# Field Visit Report

## IMPACTS OF CHANGE FOR CHILDREN'S EDUCATION TECHNOLOGY PROJECT IN THE BOSAWÁS REGION, NICARAGUA.

**JULY – AUGUST 2023**

Report Published: March 2025

Change for Children

60 million girls

# Acronyms and Definitions

**60MG:** 60 Million Girls Foundation

**BOSAWÁS:** UNESCO Cultural Heritage Site and Biosphere Reserve in North-Central Nicaragua

**CFC:** Change for Children

**CNU:** National Council of Universities

**FIT:** Fund for Innovation and Transformation, Global Affairs Canada

**GR:** Girl Rising, an International NGO, with a Branch Office in Guatemala

**GTI:** Indigenous Territorial Government

**GTI–MITK:** Indigenous Territorial Government of MITK (Miskito Indian Tasbaika Kum)

**MINED:** Ministry of Education of Nicaragua

**MINSA:** Ministry of Health of Nicaragua

**MLL:** Mobile Learning Lab

**MOOC:** Massive Open On-Line Course

**RACHEL:** Remote Area Community Hotspot for Education and Learning - a server that can connect individual devices to a digital library of resources

**SRHR:** Sexual and Reproductive Health and Rights

**UALN:** Nicaragua Online University

**URACCAN:** Universidad de las Regiones Autónomas de la Costa Caribe Nicaragüense (University of the Autonomous Regions of the Nicaraguan Caribbean Coast)

**WIMPA:** GTI–MITK Women's Organization

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# Introduction

The **60 Million Girls Foundation** (60MG) and Change for Children (CFC) have built a collaborative partnership over the past decade. This partnership has supported two projects in Nicaragua focusing on improving access to education and technology with the Miskito communities[1] in the Bosawás region. The first project funded the building of two schools in 2015, while the second collaboration was implementation of a technology–for–education project in 2021.

This second project built upon a successful pilot project funded by the Canadian Government Fund for Innovation and Transformation (FIT) in 2020. In 2021, **60MG** partnered with CFC to launch the "Technology Project for the Improvement of Learning and Education in the BOSAWÁS Region of Nicaragua" (TILE). This initiative brought 60MG's innovative Mobile Learning Lab (MLL), essentially a solar-powered offline digital library (RACHEL), to three schools in the region. The project also provided teacher training on effectively integrating technology into classroom instruction and workshops on gender awareness.

In July 2023, two 60MG volunteers, Josiane Farand and Naheed Rizvi, alongside CFC representatives, embarked on a field visit to the Bosawás region of Nicaragua. The purpose of the visit was to gain an understanding of the impact of the TILE project in the participating communities. This report[2] was done based on informal interviews with local partners, project participants, educators and students and data from reports prepared by CFC, FIT and an external evaluator (See references).

*L'Art de Capter – Josiane Farand*

Data was gathered on five key areas:

1. **Technology functionality:** This assessed the condition and reiability of the technology.
2. **Technology adoption:** This evaluated how the technology was being integrated into classrooms and perceived by the wider education community.
3. **Digital library content use:** This examined how teachers and students utilized content available on the MLL units.
4. **Impact of workshops:** This explored the influence of workshops on gender awareness, sexual and reproductive health rights (SRHR), and related content found on the MLL on attitudes and behaviors.
5. **Climate change:** This aimed to gain an understanding of the Bosawás communities' experiences and strategies for coping with the effects of climate change.

Interviews were conducted in both Spanish and Miskito, the local Indigenous language, and subsequently translated into English.

# Collaboration & Cooperation

CFC and the Miskito communities have built a strong and mutually respectful partnership over time. This collaborative approach allows them to work together to identify and implement solutions that directly target the specific needs of the communities. Both CFC and Miskito leaders share a commitment to innovation, which fuels their efforts to drive the communities' development.

# Technology Functionality

## SOLAR PANEL INSTALLATION

From 2020 to 2021, seven schools in the Bosawás Indigenous communities installed solar panels as part of the MLL. **Phase 1** of the pilot project was funded by FIT-GAT in four schools, and during **Phase 2**, **60MG** supported the implementation in three more schools. The installation involved the dedicated efforts of the project team (see **Annex 1** for team members). This team managed the entire process, from pre-planning to installation as well as troubleshooting any issues that arose.

**Technosol,** a local supplier, played a crucial role by providing a turnkey solution and ongoing remote support which significantly facilitated the project's implementation. The installed panels, with outputs in **Phase 1** of 370 watts with eight solar panels and in **Phase 2** of 400 watts with six solar panels per school, have been mounted on reinforced school roofs and have a projected lifespan of 15 – 20 years. Regular cleaning ensures optimal performance, and after two years of operation, the panels continue to function efficiently (J-F. Barquero Blandon, Interview, July 23, 2023). The batteries have a shorter lifespan – three to five years and have been operating well to date.

The installation process presented some challenges, including ensuring safe transportation of the panels by river, proper connection of inverter cables, and secure attachment of the aluminum bank. However, the team's collaborative approach and meticulous planning ensured these challenges were effectively overcome.

