ADAPTATION FUND

AFB/PPRC.36/9
15 September 2025

Adaptation Fund Board
Project and Programme Review Committee
Thirty sixth Meeting
Bonn, Germany, 7-8 October 2025

Agenda Item 4(g)

PROPOSAL FOR MEXICO

Background

1. The Operational Policies and Guidelines (OPG) for Parties to Access Resources from the Adaptation Fund (the Fund), adopted by the Adaptation Fund Board (the Board), state in paragraph 45 that regular adaptation project and programme proposals, i.e. those that request funding exceeding US$ 1 million, would undergo either a one-step, or a two-step approval process. In case of the one-step process, the proponent would directly submit a fully-developed project proposal. In the two-step process, the proponent would first submit a brief project concept, which would be reviewed by the Project and Programme Review Committee (PPRC) and would have to receive the endorsement of the Board. In the second step, the fully-developed project/programme document would be reviewed by the PPRC, and would ultimately require the Board's approval.

2. The Templates approved by the Board (Annex 5 of the OPG, as amended in March 2016) do not include a separate template for project and programme concepts but provide that these are to be submitted using the project and programme proposal template. The section on Adaptation Fund Project Review Criteria states:

> *For regular projects using the two-step approval process, only the first four criteria will be applied when reviewing the 1st step for regular project concept. In addition, the information provided in the 1st step approval process with respect to the review criteria for the regular project concept could be less detailed than the information in the request for approval template submitted at the 2nd step approval process. Furthermore, a final project document is required for regular projects for the 2nd step approval, in addition to the approval template.*

3. The first four criteria mentioned above are:
   (i) Country Eligibility,
   (ii) Project Eligibility,
   (iii) Resource Availability, and
   (iv) Eligibility of NIE/MIE.

4. The fifth criterion, applied when reviewing a fully-developed project document, is:
   (v) Implementation Arrangements.

5. It is worth noting that at the twenty-second Board meeting, the Environmental and Social Policy (ESP) of the Fund was approved and at the twenty-seventh Board meeting, the Gender Policy (GP) of the Fund was also approved. Consequently, compliance with both the ESP and the GP has been included in the review criteria both for concept documents and fully-developed project documents. The proposal template was revised as well, to include sections requesting demonstration of compliance of the project/programme with the ESP and the GP.

6. At its seventeenth meeting, the Board decided (Decision B.17/7) to approve "Instructions for preparing a request for project or programme funding from the Adaptation Fund", contained in the Annex to document AFB/PPRC.8/4, which further outlines applicable review criteria for both

concepts and fully-developed proposals. The latest version of this document was launched in conjunction with the revision of the Operational Policies and Guidelines in November 2013.

7. Based on the Board Decision B.9/2, the first call for project and programme proposals was issued and an invitation letter to eligible Parties to submit project and programme proposals to the Fund was sent out on April 8, 2010.

8. The following fully-developed project document titled “Ha Ta Tukari, “Water our Life”: Towards Universal Drinking Water Coverage for 21 Communities of the Wixarika Nation” was submitted for Mexico by the Mexican Institute of Water Technology (IMTA), which is a National Implementing Entity of the Adaptation Fund.

9. This is the fourth submission of the fully-developed project proposal using the two-step submission process.

10. It was first submitted as a project concept in the thirty-ninth meeting and was not endorsed by the Board.

11. It was last resubmitted in the forty-second meeting as a project concept and the Board decided

> *(a) To endorse the concept note as supplemented by the clarification responses provided by the Mexican Institute of Water Technology (IMTA) to the request made by the technical review;*
>
> *(b) To request the secretariat to notify IMTA of the observations in the review sheet annexed to the notification of the Board’s decision;*
>
> *(c) To approve the project formulation grant of US$ 50,000;*
>
> *(d) To encourage the Government of Mexico to submit, through IMTA a fully-developed project proposal that would also address any observations under subparagraph (b) above.*

(Decision B.42/17)

12. The current submission was received by the secretariat in time to be considered in the forty-fifth Board meeting. The secretariat carried out a technical review of the project proposal, assigned it the diary number AF00000328, and completed a review sheet.

13. In accordance with a request to the secretariat made by the Board in its 10th meeting, the secretariat shared this review sheet with IMTA, and offered it the opportunity of providing responses before the review sheet was sent to the PPRC.

14. The secretariat is submitting to the PPRC the summary and, pursuant to decision B.17/15, the final technical review of the project, both prepared by the secretariat, along with the final

submission of the proposal in the following section. In accordance with decision B.25.15, the proposal is submitted with changes between the initial submission and the revised version highlighted.

ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY:

Country/Region: Mexico
Project Title: Ha Ta Tukari (Water for Life): Towards Universal Drinking Water Coverage for 21 Communities of the Wixarika Nation.
Thematic Focal Area: Water Management
Implementing Entity: Mexican Institute of Water Technology (IMTA)
Executing Entities: Lluvia para Todos A.C.
AF Project ID: AF00000328
IE Project ID:
Requested Financing from Adaptation Fund (US Dollars): 7,999,991
Reviewer and contact person: Ahmad Ghosn
Co-reviewer(s): -
IE Contact Person:

Technical Summary	The project "Ha Ta Tukari, "Water for Life": Towards Universal Drinking Water Coverage for 21 Communities of the Wixarika Nation" aims at providing autonomous renewable water access for 21 *Wixárika* communities in San Andrés Cohamiata region to support adaptation to water shortage and desertification induced by climate change. This will be done through the four components below: Component 1: Establishing rainwater harvesting (RWH) infrastructure for sustainable and autonomous water access (USD 4,089,491) Component 2: Developing and piloting of a community action plan for landscape-scale water management (USD 1,177,877) Component 3: Developing communities' capacities for sustainable water management (USD 821,205) Component 4: Knowledge management and development of a model for community-led universal water coverage (USD 600,634) Requested financing overview: Project/Programme Execution Cost: USD 684,057 Total Project/Programme Cost: USD 7,373,264 Implementing Fee: USD 626,727 Financing Requested: USD 7,999,991 The first technical review raises several issues, such as revising the document to correct/ add some information; revising overall objective to reflect climate change aspects; aligning specific objectives with project outcomes; clarifying the project theory of change; arranging the components description as per AF requirements; providing

	full gender assessment and action plan; adding a summary for related projects and respective synergies; adding more details on consultations; revising sustainability discussion to reflect economic, social, environmental, institutional, financial and O&M aspects; revising project management chart to reflect institutions involved and reporting line; inclusion of a project grievance mechanism; revising project results framework for compliance/ alignment with AF requirements; revising budget and disbursement schedule as per AF requirements; among others discussed in the Clarification Requests (CRs) and Corrective Action Request (CARs) raised in the review. The second technical review found that most of the CRs and CARs raised in the first technical review were addressed. However, few CRs and CARs remain pending further clarification. These include several editorial revisions to improve the clarity of the document contents and layout; quantifying the benefits where possible; revising the project alignment with the AF results framework and core indicators requirements; adjusting the midterm and final evaluation reports allocated budget items; among others as noted in the review comments. The third technical review found that almost all of the pending CARs and CRs indicated in the second review have been addressed, except for the inclusion of a revised AF E&S checklist in the relevant section and revising the AF RF alignment table to indicate allocated grant amount at AF outcome level. The fourth technical review finds that all the pending CARs and CRs of the third review have been addressed. *Please be advised that the findings of the AFB Secretariat's review of the funding proposal(s) do not reflect, indicate, or prejudge the outcome of the reaccreditation process currently underway. The Implementing Entity (IE) shall acknowledge that the funding proposal will not be approved by the Board if the IE's accreditation has expired, and reaccreditation has not been achieved at the time of the Board's decision. Notwithstanding this potential risk, the IE has elected to proceed with the development of the funding proposal.*
Date:	**8 September 2025**

Review Criteria	**Questions**	**First Technical Review: January 8, 2025**	**Second Technical Review August 6, 2025**	**Third Technical Review August 25, 2025**	**Fourth Technical Review September 8, 2025**
Country Eligibility	1. Is the country party to the Kyoto Protocol and/or the Paris Agreement?	**Yes**.	-	-	-
	2. Is the country a developing country particularly	**Yes.** Mexico is vulnerable to climate change impacts	-	-	-

	vulnerable to the adverse effects of climate change?	including increased sea level and temperature, extreme weather events, erratic rainfall, droughts, floods, and reduced water precipitation among others.			
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	**Yes.** As per the attached Endorsement letter dated October 22, 2024.	-	-	-
	2. Does the length of the proposal amount to no more than One hundred (100) pages for the fully-developed project document, and one hundred (100) pages for its annexes?	**Yes.** <u>However,</u> the below issues need to be addressed. **CR1:** An additional round of proof-reading and editing is highly recommended. Please address the following: 1. Add table of contents. Also add lists of figures, photos and tables and include in table of contents. 2. Remove numbering of lists of acronyms and annexes. 3. Include date of the proposal last submission on page 1.	**CR1 – Not cleared.** Please address the below: 1. Revise table of contents to reflect all key sections of Parts I, II, III, etc. along with associated letter numbering as per the AF proposal template, “lists” of tables and figures, and annexes. Remove the individual figures and tables from	**CR1: Cleared** (1. see pp. 2-5; 2. see p. 19, p. 42 and cross the document; 3, 4, 5, and 6. across the document).	**-**

		4. The requested financing (p.1) should be USD 7,999,991. 5. Figure 2 caption (p. 5) is too long and should be positioned under the figure. Also, make sure that figures/ photos, tables and annexes are referred to in related text. 6. Revise row 2 in Table 1 to show full words. 7. Revise the overall objective statement (p. 14) to reflect climate change aspects. In the "Project/ Programme Components and Financing" table (pp. 15-17), suggest to remove the "$" sign in listed amounts as it is mentioned in column heading. Please separate the millions, thousands and hundreds digits by comma (,). Apply	the table of contents and only indicate the lists. 2. Section letter numbering "A" is repeated twice. Change Section numbering of the section "Describe how the project/programme provides economic, social and environmental benefits …." to "B" and revise/ adjust letter section numbering after accordingly. Reflect changes in the table of contents. 3. **Add document page numbering**. 4. Revise Table 6 numbering, p.57. It should be Table 8. 5. Add table number for the AF E&S checklist and double check tables numbers throughout the document and revise reference		

		the same for similar cases across the document. 8. Include numbers and headings for all tables. **CAR1:** Revise listed program's specific objectives and goals (p. 14) to be under "Project/ Program Specific Objectives" heading and ensure that the listed objectives are aligned/ consistent with the "Expected Outcomes" indicated in the "Project/ Programme Components and Financing" table (pp. 15-17) and provide table number and heading for this table. **CAR2:** In the "Project/ Programme Components and Financing" table (pp. 15-17), specify the corresponding output/s for each outcome and provide budget at	to the revised tables numbers in related discussions accordingly. 6. Another thorough round of editing/ proofreading for the whole document is recommended. **CAR1: Cleared.** See pp. 14-15. **CAR2: Cleared.** See Table 15, pp. 15-17.	- -	- -

		output, outcome, and component levels.			
	3. Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive capacity to the adverse effects of climate change and build in climate resilience?	**Yes.** See Part IIA, pp. 18-38. Concrete actions include i) installing 1200 rainwater harvesting systems, ii) developing/ piloting a community action plan for landscape-scale water management, iii) Support regeneration of 700 forest hectares, iv) pilot demonstration of innovative agroforestry practices in 3 hectares for 60 families; among others. <u>However,</u> few issues indicated below need to be addressed.			
		CR2: In Part IIA, revise the discussion flow to reflect components, followed by the corresponding outcome/s under the component, the output/s under each outcome, and the activities under each output.	**CR2: Cleared.** See Part IIA, pp. 18-40.	-	-
		CAR3: In Part I or Part IIA, add a brief discussion on the	**CAR3: Cleared.** See Part IIA Figure 8 and	-	-

		project theory of change (TOC) and provide a schematic presentation of the same. TOC should demonstrate how the project interventions respond to the threats posed by the climate scenarios discussed in Part I, and support realizing the project climate change adaptation overall objective.	related discussion, pp. 18-19.		
	4. Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?	**To a large extent.** See Part IIB, pp. 38-41. However, under "Gender equity and children" (pp. 38-40) reference is made to an initial gender assessment (Annex 5). At full proposal stage, a "full gender assessment" and "a gender action plan" are required to ensure inclusion of gender issues in project design and implementation. Further quantification of the benefits, where possible, is also recommended.			

		CR3: Where possible and as applicable, quantify benefits (e.g.: number of beneficiaries with gender consideration, rehabilitated forest area, economic returns, etc.). **CAR4:** Please provide a full gender assessment and a gender action plan and attach as an Annex (replace Annex 5) and refer to at related discussion in Part IIB.	**CR3 – Not cleared.** In Part II section on benefits, pp. 18-40 (section number should be revised from A to B) quantify benefits where possible (e.g.: number of beneficiaries with gender consideration, rehabilitated forest area, economic returns, etc.). **CAR4 – Cleared.** See Annex 5.	**CR3: Cleared.** See pp. 42-45. -	- -
	5. Is the project / programme cost effective?	**Yes.** See Part IIC, pp. 41-42, for related discussions.	-	-	-
	6. Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments?	**Yes.** See Part IID, pp. 43-45. **CR4:** In Part IID, the dates of some the listed plans/ strategies/ programs are missing. Please include. **CR5:** Mexico's UNCCD National action plan/ strategy is likely to be relevant, as the project addresses land degradation. Please double check and add if relevant.	**CR4: Cleared.** See Part II, pp. 45-47 (note: section letter numbering should be changed from C to D). **CR5: Cleared.** UNCCD National Action Plan is added, see item no. 8, p. 46.	- -	- -

	7. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund?	**Yes.** See Part IIE, pp. 45-47, for related discussions. **CR6:** Delete table 4 (pp. 46-47) as compliance with AF E&S principles are/ should be reflected in Part IIK and Part IIIC.	**CR6: Cleared.** Table deleted.	-	-
	8. Is there duplication of project / programme with other funding sources?	**No.** See Part IIF, pp.47-48. However, more details are needed. **CAR5:** Provide a summary table for related projects and include: title, status (completed, ongoing), date, and synergy/ complementarity.	**CAR5: Cleared.** See Table 6, pp.49-51.	-	-
	9. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?	**Yes.** A dedicated component (component 4) is included for the purpose (see Part IIA). Also see Part IIG, p. 48.	-	-	-
	10. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender	**To a large extent.** See Part IIH, pp.48-52. However, more information on these consultations is needed.			

	considerations in compliance with the Environmental and Social Policy and Gender Policy of the Fund?	**CAR6:** In Part IIH, add a summary table that includes date of consultation, consulted groups/local communities, number of participants with gender consideration, topics discussed, outcomes and how they were reflected in project design.	**CAR6: Cleared. See** Table 7, pp.53-55.	-	-
	11. Is the requested financing justified on the basis of full cost of adaptation reasoning?	**Yes.** See Part II"I", pp. 53-54. **CR7:** Revise the components titles in Part II"I" to ensure consistency with those in Part I and Part IIA.	**CR7: Cleared.** See pp. 57-58.	-	-
	12. Is the project / program aligned with AF's results framework?	**Yes.** See Part IIA, Part IIIE, Part IIIF. Also, see comments under item 9 of "Implementation Arrangements" below.	-	-	-
	13. Has the sustainability of the project/programme outcomes been taken into account when designing the project?	**Not sufficiently addressed.** See Part IIJ, pp. 54-55. **CAR7:** Please revise Part IIJ to reflect key sustainability areas under dedicated headings, including but not limited to economic,	**CAR7: Cleared.** See pp. 58-60.	-	-

		social, environmental, institutional, and financial. **CAR8:** Please briefly reflect on the sustainability aspects of the operation and maintenance of the rainwater harvesting facilities and rehabilitated land, etc., after project completion.	**CAR8: Cleared.** See p. 60.	-	-
	14. Does the project / programme provide an overview of environmental and social impacts / risks identified, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?	**Yes.** See Part IIK, pp. 55-60. The overall project risk is classified as category "C" (low risk). **CR8:** Part IIIC, Table 13, labels some E&S principles as "no risk" (Principles 2,4, 6, 8, 9, 14, 15). Please ensure consistency of the stated level of risks in Part IIK with those of Part IIIC, or vice versa.	**CR8: Cleared. See Part IIIC** Table 10 (revise table number), pp. 71-74.	**CAR1 NEW:** The updated AF E&S checklist (as advised by concerned AFSEC team on 12 August) is not included in Part IIK. Please include the updated AF E&S checklist in Part IIK. It is required to ensure compliance with AF ESP. **Note:** A revised ESMP as requested is provided in Annex 13 (pp. 220-228) and referred to in Part IIK, p.68.	**CAR1 NEW: Cleared.** See pp. 66-67.
Resource Availability	1. Is the requested project / programme funding within the cap of the country?	**Yes.**	-	-	-

	2. Is the Implementing Entity Management Fee at or below 8.5 per cent of the total project/programme budget before the fee?	**Yes.** The implementing fee (USD 626,727) is 8.5% of the total project cost (USD 7,373,264)	-	-	-
	3. Are the Project/Programme Execution Costs at or below 9.5 per cent of the total project/programme budget (including the fee)?	**Yes.** The execution costs (USD 684,057) are 9.3% of the total project cost (USD 7,373,264).	-	-	-
Eligibility of IE	1. Is the project/programme submitted through an eligible Implementing Entity that has been accredited by the Board?	**Yes.** The Mexican Institute of Water Technology (IMTA) is an AF accredited national implementing entity. Accreditation status: In Re-accreditation Process Accreditation Expiration Date: 24 October 2024. *Please be advised that the findings of the AFB Secretariat's review of the funding proposal(s) do not reflect, indicate, or prejudge the outcome of the reaccreditation process currently underway.*	-	-	-

		The Implementing Entity (IE) shall acknowledge that the funding proposal will not be approved by the Board if the IE's accreditation has expired, and reaccreditation has not been achieved at the time of the Board's decision. Notwithstanding this potential risk, the IE has elected to proceed with the development of the funding proposal.			
Implementation Arrangements	1. Is there adequate arrangement for project / programme management, in compliance with the Gender Policy of the Fund?	**To a large extent.** See Part IIIA, pp. 61-64. **CR9:** Revise Figure 13 (Project management organization) to clearly reflect the key institutions involved and reporting line. Also, enlarge the figure size to be more legible.	**CR9: Cleared.** See Part IIIA and Figure 14, pp. 66-69.	-	-
	2. Are there measures for financial and project/programme risk management?	**Yes.** See Part IIIB, pp. 64-67.	-	-	-

	3. Are there measures in place for the management of environmental and social risks, in line with the Environmental and Social Policy and Gender Policy of the Fund?	**To a large extent.** See Part IIIC, Table 9, pp. 67-69. Given the low-risk rating of the project (C), a simplified ESMP is provided. <u>The issues below need to be addressed/ clarified</u>. **CAR9:** In Table 9, pp. 67-69, please: 1. Specify the responsible entity for implementing the risk management measures, and allocated budget/ resource. 2. Include clear arrangements for the IE to supervise executing entities implementation of the risks management measures, and the monitoring and evaluation for compliance with AF ESP. 3. Include grievance mechanism, with clear process, including and where	**CAR9: Cleared.** See Part IIIC, pp. 71-74 and Part IIID, pp. 75-78.	**CAR9: Cleared.** Based on updated ESMP, Annex 13, pp. 220-228, <u>as advised by the Adaptation Fund SEC team during a call on 12th of August 2025.</u> **<u>Note:</u>** The updated AF E&S checklist table (as advised by AFSEC team on 12 August 2025) should be included in Part IIK. **<u>See CAR1 NEW above.</u>**	**Cleared.** See CAR1 NEW above.

		grievances can be addressed.			
	4. Is a budget on the Implementing Entity Management Fee use included?	**Yes.** See Table 12, pp. 82-84. <u>However</u>, further breakdown of this fee is recommended. **CAR10:** Provide further breakdown of IE management fee. The fees may cover activities related to engagement with donor (policy support, portfolio management, reporting, outreach, knowledge sharing) and project management (project preparation, management oversight including financial management, quality insurance, implementation reports supervision, project completion/ evaluation oversight, etc.).	**CAR10: Cleared.** See pp. 97-98 of Part IIIG budget table (pp. 87-98). <u>However, please see CAR13 below.</u>	-	-
	5. Is an explanation and a breakdown of	**Yes.** See Table 12, pp. 82-84. <u>However,</u> further			

	the execution costs included?	breakdown of these costs is recommended. **CAR11**: Provide further breakdown of the Execution costs. Execution costs include the main items supported by the AF for project management such as consultant services, travel, office facilities, etc., and direct costs for the administration of the project day-to day activities. Specific costs include staff costs and project related activities (monitoring and evaluation costs; costs related to drafting progress reports and financial reports; consultation meetings, travel, etc.).	**CAR11: Cleared.** See pp. 96-97 of Part IIIG budget table (pp. 87-98).	-	-
	6. Is a detailed budget including budget notes included?	**Not clearly presented.** See Tables 12 and 13 (pp. 82-91). **CAR12:** Combine Tables 12 and 13 in one table to reflect a detailed budget with budget notes indicating the break- down of	**CAR12: Cleared.** See Part IIIG, pp. 87-98.	-	-

		costs at the activity level.			
	7. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans and sex-disaggregated data, targets and indicators, in compliance with the Gender Policy of the Fund?	**Yes.** See Part IIID, pp. 69-72. However, Monitoring and Evaluation should also include provisions for mid-term and terminal evaluations, and management of the environmental and social risks identified. **CAR13:** Please include Monitoring and Evaluation plan provisions for mid-term and terminal evaluations, and management of the environmental and social risks identified (i.e., compliance with AF E&S Principles).	**CAR13: Not Cleared.** In Part IIID, pp. 75-78, please address the below: • The proposed budget allocates a total of USD 45,000 for the Mid-Term Evaluation and Final Evaluation. This represents 0.56 % of the overall funding requested. Consider revising the figures in all relevant sections of the proposal to ensure it is between 1 to 2% of the total amount of financing requested, which is the recommended range for such evaluations based on the size of the proposal. • Reference to the Project	**CAR13: Not Cleared.** The amendments at Part IIID, pp. 80-84 for related information, and bottom of Part IIIG, Table 14, p. 118, for the new allocated budget for the Midterm and Final Evaluations, which is now USD 95,000 (1.2% of the total budget). Project completion summary is also referenced on p. 83. Due to the IE budget adjustments for the new Midterm & Final Evaluation cost in the detailed budget, there has been a small change to the distribution of disbursements in the disbursement schedule. . Kindly revise these figures in all relevant sections of the proposal to ensure that evaluation costs (i.e., baseline data report, MTR and	**CAR13: Cleared.** See p. 99 and disbursement schedule p. 100.

			Completion Summary (mandatory reporting requirement - see https://www.adaptation-fund.org/projects-programmes/project-performance/) is missing from Part III.D. Please kindly add it.	Final Evaluation) are between 1 to 2% of the total project cost, which is the recommended range for projects of this size. **CAR 16 (NEW):** Please kindly include a baseline report in Part III.D (please refer to p.8 of the guidance document on the updated Evaluation Policy at: https://www.adaptation-fund.org/document/evaluation-policy-of-the-adaptation-fund-graphically-edited) and ensure that it is adequately budgeted in the proposal.	**CAR 16 (NEW): Cleared.** Baseline data report is included in Part II.D, p. 77, and allocated budget (USD 2,000) is included in detailed budget, on p. 99.
	8. Does the M&E Framework include a break-down of how implementing entity IE fees will be utilized in the supervision of the M&E function?	**Yes.** See Part IID, Table 10, p. 72. However, the table should be revised to reflect the revisions requested above, among others as indicated below. **CR10:** Include provisions for midterm and terminal	**CR10: Cleared.** See discussion under "Financial Support" heading in Part IIID.	-	-

		evaluations, and management of the environmental and social risks in Table 10. Also, include M&E plan total budget.	See also the detailed breakdown of implementing fees in Part IIIG (detailed budget, pp. 87-98). See CAR13 above.		
	9. Does the project/programme's results framework align with the AF's results framework? Does it include at least one core outcome indicator from the Fund's results framework?	**Not fully.** See Table 11 (pp. 73-78) and the Table on pp. 79-81. Please note that The Project Results Framework should align with the latest Adaptation Fund Results Framework (https://www.adaptation-fund.org/wp-content/uploads/2019/10/Adaptation-Fund-Strategic-Results-Framework-Amended-in-March-2019-2.pdf). Alignment table should indicate the linkage between project objectives and outcomes to the Fund level outcome and outputs. Also, the project results framework should include one or more AF core impact indicator/s, and a dedicated table for each of the applicable core			

		indicators should be included as per pertinent AF guidance in this respect. **CR11:** Revise Part III sections letter numbering after Part IIID (e.g.: Project Results Framework should be Part IIIE, Alignment with AF RF should be Part IIIF, etc.) and provide table number and title for the results framework alignment with AF RF. **CAR14:** Align the table on pp. 79-81 (Part IIIF after revision) with the AF template format provided by the link below: https://www.adaptation-fund.org/wp-content/uploads/2021/01/Results-framework-alignment-table-March-2019.doc **CAR15:** In Table 11, pp. 73-78 (Part IIIE after revising section numbering), Include one or more AF core	**CR11. Cleared.** See p. 78 and p. 83 **CAR14 – Not cleared.** The alignment table provided in part III.F must be revised in accordance with the guidance provided in Annex 5 of the OPG (refer to the example on p.16). The template currently used in the funding proposal differs from the one included in Annex 5. Please revert to the correct template, ensuring that the original headings remain unchanged. More specifically: a) Upper section of the table: i) add the three Project	- **CAR14: Not cleared.** See pp. 91-98. In the upper part of the table, please distribute the amount of USD 6,689,207 at outcome level (i.e., allocate the amount for each outcome).	- **CAR14: Cleared.** As per amendment to alignment table.

		impact indicator/s. Please refer to the template and guidance below. The table on core impact indicator on Number of beneficiaries (direct/ indirect) is mandatory, with other impact indicators (e.g.: Early Warning System; Assets Produced, Developed, Improved, or Strengthened; Increased income, or avoided decrease in income; Natural Assets Protected/Rehabilitated) are to be selected based on project activities. A dedicated table for each applicable core indicator should be provided as per the below guidance: Methodologies for reporting Adaptation Fund core impact indicators (78 kB, DOC) Methodologies for reporting Adaptation Fund core impact indicators (152 kB, PDF)	Objectives Indicators identified in the project results framework in distinct rows in the ”Project Objective Indicator(s)” column (Number of effective community governance structures to manage water and landscape regeneration) is currently missing; ii) for each Project Objective indicator, select only the most appropriate Fund Outcome and enter it in the "Fund Outcome" column; iii) select only the most relevant matching Fund Outcome Indicator for each Fund Outcome and enter it in the "Fund Outcome Indicator" column; and iv) input the		

			grant amount for each Project Objective Indicator in the column “Grant Amount (USD)”, ensuring that the total equals the project activity cost, i.e. USD 6,689,207; b) Lower section of the table: i) list the eight project outcomes in the “Project Outcome(s)” column, along with their respective outcome-level indicators in the “Project Outcome Indicator(s)" column; ii) for each indicator, select only the most relevant corresponding Fund Output and enter it in the "Fund Output" column; iii) choose only the most relevant corresponding		

			Fund Output Indicator for each Fund Output and enter it in the "Fund Output Indicator" column; and iv) input the grant amount for each Fund Output in the "Grant Amount (USD)" column, again ensuring that the total equals the project activity cost of USD 6,689,207. c) Lastly, for consistency, please ensure that all the Fund Outcomes associated with the listed Fund outputs in the lower section of the table are reflected in the upper section of the table. **CAR15 – Not Cleared.** Please address the issues below:	**CAR15: Cleared.** See pp. 85-90 for the project results framework, and Annex 12, pp. 215-	- -

			1. Results Framework As raised below on core indicators tables, the proposal should make an effort to disaggregate the direct and indirect beneficiaries by youth (age 15-24) in the results framework table. **2. Core indicator tables** The Core indicator tables in Annex 13 must be revised in accordance with the document "Methodologies for reporting Adaptation Fund core impact indicators". Specifically: for each AF Core Indicators relevant to the project interventions (i.e., "Number of beneficiaries", "Assets Produced, Developed, Improved, or Strengthened" and "Natural Assets Protected or Rehabilitated"),	219 for the core indicators.	

			please use in Annex 13 the corresponding Core Indicators table(s) available on pp.10-14 of the document "Methodologies for reporting Adaptation Fund core impact indicators". Kindly also ensure that "Baseline" and "Target at project approval" columns are duly completed in each table and ensure that the figures provided in the tables align with those included in the project results framework. Finally, while filling out the "Number of beneficiaries" core indicator table, efforts should be made to disaggregate the direct and indirect beneficiaries by youth (age 15-24).		
	10. Is a disbursement schedule with time-bound milestones included?	**Yes.** See Table 14, p. 92. However, the below issues need to be addressed. **CR12:** Insert time-bound milestones			

		relative to project inception and the annual reporting requirement in the relevant columns of Table 14 and delete the table below it. **CR13:** The execution costs should add up to $684,056 (they should be $684,057). Add one dollar to one yearly payment of the execution costs and adjust total of the corresponding column to maintain the grand total of $7,999,991.	**CR12: Not Cleared.** Please adjust dates at the top row of the disbursement schedule table (July 2025 has already passed). **CR13: Cleared.** See disbursement schedule, p. 99.	**CR12: Cleared.** See p. 119. -	- -

ADAPTATION FUND

FULLY DEVELOPED PROPOSAL FOR SINGLE COUNTRY

PART I: PROGRAMME INFORMATION

Title of programme/Programme: "Ha Ta Tukari, "Water our Life": Towards Universal Drinking Water Coverage for 21 Communities of the *Wixárika* Nation"

Country: Mexico

Thematic Focal Area: Water Management

Type of Implementing Entity: National Implementing Entity

Implementing Entity: Mexican Institute of Water Technology (IMTA)

Executing Entities: Lluvia Para Todos, A.C.

Amount of Financing Requested: $7,999,991 (in U.S Dollars Equivalent)

Letter of Endorsement (LOE) signed: Yes ☒ No ☐

NOTE: The LOE should be signed by the Designated Authority (DA). The signatory DA must be on file with the Adaptation Fund. To find the DA currently on file check this page: https://www.adaptation-fund.org/apply-funding/designated-authorities

Stage of Submission:

☒ This proposal has been submitted before including at a different stage (concept note) – Proposal last submission: October 2024

☐ This is the first submission ever of the proposal at any stage

In case of a resubmission, please indicate the last submission date: 10/23/2024

Please note that fully-developed proposal documents should not exceed 100 pages for the main document, and 100 pages for the annexes.

