"It takes days for alerts to come"

Indigenous participation in early warning systems in Bolivia

September 2025

Summary: what you absolutely need to know

Indigenous communities in Bolivia rely heavily on farming for their food and way of life, but they face growing threats from climate change that are reshaping their cultural and spiritual landscapes.[1] In the Amazon, the Tacana are dealing with wildfires, floods, and droughts, caused by deforestation, climate change, and extractive mining and timber activities.[2] In the highlands, Aymara communities struggle with long droughts, hailstorms, heavy rains, and frost. These changes threaten their traditional ways of life and disrupt local ecosystems and subsistence livelihoods.[3]

Between March and April 2025, CLEAR Global and Practical Action worked with four communities in the La Paz department that speak Aymara and Tacana (Corpa, Jesús de Machaca, Tres Hermanos, Bella Altura and Tumupasa). The goal was to learn how these communities prefer to receive information and warnings which aim to predict and mitigate disasters (early warning systems – EWS) like floods, droughts, and wildfires. We used a mixed-methods approach to understand how well people can access information in their own language, how emergency messages are shared, and how they prepare for disasters. Activities included participatory workshops, key informant interviews, and testing key terms about disaster risk with 53 Aymara and 30 Tacana participants. We also ran a survey with 69 people selected through quota sampling. The communities recommended:

- **Make EWS more relevant to local needs and disaster risks.** Community members said that systems often don't reflect the real disaster risks they face or how they live. The alerts and other information provided are often too far removed from their realities to be useful and arrive too late.

- **Share alerts using platforms the community already uses.** Participants said warnings should be sent through channels that are trusted and easy to access, like community radio, WhatsApp groups, and face-to-face communication during community meetings. This is especially important in places with poor mobile signal or limited digital literacy. Use both traditional and digital methods.

- **Send early warning messages in the right languages and include Indigenous knowledge.** Community members said it is important to send messages in Indigenous languages like Aymara and Tacana. They also asked that local knowledge used to predict weather patterns be included alongside scientific information.

- **Address communication gaps and vulnerabilities rooted in local realities.** Challenges like low literacy and remote locations must be dealt with through inclusive approaches. Communities want clear, simple messages in plain language so everyone can understand what to do when they get a warning, and take action.

---

[1] Saxena, A., Cadima, X, Gonzales Herbas, R., Humphries, D., (2016), "Indigenous Food Systems and Climate Change: Impacts of Climatic Shifts on the Productions and Processing of Native and Traditional Crops in the Bolivian Andes", *Frontiers in Public Health.* Accessed on 25 April, 2025, 10.3389/fpubh.2016.00020

[2] Practical Action (2025), "Flooding, fire and drought: Indigenous communities in Bolivia hit by extreme weather". Accessed on 25 April, 2025, https://practicalaction.org/news-stories/flooding-fire-and-drought-Indigenous-communities-in-bolivia-hit-by-extreme-weather/

[3] Flores-Palacios, X., Ahmed, B., Barbera, C. (2023). "Micro-narratives on People's Perception of Climate Change and Its Impact on their Livelihood and Migration: Voices from the Indigenous Aymara People in the Bolivian Andes", in Hamza, M. et al., (eds) Rebuilding Communities After Displacement, Accessed on 25 April, 2025, https://link.springer.com/chapter/10.1007/978-3-031-21414-1_2

Recommendations to responding organizations

Tacana- and Aymara-speaking communities in Bolivia recommend that government agencies, NGOs and other groups working to mitigate disaster risks and reduce the impact of climate-related disasters:

- **Involve Indigenous communities in disaster risk planning and actions,** especially when creating early warning systems and disaster risk contingency plans. These plans should include Indigenous knowledge about weather patterns and natural indicators, and use the communication channels that communities prefer, like WhatsApp groups and local radio.

- **Communicate clearly using plain language in the correct local languages, avoiding technical terms.** Early warnings should explain clearly what people need to do, when, and how. The instructions should fit the local situation and be practical.

- **Make sure everyone is included by addressing challenges that affect vulnerable groups.** EWS strategies should consider the language and literacy needs of older adults, women, and people living in remote areas, so everyone gets timely, clear warnings they can act on in an emergency.

- **Respect and include local knowledge,** like traditional ways of predicting weather, along with scientific information. This builds trust and reinforces credibility. Indigenous communities and government officials should share and learn from each other.

- **Use tools to plan communication strategies and create clear messages,** like the glossary of terms in Aymara and Tacana and the Language and Communication Map developed by CLEAR Global in collaboration with Practical Action and the University of Edinburgh as part of an initiative funded by the Lloyd's Register Foundation.

Adapt early warning systems to make them relevant

In Corpa, a town in the Jesús de Machaca municipality, Aymara women *Mama T'allas* and male *Mallkus* (elected community leaders) report many climate-related challenges. "When it doesn't rain, the soil becomes completely dry, making it impossible to plant crops. When the ground is dry, we can't plow," explained an elderly woman. Another said: "We face other types of extreme weather too—hail, frost, drought, and floods. The topsoil from higher ground washes down and buries our crops completely." The men said that these changing weather patterns deeply impact their way of life: "Animals get trapped in pools of water", and "the potatoes are spoiled". The Aymara feel these changes strongly, both emotionally and spiritually. One woman said, "There is tremendous sadness for us—it's something to cry about".

3

In Tumupasa, the capital of the Tacana communities in northern Bolivia's Amazon region, Indigenous communities have faced a harsh cycle of hazard events and disasters—droughts, wildfires, and floods—each making the damage of the last worse.[4] These overlapping events have destroyed successive harvests and devastated the forests and biodiversity they depend on. An elderly woman from Tumupasa said: "All the edible and medicinal plants burned. Everything disappeared". Another woman shared how traumatic it was: "The birds were nesting when the fire came. They burned; they died there. The flames were so high. It was terrifying. The fires destroyed all my crops, and my house. I had nothing left".

The problems get worse during long droughts. A young man explained: "The sun never used to be this strong, and the dry season wasn't this long. There was always a bit of moisture that kept the vegetation alive". During drought, families have to dig for drinking water. He said: "We were simply crying out for rain." After the wildfires, floods destroyed crops like plantains and cacao, leaving families without food or income. A man from Tumupasa said, "Everything is spoiled, everything is lost".

Early warning alerts often don't reach communities

Tacana- and Aymara-speaking communities say that government weather alerts and information—like those from SENAMHI (El Servicio Nacional de Meteorología e Hidrología) issued to inform communities about changing weather patterns—often don't reach them. This means many people don't know about disaster risks and lifesaving mitigation strategies.[5] About 26% of people surveyed said they don't receive any information at all. A leader from Corpa said: "If something happens, the municipality doesn't inform us. We hear it by chance; there is no sharing of knowledge". In remote riverine communities in the Tacana territory, leaders said there is no early warning system at all.

"When the river starts rising, there's no manual that tells us: now we should be doing this." Man, Tumupasa

Another problem is that when early warning alerts do reach communities, the information is not very practical. In the Tacana territory, women said: "SENAMHI alerts don't match our territory. It's more for the Altiplano or Santa Cruz." A young man added, "Sometimes there's one version of the information, then another, then another… we don't know which one is right". Aymara leaders had the same concerns. They said government alerts are vague and don't give clear instructions on what to do. "They just say 'be careful'.