The sustainability strategy in place is as follows: MINED, the Nicaraguan Ministry of Education, has taken over full responsibility for maintaining and managing the usage of the MLLs, and the GTI, the local Indigenous government, has taken responsibility for immediate oversight and follow-up. While the transition to MINED for future repairs might impact response times, the government's dedication to promoting technology in schools minimizes the risk of major issues. The local maintenance capabilities will remain in place, and MINED representatives are also available locally to address any emerging concerns. The presence of a Miskito representative at MINED further strengthens the project's success by ensuring cultural sensitivity and local support.

## LAPTOPS AND RACHEL SERVERS

Between 2020 and 2022, seven schools in the Bosawás region implemented mobile learning labs (MLLs) equipped with 14 to 20 Chromebooks, one laptop, and a RACHEL server. These labs are providing valuable learning resources for students and teachers.

The Chromebooks have demonstrated their reliability, performing well with no significant issues reported. While the software update schedule deviates from the recommended monthly cycle, occurring only every six months, it has not caused any major problems. However, minor inconveniences have been observed with students needing assistance after screen saver lockouts and incorrect password attempts. Additionally, Google software requires administrative sign-in every three months across all schools, adding to the workload of the technical coordinator.

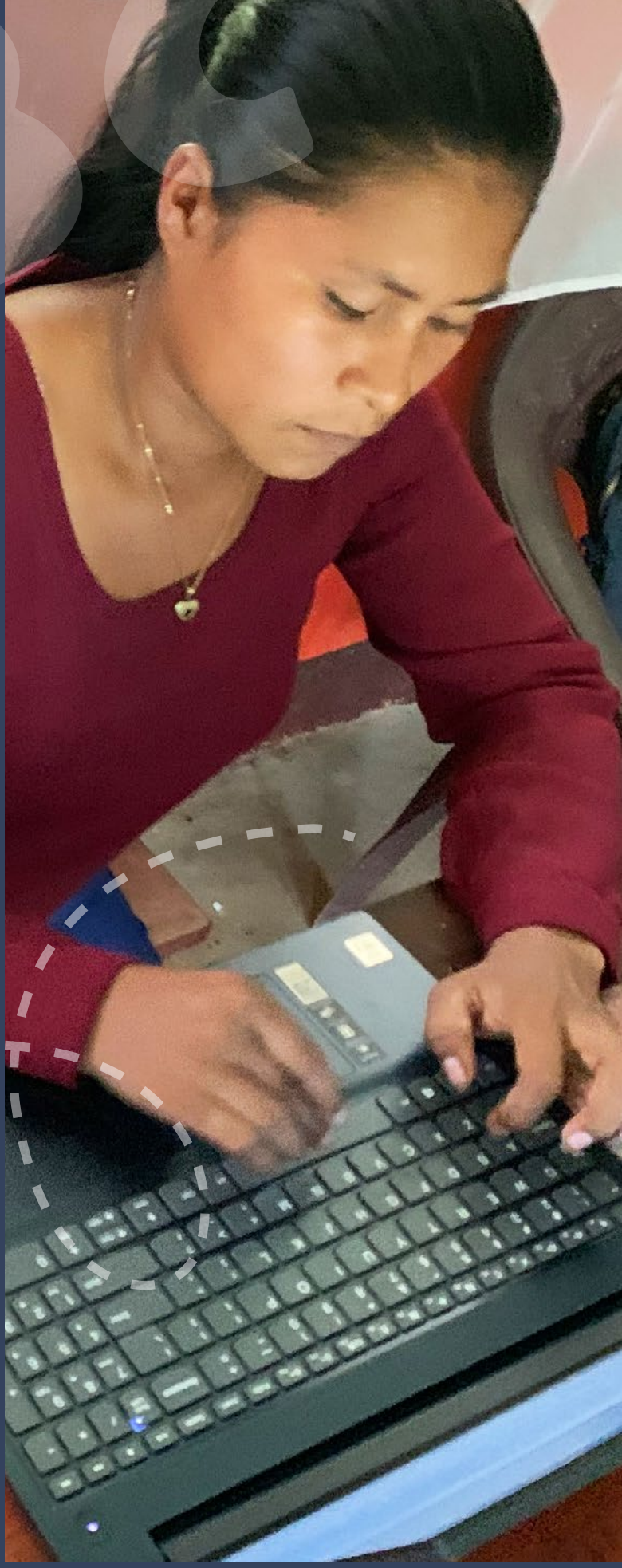
Several RACHEL servers have encountered hardware problems. Two out of seven units experienced issues with the battery connection port and damaged chargers. As a result, these servers required repairs by Mundo Posible, the technical partner on the project based in Guatemala, leading to weeks of downtime. It is believed to be a factory defect which may affect 1 or 2 out of 10 RACHEL units. (T. Llorente, Interview, July 24, 2023).

