men; limited opportunities to go out, study, and work, and overall poverty in their own families. Israt voiced her own lack of freedom by saying:

> Discrimination entails that women and men are not given equal rights. Boys can study but girls can't; girls are married off at younger ages and that disrupts their studies. This is called early marriage and early marriage is the main reason in our society that girls fall behind. Society can't progress and we can't be


**Figure 4: Some of the Israt's expressions in the videos; (a) shows her angers and frustrations on child marriage customs, (b) shows her humble request to stop child marriage in their society (permission to use images was granted by participants)**

> fully developed if early marriage is not stopped. [Israt, 16 years old, adolescent group, Rangpur, Bangladesh]

The videos also describe the lived experience of girls who are married early. These experiences include suffering, difficult feelings, and challenging situations arising from the sudden uncontrollable changes in their lives after the wedding. For instance, household chores, cooking, giving birth at an early stage of their lives, and dealing with everything with limited support. From their life stories, participants presented girls' pains, miseries, and struggles throughout their lives resulting from early marriage. Israt shared,

> Girls face a lot of problems due to early marriage. When girls are married off in their adolescence and give birth at a young age, both they and their babies face various health risks. After the child is born, the mother becomes weak and cannot work in the household; when they cannot work it creates problems within the family. [Israt]

In our fieldwork and in the videos, the participants not only expressed the sadness resulting from unfortunate situations, anger, and frustration but also an inner drive to revolutionize the current situation. The girls' group also observed that *"We want early marriage to be stopped."* On behalf of her group, Israt said:

> I want the dowry system to be abolished and also early marriage to be prevented and laws to be enforced to prevent it. This is my request to the government. It is my request to everyone to not go for early marriage so that girls can have their full rights and study properly. [Israt]

On behalf of her team, she also identified the initiatives they believe the government must undertake. She pointed out:

> Girls are given training regarding early marriage that teaches them to resist early marriage. But this training should be also for our parents, not just us, to raise awareness. They should be taught that early marriage is bad, early marriage causes these kinds of problems...that way they can be aware. So I hope that our parents will also get training in early marriage. [Israt]

The video screenshots shown in Figure 4 offer examples of visual expression, where Israt, represents her community, expressing her internal motivations, expectations, and belief in change with natural, bold, and spontaneous expression and voice. She also shared their views on what initiatives the government should take to tackle these challenges. Her naturalistic speeches are not words alone; they include symbolic expressions that combine with the inner spirits, beliefs, and dreams of these girls, raising their voices to break with societal and cultural norms and end the oppression they experience.

## 4.3 Local knowledge and community practices

We found that community-generated participatory videos offered an accumulation of local knowledge on the four pre-selected challenge areas. Without formal education, communities have their own traditional and indigenous knowledge passed on from generation to generation, such as around crop cultivation, coping with the challenges of extreme weather, and medicine.

Some people in the community are recognized as experts in certain areas: they let community members know who they are and reach out to them with help or information. Communities employed strategies to look for local knowledge in creating their videos, preferring to visit and consult with the local people that participants believed were able to answer their questions. As well as frequently reflecting on their existing knowledge, participants asked questions to these local experts, capturing exchanges in the videos they produced. Among the three groups, participants captured a total of five different people in their community whom they asked about agriculture, health, and nutrition. Two of these local experts answered their questions with practical demonstrations.

