

PRACTICE INSIGHTS

Co-designed Projects in Ecological Research and Practice

Co-designing conservation interventions through participatory action research in the Indian Trans-Himalaya

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Handling Editor: Errol Douwes**Abstract**

1. Community-based conservation, despite being more inclusive than fortress conservation, has been criticized for being a top-down implementation of external ideas brought to local communities for conservation's benefit. This is particularly true for Changpas, the pastoral people of Changthang in trans-Himalayan India who live alongside unique wildlife.
2. Our main aim was to co-design conservation interventions through participatory action research. We worked with two Changpa communities, to understand the issues faced by them. Subsequently, we co-designed context-sensitive interventions to facilitate positive human–nature interactions. We did so by integrating the PARTNERS (Presence, Aptness, Respect, Transparency, Empathy, Responsiveness, Strategic Support) principles with the Trinity of Voice (Access, Standing and Influence).
3. In Rupsho, we facilitated focus group discussions (FGDs) led by the community. We found livestock depredation by wildlife was primarily facilitated by the weather. This led to co-designing of a new corral design, which was piloted with seven households, safeguarding 2385 pashmina goats and sheep. Approximating the value of each sheep/goat to be USD125, this intervention amounts to a significant economic protection of USD c. 42,500 for each household. This is along with intangible gains of trust, ownership and improved self-esteem.
4. In Tegazong, a restricted area adjoining the Indo-China border with no previous research records, we worked with 43 Changpa people to co-create research questions of mutual interest. Wildlife presence and reasons for livestock loss were identified as areas of mutual interest. The herders suggested they would record data in a form of their choice, for 6 months, while they live in their winter pastures. This participatory community monitoring revealed nutrition and hypothermia to be a key cause of livestock death. Subsequently, we delimited two previously untested interventions: lamb cribs and provisioning of locally sourced barley as a feed supplement. The wildlife monitoring recorded the first record of Tibetan Gazelle *Procapra picticaudata*, outside of their known distribution, in Tegazong.

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5. We aim to highlight the benefits of co-designing projects with local communities that link research and conservation, while also discussing the challenges faced. Ultimately, such projects are needed to ensure ethical knowledge generation and conservation, which aims to be decolonial and inclusive.

KEYWORDS

Changthang, co-design, community, conservation, participatory

1 | INTRODUCTION

Conservation is defined as an action-oriented 'mission discipline', albeit where the mission or values of some stakeholders may not align with those of others. Nevertheless, this implies that conservation researchers should move beyond simply generating understanding and collaborating in designing and reporting on effective interventions (Williams et al., 2020). Top-down, centralized approaches to conservation, such as 'fortress conservation' (Brockington, 2002) and 'fence and fines' approaches (Brown, 2002), have persisted for decades. This often not only excludes and marginalizes local and/or indigenous communities but has also had unintended negative impacts on local and regional ecosystems (Borrini-Feyerabend et al., 2002). For instance, a government-imposed grazing ban in the transhumant pastoral system of Sikkim, India, resulted in not only a lowering of income for families but also reducing plant diversity and ecosystem functioning (Ingty, 2021). Community-based conservation emerged as an idea challenging the fortress conservation model, promising the participation of local people (Berkes, 2006). This was one of the first steps towards inclusive conservation, which is premised on the safeguarding the rights of Indigenous and local people and recognizing that they have rights to decide how to manage their territories, as well as when, how and if to involve others, all in a way that benefits them as well as nature (Rai et al., 2021). Nevertheless, community-based conservation, despite aiming to be inclusive, has been criticized for being a top-down implementation of external ideas brought to the local communities for conservation's benefit (Rai et al., 2021). Community-based conservation has faced various critiques. Firstly, various community-based conservation approaches have tended to oversimplify and homogenize the notion of community (Agrawal & Gibson, 1999). Secondly, falsely attributing community-based conservation to projects, which are, in truth, conceived, implemented and evaluated by outside agencies (Campbell & Vainio-Mattila, 2003). Thirdly, the emphasis is solely on outcomes rather than the process of achieving them, especially in the context of working with local people (Mulrennan et al., 2012). Fourthly, while there is a general acknowledgement of the importance of participation in principle, tools and mechanisms to support this meaningfully have been lacking (Brown, 2002). It is thus evident, that the notion of participation—or lack thereof—from local people, is a key missing element driving community-based conservation's critique.

'Participation' can appear to be an infinitely malleable concept (Cornwall, 2008). While Arnstein's ladder looks at participation from those who are receiving it (1969), Pretty's (1995) typology speaks

more to the user of participatory approaches. White (1996) further provides insights into the different interests at stake in various forms of participation, ranging from manipulative participation to self-mobilization. The role of participation, or a lack thereof, within conservation, particularly community-based conservation, has been a topic of debate (Mulrennan et al., 2012). Early forms of participatory approaches such as Participatory Rural Appraisal (PRA) have now been critiqued for their tendency to over-emphasize consensus, impose alien decision-making processes and not tackle power dynamic issues (Cooke & Kothari, 2001). Participatory Action Research (PAR) is a broader term that builds on PRA along with other theoretical concepts of emancipatory research which are attempting to take the control back to local marginalized communities while also achieving conservation targets (Keahey, 2021).

The nomadic pastoralists of Changthang, the Changpa people, have been sharing space with wildlife and using these high-altitude rangelands even before the first millennium BC (Mishra et al., 2001). Changthang is the western extension of the Tibetan plateau which extends from China into India (hereafter Changthang refers to the Indian Changthang). It is home to rare and elusive wildlife such as snow leopards *Panthera uncia*. This region has remarkably high ecosystem services in supporting local livelihoods and also being of regional importance given its role in climate shaping and being the water source of many rivers (Murali et al., 2020). Like many nomadic people globally, Changpas are a minority, suffering problems of under-representation of social, economic and geographic marginalization (Bhasin, 2012). Changpas have felt alienated by the government over the notification of the Changthang Wildlife Sanctuary for over two decades. They fear eviction due to the creation of the protected area at worst and limited access to services like electricity at the least (Singh et al., 2013). This region is critically important for high-elevation wildlife. As such the Changpa people have been a target of various community-based conservation initiatives that seek to ensure wildlife conservation (Anand et al., 2012). However, often the Changpa people have voiced criticism of these, albeit well-intentioned approaches, for being inadvertently delivery of external top-down implementations of ideas. Frequently, both the process of such conservation actions and their product have a dearth of inputs and consultation from the very people they are aimed for (Bijoor et al., 2021). With this background, we worked with the Changpa people of Changthang to co-design conservation interventions guided by PAR. Here, we aim to share both the process of doing this PAR and our learning from it, such that we can introspect and move towards more inclusive and just forms of conservation action.