Additionally, it has been observed that completely discharging the battery can damage RACHEL servers. In such cases, the servers may not turn on immediately, or even permanently, even after reconnecting to power. The technology team has been working with school directors to address this issue. (T. Llorente, personal communication, March 15, 2024).

The MLLs are housed within dedicated classrooms, with laptops secured in locked cabinets. Most schools have perimeter fences and night patrols, further contributing to the security of the equipment. There have been no reports of lost materials, and breakage incidents have been minimal (Swift, L., July 2022). Importantly, the project team has provided training to school staff to ensure proper care and handling of the devices, emphasizing protection from moisture and damage.

# Future considerations

- Identifying means to manage software sign-ins would save time for students and the technical coordinator.
- Exploring alternative repair solutions for RACHELs would further enhance the program's effectiveness.
- Exploring options for increased access and exploration could unlock the full potential of technology as a learning tool in the MITK territory (more laptops and more time for students to use them).



# Technology Adoption

## TEACHERS

The integration of technology in the MITK territory classrooms aims to empower teachers through training and resources. Between 2020 and 2022, workshops equipped 223 teachers, representing most of the territory's active educators, with the necessary skills to utilize technology effectively (T. Llorente, personal communication, August 19, 2023).

The experience shared by one of the teachers exemplifies the project's impact. Initially apprehensive due to limited prior experience, she now embraces technology as a valuable teaching tool, particularly given the scarcity of printed materials in schools. The workshops and online courses (MOOCs) introduced her to various pedagogical methods like mind mapping and strategies for teaching math concepts.

Additionally, access to the RACHEL platform provides teachers with resources for lesson planning, professional development, and self-directed learning through its dictionary and other materials. This newfound confidence translates into a stronger ability to explain complex topics to their students.

The availability of curriculum content in Spanish on RACHEL further supports teachers by offering engaging learning materials for students. Following individual work on laptops, teachers can assess understanding in the classroom and provide additional explanations in Miskito where needed. This blended learning approach demonstrates the project's commitment to harnessing technology to enhance the teaching experience for both educators and students in the MITK territory.

### COMMENTS BY TEACHERS

***Female teacher 1:*** *"Before RACHEL and the workshops, I didn't do class plans and there were words I didn't know, but now I can prepare classes and research, which allows me to be more confident when explaining to students."*

***Female teacher 2:*** *"Through this new RACHEL program, children are changing their opinions and becoming more creative as well…the children are also becoming more emotionally engaged and interested in learning more about other important topics for their studies and for their personal knowledge."*

***Female teacher 3:*** *"The students tell me that the RACHEL program is important because it helps students learn a lot of things that will be useful for their future. They say that the program has all the information they need…they can find the answer to everything when they have to do research… and that they are learning a lot from it."*

## STUDENTS

Students in Bosawás schools are increasingly utilizing technology as a learning tool, integrating digital resources into their educational experiences. Primarily, students utilize the Chromebooks for directed learning, completing assigned research and reading tasks. They are also encouraged to explore the diverse educational programs available on the RACHEL servers, expanding their knowledge and fostering independent learning skills.

Access to technology is met with enthusiasm, with students expressing a desire for more frequent computer sessions. Currently, they have access twice a week for approximately 45 minutes, leaving them somewhat frustrated at the limited time available to delve deeper into the available content. Teachers have observed a significant increase in attendance on days when students know they will be using the computers.

Technology presents an engaging and interactive way of learning, as students enjoy watching educational videos and playing educational games. One teacher noted that students often exhibit increased focus and engagement when learning through digital resources, such as reading or watching videos, compared to traditional classroom instruction. This observation suggests that technology can serve as a valuable tool for diversifying teaching methods and catering to different learning styles.

As access to technology continues to grow, its potential to further transform the educational landscape in the Bosawás remains promising. The initial steps taken in the MITK territory demonstrate the promise of technology as a valuable tool for enhancing student engagement and fostering a love of learning. With continued efforts to expand access and refine implementation, technology has the potential to play a significant role in shaping a brighter educational future for the region's youth.

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## COMMENTS BY STUDENTS

***Female student 1:*** *"Technology has been a great support for my studies. I have acquired new knowledge in terms of the subjects I study, but it has also helped me learn more Spanish and improve my vocabulary."*

***Female student 2:*** *"I like RACHEL because it helps me learn new things and be able to know the meaning of unknown words."*

***Female student 3:*** *"Education creates the best opportunities. With a good education you can get a decent job. It's good to keep studying, so one day you can become a doctor, a policeman and gain other good positions."*

***Male student 1:*** *"Actually everything about RACHEL generates a lot of curiosity. Without knowing, we explore several modules, and we are surprised with so many things that are inside them."*

## PARENTS

Parents in the Bosawás communities expressed positive sentiments towards the integration of technology in schools. They acknowledge the impact on the overall quality of education, citing the achievements of graduates who have successfully transitioned to post–secondary institutions. This observation suggests that parents perceive technology as a valuable tool enhancing their children's learning and prospects. Furthermore, increased school attendance rates can be interpreted as a reflection of their enthusiasm and encouragement towards the project, demonstrating their trust in its potential to benefit their children's education. This positive outlook extends to girls' education. Bosawás families are increasingly recognizing the value of educating girls. Educated girls can share the knowledge and skills they acquire in their homes and communities, making families more resilient in the face of challenges like climate change.