---

[4] Cuba, Mónica (2024), "The impacts of the 2023 wildfires on Tacana communities", Climate Resilience Alliance (ZCR Alliance). Accessed on 25 April, 2025, https://zcralliance.org/blogs/2023-bolivia-wildfires/

[5] Lloyd's Risk Register (2024), "Indigenous inclusion for informed disaster risk reduction in Bolivia". Accessed on 25 April, 2025, https://www.lrfoundation.org.uk/news/Indigenous-inclusion-for-informed-disaster-risk-reduction-in-bolivia

It's not very specific, you don't know what's going to happen", said a man from Tumupasa. A local radio journalist added, "They say the Alto Beni River is rising, but they don't mention the nearby communities. So people don't know which ones are affected".

Communities asked the government to make alerts clearer and more locally relevant. They want alerts to mention specific rivers and zones in the correct local languages (Aymara in Corpa and Tacana and Spanish in Tumupasa). They also want information on how each area might be affected. This is important because risks vary by location. In Aymara communities, for example, climate-related risks change with altitude. In the highlands, people often face frost and hail, which harm crops like potatoes, barley, and quinoa. Lowland communities face frequent flooding.

Indigenous communities feel left out of disaster planning

The repeated shocks of climate-related disasters have made many Indigenous communities in Bolivia feel even more forgotten by the government. Wildfires, floods, and droughts have damaged their homes and farms but also strengthened the belief that the government doesn't care about them. Tacana *corregidores* (community leaders) said they asked for urgent help during the 2023 wildfires and recent floods, but little support came. "It was terrible," said a woman from Tumupasa. "Some people lost everything. The government never came to help us." In San Miguel, a recently flooded town, another woman said, "People are sick now—no medical help has arrived." Elderly women in particular feel overlooked. One said, "No one thinks of us."

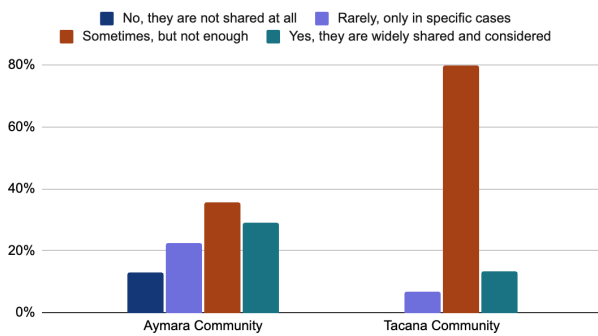*"The government comes when we're angry, when we're already dead, let's say." Elderly man, Tumupasa*

When asked if decision makers truly listen to them, most people in the survey were doubtful. Over half (60%) said their concerns are only sometimes shared with authorities or the public, and (7%) said this never happens. Even when issues are raised, most (73%) felt that it rarely leads to real change. Only 13% said they had seen regular or meaningful action in response to their concerns (see Figure 1 and Figure 2).

A male leader from the Aymara community of Corpa said, "We shouldn't depend on the authority of the municipalities. Each community has to be resilient". Tacana men expressed similar frustration about the government's slow and limited response. "After a month or two, they finally show up—just to make a list," one man said. Echoing a broader sentiment of neglect, an elderly woman from Corpa added, "We don't know why we as Indigenous people are always forgotten."
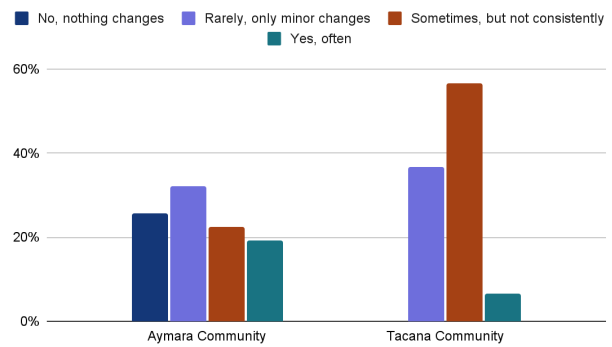
Figure 1: Communities do not believe that concerns are widely shared with decision makers

Figure 2: Communities do not believe that sharing concerns leads to action

Survey Question: Do you think the concerns and ideas expressed by your community about disasters and challenges (e.g., drought, fires) are shared with decision-makers or the public?

■ No, they are not shared at all ■ Rarely, only in specific cases
■ Sometimes, but not enough ■ Yes, they are widely shared and considered

Survey Question: Have you ever seen your community's concerns lead to action or change?

■ No, nothing changes ■ Rarely, only minor changes ■ Sometimes, but not consistently
■ Yes, often

Indigenous communities use traditional knowledge to predict and prepare for disasters

Because official early warning systems are often unreliable or difficult to access, many Indigenous communities continue to rely on ancestral knowledge and traditional practices to prepare for disasters (see Figure 3 and Figure 4). This traditional knowledge gets passed down through generations and is based on environmental "natural indicators" that help predict weather changes.[6] These systems have their roots in oral tradition, astronomy, and ritual practice. Communities look for signs in nature—from the sun, stars, animals, and seasonal ceremonies—to anticipate risk. For example, people use bird song, the sun's position, and animal behavior (like the howling of the fox) as important indicators. As women in Aymara and Tacana communities explained, "When it's going to rain, the moon hangs low," and "Drought? You can tell from the sun."

---

[6] Practical Action (2024), "Proponen un sistema de alerta temprana que incluya saberes ancestrales e indicadores naturales". Accessed on 25 April, 2025, https://latam.practicalaction.org/proponen-un-sistema-de-alerta-temprana-que-incluya-saberes-ancestrales-e-indicadores-naturales/; Beltrami, S., (2019), "Ants, bird eggs and fox calls: Ancestral knowledge helps communities predict the weather and prepare for disasters", World Food Programme. Accessed on 25 April, 2025, https://www.wfp.org/stories/ants-bird-eggs-and-fox-calls-ancestral-knowledge-helps-communities-predict-weather-and

Figure 3: Traditional practices are used by communities to prepare for or respond to disasters