2 | THE CHANGTHANG REGION AND OUR PARTNER COMMUNITIES

The western extension of the Tibetan plateau, part of which lies in India, is called Changthang. This is an important rangeland system (Goldstein et al., 1990), characterized by extreme cold and frigid winters and high aridity. The primary productivity is low. The growing seasons are restricted to a few months in the summer (June–August), and the vegetation is characterized as dry alpine steppe (Rawat & Adhikari, 2005).

Changthang has nearly 50 villages and hamlets, inhabited by less than 10,000 settled and nomadic pastoralist populations. Each community has traditional grazing rights over certain pastures which they seasonally move between. Tibetan Refugees, who crossed the border during the early 1960s and remained within Indian Territory, joined the existing population. Changthang is split into two administrative blocks—Durbook and Nyoma (Bhasin, 2012). In their political system, the traditional structure (village council with a chief/*Goba* and village administration) and the government-sponsored local bodies (*panchayats*) coexist, but with differing roles (Singh et al., 2013).

In Changthang, we worked with two nomadic pastoral communities within the Nyoma block: namely Rupsho and Korzok. Rupsho, also known as Samad Rokchen, is home to about 60 families which includes both locals and Tibetan Refugees. Being nomads, herders from Rupsho are periodically moving between pastures. They spend their winters along the banks of Lake Tso Kar, while their summers are spent in the Moray and Mangzol plains, also known as Skyangchuthang, along the Leh-Manali Highway (Figure 1). Rupsho grazing areas stretch from Taklangla Pass in the east of Pang and Polokanga in the west. Their movement patterns consist

of pre-determined areas of encampment but the availability of resources decides the duration at one camp. The rangelands of Rupsho are home to varied forms of wildlife. These include, but are not limited to, one of the last remaining populations of the vulnerable Tibetan Argali *Ovis ammon hodgsoni*, breeding ground for over 100 species of water birds including the Black-necked Crane, *Grus nigricollis*, and being home to one of best habitats for Tibetan Wolves *Canis lupus* and the Tibetan Sandfox *Vulpes ferrilata* (Jamwal et al., 2020; Namgail et al., 2010; Singh et al., 2013).

In addition, the community of Korzok is headquartered within the village of Korzok, which is located on a small hill at the south-west corner of Kyangdum along the north-west bank of Tso-Moriri. The Korzok region, encompasses several pastoral and agro-pastoral villages, namely Korzok, Angkung, Sumdo and Chumur. Like Rupsho, this region also saw an influx of Tibetan refugees around the 1960s. Historically, the powerful feudal lord called the Rupshu '*Goba*' ruled this region. After these *Gobas* lost their power in the 17th century, the smaller villages organized themselves and elected headmen who now come to be called *Goba*. The Korzok *Goba*, presently yields the most power, and *Goba* of other villages within the Korzok region, namely Chumur, Sumdo and Angkung, report to him. The Changpa community at Korzok is comprised of two parts, the permanently settled (*yulpa*) located in the village of Korzok and the nomadic pastoral population, the Changpa people. The Changpa people, in the summer, divide into two groups, one grazing the Korzok phu and another visiting the Phirste region further south. In late summer-autumn, they congregate near the Tatsang Tso, north of Korzok village. The Changpas of Korzok spend 6 months of winter in the valleys around Tegazong, near Chumur, which is along the Indo-Sino frontier (Figure 1). Changpa people from other villages within the Korzok belt, for example, Sumdo

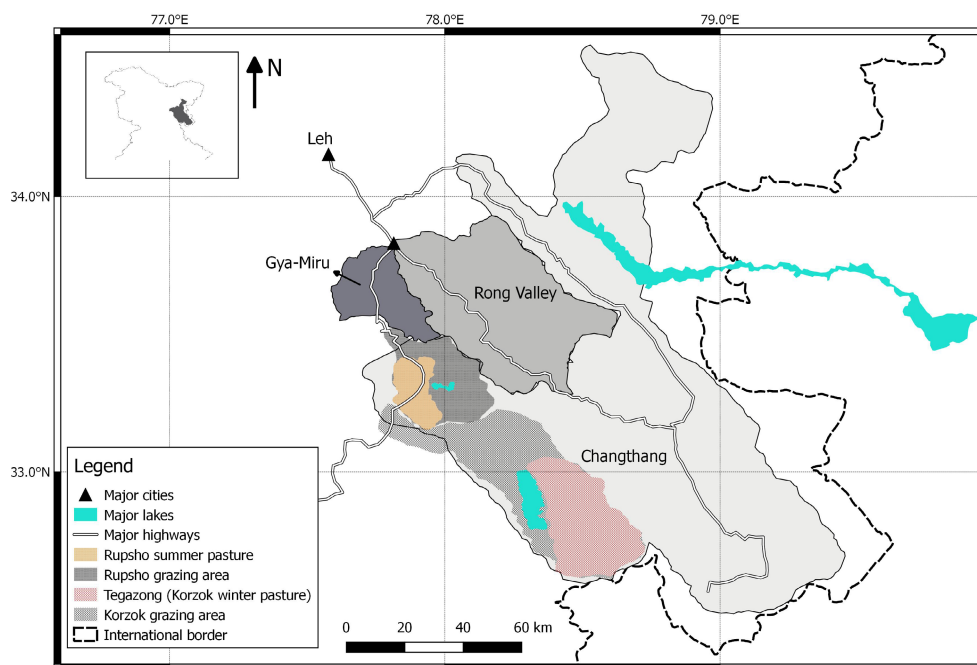


FIGURE 1 Map showcasing Changthang and the seasonal pastures for the Rupsho and Korzok herders. The areas aren't exact but are indicative.

and Chumur also graze parts of Tegazong in the winter. Due to its remoteness, and proximity to the often volatile geo-political frontiers with China, little is known about both the life of the Changpa people and the presence of wildlife in Tegazong.

3 | AUTHORS' POSITIONALITY

At Nature Conservation Foundation (NCF), we work with a philosophy of science-informed, place-based and contextually-appropriate conservation (e.g. Bijoor et al., 2021). Working in India, despite its reality of fortress conservation (Rai et al., 2021), harbours abundant wildlife outside formalized Protected Areas, alongside over 1 billion people (Athreya et al., 2015). It is non-negotiable, thus, to work alongside people to ensure conservation goals are achieved through collaboration and negotiation on shared priorities and goals. We are driven towards understanding the survival needs of various wildlife species, human resource use and its impact on wild species and ecosystems. Using this knowledge of wildlife ecology and human society, we try to design conservation strategies that are locally appropriate (e.g. Sonam et al., 2022). These are implemented in collaboration with local communities that depend on the most on natural resources, and the governments that manage them. While promoting wildlife conservation, our programs also strive to safeguard livelihood and development options for local communities.