## STUDENT INTEREST IN POST-SECONDARY EDUCATION

Recent years have witnessed an increase in the number of students from the Bosawás territory pursuing post–secondary education. According to Primitivo Centeno Perez, the President of the MITK territorial government, the number of students leaving for post-secondary studies in Managua and other cities has increased from 25 to 100 over the past two years. This positive trend is further bolstered by a rise in female participation, with the percentage of girls enrolling in post-secondary education climbing to 30% for the first time. The territorial government remains committed to encouraging and supporting more girls in their academic pursuits.

Several factors contribute to this encouraging development. Improved quality of education, attributed to various initiatives, has empowered students to become more engaged learners and set their sights on advanced degrees. The technology project has played a crucial role in preparing students for the demands of post-secondary studies. Previously, many students required additional "qualification" years to reach the necessary academic level. However, with the enhanced learning resources and tools provided by the project, students are now able to transition to higher education more easily, maintaining their academic standing and reducing the associated financial and logistical burdens. This, in turn, has enabled more young people to benefit from the funding provided by the territorial government.

The technology project's impact extends beyond empowering students. By offering professional development opportunities through offline technology on the RACHEL servers, teachers can continue their professional growth within their communities. This approach caters specifically to girls and women who may face limitations in relocating for traditional post–secondary and professional education programs.

## STUDENT EMPLOYMENT OPPORTUNITIES IN THE COMMUNITY

Over the past two years, seven communities in the Bosawás have seen 360 students graduate high school, with a nearly even split between girls (51%) and boys (49%). Despite this, working alongside their parents on the farm is still a common choice for young people, because opportunities outside traditional agriculture are scarce in the Bosawás region.

Some graduates (both men and women) are finding success in local formal jobs like teaching, agricultural program advising, and community roles (see Gender section). However, many young people are forced to migrate to the Estelí region seeking better employment opportunities, particularly in tobacco cultivation and processing.

As graduation rates climb, pressure will mount on the territorial government to create more local job opportunities through development programs. This is a challenge they are already actively addressing.

## BILWI KNOWLEDGE SHARING FORUM

The Bilwi Knowledge Sharing Forum (sponsored by a FIT grant) served as a pivotal platform for the Change for Children team, to share their experiences and the successful implementation of solar-powered RACHEL technology in the schools in their communities. This Forum targeted Indigenous educators and policymakers from across Nicaragua, with the aim of exploring the potential for wider application and scaling of the project in other remote Indigenous communities on the Caribbean Coast. **(See full Forum Report in Annex 3)**.

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The Forum's impact extended beyond knowledge sharing. It significantly strengthened the project's relationship with MINED, connecting them with key decision-makers in remote and bilingual education, as well as representatives from Nicaragua's remote learning institutions (e.g. URACCAN) and UNESCO. This newfound connection opens doors to potential collaborations, funding opportunities, and possibly even recognition through UNESCO prizes.

The Forum also sparked a surge of interest in innovative solutions for remote education within Nicaragua. Regional and national authorities showed keen interest in exploring offline technology; they were impressed by its versatility, effectiveness, and affordability compared to traditional options. This enthusiasm was evident through various channels, including government social media highlighting the forum's significance.

School directors and teachers from Indigenous communities were also in attendance. They participated actively and asked numerous questions, demonstrating a strong interest in the RACHEL's potential. To empower educators across the region, the CFC team is currently developing a comprehensive handbook. This resource will capture the key findings and lessons learned from the technology project, providing valuable guidance for schools and communities seeking to implement similar initiatives. Furthermore, the CFC team is developing a proposal for scaling up technology integration within regional education.

The Forum also fostered collaboration within the education sector. Notably, the representative of the Nicaragua Online University (UALN) and the National Council of Universities (CNU) recognized the value of the RACHEL servers used in the MITK territory. They expressed plans to explore converting their online MOOCs into offline formats suitable for similar server-based delivery, potentially expanding their reach to off-grid communities. This initial interest holds promise for future collaborative efforts and potentially larger-scale projects that bring quality education to more Caribbean coastal communities.

The Bilwi Forum's success was in its ability to showcase the potential of RACHEL as a transformative tool for Indigenous education. By fostering collaboration, sparking new ideas, and generating interest at various levels, the forum has laid the groundwork for potentially scaling up this successful approach and achieving wider education equity across remote Indigenous communities in Nicaragua.