***A vignette of local knowledge and community practices:*** Video shows Mrs. Argina Begum, a 37 years old successful farmer in the community. She has a backyard where she grows different types of vegetables including leafy vegetables (such as spinach and red amaranth), gourd, pumpkin, papaya, and tomatoes. She knows how to cook and prepare healthy food. Other women in her community respect her as a successful woman farmer who not only grows vegetables but also sells them in their local market and earns money. In the group's videos, it has been shown that other women in the community visit Argina to gain her insights about growing vegetables and plants. They were keen to know how Argina can grow so many healthy vegetables in her home garden. In the video footage, participants visit Argina's house and ask her how to prepare food; the video captures Argina's suggestions and her demonstration of cooking in her kitchen (see Figure 5) saying:

> When you buy vegetables from the market, ... You need to keep those in salty water for some time before cutting them. You need to rest them in salty water for 5 to 6 minutes before cutting them. See, I cooked what I grow in my garden. See how nice my leafy vegetables are that I am cooking now ... I cultivate them so nicely with cow dung and organic fertilizer. You can try at your home to cultivate vegetables with organic fertilizers. If you eat poison-free food, you will be healthy, your family will be healthy and your children will get proper nutrition and you will get nutrition as well. [Mrs. Argina Begum, 37 years old, women's group, Rangpur, Bangladesh]

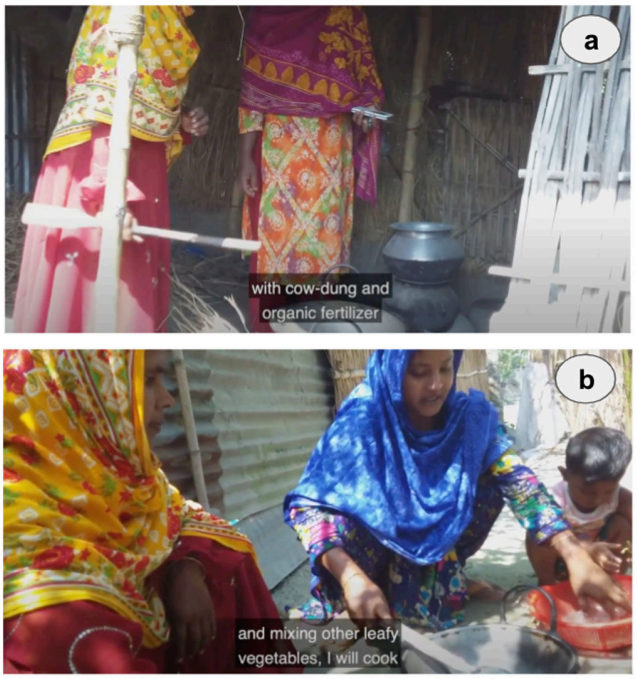


**Figure 5: Image (a) shows Mrs. Argina's food preparation, and (b) shows Mrs. Shahera's cooking demonstration (Permission to use images was granted by participants)**

As such, the participants captured what they generally do to find local knowledge to solve their problems. Their videos reflect who knows what, and who could help them in terms of suggestions and local expertise. We found that PV has the advantage of capturing local knowledge by way of practical visual demonstrations helping the community to capture i) what their existing knowledge is and how to document it to share with others, and ii) who the local experts are in a specific area of program development. As outsiders and observers, PV initiatives among the participants gave us a better understanding of their existing knowledge about agriculture, health, and nutrition and could help decision-makers justify interventions taken for communities.

## 4.4 The wider impact of the PV process

*4.4.1 Capturing community bonds and networks .* Throughout our fieldwork, we observed subtle mechanisms used to build stronger bonds within the community. This trust-building began through our communication with the community and ensuring opportunities to start dialogue and interaction to express their needs, challenges, and experiences. Participants also introduced their local leaders to represent their local connections. From our experience, we see community bonding as a mechanism that starts with dialogue and shapes participation through agency and accountability. We found the "playback to the community" stage of the PV process a key enabler of this, bringing the whole community together as a team that reflected their bonding and affection for each other. Furthermore, we saw participants' joyful and curious eyes during the PV process and mainly during the last stage when participants, their family members and the community joined to watch their videos. It was a crowd while all of the participants and others, including neighbors, gathered; they laughed, they commented on the characteristics of the participants on video, and some of the audience gave feedback to the participants as well. We saw that PV could strengthen community bonds and networks where they supported each other. It was also interesting to see how the playback session brought all age groups of people together, from children to older adults, to watch and enjoy the videos.