However, while we remain well intentioned, we realized that a donor-recipient relationship may develop in certain instances with our partner communities across the Trans-Himalayan landscapes of North India. Not only is this based on a nuanced power dynamic but often the processes that lead to the designing of conservation interventions mentioned above, do not necessarily incorporate the communities' ideas—particularly as communities are not homogeneous, autonomous and clearly bounded (Agrawal & Gibson, 1999). Often, the conservation interventions are our ideas, albeit based on the information communities provide us. These ideas are then negotiated with the communities in a respectful manner. Such reflections, over the years, have made us realize the importance of participation of our partner communities, not only as donors of knowledge and receivers of interventions but as equal partners in both creating the knowledge and designs of conservation interventions (Mulrennan et al., 2012). This is even more important when considering that the people we work with have rights over the areas we seek to conserve.

Having cognizance of this, land-use changes due to neo-liberal extractive forms of development, along with climate-related uncertainties, threaten pastoral communities living in close proximity of elusive wildlife across regions of High Asia, including Changthang (Mishra et al., 2022; Sultan et al., 2022). Therein, we believe that conserving pastoralism as a form of livelihood is not only ecologically and culturally beneficial, but also, perhaps most compellingly, an issue of rights. Besides, recognition of and respect for collective customary rights is a fundamental requirement under international law, and this includes the right to free, prior and informed consent and the right to participation (Newing & Perram, 2019). Moreover, there is extensive evidence

of the crucial importance of collective institutions and environmental stewardship for effective conservation (Armitage et al., 2020; Dawson et al., 2021). This is particularly relevant today as the adoption of the Kunming-Montreal Global Biodiversity Framework calls for increased recognition of rights-based approaches to conservation, recognizing the important role played by indigenous people and local communities in global conservation.

We found ourselves working in Rupsho and Korzok, as they are key areas of traditional forms of livestock grazing that contribute to the local pashmina (cashmere) economy, known as Ladakh Pashmina. Just 1% of the cashmere produced globally qualifies as Ladakh Pashmina. Growing Ladakh Pashmina is a way of life for the local Changpa communities who graze their goats in incredibly high-altitude pastures of Changthang. Sharing their pastures with snow leopards and other rare and unique wildlife, the Changpa people strive to maintain a balance between sustaining their livelihoods while preserving their culture and honouring the ecological sanctity of the high mountains they inhabit.

Some of the thinking of participatory research that is reflected in this paper was informed by the lead author's (Munib Khanyari) participation in a workshop series of participatory research, co-led by Dr. Helen Newing and Dr. Arash Ghoddousi, funded by the Oxford Berlin Research Partnership (OxBer).

4 | BUILDING PARTNERS BY ENABLING THE TRINITY OF VOICE

Mishra et al. (2017) developed the PARTNERS (Presence, Aptness, Respect, Transparency, Negotiation, Empathy, Responsiveness, Strategic Support) principles as a guideline for community-based conservation. The eight principles build on the ideas that have been developed in diverse fields like applied ecology, natural resource management, health, social psychology, rural development, negotiation theory and ethics. Presence refers to the immersion of conservation practitioners to gain a nuanced understanding of communities facilitating the building of resilience relationships. Aptness alludes to ensuring that interventions are relevant and sensitive to the local context. Respect urges the establishment of equal partnerships with the local community. Transparency indicates establishing an honest decision-making partnership with the community. Negotiation cautions against taking extreme positional stances in conflict mitigation. Empathy reminds practitioners that conservation and conflict mitigation is often one of many realities of communities. Responsiveness reiterates the need for time responses. Lastly, strategic support illustrates the importance of formalizing conservation interventions by working using a multi-sectoral approach, including with relevant government agencies. While there is a growing body of literature on the use of PARTNERS principles (Bijoor et al., 2021; Mishra et al., 2017; Sonam et al., 2022; Young et al., 2021), the discussion of participatory process within it, at best remain implicit.

A means to enable participatory processes while using the PARTNERS principles is using Senecah's (2004) Trinity of Voice (TOV).

Participatory approaches to research require a highly collaborative process where professional researchers relinquish their authority as principal investigators, and both conceptualization and execution of the research are shared between professional researchers and local participants. TOV combines access, standing and influence, helping build and maintain trust between professional researchers and participants. Access is enabled in various ways, including conscious consideration for the participants' schedule and comfort when choosing times and locations for gatherings, and use of accessible language in communication (Senecah, 2004). Access, along with standing, allow influence to emerge, where participants' inclusion is more than a formality, and decisions indicate that local expertise has been acknowledged and respected (Senecah, 2004). While TOV was originally intended as a normative framework, studies have subsequently used it to design PAR (e.g. Wedemeyer-Strombel et al., 2019). As we worked with Rupsho and Korzok nomads, we were guided by the PARTNERS principles in our approach and tried to operationalize the TOV to ensure participatory processes.

4.1 | Beginnings in Rupsho and Korzok

With these principles in mind, on visiting Rupsho and Korzok in August 2020, initially, we (the members of NCF) met with their respective *Gobas*, where we explained our rationale. Our intention was to understand issues faced by them in lieu of their livelihoods and relationship with nature and see if we could co-design context-specific

interventions to facilitate positive human-nature relationships. In both communities, the conversation with the *Gobas*, was followed up with a conversation with the village governing council. In both such meetings, many issues were raised by *Gobas* and their governing council. However, we insisted politely opening up this conversation with the other members of the herding community.

In these large, remote landscapes, herding families usually live in a traditional tent called *rebos*. These are often far from each other. During the day, herders and their families are preoccupied with herding activities and only post dusk, when herds are back in their corrals (i.e. night-time pens), are they relatively free to gather for discussions. Often we had to make multiple visits to these regions, ensuring as many herders could gather at a time convenient to them for us to have community meetings. Rather than us convening these meetings, we encouraged the *Goba* and village council to do so. Community meetings were often held outdoors in common spaces, where we sat in circles (Figures 2c and 3a) and the conversations were in the local Ladakhi language. Members of NCF played a facilitating role in the discussions and ensured to be active listeners.