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List of Acronyms

ARCSA – American Rainwater Catchment Systems Association
CEI - State Indigenous Commission of the State of Jalisco
CONABIO – *Comisión Nacional para Conocimiento y Uso de la Biodiversidad* – National Commission for the Knowledge and Use of Biodiversity
CONAFOR – *Comisión Nacional Forestal* – Nacional Forestry Commission
CONAGUA – *Comisión Nacional del Agua* – National Water Commission
EE – Executing Entity
ESP - Environmental and Social Policy
ESMP – Environmental Social Management Plan
FGRA – *Fundación Gonzalo Río Arronte* – Gonzalo Rio Arronte Foundation
FPIC - Free, prior and informed consent
HDI – Human Development Index
HDPE – High density Polyethylene
IFAD - International Fund for Agricultural Development
ILO - International Labour Organization
IMTA – *Instituto Mexicano de Tecnologías del Agua* – Mexican Institute for Water Technologies
INDESOL – *Instituto Nacional de Desarrollo Social* – National Social Development Institute
INEGI – *Instituto National de Estadística y Geografía* – National Statistics and Geography Institute
INPI – *Instituto Nacional de Pueblos Indígenas* – National Indigenous Peoples' Institute
INSP – *Instituto Nacional de Salud Pública* – National Public Health Institute
NGO – Non-Governmental Organisations
PEACC - Programme for Climate Change Action
PECC - *Programa Especial de Cambio Climático* - Special Climate Change Programme
PROCAPTAR – *Programa Nacional para la Captación de Lluvia y Ecotecnias en Zonas Rurales* – National Programme for Rainwater Harvesting and Ecotechnologies in Rural Areas
PROMARNAT – *Programa Sectorial de Medio Ambiente y Recursos Naturales* – Sectorial Environment and Natural Resources Programme
RWH – Rainwater Harvesting
RWHS – Rainwater Harvesting Systems
SDG – Sustainable Development Goals
SECAP - Social, Environmental and Climate Assessment Procedures
SEDEMA – *Secretaría del Medio Ambiente* - Environment Secretariat
TNT – *Taller Nuevos Territorios* – New Territories Workshop
UN – United Nations
UNAM – *Universidad Nacional Autónoma de México* – National Autonomous University of Mexico
UNDP – United Nations Development Programme
UNDRIP - United Nations Declaration on the Rights of Indigenous Peoples
UV – Ultra Violet
WHO – World Health Organization

Programme Background and Context:

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This programme addresses the extremely precarious water access conditions being experienced in the territory of the *Wixárika* Nation, often known as Huichol, in the western Sierra Madre mountains (Figure 1). This remote and beautiful region, inhabited by one of the most iconic indigenous peoples of Mexico, is also one of its poorest, with some of the worst development and health outcomes in the country. Water access is very problematic, and most of the population lives with minimal amounts of often unsafe water, carried from small and dwindling springs and water holes spread thinly through the landscape. It is an arduous job, disproportionately borne by women, and the difficulty involved results in extremely low per-capita use, often in the range of just 10-15 litres per day. This contributes to the very high levels of child illness and mortality that are pervasive in the region. The water problem in the *Wixárika* Nation has geographic, economic, development, and environmental aspects. The combination of steep, mountainous terrain, scattered, low-density settlement patterns, and low levels of economic development make water infrastructure hard to build and maintain.

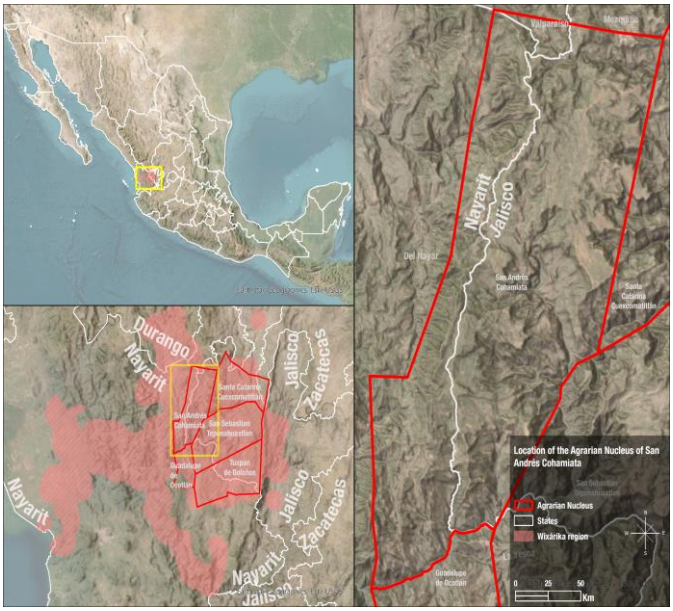

Figure 1. *Map of the location of the Sierra Wixárika, Jalisco, México; along the location of the Agrarian Nucleus of San Andrés Cohamiata, within the municipalities of Mezquitic, El Nayar, and Valparaíso.*

Environmental and climate changes are making already difficult water conditions increasingly precarious. The region is very vulnerable to the persistent droughts affecting the entire northwest of Mexico and southwestern United States.

Rain-irrigated subsistence agriculture is fundamental in the *Wixárika* territory, and their mountain forests are highly vulnerable to desertification. Dryer dry seasons are seeing large forest fires, some of which burn for weeks, and the thinning forests and eroding soils hold less water. Springs and water holes are shrinking under combined pressures of reduced recharge, and increased demand from a growing population trying to meet its needs. The Sierra normally gets considerable, though short and concentrated, summer rains, but with little retention and storage capacity, the water flushes directly down the canyons and gorges, leaving the landscape dry and the population scarcely able to meet their most basic needs.

This programme seeks to scale up a line of work we have been carrying out with *Wixárika*

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communities over the course of almost fifteen years, developing and installing rainwater harvesting systems that have proven highly effective at improving water access, quality, and resilience in the complex context of the Sierra. We seek to achieve sustainable and climate adaptive universal drinking water access in the 21[1] *Wixárika* villages of San Andrés Cohamiata, the largest population group of the 4 subregions that constitute the *Wixárika* Nation (Figure 1), through the installation of 1,000 rainwater harvesting systems (RWHS) cisterns, and landscape management for water retention and soil regeneration.

Economic/Social Context:

The *Wixárika* people live in one of Mexico's most isolated and underdeveloped regions, high in the western Sierra Madre, where the states of Jalisco, Nayarit, Zacatecas and Durango converge (Figure 1). The *Wixáritari* (plural of *Wixárika*) live in small villages and hamlets scattered amongst the imposing cliffs, mesas, and canyons that dominate the territory. One of Mexico's least assimilated indigenous communities, the *Wixaritari* preserve their native language and continue to follow the traditional spiritual belief system known as El Costumbre, which descends from their pre-European ancestors. The *Wixárika* people gained notoriety for the resilience of their rich indigenous culture, artwork, and their deep, elaborate spiritual traditions and practices involving the psychoactive Peyote cactus. They are an emblematic people, featured heavily in Mexican cultural and political displays appealing to national history and identity.

Photo 1. *Wixárika ancestor dressed in traditional attire (unknown author).*
Photo 2. *Felipe Lopez Moreno, Rainwater Harvesting Systems installer technician, dressed in traditional Wixárika attire with his children.*

Despite this notoriety however, most *Wixárika* people today live in conditions of great material poverty. Paid work is almost non-existent in the region, and subsistence agriculture remains a principal activity, despite the lack of arable lands and thin soils which result in very low yields. As a result, the *Wixárika* often leave home to work in industrial agriculture as labourers in neighbouring states, or to sell their

[1] The First proposal stated universal access for 23 communities. But since, and through the work of the past 13 years, we have already achieved this in 2 of those 23 communities (La Cebolleta and La Laguna). The proposal is thus directed to the remaining 21.

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crafts in towns and cities throughout Mexico, their travel expenses consuming much of what they earn. The erosion of food self-sufficiency and the introduction of new necessities like cell phones has pushed the *Wixaritari* into an economic system for which they have limited preparation. Many people, especially the most vulnerable members of the community, such as single mothers, or those with abusive spouses, have practically no income whatsoever and subsist minimally on support from family members. The traditional ways of life in the Sierra are being subjected to massive, converging pressures from the no longer distant outside world. The Situation the *Wixaritari* people face has recently become even more difficult with the increased presence and activity of organised crime groups in the region, who commit acts of violence, intimidation, and engage in extractivist economies like illegal logging (Photo 1 and photo 2).

Development/Environmental Context:

The territory the work takes place in is one of extreme topography, with sheer cliffs and canyons separating villages that might be a few kilometres apart as the crow flies, but take many hours of driving or walking to get between. Elevations range from around 600 to 2,200 metres, often within short distances, so the ecology and plant life of the region vary greatly. For hundreds of years and up until the mid-late 20th century, the *Wixárika* Sierra had no roads whatsoever, and the peoples living there were settled in very small, family ranches or hamlets, located in places near springs or water holes and land suitable for farming. The forests in the area, especially the higher elevation parts, were dense and rich in wildlife (Figure 2).

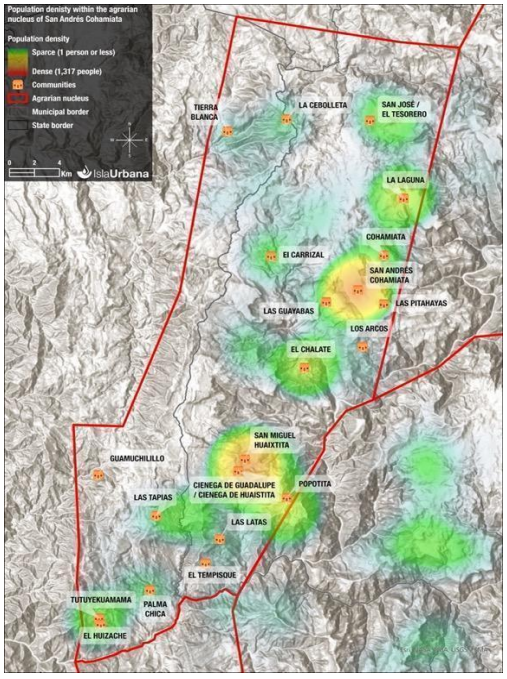

Figure 2. *Map of the location and population density of the Agrarian Nucleus of San Andrés Cohamiata and its 21 localities. The population density map was created using the mean coordinates of every official locality of the INEGI 2020 census within the borders of the San Andrés Cohamiata Agrarian Nucleus. A heatmap was created using a 300-metre radius from every locality's coordinates, with the total population within each locality serving as the main weight, in order to visualise the population distribution within the agrarian nucleus. However, the coordinates of every locality do not accurately represent the spatial distribution of the individual dwellings within each locality.*

Infrastructure development in the *Wixárika* region began with the establishment of airstrips, followed by government schools, and eventually in the 1980's and 90's, roads, the presence of which resulted in large scale logging, which in the telling of local people, changed the forest and made it significantly thinner, to this day. The topography and location of the *Wixárika* Sierra make it very vulnerable to soil erosion and climate related problems. The rocky mountains have only very thin soils, and the loss of forest cover, overgrazing from livestock, and increasing drought conditions in the entire region result in a desertifying landscape, with growing incidence of forest fires, less surface water, and tougher conditions for the subsistence farming the *Wixárika* rely on to feed themselves.

By almost any indicator, the area has very low development, with some of the lowest basic services coverage in Mexico. The great majority of homes have no running water, sanitation services are almost nonexistent, electricity only started reaching most communities in the last 10 years and is intermittent

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at best. Health and education outcomes are at the very bottom of national ratings.

The municipality of Mezquitic, where our work is focused and where the largest share of the *Wixárika* people live, has the lowest Health Index rating in all of Mexico , among the lowest education and income ratings.Also, this municipality has the lowest National Multidimensional Poverty Index (MPI) with (0.46) rating in the State of Jalisco (which is -0.617) and the fourth lowest at a national level (0.0). About 89% of the population lives in poverty and 55% lives in extreme poverty (CONEVAL, 2024), and it has an infant mortality rate of 76.66 compared to the national average of 16.76 (CONAPO, 2020). Tellingly, Mezquitic suffered one of the country's greatest reductions in HDI, falling 9.61% between 2010 and 2015. INEGI (Mexico's National Institute of Statistics and Geography) categorises the municipality as having "Very High" marginalisation.

The *Wixárika* region has experienced the highest increase in average Human Development Index (HDI) from 2010 to 2020 compared to all other indigenous regions in the country (Figure 3), with an increase of 0.55. The National Multidimensional Poverty Index changes from 2010 to 2020 in the San Andrés Cohamiata Agrarian Nucleus is the highest (0.70) compared to the 5 agrarian nuclei (0.65) and the overall *Wixárika* region (0.55). However, 2 localities within the Agrarian Nucleus, La Laguna and La Cebolleta, experienced a much lower increase of 0.13 and 0.1 respectively. The percentage of dwellings with no running water range between 49-57% within the *Wixárika* region. However, the locality of La Cebolleta has an astonishing 96% of dwellings with no running water. Given this, all dwellings in both La Laguna and La Cebolleta are equipped with RWHS, providing them with better access to clean water than most other localities in the *Wixárika* region.

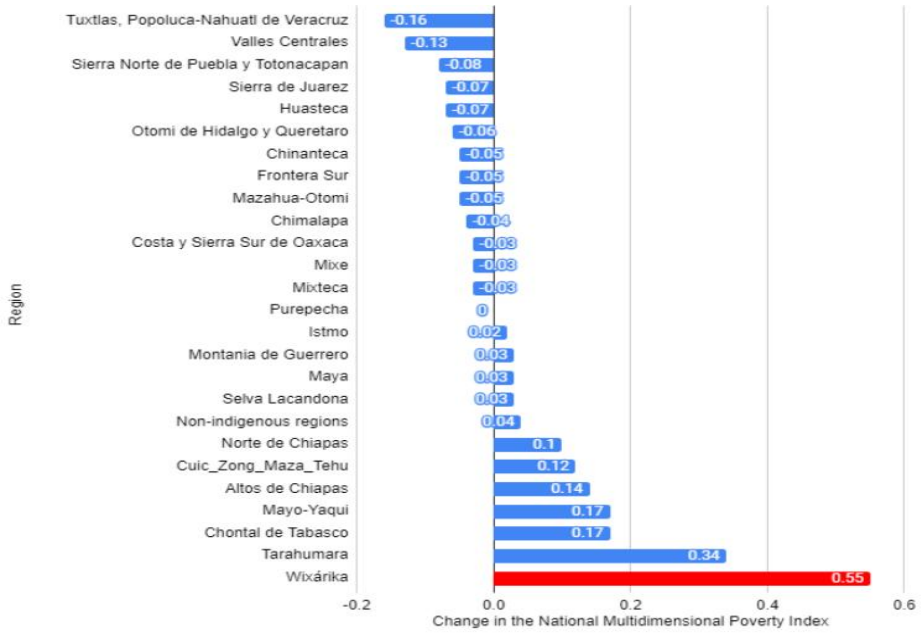

Figure 3. *Changes in the National Multidimensional Poverty Index from 2010 to 2020 in the indigenous regions of Mexico.*

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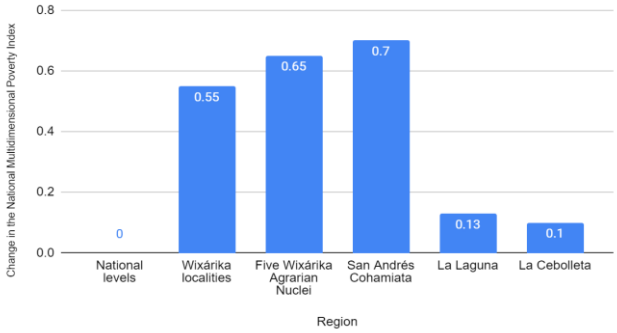

Figure 4. *Changes in the National Multidimensional Poverty Index from 2010 to 2020 in different regional levels within the Wixárita Region.*

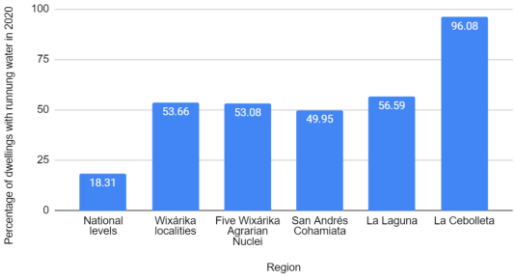

Figure 5. *Average percentages of dwellings that have no access to running water in 2020.*

Climate change impact on the Wixáritari people

Future climate change predictions within the San Andrés Cohamiata region are expected to have a deeply detrimental effect on the local population. Overall annual average precipitation levels at a national scale are expected to decrease by 3 to 15% and temperatures are expected to increase by 1.3 to 4.8 Cº by the end of the century (Mercer et al., 2012). Based on figure 6, current climatic classifications include Subtropical Highlands and Humid subtropical within most of the region, Tropical Savannah to the southeast border and a small region of Hot semi-arid climate. However, based on a study by Beck et al. (2018), indicates that according to current climate change weather predictions for 2071 to 2100, 1) Subtropical highland climate will virtually disappear, 2) humid subtropical climate will be displaced northwards, and 3) both tropical savannah and hot semi-arid climates will dramatically increase. These last two climates have a shorter and less intense rainy season, as well as a dryer and hotter summers.

CONABIO (2017), indicates that currently two of the three municipalities where San Andres Cohamiata agrarian nucleus is located (Mezquitic and Del Nayar) have a very high social vulnerability towards drought at a national level (CONAGUA, 2022). These effects will compromise the reliability of *Wixárika* communities' current water sources and their agricultural cycles; thus, drastically increasing their overall vulnerability.

Currently, the probability of forest fires within the Agrarian Nucleus is high for 3% of the region, low for 22% of the region and medium for 71% of the region (CONAFOR, 2021). However, with longer dryer

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seasons and hotter winters, it is expected that both the probability and risk are going to increase significantly by the end of the century (Mercer et al., 2012). Already in the past three years, large forest fires have blazed for weeks over large areas of forest in Mezquitic and El Nayar. In addition to this, the climate change vulnerability for Del Nayar and Mezquitic are high, the degree of resilience for natural disasters is very low, and the social vulnerability index for natural disasters is very high (CENAPRED, 2024).

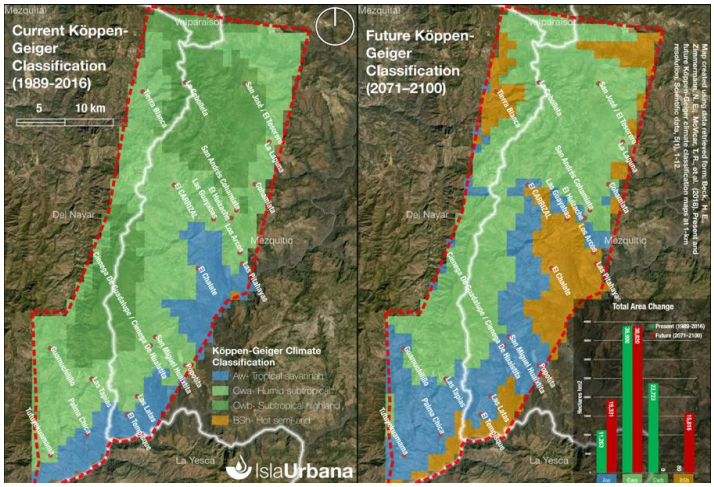

Figure 6. *Actual and future distribution of the Koppen-Geiger Climate classification within the Agrarian Nucleus of San Andrés Cohamiata.*

Forest and water challenges

Through a participatory community consultative process conducted between 2022 and 2024, local authorities report that the main problems affecting the forest in the last decade are forest fires (94%), followed by pests, deforestation, overgrazing, and landslides. 100% of the localities have observed erosion (areas without vegetation and soil loss on slopes and in the forest), which they mainly attribute to heavy rains (88%), slope (76%), and agricultural use of the land. 100% of the localities have detected changes in the water coming from the slopes in the last 10 years, the most common being the drying up of springs and the increase of sediment in the water flowing down from the slopes (see Annex 6).

The amount of water used per capita ranges between six and thirteen litres per day, which is insufficient to have a dignified life according to the World Health Organization (WHO), which establishes an ideal of 50 litres per person per day and a minimum of 20 litres per day per capita. The population depends on the water they find in springs and water holes - open pools distributed in the mountainous landscape that depend on the rain recharge to the springs (González-Padrón 2019a) -, seasonal streams, as well as the Santa Clara River, which passes through the town of El Carrizal. Some of these water springs are only used for livestock due to their low quality for human usage, since they are visibly cloudy and/or have a bad taste. The *Wixárika* rely on these dwindling natural water sources for survival. In addition to these main water bodies there are hot springs with salts and high temperatures in the Tesorero and San Miguel Huaixtita ranches, that are scarcely used by the population.

Water is a central part of the *Wixárika* “custom”, *El Costumbre*; many specific water holes and springs along the whole *Wixárika* territory (figure 1) are considered to be sacred, and serve as pilgrimage and ceremony sites. The Agrarian Authority (*Comisariado de Bienes Comunales*) considers them of utmost spiritual importance and are devoting great effort to registering their geoposition.
Table 1 shows the number and type of current water sources by location.

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Table 1. Current water sources by location

Locality			Number of natural sources from which they obtain water		Number of centralized infrastructure works						Number of SCALL	
	NUMBER OF HOUSEHOLDS	AVERAGE DISTANCE (METERS) TO WATER SOURCES	WATER HOLE (OJO DE AGUA)	SPRING	RIVER	DRINKING WATER TANK	DRINKING WATER CISTERN	DIRECT DRINKING WATER	WATER ER BOARD	DAM	COMMUNAL	HOUSEHOLDS
Ciénega de Guadalupe	103	706	0	2	0	1	0	0	0	0	0	0
Cohamiata	212	418	2	1	0	1	0	0	0	0	0	0
El Carrizal	132	534	2	0	1	1	0	0	0	1	0	1
El Chalate	ND	1316	0	1	0	1	1	0	0	0	0	0
El Huizache	49	ND	2	0	0	0	1	0	0	0	0	0
El Tempizque	32	536	3	0	0	0	1	0	0	0	0	0
Guamuchililllo	70	686	7	0	0	1	0	0	0	0	0	0
La Cebolleta	48	4616	1	0	0	0	0	0	0	0	4	48
La Laguna	111	398	5	1	0	2	0	0	0	0	4	91
Las Latas	36	194	0	5	0	1	0	0	0	0	0	0
Las Guayabas	ND	1138	2	1	0	1	0	0	0	0	0	0
Las Pitayas	125	856	11	0	0	0	0	0	0	0	0	ND
Las Tapias	300	1118	0	0	0	2	0	0	1	0	0	0
Los Arcos	55	4168	3	0	0	0	0	0	0	0	0	0
Los Lobos	50	ND	0	1	ND	ND	ND	ND	ND	ND	0	0
Palma Chica	55	644	0	0	0	1	0	0	0	0	0	0
Popotita	516	780	2	2	0	1	0	0	1	0	0	0
San Andrés Cohamiata	170	856	5	1	0	4	0	0	0	0	0	ND

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San José Tesorero	55	650	7	0	0	1	0	0	0	0	0	2
San Miguel Huaixtita	ND	948	1	0	0	6	0	0	0	0	0	0
Tierra Blanca del Chalate	36	396	3	0	0	1	0	1	0	0	0	0
Tierra Blanca de Huaixtita	28	ND	1	0	ND	ND	ND	ND	ND	ND	0	0
Tutu Yekuwamama	ND	1084	0	0	0	0	1	0	0	0	0	0
Total	**2,228**	**ND**	**57**	**15**	**1**	**25**	**3**	**1**	**2**	**1**	**8**	**142**

Water management and quality

As mentioned above, the limited natural water sources are often of poor quality, mainly because they are in open spaces easily accessible by animals. The Implementing Entity, the Mexican Institute of Water Technology (IMTA) took samples from natural water sources used by the community for consumption in 2022 and 2023. The samples were first analysed in a mobile laboratory for bacteriological parameters, and then sent to the IMTA Water Quality Laboratory in Morelos to analyse the presence of heavy metals. To determine if the water from the supply sources is suitable for human use and consumption, the microbiological parameters Total Coliforms and E. coli were measured. The results were evaluated against the permissible limit established in the official Mexican standard NOM-127-SSA1-2021, which indicates less than 1.1 MPN/100 mL or undetectable for the E. coli parameter. The results clearly indicate that, in bacteriological terms, the quality of the water from the sampled sources is not compatible with human consumption. The impact on health is significant and most obviously impacts children: infant and child mortality rates are significantly higher than national averages, dysentery being one of the main culprits of this public health crisis.

In terms of water management within households, the main challenge is safe water storage. Families store water in drums, buckets, and only some of them own specialized tanks or cisterns (most of which are RWHS installed in this project). Typically, drinking water is placed in a bucket in the kitchen and taken from there with a glass, but disinfection practices are scarcely known and are not rooted in the families' habits. They drink water from both natural sources and a few existing centralised distribution systems that are rarely reliable. Bathing and washing clothes are usually done directly in the streams and springs, since there is no infrastructure that can meet those ends within households.

Wixaritari women and water

Wixaritari culture is characterised by highly conservative gender roles. Women have little decision-making power within their community governance structures, although in recent years there have been significant advances made when it comes to women's participation in community leadership and governance - structures in which previously only male members of the community participated. An example of this is Paulita Carrillo Carrillo, the current Secretary of the Agrarian Authority of San Andrés,

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who will be directly supporting and guiding the implementation of this programme.

Today, women's roles are still principally ones of child rearing and management of the home; this means they are disproportionately impacted by the increasing water shortages and deficiencies in climate resiliency strategies. 67% of households carry water from natural sources, on average six times a week, to obtain a maximum of 13 litres of water per person per day. In that vast majority of families that rely on water hauling, 68% of the people who haul are women, and 23% are girls and boys under 16 years of age (91% in total for women and children). This work takes them, on average, two hours a day (González-Padrón 2019b) (Photo 3).

Photo 3. *Wixárika woman hauling water.*

Hauling is a particularly difficult activity in the mountains: in many locations people need to descend very steep and dangerous paths to look for water in the ravines. These water sources are usually of poor quality because they are in open spaces and with free access to animals (González-Padrón, 2019b).

The average route is 1,104 meters (median: 770 m; mode: 856 m) to bring water to their homes from the nearest water source. Most adults (77%) carry the water on their back, in 20 litre containers, while girls and boys carry 10 or 5 litre containers. Some families have access to wheelbarrows or donkeys that significantly facilitate the task, but hauling capacity is still usually very low. Only 7% of hauling is done in large volumes, by carrying tanks on trucks. 4% of households pay those who have vehicles for this hauling service.

Table 2. Water hauling per household

	Times per week that households haul	Litres they carry each time	Water obtained by hauling (litres per person per day)
Dry season	4.3	41.5	6.9
Rainy season	7.8	69.4	19.3
Annual average	6	55.4	13.1

Women are the most important actors when it comes to water management in homes. They will thus be the drivers of water autonomy and safety improvement, by ensuring that Rainwater Harvesting Systems (RWHS) in homes are properly maintained and water is correctly disinfected for human consumption. As we describe in the Sustainability section below, women will be the driving force behind deepening the communities longer-term adaptive capacities. A

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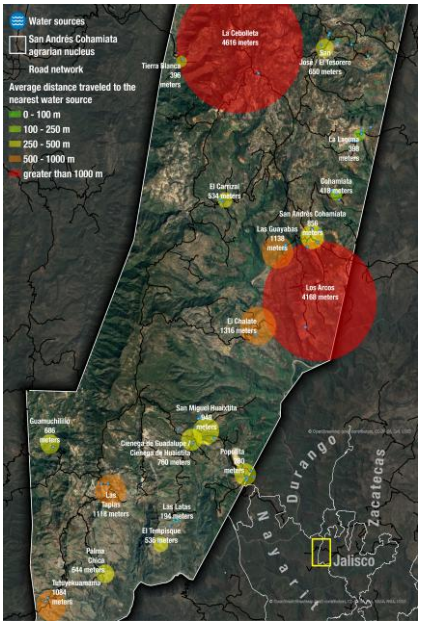

fuller gender assessment and gender action plan can be found in Annex 5.

In order to estimate how far the nearest source of water is to each locality, a geospatial analysis was created. Firstly, we generated coordinates for every visible building using publicly available satellite imagery from Google, and (2) calculated the linear distance of every building to the nearest water source (the latter retrieved from fieldwork). Finally, the distance of every building to the nearest water source was averaged for every locality. As the distance does not consider topography or the path from existing road networks or footpaths, the actual walking distance is higher than this estimate (Figure 7).

Figure 7. *Map of three different localities and the distance from each building to the nearest water source.*

Programme Objectives

The programme's overall objective is to provide universal autonomous, renewable, and adaptive water access to the *Wixárika* people of the 21 communities in the San Andrés Cohamiata region of Mexico. We aim to do this through an innovative combination of Rainwater Harvesting Systems (RWHS), forest regeneration and community capacity building. **Ultimately the programme seeks to support the *Wixárika* nation to become more adaptive and resilient to the water shortages and desertification that are a direct result of climate change.**

Achieving universal sustainable water coverage in the *Wixárika* territory would be a highly significant achievement. The complexities present in this area, which have made conventional water services so prone to failure, also exist in other marginalised communities throughout Mexico and the world. An effective strategy that can establish permanent water access there would be of great relevance if made replicable. This programme therefore seeks not only to supply water to an entire indigenous nation, but aims to systematise a complete methodology, merging technical innovation with social tools and processes, that can be implemented with many more communities across the world, supporting them to more effectively adapt to the effects of climate change.

The programme's specific objectives are:

- Increase the amount of drinking water available for 5,100 people
- Increase the adoption of RWHS in 1,000 homes
- Co-design ecological regeneration strategies with the *Wixárika* community to improve soil health and water retention
- Increase the diversity of water sources available to the 21 target communities
- Increase water abundance in existing sources
- Enhance forest and soil health, and biodiversity in target forest areas
- Pilot a new approach to agroforestry practices to enhance food sovereignty and soil health
- Build capacities in the communities to autonomously manage their water needs
- Produce a replicable and scalable model for achieving universal water coverage using RWHS and water-sensitive landscape regeneration for remote indigenous communities across the world.