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# Future considerations

## Technology adoption

- Equipping the RACHEL system with additional professional development courses focused on fields relevant to the communities' needs can also provide graduates with valuable skills. Addressing these needs will further provide opportunities to Bosawás youth, both female and male, to acquire skills that will allow them to contribute meaningfully to their communities.
- Exploring models like the Indigenous-led conservation program discussed with Julio Espinoza, potentially funded by carbon offsets, offers one solution. This approach would provide young adults with meaningful work while addressing climate change concerns. (See an example of such a project with one of the Indigenous communities in British Columbia, Canada. https://www.cbc.ca/radio/whatonearth/great-bear-rainforest-carbon-offsets-1.7072839).
- Following up with UNESCO to be recognized for the innovation.
- Following up with UALN to get additional offline content useful for educators.
- Preparing the handbook and blueprint for distribution.

# Digital Library Content Use

The digital library provides a wealth of educational materials and resources to Indigenous communities within the MITK territory. This section explores the content on the server:

- in the Miskito language,
- on sexual and reproductive health rights (SHRH), and
- climate change.

Bridging the knowledge gap in the MITK territory, the Technology Project's digital library and offline server provides Indigenous communities with a wealth of educational resources. Accessible even without internet connectivity, this server acts as a local hub, providing useful information in Miskito alongside valuable materials on SRHR and climate change.

Initially in **Phase 1** of the pilot program, 96 preloaded modules were available on the RACHEL. This was expanded to 115 in **Phase 2** (T. Llorente, Interview, July 25, 2023). The dedicated project team curates and adds new resources to the existing ones, covering a range of crucial topics. From gender equality and reproductive health rights to Miskito language preservation and territorial defense to climate change, the library addresses the communities' diverse needs.

## MISKITO LANGUAGE CONTENT

The RACHEL platform was enhanced with a variety of Miskito language resources, designed for diverse age groups and interests. This collection includes children's songs, technology tutorials, primary school textbooks, and classroom recordings showcasing Miskito instruction. Furthermore, it offers cultural stories, locally produced presentations exploring Miskito culture, and videos of student-led cultural performances. Recent additions explore the Miskito people's history, language, religion, and cultural identity through locally produced videos. Importantly, teachers and students are actively creating new Miskito-language materials, which are regularly uploaded to the RACHELs.

The introduction of Miskito content on the RACHEL servers has had a significant impact on both teachers and students in the MITK territory. Previously, the lack of educational materials in their native language presented a challenge for learning and cultural preservation. However, the RACHEL now offers a diverse range of Miskito resources, including vocabulary lessons, cultural videos, and interviews with elders, which have become the most popular content on the platform according to RACHEL's usage reports (L. Swift, July 2022).

This access to Miskito materials has benefited individuals in multiple ways. Teachers have reported improvements in their own fluency and writing abilities, while students are actively learning basic vocabulary and exploring their cultural heritage. The stories and interviews provide valuable insights into the history and traditions of different Miskito communities, promoting understanding and appreciation of each other's communities (E. Muller, August 5, 2024).



*Field Visit Report: Bosawás, Nicaragua.*

## GENDER EQUALITY AND SRHR

The RACHEL platform was enriched with resources promoting gender equality and SRHR tailored to the Bosawás communities. It offers content from Girl Rising (Guatemala) on gender equity and girls' rights, alongside 12 translated videos specifically addressing the rights and dignity of Indigenous women. Additionally, extensive information on SRHR is available, including over 76 files and videos covering topics like sexually transmitted diseases, contraceptives, and healthy sexuality (L. Swift, July 2022). The use and impact of this content is addressed in the section *Gender and SRHR curriculum.*

*Field Visit Report: Bosawás, Nicaragua.*

# Climate change

The RACHEL platform incorporates resources on climate change and the environment, aiming to inform and empower the Bosawás communities. This includes content that is both locally contextualized, addressing the specific effects on the communities, and general in nature, offering broader understanding of the global phenomenon. Accessibility is key, with resources available in both Spanish and Miskito. Additionally, engaging audio-visual materials cater to different learning styles.

This collection encompasses (L. Swift, July 2022):

- Research and reports: Over 271 academic and official documents from organizations like the UN, offering a broad range of environmental information.
- Climate change module: 16 educational videos providing general information on climate change suitable for various ages and learning levels.
- Local knowledge: A recent addition featuring community leaders and Elders sharing their traditional ecological knowledge and teachings on climate change.

Climate change videos have been integrated into school curriculums, fostering environmental awareness among young learners. These videos not only educate students on the realities of climate change but also highlight the threats their communities face daily. This personalized and contextualized approach makes learning impactful and relevant, empowering students to become agents of change.

# Future considerations

- Continued translation efforts to expand the existing content library is important.
- Collaboration with the Ministry of Education to increase dedicated class time for Miskito language instruction. By implementing these improvements, the project can continue to empower individuals and strengthen cultural identity within the MITK territory.
- Access to content for learning English for teachers so they can support students wishing to learn the language.




*Field Visit Report: Bosawás, Nicaragua.*

# Gender & SRHR Curriculum

## GENDER EQUALITY

The workshops related to gender awareness and SRHR were prepared and delivered in the communities between 2020 – 2022. They were developed based on the preliminary assessment of knowledge of the teachers and the communities.