We followed the recommendation provided by Nyumba et al. (2018) whose aim was to have improved the contextual use of Focus Group Discussions (FGDs), to facilitate community meetings. Four key aspects were upheld: (i) a clear rationale for the choice of the FGD, (ii) we (members of NCF) focussed on facilitatory skills (Morgan et al., 1998), (iii) we attempted to be aware of biases in each of the groups and (iv) we ensured to have de-briefing time at the end of each meeting to recap the discussion and produce key take-aways.

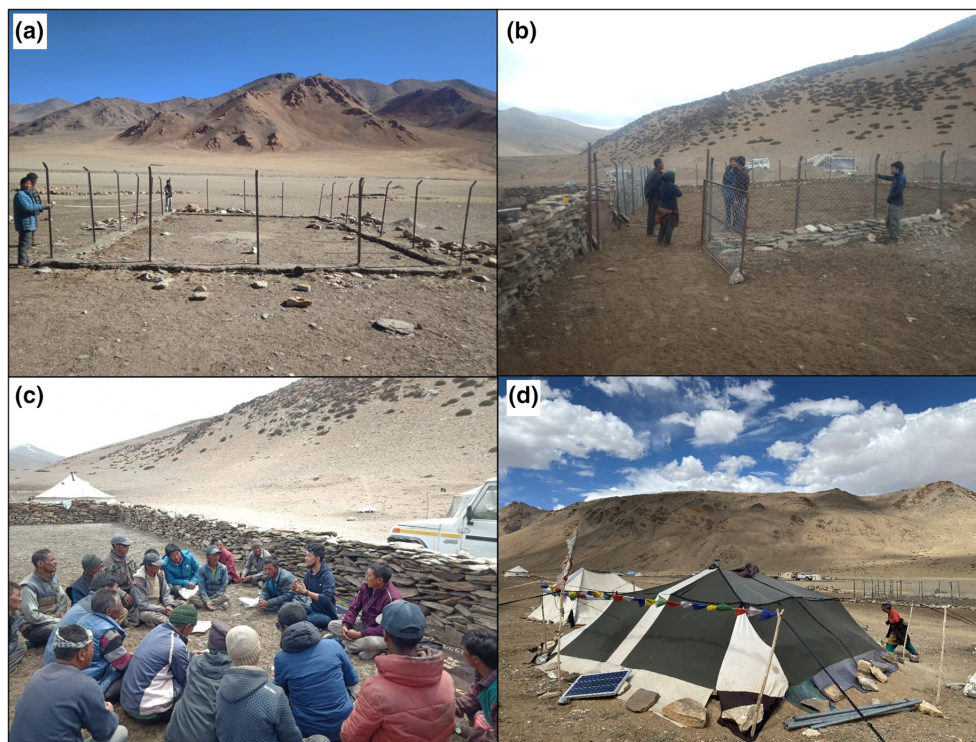


FIGURE 2 A panel image showing: (a) the building of the summer-time corrals, (b) the finished corral that is currently in use, (c) a community meeting with the Rupsho herders and (d) a Changpa lady tending to her Rebo with the co-designed summer corral in the background. Consent was taken from people in the photo before taking and using these images.



FIGURE 3 A panel image showing: (a) community-meeting with Korzok Changpas, (b) the group of Korzok Changpas that recorded information on livestock losses and wildlife presence with their diaries, (c) Diaries with data in local Ladakhi language, (d) image of livestock that died due to the cold. Consent was taken for people in the photo before taking and using these images.

4.2 | Co-designed research and interventions in Rupsho—Summer corrals

In Rupsho, while the herders discussed various issues, a key issue that they felt was both important and neglected was linking climate and livestock depredation. Predominantly, sheep/goats remain in the open near the owners' *rebos*. In recent years, the Rupsho Changpas have indicated an increase in rainfall, particularly in their summer grounds. This trend has been confirmed using daily precipitation data from integrated Multi-satellite Retrievals for GPM (Global Precipitation Model; Yangkey, 2020). The Rupsho Changpas suggested that, rains, especially at the night, resulted in their sheep/goats taking shelter under boulders and overhangs in the nearby cliffs. Being scattered in the open makes them vulnerable to attacks by both wolves and snow leopards, resulting in losses for the herders. Sometimes, this might mean attempts of retaliation against these predators. Such instances are also tiresome for the herders as they have to wake up periodically at night to ensure their sheep/goats are secure.

When we started to discuss potential solutions, we shared ideas from our experience, such as the community-run livestock insurance program (Mishra et al., 2003). They felt it was reactive and we were unsure how to operationalize it with such a large number of livestock (each herder has on average 200 sheep/goat). After much thought about potential solutions, a group of Rupsho Changpas suggested 'We have a solution, but we don't have the ability to operationalize it'. The solution was a simple, rectangular pen that would ensure sheep/goats do not scatter, even if it rains. This would require a concrete 1-foot rectangular base on which fabricated 6-foot steel poles would provide a frame that would have steel wiring along the perimeter.

This pen/corral would have a rectangular door that the herder could lock. At first, we (the NCF team) were sceptical. A rectangular pen might keep the sheep/goat from scattering, but experiences from our colleagues (Samelius et al., 2021) suggested snow leopards could easily jump into pens that are 6 feet off the ground.

Upon several discussions, the Rupsho Changpas reassured us that the goal of the rectangular corrals pen is not only of preventing livestock depredation, as with most other reinforced corrals in snow leopard landscapes (e.g. Bijoer et al., 2021) but to not let the livestock scatter. Being in the plains away from the cliff, these corrals are not at risk of predation as the large *Changkhi* (cousins of the Tibetan Mastiff) dogs could chase away any approaching predators. This was indeed a problem in their winter corrals, as they were mostly in or near cliffs, where predators like snow leopards and wolves had more of a chance to go unnoticed and enter night-time corrals.

We agreed that the size of each corral would be proportionate to the sheep/goat holding of the owners. The Rupsho Changpas told us that the enclosure needed to be large enough to sit the sheep/goat comfortably but not too large to ensure sufficient warmth and cost-effectiveness of the structure. For this, we measured the space occupied naturally by each sheep/goat in a herd during the night in the open. This measured to be four square feet per sheep/goat. Through a traditional process of randomized choice, which involves rolling of the traditional *cholo* dice and designating numbers, seven herders were chosen by the community members to trial this intervention. These seven herders, along with the *Goba* and village council members, organized themselves into a corral-building committee. Timelines were set for actionable and a community agreement with responsibilities are written (in the local Ladakhi language) and signed by all people involved.