Survey Question: What specific traditional practices does your community use to prepare for or respond to disasters?
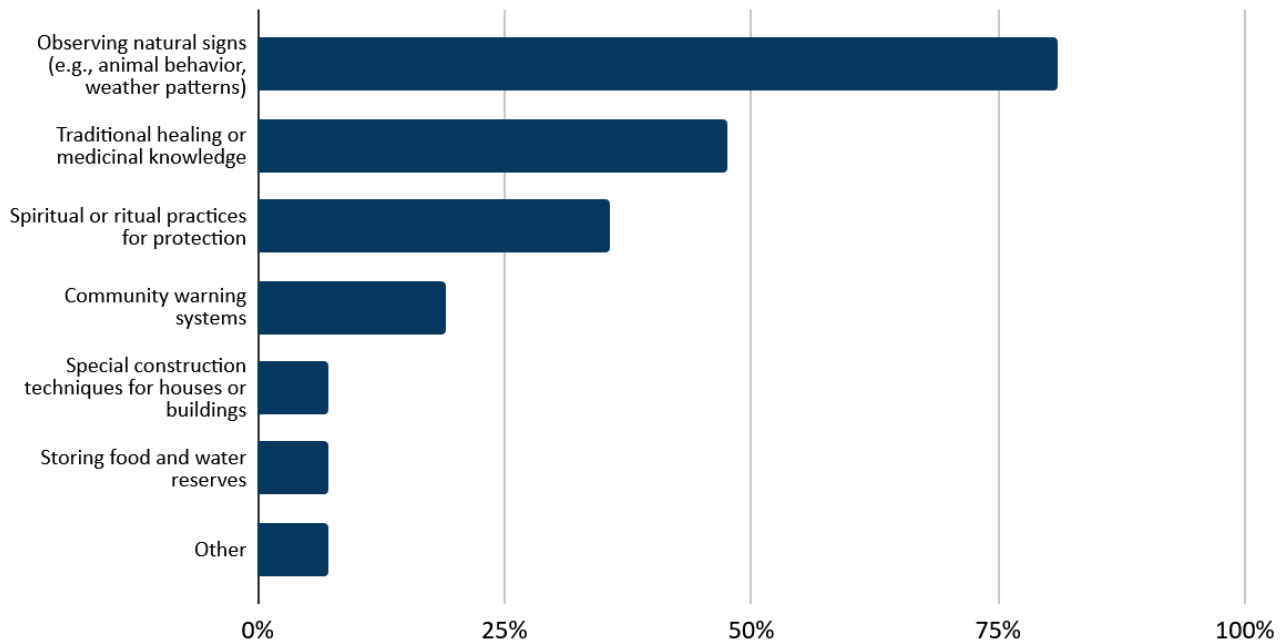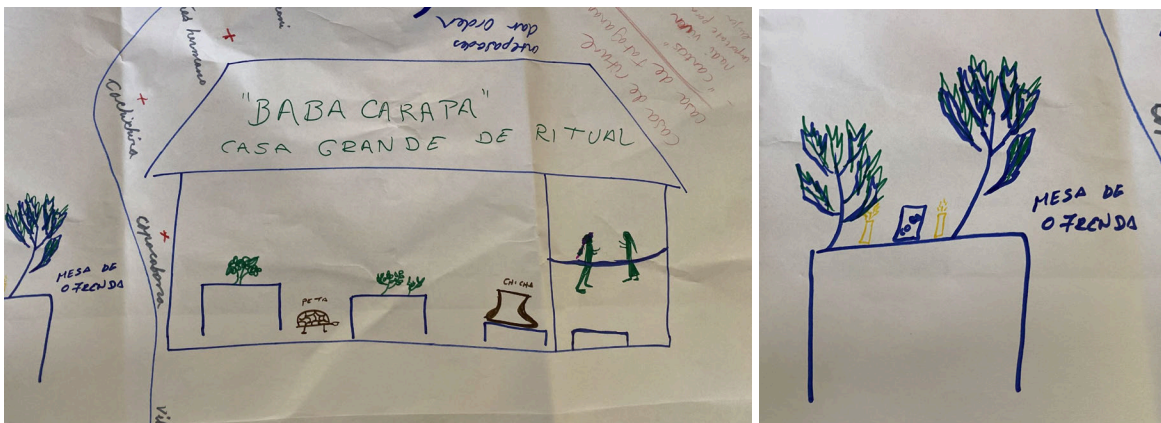
Figure 4: Traditional spaces, like the "baba carapa" (translation: the big house where rituals are performed) where members of the community gather to carry out spiritual and ritual practices to influence the weather and call for protection

Along with reading signs in nature, other forms of traditional knowledge for preventing environmental disasters are widely respected within Indigenous communities. In Aymara communities, Indigenous leaders described doing collective community dances when communities sow potatoes. In Tacana areas, local leaders called *corregidores* have long played a key role in managing fire risk. Families carry out controlled burns (*quemadas*) between August and November, working with the *corregidores*. They say that there are problems when non-Indigenous settlers do not respect their customs and burn agricultural land without warning or control, using slash-and-burn methods (*chaqueo*) that can lead to wildfires. Tacana men

7

emphasized that their controlled burns are safer: "They don't know how to burn the land safely. We know how to do it safely, but they don't." Another man explained, "We warn everyone before we burn; they don't. That's why everything burned."

Indigenous communities have noticed that climate change is affecting their traditional practices and natural indicators. These natural indicators, like animal behavior and patterns in the sky, don't follow the rhythms they used to. Rainfall and planting cycles have become unpredictable, and younger generations are less likely to rely on ancestral knowledge.

Aymara women shared that some traditional signs do not make sense anymore. For example, the howl of the *qamach jach'a* (fox) used to signal the planting season: "If it howls in November, it signals the time to plant. When it howled in June, the sign was deeply confusing. That never happened before," one woman said. Still, many believe that "our natural indicators still work—just at different times." Communities are asking for help to study and confirm the natural indicators they have used for generations.

Leaders also emphasize the importance of recording these indicators in the Aymara and Tacana languages as part of EWS. One Aymara *mallku* explained, "Our ancestors spoke well Aymara, but this generation is slowly forgetting this, the youth and the women don't talk well Aymara, and also can't really express themselves well in Spanish, so… that is where we are at, the Aymara language has a richness and lexicon that we are forgetting, and it is in this where the natural indicators are also being lost, because our ancestors had the capability to guide us in the agriculture and the holding of animals, and could predict hail, frost and excess rain".

Indigenous communities want inclusive terminology about disaster risk

Indigenous communities ask for early warning systems to use language that expresses the full impact of disasters, not just on people but also on animals, plants, and the environment. They feel that official definitions of disaster and related risks, like those in Bolivia's Ley de Gestión de Riesgos (Law No. 602), are too narrow and technical. "They write the definition, but it doesn't include the effects. That's not enough," said one person. Aymara women added that risk terms, "[have] to include how it affects our animals." For example, elderly women in Corpa described frost (Spanish: *helada,* in Aymara: *juyphi*) was defined by elderly women in Corpa as: "the most damaging phenomenon for agriculture in the rainy seasons, the frost affects the seedlings and the feed of the animals."

Many of the technical disaster risk terms used by the government, other organizations, and in official laws about disaster risk are confusing or don't make sense to Indigenous communities. A leader from Corpa explained, "Some definitions… may be a little complicated because they're quite technical." For example, the word "resilience" (*resiliencia*) could only be translated into Aymara as *pachata arxatiri*, which means "living

in harmony with mother earth" — a very different idea. In Aymara, the word *jark'a* expresses danger, sadness, or worry, but it doesn't mean "climate change". Other abstract terms can't be translated literally. "Risk perception", for example, is translated into Aymara as *chijita lup'ikipaña* and means: "how to neutralize problems".

Because many of these concepts don't have direct translations, participants emphasized that it is important to test terms about disaster risk and early warning systems through spoken language. They need to connect emotionally and culturally, not just be borrowed from Spanish or based on Western concepts of risk and loss. And since many people who understand Tacana or Aymara don't know how to read or write it, oral communication is very important. "Before, all was oral. Education was passed down from generation to generation", said a woman from Corpa.

Indigenous communities want training in disaster preparedness

Although Indigenous communities use traditional knowledge, they are also open to learning modern and technological ways to prepare for and respond to disasters. Over half of the people (60%) said they want training on disaster preparedness and response (Figure 5). "Teach us what these words mean," said women in Corpa, referring to technical terms in Bolivia's disaster laws that they don't fully understand. People in both Tacana and Aymara communities said that traditional knowledge and modern tools can work well together. Aymara leaders, for example, said they would like to use mobile phone applications that give accurate weather information.