The initial project assessment revealed limited knowledge of gender issues among teachers in the Bosawás. Gender awareness workshops aimed to address this gap, providing them with a deeper understanding of topics like sexuality, gender equality, and discrimination. This allowed teachers to not only develop relevant teaching skills but also effectively integrate these concepts into their classrooms at all levels.

Previously, female teachers often hesitated to participate alongside their male counterparts, while girls exhibited lower classroom engagement and traditionally took on tasks like cleaning. The workshops, however, appear to be leading to positive shifts. It seems that female teachers are now actively participating, and that girls are demonstrating increased engagement not only in classrooms but also within the wider school and community. Additionally, male students and teachers are taking on previously gender-assigned chores.

The workshops may be having a broader impact beyond education, potentially influencing the communities in a positive way. The participation of both men and women in leadership roles within schools and within the community could be encouraging more open dialogue and understanding around gender issues. There is anecdotal evidence that increased gender awareness is leading to a decrease in domestic violence and violence within couples, creating a safer environment for both adults and children. A reduction in family conflict could also contribute to improved mental well-being and education performance among children.

Gender awareness seems to be more visibly integrated now into various aspects of community life, encompassing religious, educational, and communal spheres. Women actively participate in various spheres of community life, holding positions on boards and contributing meaningfully to decision-making processes. They are no longer simply fulfilling quotas but are actively participating and shaping their communities. (C.S. Manzanares Blanco, May 2022).

This extends to young women who are finding their voices and taking on supportive roles within organizations like WIMPA, the Indigenous women's organization. Within WIMPA, young women provide valuable support to the board of directors, many of whom lack formal education, by assisting with tasks like record-keeping and document preparation. (M. Salomón, interview August 5, 2023).

The education project also engages both young women and young men in community activities. Previously, environmental protection and territorial defense were seen as solely male responsibilities. However, the project now empowers and encourages young women and men to work together as rangers, actively protecting and caring for Mother Earth.

## SRHR IN THE SCHOOL AND THE COMMUNITY

Traditionally, open conversations about sexual health in the Bosawás were uncommon. Community leaders and parents often viewed it as a sensitive subject. However, the workshops appear to be fostering a more open dialogue, with these issues being discussed more frequently.

Workshops targeting teachers, school staff, community leaders, and community members at large have opened avenues for dialogue. Through these sessions, participants have acknowledged the importance of addressing topics like birth control, sexually transmitted diseases, and unwanted pregnancy. This newfound awareness among parents has facilitated the task of educators who now introduce these topics in classrooms with greater ease.

The change extends beyond schools. Conversations about sexual health are becoming more commonplace within families and communities. Students are taking initiative, seeking information and engaging in open discussions about their sexual development with their parents. Previously, events like a girl's first period were often met with fear and confusion, leading to isolation and reluctance to seek guidance. There are signs of a shift, with some parents appearing to be more willing to initiate conversations about sexual health and explore methods for preventing unwanted pregnancy. The impact of these educational efforts remains to be fully evaluated, but initial indications suggest they may be making a difference.

The Ministry of Health (MINSA) is involved in efforts to reduce early-age pregnancies. This includes implementing SRHR education in schools and providing family planning methods to communities. These efforts, along with other potential factors, may be contributing to a decrease in the prevalence of early-age pregnancies. Additionally, young women who pursue further education outside their communities could potentially serve as role models for younger girls, inspiring them to prioritize their studies and delay childbearing.

There seems to be a shift in attitudes among teachers, with a growing openness towards previously sensitive topics like SRHR and mental health. This openness is complemented by students' access to relevant resources on RACHEL, particularly the comprehensive and well-illustrated materials provided by Girl Rising. This improved access to information empowers students to develop a greater understanding of their bodies and enables them to make informed decisions. Furthermore, teachers have participated in training facilitated by Girl Rising, equipping them with tools to stimulate dialogue, reflection, and learning in the classroom (T. Llorente, March 2021).

Formal education on SRHR is now integrated into the school curriculum under the title "Women's Rights and Dignity." This subject is taught multiple times a week using the RACHEL digital library due to the limited availability of printed materials. The content is adapted to different age groups, making it easier for teachers to deliver these sensitive topics to various student cohorts.

While the RACHEL platform currently offers sexual health materials primarily in Spanish, progress is underway to provide it also in Miskito. Recognizing the importance of cultural context, the project emphasizes the need for teachers to adapt the content to their specific communities and realities during delivery.

## MENSTRUAL HYGIENE

Menstrual hygiene remains a significant challenge in the Bosawás communities. While schools provide education on the subject, access to sanitary pads is severely limited. Even when available, many families lack the financial resources to purchase them regularly. This leaves girls to rely on the traditional practice of using old rags as reusable menstrual products. While this solution is far from ideal, the reality of limited resources leaves families with few other options.