We (members of NCF) would be in charge of getting the fabricated steel polls, door and steel frame from Leh to Rupsho. The Rupsho Changpas would be in charge of building the concrete base and building the structure once the material arrived. This process was not without unanticipated challenges. For example, in one instance, some of the corral owners delayed the start of construction from the agreed timelines. In this case, the corral-building committee stepped in to understand the cause of the delay and when it was verified that these delays were for genuine reasons, they agreed to a marginal relaxation in timelines. In another instance, when fabricated material was incorrectly designed, the herders remained patient with the NCF team and worked jointly with them and the manufacturers to have these corrected, despite this leading to some delays.

4.3 | Outcomes and impacts—Rupsho

These seven summer time corrals are currently safeguarding 2385 pashmina goats and sheep. Approximating the value of each sheep/goat to be USD125, this intervention amounts to a significant economic protection of USD c. 42,500 for each household (Figure 2a,b,d). In addition, being on the National Highway, often, passing freight trucks would pick up the manure left by the sheep/goat without consent. Now, as the Rupsho Changpas can lock their pens, the manure of their sheep/goat is also secured. The herders are now selling this manure predominantly to fellow Ladakhi that use it as fertilizer in Western Ladakh to grow barley. Part of this barley is bought back by the Changpas people as winter feed for their livestock. The benefits of these structures are not solely monetary. As one of the Rupsho Changpa owners said 'I can lock up the door and sleep peacefully at night', highlighting an important non-monetary benefit of these structures. These seven structures have now been used for one season and based on their success the Rupsho Changpas have made 20 more such structures, which will be used from summer 2023 onwards.

4.4 | Co-designed research and interventions in Korzok-community researchers

We first visited the Korzok community in August 2020. Our initial approach mimicked that of one taken with the Rupsho Changpas—explaining our visit to first the *Goba* and then the village governing council. Considering the size of the Korzok Changpa community (over 300 herders), it was decided that we should meet in Tegazong in early winter. Tegazong is a nearly 1000km² region, which is over 70 kilometres away from Korzok village (Figure 1). All the near 300 Korzok Changpas gather in Tegazong for about 5–6 months of the harsh winters. The *Goba* and village council members also indicated winter to be the time when attacks from predators such as snow leopards and wolves peaked during their annual migration and harsh weather did lead to losses of their livestock as well.

Between September and December 2020, although the Korzok Changpas were yet to get to Tegazong, we continued having several

meetings with the *Goba* and the village council to build trust. Unlike the Rupsho Changpas who have a history of conservation engagement (e.g. Bhasin, 2012; Singh et al., 2013; Bijoor et al., 2021), relatively little conservation work has been done with the Korzok Changpas. On arrival in Tegazong (December 2020), the *Goba* and village council told us that Korzok operates under the *Churpon* system, wherein the entire Korzok Chagpa community is sub-divided into clans of roughly 50 herders each. The *Goba*, village council and all Korzok Changpas had self-organized before their annual migration to Tegazong. It was decided then, we (NCF) would primarily engage with the Phirtse herders (named after their summer pastures), which operated under one *Churpon*, for two primary reasons: (i) their winter grazing areas are close to each other making it manageable for us to work there and (ii) they seem to face high losses during the winter. To exacerbate the latter, during their autumn migration from Phirtse towards Korzok and onwards to Tegazong, the Phirtse herders incurred huge losses due to inclement weather conditions.

The *Goba* and village council organized a meeting between us (NCF) and the entire *Churpon* of Phirtse in the community gathering areas of Rusephuk within Tegazong (Figure 3a). Several issues were raised by them including death of newborns due to hypothermia, heightened depredation in their winter corrals due to snow leopards and wolves, lack of available forage resulting in livestock losses due to malnutrition, to state a few. Given the size of the community and the variable nature of issues faced by the herders, it was difficult to reach a consensus on the most important issue and ways to deal with it. We emphasized to the community members during a community meeting, that having a philosophy of science-driven socially-just conservation, would require us to gather more information to understand the prevailing issues better. The Korzok Changpas herders understood this and suggested rather than us coming repeatedly, they could help us in gathering the necessary information, particularly as Tegazong is much more remote than other places in Changthang and the community here is much more spatially spread out (Figure 3b,c). This suited us, as unlike Rupsho, where we could have multiple community meetings which were attended by majority of the herders to delimit issues and solutions, this reiterate process was a logistical challenge in Tegazong.

Therefore, 43 herders under the Phirtse *Churpon* decided to collect information on livestock losses and the presence of wildlife in their winter grounds of Tegazong from December 2020 to May 2021. We visited them twice over the course of this time, to ensure smooth functioning. Data collected by them suggested that the peak winter months of December–February had more losses than the transitory month from winter into spring (March–May; see Figure 4a). Causes were collapsed into categories after discussion as follows: (i) wolves: livestock lost due to depredation by wolves, (ii) snow leopards: livestock lost due to depredation by snow leopards, (iii) malnutrition: livestock lost due to lack of food (generally over time), (iv) weather: inclement weather conditions resulted in the loss of livestock, (v) premature/abortion: a newborn lamb or kid was born premature and died or a dead aborted newborn and (vi) disease: a discernible symptom of a known disease