Figure 5: Communities would like training and other support and knowledge to better prepare for disasters

Survey Question: What kind of support or knowledge would help your community better prepare for disasters?
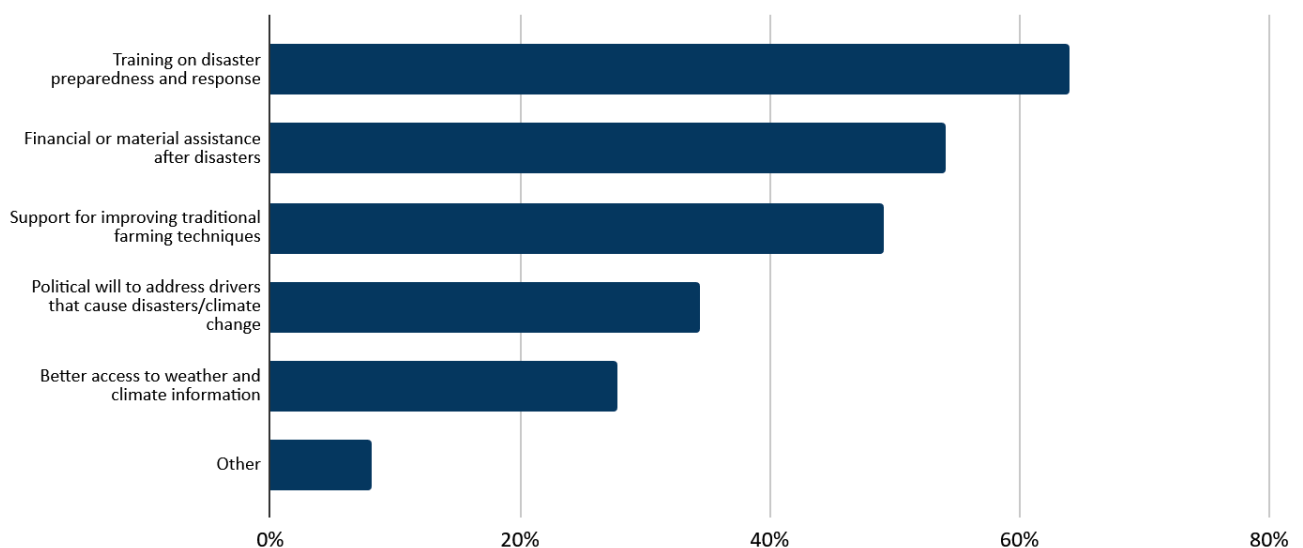
Language and communication online map

CLEAR Global with Practical Action created this interactive map to help decision makers better understand how language, risk, and communication intersect in Bolivia, especially in Aymara and Tacana communities.

The map visualizes data on language distribution, population density, and risk zones. It integrates multiple data sources, including:

- **Risk Zones (2002):** Identified by the Unidad de Ordenamiento Territorial del Ministerio de Planificación del Desarrollo. Link

- **Families Affected by Rain (2024):** Reported by the Viceministerio de Defensa Civil. Link

- **Language and Disaster Preparedness Survey (2025):** Conducted by CLEAR Global between February and March 2025.

- **Population and Language Density (2012):** Based on the Bolivia Population and Housing Census at the municipal level. Link

- Historical Recurrence of Flooding at the Community Level 2002-2023. Link

- Historical Recurrence of Droughts at the Community Level 2002-2023. Link

- Historical Recurrence of Fire at the Community Level 2002-2023. Link

- Historical Recurrence of Frost at the Community Level 2002-2023. Link

- Historical Recurrence of Hailstorms at the Community Level 2002-2023. Link

Users can turn different layers on and off, zoom into municipalities, and explore detailed local information. The map also links to a dashboard that shows key findings from the 2025 CLEAR Global survey.

This tool helps improve disaster preparedness, make communication more inclusive, and support more informed planning for emergencies and development.

Note: *The map screenshot below is **just an example***. *To use the real, interactive dashboard, click here. If you need help using the dashboard, you can find easy-to-follow instructions here. A dashboard with more detailed results of the surveys conducted with Aymara and Tacana communities is also available here.*

Bolivia Language Map
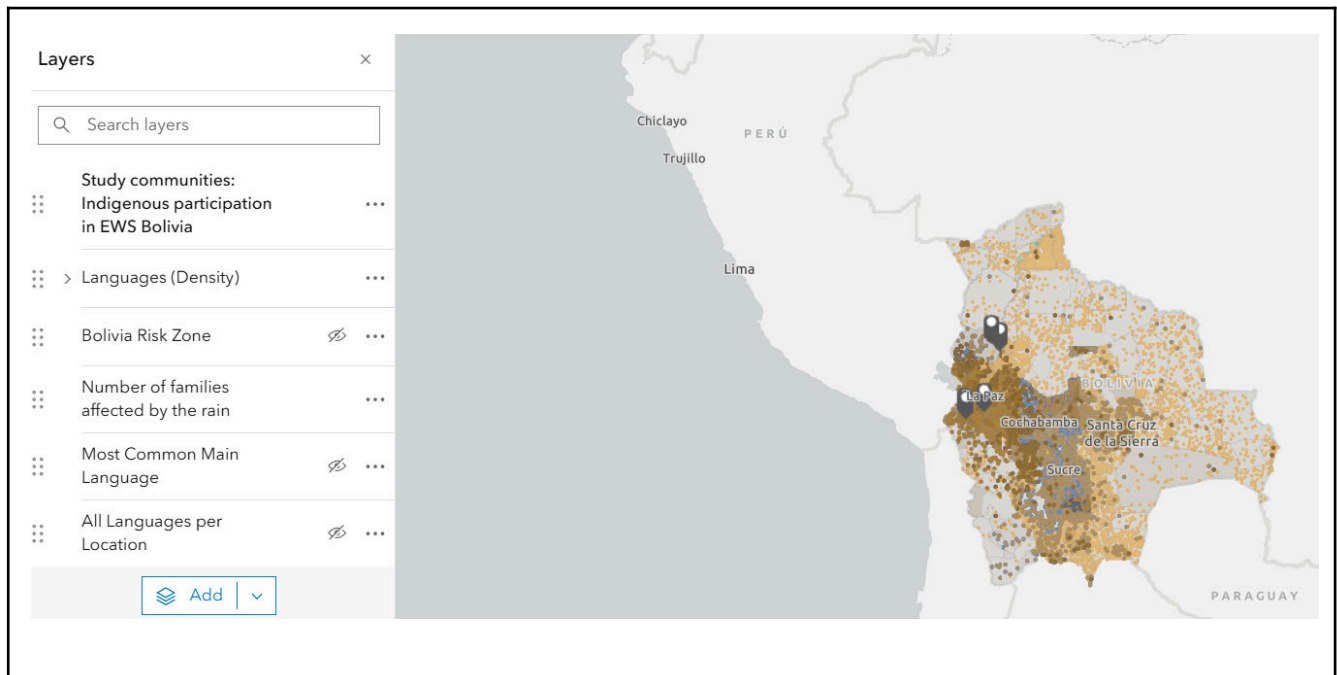
Strengthen communication methods and platforms used and trusted by communities

Effective communication is crucial to help communities stay informed, prepared, and able to respond to emergencies and disasters. To improve this, it's important to build on the communication tools and platforms people already use and trust.[7] These include local leaders, community networks, and media that is familiar. Information can reach more people in a way that feels reliable and accessible through trusted platforms. This builds trust, encourages people to act, and supports more resilient communities. During a crisis, people are more likely to understand and act on messages that respect local culture, language, and ways of sharing knowledge.