*4.4.2 Building trust, agency and accountability.* We found that community engagement through a PV methodology gives participants agency to shape their dialogue and interactions, creating an emancipatory environment in which they can share their views in their own way. Participants claimed agency at each stage of PV production, from capturing and sharing challenges, needs and priorities, stories, experiences, visual backgrounds, videos, analyzing, and editing to creating the final videos without any external influence. For instance, they moved from place to place to capture their voices, featuring around 40 different locations in the videos. Another example of their agency is evoked through the example of the creating (editing) phase, where from their 170 video files, they decided what to include for the final videos. We also found that involvement in the PV process enabled our participants to enhance their critical agency for development by joining in ideation and familiarization, video-making cycle, and group discussions for editing, including group screening and critical dialogues. Participants' engagement through each step allowed them to explore and share their stories on the four topics. The PV process's affordance for brainstorming, discussing, capturing, screening, reviewing, and editing footage enabled agency on decision-making as other work on PV has also reported [10, 94]. Our participants not only shared their needs, challenges, and priorities; they also made recommendations and requested the changes they wanted to see.

When making requests and recommendations, they explicitly mentioned the "Bangladesh Government" and there was a sense of building expectations of the government, with the belief that the government should listen to their voices and make some positive changes in their lives by taking appropriate initiatives. For instance, the elderly group concluded their video by stressing one of their priorities:

> We request the government that they provide help for farmers and give us support so we can get the true value for our crops. [Elderly group]

Similarly, the adolescent group stated:

> We want the dowry system to be abolished and also early marriage to be prevented and laws to be enforced to prevent it. This is our request to the government: that they discourage everyone from the practice of early marriage so that girls can have their full rights and study properly. [Adolescent group]

This agency and decision-making power also provide them with a sense of accountability to share their exact needs, challenges, and priorities on the given topics. The final videos were only based on the clips they chose, hence, trust was built as they edited and analyzed their data by themselves, for themselves.

> This is the first time we are taking video footage of our villages, roads, fields, house and capturing each others' stories. Many NGOs come here to work with us. But, this experience of capturing videos is completely different and very exciting!

*4.4.3 Participants' perception on PV.* Participants were involved for one and a half days to capture their videos. We found participants were enthusiastic and deeply engaged with PV activities and showed a sense of pride in the videos that they were making. Our field notes captured some of these reflections: *"Please keep the videos where we look good and talking without any hesitation and pause"*. Moreover, from the informal discussions during the PV-making process, participants shared their reflections on how they felt relating that they enjoyed the whole PV-making process. For instance, on the second day (video shooting and editing), they refused to take the lunch breaks we arranged in the field, saying, *"we don't want to eat now. We will have our lunch after finishing our videos."* They had their lunch two hours later. They were proactive and optimistic about the potential to have some effect on their environment through the documentation they produced. Our field notes recorded one participant's thoughts about the process: *"We really enjoyed the last three days. We would like to have our videos on our mobile phone, so that we can share and show our videos to others"* They also expressed a desire to engage with more work like this: *"We hope you come again and we will make some more nice videos. Maybe better than this time as this was the first time for us."*

Understandably, the process was not without problems as well. Researchers needed to sometimes refocus the participants and remind them of the master plans that they had come up with so that they captured all the footage they planned for. The participants also wanted more change than the project alone was able to offer saying *"Are you bringing any projects for us in the near future?"* and asking us *"Could you please share our videos with the government."*.

## 5 DISCUSSION

Our findings demonstrate that capturing community voices can provide rich information through situational insights, accounts of lived experiences, local knowledge and expertise, and, most importantly, priorities for development. The *Our Story* process has the potential to provide a combination of affordances including better engagement and interactions among the participants and agency to share, discuss, capture and edit videos by themselves. The PV process provided space to share and discuss daily life challenges, which is very important in a development context. The process allowed participants with limited education to share their stories by producing videos. Moreover, the participants saw themselves projected on-screen speaking and other people, including their family members and neighbors, watched and supported them, enhancing their self-confidence, and we observed pride in their local community at their mothers or friends achievements saying things like "See my mum there on the screen!" One of our research colleagues recently travelled to the same location and found that the community still remembered the PV activities and shared how they enjoyed and want to participate again in that kind of video-making activities. We reflect on our observations regarding PV process activities and the nature of participation that enhance participants' broader capabilities.