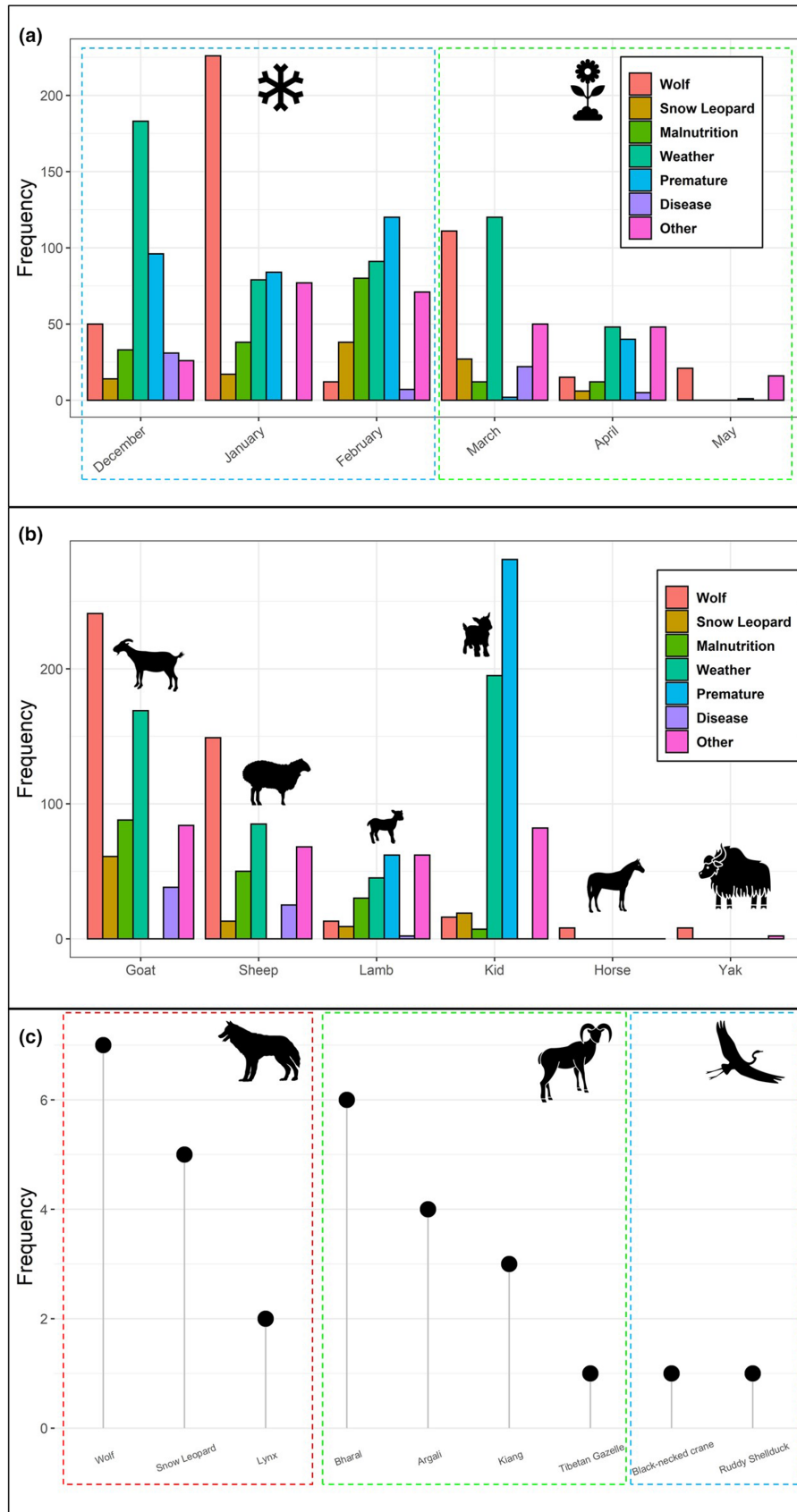


FIGURE 4 Panel graphs showcase (a) month (x-axis) against the frequency of livestock lost (y-axis) with causes in different shades (see panel), months in the blue box are peak winter, whereas in the green box are the transition months from winter to spring. (b) Type of livestock (x-axis) against the frequency of livestock lost (y-axis) with causes in different shades (see panel). (c) Frequency (x-axis) of species (y-axis) noted by Changpa herders. Carnivores = red box, herbivores = green box and birds = blue box.

was the cause of livestock loss. These were categories listed by the Changpas herders themselves, although we must acknowledge, as did they, that some of these categories are not necessarily mutually exclusive. For instance, inclement weather could result in pastures being covered with snow and ice for prolonged periods leading to death due to malnutrition.

Wolves were the major causes of losses of goats and sheep and were the only source of losses of horses and yaks (Figure 4b). Interestingly, newborn lambs and kids were predominantly lost due to being premature/aborted (highest total losses of any livestock were prematurely born kids) or inclement weather conditions. Additionally, the monitoring recorded the presence of three predators (wolf, snow leopard and lynx), four herbivores (bharal *Pseudovis naysaur*, kiang *Equus kiang*, argali, and Tibetan gazelle *Procapra picticaudata*) and two birds (black-necked crane and ruddy shelduck *Tadorna ferruginea*; Figure 4c). The record of the Tibetan gazelle was the first official record outside its extremely limited range in Ladakh's Kalak Tar Tar plateau (Namgail et al., 2008). Records of lynx and argali are noteworthy as they are highly range-restricted within the Indian Trans-Himalayas (Singh et al., 2010). The black-necked crane and ruddy shelduck were recorded in March and being a migratory species could be indicative of their arrival time in the landscape.

4.5 | Outcomes and impacts—Korzok

Towards the end of the data collection, we organized a debriefing session. Herders suggested, as indicated by the data, three main causes of livestock losses: (i) depredation by predators such as wolves and snow leopards, (ii) losses of adults and newborn due to inclement weather conditions particularly due to hypothermia as has been seen in other Changpa communities (Mariam et al., 2018) and (iii) premature/aborted births of newborn lambs and kids (Figures 3d and 4a,b).

For depredation of livestock by predators, it was agreed that most instances of loss, especially surplus losses (Linnell et al., 1999), happened within night-time corrals; hence, collectively, the community will identify the most vulnerable corrals that could be made predator-proof like others in similar landscapes of Changthang (Bijoor et al., 2021).

For the losses of newborn lambs and kids due to inclement weather, including hypothermia, we discussed the idea of lamb/goat cribs that we have co-designed with other Changpa communities (Chumur TR and Sumdo local) that could be trialled. Here the idea is that the herders build a stone rectangular base, about 2–3 feet off the ground which is roughly 12–15 feet long and about 5–6 feet wide divided into three compartments. We (NCF) fabricate a wooden frame with three openings in Leh, the regional capital. Each subsequent opening and compartment is 3 (length)×6 (width) feet, 4×6 feet and 5×6 feet. The idea of the three compartments is that for the immediate newborns, they are placed in the 3×6 feet compartment, and they are subsequently shifted to bigger compartments as they grow until they are big enough to walk and hence be outside these cribs. Each compartment of the cribs is insulated with wool to ensure

temperatures are warm. With our partner communities in Chumur TR and Sumdo, we have also placed temperature sensors to check for the difference within these cribs and outside. The Korzok herders found this idea to be potentially useful and may trial it.

For premature/aborted births, the herder suspected a combination of factors to cause this. They knew, as reported in the literature, diseases can cause the birth of premature newborn (Menziez, 2011). Many of the herders indicated that lack of forage leading to stress in females could have also resulted in abortion of newborn. These discussions lead to herder suggesting that provisioning of locally-sourced barley during winters has traditionally been a means to offset not only harsh weather conditions but is also given to pregnant females to ensure a healthy birth. They agreed that barley should not necessarily be thought of as a substitution for natural forage but as a supplement that is provided to herds at critical periods (such as prolonged snow days which restricts grazing). At the back of this, in May 2021, we provisioned 6 tons of barley that were shared between these 43 herders. The barley was sourced from Western Ladakh with the hope to (i) trial the possibility of sourcing barley locally, (ii) ensure that adult sheep/lamb and newborn that did survive the winter get extra nutrition to build up their health and contribute to stabilization of herds into the summer and beyond.