Indigenous leaders play an important role before, during, and after emergencies

Indigenous leaders are key figures in helping communities prepare for and respond to disasters. They share important information, raise awareness about disaster risks, and organize local responses. For example, in Tumupasa a radio journalist working for the Tacana Indigenous People Council (CIPTA) said, "I get alerts from the Capitanía and SENAMHI, which I pass on to the communities." He does that via radio and the CIPTA WhatsApp groups. Community leaders then use WhatsApp groups to communicate with *corregidores* in different villages. They then use traditional ways to alert their communities: they ring bells in churches and other community institutions, (*campanas* in Spanish), blow horns (*cuernos* in Spanish, *pututus* in

---

[7] UNISDR (2017), "A Public Communication for Disaster Risk Reduction". Accessed on 25 April, 2025, https://www.preventionweb.net/files/52828_apubliccommunication[1].pdf

Aymara), and hold meetings (*asembleas* in Spanish). "There's a sound for emergencies, one for mass, and another for funerals," explained a woman from Tumupasa. In Aymara communities, *Mallkus* share information via WhatsApp.

In Indigenous communities, traditional healers, spiritual leaders, and elders play an important role in helping people to understand and manage environmental risks. In Aymara cosmology, for example, hailstorms are a sign of imbalance. When this happens, a *yatiri* (spiritual healer) performs a ritual. "During droughts, they climb the hill, fasting and praying for rain," said a man from Corpa. Elders also pass down knowledge through storytelling: "My grandfather was a '*tatajana*', he knew how to observe the cosmos. We watched for the start of the rains, and whether the stars arrived early or late," said a woman in Tumupasa. Elders emphasized how important it is to keep this tradition alive. "Every elder who dies takes knowledge with them, and once they're gone, it's lost forever," said a woman from Corpa.

Survey results confirmed this: communities mainly share traditional knowledge about natural indicators through elders and leaders (53%), oral storytelling (43%), and community meetings (26%). Elders recalled a time when communities depended on local healers and mutual aid, before government support existed. There is a strong tradition of resilience among communities. Community leaders said they would like to strengthen leadership during and before emergencies and create clear communication pathways and plans in local languages.

Women share traditional knowledge on natural indicators

Women often play a key role in preserving and sharing traditional knowledge to children and others in the family and community. Women harvest medicinal plants (Figure 6), cook, herd animals, farm, and spend time in communal spaces. Through these routines they observe nature and interpret signs from their surroundings. They pay attention to the behavior of birds like the *guajojó*, *mauri* (owl), and *pico,* which are seen as signs of danger, death, or heavy rain. "We women are always observing. Men are working, but we notice when the *ambaibo* tree flips its leaves — that means rain is coming," said an elderly woman from Tumupasa. Another added, "When the *guajojó* sings, it sounds like crying. It means something bad is coming." Men spend long hours fishing, hunting, or working on the land, where mobile signal is often weak or non-existent, far from signal towers or village centers. Women more often have better mobile reception in the villages/towns where they live.

Figure 6: Women in Tacana communities often share information about natural indicators when gathering medicinal plants
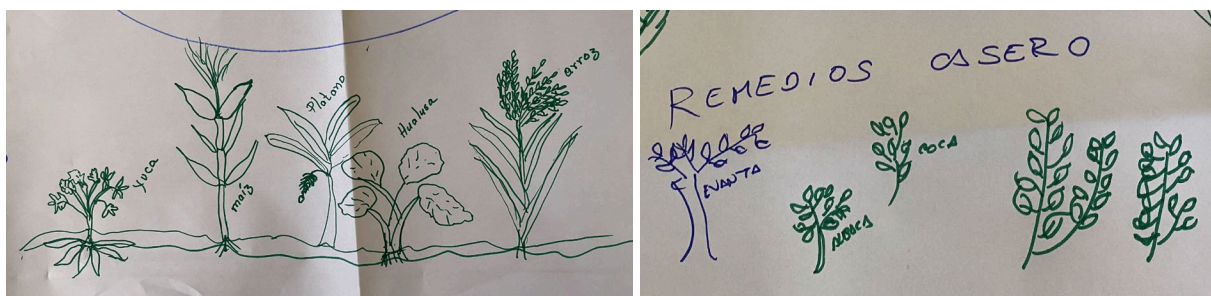
Women say they often share the signs they observe casually, during everyday tasks like making *chicha* (a fermented drink made of maize) or while eating with close friends. "We don't tell the whole community — just the people close to us," one woman said. In Indigenous communities, particularly in Tacana communities, people learn about changes in the weather and risks from community leaders and within families (Figure 7). Local languages like Tacana and Aymara are key in these conversations. They are mainly used in community spaces, like at markets, meetings, and gatherings (67%), at home (36%), at work (30%), and during religious or cultural events (28%). However, these languages are used far less in formal spaces. Only 15% report using Aymara and Tacana in education, and just 4% in digital spaces. Language use is closely linked to community and cultural identity. Most people (78%) say they learned additional languages through family and community and 46% say they speak them because of cultural identity.

Figure 7: In Tacana communities traditional practices are often shared in family settings or via oral storytelling
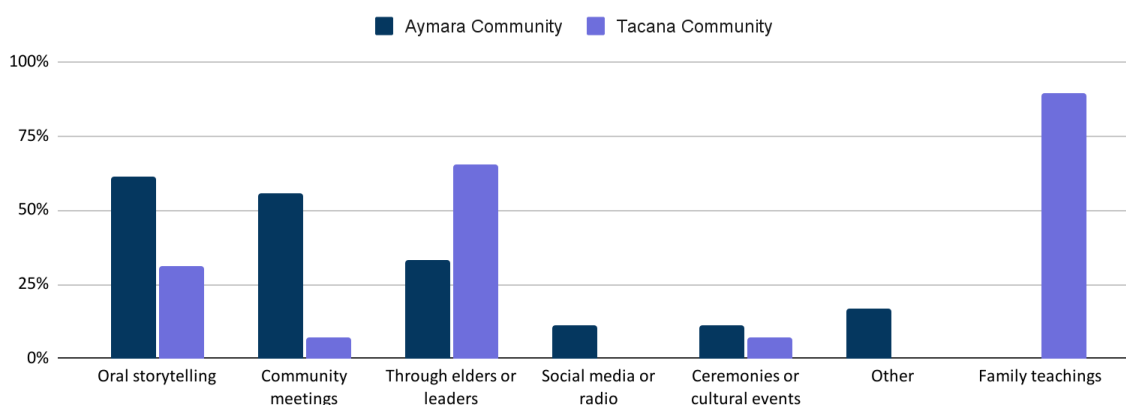

Modern tools help share risk information

Indigenous communities also use modern tools to get information about disasters and emergencies. In the last six months, people reported getting updates through the news, radio, and internet. Apart from community leaders (30%), the most common sources of information before an emergency are the news (33%), social media (19%), NGOs/humanitarian agencies (10%), friends and family (10%), and government agencies (1%). When disasters like floods or droughts happen, more than half of people prefer to receive information through mobile phone calls (52%), word-of-mouth (33%), radio broadcasts (20%), community leaders (16%), and instant messaging apps like WhatsApp and Telegram (12%). Leaders in Corpa also said

they would like to have access to a mobile application for weather forecasts.