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The programme goals are to:

- Install 1,000 Rain Water Harvesting Systems in households, giving approximately 5,100 people access to 20 litres of drinking water every day 9 months of the year. This would mean an additional 19,904,031 to 22,430,281 litres of water every year for the *Wixárika* nation once all RHWS have been installed. Although Rain Water Harvesting Potential (RWHP) is expected to decrease in 2081-2100 period, by 5.5% to 13.7%, RWHS will be able to provide more than half of their annual water needs, a significant improvement on their current situation (INECC, 2024). Of these 5,100 people, approximately 52% or 2,658 are women and girls and 45% or 2,286 are children. 920 are youth.
- Regenerate 700 hectares of forest to rehydrate the soil, increase biodiversity and capture carbon.
- Train 14 *Wixárika* community members to install RWHS.
- Train 3,570 *Wixárika* community members to use and maintain their RWHS
- 2,000 *Wixárika* community members participating in the implementation of regeneration, conservation and agroforestry practices.
- Pilot an innovative agroforestry approach in 3 hectares of land with 60 families benefiting directly from it.
- Generate a replicable implementation model in the form of a detailed toolkit for universal water coverage.

Programme Components and Financing

Table 3. Programme Components and Financing

Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
Component 1: Establishing rainwater harvesting (RWH) infrastructure for sustainable and autonomous water access.	**Output 1.1** Implementation of 1,000 fully functioning RWHS in households. **$3,885,080**	**Outcome 1.1:** 5,100 residents of San Andrés Cohamiata—of which 2,658 are women and girls and 2,286 children, 920 youth —benefit from improved access to drinking water thanks to the installation and operation of 1,000 rainwater harvesting systems (RWHS) **$3,885,080**	**4,089,491**
	Output 1.2.1: Both group and one-on-one training and agreements with approximately 3,570 users for the correct use and maintenance of the RWHS (this represents 70% of programme beneficiaries, discounting 30% for infants and elderly beneficiaries who will not participate in maintenance activities). The programme will aim for at least half of those trained, or about 1,785 people, to be women. **$204,411**	**Outcome 1.2:** Approximately 3,570 beneficiaries (1,785 women) trained on the correct use and maintenance of RWHS. **$204,411**	

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Component 2: Developing and piloting of a community action plan for landscape-scale water management and regeneration.	**Output 2.1.1:** Community-driven design of a landscape-scale water management and agroforestry strategy for the *Wixárika* region. **$60,404**	**Outcome 2.1:** Increased local capacities for landscape-scale water management and innovative agroforestry practices. **$60,404**	**1,177,877**
	Output 2.2.1: Creation of a detailed database of local physical, chemical, and geographical conditions to better understand the current conditions and areas for improvement. **$12,000**	**Outcome 2.2:** Increased water retention capacity, infiltration rates, and organic matter, and reduced erosion across 703 hectares undergoing regeneration. **$1,117,473**	
	Output 2.2.2: 700 forest hectares undergoing regeneration by the community **$604,040**		
	Output 2.2.3: Creation of 3 hectares of agroforestry demonstration plots **$501,434**		
Component 3: Developing communities' capacities for sustainable water management.	**Output 3.1.1:** A methodology for community participation and collaboration that ensures community acceptance and ownership of the programme, designed and implemented. **$205,301**	**Outcome 3.1:** The *Wixárika* community co-design and co-implement an autonomous water management strategy in their landscape. **$205,301**	**821,205**
	Output 3.2.1: A learning programme to promote RWH adoption, hygiene, environmental regeneration, and climate change resilience implemented with 3,570 beneficiaries (70% of programme beneficiaries, discounting 30% for infants and elderly beneficiaries who will not participate in maintenance activities) **$492,723**	**Outcome 3.2:** Community-wide awareness and sustainable adoption of RWHS, landscape regeneration, hygiene and safe water management practices. **$492,723**	
	Output 3.3.1: A certification programme for the local Intercultural Teams of 40 people to develop and strengthen local technical and capacity building capacities, delivered; supporting team members to become	**Outcome 3.3:** The Intercultural teams of 40 people have the technical know-how and capacity to install and maintain RWHS now and in the future, regenerate forests and deliver educational activities for their	

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	autonomous agents of change in their communities. **$123,181**	community, scaling adaptive capacities across their communities. **$123,181**	
Component 4: Knowledge management and development of a model for community-led universal water coverage	**Output 4.1.1:** Systematised documentation of all technical and community processes taking place during the programme, capturing lessons learned, data and all relevant information to be used for the final design of the model **$504,532**	**Outcome 4.1:** Development of an integrated model for rainwater harvesting systems and landscape water management, with the potential to be adapted and replicated in diverse rural settings across Mexico and the Global South, effectively addressing water scarcity and improving climate resilience in vulnerable communities. **$600,634**	**600,634**
	Output 4.1.2: Detailed manual/toolkit for the effective replication of community-led universal water coverage programmes. **$48,051**		
	Output 4.1.3: A communications strategy to disseminate the impact of our community-led model for universal water coverage within and outside San Andrés Cohamiata. **$48,051**		
6. Programme Execution cost			**684,057**
7. Total Programme Cost			**7,373,264**
8. Programme Cycle Management Fee charged by the Implementing Entity			**626,727**
Amount of Financing Requested			**7,999,991**

Projected Calendar:

Indicate the dates of the following milestones for the proposed programme/programme

Table 4. Projected Calendar

Milestones	Expected Dates
Start of programme/Programme Implementation	January 2026
Mid-term Review (if planned)	January 2028
Programme/Programme Closing	July 2029
Terminal Evaluation	January 2030

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PART II:PROGRAMME JUSTIFICATION

A. Describe the programme components, particularly focusing on the concrete adaptation activities of the programme, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual programs will contribute to the overall increase in resilience.

Ha Ta Tukari's ongoing efforts in developing and submitting the Concept Note from 2022 to 2024 enabled us to complete the first component of the initial proposal: "Participatory Community Water Access Diagnostics for the San Andrés Cohamiata Region Communities." This foundational work sets the stage for all remaining tasks, which focus on scaling our adaptation impact. With this component now complete and detailed in the report shown in Annex 11, the project is organised into four components: Rainwater Harvesting Systems' installation, landscape water management and regeneration, capacity building, and knowledge management.

Components 3 and 4 are cross-cutting and have an impact throughout programme implementation. Capacity Building and community agreements (3) especially are threaded throughout Components 1 and 2 as their success depends on the *Wixárika* nation truly adopting, implementing and maintaining all the water management infrastructure and practices they promote. There are capacity building activities that appear in both components 1 and 2, being driven by component 3.

This is what makes Ha Ta Tukari unique, the fact that this is not a programme that is being brought to the *Wixárika* people from the outside, rather it is a truly Intercultural effort, with co-design and co-implementation at its core.

Theory of Change (TOC)

The programme's TOC (Figure 8) has been developed to reflect Ha Ta Tukari's efforts as a whole over the course of its 14-year history and into the future; including some activities that go beyond the scope of the Adaptation Fund's Grant. At its center is the pressing need for adaptive management and increased access to water for the *Wixárika* nation but acknowledges that, in order to address all the climate change problems identified in Section I, we must take a holistic community-driven approach to water management and landscape regeneration.

Component 1: Establishing rainwater harvesting (RWH) infrastructure for sustainable and autonomous water access

As climate change, drought and desertification challenges deepen, there is little that the *Wixárika* people can do but walk further than they already do in search of water and increase the overexploitation of existing water sources and springs. By building a broad, decentralised infrastructure of multiple, independent Rainwater Harvesting Systems(RWHS), families can count on clean, stored water, directly in each home. The distributed and autonomous nature of each system means that any mechanical or physical failure or damage to any individual system will not affect the rest, which gives great resilience to the whole. By virtue of this decentralisation, RWHS directly address the AF strategic outcome 1, since they provide completely independent infrastructure to each building and family, and reduce their exposure to threats that might affect the whole community. This component also addresses outcome 4 through the development of infrastructure assets that increase adaptive capacity and resilience in the community. Lastly, this component supports Output 8 through the scaling-up and development of RWHS systems throughout the community, offering an innovative technology that supports adaptation

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resilience for a unique indigenous community in one of the most isolated and challenging regions in the world.

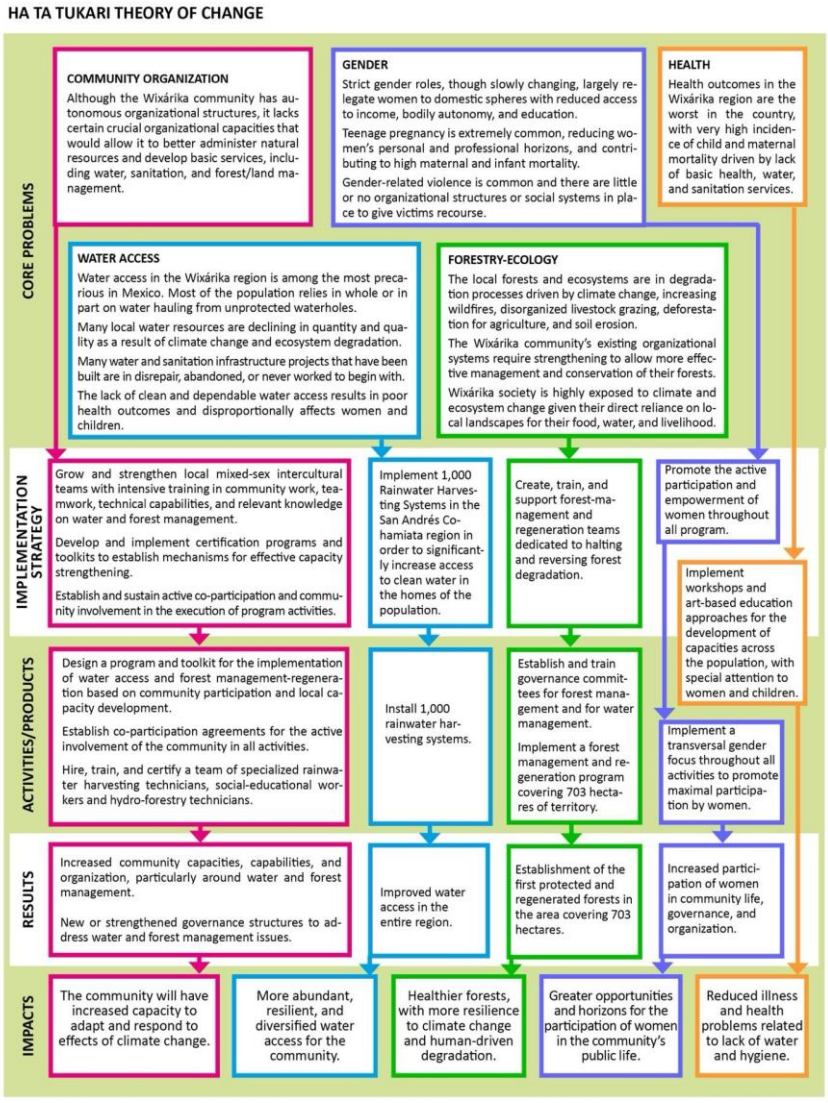

Figure 8. *Project theory of change (TOC).*

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The programme will provide 1,000 RWHS in all 21 towns and villages that make up San Andrés Cohamiata, with a focus on homes. Each system includes a tank of between 12,000 and 14,000-litre capacity, and colloidal silver to purify the collected water for human consumption. The existence of this distributed infrastructure of rainwater tanks will produce an enormous increase in available water, whose quality can be secured much more readily than that of the existing open natural water springs from which the community currently obtains most of its water (Photo 4).

The ability to store water during rainfall for future use significantly enhances the *Wixárika* community's capacity to adapt to the increased variability in precipitation rates and timeframes caused by climate change. Additionally, this network of RWHS reduces the demand on existing natural water holes and springs in the area, lessening their over-exploitation and allowing them to maintain a greater volume of water when needed. By decreasing the strain on these sources, more water remains in the landscape, reducing the number of people drawing from these natural resources and easing the pressure on the fragile riparian ecosystems surrounding them.

Our work has focused on the development of technologies and implementation models that allow the Rainwater Harvesting Systems that achieve long-term adoption and appropriation by their users. The models we have developed involve carefully designed technology in the form of robust and durable physical components, combined with user training, local technical capacity building, production of didactic materials, and long term support, in order to leave communities with a deep appropriation of rainwater harvesting practices. Follow-up and long term monitoring have shown robust adoption of the systems many years after projects have ended.

Photo 4. *Wixárika family and their RWHS.*

Main objective: Build decentralised infrastructure for autonomous and safe water provision in households across the 21 communities of San Andres Cohamiata.

Outcome 1.1: 5,100 residents of San Andrés Cohamiata—of which 2,658 are women and girls and 2,286 children, 920 youth—benefit from improved access to drinking water thanks to the installation and operation of 1,000 rainwater harvesting systems (RWHS)

Output 1.1.1: Implementation of 1,000 fully functioning RWHS in households.

1.1.1 ACTIVITIES

Activity 1.1 Preparing logistics for the implementation phase / creation of Operation Centres

The installation work will be coordinated from two strategic operation centres that will include a warehouse to store materials and tools, office space, 1-2 pick-up trucks, a kitchen, and bathrooms.

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Capacity building activities will be held in these centers during the first months of the programme. The first 6 months of the programme will involve establishing these two operation centres and making them ready to function as headquarters for the entire programme implementation.

Activity 1.2 Community meetings with traditional, communal, and religious authorities, as well as end-users
Meetings with local authorities and inhabitants to define the nature of this next phase of collaboration (and each party's respective roles and responsibilities), present the Project's Operating Rules and conditions, and review the practice of RWH and the system's operation and maintenance.

Activity 1.3 Creation of Community Governance Committees and co-participation agreements with local communities - *this activity appears in Components 2 and 3 since it is a fundamental cornerstone of all programme activities and impact* -
A series of meetings designed to inform and establish terms of participation for beneficiaries throughout the entire project. Building on and ensuring community buy-in and ownership of the programme's objectives and activities. The Ha Ta Tukari team has 14 years of experience of building these kinds of relationships and agreements in the *Wixárika* region. Community members' input is essential to the project's success, as much of the work, especially that of Component 2, will be carried out by the beneficiaries themselves (further details will be provided in the Component 2 and Cost Effectiveness sections).

Activity 1.4 Technical visits to installation sites to determine feasibility and specifications for each system, as well as beneficiary commitments regarding their operation and maintenance,
This activity includes analysing each building's characteristics, evaluating feasibility, creating a tailored list of materials, presenting conditions for inclusion in the project, and reaching agreements with beneficiaries. These agreements cover space requirements for the RWHS, necessary adjustments for installation, the beneficiaries' commitment to proper use and maintenance, and co-participation in providing food and lodging for the installation team.

Activity 1.5 Programming of rainwater harvesting system installations in homes
Design of the implementation route, notification of the installation dates and timelines to beneficiaries, preparation of the materials for each installation, organizing the RWHS installation teams.

Activity 1.6 Installation of 1,000 RWH systems in homes
The installation of a RWH system involves several parts, the principal ones being: gutters; pipes/downspouts; first flush systems, leaf screens; and cisterns. Installation of the cistern itself is generally the most complex and time consuming part of the process, taking approximately 3 hours in the case of the geomembrane-type tanks, and about 8 hours of work plus 24 hours of curing time for the cast concrete-type tanks (see below for more technical specifications). The remaining components generally take a total of 2-4 hours to install. This all means that a well trained and equipped crew of installers will generally install 1 full RWH system per day, with one sub-team installing the tank while another install gutters and all other components. Principal challenges in installing RWH systems in the context of the Sierra involve ensuring that all the materials and tools can be delivered to each house, ensuring that all prep-work is completed by the family (e.g. levelling the ground where the cistern will be placed), and the need for near-total self-sufficiency by the team given there are no hardware stores to get missing parts, or even electricity in many of the homes and villages.

Outcome 1.2: Approximately 3,570 beneficiaries trained on the correct use and maintenance of RWHS.

Output 1.2.1: Both group and one-on-one training and agreements with approximately 3,570 users for the correct use and maintenance of the RWHS (this represents 70% of programme beneficiaries,

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discounting 30% for infants and elderly beneficiaries who will not participate in maintenance activities). The programme will aim for at least half of those trained, or about 1,785 people, to be women.

ACTIVITIES 1.2.1

Activity 1.7 One-on-one training, and other knowledge-sharing activities to develop and strengthen local RWHS installation capacities

Technical training for each family on correct use and maintenance of the RWH once the systems are installed and fully operating. Training on the dosage and use of colloidal silver for water purification (brand name Microdyn). Delivery of didactic materials about RWHS, their use and maintenance, and water purification with colloidal silver. Women will be a key beneficiary of these given their key role in household management and child rearing. All training will be designed with a gender perspective, taking into account gender dynamics and local realities.

Activity 1.8 Monitoring and evaluation of the use and maintenance of community systems

Yearly follow-up of previously installed systems, during rainy months, to reinforce training, clear any doubts, make repairs to faulty systems and components, and monitor adoption. Monitoring and evaluation of the use and maintenance of the RWHS is ideally carried out during the rainy months, since this is when the systems are actively filling with water, and it is when they require more active management by their users. It is during these months that the way in which they are being used can be directly determined by the monitoring team, and any errors or misuse can be observed and corrected.

Alignment with Adaptation Fund objectives:

By virtue of the decentralised nature of this component's design, RWHS directly addresses the AF outcome 1 *Reduced exposure to climate-related hazards and threats* (and its corresponding output 1.2) since they provide completely independent infrastructure to each building and family, and reduce their exposure to threats that might affect the whole community. It also addresses Outcome 3 *Strengthened awareness of adaptation and climate risk reduction processes at local level* (and its corresponding Output 3.1).

Description of the technologies

Successfully achieving Universal Drinking Water Access in the region will depend in large part on the effectiveness of the Rainwater Harvesting component, both in terms of technical functionality, and of adoption by the community. The majority of programme resources will be invested in this Component. We have put a great amount of thought, research, experimentation, and analysis into the selection of an optimal solution (see Annex 3).

The major considerations at play in selecting a RWH technology for the Sierra are listed below. Different potential RWH technologies have strengths and weaknesses in the face of these criteria. Selection of an optimal model means weighing and comparing relative pros and cons.

1. Storage Capacity: The larger the tank, the more water you can store for the dry season. However, a larger volume requires a bigger rooftop area to be filled to near capacity with rainwater. Smaller dwellings would have the same rainwater harvesting potential with a smaller tank as long as no water overflows. Based on future climate change predictions, annual rainfall patterns are expected to decrease by 5.5%, with a greater degree during the dry season as well as a delayed onset of the rainy season in the medium scenario, as well as an overall decrease of 13.7% with a greater degree during the dry season in the worst case scenario by 2081 – 2100 (see Annex 6).
2. Transportability/logistics: The region is very remote, the villages and homes are highly scattered on a very large, extremely mountainous landscape, with few and poor roads which makes bringing heavy or very large materials an almost impossible challenge.
3. Durability/Sustainability: The infrastructure we will build should be able to function for decades with locally-led repair and maintenance.

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4. Adoptability: The technology should be understandable, acceptable, adaptable, and repairable, by the local population. The programme should be implemented with as much participation as possible by the communities themselves.
5. Water Quality: What processes or technologies are needed for achieving the desired water quality within realistic cost and complexity constraints.
6. Scaling: What is viable for scaling and replicating in other communities, regions, states, countries with similar conditions.

Rainwater Harvesting Systems in buildings: Ha Ta Tukari has already achieved near universal coverage in two of the villages of San Andrés Cohamiata, and between 2022 and 2024 has installed Rainwater Harvesting Systems in every school and clinic in the area. The current proposal would cover the implementation of RWHS for all remaining households in this area, as well as the few community buildings left to equip with RWHS.

Rainwater Harvesting Systems in households: RWHS are central to our strategy for achieving water access in the *Wixárika* Mountains because this form of infrastructure can be implemented in homes that are too scattered for centralised systems to reach; because they take advantage of the only water source that already reaches every house naturally; because they are very effective and simple to use; and because the capacity to store water in the homes - which the rainwater tanks provide - gives greatly increased resilience to families and communities, allowing water from more abundant moments to be saved for dryer periods. This is of great importance in the present context of increased droughts alternating with high intensity rain events, which are the anticipated and already apparent tendencies of climate change in northwestern Mexico.

The systems that we use capture the rainwater that flows off the house's roofs usually made of slab, metal or plastic sheet, and channel it via gutters and pipes, passing through a leaf-screen (stainless steel 2x2mm mesh). Subsequently, the water is conveyed through a first flush diverter that diverts the first 0.5-1.5mm or 0.5-1.5 L/m2 of precipitation from each rain event, eliminating diverse pollutants in the water, and is then introduced into a storage tank. Within this tank, a calm inlet allows incoming water to fill the tank from the bottom without stirring up settled sediments.

Two storage tank models will be used in this project: geomembrane tanks (figure 10 and photo 5) made from HDPE (High Density Polyethylene), and Concrete tanks (figure 9 and photos 6, 7). Their capacities range from 12,000 to 14,000 litres, depending on the type of system. To extract the water, a hose is connected to direct the water to the place of use (Figure 9 and 10, Annex 2). Final treatment of the water can be achieved with colloidal silver (brand name Microdyn), that will be distributed and also available in the small stores in the region.

These systems capture approximately 19,900 to 22,500 litres of rainwater per year in homes, enough to provide families with an average of 68 litres of drinking water at home per day, equivalent to 3 or more daily trips to streams and water holes carrying 20+ kilograms of water each time. However, it is expected that by 2080 to 2100, mean precipitation will decrease by 5.5% to 13.7%, this would be equivalent to 18,809 to 21,197 litres and 17,177 to 19,357 litres annually respectively (INECC, 2024). This would represent a decrease in RWHP from 64%–76% under current conditions to 60%–72% and 56%–66% by the period 2081–2100 respectively (Annex 7). This still represents more than half of their current annual water demand, thus is still a considerable improvement upon the worst-case scenario of climate change.

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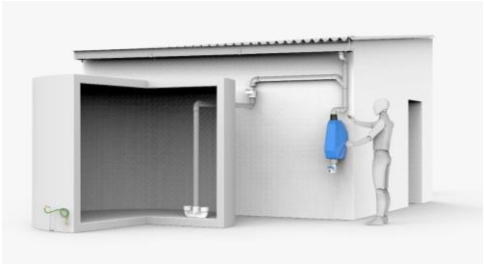

Figure 9. *Concrete cistern RWH system render*

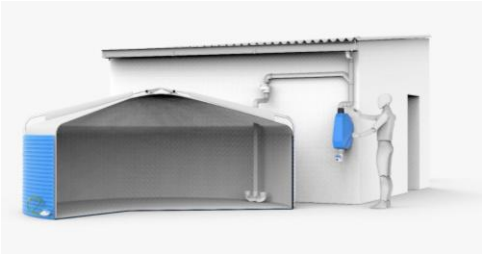

Figure 10. *Geomembrane cistern RWH system render*
Photo 5*. RWH system with metal sheet protection*

New Developments in Concrete Tanks

The concrete tanks we propose working with are approximately 12,000 litres in volume (2.8 m diameter * 2 m height) with solid 4" thick walls. They are cast in concrete reinforced with steel mesh. We have recently begun working with a novel construction method for building cast-concrete tanks. This method, which involves a combination of specially designed moulds, thoughtful use of accelerants and additives to the concrete mix, and a precise implementation process, significantly mitigates several of the key difficulties inherent in working with concrete tanks, as detailed below:

Table 5. Concrete tank comparison

Challenge	Conventional Concrete Tanks	New Technology Concrete Tanks
Takes a long time to build	5-10 days from start to finish.	1.5 - 3 days from start to finish.
Difficult quality control results in leaks	Difficult to ensure consistency in cement mixing, proportions, application times, technique, etc… requires highly skilled and trained technicians present at all times. Failures in consistency/quality control can cause frequent leaks.	The implementation system allows for tight control of all parts of the process. Cement mix is consistent, proportions can be kept exact, application method results in a solid monolithic structure poured in one session, basically eliminating fail points and potential leaks.
Highly labour intensive	3-5 days of hard physical labour by a crew of 4-6 people	8 hours of medium-hard physical labour by a crew of 4-6
Transport of heavy materials	Difficult. Needs 8-10 tons of materials delivered to each tank site.	Not affected for better or worse. Problem remains the same.

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As the table shows, this novel technology significantly improves on conventional concrete tanks on 3 of the 4 principal issues we consider. This makes them far more viable than conventional concrete tanks, effectively putting them back on the table vis-à-vis geomembrane Tanks.

Given the vast, mountainous areas and the necessity for efficient implementation and transportability under very challenging conditions, we will use a combination of the two tank technologies. **To ensure we provide high-quality storage tanks to all 1,000 households, we plan to use a 50%-50% proportion of both technologies**, depending on accessibility and other factors we will be able to assess once implementation begins. Concrete tanks are highly durable, but their large-scale construction is impractical in areas with no road access. In these homes and communities, we will use geomembrane tanks, which have proven effective and viable in the Sierra and offer the best solution for reaching inaccessible communities (see Annex 2).

Photo 6. *A Concrete tank, using the same technology as we propose, installed in the Cocachi community in the remote Bolivian mountains*

Photo 7. *Concrete storage tank require a special mold with a tailored design to this technology, the programme proposes creating its own molds for the sustainability of the project*

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Photo 8. *The Wixárika intercultural team install a RWHS in the community*

We do not seek to simply install RHW technologies, but rather to work closely with *Wixárika* communities to reach real water autonomy. To achieve this, we only work with communities who explicitly request it and, most importantly, with technicians and promoters who are trained Wixáritari that live in the Sierra and are employed by Lluvia Para Todos. Our work is based on building long-term relationships of trust and long-lasting local capacities, and has involved developing methods and strategies unique to this programme and distinct from all the others Isla Urbana, as an organisation, has carried out (see Annex 1 for more information about the relationship between Isla Urbana and Lluvia para Todos).

These RWH Systems will provide about 67 to 75% of the total water-in-the-home target. The rest will come from current-use water sources. This means that the springs and water holes that currently supply the population will continue being necessary, however the programme will allow for a very large reduction in the volumes of water extracted from them. This is good news for the fragile basin ecosystems and the forests in the region. Nevertheless, the need to continue using these natural sources of water and to adapt to the impacts of climate change in a region struck by growing desertification are the central reasons that the programme integrates landscape-scale forest and water management: with the current rate of erosion and soil loss, the landscape and its springs and waterholes are drying up. Only through a well-designed community action plan for landscape-scale water management can these water sources be preserved and enhanced.

Component 2: Developing and piloting of a community action plan for landscape-scale water management and regeneration.

The *Wixárika* region is experiencing increasing drought conditions, forest fires, and land changes that exacerbate the degradation of local soils and ecosystems. This is a serious and highly concerning problem because the rocky terrain with thin soils and steep slopes of the *Wixárika* Sierra is already highly vulnerable to desertification and erosion. Once degraded, the land in this area is very difficult to regenerate. Desertification is becoming one of the main issues for the *Wixárika* community, as it not only affects food availability but also reduces overall humidity and alters rainfall patterns that impact so many aspects of their lives.

As climate change impacts the areas where we focus our work, integrating additional water-related practices into our projects becomes increasingly important. To enhance resilience at an ecosystem level and adapt to changing rainfall patterns and climate conditions, retaining as much water as possible within the region's watersheds and soils is essential. Water retention and infiltration can increase the

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landscape's capacity to sustain vegetation cover and extend the flow and duration of seasonal streams and springs. Increased vegetation and humidity in the landscape can potentially help maintain or increase local rainfall. All these outcomes aim to reduce the exposure of the *Wixárika* to climate-related threats (AF strategic outcome 1) by regenerating the landscape and rebuilding its capacity to retain humidity. This involves working with volunteer forestry teams and community members to engage in activities that promote the productive regeneration of their landscape.

Main objective: To combat desertification by increasing water retention and infiltration in the landscape, enhancing biomass and vegetation cover, and reducing soil erosion through an innovative community action plan.

Outcome 2.1: Increased local capacities for landscape-scale water management and innovative agroforestry practices.

Output 2.1.1: Community-driven design of a landscape-scale water management and agroforestry strategy for the *Wixárika* region.

2.1.1 ACTIVITIES
Activity 2.1: Community Meetings with Authorities and Beneficiaries
Engage with traditional, community, and religious leaders, along with residents, to: present the project, define co-participation agreements, clarify each participant's role and involvement (this activity connects to Components 1 and 3, as the programme's components will be presented as one to community authorities).

Activity 2.2: Capacity Building for Hydroforestry Teams
Create and define the roles of specialized teams focused on socio-educational and technical aspects of landscape regeneration. Training will cover: Regeneration techniques, soil identification, safety protocols, topographic surveys and forest fire management.

Activity 2.3: Creation of the Ha Ta Tukari Governance Committee – Co-design of Regeneration Activities
Establish roles and responsibilities within the Governance Committee. This includes: Designing a programme for specialized teams to lead landscape regeneration activities, planning evaluation efforts and annual results reports (see Section III.A. for a full explanation of the Committee's role).

Outcome 2.2: Increased water retention capacity, infiltration rates, and organic matter, and reduced erosion across 703 hectares undergoing regeneration.

Output 2.2.1: Creation of a detailed database of local physical, chemical, and geographical conditions to better understand the current conditions and areas for improvement.

2.2.1 ACTIVITIES
Activity 2.4: Measure current soil health parameters and baseline
Assess the current soil health conditions through an analysis of physical and chemical parameters, guided by a scientifically robust sampling campaign. Compare these parameters against an ideal soil health baseline derived from (1) theoretical optimal conditions for successful regeneration and/or (2) a reference site in the region that remains in its unaltered state where applicable.

Activity 2.5 Six-monthly soil health analysis
Execute a complete analysis of soil health conditions in regenerated areas every six months to monitor and evaluate the progression of soil health over time. The results will be summarized in a concise report detailing the evolution of the key soil health parameters in comparison to the baseline, with a focus on assessing the success of the regeneration efforts every semester.

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Output 2.2.2: 700 forest hectares undergoing regeneration by the community

2.3.2 ACTIVITIES

Activity 2.6. Design of a community-centered regeneration strategy

Designing a programme for specialized teams to lead landscape regeneration activities. These teams will focus on key areas such as soil regeneration, live barriers, reforestation, water management, and biodiversity conservation. The programme should include team training, capacity building, and integration with local communities and co-participants.

Activity 2.7. Implement community-centered regeneration strategy

Train, coordinate and support 2,000 community members (approximately 2 per household receiving RWHS) in the implementation of landscape-scale water management in order to ensure full adoption, maintenance, and replication of ecosystem regeneration activities and agroforestry practices.