### 5.1 Embedding community voice in decision-making

*5.1.1 Community-generated voices as a rich data source.* Capturing disadvantaged community voices through a well-structured participatory media production process will lead to having more authentic and representative insights as community data for development program designs for practitioners, decision-makers, and researchers in the Global South.

*Use of rich situational insights as data.*
Our findings suggest that engaging communities through PV processes can provide rich situational information in the form of visual data. For ICT and HCI for development researchers, where understanding the local context has been seen as a fundamental step in designing technology [7, 28, 56], we argue that a disadvantaged people's local context needs to be interpreted with respect to the community's position in their situations. Such contextual data can only be captured through communities' own views and is crucial for decision-makers to gather and reflect on in order to design effective context-specific programs and interventions [22, 38]. Existing reporting systems can provide some of this data, but community-generated voice and visual presentations can provide data in a form that provides for a unique understanding of these interconnected outer and inner factors from the perspectives of community participants. Our community-generated visual and audio presentations provided us with an in-depth understanding of communities' important external factors (such as social, economic and demographic) and inner factors (such as cultural and religious), which is crucial to designing future nutrition-sensitive agricultural projects and programs. For instance, according to Ruel et al. [96], contextual factors, including what crops the community grows, are essential to understanding dietary diversity and food security, while socio-cultural attributes, such as access to markets, also need to be taken into account when designing and implementing a nutrition-sensitive agricultural program.

*Use of rich lived experience as data.*
Our findings report how community voices can provide us with a deeper understanding of their Lived Experience (LE) in three different categories — extrinsic, actual, and inner — to understand community experiences in certain areas. Furthermore, our study also allows us to extend the concept of "storytelling," which has been envisaged in the literature as a performance-based process of voice building for marginalized populations [131] and a means for actors to reflect, express, and negotiate their experiences [34, 111, 130]. Young [131] suggests that stories as community narratives can convey disadvantaged communities' arguments as their moral and ethical perceptions, while Eastmond [34] argues that stories as popular narratives reflect a dynamic interplay between life, experience, and story. We extend this line of work by showing that capturing marginalized communities' subjective perceptions through their stories can articulate their arguments and reflections on their extrinsic, actual, and inner-lived experiences of the challenges they deal with in daily life. International development practitioners and

researchers can benefit by critically analyzing LE for better intervention designs. For instance, empowering women is seen as a way to achieve better agricultural and nutritional outcomes, where understanding the obstacles marginalized women face is essential to tailoring appropriate nutrition-sensitive agriculture (NSA) program design [55, 65, 69, 96, 105]. From the participants' experiences and stories as community-generated data, we found early marriage to be the most critical obstacle to women's development in that particular community; hence, NSA intervention to combat early marriage has the potential to dislodge other challenges and improve women's overall social, economic, health, and educational development in this context.

*Use of rich local knowledge and expertise as data.*
Local knowledge and expertise offer an understanding of 'who knows what', in a community on a specific topic, and is important for program development [123]. One common survey in the health and nutrition domain is "Knowledge attitude and practice (KAP)", developed by outsiders, which can give an overview of the current knowledge status of a community [45, 92]. However, using the structured PV process, we found that communities' own traditional knowledge and perceptions can reveal rich data which is difficult to attain using traditional top-down survey reporting systems. For instance, the aims of most NSA interventions are to enhance participants' knowledge of agriculture, health, and nutrition and to improve their skills and practices toward appropriate agriculture and health management [91, 100]. Local and existing community knowledge can help the program-makers to get an idea of what is already known, to learn what traditional knowledge is embedded within a community, and to identify any misconceptions or knowledge gaps regarding agriculture and health to help design effective NSA interventions for the community. Our PV analysis was able to detect implicit interactions of knowledge-sharing between participants, thus revealing knowledge hierarchies. Our findings also suggest that through PV, communities identify local expertise that can be a key resource in program intervention design. Thus, our findings showed rich implicit power and knowledge interactions that the medium of video can show but externally-derived surveys may not.