Figure 8: People received information about disasters and emergencies from news, radio, and the internet as well as community leaders

Survey Question: In the last 6 months, from whom have you received information or communication about disasters or emergency?
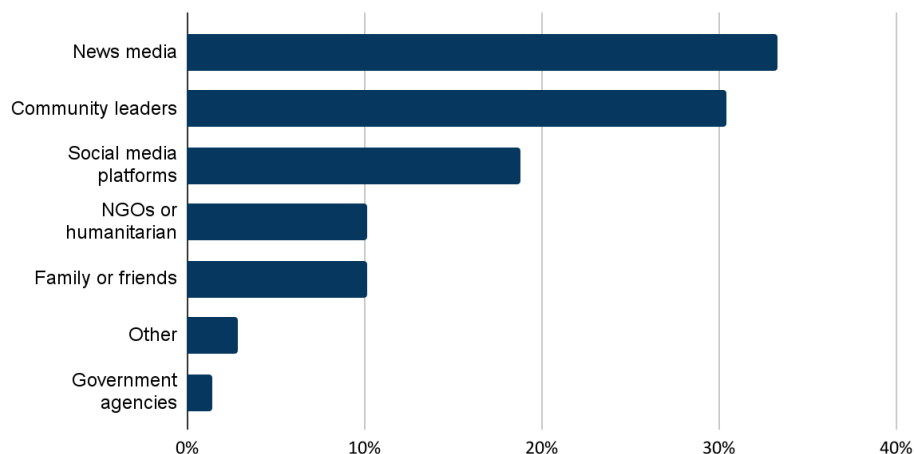
Preferences varied notably between communities (see Figure 9). The Aymara tend to prefer mobile calls, radio, SMS, and instant messaging. In contrast, Tacana communities (who often have less reliable mobile phone networks and digital platforms) relied more on face-to-face communication. Just under half—47%—prefer word-of-mouth communication and 21% turn to community leaders, and mobile phones.

Figure 9: Aymara and Tacana communities prefer to use different channels during an emergency phase

Survey Question: What type of (information) channel would you like
to use during an emergency phase, like flooding or drought?
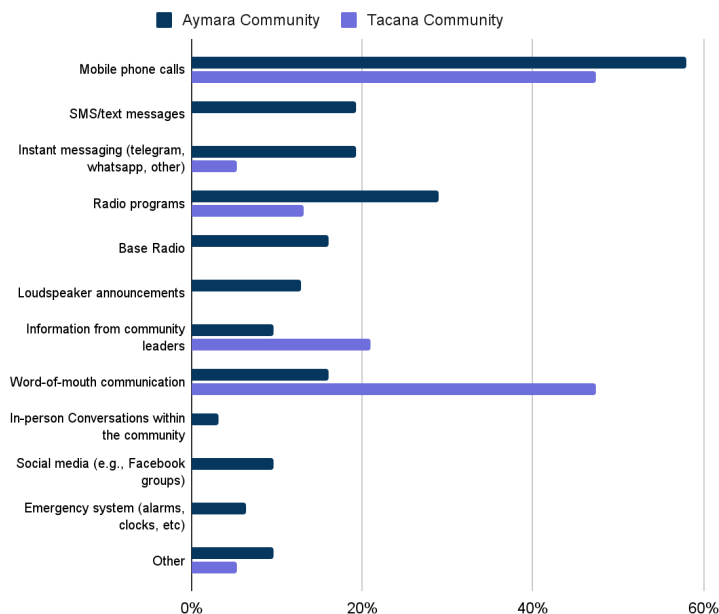
The highest Indigenous authorities, in collaboration with other community leaders, manage active WhatsApp groups to stay connected with leaders from nearby villages. These groups are very important for quickly sharing updates about the environment, and warnings during emergencies like floods. "We have a WhatsApp group of *corregidores* from each community," explained an Indigenous woman in Tumupasa who helps with risk planning. In the Tacana area, some schools also use WhatsApp to contact families during emergencies. More and more young people are using WhatsApp, Facebook, and even TikTok to communicate with their communities.

Social media is also helping Indigenous communities to advocate for their causes (Figure 10). In the Tacana territory, a communications officer for CIPTA shares posts on Instagram and Facebook. "Communities send us images of what is happening, and we share it with the world," the officer said. The goal is to get the attention of the authorities and NGOs. "Sometimes the government only responds when we make noise online," said a male radio journalist from Tumupasa. Social media like WhatsApp and Facebook help put pressure on authorities, but informal alerts aren't always reliable and easy to use. Information doesn't always reach everyone on time.

Figure 10: Tacana communities share disaster information with audiences via Instagram
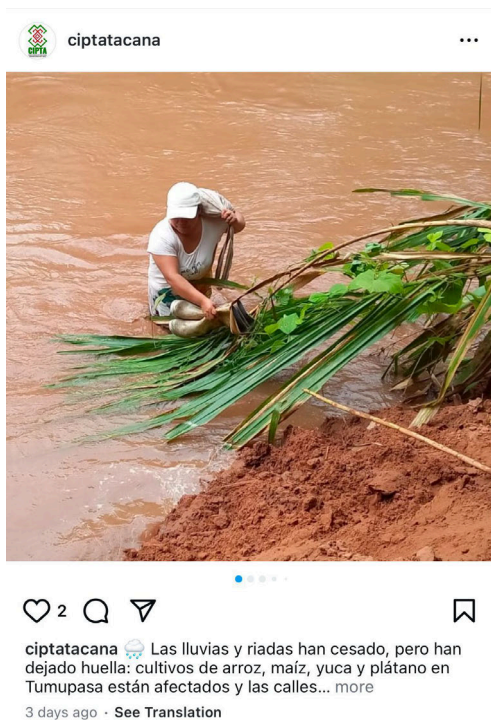

Adapt in order to close communication gaps

To reach everyone, communication methods need to match local needs. People of different ages, locations, and genders access information in different ways. In remote areas with little or no phone signal, word-of-mouth, community leaders and meetings are still the main ways to share news. Younger people, especially in connected areas, tend to use WhatsApp and Facebook. Men and women may also prefer different ways of getting information.

Some communities can't access digital tools

In remote riverine communities in the Tacana territory, there is no mobile signal, so people can't use phones or the internet (Figure 11). Messages are delivered by boat, but fuel shortages driven by Bolivia's foreign currency crisis have made travel slow and difficult. "Only by boat or canoe can you reach these places," said a *corregidor*. VHF/UHF base station radios "were once used to communicate, but antennas failed, and authorities often didn't respond". A man recalled, "When the water rose over two meters, they had to shut down the antenna. There was no more signal." Leaders now have to make long and expensive trips to Rurrenabaque to send or receive updates. "Sometimes we don't hear from them for weeks."