Activity 2.8 Monitoring and Evaluation of forest regeneration results

Track the progress of forest regeneration activities using user-friendly tools (developed for participation by *Wixárika* community members) that maintain scientific rigor. Detail results, progress, challenges, and lessons learned for the specialized teams and co-participants in annual reports. These reports will inform adjustments to the regeneration strategy and ensure transparency in the project's implementation.

Activity 2.9 Annual meetings with the Hydro Forestry committee

Conduct annual evaluations and end-of-year meetings with the Hydro Forestry Committee to assess achievements and set future goals.

Output 2.2.3: Creation of 3 hectares of agroforestry demonstration plots

2.2.3 ACTIVITIES

Activity 2.10: Joint selection of demonstration plots

Meetings with the Hydroforestry committee, local representatives and authorities, and community members to co-define the areas designated to become Successional Agroforestry Systems.

Activity 2.11: Implementation of Forest Nurseries

Construction of forest nurseries for the planting and development of forest and agricultural species for their future integration into various regenerative programs. Budget has been allocated for specialized consultancy from a nursery developer.

Activity 2.12: Implementation of SAFS

Design of a programme for specialized teams to lead 3 hectares of agroforestry demonstration plots. These teams will focus on key areas such as tree nursery maintenance, stratification, SAFS design, irrigation, planting, and SAFS maintenance. The programme should include team training, capacity building, and integration with local communities and co-participants.

Activity 2.13: Monitoring and Evaluation of SAFS results

Track the progress of SAFS activities using user-friendly tools (developed for participation by *Wixárika* community members) that maintain scientific rigor. Detailed results, progress, challenges, and lessons learned for the specialized teams and co-participants in annual reports. These reports will inform adjustments to the SAFS regeneration strategy and ensure transparency in the project's implementation.

Activity 2.14: Annual meetings with the Hydro Forestry committee

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Conduct annual evaluations and end-of-year meetings with the Hydro Forestry Committee to assess achievements and set future goals.

Alignment with Adaptation Fund objectives:
All of these outcomes aim at reducing the exposure of the *Wixárika* to climate-related threats aligning with the AF strategic outcome 1. *Reduced exposure to climate-related hazards and threats*. Most aligned is Outcome 5: *Increased ecosystem resilience in response to climate change and variability-induced stress (and its corresponding Output 5)* as this component focuses on regenerating the landscape and re-building its capacity to retain humidity which can help ecosystems build resilience in the face of forest fires, desertification and loss of water sources brought about by climate change. Increased vegetation and humidity in the landscape can also potentially help increase local rainfall. The implementation and execution of this plan works towards Outcome 3 (and output 3.1). *Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level,* by ensuring community participation and ownership throughout the process.

Integrated hydrological land management methods
How can we support the *Wixárika* nation to store water? Cisterns/tanks are the most expensive type of storage, but they keep water of better quality and availability for human consumption and are the most appropriate for capturing rainwater near homes. However, it is essential to generate a shared understanding of how the landscape plays a crucial role in terms of water storage, and generate new local capacities to understand and implement landscape rehydration processes. Water in the landscape can be stored in:

- The soil
- Biological resources (living organisms)
- Surface storage (water bodies)
- Built cisterns/tanks

The key to this component is the implementation of features that slow the speed of surface water flows, promote infiltration, catch soil, and retain moisture. These features include swales, keyline and/or contour line trenches and slits, revegetation/forestation along contours, ponds and micro dams, gabions, and other subtle changes in the land that prevent the fast erosion of soils and allow water more time to permeate into the ground. It also involves working with the local farmers to implement similar methods that allow their cultivated fields to retain soil more effectively, since the steep grades and shallow soils of the Sierra mean that agricultural land generally becomes significantly depleted within a few years.

Land management based on practices that seek to increase organic carbon storage in the soil not only contributes greatly to carbon sequestration as a strategy to reduce greenhouse gases but also contributes to adaptability to Climate Change in forest landscapes. Because soils with little organic carbon are *dehydrated soils* with little capacity for storing water and nutrients, for recharging aquifers, and, as a consequence, they are soils devoid of life and biological fertility. Soils with high amounts of organic carbon are hydrated soils, of high water storage capacity, aquifer recharge and high biological activity and fertility that allows the support of different biological systems.

To integrate these interventions and create a healthy landscape that can also sustain food sovereignty, we also plan to pilot Successional Agroforestry Systems (SAFS, photos 9, 10, 11): a design methodology that promotes the natural replacement of plant species over time in healthy ecosystems (natural succession). This type of intervention produces abundant food for humans and animals, wood for different uses, as well as biomass that is reincorporated into the soil, favouring soil health and therefore its retention and infiltration capacity. These actions contribute to rehydration at the landscape scale, while forming productive and resilient "micro-ecosystems". The actions mimic the natural processes of biodiverse ecosystems and human intervention serves as the accelerating and optimising

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element of the regeneration process. The potential of these interventions has already been analysed in the *Wixárika* Sierra (see figure 11).

Photos 9 and 10. *Images of innovative agroforestry system implemented in Tepoxalin in the state of Morelos, Mexico, 2023.*

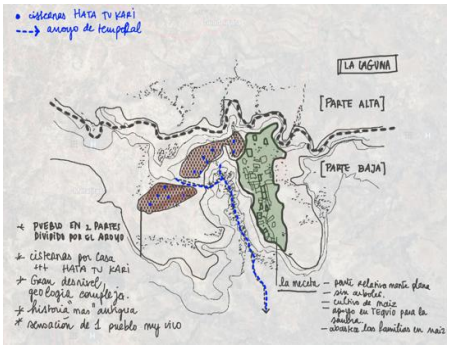

Figure 11. *Image of the initial landscape analysis of la Laguna town, Sierra Wixárika, 2022.*
Photo 11. *Successional agroforestry system by TNT in Reserva El Peñon, Valle de Bravo, Mexico.*

The choice to demonstrate SAFS (Successional Agroforestry Systems) in three 1-hectare plots, each subdivided into 20 parcels of 500 m² each (total of 60 parcels), is not an arbitrary decision; *Wixárika* agricultural practices are deeply spiritual, involving not just cultivation but also rituals, prayers, and offerings for specific crops like tobacco and corn, depending on the season. Transitioning to new agricultural methods on a large scale poses both technical and cultural challenges, as it intrudes upon these traditional practices.

Following advice from SAFS expert Namaste Messerschmidt, we decided against starting with a large area requiring collective management. Instead, we will use smaller, manageable plots to encourage individual experimentation with crop diversity and alternative agricultural practices. This approach allows interested parties to adopt SAFS practices in a manageable context, facilitating farmer-to-farmer knowledge sharing and providing inspiration through individual plots. The process will focus on integrating modern agricultural techniques with traditional methodologies, fostering awareness and

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training in a model that harmonises forest and agricultural relationships, balances abundance with monoculture, and blends new planting conventions with ancestral practices.

This work requires significant community participation and organisation, which will be a central focus of the programme. Though challenging, it is crucial for enhancing the adaptability and resilience of *Wixárika* communities. **Their best chance to prevent land degradation lies in their ability to organise and collaborate in protecting their lands from erosion and deforestation.**

This programme component will be implemented in 2-3 locations, where the landscape conditions are favourable, and local villages are both interested and well-organised (see figures 12 and 13). 700 hectares of forest will be regenerated for water retention and carbon capture, and a further 3 hectares used to pilot the SAFS.

It will involve collaboration with experienced landscape management experts and the development of strong community organisation efforts. This piece of the work serves as a critical pilot stage for scaling and extending the initiative across the broader region.

Figure 12. *Satellite image of Proposed area for regeneration.*

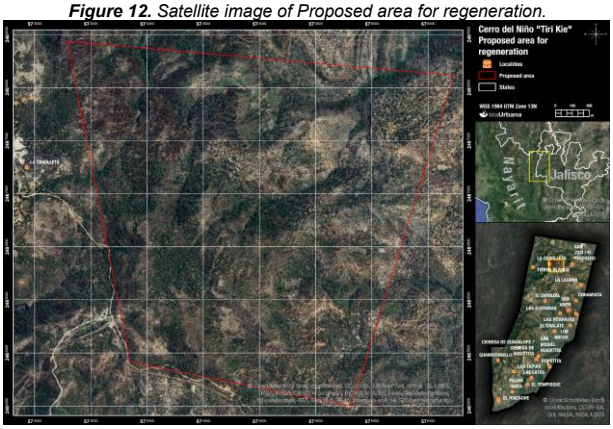

Figure 13. *Proposed area for regeneration at Cerro del Niño or Tiri Kie*

Component 3: Developing communities' capacities for sustainable water

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management

This component provides a platform from which to strengthen awareness and ownership of adaptation and climate risk reduction processes for the *Wixárika* community (AF's Outcome 3) and fundamentally underpins the overall programme objective of ensuring local ownership of adaptation solutions.

Instead of relying on external technicians to install RWHS and develop landscape-scale water management plans, the programme will focus on expanding and empowering an existing *Wixárika* team. This approach ensures that as much of the work in organising and implementing the technologies and interventions of Components 1 and 2 is done by the communities themselves. External expertise will be brought in as needed, promoting intercultural knowledge-sharing and enhancing local capacities for the effective replication, installation, use, and maintenance of eco-technologies, as well as the design and execution of landscape-scale water and soil retention projects. We will also work with each village to establish community co-participation agreements and develop the skills necessary for the long-term maintenance and sustainability of these technologies.

This component involves two key initiatives: first, expanding and training the specialised teams of *Wixárika* technicians who will build the infrastructure and teach every family how to operate and maintain their RWHS; second, implementing a comprehensive education programme in every school, ensuring that teachers and students are taught RWHS use, safe drinking water practices, and landscape water management principles, so that every *Wixárika* child learns these skills during their school years.

This extensive effort to build capacity and knowledge in water management across the population will greatly enhance *Wixárika* resilience and adaptability in the face of changing climate and water access conditions. It will also strengthen their ability to respond to and mitigate the impacts of climate-related events, such as forest fires, floods, and rain variability, ultimately reducing their exposure to climate risks.

Main objective: To provide the *Wixárika* community with the tools, technologies and techniques to implement and manage their autonomous water systems and landscape regeneration strategies; ensuring the expansion and sustainability of the programme's overall impact through the fostering of community ownership.

Outcome 3.1: The *Wixárika* community co-design and co-implement an autonomous water management strategy in their landscape

Output 3.1.1: A methodology for community participation and collaboration that ensures community acceptance and ownership of the programme, designed and implemented.

3.1.1 ACTIVITIES

Activity 3.1: Design and produce participatory tools and didactic materials with a gender perspective

Design manuals, guides, video tutorials, infographics, educational stories, board games, etc., appropriate to the local sociocultural context, which is both bilingual and intercultural, based on the notion of community resilience against climate change (a lot of these materials will be co-created with beneficiaries). Piloting and adjustments will be done during the first months of the project, and the final version will be produced for distribution (digital and printed) (See annex 9).

Activity 3.2: Create Community Art. Facilitate the creation of murals, songs, videos, and photographs through workshops and participatory research.

Engage community members, including children, women, and men, in art projects that reinforce concepts of autonomy, water and land management, resilience, and climate adaptation.

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Outcome 3.2: Community-wide awareness and sustainable adoption of RWHS, landscape regeneration, hygiene and safe water management practices.

Output 3.2.1: A learning programme to promote RWH adoption, hygiene, environmental regeneration, and climate change resilience implemented with 3,570 beneficiaries (70% of programme beneficiaries, discounting 30% for infants and elderly beneficiaries who will not participate in maintenance activities)

3.2.1 ACTIVITIES

Activity 3.3: Establish Community Agreements

Develop and formalise Community Agreements for water management, defining roles and participation for each set of stakeholders. Build an organisational structure within the community to ensure effective project implementation (the Governance Committee). Promote a unified understanding of community resilience in the face of climate change. Finalise agreements with community signatures.

Activity 3.4: Train All Beneficiaries

Conduct training and knowledge exchange activities (workshops, meetings, etc.). Train households and local committees in the use and maintenance of RWHS, and educate families, students, and teachers on hygiene and water purification. Ensure the community is able to implement, install, operate, and maintain RWH systems and hydroforestry techniques. Women will be the main focus for these activities because of their role in managing homes and raising children.

Outcome 3.3: The Intercultural teams of 40 people have the technical know-how and capacity to install and maintain RWHS now and in the future, regenerate forests and deliver educational activities for their community, scaling adaptive capacities across their communities.

Output 3.3.1: A certification programme for the local Intercultural Teams of 40 people to develop and strengthen local technical and capacity building capacities, delivered; supporting team members to become autonomous agents of change in their communities.

3.2.1 ACTIVITIES

Activity 3.5: Expand and Train the *Wixárika* Team

Announce an open call across San Andrés Cohamiata to recruit and reconfigure an Intercultural Team, with a focus on including women. Develop a range of skills, including communication, organisation, systemic thinking, vehicle management, basic mechanics, and the use of platforms and electronic devices. Continuously assess the team's ability to implement project activities.

Activity 3.6: Design and Implement a Certification Programme

Create procedure manuals for each role (Hydroforestry team, RWH technicians, education facilitators) that include toolboxes with data collection instruments, community agreements, registration formats, installation receipts, and necessary equipment. Train and certify the Intercultural Team to facilitate community agreements, capacity development, eco-technology installation, and land regeneration. The training will involve theoretical and practical workshops, including on-site practice and evaluation. Team members will be certified once they can perform their tasks independently.

Alignment with Adaptation Fund Objectives:

All of these outcomes focus on strengthening the *Wixárika* Community's agency and capacity to manage its own water and forestry resources through the development of skills, knowledge, and local organization. In so doing, they align directly with the AF's Strategic Outcome 3 *'Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level'.* Because of the central emphasis on capacity building and the systematization of knowledge sharing (through

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the creation of committees, certification programs, didactic materials, workshops, etc,) the outcomes also align closely to **Output 3.2:** *Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning.*

Capacity Building Approach

Our strategy involves respecting and leveraging *Wixárika* community organisation methods to build a methodology with empathy and active listening at its core. We aim to create a comprehensive training process where capacity building addresses the community's emerging needs and is rooted in a deep understanding of their land and culture[2] (Annex 4).

To ensure the full adoption of RHW, hygiene and land regeneration practices and technologies, it is the certified local Intercultural Team that will carry out paid work for the project. This team will be able to autonomously replicate RWH technologies and hydroforestry regeneration activities, facilitate the workshops and technical training needed for their full adoption in homes, schools and community committees, accompany the creation of co-participation agreements, as well as support group reflections on climate threats and mitigation strategies, collective decision-making and organised collective action.

The intention is that most of the work (organisation, construction of decentralised water infrastructure, regeneration) will be carried out by the communities themselves, thus ensuring local appropriation of adaptation solutions and the strengthening of livelihoods through employment opportunities. We believe that the training of this team, beyond enabling the implementation of the programme, creates a seedbed for change agents that will support the survival of the *Wixárika* nation.

Ha Ta Tukari promotes a holistic training process that goes far beyond the development of technical capacities; it addresses the development of capacities that help strengthen the whole community's understanding and ownership of key concepts such as sustainability, land regeneration, water cycles, hydroforestry management and adaptation to climate change – and sets the stage for a new way of communicating and reaching community agreements. This process must be deep, and oriented to generate agency in individuals and communities, so that it can build strategies to face the effects of climate change on the *Wixárika* way of life.

Photo 12. *Capacity building on hygiene practices.*

Participatory Processes and Community Agreements

To ensure the project's success, we must establish relationships and secure community co-participation agreements at four different levels:

[2] (Lobo, 2023) y poner en fuentes: Lobo, T and Yurén, T. (2023). Co-construction d'un écosystème pour une vie humaine digne : méta-analyse du projet Ha Ta Tukari (Antoine Rufs. Trans.). Dans Jérôme Guérin, Stéphane Simonian et Joris Thievenaz (Eds.) Vers une approche écologique de l'action humaine dans l'éducation et la formation. (pages 43-68).

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1. **Regional:** We will formalise an agreement between the Ha Ta Tukari programme team and the San Andrés Agrarian Authorities (Comisariado de Bienes Comunales) to collaborate on project design and implementation. An initial agreement is already in place. The project will then be presented to the General Assembly to obtain formal approval from central authorities. Upon approval, the Agrarian Authorities will assist with activities such as inviting localities to participate, forming the Intercultural Team, connecting with local Water Committees and local authorities for the distribution of programme materials, and other tasks. Additionally, we will establish a Ha Ta Tukari Governance Committee, which will oversee all programmatic activities which will include members of our team and the Agrarian Authorities.
2. **Locality:** Community agreements will be made during a community meeting and signed by Intercultural Team representatives and local authorities. The initial agreement will ensure the community provides adequate accommodation, work conditions, and security for the Intercultural Team. Additional agreements will cover food preparation, water and firewood provision, material transportation, and family participation in forest regeneration activities. The community will also engage in workshops and participatory processes. If needed, we will agree on criteria for selecting RWHS beneficiaries. In return, Ha Ta Tukari will execute the project in line with the Tateikie San Andrés Cohamiata Biocultural Community Protocol (Tateikie Communal Property Commission, 2020) (Photo13).
3. **Households:** Beneficiaries of RWHS will sign a commitment to properly maintain and use their eco-technology. Agreements will involve all household members—women, men, girls, and boys—in maintaining the RWHS, with children participating as appropriate, such as draining the first-flush container and cleaning the leaf screen. The agreement will also outline actions to maximise the benefits of the new water access, focusing on water saving, safe management, purification, and improved handwashing practices.
4. **Schools:** In a previous programme phase, agreements were established for maintaining school RWHS and implementing hygiene routines in 18 schools. At this stage, the education team will monitor these agreements to ensure that RWHS use and handwashing practices are properly adopted by students (Photo 12).

Photo 13. *The Intercultural team present water management strategies to the community*

Component 4: Knowledge management and development of a model for community-led universal water coverage

There are several things that make Ha Ta Tukari a unique programme. Though Rainwater Harvesting is in itself a long understood and widely used practice, we have been able to develop new technical

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solutions aimed at making replication more viable in such a geographically and socially complex context. The Rainwater Harvesting System itself has been developed through an iterative process of testing and monitoring different ideas, and has resulted in a uniquely deployable technological package of demonstrated effectiveness for climate adaptation.

Uniting this with landscape regeneration, working to actively rehydrate the soil, as well as provide new sources of water through RWHS, means a uniquely holistic approach to preparing the *Wixárika* community to take on climate adaptation through new water infrastructure deployment.

Underpinning the first two components, is component 3 - the coordination, community work, and capacity building aspects of the programme that have required a great amount of thought and development in order to function effectively in the Sierra. The integration of several protocols and approaches adapted to working with remote and isolated communities has resulted in a very innovative methodology that the Adaptation Fund will enable us to scale and adjust towards the ambition of creating a model for universal drinking water coverage for communities across the Global South. **Component 4 aims to consolidate and learn from the first 3 programmatic components to fully develop this innovative adaptation model to be diffused and shared for replication.**

Main objective: Systematize and document programmatic learning and knowledge to develop a model for community-led universal water coverage.

Outcome 4.1: Development of an integrated model for rainwater harvesting systems and landscape water management, with the potential to be adapted and replicated in diverse rural settings across Mexico and the Global South, effectively addressing water scarcity and improving climate resilience in vulnerable communities.

Output 4.1.1 Systematised documentation of all technical and community processes taking place during the programme, capturing lessons learned, data and all relevant information to be used for the final design of the model

4.1.1 ACTIVITIES

Activity 4.1: Design the monitoring, evaluation and learning tools for short-, medium- and long-term impact measurement and analysis.

Activity 4.2: Capture data and evaluate the impact of the installation of RWH technologies and the benefits of the increased access to water in the *Wixárika* communities including effects on hygiene practices, gender dynamics, and more.

Activity 4.3: Capture data and evaluate the direct impact of landscape regeneration in terms of soil rehydration, carbon capture and other climate change mitigation needs.

Activity 4.4: Capture data and evaluate the direct impact of the programme's approach to community-led capacity building.

Activity 4.5: Run periodic reflection sessions every 6 months that utilise a variety of sources of information (from activities 2, 3 and 4 above) and take the time to pause and reflect on implementation. Using participatory development methodologies that catalyse learning for ourselves and our stakeholders, we will then adapt programme activities for the coming months to reflect this learning.

Output 4.1.2 Detailed manual/toolkit for the effective replication of community-led universal water coverage programmes.

4.1.2 ACTIVITIES

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Activity 4.6: Consolidate, systematise, and structure all the steps and actions taken in the course of implementation, and produce a manual and toolkit detailing the process and lessons learned, with the purpose of facilitating the adaptation and replication of the model for other communities within and outside of Mexico. This manual and toolkit will include a gender transformation module to guide other communities in key gender design considerations.

Output 4.1.3 A communications strategy to disseminate the impact of our community-led model for universal water coverage within and outside San Andrés Cohamiata.

4.1.3 ACTIVITIES
Activity 4.7: Design and deploy an effective communications strategy for the sharing of the manual and toolkit.

Activity 4.8: Mainstreaming of a gender transformation approach and programme strategy implementation oversight

Alignment with Adaptation Fund objectives:
Component 4 supports the achievement of the AF's *Outcome 8: Support the development and diffusion of innovative adaptation practices, tools and technologies.* It does this putting special emphasis on the systematization, structuring, and documentation of experience and knowledge into manuals, kits, protocols, and other tools that can be replicated, shared and further developed. The component also aligns closely to *Output 8: Viable innovations are rolled out, scaled up, encouraged and/or accelerated* by ensuring that this scaled-up, innovative deployment of RWHS technology and landscape regeneration for such remote contexts is documented, and by ensuring that key practices, findings and tools are shared for replication and communicated as widely as possible.

Collaboration, Learning and Adaptation
Collaborating, Learning, and Adapting (CLA) is a set of systematic and intentional practices that help improve development effectiveness. Strategic collaboration, continuous learning, and adaptive management link together all components of the programme. Integrating CLA into our work helps to ensure that we are consistently improving our practices and systematising the knowledge these produce in order to ensure we capture it all for a wider climate adaptation audience. Our bi-yearly reflection sessions will feed into both our implementation strategy as well as the development of the model (below). This approach will underpin our Monitoring and Evaluation strategy outlined in more detail in Section III.D. and which will feed into all reporting, planning and communications steps taken by the programme.

Developing the model
A key achievement of our programme is the creation of work methodologies rooted in empathy and local experience, united with innovative technological approaches to the water management crisis experienced by the *Wixárika* community. As we advance, our focus will be on refining these methodologies, testing and optimising our tools to ensure they are both effective and adaptable. Central to this effort is the development of a comprehensive toolkit that will be crafted to include detailed instructions on the technologies used, step-by-step implementation processes, and strategies for adapting these methods to different cultural and environmental contexts. This resource will be a cornerstone for replicating and expanding our model, initially in San Andrés Cohamiata, with the ultimate goal of achieving universal water coverage throughout the Sierra *Wixárika*.

To facilitate knowledge sharing and support dissemination, we will produce a range of materials, including detailed reports, guides, and multimedia content such as videos and photos. These documents and resources will highlight our experiences and offer insights into integrated rainwater harvesting and landscape regeneration systems. They will be designed to promote understanding both within and beyond the Sierra, addressing Outcome 8 by developing new tools for the Global South.

By documenting our progress through semi-annual reports and audiovisual materials, we will

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provide valuable knowledge on the successful implementation and sustainability of water programs. This comprehensive approach will ensure that our model can be effectively replicated in other *Wixárika* communities and rural areas across the Global South.

A gender perspective will be included throughout the model, offering guidance on how to unpick and unpack how gender dynamics within any replicating community interact with climate adaptation needs. The model will offer a framework that can be used to ensure that women and the most vulnerable in the community are included throughout every step of the replication process: from data gathering, to design and implementation.

Communicating the model

An important aspect of this component will be leveraging success stories and testimonials from early adopters within the community to serve as powerful motivators for further communities to join this adaptation challenge. The objective of the communications strategy will be to effectively diffuse and facilitate the replication of a successful community-led model for universal water coverage in rural communities across Mexico and the Global South by raising awareness, building local capacity, and fostering collaborative networks. An example of what this strategy could look like is:

1. Audience Identification:

- Primary: Rural communities in Mexico and similar regions in the Global South.
- Secondary: Local government officials, NGOs, water sector professionals, and potential funders.

2. Key Messages:

- Success Story: Highlight the proven success of the model through data, testimonials, and case studies.
- Benefits: Emphasise the improvements in water access, health, and economic benefits experienced by communities using the model.
- Replicability: Showcase how the model can be adapted and implemented in different rural settings.

3. Communication Channels:

- Local Media: Partner with local radio stations, newspapers, and community newsletters to share success stories and informational content.
- Digital Platforms: Utilise social media, community forums, and a dedicated website to reach a broader audience and facilitate knowledge exchange.
- Visual Aids: Develop infographics, videos, and brochures that illustrate the model's impact and operational details (these will be produced by Component 3).

4. Resource Materials: Provide comprehensive guides, toolkits, and manuals to support communities in adapting the model to their specific needs.

5. Stakeholder Engagement:

- Partnerships: Build alliances with local governments, NGOs, and community organisations to support and advocate for the model's adoption.
- Local Champions: Identify and empower local advocates who can champion the model within their communities and facilitate peer-to-peer learning.

6. Monitoring and Feedback:

- Impact Assessment: Regularly evaluate the effectiveness of the communications strategy through surveys, interviews, and community feedback.
- Adaptation: Adjust messaging and tactics based on feedback and emerging needs to ensure continued relevance and impact.

7. Scaling Up:

- Replication Toolkit: Share the toolkit for communities interested in replicating the model, including

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step-by-step implementation guides and best practices.
- Success Stories: Document and share stories of successful replications to inspire and guide other communities.

B. Describe how the programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the programme/programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

Economic and social benefits

For a community to thrive, fundamental survival needs must be met before other challenges can be tackled. For example, a woman cannot focus on gender equity if she spends every minute of her day gathering water, firewood, and food to keep her family from dying of thirst, cold, or hunger. Addressing the need perceived as a priority by the community (such as water is within the *Wixárika* community) creates conditions to tackle additional needs, like improving hygiene practices to reduce diseases, addressing profound needs like time for women to focus on *their* needs, and improving agricultural practices that do not deplete the soil. This approach is fundamental to this programme's design.

Water security and access - Water access is extremely uneven in Mexico; there is a great amount of overlap between communities that are economically poor, and those that suffer from poor water access. Small, rural, and especially indigenous populations, are much more likely to lack secure water. The *Wixárika* as a whole are a stark example of this. By securing permanent, sustainable, autonomous water infrastructure in this area, and undertaking soil regeneration and water retention strategies, we will help address this inequity, bring social, economic, and environmental benefits while mitigating the negative impacts of poverty and climate change. 5,100 will benefit from increased water security and access, of these 2,658 will be women, 2,286 will be children (1,145 girls) and 920 will be youth.

The expected rainwater volume harvested per year is 19,904,031 to 22,430,281 litres, with an equivalent annual cost of $1,518,500 to $1,711,250 MXN (using the minimum domestic water cost per litre in the state of Jalisco in 2023; equivalent to $86,771 to $97,785 in USD at a 17.5 exchange rate). Once the RWHS are installed that volume will be harvested each year for free.

A better way however of calculating the economic benefit of this increased access to water is by quantifying the number of hours that will be saved by the programme in water hauling. Annually the programme will save between 719,000 and 810,000 hours of hauling which when multiplied by the hourly minimum wage of $35 MXN (approximately $2 USD) shows a saving of $25.1 million MXN to $28.3 million MXN ($1.5 to $1.7 million USD).

Job creation and improved household incomes - The *Wixárika* region has minimal access to paid work, and stable, formal employment is almost non-existent. This programme will generate local paid jobs in the forms of rainwater harvesting technicians, capacity building facilitators, landscape regeneration technicians, etc., through the building of the Intercultural Team of installers and promoters (see implementation strategy for more detail). All the current and future technicians and promoters (currently 10, 7 men and 3 women, and a total of 44 or more once the project is ongoing, who would otherwise struggle to find stable employment) are hired directly by us. The programme will spend $1,818,000 USD on salaries for *Wixárika* community members – this will be divided between 44 staff members who will play 7 different roles within the team – Rainwater Harvesting technicians, Logistics, Regeneration Technicians, M&E and data gathering, Capacity Building Trainers, Community Liason and Field Component Lead.

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Indigenous people - 100% of the beneficiaries of this programme are indigenous people. The programme itself is developed through an intercultural process whereby the traditions, customs and culture are the fundamental building blocks of its deployment. All benefits of the programme, social, economic and environmental impact will directly benefit indigenous people.

Gender equity and children - This programme inherently impacts on gender and equity issues, because current water access is highly unequal, and has markedly differentiated effects and implications for women versus men. Since there is very little official data of the region, most of the analysis we count on is made either by research of existing documents, or direct observation from our team and our 15 years' experience working in the region. The most relevant observation is the following: most of the people in the Sierra have to haul their water, and most of the hauling is done by either women or young girls due to the traditionally gendered housekeeping and cooking roles. A gender assessment and gender action plan are further developed in Annex 5. On average, each water-hauling trip takes around 2 hours and collects 55.4 litres of water. Annually, this programme will save between 719,000 and 810,000 hours of hauling, with 489,000 to 551,000 of those hours saved for women, and 165,000 to 186,000 hours saved by children. This translates to 719 to 810 hours saved per family each year, with women within one family saving 489 to 551 hours, with children within one family saving 165 to 186 hours. On a weekly basis, families will save about 14 to 16 hours, with 9 to 11 of those hours being saved by women, and 3 to 4 hours being saved by children.

This work, by the mere fact of providing clean water in the homes, will have tangible positive effects on gender and equity dynamics. We strive, however, to go beyond these; we are deeply committed to the integration of women into the implementation team (the Executing Entity's team itself has very strong female representation, including the programme director and capacity building director). *Wixárika* women, however, are often not supported by their families when seeking active employment, and effort has to be put into encouraging female candidates to apply. The integration of women into the local team has involved on-going support for them from the whole team. It is the intention of the EE that the growth of the team in the next phases of the programme involves as many women as possible and this will be a key pillar of our human resource strategy. If, of the 44 *Wixárika* staff members hired by the programme, at least 11 are women (approximately 25%, an ambitious target given the gender dynamics in the community) $454,500 USD will be earned by women in the community.