*Understanding community bonds and networks as data and a mechanism for Community Connection.*
Our findings suggest (unsurprisingly) that bonds within communities are crucial to the effectiveness of any development program [18, 23]. Through the PV process, we showed the importance of networks as a key mechanism for connecting with communities. To build a community of trust, governments and researchers must develop culturally competent mechanisms and transparent practices to encourage participation [18]. By coming to understand the community's expectations and modes of communication; giving them ownership to share their voice through dialogue; and offering agency to capture their needs, challenges, and priorities, our PV processes showed how to start building trustful relationships with the community, local experts, local connections (such as local leaders and gatekeepers), and organizations. We argue that PV is a potential entry point for development practitioners to build trustful connections with a community. We would also like to emphasize that building trust with communities through PV also allows information about marginalized communities to be identified through via such processes. We suggest that PV offers the potential to provide quality dialogue, agency to share and capture community voices, and accountability [90, 112] to communities as they share their needs, challenges, and priorities. Participants develop their own preferred solutions based on their own meanings and create representations of their own communities that can ensure improved opportunities for successful program development and implementation.

Thus, we believe above four benefits of capturing marginalized voices would be geared toward strengthening decision-makers' understanding and responsiveness so that they can design effective interventions which can make a real impact on the ground.

## 5.2 Design Opportunities within International Development

We have already demonstrated that, by following a structured PV process, community-generated and prioritized voices could provide better-quality, representative, and rich data for program design. However, we also highlighted that the existing bureaucratic and administrative processes (see section 2.1) that drive project development are constraining decision-makers. We need to envisage the practicalities of capturing and using community data in the existing program development pipeline. In the following sections, we discuss two major design considerations for this and how to make the PV design process more geared toward including its output in the existing forms of program development.

*5.2.1 Using PV data to better inform international program development and implementation.* We suggest three possible areas in which community videos as data could be used to inform better program design and implementation:

*Incorporating community voices into existing the project commissioning process:*
As discussed, previous research has documented how evidence from surveys and qualitative data is crucial to making decisions on interventions, programs, and policies for development [72, 74]. In line with other expert-led surveys and qualitative studies, we argue that well-structured participatory media can be an important problem-scoping tool for understanding a community's authentic needs, challenges, and priorities for project development and design. Our findings demonstrate that capturing community voice through a well-structured PV process — which to date has been limited in its use in communities — can provide decision-makers with an improved understanding of local contexts, knowledge, and expertise. Furthermore, we argue that PV can be a particularly valuable step at the beginning of a development program and a project's design. We advocate for community voices to be incorporated into the early, formative stages of program design processes: when developing "calls for proposals" or "expressions of interest", and that there is a requirement for both donor agencies and respondent organizations to explore communities' actual needs. We argue that PV can provide the required insights to inform such decision-making during these foundational stages of the project life cycle. Development practitioners, donors, decision-makers and researchers should take the responsibility to adopt best practices that give space to the community to take part in decision-making processes [88], and utilize trust-building mechanisms to ensure effective program planning

and implementation. Many previous participatory media studies have suggested informing programs and policymakers with community voice using participatory video [11, 54, 119, 126] and audio [78]. We extend this line of work, showing how a structured PV process can generate rich community-generated data for project design, and also recommend the incorporation of community voice at the very beginning of the project commissioning process to better inform programs.