Figure 11: A map drawn by Tacana men highlights communication challenges of remote riverine communities
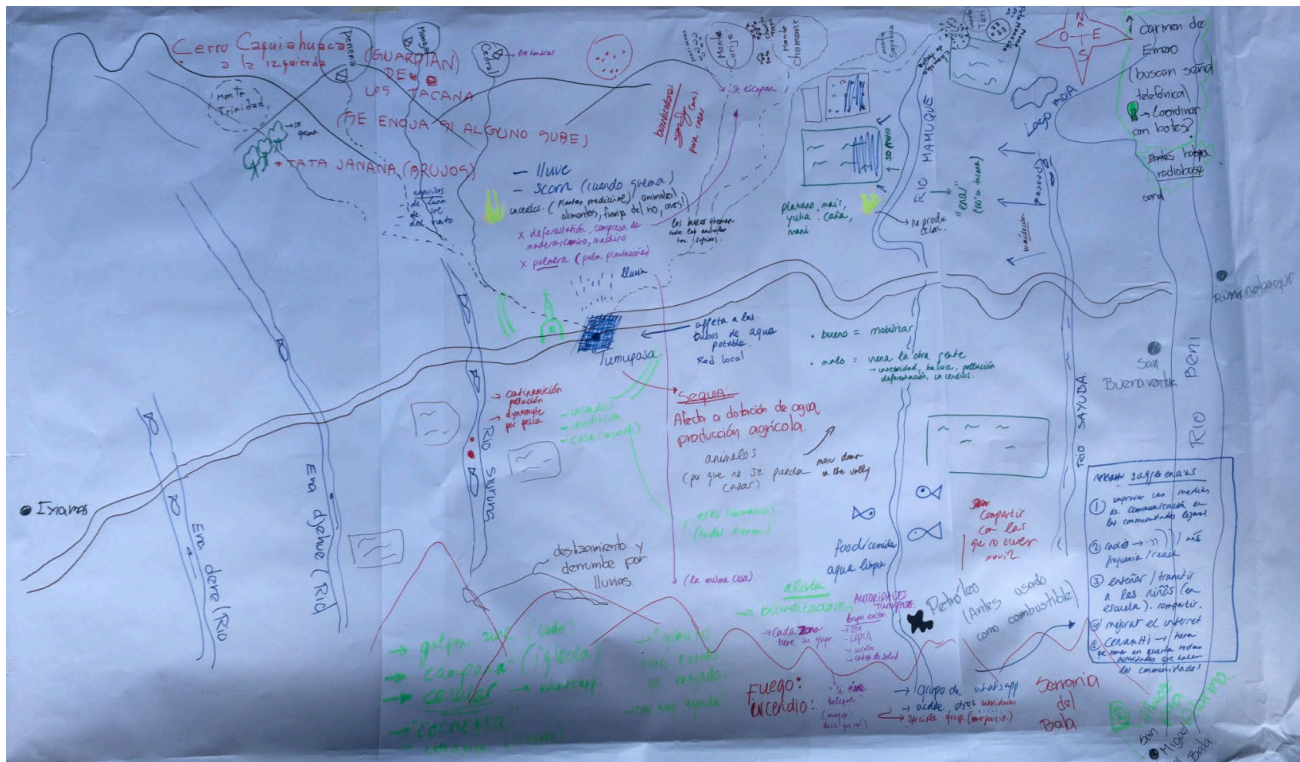
Women, particularly older women, don't have access to digital technologies. "Older women don't understand how to use them", older women in Corpa said about mobile phones. The same is true in the Tacana zone. Our survey also found that 16% of women—mostly older—had some difficulty reading. This shows that early warning systems need to work for people who do not read well or use digital devices.

To reach people without mobile phones, residents of Tumupasa and Corpa want emergency information shared over the radio, ideally through a local community station that broadcasts in Spanish, Tacana, and Aymara. "That radio has to work again. Even if it doesn't get reports from far away, it's important to alert people," said a man from Tumupasa. There is already a station but it struggles to stay on air because of a lack of funding and staff. One person runs it while also managing CIPTA's social media. In the Aymara community, leaders running a community radio station emphasized that it's important to share information in Aymara for older listeners, and in Spanish for younger ones. They also said radio is important to keep the language alive: "we need to revitalize Aymara on the radio."

Communities have different language needs

Information about disaster risks needs to be shared in the local languages that people actually use. In Aymara communities, Aymara is still widely spoken in daily life (Figure 12), especially by elders and during ceremonies, markets, and gatherings. It is central to *educación* (education), *costumbre* (custom), and *valores* (values). "The Aymara language has a deep connection to our culture, our customs, our values — it's all one", said a woman in Corpa. "We must protect it — it is inclusive, oral, and full of meaning". However,

17

younger generations are using it less. Many children understand Aymara but respond in Spanish ("they want to talk, but it is difficult to pronounce and vocalize Aymara", says one woman in Corpa). Discrimination, limited access to opportunities, and past punishment have made some people ashamed to use Aymara, especially in public. "When the Spanish came to the Americas they did not know how to speak Aymara, they spoke Spanish, and for our brothers and sisters, the Conquista was very violent, and they were discriminated against a lot, they considered our ancestors as beasts, they dominated them for more than 500 years, and because of that, the sisters and I we suffered as children, and I don't want the same for my children, that they suffer because they don't know how to speak Spanish, that is what we were thinking", says an elderly woman.

Figure 12: In Aymara communities, young people want information in Spanish, while elders prefer Aymara and Spanish

Survey Question: Which language does your household prefer?
(Aymara communities)
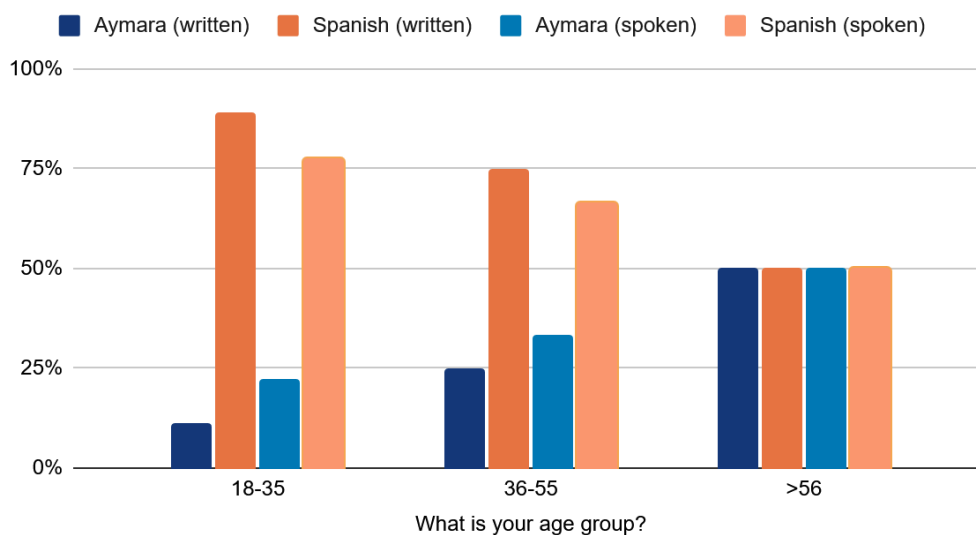
In Tacana communities, most people prefer to receive information in Spanish. Some older adults understand spoken Tacana, but many can't read it. One elderly man from Tumupasa explained, "Older people can understand the words if you read them, but they can't explain or correct them. Young people know the letters but don't grasp the meaning." However, the Tacana language is very important for maintaining local traditions, legends and stories. Because of this, some Tacana leaders want key EWS terms and natural indicators to also be shared in Tacana.

How well people understand or read different Indigenous languages differs from place to place. It is important to consider this when developing early warning systems. For example, in Aymara-speaking communities, language preferences differ: in Corpa 44% prefer Aymara, but in Jesús de Machaca 92% prefer Spanish. In Tacana areas, Spanish is more common. Everyone in Tres Hermanos chose Spanish, and only 7% in Bella Altura chose Tacana. It's also important to consider local dialect differences. In Aymara, for

example, the word for "fox" changes across regions (*qamach*, *lari*, *tibula*). Using the right terms ensures everyone understands across different regions and communities.

Older generations, especially in Aymara communities, are more likely to speak and understand Indigenous languages. Younger people use more Spanish. This is the result of years of discrimination and a school system that prioritized Spanish. In our survey, almost no one under the age of 56 reported speaking Indigenous languages. One woman from Corpa explained, "When I was in school, teachers would beat me if I spoke Aymara." Because of this history, many parents encouraged their children to learn and speak Spanish, especially because many children move from Indigenous communities to cities like La Paz and Cochabamba for work or study. Losing Indigenous languages is seen as both a cultural and ecological vulnerability.