5 | PRACTICAL AND ETHICAL CHALLENGES WITH PAR: LESSONS FROM CHANGTHANG

There are several practical and ethical challenges that we experienced while using participatory approaches to produce knowledge and enable action. It is, thus, important for researchers and practitioners to question to what level are collaborative processes feasible.

Firstly, recruitment and retention of participants can prove challenging. Participatory approaches are often time-consuming, with opportunity costs associated with participating, which can result in the exclusion, intentionally or unintentionally, of those who cannot afford to contribute their time (Wilmsen et al., 2012). Even though research has shown that women often bear the brunt of negative interactions with wildlife in snow leopards landscapes (e.g. Alexander et al., 2022; Piaopiao et al., 2022), our efforts in Rupsho and Korzok failed to engage directly with women. Secondly, in Korzok, we had varying levels of information provided to us by the 43 participant herders, which may indicate varying levels of motivation towards the participatory research.

Secondly, power dynamics are ubiquitous and no community is homogenous (Agrawal & Gibson, 1999). In both Rupsho and Korzok, to avail conversations with the herders, we had to go through the *Goba* and village council first. There, for instance, could have been personal reasons beyond the justification given to us, why the Phirste herders were chosen as the *Churpon* we would engage with in Korzok. The *Goba* and village council by virtue of their roles, always invoked hierarchy, which could be opposed to a transparent participatory process (Brittain et al., 2020). Besides, even though we attempted to play a facilitatory role, there is

usually a clear power imbalance between us and the community. For example, in PAR specifically, the lines between research and societal change can become blurred and in terms of impact, a key challenge in PAR is managing the expectations of the benefits of the research (Mulrennan et al., 2012). If there is no way that the research will result in any changes to the community, this can carry an emotional burden for both the researchers and the participants. We had to be abundantly clear about this in both communities, especially in Korzok.

Thirdly, as conservation is a value-laded endeavour, a conflict of values between conservation and priorities for local communities can exist (Corson et al., 2020). Albeit subtle, both the Rupsho and Korzok communities were prioritizing the security of their livestock, while our primary motivation was ensuring human-wildlife coexistence. As we move towards collaborative models of conservation, researchers will increasingly need to grapple with how to balance the priorities and interests identified by the communities they work with, alongside the conservation priorities that may have been (externally) derived before commencing collaborative research (Brittain et al., 2020). For instance, we have often worked with herders in Trans-Himalayan India to mitigate livestock depredation by wild carnivores, but it was becoming increasingly clear from our interactions with the Rupsho and Korzok Changpas that issues of weather and nutrition are a key consideration in these landscapes as well.

Fourthly, PAR processes, like any method, are not devoid of biases (Brittain et al., 2020). Even though many bird species call Tegazong their home, the herders only listed black-necked crane and ruddy shelduck once. This could indicate personal choices

of data input, which could be influenced by how charismatic a species is.

6 | WAYS FORWARDS FOR CO-DESIGNING INTERVENTIONS USING PARTICIPATORY RESEARCH: MERGING OF TOV INTO PARTNERS' PRINCIPLES

Given the concerns about conservation and human rights (Newing & Perram, 2019), increasing evidence that control by local and indigenous people often is beneficial for conservation (Dawson et al., 2021), and calls for transformative change from exclusionary approaches in conservation towards more collaborative and equitable approaches (Lele et al., 2010), PAR is a key area of consideration within conservation. Particularly, this means that before considering the creation of a protected area, implementing conservation interventions and/or restricting local peoples' access and resource use, there needs to be a full and participatory analysis of the conservation problem. While in principle many people agree with the importance of participation in conservation, albeit ranging in degrees from participation throughout a project to participation for a part of it (e.g. setting research questions/priorities), means to operationalize it, often provide hindrance. Therein, our experience of working with the Changpa people in Changthang alludes to integrating two guidelines: Mishra et al.'s (2017) PARTNERS principles and Senecah's (2004) TOV. In Figure 5, we provide a schematic to illustrate this integration, where the core values driving engagement with communities are

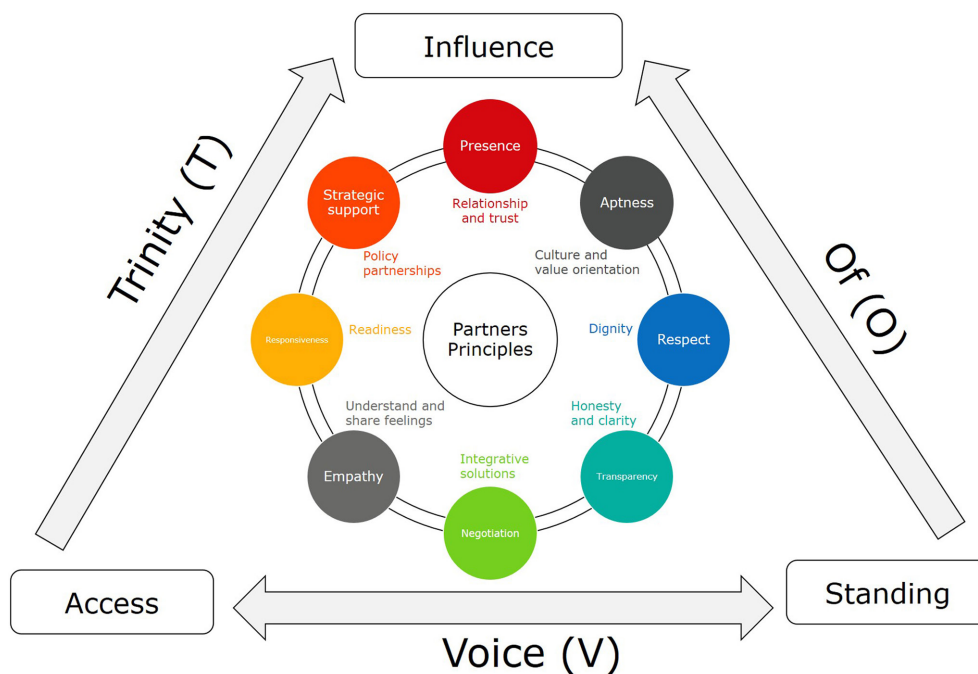


FIGURE 5 A schematic displaying the integration of Trinity of Voice into the PARTNERS (Presence, Aptness, Respect, Transparency, Negotiation, Empathy, Responsiveness, Strategic Support) principles. For each principle a phase (in the same colour as the principle) is written to describe its essence.

TABLE 1 Table articulating the key takeaways and key challenges faced while working with the Rupsho and Korzok communities using participatory action research guided by the PARTNERS principles and Trinity of Voice (TOV).