Having said this, it is important to recognise that the current socio-cultural conditions are complex and in many cases limit the participation of women. Our work proactively tries to prioritise certain beneficiary profiles who have a significantly greater or special need. The most common is the case of single mothers. These women often became pregnant while very young to fathers who did not stay. Having children, they often find it very difficult to re-partner, and are left to raise the children themselves with only whatever limited help their parents and siblings can give. These women often find themselves in conditions of great material poverty, and have to carry out multiple tasks that would normally be shared in a couple. In these cases, eliminating a woman's need to walk for and haul back water for her family is an enormous burden lifted. In single mother households this could mean gaining 12 hours a week that would previously have been spent hauling water.

Women also particularly benefit from their integration into regeneration activities in the programme. And their participation brings several significant benefits both for local communities and the environment. Some of the main benefits include:

- Economic and Social Empowerment: Including women in regeneration activities can increase their access to income and job opportunities (as outlined above). By engaging in these activities, women can gain skills and training that enable them to access better-paying and more stable jobs, contributing to their economic and social empowerment.
- Poverty Reduction: Improving food security and economic opportunities through participation in reforestation programs can help reduce poverty in communities. Forest restoration projects often create temporary jobs and promote the establishment of small businesses related to forest management.

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- Health and Wellbeing Improvement: regeneration activities can have a positive impact on community health by improving air and water quality and promoting a healthier environment. Women participating in these programs may also experience improvements in physical and mental health due to physical activity and a connection with nature.
- Strengthening Community Leadership: Active participation of women in regeneration projects can promote female leadership and decision-making in the community. This can lead to greater equity in decision-making processes and more equitable representation in environmental and community management.
- Sustainability and Efficiency in regeneration: Women often have deep knowledge of local ecosystems and traditional forest management practices. Their involvement in restoration can enrich management approaches with a more holistic and sustainable perspective, improving the effectiveness of restoration programs and projects.
- Education and Environmental Awareness: Involving women in these programs can also help raise community awareness about the importance of conservation and sustainable resource management. Women often play a key role in educating their families and communities about sustainable environmental practices.
- Community Cohesion: Participation in collective activities like reforestation can strengthen bonds within the community. Women working together on these projects can build support networks and collaboration that benefit the entire community.

These benefits highlight the importance of including women in all water management and regeneration efforts not only from a gender justice perspective but also as an effective strategy for achieving broader environmental and community goals. With that in mind, the programme will provide childcare services whenever there are training or community meetings so that women can bring their children yet concentrate on the matters at hand. These will be free and available at every training or meeting. This approach has proved very successful in Isla Urbana's work in Jalisco [Nidos de Lluvia]. Women's schedules in terms of current water hauling responsibilities and childcare will also be taken into account when designing capacity building workshops timings.

Environmental benefits

In terms of environmental and access to food benefits, rainwater retention within the watersheds will have impacts on food sovereignty as well as in the landscape and the ecosystemic services it can provide, in turn also attracting biodiversity and generating biomass. Establishing integrated systems (rainwater harvesting, successional agroforestry systems, controlled water consumption and land roaming for livestock) is the key starting point towards soil and forest regeneration, which can, in turn, detonate a more stable habitat resilient to droughts. Water retention within the watershed will also guide communities towards access to diversified and nutritious food, as well as sustainable wood and traditional medicine. 700 hectares of forest will be regenerated for water retention and carbon capture. 3 hectares (divided into 3 plots and in turn into 20 parcels of 500m2, for a total of 60 parcels) will be Successional Agroforestry Systems. 1 Hectare of SAF can provide fruits, vegetables and legumes for 100 families, so 1,530 people will be fed from these (of which 797 will be women, 276 will be youth, 686 will be children).

Rehydrating the landscape revitalises depleted areas by increasing their water storage and supply capacity. Within an agroforestry system, this supports food sovereignty and sustainable livelihoods, fostering a cooperative relationship with the land rooted in cultural identity. This productive yet careful approach to soil management yields abundant resources for families, advancing autonomy and sovereignty.

The productive capacity and visible improvements in soil and environmental health within these systems, observed in the short, medium, and long term, encourage people's sustained involvement and commitment. Agroforestry landscapes have the potential to become centres of fertility and biodiversity at family, community, and territorial levels. They enhance the supply of ecosystem services for families,

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communities, and the broader landscape. This creates social, cultural, and economic conditions that allow future generations to reconnect with their territories, reducing migration and the abandonment of rural areas. This model represents a radical shift from the current agricultural paradigm by advocating for the use of local resources, reducing dependency on external inputs, and striving for economic and ecological autonomy through natural principles such as soil coverings, plant species diversification, and tree incorporation into production systems. Trees act as nutrient recyclers, continually reintegrated into the system.

Mitigating potentially negative impacts

The following measures will ensure that the programme's activities are designed and implemented in a way that does not cause negative social or environmental impacts:

The programme takes place within the context of a semi-autonomous indigenous area, with a large degree of self-rule under traditional government structures and customary law. This fact is considered throughout the implementation process, which involves close collaboration with local traditional authorities. Work in each individual community begins only after having established collaboration agreements with the current representatives of the local traditional government, the details of which are developed in conversation with them, and then set in writing. **The central traditional government, which represents all the communities, requested the extension of the programme to every town and village in the area, and the programme was formally presented in the main assembly and accepted by the traditional authorities in 2022.**

Traditional governance and custom are always taken into consideration and respected. For example, it was the request of the traditional authority that the work of implementing Rainwater Harvesting Systems in all the communities should begin in the 11 major ceremonial centres where the principal rituals are held. This was agreed upon, and has already been fulfilled, with traditional ceremonies held to bless the work and place it within the framework of the customary law and tradition.

There are two additional risks when it comes to Gender dynamics within the *Wixárika* community that need to be taken into account. The first is that several women, during our years of collaborating with the community, expressed that their time spent collecting water at springs and natural water holes represents an important opportunity to socialise with other women, gossip and have a safe space to share. The programme's Component 3 will focus on ensuring that the programme helps create more opportunities for women-only socialising, ensuring safe spaces for intimate conversation and sisterly support are not lost (for more details, see Component 3).

The second risk it is important to monitor and mitigate is the potential resentment that shifting gender dynamics around female leadership in the community could cause amongst male members of the community. *Wixárika* women have shared their fear with us that, with the increasing pressure at the municipal level to empower and lift women into positions of leadership (often for the first time) , that this can cause resentment and even domestic violence as men often feel excluded from these kinds of processes. The programme will promote that any activities which may impact gender dynamics in the community are underpinned by masculinity workshops and consultative processes and training for *both* men and women. It is important to include both genders in re-imagining how, when transforming the community's approach to adapting to climate change, women's increasing leadership, empowerment and equality can be a source of positive transformation for **all** members of the community. For further analysis and associated actions to manage potential risks and negative impacts see the ESMP in Annex 13.

C. Describe or provide an analysis of the cost-effectiveness of the proposed programme.

Cost-effectiveness of the programme

Given that 47% of the region's water infrastructure works are not functioning, including tanks, hydraulic pipes, wind pumps, and more, it is urgent to provide adaptive water infrastructure as well as addressing

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the need for the rehydration of the landscape that will help regenerate the natural water sources the *Wixárika* rely on for survival. It is challenging to provide a clear description of alternative options to the proposed measures of RWHS as there are very few comparable strategies that could address the water shortages in such a remote and challenging area which only relatively recently received road access. Any other intervention would necessitate large scale government infrastructure investment costing at least five times the amount of funding we are requesting from the Adaptation Fund, investment that has the potential to threaten the *Wixárika*'s ancestral way of life. Moreover, once that infrastructure is built, the distribution would have a cost. The expected rainwater volume harvested per year is 19,904,031 to 22,430,281 litres, with an equivalent annual cost of $1,518,500 to $1,711,250 MXN (using the minimum domestic water cost per litre in the state of Jalisco in 2023; equivalent to $86,771 to $97,785 in USD at a 17.5 exchange rate). Once the RWHS are installed that volume will be harvested each year for free.

Rain Water Harvesting Systems - community co-participation and labour costs

The most important element of cost-effectiveness is the 'co-participation' model under which this programme will be implemented. Beneficiaries who will receive RWHS in their homes must offer 10% of the total value of their system (approx. $6,000 MXN or $340 USD of a total value of $60,000 MXN or $3,400 USD) in the form of labour. We are calculating a daily rate of $500 MXN/day (approx. $29 USD) which means that each household of an average of 2 adults will offer 12 days of labour to the programme. This represents 12,000 days of labour from the 1,000 beneficiary families. This is principally a way of ensuring deep community ownership and accountability when it comes to their climate adaptation future - every family will have a role to play and a stake in the ultimate success of the programme; they will also develop knowledge and capacities through this work that are the basis for replication and expansion.

On average, each water-hauling trip takes around 2 hours and collects 55.4 litres of water. Annually, this programme will save between 719,000 and 810,000 hours of hauling, with 489,000 to 551,000 of those hours saved for women. This translates to 719 to 810 hours saved per family each year, with women within one family saving 489 to 551 hours. On a weekly basis, families will save about 14 to 16 hours, with 9 to 11 of those hours being saved by women. Additionally, the average home will only need to partially haul water from February to June, while completely relying on rainwater the rest of the year. According to our findings, around 4% of the population transports water by truck (in prefabricated tanks). This need can be practically eliminated with RWHS, which would annually save between $217,135 and $407,823 MXN (approximately $12,408 to $23,304 USD using a 17.5 exchange rate) by 4% of the population, based on the cost range of transporting 1100 litres by car within San Andrés Cohamiata of 300 to 500 MXN ($17-$28 USD).

Materials chosen and an adaptive implementation strategy

The programme team has done a thorough cost benefit analysis of two principal RWH technologies as outlined in Section IIA and detailed in Annex 2. Geomembrane and concrete tanks have comparable costs, with concrete the marginally more expensive but more sustainable. There is a difference of $487 USD in terms of cost which considering the scope of the project will not make a significant difference to the budget versus impact evaluation. Extensive research, including attending the full installation of the concrete tank technology, has been conducted to ensure that the technology chosen ensures the best outputs and outcomes are achieved for the community by weighing cost, amount of water each type of system can provide, sustainability of the tanks, feasibility of installation in such a challenging setting (transport of materials). We have decided to install both types depending on the level of road access of beneficiaries' homes. The *Wixárika* Intercultural installation teams will be fully trained in both technologies to ensure that the programme can constantly adapt its implementation approach as needed when assessing which of the two types of tank can be installed.

Water purification

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Further extensive research has been done to evaluate what is the most sustainable and cost-effective way for beneficiaries to purify the rainwater captured to ensure it is drinkable. Water purifiers which necessitate frequent filter replacements have been judged too expensive in a community with severe poverty- one brand's filters cost $5 USD but must be replaced every 2 months, and the other cost around $50 USD every 2 years - and it is unlikely that local stakeholders will adopt the technology. The most cost-effective means to purify water is using disinfection drops which cost $2 and would need to be bought twice annually. They are now sold in the small convenience stores dotted around the communities we will be working with and which have a much better litre/peso cost efficiency ratio. Component 3 will be focusing on ensuring beneficiaries know how and when to purify their water.

Regeneration

The co-participation approach means that a significant part of the regeneration and SAFS work in Component 2 will be done as co-participation in exchange for the RWHS from Component 1. 12,000 days of labour or $6,000,000 MXN ($343,000 USD) that will be technically paid with RWHS installations and does not need to be funded.

D. Describe how the programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national adaptation plan (NAP), national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

Consistent with national and sub-national sustainable development strategies

This programme is consistent with several national and subnational strategies and tools related to climate change, as well as strategies related to indigenous peoples rights and customs. Their related objectives are summarised here:

1. **Article 4 of the Mexican Constitution:** every person has the right to health protection - Last update made in February 2012.
2. **The General Climate Change Law of Mexico (2012)**

a. Reducing vulnerability and increasing resilience of the social sector.
b. Increasing access to, reducing vulnerability and increasing resilience of critical infrastructure and productive systems.
c. Preserving and sustainably using ecosystems and the environmental services they provide.

3. **Updated NDC 2030 goal:** 35% carbon emissions reduction (last update November 2022, will be updated again in NDC 3.0 to be published in 2025).
4. The National Climate Change Strategy (ENCC) update in May 2025, through its 4th axis, focused on sustainable and holistic management of water resources.
5. The National Adaptation Policy (Política Nacional de Adaptación) is currently under development, and as the potential first Adaptation Fund project, Ha Ta Tukari has the capacity to provide valuable evidence for this policy.
6. National Development Plan (Plan Nacional de Desarrollo) 2025-2030:
    i. General Axis 4: Sustainable Development
        1. Goal 4.3. Reduce pollutant emissions and strengthen climate resilience through the prevention, control, and mitigation of environmental impacts on health and ecosystem

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2. Goal 4.6: Guarantee the right to water through efficient, sustainable, and climate change-resilient management, protecting the integrity of watersheds and ensuring their availability for present and future generations.

ii. Cross-cuting Axis 1: Substantive Equality and Women's Rights

1. Goal T1.3: Ensure the full and substantive participation of women in decision-making in political, social, and community spheres, promoting their leadership and the effective exercise of their rights.

iii. Cros-cutting Axis 3 – Right's of Indigenous and Afromexican communities

1. Goal T3.1: Ensure the effective exercise of the rights of Indigenous and Afro-Mexican Peoples as subjects of public law, with legal personality and their own assets, guaranteeing their self-determination and autonomy in accordance with the Constitution and international instruments.
2. Goal T3.4: Ensure the full exercise of the right to self-determination, autonomy, and self-government of Indigenous and Afro-Mexican Peoples and Communities in social, economic, cultural, legal, and political spheres, strengthening their decision-making and management capacity at the community, municipal, and regional levels.

7. IMTA Institutional Program 2025-2030

8. Mexico's Action Plan for the UNCCD (1996)

The project, through its rainwater harvesting, regeneration, and capacity building components, is directly linked to the plan as it promotes the sustainable management of natural resources and climate change adaptation. It responds to:

. Water access in vulnerable communities through rainwater harvesting, reducing their exposition to the risks of droughts and desertification

. Damaged ecosystem regeneration through the regeneration of 700 hectares of forests

. Promoting the active participation of communities in their land's management, through its capacity building component

9. PECC (Special Climate Change Programme, 2021), through objectives 1 and 3:

a. Objective 1: Reduce the vulnerability of the population, the ecosystems and their biodiversity, as well as the productive systems and the critical infrastructure through the impulse and strengthening of adaptation processes and resilience.

b. Objective 3: boost actions and policies that demonstrate synergy between mitigation and adaptation, and that address the climate crisis, prioritising the generation of environmental, social and economic co-benefits.

10. The National Climate Change Strategy (2013):

a. Attend to the most vulnerable communities
b. Programme transversality
c. Promote prevention
d. Sustainability in the use of natural resources
e. Preservation of ecosystems and their biodiversity
f. Active participation of target population and capacity strengthening
g. Adaptation capacity strengthening
h. Coordination between actors and sectors
i. Flexibility
j. Monitoring and evaluation of enforcement and effectiveness of the actions taken

11. The Special Climate Change Programme (2021-2024; this programme is specific to Federal Public Administration, but our programme in consistent with it nonetheless)

a. Territorial and ecosystemic approach: consideration of socio-environmental and institutional

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diversity, and the sustainable management of the territory and its resources.

b. Human rights, social justice and gender equity: consideration of equality of rights, ethnicity and gender differences.

c. Inclusive and participative processes: adaptation must result from a collective and inclusive process.

12. The project will be in alignment with the Justice Plan of the *Wixárika*, Na'ayeri, O'dam, and Meshikan Peoples.

13. The 2030 Agenda for Sustainable Development (2015)

Mexico developed its National Strategy for the Implementation of the 2030 Agenda, a guide document with mechanisms to understand the route that leads to the desired future. Our programme is consistent with its 6th Axis - maintaining a territorial approach and implementing the vision at the municipal level - and the following SDGs (to a greater or lesser extent):

- 1) No poverty
- 2) Zero hunger
- **3) Good Health and wellbeing**
- **5) Gender equality**
- **6) Clean water and sanitation**
- 8) Decent work and economic growth
- **10) Reduced inequalities**
- **11) Sustainable cities and communities**
- **13) Climate action**

14. Sustainable Financing Mobilization Strategy (Estrategia de Movilización De Financiamiento Sostenible; 2023), from SHCP, of which this project is a part of, aims to mobilize up to 15 trillion MXN between 2023 and 2030, through voluntary commitments and action lines adopted by the public, private and social sectors.

15. National Strategy about Biodiversity in Mexico (Estrategia Nacional sobre Biodiversidad de México), Action Plan 2016-2030.

16. Jalisco State Climate Change Strategy, 2024-2030-2050 Vision

The strategic axis that seeks to "Ensure food sovereignty and resilient supply chains" aims, among others, to transform, adapt, and strengthen sustainable and efficient production models. Successional agroforestry systems align with the established lines of action for this strategy, as they include elements considered within the proposal, such as: productive systems that consider the carrying capacity of the territory and the food needs of the local population; reinforcing the protection of native agrobiodiversity; ensuring resilience through agricultural practices that maintain ecosystems and soil quality, and promoting the adoption of practices and technologies for efficient water use in the agricultural sector.

Additionally, the strategic axis that aims to "Integrate water resources and watershed management" includes several related lines of action regarding water harvesting in buildings and landscapes, namely: "Strengthen the integrated management of surface and groundwater" (A5.3); "Promote secure access to water for life, health, and productive processes, focusing mainly on areas with water stress and increasing scarcity" (A5.5); "Encourage actions for rainwater management based on ecosystems" (A5.7), and "Promote actions to increase infiltration, pre-infiltration treatment, and protection of recharge areas."

17. The programme is also consistent with the adaptation and mitigation strategies presented in the most recent **Climate Change Action Plan in the State of Jalisco**, where the programme is being implemented, the "2015-2018 State Programme for Climate Change Action, PEACC" (2018).

18. Biocultural Community Protocol of the Tateikie San Andrés Cohamiata Community (2020)

The *Wixárika* community of San Andrés Cohamiata developed the Biocultural Community Protocol as a management instrument to regulate the mechanisms for requesting access, negotiation, fair and equitable distribution of goods derived from biological and genetic resources and traditional

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knowledge present in the *Wixárika* territory. The hole methodology of this project is based on the following:

- Ensuring the conservation of natural resources in the community
- Preserving cultural traditions and the way of making decisions
- Generating mutual agreements with people interested in their resources
- That those people interested in the community's resources present themselves and that through ordinary assemblies and local meetings, the community is informed in detail through reflection and awareness workshops, and on the bases of clear communication, the community has the right to negotiate and consciously decide whether or not they can access their resources, prevailing respect for fundamental rights and indigenous rights embodied in international agreements, in the Mexican Constitution, Mexican laws and in the customs and traditions of the community, guaranteeing the participation of local police stations, children, women, men, agrarian and traditional authorities, council of elders, former authorities; thinking about children and future generations, so that they can continue enjoying the biological and cultural wealth of the *Wixárika* territory.

15. Additionally, a **Justice Plan for Indigenous Communities of the state of Jalisco,** which strongly includes the *Wixárika*, was published in 2023. Our programme will comply and uphold this new justice plan.

E. Describe how the programme/programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

Relevant national technical standards

There are currently few national technical standards specifically governing rainwater harvesting in Mexico. There are, however, guidelines for Rainwater Harvesting System Design set out by the National Water Commission (CONAGUA) through the programme PROCAPTAR, and by the Mexico City Secretary of the Environment (SEDEMA CDMX), through the manual for domestic Rainwater Harvesting (this manual was written and coordinated by Isla Urbana (the Executing Entity) in 2019 and 2020). The Rainwater Harvesting systems proposed for this programme are designed in accordance with these guidelines.

Regarding PROCAPTAR (the biggest federal government reference about RWH), our systems do meet most of its technical standards, but the very premise of this programme is limitative in terms of programme deployment: it states that the minimal annual rainfall to operate is 1,500 mm, almost double the rainfall of the Sierra. If we followed this standard, most of the Mexican territory would be discarded for RWH. In this sense, the international agreement for minimal rainfall amongst the RWH community is 400+ mm (the border between arid and semi-arid regions).

The primary technical standard governing water for human consumption in Mexico is the Secretary of the Environment's NOM-127-SSA1-2021 regulation which establishes permissible limits for various pollutants. RWHS similar to the ones to be used here have been tested multiple times by certified labs and successfully met these standards.

Still, harvested rainwater quality can vary through many local conditions, and so the proposed programme involves performance of tests and analyses of water quality carried out by certified third-party laboratories throughout the implementation process and in several locations of the Sierra. These tests follow the procedures for water-quality testing set out in the NOM-014-SSA1-1993.

Based on Article 7 of the National Waters Law (Ley de Aguas Nacionales), the following indexes apply to the proposed programme as public utility or public interest:

- Art. 7, I - Integrated management of surface, subsurface water resources, based on the hydrological basins within the national territory as a priority and as a national security issue.

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- Art. 7, V - Restoring the ecosystems' equilibrium relevant to water quality
- Art. 7, VI - Increasing the efficiency and modernization of domestic and public water services, as a way to contribute and improve public health and wellbeing, to improve the quality and accessibility of the resource, as well as making a contribution to the goal of reaching an integrated management of water resources
- Art. 7, IX - To prevent and address the effects of unusual meteorological phenomena that could affect the people, productive areas or installations.
- Art. 7 BIS., V - The prioritisation to address water related issues within communities, aquifers, hydrological basins and hydrological regions with water scarcity.

F. Describe if there is duplication of programme/programme with other funding sources, if any.

No duplication with other funding sources

Our funding sources do not overlap; instead, they complement previous and ongoing initiatives. We will continue to seek out additional projects and programmes for potential synergies and collaboration as we expand the impact of Ha Ta Tukari.

Beyond our work in *Wixárika* communities, Isla Urbana works with an extensive network of partners and collaborators, whose support can be leveraged for the development, execution, communication, and evaluation of this programme. Notable collaborators include the National Institute of Health (INSP), National Geographic, the National Autonomous University of Mexico (UNAM), Agua Capital, the Ashoka Network, among others. These collaborations have bolstered our recognition and visibility, earning us the trust of important partners.

Additionally, Isla Urbana has cultivated a close collaboration with the State Government of Jalisco, involving the installation of Rainwater Harvesting Systems (RWHS) in homes in Guadalajara (Nidos de Lluvia), as well as in schools. In 2023, the State Government began funding RWHS in the *Wixárika* Sierra. This close working relationship with the government of Jalisco, where the *Wixárika* reside, is highly complementary to this programme, allowing us to rely on their support across multiple fronts, especially when it comes to security (see Section III).

The work undertaken over the past 14 years in the *Wixárika* Sierra has been made possible through a diverse array of partnerships and collaborations with funders, NGOs, civil society organisations, and numerous national and international institutions, including UNDP, HSBC, PepsiCo Foundation, the National Institute of Social Development (INDESOL), the Gonzalo Río Arronte Foundation, the National Institute for Indigenous Peoples (INPI), and the Mexican Institute of Water Technology (IMTA), among others.

The Ha Ta Tukari programme is currently funded primarily by the Gonzalo Río Arronte Foundation (FGRA) and the Casa Córdoba Foundation, with a total of approximately USD $500,000 invested between 2020 and 2025. The funds we are applying for from the Adaptation Fund are specifically intended for the expansion of the programme in San Andrés Cohamiata. However, our overarching goal is to ensure universal access to water throughout the *Wixárika* nation. This means we will continue to pursue additional funding sources that will help us achieve this longer-term vision. With this aim, we are working to secure further support from the Gonzalo Río Arronte Foundation. There will be no duplication, and both programmes will progress independently; this potential funding from FGRA will allow us to initiate RWHS work outside San Andrés Cohamiata in the other three Agrarian Nuclei that make up the *Wixárika* nation, as well as integrating other components, such as sanitation.

We are consistently seeking opportunities for complementarity, recognising that our goals are ambitious and will require time, effort, and diverse collaborations to achieve. In the Concept Note for this grant, we estimated a total cost of adaptation (universal RWHS coverage for the entire *Wixárika* Nation) at approximately USD $15 million. The potential support from the Adaptation Fund is a

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significant driver of our scaling ambitions and has enabled a wider and broader vision when it comes to preparing the *Wixárika* for a climate resilient future.

There has been no duplication of the project or programme during its history; there has only been synergy or complementarity. In the past 5 years, funds have been received from 8 different organizations (both national and international), divided into 18 projects and totaling roughly $900,000 USD. 15 of the projects have been have brought together activities to improve access to water and sensitive participatory processes, while 3 of them have involved *Wixárika* youth and cultural and artistic activities: one granted by the National Fund for Culture and the Arts (Mexican government), and two granted by the National Geographic Society. The funding sources of the past 5 years are detailed in the table 6:

Table 6. Summary of project's financing complementarity

Project	Year	Funder	Amount USD	Amount MXN	Status	Synergy / Complementarity
HA TA TUKARI	2019	Isla Urbana Foundation	$10,921.20	$218,424.00	COMPLETED	Partnership consolidation and RWHS implementation
HA TA TUKARI	2019	Ascalapha SAPI De CV	$715.00	$14,300.00	COMPLETED	Link with local artisans in the locality of San José; follow-up and installations in schools and homes
HA TA TUKARI	2020	Fondo Nacional para la Cultura y las Artes (National Fund for Arts and Culture)	$45,068.33	$968,969.00	COMPLETED	This financing helped bound the synergy with 'La Ventana Infinita", adjust efficient products and elaborate didactic materials that are still used to date
HA TA TUKARI	2020	Casa Córdoba Filantropía	$23,162.79	$498,000.00	COMPLETED	Programme strengthening through the kickstart of a long and important partnership
HA TA TUKARI	2020	Programa de Naciones Unidas para el Desarrollo (UNDP)	$10,871.72	$233,742.00	COMPLETED	First partnership of international reputation and importance for the programme for RWHS implementation
HA TA TUKARI	2020	Isla Urbana Foundation	$2,885.68	$62,042.15	COMPLETED	Renovation and maintenance of all RWHS components installed in the localities of La Laguna and La Cebolleta
HA TA TUKARI	2021	Fundación Gonzalo Rio Arronte	$102,220.61	$2,073,034.00	COMPLETED	First collaboration and partnership kickstart with funders. Kick Start of in-depth local capacity development to form the Intercultural Team
HA TA TUKARI	2021	National Geographic Society	$ -		COMPLETED	Individual grant for Enrique Lomnitz (then CEO of Isla Urbana) for his training as a National Geographic Explorer

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HA TA TUKARI	2022	Fundación Gonzalo Rio Arronte	$159,594.14	$3,211,034.00	COMPLETED	Funding continuation for the consolidation of the Intercultural Team
HA TA TUKARI	2022	Casa Córdoba Filantropía	$22,415.51	$451,000.00	COMPLETED	Partnership continuation prioritizing the most urgent needs: equipment and human resources
HA TA TUKARI	2023	Fundación Gonzalo Río Arronte	$119,390.74	$2,038,000.00	COMPLETED	Funding for the creation of an updated diagnosis of the water access situation in San Andrés Cohamiata
HA TA TUKARI	2023	National Geographic Society	$103,281.84	$1,763,021.00	COMPLETED	Funding for a free concept Story-Telling process, which was dedicated to design and implement a year-long process of work with *Wixárika* youth for them to envision their futures
HA TA TUKARI	2023	Casa Córdoba Filantropía	$46,748.68	$798,000.00	COMPLETED	Funding continuation for human resources and capacity building for the Intercultural Team
HA TA TUKARI	2024	Fundación Gonzalo Río Arronte	$112,308.14	$1,917,100.00	COMPLETED	Conclusion of project goals to address 23 localities in San Andrés Cohamiata, and talks for the funding continuation
HA TA TUKARI	2024	Casa Córdoba Filantropía	$44,913.10	$766,666.67	COMPLETED	Upgraded funding (fixed percentage of annual income contribution) focused on human resources and capacity building
HA TA TUKARI	2025	Fundación SERTULL	$44,913.10	$700,000.00	ONGOING	Materials and components financing for follow-up and maintenance of existing RWHS, and installation of new ones in San Andrés Cohamiata
HA TA TUKARI	2025	Fundación Gonzalo Río Arronte	$44,913.10	$5,000,000.00	ONGOING	Funding renovation for the piloting of new work around sanitation and forest management
HA TA TUKARI	2025	Casa Córdoba Filantropía		PENDING	PENDING	

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G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

Capture and disseminate lessons learned

Component 4 is the programme's knowledge management component and describes the programme's strategy for the capture and dissemination of lessons learned.

As outlined in Section II.A., we will be following an intentional approach called Collaboration, Learning and Adaptation (CLA), to support the programme and its stakeholders go beyond traditional Monitoring & Evaluation. The approach will provide a framework for collaboration that translates M&E data (see section III.D) into learning, and uses learning to improve activities and impact. The collaboration element is critical to ensure that the *Wixárika* community's perspective is fully integrated into our strategies, ensuring we collectively understand the evidence behind performance and support project planning decisions.

The effective capturing of data and learning in innovative and creative ways will in turn feed into our communications strategy (again, outlined in Section II.A.) and the creation and dissemination of our model and toolkit for universal water coverage. All with the ultimate goal of enriching the global, national and local knowledge on climate change adaptation and to accelerate understanding about what kinds of interventions work.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during programme preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

Consultative process

The consultative process of this programme builds on 14 years of close collaboration with the *Wixárika* community. Every major step in the evolution of the work has occurred in dialogue and consultation with the local population. Isla Urbana and several other partner organisations have been working with the *Wixárika* community since 2010 in response to an explicit request from a village leader who was searching for help to address the water access problems faced in the locality of La Cebolleta. Our first trip to the Sierra was dedicated entirely to speaking with people from the community, visiting their existing water sources, and over several days, discussing multiple ideas to address the problem. In an interesting preview of working with the *Wixárika*, our hosts on that first trip conducted a ceremony to bless the nascent project, to ask that we find resources for it, and they named it Ha Ta Tukari - Water, Our Life.

The *Wixárika* are the principal stakeholders of this work; understanding the spiritual framework, traditional governance structures, communication styles, taboos, and forms of communal organisation present in *Wixárika* culture is crucial for the success and sustainability of the programme. To give one example, we have learned that in order to begin working in a new *Wixárika* community, it is necessary to first be formally "presented" and give an offering of candles, corn, and some very specific items, in the local ceremonial centre. Failing to do so causes the people to fear that the work will not be spiritually grounded, and any accident or incident that occurs will often be blamed on this failure.

This proposal has emerged from a deep consultative process rooted in our long-standing collaboration with the community. Unlike projects ideated by outside groups and then brought to the community for consultation, this initiative began as a direct response to requests from *Wixárika* individuals seeking help to address severe water scarcity. Since the first Cebolleta contact, the process has evolved through continuous consultation and collaboration with local communities and authorities, focusing exclusively on areas that have explicitly sought our partnership. Communities reach out to us because they see the potential benefits of working together.