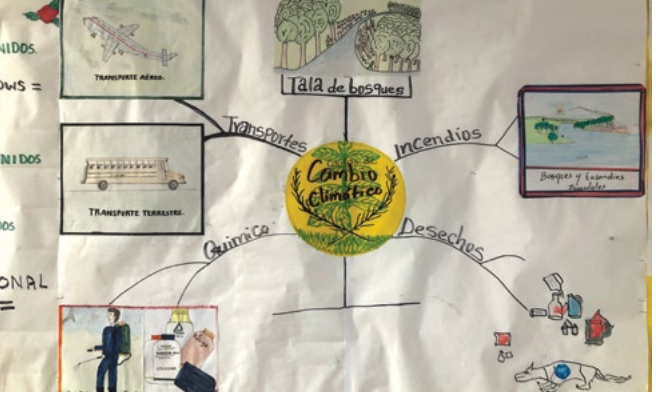
Compounding this issue is the lack of clean water and proper sanitation facilities. Most communities rely on the Coco River for bathing and washing, but this crucial lifeline is frequently contaminated with bacteria. Inadequate access to clean water and sanitation hinders effective hygiene practices, increasing the risk of vaginal infections and diseases, including cervical cancer. The presence of shared communal latrines further exacerbates these risks.

In the Bosawás, economic constraints, poor sanitation, and limited access to hygiene products pose significant challenges for women and girls managing their menstrual health. These factors increase their risk of infections and illnesses. Urgent action and creative solutions are needed to protect the health of these women and girls.

*Field Visit Report: Bosawás, Nicaragua.*

# Future considerations

- Continue strengthening the components of gender and SRHR education, and expand target groups to include additional parents, religious leaders and women's organizations.
- To ensure everyone has access to sexual health information, Miskito language resources need to be prioritized. Aside from the translation of existing materials, it would be useful to also develop new content specific to the Miskito communities' needs and cultural context.
- Since the digital library is not present in every community, alternative methods like translated print documents and trained facilitators are needed to deliver these health materials effectively.
- Informative two-sided brochures in Miskito and Spanish, featuring clear illustrations and key facts about sex and early pregnancy prevention, can be powerful tools. They can dispel myths, promote clear communication, and empower young women and men to make informed decisions about sexual health.
- Consider adding content to the RACHEL, enabling girls to make their own reusable pads and to learn about the menstrual cycle through content such as Lulu Lab's menstrual hygiene game *Lulu's Journey.*




# Community View of Climate Change[3]

## EFFECTS OF CLIMATE CHANGE AND DEFORESTATION

While the intricacies of global warming and greenhouse gas emissions might not be readily grasped by everyone, the Bosawás communities are experiencing the realities of climate change firsthand.

Community leaders and elders, with their life-long experience, recognize the territorial impact of erratic weather patterns and declining crop yields. Daily life for community members revolves around coping with these changes, particularly the impact on their crops. Elders, having witnessed significant changes over the past decades, possess a deeper awareness than younger generations.

Concrete examples illustrate the challenges faced. For example, excessive rainfall during harvest time destroys bean crops due to inadequate drying grounds, impacting both food security and seed availability for future planting. Additionally, reduced forest cover diminishes humidity, contributing to uncontrolled wildfires that threaten both forests and cultivated fields.

Deforestation, driven by agricultural expansion into protected areas, is also of major concern for the Bosawás communities. They recognize the direct link between tree loss and climate change: fewer trees translate to less water retention, increased heat, and unpredictable weather patterns. Furthermore, illegal settler activities, such as clearing land for cattle or crops, deplete water resources crucial for both the forest and Indigenous communities.

The Bosawás communities, while not possessing detailed scientific knowledge of climate change, are demonstrably aware of its local effects and the underlying causes. They experience the challenges daily and possess valuable insights into the interconnectedness of the environment and human well-being.

## MITIGATING CLIMATE CHANGE

The Bosawás communities are experiencing significant shifts in weather patterns, with the rainy season starting earlier and lasting longer, even encroaching upon the traditionally dry season. In response, they are innovating and adapting their agricultural practices, often through trial and error, to ensure food security amidst these changes.

For instance, bean planting, which traditionally occurred in December or January, is now being experimented with in different months. Later planting has proven more successful in recent years. Similarly, rice cultivation, historically sown in April or May, has been shifted to the end of May or mid-June with better outcomes. These new approaches, developed by community members themselves and shared within the region, demonstrate local resourcefulness in the face of a changing environment.



*Field Visit Report: Bosawás, Nicaragua.*

However, community members also express significant concerns. Climate change poses a major threat to their food security, and fundamentally their survival as remote forest-dwelling Indigenous communities. They lack access to resources and technology to fully address these challenges and so feel largely dependent on finding their own solutions. High rates of out-migration are also a concern. The changing environment disrupts traditional ways of life, pushing younger generations to seek paid work and opportunities outside the region (T. Llorente, July 25, 2023).

# Future considerations

Indigenous communities face unique challenges in adapting to climate change due to limited resources and historical marginalization. Here are some potential areas of support that were discussed during our visit:

### 1. Building Capacity and Awareness:

- **Environmental promoters:** Develop local leaders who can educate communities about sustainable practices like agroforestry systems, combining trees with crops or livestock. This can improve food security and soil health while mitigating climate change impacts.
- **Collaboration:** Work alongside both Indigenous and central governments to develop climate-resistant crop varieties, focusing on early-maturing and pest/disease-resistant options.