Testing Disaster Risk Terms in Aymara and Tacana Communities

CLEAR Global and Practical Action worked together to create a glossary of disaster risk reduction (DRR) terms in two Indigenous languages spoken in Bolivia: Aymara and Tacana. To test and improve the glossary, we organized focus group discussions in March 2025, in Corpa with Aymara speakers and in Tumupasa with Tacana speakers—to assess understanding of abstract and potentially unfamiliar DRR-related terms. We also interviewed members of local language councils.

The glossary includes about 50 key concepts related to disaster risk, taken from Bolivia's Ley de Gestión de Riesgos (Law No. 602), the Lloyd's World Risk Poll, and other sources. Each term, with definitions available in English and Spanish, was translated into Aymara and Tacana. Community members checked the translations to make sure the meaning was clear.

The goal was to see how well people understood terms used by government and humanitarian organizations. Participants shared the meanings, emotions, and associations they attached to the terms and their preferred wording. Although the original plan was to test just 15 words, people were so engaged that they discussed almost all of the words.

The results showed that many of the technical DRR and climate-related terminology, like *risk reduction*, *resilience*, or *climate adaptation*, was difficult to understand. People usually related terms to real-life situations, like losing crops or animals, not to abstract ideas. For example, people usually understood *recuperación* (recovery) as related to recovering from illness, not from a flood or disaster as used in the context of DRR.

People said they preferred simple language, familiar words, and clear, descriptive explanations. This shows how important it is to communicate in ways that fit the local culture and language when talking about disaster risks.

See the Aymara glossary as a table or as a PDF.
Link to Tacana glossary as a table or as a PDF.

Engage young people in creative ways

It can be hard to get young people involved in early warning activities. Many are busy with work, not very interested, or don't see how it benefits them. One young leader from Tumupasa said, "It's mostly the elders who participate… there's very little involvement from the youth." Many feel there are few relevant projects, and a lack of motivation to organize them. Young men support their families and emphasize the need for job opportunities. Young women want more livelihood education. Many young people leave the communities after graduation or marriage to look for work, so "they don't have time for activities without pay."

To get young people involved, creative approaches that are relevant to local communities are needed. For example, many young Aymara people work in La Paz and come home at the weekend, so sharing messages on the radio or TV in El Alto (La Paz) could be effective. Involving more local female leaders—like those from Consejo Indigena de Mujeres Tacana (CIMTA; women leaders associated with CIPTA)—could encourage more young women to take part. Offering training in social media, video production, and radio could also be more appealing. Topics like livelihoods and education are important to young people, especially girls, who are interested in groups with female role models. It is also helpful to use the right communication channels: both women and men prefer to get information through community radio and digital media, but women especially prefer information through social media and instant messaging apps (Figure 13).

Partnering with schools that already teach about disaster preparedness could also help involve more young people. Radio shows should also make early warning messages in an entertaining format. Women in the Tacana territory suggested using oral stories, *telenovelas*, and children's stories with music to share important information.

Engage young people in creative ways

20

Figure 13: Women like to receive information in a different way than men

Survey Question: How do you prefer to receive information about disaster risks?
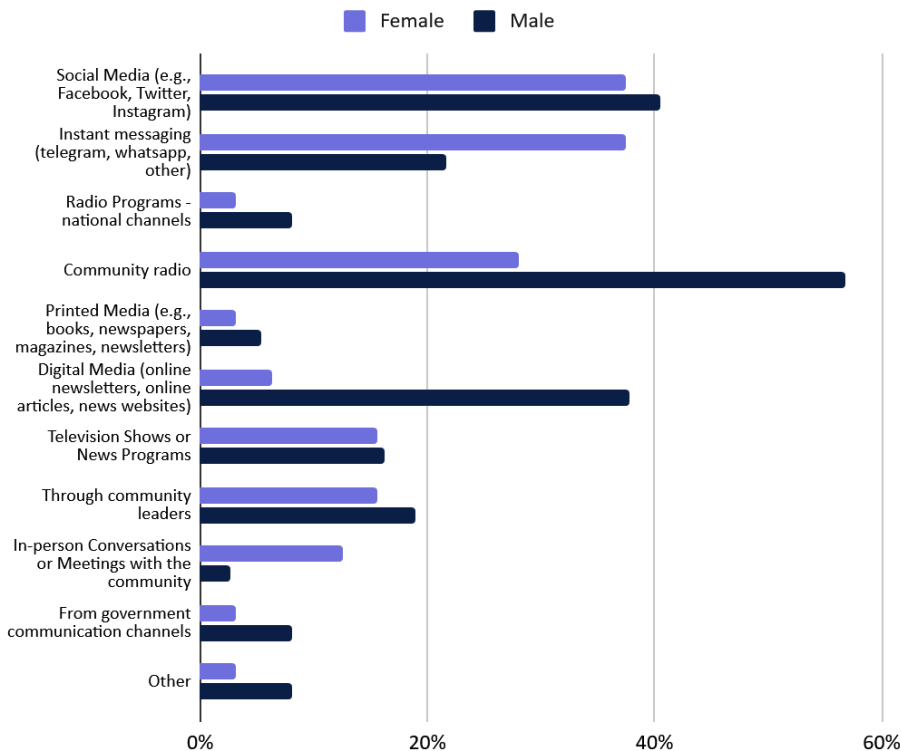
Communities ask for long-term support

Indigenous communities say that building real resilience means more than just sending warnings. It must include support for land rights, steady incomes, and keeping culture alive. Short-term aid often misses the root causes of vulnerability like poverty, the lack of jobs, and young people leaving the community. "As leaders, our role is to protect and nurture our communities, ensuring that everyone can live well. We are the protectors of nature and our territory," said women from Tumupasa.

People in both Aymara and Tacana communities say that alerts should come with practical, long-term support. For example, an elderly man from the Tacana territory said they need a place to dry seeds during floods to prevent waste. Women in both Aymara and Tacana communities also want training on how to market their crafts better, both online and in traditional markets.

Communities say they need long-term support to keep bilingual community radio stations running, especially in remote areas. This includes help with fuel, solar batteries, and staffing. "The station has to be working, although we won't suddenly receive reports from there, but it's important to warn them now, right? To suggest, to tell them, well, we have to prepare, the rainy season is coming", said men in Tumupasa. They also suggest that the government or NGOs help fix and restore VHF/UHF base station radios in places with no phone signal. To keep these stations going, communities need support to help get proper licenses

and funding. Many of these stations have very few resources. Working with the Instituto Plurinacional de Estudio de Lenguas y Culturas (IPELC) can also help. IPELC supports Indigenous language education and could help share trusted information in Aymara and Tacana through local radio, as well as help produce songs and digital learning materials.

How CLEAR Global can help
CLEAR Global's mission is to help people get vital information and be heard, whatever language they speak. We work with partner organizations to help them listen to and communicate clearly with the communities they serve. We translate messages and documents into local languages, create audio and picture-based information, train staff and volunteers, and give advice on two-way communication. We also help test and improve materials to make sure they are easy to understand and effective. We also develop language technology solutions that work for communities. Our work is based on research, language studies, and learning about the communication needs of different communities. We also offer training on how to communicate clearly in emergencies and how to use plain language. For more information visit our website or contact us at info@clearglobal.org.

Acknowledgments