	Key takeaways		Key challenges	
	Rupsho	Korzok	Rupsho	Korzok
P—Presence	Multiple visits to have conversations before starting the intervention	Presence was amplified by working with 43 community researchers	Multiple visits by us could make the local communities feel less ownership of the intervention	Being remote, it was hard to ensure repeated trips to Tegazong
A—Aptness	Being open to innovate the new design that was apt to Rupsho	Recognize that before an intervention, it would be important to gain more information	Prototyping a new design can be risky	Managing expectation of the community to first gain information before interventions
R—Respect	Before giving solutions hear from local people	Heed to herder's suggestion of taking data in ways they felt comfortable	Respectfully articulating reservations with the newly proposed corral design	Articulating issues we had with the way the data was being collected
T—Transparency	Being honest that we could only pilot seven corrals at first	Trust the community researchers to record data honestly	Manage the expectation of herders that did not get corrals in the first round	We could never truly know if the community researchers had altered data
N—Negotiation	Ensure that the community also took part in building of the corrals	Ensure that wildlife monitoring (our primary interest) along with livestock losses was done	Dealing with conflict if designated tasks were not done on time	Data on livestock losses were far richer than that on wildlife presence
E—Empathy	Understand that conservation intervention was one of many things that communities needed to do	Understand that collecting data was an added task for the herder	It was hard to picture the challenges faced every day by the herders	Being primarily trained in robust study design, it was hard for us to have a more organic form of data collection
R—Responsiveness	Once the community agreed on making corrals, we had to be quick in providing the fabricated material	When the data collection was done, we had a community meeting delimiting next steps for interventions	Fabrication of material was subject to the timelines of the manufacturer	Those facing issues of livestock loss were losing patience with the research process
S—Strategic Support	Follow-up conversations with local administrators like the sheep husbandry department to scale the intervention	Ensure we first spoke to the <i>Goba</i> and <i>members</i> of the community and then collectively reach out to all the others	Translating on-ground conservation action into a policy change can be derailed due to various things including bureaucracy	The <i>Goba</i> and <i>Membar</i> rotate after a fixed tenure, which could mean relationships need to be re-developed
A—Access	Being conscious to consider people's schedule and comfort when choosing times and locations for gatherings	Ensure we speak in the local language and also ensure data could be written down in the local dialect of <i>Ladakhi</i>	It was challenging to accommodate all the herder's schedules	The <i>Changpa</i> people of Eastern Changthang write a specific form of <i>Ladakhi</i> which was hard to translate into English
S—Standing	Ensure that we engaged as active listeners when the community suggested the newly designed summer corrals	Engage in mutual learning by ensuring varied opportunities for dialogue while herders collect data	It is difficult to push back against ideas from the communities, even if they may have shortcomings	Difficult to gain a common understanding if people have different ways to collect data
I—Influence	Incorporate local knowledge in designing the corrals	Enable local voices to shape the knowledge base for the region	Need to ensure disparate opinions converge into actionable steps	Enthusiasm and means to continue monitoring need to be maintained

Note: (1) Take-aways and challenges aren't mutually exclusive across elements of PARTNERS principles (green) and Trinity of Voice (blue). We choose to articulate them for each principle and component of TOV, for ease of understanding. (2) Column in dark grey refers to Rupsho and the column in light grey refers to Korzok.

determined by the PARTNERS principles to ensure the effective influence of local/indigenous people is incurred in research and action by enabling their access and standing (TOV). To further illustrate this integration, we articulate key takeaways and key challenges faced while operationalizing the PARTNERS principles and TOV in each of our case studies (Table 1).

For instance, improved access of local communities to conservation engagement can be ensured by conducting meetings in a relaxed environment using a language spoken by the local community (Liles et al., 2015). Principles of Presence and Respect could help in building the relationship and trust while the principle of Aptness could ensure we as outsiders are trying to align with the local culture and value orientations to allow for such a relaxed environment to occur. Trust building with partner communities will help create a subject/subject relationship (Fals-Borda, 1987). Moreover, standing, which is the civic legitimacy, respect and consideration that all stakeholders' perspectives should be given, can be enabled by ensuring the principle of Transparency is upheld by explaining to our partner communities our exact motives and that we want to learn from and with them. In addition, ensuring empathy by using colloquial terms and non-scientific terminology can help achieve standing (Marin & Marin, 1991). As Senecah (2004) suggests, there is an interdependency of access and standing and their outgrowth (hence the arrows going from access and standing towards influence in Figure 5) is influence. Influence means that one's ideas are respectfully considered along with those of other stakeholders. Influence can be ensured by using Strategic Support of community heads such as the *Goba* to ensure voices of the less vocal are also heard. Exercising influence can be encouraged by asking local people to speculate on the significance of their observations and to Negotiate the proposal of their own ideas as conservation solutions (e.g. Wedemeyer-Strombel et al., 2019).

Four key advantages of using TOV along with PARTNERS principles to ensure PAR occurs is that (i) locality-specific information emerges, (ii) mutual learning is enhanced, (iii) local experience, knowledge and creativity are incorporated and (iv) local participation, ownership and commitment to conservation challenge are enabled—like in the case of the Rupsho summer corrals. Due to the ownership of the conservation interventions, the Rupsho Changpas took the responsibility of their corrals and interactions with predators, even when we (NCF) were sceptical that a 6-foot corral wall could prevent a snow leopard from entering the corrals and causing losses.

7 | CONCLUSION

Collaborative research has the potential to not only generate knowledge baselines efficiently but also make them more inclusive, one which is not just about supporting conservation by Indigenous peoples and local communities but also recognizing they have the right to decide how to manage their territories and when, how, and if to involve others (Rai et al., 2021). Developing conservation initiatives

without including the voices of local people can result in pushback from the local community, ultimately making the research unnecessarily inefficient and expensive, besides being forced and ethically questionable (Liles et al., 2015). Collectively, through our paper, we aimed to highlight not only the benefits of co-designing projects with local communities that link research and conservation but also discuss the challenges faced. Ultimately, such projects are needed to ensure ethical knowledge generation and conservation, which aims to be decolonial and inclusive.

AUTHOR CONTRIBUTIONS

All authors conceptualized the project together. Rigzen Dorjay and Sherab Lobzang led the field work in Rupsho and Korzok. Ajay Bijoor supervised the field work and Munib Khanyari assisted him. Munib Khanyari conducted the analysis and led the writing of the paper. Ajay Bijoor, Rigzen Dorjay and Sherab Lobzang commented on the draft. Kulbushansingh Suraywanshi supervised the entire project and gave critical comments on the draft.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

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