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The team executing the programme is predominantly composed of local *Wixárika* who have been involved in this proposal's development from the start. For the past two years, they have installed RWHS in schools and clinics across the region. The team has already visited each of the 21 target communities and held meetings with all of them. They expressed confidence in expanding the project's scope to the scale outlined in this proposal, which motivated our pursuit of funding to achieve universal water coverage in the region (Photo 14).

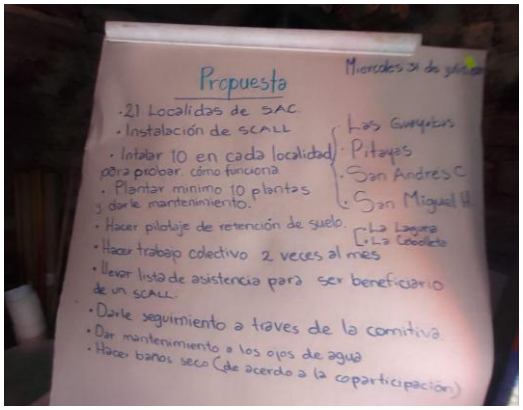

Photo 14. *Intercultural Team meeting to co-design the programme*

Our most recent consultation process was conducted in each participating locality, using a mixed qualitative- quantitative methodology to gather information across three key areas: community, school, and home. We surveyed a diverse range of informants to ensure a comprehensive representation of the locality, including community authorities, health personnel, teachers, community leaders, with an even distribution of women, men, girls, and boys. Information was collected through various activities, such as participatory methodologies, questionnaires, community tours, and observations of hygiene practices among primary and secondary students. Additionally, we held workshops with focus groups to give a voice to community members of all ages. These workshops were designed using the "*La Ventana Infinita*" (The Infinite Window) method, which employs art to engage children and socially disadvantaged communities (see table 7).

Table 7. Community Consultation Activities

Field	Activity	Date	Consulted people	Information gathering technique
Community	Interviews with village authorities	Oct 2022 - Dec 2023	26 Local authorities. 19 men and 7 women.	Questionnaire
	Participatory mapping exercises		599 People in focus groups. 292 women, 210 men, 63 girls and 34 boys.	Participatory workshop
	Community tours		131 Key informants: Village authorities, health personnel, community leaders, etc. 100 men and 31 women.	Observation for verification and registration of information

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	Collective creation of the history of water in my community		502 people in focus groups. 281 Women and 221 men.	Participatory workshop
	Meetings with main tribal authorities from the Agrarian Nucleus (in San Andrés and La Cebolleta)	Sep 2023 and Apr 2024	6 Agrarian and traditional authorities from San Andrés Cohamiata, 5 men and 1 woman.	Transcription and audio recording
	Conversations on gender in women's circles and men's circles.	Two sessions in Oct 2023 and two more in Apr 2024	*Wixaritari* youth, 6 women and 11 men.	Focus group discussion (information was not recorded due to confidentiality).
Household	Household surveys	Sep 2022 - Jun 2024	194 adults in 177 homes, 76 men and 118 women.	Questionnaires
School	Interview with the school directors and physical tour of the schools	sep 2022- Dic 2023	26 Teachers and administrators from 22 pre, primary, and secondary schools (17 men and 9 women). representing 51% of all primary schools in the region.	Questionnaires, observation for verification, and registration of information
Community	**Consulted Topics:** The proposal for the Programme was presented to the authorities, members of Water Committees, and the general population. Interest and willingness to participate in the Programme on the part of those consulted was established. Terms and expectations of co-participation were presented and discussed, including roles for authorities, water committees, and beneficiary men and women from the community. The population and available basic services in each locality were recorded and mapped. Local issues related to water, forests, soil, and agricultural production were discussed at length. Access to water, sanitation, the condition of local water sources, with emphasis on the situation of clinics, dining halls, schools, and ceremonial centers, was recorded. The community's relationship with water, changes to the land over time: hauling situation; the condition of natural water sources and their usage; water conflicts; existing works for water storage and distribution, and community agreements for its management were thoroughly explored. With the main traditional Agrarian Authorities (the highest civil authority for the *Wixárika* community), the expansion of the programme was discussed in depth, including activities related to hydroforestry regeneration and installation of dry toilets and rainwater harvesting systems. The creation of a community organization focused on water and landscape management in San Andrés Cohamiata to lead participation and decision-making in the programme. With women's and men's circles, confidential discussions addressed topics such as partner violence, gender roles and stereotypes, discrimination, and women's participation in decision-making in both the home and the community. We received direct petitions asking for dry toilets and RWHS and signed by members of the community.			

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	Results and implications for programme design Co-participation agreements were established and signed with the authorities and Water Committees representatives from 19 localities (villages and towns). We differentiated the needs and challenges of installing RWHS in each locality; we assessed the number of families living in small, dispersed settlements. This is essential for planning operations and prioritizing populations with less access to water. Ceremonial centers were included as key sites for RWHS installation, in order to respect and acknowledge their centrality in *Wixárika* customs and traditions. We observed widespread perceptions of increased rates and scale of forest fires, soil erosion, and concerns regarding the reduced volume and flow of spring water. The community perceives that this issue, combined with population growth, makes the water provided by natural sources insufficient. In general, they believe that rainwater harvesting, both at home and in the landscape, is an appropriate solution for the context. Localities recognize a link between their agricultural practices and forest and soil degradation, which leads to their interest and willingness to learn work with agroforestry systems. We confirmed a general willingness in the community to work on hydroforestry regeneration projects and sanitation issues (which were previously not recognized as especially problematic). The population is starting to see dry toilets as a necessity, a condition required for planning their installation and adoption process. We gathered evidence that many centralized water systems built by the government, as well as some ecotechnologies, have fallen into disrepair, or in some cases never worked at all. A lack of participation, consultation, and collaboration in general with the communities appears to be a major factor, with many villages reporting that infrastructure was built without any participation on their end, resulting in a lack of knowledge on operation and maintenance, or even of entirely unviable or inadequate technologies being implemented. We learned many mythical stories and traditions that the *Wixárika* hold about water, which will be considered in the creation of intercultural educational materials and content. With the Agrarian Authorities, we identified geographic polygons in which to carry out forest regeneration works, and proposed the creation of a Hydroforestry Governance Committee. We understood the perception of a group of young *Wixárika* people regarding the gender situation in the community. We recognized the need to strengthen gender and inclusion training for our local team, as well as provide support for childcare to mothers and team members, and fathers who require it. We confirmed the desire of the community for installing decentralized technology such as RWHS and dry toilets
Household	**Consulted Topics:** General information about the population, housing, and household services. Access to water, water hauling, water management practices, hygiene, and sanitation in the home. Perception of family health.
	Results and implications for programme design We found that centralized water systems (where a tank is built around a spring and connected with pipes or hoses to the homes) have not significantly reduced water hauling, largely because so many of these pieces of infrastructure are in disrepair, and because the low population density and high dispersal of houses means they are often not reached at all. RWH systems in contrast significantly reduce the number of water hauling trips. We recognized the gender-related aspects of water hauling. We identified the percentage and location of single-mother-headed households in each locality, which allows us to establish a strategy to prioritize their attention as beneficiaries of RWHS and dry toilets.

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	We identified the population without proper roofing for rainwater harvesting, which led us to develop a strategy to ensure these families, often the most disadvantaged, are not excluded. We designed a context-appropriate strategy for household water management and purification. This included considering the installation of washbasins and dry toilets as part of an integrated system for water and waste management at home, since the vast majority of households lack these services. We also considered designs that would reduce the domestic workload for women. We concluded that health issues are very sensitive for the population, making it difficult to obtain reliable information through a questionnaire. Therefore, we plan to design participatory health workshops with a gender perspective.
School	**Consulted Topics:** Access to water and sanitation in schools. Hygiene and sanitation practices of children, both at school and at home. Teachers' perceptions of the health of children. Willingness of the school community to participate in the adoption of better hygiene and sanitation practices.
	Results and implications for programme design We identified specific needs within the school community for adopting better hygiene and sanitation practices. We established co-participation agreements with schools, signed by teachers and educators. We recognized the need to encourage the involvement of mothers and fathers in these efforts. The consultation will allow us to design better training processes and foster active participation from children in the Programme.

All consultation activities were carried out between September 2022 and June 2024, in 19 localities: Ciénega de Guadalupe, Cohamiata, El Carrizal, El Chalate, El Huizache, El Tempizque, Guamuchililllo, Las Latas, Las Pitayas, Las Tapias, Los Arcos, Los Lobos, Palma Chica, Popotita, San Andrés Cohamiata, San José Tesorero, San Miguel Huaixtita, Tierra Blanca del Chalate and Tierra Blanca de Huaixtita, with the exception of La Historia del Agua, of which its corresponding activities were conducted in 18 localities, but were not completed in San Miguel Huaixtita. The localities of La Cebolleta and La Laguna, where the programme has been operating since 2010 and 2014 respectively, participated in previous consultations.

The results obtained from this work have helped build a better understanding of the ways community members within *Wixárika* Villages understand and perceive the water scarcity problems they live with, and crucially, how they have experienced the work and involvement of our team. These interviews have been very valuable in the continuous process of analysis and reflection on how to better collaborate across cultural differences. They have also allowed our team to get feedback from a very diverse cross-section of the *Wixárika* population on the impact and perceptions of our work.

Generating and collecting information for this consultation process required a complex process of capacity building for the Intercultural Team. Sufficient baseline quantitative and qualitative information was obtained to verify future changes in access to water, as well as in the hygiene and sanitation practices of the community. This will be invaluable for the knowledge management and M&E components of this programme.

The objective of thoroughly understanding the water situation in San Andrés was achieved, but there are areas for improvement to ensure the most accurate information. Although the sample design aimed to interview around 10% of households in each locality, some localities fell short of this target, while others exceeded it. We propose continuing the process to strengthen the sample size in those localities where it was insufficient.

We were unable to obtain sufficient and consistent information on the community's health situation, which is always a sensitive topic for beneficiaries. To address these gaps, we will develop more

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effective participatory tools to better understand how the *Wixárika* community perceives its health. Additionally, we will seek partnerships with regional health authorities to access accurate local data, as this information is crucial for assessing the impact of improved water access on community health. More detailed information about the consultative process can be found in Annex 8.

Recently, several significant developments have occurred that are crucial to the success of the Adaptation Programme. In October 2023, the newly elected local government officials for the entire San Andrés region approached us, expressing strong motivation to see this project succeed and agreeing to support it in any way necessary. During a field visit to the Sierra in April 2024, we received approval from local authorities to not only continue scaling up household RWHS but also to explore forest regeneration activities (Table 8). These authorities have already identified suitable areas for regeneration efforts (component 2) and will play a key role in guiding decisions on where and when to begin this next phase of RWHS installation (Photos 15, 16, and 17).

Photos 15, 16, and 17. *Meetings with local authorities for the extension of the programme and the identification of regeneration polygons.*

Table 8. Leaders consulted and who later approved this intervention in the community

Name	Role

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Alfredo Carrillo Salvador	Commissioner of Communal Assembly
Paulita Carrillo Carrillo	Treasurer of communal lands
Prodencio Carrillo de la Cruz	Secretary of communal lands
Miguel Carrillo López	Traditional Governor
Claudio Montellano de la Cruz	Community Technician
Humberto Ramírez Díaz	CADET - Comisión de Análisis de la Defensa del Territorio (Territorial Defence Analysis Commission).

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

Justification for funding requested

Component 1: Establishing rainwater harvesting (RWH) infrastructure for sustainable and autonomous water access

Baseline: Water infrastructure in the *Wixárika* Nation is either non-existent or in very poor condition. Only a few communities have access to tanks and piping, but most of this infrastructure is old and has not been maintained, so the whole population has to rely on the limited and already overexploited natural sources nearby (water holes and springs) and haul water to their homes, mostly by foot (only 4% of the population has the means to do it by truck) and store it in buckets. The mountainous terrain, isolation, and insecurity deepen the political abandonment the *Wixárika* people suffer; little to no government funds are allocated to these massive needs. *Wixárika* people live off a maximum of 13 litres of water a day, less than what the World Health Organization recommends for a dignified life (20 litres/day/person). The *Wixárika* are extremely vulnerable to the effects of climate change on the availability and quality of water from the natural sources that their lives depend on, and have a baseline of almost no resiliency measures to mitigate the risks to their way of life. The exception to the above are the approximately 300 RWHS previously installed in the region by our team.

With AF Funds: Most households of the 21 localities of San Andrés Cohamiata will have a functioning RWHS with 12,000 to 14,000 L storage tanks, that will be able to harvest up to 25,000 L of water for all domestic purposes every year, for no cost except their co-participation during implementation. Water hauling will be reduced to around 30% of what it is now. Families will have the technical capacities and knowledge to operate, maintain, and do basic repairs to their RWHS - which will bring them safe water, almost year-round-, purify and drink their harvested water, thanks to a decentralised infrastructure that will grant them resilience, satisfy their water needs and improve their quality of life, and greatly reduce the time, effort, and money currently dedicated to water provision.

Component 2: Developing and piloting of a community action plan for landscape-scale water management and regeneration

Baseline: The *Wixárika* Sierra is undergoing desertification. Soil erosion and free grazing are depleting the land, while longer dry seasons intensify forest fires, further thinning the forests. Agricultural soils retain less water, leading to inadequate harvests for subsistence, and water holes are shrinking due to overexploitation

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by a growing population. The *Wixárika* people lack the means to provide water at a household level, living in a constant state of scarcity and vulnerability.

With AF Funds: The *Wixárika* people will develop skills in land management and regeneration, gain firsthand experience in restoring hundreds of hectares, and learn about innovative Agroforestry Systems. The newly formed Ha Ta Tukari Governance Committee will lead this work in coordination with authorities, communities, and beneficiaries of Component 1. This approach will foster a deep understanding of these solutions, enabling their implementation, replication, and expansion. The result will be healthier, more humid forests, landscapes, and soils—better suited for self-subsistence agriculture. Additionally, there will be increased water availability in local sources, along with enhanced local knowledge and capabilities for improved land management. Through carbon bond programs, these efforts could also create economic stability, ensuring long-term sustainability and significantly boosting the Sierra's climate resilience.

Component 3: Developing communities' capacities for sustainable water management

Baseline: The *Wixárika* currently have limited knowledge of water and land management, rainwater collection, water purification, and hygiene practices. Issues like hygiene, sexuality, gender, and mental health are rarely addressed. Stable job opportunities are scarce, forcing many to leave the area for months each year to find low-paying work, often in industrial agriculture. Aside from traditional *Wixárika* crafts, there is little local industry, and few spaces exist for learning, creating, and sharing knowledge outside of schools and religious settings. Learning materials are often insensitive to the local context, and traditional practices are excluded from adaptation processes in the *Wixárika* Nation.

With AF Funds: A *Wixárika* team will be trained and employed, providing stable work opportunities for over 40 local men and women. This team will become facilitators and technicians, teaching rainwater harvesting, landscape management, hydroforestry, and hygiene practices. Spaces will be created for artistic expression and learning, with context-sensitive educational materials developed in the *Wixárika* language. Traditional knowledge will be integrated into these efforts. New Intercultural Teams will focus on land regeneration, introducing novel practices to a significant portion of San Andrés Cohamiata's population.

Component 4: Knowledge management and development of a model for community-led universal water coverage

Baseline: Without Adaptation Fund support, Ha Ta Tukari is a small and fragmented effort which has a significant impact on the families and communities that have received RWHS but cannot be synthesised and understood as a scalable model that can be replicated to achieve universal water coverage for a larger community.

With AF Funds: Having one concentrated and larger scale effort like this will allow us to capture and systematise all the lessons learned and translate them into a toolkit and model that can have a much broader significance in the adaptation community: offering a pathway to universal water coverage for communities across the Global South. Essential to this will be an innovative communications plan to accompany the creation of the toolkit to ensure other communities know that this kind of impact is possible.

J. Describe how the sustainability of the programme outcomes has been taken into account when designing the programme.

The adaptation benefits achieved with the help of this AF programme have been designed with sustainability, scalability and replicability at their core.

Social Sustainability

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Social Sustainability of the Rainwater Harvesting Systems (RWHS) depends on the technology being socially and culturally appropriate and acceptable, and on the society having the capacity to keep and sustain the functionality of said technology over time.

RWH as a way of achieving water access has proven to be very appropriate and acceptable to *Wixárika* culture and society. The fact that most *Wixárika* families rely on laborious water hauling from natural sources means that having water storage and access at the home is highly impactful, which has contributed to the enthusiastic response to RWH we have seen in the communities where it has been piloted. These *Wixárika* communities, with their strong agrarian roots, closely observe rain cycles, and the maintenance of RWH systems, with its annual pre-season tank cleaning and administration of stored water through the dry season, has proven largely intuitive to them.

The remaining aspect of Social Sustainability requires the development of the local capacities for maintenance and repair that can keep the RWHS functioning over time. To this end, the programme emphasizes extensive training and equipping of local technicians, as well as the broader training of the population in use and maintenance. The programme is set up to ensure that the tools and knowledge needed are fully developed within *Wixárika* communities.

The RWH system is a tool with the potential of providing permanent water access, but its success relies on full adoption and the development of a permanent practice. No decisions are taken without the user's engagement and agreements. Families decide where their cisterns will be installed with the help of the local technicians, and extensive one-on-one training is carried out (during technical visits, installation, and follow-up). The RWH system installation is always accompanied by a process of co-design and local capacity building, support, monitoring, maintenance and repair.

The social sustainability of landscape regeneration follows a similar logic - by building community ownership and capacity to manage the development of these practices, we are building sustainability into the social fabric that supports these changes.

Women's role in the sustainability of the programme: women will play a crucial role in the sustainability of the programme. They are the custodians of the community's traditional knowledge and predominantly responsible for transmitting practices to future generations. They are the ones who collect and manage water in the households and are the first to perceive the great impact that improved access to water has on their well-being and that of their children. They often become the best promoters of the practices promoted by the programme, conscientiously monitoring the quality of the water stored in their RWHS and teaching their children to do so. Their unique perspectives and experiences enrich ecosystem water management strategies, ensuring that actions taken are culturally relevant and effective. We will prioritise women's involvement in the RWH Intercultural Team, Programme Leadership, and their holding important positions of influence within the Committees that will govern activities.

Economic Sustainability

Economic Sustainability is achieved by designing RWHS that require only minimal financial costs to maintain. By using long-lasting materials, gravity-based designs that require no electricity or complex machinery, and maintenance regimes that rely on cleaning with simple and accessible products and equipment, the infrastructure needs very little money to be kept fully operational for decades.

Furthermore, and because a certain amount of repair and specialized maintenance may be needed over time, local technicians are trained and equipped as part of the programme model, and these technicians can offer repair services in their communities. The prices for repair are set and standardized by the programme in collaboration with said technicians, and are presented to the communities in written form, so as to establish reasonable prices that are viable both to users and technicians.

Environmental Sustainability

The programme has little potential for negative ecological impact, but rather involves significant efforts to increase the health and resilience of the local forests. The Rainwater Harvesting Systems to be implemented are designed to be long-lasting and non-toxic, and their construction processes do not involve the production of significant waste streams or pollutants.

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Regeneration (Component 2) is inherently sustainable - by enhancing the land's water retention capacity, the area will support a larger and more diverse population of flora, which is crucial for preventing desertification and will increase and prosper over time. This will create a refuge for plant species that might otherwise be lost due to rising temperatures and decreasing precipitation in the coming decades.

Environmental sustainability is thus achieved by implementing a programme that builds water-access infrastructure that is non-polluting, whose use and operation does not require significant energy or chemical loads, and which reduces the need for the population to extract water from the fragile natural sources - springs and water holes- which are critical to the health of the forests and resident wildlife; and by undertaking regeneration activities which are designed to sustain in the coming decades with minimal human intervention.

Institutional Sustainability

Reaching Institutional Sustainability relates to the ongoing development of the Ha Ta Tukari programme into an institution with long-term presence and reach in the *Wixárika* region (a presence that can already claim 15 uninterrupted years of work). This process of institutional consolidation and strengthening has allowed progressively stronger and more consistent fundraising, alliances, as well as greater reach in the region. The long presence and work by the organization in the area has built strong trust and communication with the communities, which has allowed increasing levels of responsibilities to be assumed locally, strengthening capacities along multiple fronts. As Ha Ta Tukari increasingly systematizes and develops its implementation methodologies, its governance, and its operational structures, and as it becomes an increasingly bi-cultural (*Wixárika*-Mexican) institution, it is moving solidly towards increased institutional sustainability.

Financial Sustainability

Financial sustainability (as opposed to economic sustainability which we understand as the possibility of the results of the current project to be sustained economically over time), refers to the capacity of the executing institution to sustain itself financially over the long term. This is achieved through professional and transparent administration of funds, careful planning of expenditures, and the continuous work of fundraising and development of partnerships with people and organisations that share our goals and mission and help sustain the Ha Ta Tukari programme. Ha Ta Tukari will always need some degree of fundraising, its programme team have been doing this for 15 years, leveraging a deep and trusting relationship with a community to raise the support it needs to be able to live autonomously, protecting its ancestral way of life and adapting to the increasing impact of climate change.

Infrastructure sustainability

Once built, the 1,000 RWHS will provide fully autonomous and renewable water in every homestead. They are capture, treatment, and storage systems that can be locally installed, maintained, operated, repaired, and expanded as necessary. The design is a result of years of experimentation for minimal operating costs, ease of use, durability, repairability, deployability, in extremely isolated areas that are difficult to reach with heavy materials and equipment. The result is a RWH system with a 12,000 to 14,000-litre capacity storage tank, with pipes, gutters, and filters. The geomembrane tank is extremely lightweight and can be transported pretty much anywhere, including places with no vehicle access, and can be quickly installed in every home. The concrete tank will provide very sustainable and durable access to water for many years to come. Since there is no water infrastructure in homes, the systems can be adapted to pretty much any building. Small dispersed houses with metal sheet roofs with vast space around them simplifies the installation of on-ground 5 metre-diameter cisterns, with simple filters designed for unpolluted rural contexts. The *Wixárika* Intercultural team will be able to operate all aspects of installation, maintenance and repair of these systems after the end of the programme.

K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the programme/programme.

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Environmental and social impacts and risks

The programme does not have any significant environmental and social risks, in fact, it should help reduce and mitigate them significantly through the increased availability of water. In the same line, regenerating the forest and soils and creating new water bodies can increase overall humidity and stabilise rain patterns.

The main environmental impacts we hope to achieve relate to the landscape-scale work of soil and rainwater retention, by which we intend to fight the trend towards desertification, promote the recharge of springs and water holes, and assist in increasing vegetation cover.

In terms of social impacts, the detonation of participation and community involvement spaces, sensitive to the cultural context, can greatly improve social dynamics in place. Further, the promotion of local work opportunities, with professionalised technicians and promoters, can be of great help in the detonation of a local economy that can impact many families' incomes. There is also the topic of gender, where we seek to integrate women more and more and initiate conversation about gender equity issues, without disrupting the traditions and social structures in place. Therefore, the programme allows us to create new spaces where women can integrate the participative processes and facilitate their involvement, and in particular cases find work opportunities that can be adapted to their specific roles within their families and communities.

Principle 1: Compliance with the law (low level of risk)

1.1 There are no identified major risks in terms of compliance with the law. All our actions will be consulted and have been previously approved by all relevant federal, municipal and community governance bodies and structures. Similarly, our water technology and infrastructure has been tested and approved to deliver water quality which meets the minimum water quality standards on several government and philanthropically-funded programmes.

1.2 There is a risk relating to Mexico's strict accounting regulations governing non-profits. These require all expenditures to be backed by fiscal receipts, which can only be emitted by people and businesses registered in the National Tax Administration Agency. Mexico has a massive, unregistered informal economy, and in the *Wixárika* region, there are almost no people or businesses registered. This means that complying with administrative regulations involves a great amount of work when trying to hire locally, as the programme intends on doing. This is a manageable risk but is likely to entail a very considerable amount of work.

Principle 2: Access and Equity (low level of risk)

2.1 The programme's primary goal is to achieve universal water access, so in principle, there should be no one excluded. The more water-scarce villages and hamlets would be given priority and attention first, but all interested communities and persons would become beneficiaries.

2.2 There are risks in terms of secondary benefits of the programme, particularly around employment. The *Wixárika* region has minimal access to paid work, and stable, formal employment is almost non-existent. This programme will generate local paid jobs in the forms of rainwater harvesting technicians, community workers, landscape workers, etc. It is easy for the more vulnerable or marginalised members of the communities to be excluded from accessing these positions for various reasons, including living in particularly remote spots, lacking basic necessary technical, organisational, or language skills, being overwhelmed by childbearing duties, not being allowed to participate by a controlling partner, or simply not having the self-confidence to apply. Mitigating these risks will require the careful design and execution of application, recruiting, training, and support procedures that allow equitable access and participation in the programme.

2.3 The organisation is fully committed to serving the communities and integrating its work teams with no favouritism or discrimination, except for the prioritisation of participation by women, whose general conditions of greater marginalisation requires some preferential attention.

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2.4 There is a risk that the absolute most vulnerable people may be left out from receiving rainwater harvesting systems when they do not have homes of their own on which they can be installed. This is a very difficult risk to mitigate. All attempts will be made to include these most vulnerable people, by hiring them, or by ensuring they have access to water through the schools or other public systems.

Principle 3: Marginalised and Vulnerable Groups (low level of risk)

3.1 The entire programme takes place in the context of a highly marginalised indigenous nation, so the entirety of its impacts will be felt by them.

3.2 The *Wixárika* people live in conditions of high marginalisation from the broader Mexican national community, with minimal public services. It is precisely this lack of access that the programme seeks to address.

3.4 Within the target population, there are groups that are particularly vulnerable, among whom are women, single mothers, and young adults, all of whom have little power or clout in the communities relative to other sectors of the population. The programme seeks to integrate these parts of the population especially, by intentionally recruiting them into the teams that will work on programme implementation. The main risk is that these vulnerable people might not be easily integrated into the programme teams because of various factors (such as being prevented from doing so by a controlling spouse, by shyness or lack of confidence, etc). Mitigating this will require intentional outreach, training, and support.

Principle 4: Human Rights (low level of risk)

4.1 No risks identified

Principle 5: Gender Equality and Women's Empowerment (low level of risk)

5.1 Women tend to be the more vulnerable or marginalised members of *Wixárika* communities, particularly when they are single mothers or have alcoholic and/or abusive spouses. Women will not be excluded from the programme's primary benefit of providing water access in the homes. On the contrary, women will be among the main beneficiaries of this, since the task of water collection and hauling falls primarily on them.

5.2 There is a real risk that women could be excluded from participating fully as employed members of the programme, for various reasons mentioned earlier. Mitigating this risk will require carefully designing the recruiting, application, training, and support processes to facilitate their participation. The programme executing team is fully committed to making this happen.

Principle 6: Core Labour Rights (low level of risk)

6.1 No risks identified. All hiring of community members by the programme will be done in observance to national labour laws, ILO standards, and ethical practices.

Principle 7: Indigenous Peoples (low level of risk)

7.1 The entirety of the programme takes place within the territory of the *Wixárika* Nation, an indigenous group that maintains a high degree of self-governance. The *Wixárika* community will be the beneficiaries of the programme, and *Wixárika* people will make up most of the team. Already, the team currently working in Ha Ta Tukari (the existing programme that this programme will greatly scale up) is made up by approximately 60% *Wixárika* persons.

7.2 At each step in its development, the current programme has been and will continue to be carried out in consultation with local *Wixárika* authorities. Every time it has been extended to a new village or hamlet, it has been after the direct request of the local authorities, and after a community meeting in which the work has been presented and explained, and the community accepted. These meetings are

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led by *Wixárika* members of the Ha Ta Tukari team and are done in both Spanish and *Wixárika*. The programme will continue working in this manner, with explicit and informed consent from local authorities, and every individual beneficiary family.

7.3 The programme also counts on support from the Institute of Indigenous Peoples of Jalisco State, which includes *Wixárika* staff, and maintains constant communication and relations with the *Wixárika* traditional government.

7.4 The central traditional government of San Andrés Cohamiata will be consulted at every stage of the development of the programme, as well as in the final design of the proposal, as they have been.

7.5 The Local authorities of San Andrés Cohamiata have produced and published a written set of guidelines and procedures for organisations wishing to work within the territory. The chief writer of this document is a close ally of the current programme, and will provide his support in ensuring that these procedures are perfectly understood and followed by the team.

7.6 The team will do everything to be fully consistent with UNDRIP and work with FPIC at all stages.

Principle 8: Involuntary Resettlement (low level of risk)

8.1 No resettlement whatsoever, voluntary or not, is anticipated in the execution of this programme. Our programme increases the feasibility of communities staying in their original homes. The current water crisis means that it is becoming increasingly difficult for the *Wixárika* people to stay in the San Andrés Cohamiata, this programme is in part designed to make it possible for the community to avoid involuntary resettlement.

Principle 9: Protection of Natural Habitats (low level of risk)

9.1 Part of the programme involves landscape water harvesting work intended to allow greater water retention and infiltration, and reduction of soil loss and erosion. This involves some alteration of the terrain, but not any conversion of natural habitat to other land use. It does include the digging of keylines and other types of trenches for water and soil retention, and improvement of agricultural lands by the planting of vegetation lines along swales and trenches, in order to combat the desertification that threatens the region.

9.2 In order to avoid causing unwitting harm to the local ecosystems, interventions in the landscape will focus on already degraded lands, and will be designed with experts on landscape water management, ecology, and with the local population, taking into full consideration biological diversity and habitats, as well as culturally and spiritually important sites and features.

Principle 10: Conservation of Biological Diversity (low level of risk)

10.1 No negative impacts on biological diversity are anticipated. On the contrary, the programme will seek to rehabilitate degraded lands and soils, regenerate local ecosystems, and increase the populations of native species that have been pressured by desertification and land degradation over the past decades.

10.2 No invasive species will be introduced, and all reforestation-revegetation efforts will focus on native species and possibly non-invasive agricultural plants, where appropriate, selected in consultation with the local population, ecologists, and agronomists with a strong understanding of the local biome.

10.3 It is worth noting that two current members of the team are scientists with advanced degrees in ecology, who know the region well and have a solid understanding of the biodiversity present. The team also maintains contact with the National Forestry Commission of Mexico (CONAFOR) who are available to support with recommendations on species selection.