### 2. Protecting Land and Resources:

- **Territorial defense:** Assist Indigenous communities in protecting their legally recognized territories from illegal encroachment and unsustainable development practices. This may involve legal advocacy, capacity-building for resource management, and collaboration with relevant authorities.

### 3. Sustainable Economic Alternatives:

- **Agroforestry integration:** Promote the adoption of practices like silvopastoral systems (integrating trees with livestock) and agroforestry (combining trees with crops) that are better suited to local conditions and offer economic opportunities.
- **Sustainable livelihoods:** Support the development of income-generating activities that are compatible with environmental conservation, such as sustainable forestry practices, ecotourism, or organic agriculture.

### 4. Global Responsibility:

- **Recognize contributions:** Acknowledge the vital role Indigenous communities play in preserving ecosystems and mitigating climate change through their traditional knowledge and sustainable practices.
- **Shared responsibility:** Advocate for equitable solutions that address the historical injustices faced by Indigenous communities while ensuring their participation in decision-making processes related to climate change and environmental protection.

# Annex 1

## TEAM MEMBERS INTERVIEWS BOSAWÁS

| INVOLVED IN MLL PLANNING AND INSTALLATION | |
|---|---|
| NAME | **POSITION** |
| Alonso Joseph | Secretary, Regional Government of Alto Wangky and Bocay. |
| Juan Francisco Barquero Blandon | Logistics and Technology Coordinator, Agricultural Engineer.<br>• Worked in the Bosawás region for the past 23 years.<br>• Learning about impact of climate change from agricultural producers in the region. |
| Primitivo Centeno Perez | President, GTI MITK (Regional Government of Alto Wangky and Bocay). |
| Tony Llorente | Monitoring, Evaluation and Learning Coordinator. |

| OTHERS INTERVIEWEES | |
|---|---|
| NAME | **POSITION** |
| Edda Muller | Pedagogy Trainer. |
| Julio Espinoza | Translator and External Monitoring, Evaluation and Learning Consultant.<br>• Working with the Indigenous communities in the Bosawás region for the past 23 years. |
| Marisol Salomón | Secretary, Board of directors, WIMPA. |

# Annex 2

## HISTORICAL BACKGROUND OF ALTO WANGKY AND BOCAY COMMUNITIES OF BOSAWÁS[4]

The Alto Wangky and Bocay communities of the Bosawás region (northern Nicaragua) are made up of Indigenous Miskito people of Nicaragua. These communities faced a brutal displacement during the war from 1980 to 1990. They were forced to leave their ancestral lands due to the threats of invasions from armed groups opposed to the Sandinista government which were based in neighboring Honduras and supported militarily by the United States government. The Nicaraguan government required the Indigenous peoples of the Bosawás to move with their families to other regions of Nicaragua where they were forced to work on coffee plantations. This drastic change caused significant physical and emotional damage, disrupting their culture and way of life. Ultimately, many families chose to remain in these regions after the war was over.

In 1990, with the war's end, the communities were allowed to go back to their territory. However, returning to their homeland brought new challenges. They found overgrown forests, destroyed houses, and a complete lack of resources. The lingering effects of war included abandoned weapons and landmines, causing further casualties and hardships. Using their deep connection to nature, they found ways to survive and began the arduous task of rebuilding their communities from scratch.

Securing their land became their top priority as they faced attempts by outsiders to seize their territory; they fought for legal recognition and confronted numerous challenges. The years from 1990 to 2002 were marked by intense efforts to obtain their land rights and establish legal security. Finally, in 2005, they achieved the first official land titles.

With land security finally established, they turned their attention to development and education. Prior to this, formal education was nonexistent in their communities. Through collaboration with churches, international organizations, and volunteers, they brought basic education to their children, starting in their homes. Over time, partnerships with the Nicaraguan government and international cooperation agencies enabled them to gradually establish a more formal education system.

Today, the struggle continues. The communities strive to level the playing field in terms of development compared to other regions of Nicaragua. They seek to improve the quality of education, secure their lands against ongoing threats, and guarantee the well-being of their families. Relationship building with the Nicaraguan government and international cooperation remains crucial. Partnerships like the one with Change for Children, the Ministry of Education and Nicaragua Online University can support bringing vital educational technology to their communities.

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# End Notes

[1]See Annex 2 for a brief history of the Miskito Indigenous communities in the Bosawás.

[2]This report was edited with the assistance of Gemini [large language model, Google AI].

[3]Interviews with: agricultural engineer Juan Barquero; technology project coordinator and Miskito community member Tony Llorente; and sustainable development worker Julio Espinoza—provided the evaluation team with valuable insights on local climate change. (See Annex 1 for details about the three interviewers).

[4]Base on interview with Primitivo Centeno Perez, President GTI-MITK, August 5, 2024.