*For monitoring & evaluation (M&E):*
Recent studies have documented how *Our Story* captured project outcomes to share with project donors of the International Federation of Red Cross and Red Crescent Societies (IRFC) in several countries [11, 116]. We suggest that using participatory media to record community voices should not be limited to end-of-project M&E purposes, to pass (only) successful stories to donors. Rather, it should be incorporated into regular M&E systems within a project timeline. Most project interventions have a M&E mechanism to assess and track their regular intervention activities and outcomes to measure whether a project has been implemented according to the plan and for desired results. We suggest that the *Our Story* PV process could be incorporated into existing project M&E plans to allow the community to share their views during different project stages (such as during baseline, mid-line and end-line studies). We believe this will provide ownership and accountability of a project to a community, thus enabling decision-makers to enhance trust and regular connections with communities.

*To strengthen and validate other evidence-based data:*
We see a potential for PV-generated data to augment existing organizational (governments and NGOs) data sources such as surveys and qualitative data. For instance, while quantitative data can provide us with evidence-based health and nutrition status with numbers and figures from a certain community, PV can portray visual presentations, lived experience, and local knowledge to provide contextual insight into community health and nutrition. Moreover, the PV process could be used to cross-check and validate critical findings from existing data collection approaches through community reflections on significant findings, deepening decision-makers' understanding. We would like to stress that we see the PV process as a supplement to existing data collection approaches, both quantitative and qualitative.

Rose and Cardinal [95] showed how their democratic PV approach could not only deepen participants' engagement and power to share their experiences and needs but also provide opportunities for checking researchers' preconceptions and assumptions in ways that are convenient to the participants: providing a more rigorous and accurate data collection process. The existing PV literature has further demonstrated the potential of including participants' reflections to triangulate analysis and check assumptions in interpreting PV data [49, 95]: we extend this line of work by suggesting that participants' reflections as gathered through PV could be used in validating significant findings of other existing evidence-based data, so as to make research findings more rigorous and persuasive for intervention design.

*5.2.2 Design considerations to include PV in project development.* While there are places in the existing project development pipeline where community-generated PV data can add value, we argue that the practical use of PV as data in these contexts requires some additional design considerations:

*Design to capture metadata and improve the PV process:*
The program development and tender process relies on creating documentation in which data is used to make arguments or backup program decisions. However, it is self-evident that presenting multiple long-form videos alongside a program proposal document might not be the most effective or practical way of providing supporting evidence. When implementing the PV process during program development, we argue that it is important to consider the role of easily navigable metadata that describes in more granular detail how individual videos (or segments thereof) can be related to specific elements of the program, such as by a given topic or location. The *Our Story* process automatically captures this sort of metadata (tags on videos, participant notes, timestamps, etc.) and, as a consequence, was far easier to navigate and analyze or to connect videos to proposals or M&E reports.

Similarly, the planning, creation and post-production of media within the PV process can produce multiple forms of secondary metadata, such as participant notes, discussions, storyboards, and unused edits. In this study, the ideation and prototyping phases gave rise to critical discussions and arguments among participants, where they negotiated daily life challenges to finalize and prioritize issues under the given themes. Such forms of data are not currently included as evidence within the final video output. Varghese et al. [116] highlighted that *"there is vital data that exists in the process of how and what criteria the community used to arrive at particular curatorship decisions."* As a design consideration for future PV processes, we suggest adding "prioritization" as an additional phase in the PV method: to both provide the community opportunities to discuss priority issues among themselves, and to expand the capture of voices to document those discussions as supplementary data. Such captured data could also be utilized by the participants during the editing phase: providing a means of reflecting on their discussions and arguments, and helping them check if their videos have omitted ideas from previous discussions.