Principle 11: Climate Change (low level of risk)

11.1 The programme will not result in significant emissions or other drivers of climate change, but rather seeks to combat the desertification that is being driven by climate change as well as land use changes,

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through the rehabilitation of degraded lands. The only source of Greenhouse Gas will be the use of fuel to transport equipment and collaborators.

Principle 12: Pollution Prevention and Resource Efficiency (low level of risk)

12.1 The programme does not involve significant use of polluting chemicals or products. The installation of rainwater harvesting systems involved the use of plastic components, such as geomembranes, pipes, and other components, but these will be long-lived and low toxicity plastics, mainly UV treated, food grade polyethylene, which has a very long lifespan, and very low toxicity, being the type of plastic used for water storage around the world. As our programme will be conducted in a very isolated region, the reuse of disposable materials will be highly encouraged. Similarly, most infrastructure comes with no packaging.

Principle 13: Public Health (low level of risk)

13.1 The principal risk to public health would be failure of the rainwater harvesting systems to produce drinking water of acceptable quality, or the contamination of the water in any given tank from bird droppings, or the entry of animals. This risk is mitigated by the use of well tested rainwater harvesting system designs, known to be able to produce quality drinking water, by the testing of water quality throughout the programme, by training the beneficiary population on best practices for safe water collection and storage, and by the addition of filters where needed. Best practices on water harvesting and storage laid out by the Secretary of Social Development, the WHO, the American Rainwater Catchment Systems Association, and the National Water Commission will be taken into account.

13.2 It is worth noting that, although poorly stored or harvested rainwater presents a real health risk, the current state of affairs, in which untreated surface water is hauled for human consumption from open and unprotected sources, often shared with animals, is potentially a much greater risk, and the use of safely harvested and stored rainwater in the homes is much more likely to reduce health risks than to produce them.

13.3 As our programme will be conducted in a very isolated region, the reuse of disposable materials will be highly encouraged. Similarly, most infrastructure comes with no packaging.

Principle 14: Physical and Cultural Heritage (low level of risk)

14.1 No cultural or historic objects, sites, buildings, etc., will be removed or destroyed in the realisation of this programme. All restoration and water retention work that affects the landscape itself will be designed and planned in close collaboration with the local authorities and community members to ensure that no sacred places are inadvertently altered. Many water springs are considered sacred and hold a fundamental place in *Wixárika* spiritual practice, the programme will significantly contribute to their conservation.

14.2 This programme will be carried out with members of the *Wixaritari* community, of which have been consulted before and will continue to be consulted on the matter of cultural values, beliefs and resources.

Principle 15: Lands and Soil Conservation (low level of risk)

15.1 The *Wixárika* region has a rocky landscape with thin soils, steep inclines, and receives torrential rains during a monsoon season, followed by intense drought. These factors contribute to a high degree of vulnerability to erosion and desertification. Productive land is scarce, with few arable spaces. The traditional model of land use, in which forest would be felled and converted for agriculture, used for a few years, and then allowed to be reclaimed by the forest, are no longer sustainable with the much larger populations present today. Much of the territory has been significantly degraded, both by this

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type of conversion from forest to marginal agricultural land, as well as from massive logging ventures that were imposed decades ago on the *Wixárika*, and from which the local forests have never fully recovered.

15.2 This programme seeks to begin a process of landscape rehabilitation, in order to combat the erosion and desertification that affect the area. The programme will carry out works designed to retain water and soil through the digging of trenches, swales, and ponds, and through the reforestation of native tree and shrub species. It will also work to increase the soil and water retention of the agricultural lands, in order to improve their overall health and fertility and allow them to remain viable long term and not erode down to the underlying clay and rocky layers.

15.3 There is risk that in intervening the landscape, local erosion can be made worse, for example by the digging of keylines and trenches with excessive grades. The programme will seek to mitigate these risks by working with highly experienced landscape water management experts, and by closely monitoring the changes in water and soil flows.

The Ha Ta Tukari programme falls under "Category C" of the Environmental and Social Policy of the Adaptation Fund, since it has no adverse environmental or social impacts on the *Wixárika* community or environment, as shown in the following screening of each potential risk and impact according to the ESP (the level of risk is always low or simply non-existent). For further details of the Environmental and Social Management approach of the programme, see Annex 13 ESMP.

Table 9. Risks and impacts according to the ESP (a complete ESMP is developed in Annex 13 and further explains how potential risks will be mitigated).

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
E&SP 1. Compliance with the Law	No additional evaluation required	Low and mitigable risk**.** No significant legal risks identified. Program activities do not require prior permission from the Government. Permission from the local authorities is required to work in the area (current *Wixárika* authorities have already granted permission for this programme). Compliance with all fiscal-administrative responsibilities in the context of the Wixárika region, where few people or businesses are registered in the formal economy, may present some challenges. The Program will work closely with INPI (National Institute for Indigenous Peoples), the State of Jalisco and an HR Specialist to ensure all fiscal responsibilities when it comes to the hiring of the Intercultural teams are complied with.
E&SP 2. Access and Equity	No additional evaluation required	A possible, though highly mitigable risk exists that inequities in water access and services coverage could be exacerbated if families with particular vulnerabilities, such as those led by single mothers or from remote homesteads, are not reached by the program. The program has been designed to ensure these households are prioritised. This will be carefully monitored.
E&SP 3. Marginalised and Vulnerable Groups	No additional evaluation required	No significant risk of negatively impacting certain groups or sectors of Wixárika society have been identified. A possible but mitigable risk exists that more vulnerable members of Wixárika society (i.e. single mothers, elderly people, those living in particularly remote homesteads) could face more barriers to becoming beneficiaries of the program.
E&SP 4. Human Rights	No additional evaluation required	Low and mitigable risk.The programme is focused on guaranteeing the human right to water for the entire community. None of the program activities involve identified risks or threats to Human Rights.

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E&SP 5. Gender Equality and Women's Empowerment	No additional evaluation required	Low and mitigable risk. Women, especially single mothers, are often subject to strict gender roles, and are among the most vulnerable members of Wixárika communities. There is a risk that some women could be excluded from participating in the program, particularly as employees, due to family/community pressures.
E&SP 6. Core Labour Rights	No additional evaluation required	Multiple local community members will be hired by the program as implementors, facilitators, educators, and technicians. Any potential risk that these hirings could involve must be mitigated.
E&SP 7. Indigenous Peoples	No additional evaluation required	Low and mitigable risk. The programme operates entirely within the Indigenous Wixárika Nation. Indigenous persons represent the entirety of program beneficiaries and the majority of program staff. The Mexican Constitution was reformed in October 2024 to recognise indigenous peoples legal rights and the programme will comply with and reflect this protection in all its actions.
E&SP 8. Involuntary Resettlement	No additional evaluation required	No identifiable risk. No resettlement, voluntary or otherwise, is anticipated in the execution of this programme
E&SP 9. Protection of Natural Habitats	No additional evaluation required	Low and mitigable risk. The programme includes forest regeneration strategies involving landscape water harvesting and enhanced water and soil retention, to combat desertification. These activities involve increased vegetation cover and protection of habitats.
E&SP 10. Conservation of Biological Diversity	No additional evaluation required	Low and mitigable risk. The programme anticipates no negative impacts on biodiversity and aims to rehabilitate degraded lands, regenerate ecosystems, and boost native species populations.
E&SP 11. Climate Change	No additional evaluation required	The programme aims to address desertification caused by climate change and land use changes by rehabilitating degraded lands, without any significantly contributing to emissions or climate change drivers.
E&SP 12. Pollution Prevention and Resource Efficiency	No additional evaluation required	Low and mitigable risk. The programme avoids using polluting chemicals, and the rainwater harvesting systems will utilize durable non-toxic materials. Along this, there is little to no residue from the implementation activities, and the protocols include proper disposal.
E&SP 13. Public Health	No additional evaluation required	There is a very low level of risk to public health from improperly disinfected water. The main health risk comes from potential failure in rainwater harvesting systems or contamination from animals or bird droppings. However, it is less hazardous than current practices of using untreated surface water from unprotected sources.
E&SP 14. Physical and Cultural Heritage	No additional evaluation required	Low and mitigable risk. The programme will not negatively affect, remove, or destroy any cultural or historical sites.
E&SP 15. Lands and Soil Conservation	No additional evaluation required	There is no risk. The Wixárika region is highly vulnerable to erosion and desertification due to its rocky terrain, steep slopes, and extreme weather, compounded by unsustainable land use practices and past logging. The programme seeks to significantly regenerate lands and increase soil biodiversity.

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PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for programme implementation.

Arrangements for programme implementation

Arrangements for Programme Implementation are based on the close collaboration and communication between a few interconnected organizational structures with clear roles and responsibilities.
The organisational centre of the programme will be the Ha Ta Tukari Programme Coordination Team. This group will be responsible for ensuring programme outcomes across all goals and objectives, and of managing the multiple collaborations involved. It is made up principally by personnel from Isla Urbana/Lluvia Para Todos and La Ventana Infinita who co-founded and developed Ha Ta Tukari, working very closely with key allies IMTA and SARAR, and with the *Wixárika* community itself.

Participation of the *Wixárika* community occurs through the entire programme and includes the autonomous government authorities -chiefly the Community Assembly of Tatei Kie and its delegates from each town and village. These locally elected officers are the highest secular authority and are empowered to organise community wide efforts and make commitments on their behalf. They are key allies in the project and have been consulted throughout the process of designing it.

Crucially, the team which will build and install the Rainwater tanks, lead the community efforts to regenerate the forests, and who will teach the children and adults of the whole community how to do all of this, will be made up almost entirely by local young *Wixárika* men and women. The existing and already highly trained and experienced *Wixárika* Intercultural Team will be the frame on which the larger team will be built.

The specific roles and relationships of the key actors and stakeholders are outlined in figure 14.

Mexican Ministry of Finance and Public Credit (SHCP)'s Director General of their Public Credit and International Affairs Unit is the Designated Authority for this programme and endorses and oversees this proposal, and subsequent programme, on behalf of the Mexican government.

Mexican Ministry of the Environment and Natural Resources (SEMARNAT) is the National Climate Sector Lead. It will provide support, oversight and technical guidance as needed to the programme. Within SEMARNAT, there are two key units or departments that will be closely involved in the governance and technical oversight of the programme: INECC (National Institute for Ecology and Climate Change) and UCAI (International Affairs Coordination Unit).

The Mexican Institute of Water Technology (IMTA) will act as the Implementing Entity. They will oversee the activities conducted by the Executing Entity, ensuring the technical robustness of the programme, and will assist in designing and implementing a monitoring plan, focusing in particular on measuring the quality of water consumed in households.

The Tatei kie Community Assembly Is the highest secular authority for the community of San Andrés Cohamiata with its 21 towns and villages. It is presided by an elected body called the Commissary of Communal Lands, or the Agrarian Authority, made up by a president, secretary, treasurer, and council. This body has an elected representative in each locality, each with their own small team. The Community Assembly must approve any project that takes place in the territory, they can make agreements and commitments, and they can organize community efforts.

Lluvia para Todos A.C. (Isla Urbana) serves as the Executing Entity. Its main functions are to orchestrate and coordinate the programme, oversee the multiple teams working on each aspect of it, manage the collaborations with the multiple partners, and provide the technical capacities and experience in relation to

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Rainwater Harvesting.

La Ventana Infinita is a cofounder of Ha Ta Tukari, leading education and various forms of training within the programme. It forms part of the central Programme Coordination together with Lluvia Para Todos and SARAR, in charge of overall programme implementation. They bring capacities and experience in the design and execution of training processes, both for the team itself, as well as for the beneficiary populations.

SARAR is a key collaborator, bringing decades of experience in decentralized, ecological sanitation, water management, and community organization. SARAR personnel will be in charge of overseeing the forest regeneration and agroforestry aspects of the programme, and will serve on the central Programme Coordination Team.

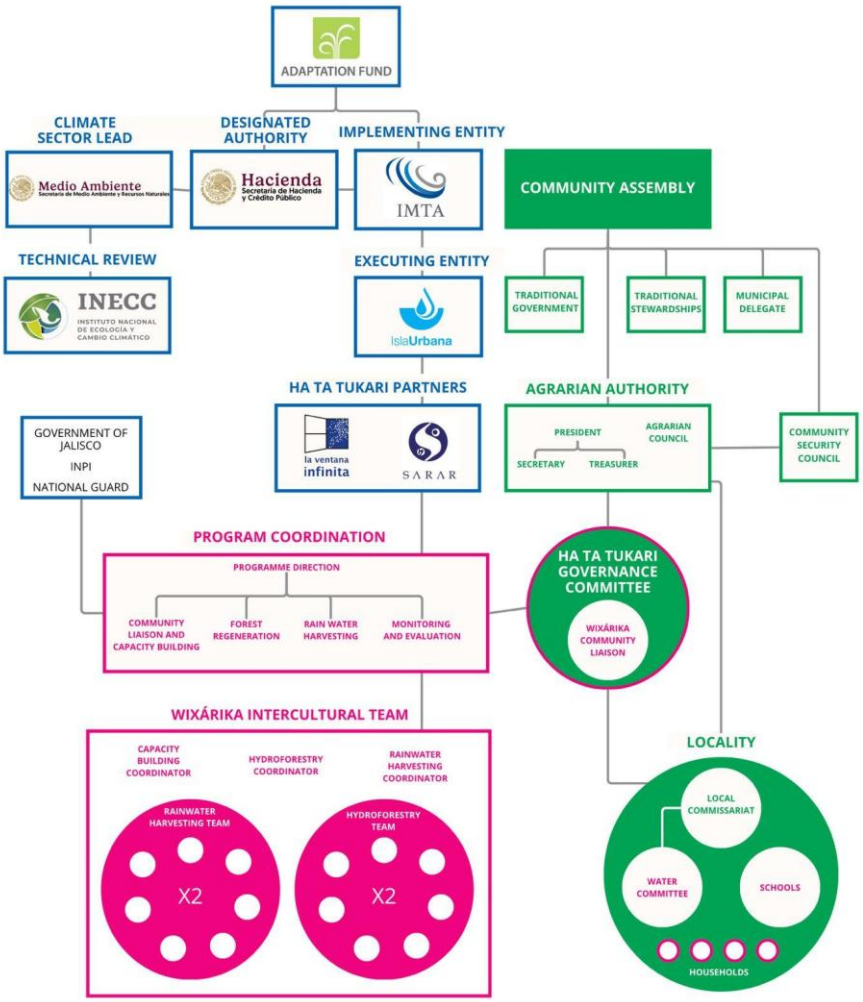

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Figure 14. *Programme Key Players and Roles*

The Central Programme Coordination Team is made up of a General Director and four management roles: the RainWater Harvesting Director, the Forest Regeneration Direction, the Community Liaison and Capacity Development Direction, and finally the Monitoring and Evaluation Direction.

The Central Programme Coordination Team includes a General Director and four key management roles:

- **General Direction:** Oversees the entire programme, ensuring communication and coordination amongst key leadership and staff, representing the project before local authorities, funders and allies, and supporting the programme to achieve its key outputs and outcomes across components.
- **RainWater Harvesting Direction:** Drives all strategic and technical decision-making when it comes to RWHS installation, oversees field technicians, as well as recruitment and training.
- **Forest Regeneration Direction:** Drives all strategic and technical decision-making when it comes to landscape-scale water management, facilitates learning processes related to forest regeneration, designs technical training, and monitors implementation.
- **Community Liaison and Capacity Development Direction:** Designs and drives Component 3 of the programme, managing the training of the Intercultural team, and overseeing the production of all capacity building materials.
- **Monitoring and Evaluation Direction:** Leads all M, E & L activities including data collection and analysis, overseeing field technicians, and preparing progress and impact reports.

The Ha Ta Tukari Governance Committee functions as a kind of board for the various stakeholders to communicate, make decisions and co-create the programme. The Committee will include the Central Programme Coordination Team, the representatives of the Tatei Kie Communal Assembly, representatives of the *Wixárika* Intercultural Team, and whoever else the community considers relevant to the joint implementation of the programme. We will actively work to ensure that this committee has representation from across *Wixárika* society, including often underrepresented groups, and that the voice of women in particular figures prominently.

***Wixárika* Community Liaison:** During the first Ha Ta Tukari Governance Committee meeting, local authorities will be encouraged to appoint a Liaison. This individual will be responsible for conveying decisions from the Committee to the Intercultural Team Coordinators and the local community authorities involved in the programme.

The *Wixárika* Intercultural Team, composed of local *Wixárika* people, will actively contribute to this project. The team consists of local coordinators and two fieldwork teams:

- **Field Coordinators**: Responsible for overseeing three key activities—RWHS (Rainwater Harvesting System) installation, forest regeneration, and local capacity building.
- **Rainwater Harvesting Team**: Responsible for installing RWHS and training households how to use and maintain their systems, as well as data collection and other M&E activities.
- **Hydroforestry Team**: Responsible for implementing forest regeneration activities and training others to do so, as well as soil sampling and other M&E activities.

Table 10. Composition of the *Wixárika* intercultural team

Position	Description
Field Coordinators (RWHS, Regeneration; Capacity Building)	Coordinates the local team in the field and is the liaison with the Central Programme Coordination and the *Wixárika* Operations Coordinator. Is responsible for contact with local authorities, for convening meetings with the community and for establishing community agreements. There will be a coordinator for the Rainwater Harvesting Team, one for the Hydroforestry Team, and another for Capacity Building activities.

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Field Technicians	Are primarily responsible for collecting, verifying, and delivering diagnostic and monitoring information for the Rainwater Harvesting, Hydroforestry, and Capacity Building activities.
RWHS Technician	Will be trained to install, repair, and give maintenance to RWHS. The people working in this role will need to master the use of a wide range of tools, from the basic hand and power tools to more sophisticated equipment for geomembrane welding and concrete casting. They will be expected to develop strong team-working skills, and other soft skills to work with the beneficiaries.
Forest Regeneration Specialised Technician	Possesses a deep understanding of the technical and social foundations of comprehensive forest ecosystem regeneration. Designs and coordinates field systems tailored to various types of terrain, with a strong emphasis on team safety as a core principle of fieldwork. Leads hydroforestry regeneration projects in collaboration with community members, contributes to the training of local technicians, and oversees the collection and systematisation of real-time data on the progress of technical implementation.
Forest regeneration trained technicians	Possesses expertise in forest ecosystem regeneration. Ensures the availability and mobilisation of materials for community-led regeneration activities. Leads technical implementation with community participants, collects real-time progress data, and oversees agroforestry nurseries.
Socio-educational facilitator	Implements workshops and participatory activities in homes, schools and community spaces for the construction of community agreements and collective decision-making for the sustainable management of the landscape. Collaborates with Intercultural team technicians in technical training for the population. Supports community art projects aimed at the adoption of the implemented actions.
Operations Technician	This role can be filled by any qualified team member for additional compensation. Responsible for tasks such as driving and maintaining vehicles, inventorying warehouse and home base equipment, tracking freight and material distribution, etc. Will be responsible for the team's tools, equipment, vehicles, and materials, as well as for keeping close communications with the other teams and coordinators in the project.

Our main **external alliances** are with public institutions. We have cultivated good relations with, and have received non-economic forms of assistance of various kinds from the State Government of Jalisco, the National Institute for Indigenous Peoples (INPI), the State Commission for the Development of Indigenous Peoples (CEDPI), and the National Guard, among several others.

B. Describe the measures for financial and programme risk management.

Risk management

Table 11. Risk management

H = high, M = moderate, L = low

Risk	Initial risk assessment	Proposed mitigation measure	Final risk assessment

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Financial - Currency and cost fluctuations	**M**	All budgets will be in US$- we have assumed an exchange rate of $17.5 MXN to $1 USD in order to mitigate the risk of fluctuations in the exchange rate that we have seen in recent years. Where possible, a clause will be included in contracts with private sector providers that they can't increase the costs during the contract duration once the contract has been signed. We have a miscellaneous materials line of 10% to cover fluctuations in the cost of materials should prices of key RWHS costs increase.	**L**
Financial - *Wixárika* have limited budgetary and administrative capacity	**M**	We will work with the Agrarian Authorities and other community leadership to co-design an effective means of employing members of the community that both obeys Mexico's strict employment law but is feasible in the very remote and limited region where the programme will be taking place. We have also sought advice from the Jalisco Government's Indigenous Peoples Bureau to understand how similar programmes have managed limited budgetary and administrative capacities but still offered the types of opportunities this programme aims to.	**L**
Operational - Security	**H**	Security in the region is a serious and ongoing concern. In recent years, competing organised crime organisations have been highly active along the highway that leads into the *Wixárika* region. We have developed protocols for travelling to and from the *Wixárika* Sierra, involving ongoing monitoring of conditions on the ground, security protocol training for the team, only-daytime driving, use of clearly marked vehicles, etc. We have received significant support from the National Guard and the State of Jalisco Police who have provided escorts to and from the region. Maintaining this support and relationships with federal and state government institutions is of highest priority. The security conditions along the highways leading to the Sierra constitute the highest risk to the project, and although the programme team will do its utmost to mitigate this risk, conditions are such that this will likely remain an active concern. Implementation times and strategies may require adjustments in response to changing conditions which is why we have designed an adaptive management and implementation plan that will allow for as much flexibility as possible to accommodate any necessary changes.	**M**
Operational - Delays in implementation of programme activities	**L**	We will create two operational centres in the Sierra from which the RWHS Intercultural teams will operate to enable a wider geographical reach and reduce the likelihood delays are caused in installation if equipment should break/need repair, team members fall sick, etc. All teams have built in rest periods to ensure that timelines are realistic. We will be training more people than are technically needed to ensure that, if someone should no longer be available, the technical capacity will still be there. We	**L**

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		have budgeted two sets of tools per team, to ensure the need for repair does not slow down implementation (given how remote the region is, it can take a long time to replace equipment).	
Operational - Team Health and Safety	**M**	Regeneration activities do involve moving very large and heavy tree trunks. Health and Safety protocols will be put in place and strictly adhered to. Additionally a training programme has already been designed, and budgeted, to train all those involved in regeneration activities. They will also be trained in specific health and safety protocols and first aid. All team members will also be carrying epi pens and snake and scorpion venom antidotes when working in forest areas.	**M**
Technical - Resistance to change and the use of new technologies	**L**	Given our 15 -year involvement with these isolated indigenous communities, we have already overcome suspicion and resistance when it comes to introducing a new technology. The *Wixárika* know and appreciate the advantages of RWH. However to ensure further ownership and sustainability, community members will need to bring in 10 percent of the value of their RWHS by committing labour to support the installation of their systems. Capacity building and training of communities will be undertaken to improve their awareness and understanding of the benefits of the activities, including infrastructure maintenance. Communities will be involved in programme implementation/decision making throughout the programme. In depth community consultations will continue to take place throughout. Infrastructure maintenance will be a key piece of the training, with a special focus on women who often hold the management of the household as a key responsibility.	**L**

C. Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

The Executing Entity, in collaboration with the Implementing Entity, has developed a full Environmental and Social Management Plan that can be found in Annex 13. Building on the Adaptation Fund's Environmental and Social Principles to unpack all potential risks, the ESMP outlines all actions to be taken to manage and monitor and evaluate these. A budget has also been developed as part of the plan.

The program will also have a formal Grievance Mechanism outlined below:

The **Programme Grievance Mechanism (GM)** outlines the process for addressing grievances, it aims to provide a clear, accessible, and impartial process for individuals and groups to voice their concerns, complaints, or grievances regarding the Programme's activities. This includes but is not limited to:

- Environmental impacts: Negative impacts on the environment, ecosystems, or biodiversity.
- Social impacts: Negative impacts on livelihoods, human rights, cultural heritage, or social equity.
- Economic impacts: Unfair economic practices, lack of compensation, or economic disadvantages.
- Procedural irregularities: Non-compliance with programme procedures, regulations, or agreements.

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- Lack of transparency: Insufficient information sharing, decision-making processes not being transparent, or public participation lacking.

Procedure:

- Informal Resolution:
  - Initial Complaint: Grievances should be submitted in writing to both Isla Urbana and IMTA using the contact information provided below.
  - Acknowledgment: Isla Urbana will acknowledge receipt of the complaint within 2 days and IMTA will do so within 5 days.
  - Investigation: Isla Urbana and IMTA will jointly investigate the complaint. This may involve meetings, site visits, and gathering information from different sources.
  - Response: Isla Urbana and IMTA will provide a written response to the complainant within 7 days explaining the findings of the investigation and outlining any actions to be taken.
- Formal Resolution:
  If the informal resolution process is unsatisfactory, the complainant may escalate their complaint to the Adaptation Fund using the Adaptation Fund's established Ad Hoc Complaint Handling Mechanism (ACHM), by email to afcomplaints@adaptation-fund.org or (2) by hard copy to the Adaptation Fund Board Secretariat, 1818 H Street NW, N7-700, Washington, DC 20433, USA. Complainants will be informed of this option during the informal process.
- Timeframes:
  - Acknowledgment of complaint: 3 days for each entity.
  - Investigation and response: 10 days for the initial response.
  - Escalation to the Adaptation Fund: 30 days from the informal resolution response.
- Confidentiality:
  The identity of complainants will be protected to the extent possible, except where disclosure is required by law or is necessary to resolve the grievance.
- Contact Information:
  - Isla Urbana: Emilio Becerril, emilio@islurbana.org, +527772337877
  - IMTA: Edwin Fernando Zetina, sub.agua.territorio@gmail.com, +525591861201
  - Monitoring and Evaluation:

  The effectiveness of the GM will be regularly monitored and evaluated by both Isla Urbana and IMTA. The evaluation will consider factors such as the number of grievances received, time taken to resolve grievances, and the satisfaction of complainants. Annual reports summarizing the performance of the GM will be included in overall programme reports.
- Amendments:
  This GM may be amended from time to time to reflect changes in the Programme or best practices for grievance mechanisms.

D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan, in compliance with the ESP and the Gender Policy of the Adaptation Fund.

Monitoring and evaluation plan

This Monitoring and Evaluation (M&E) plan outlines the framework for tracking the progress and assessing the outcomes of this phase of the Ha Ta Tukari programme. The plan ensures that all identified environmental and social risks are monitored, evaluated, and managed in compliance with the Adaptation Fund's Environmental and Social Policy (ESP) and Gender Policy as well as supporting all parties involved in the programme's implementation to learn, and course correct where necessary to ensure the most effective use of resources and the most impactful outcomes possible.

Objectives

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- To monitor the impact of all key programme activities within and across technical components, tracking them against expected outputs and outcomes.
- To support the use of data produced to enhance learning at key moments in the life of the programme.
- To evaluate the programme's impact at mid-term and terminal stages.
- To report on the status of risk management, including corrective actions taken, in the annual Project/Programme Performance Reports (PPRs).

Monitoring Plan

Component-Specific Monitoring
- Component 1: Rainwater Harvesting Systems
  - Monitoring Indicators: Number of RWHS installed, system maintenance effectiveness, water quality.
  - Data Collection: Regular site inspections, beneficiary surveys.
  - Responsibility: Executing Entity (EE) with direct input from the *Wixárika* Intercultural Team.
  - ***[Water Quality testing will be done by the Implementing Entity]***
- Component 2: Landscape-scale Water Management and Regeneration
  - Monitoring Indicators: Area of land restored, biodiversity levels (measured using the Normalised Difference Vegetation Index (NDVI[3]), number of litres of water retained in the soil.
  - Data Collection: Soil sampling, field surveys, drone photographs and videos and community feedback.
  - Responsibility: The EE in collaboration with environmental experts and local communities.
- Component 3: Capacity Building and Knowledge Management
  - Monitoring Indicators: Number of training sessions conducted, participant knowledge retention, application of learned skills.
  - Data Collection: Training evaluations, follow-up surveys, and case studies.
  - Responsibility: The EE with support from training providers and the Intercultural Team
- Component 4: Community-Led Universal Water Coverage Model Development
  - This component is a knowledge management and communications component and as such will be focused on using the data and lessons generated by the first 3 components to feed into a toolkit and model for universal water coverage that will be a final programme deliverable.

Stakeholder Engagement
- **Involvement:**
  - The Ha Ta Tukari Governance Committee
- **Communication:**
  - Regular updates on the progress and impact of each component will be communicated to stakeholders through the Ha Ta Tukari Governance Committee which will meet twice a year to oversee programme progress, lessons learned, and course corrections needed. These will be used for bi-annual progress reports

Learning
Learning will be a key piece of the M&E Framework. It's crucial that the insights gained from this process inform strategic development and the design of the programme, with lessons actively integrated back into their implementation. This approach is essential for identifying and managing risks effectively, ensuring that the expected outcomes are achieved within available resources.

Role of the Implementing Entity

[3] Over the last decade, the NDVI has proven extremely useful in predicting herbivore and non-herbivore distribution, abundance and life history traits in space and time.

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Technical Support
The Mexican Institute of Water Technology (IMTA) is a decentralized public organization that focuses on facing national and regional challenges associated with water management and outlining new approaches to technological research and development to protect the resource and allocate it appropriately, efficient and equitable among different users. IMTA, as an institution with extensive experience in appropriate technologies, watershed conservation, water quality, social participation, and governance, will provide specialized technical support. This role will include conducting water quality analyses, utilizing its facilities and laboratories, as well as its expertise and capabilities to ensure that the harvested water meets national quality standards, guaranteeing that it is safe for human consumption and suitable for the *Wixárika* communities. In addition, IMTA will offer essential technical expertise to ensure that the technologies applied in rainwater harvesting and landscape regeneration are effective and suitably adapted to the specific needs of the *Wixárika* communities, thereby contributing to the region's water and environmental resilience.
Specifically, this includes travel, sampling and laboratories for water quality tests; project supervision missions; steering committee meetings, and project evaluation reports.

Financial Support
The 8.5% of the total project cost allocated to Implementing Entity as will be utilized to provide continuous and comprehensive oversight of the programme's development when it comes to budget execution, activity progress, and achievement of results. This allocation will guarantee that accurate information is available to report to the Adaptation Fund on both the technical and financial execution of the project. These resources will cover all necessary support for the project's development and oversight support activities encompassing field visits, the preparation and facilitation of follow-up meetings, the establishment of a strategic committee, external audits, training sessions, and evaluations (both mid-term and final). Detailed budget information can be found at the bottom of Table 15.

The budget includes the following activities:
Water Quality Testing: This category encompasses the procurement of supplies for the certified water quality laboratory, including materials, equipment, sample analysis, transportation for technicians, sample shipping, lodging, meals, and other expenses related to monitoring and verifying the water quality from Rainwater Harvesting Systems.