*Designing the role of facilitators:*
During the familiarization, ideation, and prototyping phases of the PV production process, we observed that many arguments and negotiations took place among the participants that were missing in the final videos. For instance, under the gender theme, workshop participants also discussed parents' and school teachers' perceptions of child marriage. Some of this discussion was missing in the final videos, perhaps simply because they had difficulty remembering and including everything discussed in the workshop. We suggest that with some simple training on the PV production process, field facilitators (such as NGO workers and other field workers) can act as PV facilitators for capturing videos with communities. Such a facilitator role would include introducing and engaging communities in the different PV stages (e.g. the familiarization, ideation, and prioritization steps), reminding participants of the topics and stories they had previously discussed, and supporting participants' training in capturing and editing videos. Such a resource would be especially valuable when working with less-literate communities, and could support more rigorous PV data collection. However, we also suggest the incorporation of a facilitator with clear role parameters to avoid influencing participants' outputs, requiring the

scaffolding of facilitator support. This would require a clear, plain language protocol on the PV data collection process to train and guide NGOs and other development workers.

*Design for privacy, security and psychological safety:* We noticed that some women shared sensitive and personal stories and information in the ideation sections of the process, but did not talk in the actual videos. For instance, when women shared their experiences using mobile phones and Facebook under the digital technology theme, a few of them shared their experiences of harassment on Facebook. Some had even been blackmailed by unknown people on Facebook, and those events traumatized them and affected their lives, especially their relationships with their husbands and in-laws. All of this was too personal, so they did not present these stories in the videos. The security and privacy of information sharing through videos came as a broad design challenge in our method of capturing voices. From our findings, we found it challenging when women lack the psychological safety to share their critical and private views due to feelings of insecurity or fearing a loss of reputation [107]. This challenge is related to the broader privacy and security issues in HCI4D work, echoed many times in the literature [2–4, 98]. We suggest that it is the researchers' responsibility to help the participants by ensuring where and how their voices would be used and keeping the option open to record them anonymously by audio if they do not want to appear on videos. We can also see that there are also potential areas where HCI, social computing, development, and psychology researchers and practitioners, along with policymakers, must work together to tailor guidelines with consideration for how to provide better psychological safety to marginalized people so that they can be confident of their privacy and security when sharing their voices. Such considerations could be adopted in various other research designs in addition to PV production.

### 5.3 Limitation and future work

We refrain from any kind of generalization of our process's findings beyond the studied settings. Rather, we focus on the strength of such exploratory PV approaches in the richness of detail and depth of all field notes, observations, and audio-visual data that can be gathered. However, the process might also be useful in other HCI contexts, for example, working with disadvantaged communities outside of developing settings. By using critical interpretative tools in our analysis, we have presented the deeper meaning of the participants' comments, expressions, and observed practices in our field sites as evidence of the merit of the use of PV within project development. Furthermore, we acknowledge that while our study offers insights into the potential for PV's inclusion within project design, and we have provided design suggestions for how this could be done, this study has not put these design ideas into practice during an actual project's development. Hence, we call for more action research, and practical and design work from HCI4D researchers to leverage community-generated and prioritized PV voices as data to incorporate and scale up in wider-level international development.

## 6 CONCLUSION

Our goal in this paper has been to bring to the attention of HCI4D researchers, and development practitioners the importance of finding a better approach to including marginalized voices in development program design and implementation. Our research explored a well-structured PV method to provide agency to a group of disadvantaged women farmers in Bangladesh to share their needs, challenges and priorities by themselves without any external influence. In this study, we have presented a detailed PV process for global development projects to collect community-generated information as data to effectively design and implement better interventions. Our findings demonstrated a way to extract rich meanings from community voices which can provide an in-depth understanding of community contexts, lived experience, and local knowledge and a way of building trust that can be used as data for better project design. Then, we suggested potential practical and design implications for HCI4D and development practitioners to incorporate community-generated data at the beginning of project development during calls for proposal writing and as part of the existing regular monitoring and evaluation process. Finally, to move forward, we suggest a set of design considerations for PV methods, including secondary and additional metadata, the role of the facilitator, and privacy and psychological safety, as a way to enhance the utility of the PV approach in real-world project development and implementation settings.

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