Technical and Oversight Support: This component involves the creation and operation of the project's strategic committee, which will provide technical and documentary support for its implementation. Additionally, it covers ongoing monitoring and evaluation of compliance with environmental, social, and gender action plans and policies, adherence to Adaptation Fund policies, and risk mitigation strategies. All these elements will be integrated into comprehensive reporting. They will be reviewed and addressed during committee meetings which will occur every semester. Moreover, this category incorporates training sessions for the technical team led by specialists, follow-up on field activities, per diem allowances, transportation costs, and other related expenses such as meals and accommodation in the project area. It also considers the organization of various events, including project launches, inductions, progress presentations, outreach activities, and other events pertinent to the project's implementation.

Monitoring and Reporting of AF Policies: IE will carry out monitoring and reporting on all matters related to the Gender Action Plan and the ESMP.

Programmatic Audits: IE will conduct annual and final financial audits of the project by engaging external auditors to ensure transparency and accountability.
IMTA will oversee and provide financial support during the execution of the project's works and activities. Its role will include supervising and optimizing the allocated resources, ensuring that each component of the project is executed according to the submitted plan and within the established budget. Additionally, IMTA will ensure that financial resources are managed with transparency and accountability.
The related activities include to ensure compliance with audit requirements, project financial reports, and the project financial audit.

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Reports and Evaluations
The IE will be responsible for the mid-term and final evaluations that assess the progress of results according to the indicators established in the project, as well as financial statements. The fees associated with these evaluations include the hiring of specialized consultants for the evaluations.

Inception Report
IE will cover the expenses for the Inception Workshop and related costs for the Inception Workshop report, which will be submitted no later than one month after the workshop has taken place.

Baseline Data Report
The IE will prepare and submit a project baseline report based on primary data collection and/or relevant and reliable secondary data, per the Fund's "Results Framework and baseline guidance." Baseline data will be used for designing the project, setting targets, and monitoring implementation progress, and assessing performance and outcomes. Baseline data shall be submitted to the secretariat by no later than the submission of the first PPR.

Annual Programme Performance Reports (PPRs)
Content:
- Progress and impact of each programme component.
- Status of implementation against all key elements of the Adaptation Fund's ESP and where necessary outline ESP Management Plans to mitigate any risks identified during implementation.
- Description of any corrective actions taken or required.

Reporting Schedule:
- Annual reports will be submitted to the Adaptation Fund at the end of each calendar year.
- Responsibility: The EE will compile and submit the reports with inputs from all relevant stakeholders.
- In addition to these reports, the EE will provide any other reports requested by the IE or the Adaptation Fund. We are also contemplating the presentation of Quarterly Reports by Technical Specialists where useful.

Project Completion Summary
- A project completion summary will be sent 6 months after project completion.

Table 12. Monitoring and Evaluation Budget

Items	Responsible Party	Amount	Timing
Component 2 Soil sampling, NDVI sampling, field capacity sampling (water retention)	Executing Entity	Total cost of materials: $68,838 (these are integrated into Component 2's budget)	Throughout the project lifetime: Soil sampling - Every 6 months NDVI - monthly Field capacity - every 3 months
Data collection in the field for Components 1, 2, 3 and 4	Executing Entity	Field M&E staff salaries - $140,400 - these are integrated into Component 4 - Knowledge Management's budget	Throughout the project lifetime

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Data Analysis for reports and learning	Executing Entity	$25,143	Throughout the project lifetime
Annual Programme Performance Reports (PPRs)	Executing Entity	$130,114	Every year (with some shorter reports produced every semester)
Total EE M&E Budget		$364,495	
Water Quality Testing	Implementing Entity (IMTA)	$242,027	Every 6 months (beginning in the second year)
Technical and Oversight Support (includes mid-term and final evaluations)	Implementing Entity (IMTA)	$45,724	Throughout the project lifetime
Monitoring and Reporting of AF Policies	Implementing Entity (IMTA)	$106,000	Throughout the project lifetime
Programmatic audits	Implementing Entity (IMTA)	$123,976	Every year
Reports and Evaluations	Implementing Entity (IMTA)	$109,000	Throughout the project lifetime
Total IE M&E Budget		$626,727	
TOTAL M&E BUDGET		$991,222	

*For full breakdown of IE M&E costs, see table 15

E. Include a results framework for the programme proposal, including milestones, targets and indicators, including one or more core outcome indicators of the Adaptation Fund Results Framework, and in compliance with the Gender Policy of the Adaptation Fund.

Table 13. Results Framework

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Expected result	Indicator	Baseline	Targets	Means of verification	Frequency
Programme objective: Provide universal autonomous, renewable, and adaptive water access to the *Wixárika* people of the 21 communities in the San Andrés Cohamiata of México	Number of beneficiaries with access to drinking water in their home *[AF Core Indicator: Number of Direct Beneficiaries]*	0	**5,100** (2,658 of which will be women and girls and 2,286 of which will be children, 920 of which will be youth (15-24 year-olds))	Project Annual Reports, Evaluation Reports	Annual, Midterm Evaluation, Terminal Evaluation
	Number of hectares where an adaptive landscape-scale water management approach has been implemented [*AF Core Indicator: Natural assets protected or rehabilitated*]	0	**700**	Project Annual Reports, Evaluation Reports	Annual, Midterm Evaluation, Terminal Evaluation
	Number of effective community governance structures to manage water and landscape regeneration [*AF Core Indicator: Assets produced, developed, improved or strengthened*]	0	**21**	Final Evaluation Reports	Terminal Evaluation
Component 1: Establishing rainwater harvesting (RWH) infrastructure for sustainable and autonomous water access.					

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Outcome 1.1: 5,100 residents of San Andrés Cohamiata—of which 2,658 are women and girls and 2,286 children—benefit from improved access to drinking water thanks to the installation and operation of 1,000 rainwater harvesting systems (RWHS)	Output 1.1.1: Implementation of 1,000 fully functioning RWHS in households.	Number of households with a fully functioning RWHS AF Core Indicator: Infrastructure Assets produced]	0	1000	Project Annual Reports, Evaluation Reports	Annual, Midterm Evaluation, Terminal Evaluation
		Number of beneficiaries with increased access to drinking water in their homes	0	5,100 (2,658 of which will be women and girls and 2,286 of which will be children, 920 of which will be youth (15-24 year-olds))	Project Annual Reports, Evaluation Reports	Annual, Midterm Evaluation, Terminal Evaluation
		Number of household-level agreements signed	0	1000	Project Annual Reports, Evaluation Reports	Annual, Midterm Evaluation, Terminal Evaluation
Outcome 1.2: Approximately 3,570 beneficiaries trained on the correct use and maintenance of RWHS.	Output 1.2.1: Both group and one-on-one training and agreements with approximately 3,570 users for the correct use and maintenance of the RWHS (this represents 70% of programme beneficiaries, discounting 30% for infants and elderly beneficiaries who will not participate in maintenance activities). The programme will aim for at least half of those trained, or about 1,785 people, to be women.	Number of Beneficiaries trained on the correct use and maintenance of RWHS.	0	3570	Technical visits and evaluations - 6 month reports	Every 6 months, Annual, Terminal Evaluation
Component 2: Developing and piloting of a community action plan for landscape-scale water management and regeneration.						

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Outcome 2.1: Increased local capacities for landscape-scale water management and innovative agroforestry practices.	Output 2.1.1: Community-driven design of a landscape-scale water management and agroforestry strategy for the *Wixárika* region.	Number of areas chosen for regeneration by the community	0	3	Workshop attendance lists/ community assembly lists/ project annual reports / evaluation reports	Annual, Midterm Evaluation, Terminal Evaluation
Outcome 2.2: Increased water retention capacity, infiltration rates, and organic matter, and reduced erosion across 703 hectares undergoing regeneration.	Output 2.2.1: Creation of a detailed database of local physical, chemical, and geographical conditions to better understand the current conditions and areas for improvement.	Assets produced: Includes a complete physical, chemical and geographical analysis of the soil health conditions as compared to baseline	0	Scale: 5	Lab Reports - Database	Annual, Midterm Evaluation, Terminal Evaluation
	Output 2.2.2: 700 forest hectares undergoing regeneration by the community	Natural Assets Protected or Rehabilitated: Number of hectares where regeneration activities have taken place	0	700	Project Annual Reports, Evaluation Reports	Annual, Midterm Evaluation, Terminal Evaluation
	Output 2.2.3: Creation of 3 hectares of agroforestry demonstration plots	Natural Assets Protected or Rehabilitated: Number of hectares with SAFS activities	0	3	Project Annual Reports, Evaluation Reports	Annual, Midterm Evaluation, Terminal Evaluation
Component 3: Developing communities' capacities for sustainable water management.						
Outcome 3.1: The *Wixárika* community co-design and co-implement an autonomous water management strategy in their landscape	Output 3.1.1: A methodology for community participation and collaboration that ensures community acceptance and ownership of the programme, designed and implemented.	Number of workshops and trainings delivered	0	160	Project Annual Reports, Evaluation Reports	Annual, Midterm Evaluation, Terminal Evaluation

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Outcome 3.2: Community-wide awareness and sustainable adoption of RWHS, landscape regeneration, hygiene and safe water management practices.	Output 3.2.1: A learning programme to promote RWH adoption, hygiene, environmental regeneration, and climate change resilience implemented with 3,570 beneficiaries (70% of programme beneficiaries, discounting 30% for infants and elderly beneficiaries who will not participate in maintenance activities)	Number of beneficiaries trained	0	3570	Project Annual Reports, Evaluation Reports	Annual, Midterm Evaluation, Terminal Evaluation
Outcome 3.3: The Intercultural teams of 40 people have the technical know-how and capacity to install and maintain RWHS now and in the future, regenerate forests and deliver educational activities for their community, scaling adaptive capacities across their communities.	Output 3.3.1: A certification programme for the local Intercultural Teams of 40 people to develop and strengthen local technical and capacity building capacities, delivered; supporting team members to become autonomous agents of change in their communities.	Number of local *Wixárika* community members trained	0	40	Project Annual Reports, Evaluation Reports	Annual, Midterm Evaluation, Terminal Evaluation
Component 4: Knowledge management and development of a model for community-led universal water coverage						
Outcome 4.1: Development of an integrated model for rainwater harvesting systems and landscape water management, with the potential to be adapted and replicated in diverse rural settings across Mexico and the Global South, effectively addressing water scarcity and improving climate resilience in vulnerable communities.	Output 4.1.2 Detailed manual/toolkit for the effective replication of community-led universal water coverage programmes	Number of manuals/toolkits created	0	1	Project Annual Reports, Evaluation Reports	Yearly, Terminal Evaluation
	Output 4.1.3 A communications strategy to disseminate the impact of our community-led model for universal water coverage within and outside San Andrés Cohamiata.	Number of unique visitors to dedicated website	0	4000	Website analytics	Yearly, Terminal Evaluation
		Number of articles written about the project in major	0	4	Publications	Yearly, Terminal Evaluation

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For a dedicated table for each applicable AF Core Indicator, see Annex 12.

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F. Demonstrate how the programme/programme aligns with the Results Framework of the Adaptation Fund

Table 14. Results framework alignment with the Results Framework of the Adaptation Fund

Project Objective(s)[1]	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Provide universal autonomous, renewable, and adaptive water access to the *Wixárika* people of the 21 communities in the San Andrés Cohamiata region of Mexico.	Number of beneficiaries with access to drinking water in their home	Outcome 1. Reduced exposure to climate-related hazards and threats	1.2.1. Percentage of target population covered by adequate risk-reduction systems	6,689,207
Component 1: Establishing rainwater harvesting (RWH) infrastructure for sustainable and autonomous water access.				
Provide universal autonomous, renewable, and adaptive water access to the *Wixárika* people of the 21 communities in the San Andrés Cohamiata region of Mexico.	Number of beneficiaries with access to drinking water in their home	Outcome 1. Reduced exposure to climate-related hazards and threats	1.2.1. Percentage of target population covered by adequate risk-reduction systems	3,885,080
	Number of Beneficiaries trained on the correct use and maintenance of RWHS.	Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses	204,411
Component 2: Developing and piloting of a community action plan for landscape-scale water management and regeneration.				
Programme objective: Provide universal autonomous, renewable, and adaptive water access to the *Wixárika* people of the 21 communities in the San Andrés Cohamiata region of Mexico.	Number of community members participating in landscape-scale water management Number of beneficiary families participating in agroforestry practices.	Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses	**60,404**
	Number of hectares where an adaptive landscape-scale water management	Outcome 5: Increased ecosystem	5.1. No. of natural resource assets created, maintained or improved to withstand	**1,117,473**

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	approach has been implemented	resilience in response to climate change and variability induced stress	conditions resulting from climate variability and change (by type and scale)	
Component 3: Developing communities' capacities for sustainable water management.				
Programme objective: Provide universal autonomous, renewable, and adaptive water access to the *Wixárika* people of the 21 communities in the San Andrés Cohamiata region of Mexico.	Number of effective community governance structures to manage water and landscape regeneration	Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	3.2. Percentage of targeted population applying appropriate adaptation responses	821,205
Component 4: Knowledge management and development of a model for community-led universal water coverage				
Programme objective: Provide universal autonomous, renewable, and adaptive water access to the *Wixárika* people of the 21 communities in the San Andrés Cohamiata region of Mexico.	Number of manuals/toolkits created	Outcome 8. Support the development and diffusion of innovative adaptation practices, tools and technologies.	8. Innovative adaptation practices are rolled out, scaled up, encouraged and/or accelerated at regional, national and/or subnational level	600,634
Project Outcome(s)	**Project Outcome Indicator(s)**	**Fund Output**	**Fund Output Indicator**	**Grant Amount (USD)**
Component 1: Establishing rainwater harvesting (RWH) infrastructure for sustainable and autonomous water access.				
Outcome 1.1: 5,100 residents of San Andrés Cohamiata —of which 2,658 are women and girls and 2,286 children—benefit from improved access to drinking water thanks to the installation and operation of 1,000 rainwater harvesting systems (RWHS)	Number of households with a fully functioning RWHS. Number of beneficiaries with increased access to drinking water in their homes. Number of household-level agreements signed.	Output 1.2: Targeted population groups covered by adequate risk reduction systems	1.2.1. Percentage of target population covered by adequate risk-reduction systems	**3,885,080**
Outcome 1.2: Approximately 3,570 beneficiaries trained on the correct use and maintenance of RWHS.	Number of beneficiaries trained on the correct use and maintenance of RWHS.	Output 3.1: Targeted population groups participating in adaptation and risk reduction	3.1 No. of news outlets in the local press and media that have covered the topic*	**204,411**

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		awareness activities		
Component 2: Developing and piloting of a community action plan for landscape-scale water management and regeneration.				
Outcome 2.1: Increased local capacities for landscape-scale water management and innovative agroforestry practices.	Number of community members participating in landscape-scale water management Number of beneficiary families participating in agroforestry practices.	Output 3.1: Targeted population groups participating in adaptation and risk reduction awareness activities	3.1 No. of news outlets in the local press and media that have covered the topic*	**60,404**
Outcome 2.2: Increased water retention capacity, infiltration rates, and organic matter, and reduced erosion across 703 hectares undergoing regeneration.	Number of areas chosen for regeneration by the community. Number of hectares where regeneration activities have taken place. Number of hectares with SAFS activities. % of total hectares with an increase of their NDVI values Number of litres stored in soil per m2	Output 5: Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability	5.1. No. of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type and scale)	**1,117,473**
Component 3: Developing communities' capacities for sustainable water management.				
Outcome 3.1: The *Wixárika* community co-design and co-implement an autonomous water management strategy in their landscape	Number of workshops and trainings delivered	Output 3.2: Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning	3.1 No. of news outlets in the local press and media that have covered the topic*	**205,301**
Outcome 3.2: Community-wide awareness and sustainable adoption of RWHS, landscape	Number of beneficiaries trained	Output 3.2: Strengthened capacity of national and subnational	3.1 No. of news outlets in the local press and media that have covered the topic*	**492,723**

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regeneration, hygiene and safe water management practices.		stakeholders and entities to capture and disseminate knowledge and learning		
Outcome 3.3: The Intercultural teams of 40 people have the technical know-how and capacity to install and maintain RWHS now and in the future, regenerate forests and deliver educational activities for their community, scaling adaptive capacities across their communities.	Number of local *Wixárika* community members trained	Output 3.2: Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning	3.2.1 No. of technical committees/associations formed to ensure transfer of knowledge	**123,181**
Component 4: Knowledge management and development of a model for community-led universal water coverage				
Outcome 4.1: Development of an integrated model for rainwater harvesting systems and landscape water management, with the potential to be adapted and replicated in diverse rural settings across Mexico and the Global South, effectively addressing water scarcity and improving climate resilience in vulnerable communities.	Learning sessions held between programme team and *Wixárika* community representatives Number of manuals/toolkits created Number of articles written about the project in major publications	Output 8: Viable innovations are rolled out, scaled up, encouraged and/or accelerated.	8.2. No. of key findings on effective, efficient adaptation practices, products and technologies generated	**600,634**

** Output 3.1: Targeted population groups participating in adaptation and risk reduction awareness activities's* indicator according to the Adaptation Fund's Results Framework is '3.1 No. of news outlets in the local press and media that have covered the topic'. This indicator does not seem to correspond to the kind of results that should be measured for this output. During the Inception Phase the programme will analyse, in collaboration with the AF, which might be the best indicator to measure progress for the Component and its outcomes and outputs.

G. Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

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Table 15. Detailed Budget

Activity	Description	Year 1	Year 2	Year 3	Year 4	Total Budget	Budget Notes
Component 1: Establishing rainwater harvesting (RWH) infrastructure for sustainable and autonomous water access.							
Output 1.1.1 Implementation of 1,000 fully functioning RWH systems in households							
1.1	Preparing logistics for the implementation phase / creation of Operation Centres	$163,579				$163,579	Covers the materials and logistics to build two strategic operation centres that will include a warehouse to store materials and tools throughout the programme, an office space, a kitchen and bathrooms. It also includes the cost for 1 to 2 pick-up trucks.
1.2	Community meetings with traditional, communal, and religious authorities, as well as end-users	$30,672	$30,671	$30,671	$30,671	$122,685	Includes travel to project sites and carrying out meetings with local authorities and inhabitants to define the nature of new partnerships, roles and responsibilities, presenting the Project's Operating Rules and Conditions, and introducing the practice of RWH and the system's operation and maintenance.
1.3	Creation of Community Governance Committees and co-participation agreements with local communities	$30,672	$30,671	$30,671	$30,671	$122,685	Includes carrying out informative meetings to establish the terms of participation for beneficiaries throughout the entire project.
1.4	Technical visits to installation sites to determine feasibility and specifications for each system, as well as beneficiary commitments regarding their operation and maintenance	$34,080	$68,158	$68,158	$34,079	$204,475	Cost includes field visits for on-site evaluation infrastructure to analyse the feasibility of installing the RWHS, creation of a tailored list of materials, and establishing agreements with beneficiaries.

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1.5	Programming of rainwater harvesting system installations in homes	$20,477	$40,865	$40,866	$20,477	$122,685	Cost includes the design of the implementation model, informative meetings with the beneficiaries regarding installation dates and timelines, and preparing installation materials along with the RWHS installation teams.
1.6	Installation of 1,000 RWH systems in homes	$574,828	$1,049,657	$1,049,657	$474,829	$3,148,971	Includes all the necessary tools and materials needed to build 500 RWHS with geomembrane tanks, and 500 RWHS with concrete tanks. Unit price for a geomembrane system is $2,906 and for a concrete system is $3,392. This cost includes all necessary components of the RWHS, tools and materials for installation, an average price for freights per system, colloidal silver for water purification, and the cost of the geomembrane and concrete cisterns. Each unit price has been multiplied by 500.
Subtotal Output 1.1.1		**$854,308**	**$1,220,022**	**$1,220,023**	**$590,727**	**$3,885,080**	
Output 1.2.1: Both group and one-on-one training and agreements with approximately 3,570 users for the correct use and maintenance of the RWHS (this represents 70% of programme beneficiaries, discounting 30% for infants and elderly beneficiaries who will not participate in maintenance activities). The programme will aim for at least half of those trained, or about 1,785 people, to be women.							
1.7	One-on-one training, and other knowledge-sharing activities to develop and strengthen local RWHS installation capacities	$20,447	$40,895	$40,895	$20,447	$122,684	Cost includes technical training for each family on the correct use and maintenance of the RWH once the systems are installed and fully operating, including water purification methods, including didactic materials. Women will be a key beneficiary of these training given their key role in household management and child rearing.

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1.8	Monitoring and evaluation of the use and maintenance of community systems		$16,345	$32,691	$32,691	$81,727	Cost includes yearly follow-up of previously installed systems, refresher trainings, and reparations to any damaged systems.
Subtotal Output 1.2.1		**$20,447**	**$57,240**	**$73,586**	**$53,138**	**$204,411**	
Cost for Component 1		**$874,755**	**$1,277,262**	**$1,293,609**	**$643,865**	**$4,089,491**	
Component 2: Developing and piloting of a community action plan for landscape-scale water management and regeneration.							
Output 2.1.1: Community-driven design of a landscape-scale water management and agroforestry strategy for the *Wixárika* region.							
2.1	Community Meetings with Authorities and Beneficiaries	$30,202				$30,202	Cost includes carrying out meetings with local authorities and inhabitants to present the project and define co-participation agreements during the programme.
2.2	Capacity Building for Hydroforestry Teams	$15,101				$15,101	Cost includes training to the Intercultural Teams that will carry out socio-educational and technical activities on regeneration techniques, soil identification, safety protocols, topographic survey techniques, and forest fire management.
2.3	Creation of the Ha Ta Tukari Governance Committee – Co-design of Regeneration Activities	$15,101				$15,101	Cost includes sensitive training in participatory methods for design implementation, evauation and monitoring of the hydroforestry regeneration strategy, and meetings for the definition of co-participation agreements.
Subtotal Output 2.1.1		**$60,404**				**$60,404**	
Output 2.2.1: Creation of a detailed database of local physical, chemical, and geographical conditions to better understand the current conditions and areas for improvement.							

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2.4	Measure current soil health parameters and baseline	$1,500	$1,500	$1,500	$1,500	$6,000	Cost includes design of soil sampling, sampling implementation, carbon in soil and physico-chemical laboratory analysys and systematization of the sampling process
2.5	Six-monthly soil health analysis	$1,500	$1,500	$1,500	$1,500	$6,000	Cost includes the materials for a complete analysis of soil health conditions to monitor and evaluate the regenerated areas, and the design and writing of bi-annual reports
Subtotal Output 2.2.1		**$3,000**	**$3,000**	**$3,000**	**$3,000**	**$12,000**	
Output 2.2.2: 700 forest hectares undergoing regeneration by the community							
2.6	Design of a community-centered regeneration strategy	$30,202	$30,202	$30,202	$30,202	$120,808	Cost includes time for the design of a regeneration strategy
2.7	Implement a community-centered regeneration strategy	$52,854	$52,854	$52,853	$52,853	$211,414	Cost includes tools and specialised equipment necessary for training for specialized hydro forestry teams on the use of tools, safety and first aid, and forest and nursery management. It also covers topographic survey equipment and coordination and support for the local teams that will be trained.Training to specialized hydro forestry teams on use of tools, safety and first aid, forest and nursery management
2.8	Monitoring and Evaluation of forest regeneration results	$37,753	$37,753	$37,752	$37,752	$151,010	Cost includes all the activities related to monitoring and evaluation of the restoration activities, design and writing of reports, and support community members on the use of monitoring tools
2.9	Annual meetings with the Hydro Forestry committee	$30,202	$30,202	$30,202	$30,202	$120,808	Cost includes annual meetings with the Hydro forestry Committee to conduct

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							evaluations and assessments on the restoration strategy
Subtotal Output 2.2.2		**$151,011**	**$151,011**	**$151,009**	**$151,009**	**$604,040**	
Output 2.2.3: Creation of 3 hectares of agroforestry demonstration plots							
2.10	Joint selection of demonstration plots	$25,070				$25,070	Cost includes meetings for participatory action-planning and selection of demonstration plots
2.11	Implementation of Forest Nurseries	$100,287				$100,287	Cost includes materials for the infrastructure of the nurseries and the associated fees for a specialized consultant in forest nursery development. It also covers all inputs required to operate three fully equipped nurseries, including one RWHS, seeds, and seedbeds per nursery.
2.12	Implementation of SAFS		$150,430	$150,430		$300,860	Cost includes the delivery of a training on Successional Agroforestry Systems (SAFS), hydrological landscape design, and water storage techniques through participatory methodology workshops, including the design of suitable and adapted strategies for each region.
2.13	Monitoring and Evaluation of SAFS results			$25,072	$25,072	$50,144	Cost includes tracking progress of SAFS, monitoring the teaching and learning process of the Specialized Teams and beneficiaries of the project, an annual assessment through activity and results reports, and end-of-year meetings with the Hydroforestry Committee to assess achievements and goals. It also includes preparation of yearly evaluation reports for each activity, highlighting results, activities

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							conducted, lessons learned, and recommendations.
2.14	Annual meetings with the Hydroforestry committee			$12,536	$12,536	$25,072	This includes the cost to hold annual meetings with the Hidroforestry committee for the assessment on the plots progress
Subtotal Output 2.2.3		**$125,357**	**$150,430**	**$188,038**	**$37,608**	**$501,433**	
Cost for Component 2		**$339,772**	**$304,441**	**$342,047**	**$191,617**	**$1,177,877**	
Component 3: Developing communities' capacities for sustainable water management.							
Output 3.1.1: A methodology for community participation and collaboration that ensures community acceptance and ownership of the programme, designed and implemented.							
3.1	Design and produce participatory tools and didactic materials	$82,121				$82,121	Cost includes design, adjustment, distribution, and printing of didactic materials (manuals, guides, video tutorials, infographics, educational stories, board games, etc.).
3.2	Create Community Art. Facilitate the creation of murals, songs, videos, and photographs through workshops and participatory research.		$41,060	$41,060	$41,060	$123,180	Cost includes the facilitation of participatory workshops and research for the creation of artistic products such as murals, songs, videos, photographs, and other community art.
Subtotal Output 3.1.1		**$82,121**	**$41,060**	**$41,060**	**$41,060**	**$205,301**	

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Output 3.2.1: A learning programme to promote RWH adoption, hygiene, environmental regeneration, and climate change resilience implemented with 3,570 beneficiaries (70% of programme beneficiaries, discounting 30% for infants and elderly beneficiaries who will not participate in maintenance activities)							
3.3	Establish Community Agreements	$35,195	$70,389	$70,389	$70,389	$246,362	Cost includes carrying out meetings to establish and sign Community Agreements for water management (including roles and participation for each stakeholder).
3.4	Train All Beneficiaries	$35,195	$70,389	$70,389	$70,388	$246,361	Cost includes delivery of training and knowledge exchange activities (workshops, meetings, training and other activities) to households and local committees on the proper use and maintenance of RWHS. Families, students, and teachers will be trained on appropriate hygiene and water purification practices. The population will be trained on the correct implementation, installation, operation, use and maintenance of the techniques and eco-technologies promoted by the project for rainwater harvesting and hydroforestry.
Subtotal Output 3.2.1		**$70,390**	**$140,778**	**$140,778**	**$140,777**	**$492,723**	
Output 3.3.1: A certification programme for the local Intercultural Teams of 40 people to develop and strengthen local technical and capacity building capacities, delivered; supporting team members to become autonomous agents of change in their communities.							
3.5	Expand and Train the *Wixárika* Team	$41,061				$41,061	Cost includes the design and launch of a call in all localities of San Andrés Cohamiata to expand and reconfigure an intercultural team, with a special emphasis on providing conditions for the inclusion of women. Continuous assessment of the intercultural team's capacity to implement project activities in the localities will be carried out.

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3.6	Design and Implement a Certification Programme	$41,060		$41,060		$82,120	Cost includes the design and delivery of an on-site certification programme in which the intercultural team will be trained and certified to facilitate community liaison activities, capacity building processes, diagnosis and monitoring, installation of eco-technologies and regeneration of the territory, and the use of toolboxes to carry out each task. These toolboxes will be part of the procedure manuals for the Hydroforestry Committee, RWH Specialized Team, RWH technicians, and socio-educational facilitators that will be designed and developed as a part of this activity)
Subtotal Output 3.3.1		**$82,121**		**$41,060**		**$123,181**	
Cost for Component 3		**$234,632**	**$181,838**	**$222,898**	**$181,837**	**$821,205**	
Component 4: Knowledge management and development of a model for community-led universal water coverage							
Output 4.1.1: Systematised documentation of all technical and community processes taking place during the programme, capturing lessons learned, data and all relevant information to be used for the final design of the model							
4.1	Design the monitoring, evaluation and learning tools for short-, medium- and long-term impact measurement and analysis.	$48,051	$24,025			$72,076	Cost includes the design and production of learning tools and materials.

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4.2	Capture data and evaluate the impact of the installation of RWH technologies and the benefits of the increased access to water in the *Wixárika* communities including effects on hygiene practices, gender dynamics, and more.		$48,051	$48,051	$24,025	$120,127	Cost includes data analysis and integration of information for RWHS.
4.3	Capture data and evaluate the direct impact of landscape regeneration in terms of soil rehydration, carbon capture and other climate change mitigation needs.		$48,051	$48,051	$24,025	$120,127	Cost includes data analysis and integration of information for landscape-scale water management regeneration.
4.4	Capture data and evaluate the direct impact of the programme's approach to community-led capacity building.		$48,051	$48,051	$24,025	$120,127	Cost includes data analysis and integration of information for community-led capacity building.
4.5	Run periodic reflection sessions every 6 months that utilize a variety of sources of information (from activities 2, 3 and 4 above) and take the time to pause and reflect on implementation. Using participatory development methodologies that catalyze learning for ourselves and our stakeholders, we will then adapt programme activities for the coming months to reflect this learning.		$24,025	$24,025	$24,025	$72,075	Cost includes facilitation of reflection sessions throughout the lifetime of the project.
Subtotal Output 4.1.1		**$48,051**	**$192,203**	**$168,178**	**$96,100**	**$504,532**	

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Output 4.1.2 Detailed manual/toolkit for the effective replication of community-led universal water coverage programmes							
4.6	Consolidate, systematise, and structure all the steps and actions taken in the course of implementation, and produce a manual and toolkit detailing the process and lessons learned, with the purpose of facilitating the adaptation and replication of the model for other communities within and outside of Mexico. This manual and toolkit will include a gender transformation module to guide other communities in key gender design considerations.			$24,026	$24,025	$48,051	Cost includes data and information analysis for the manual content and its production.
Subtotal Output 4.1.2				**$24,026**	**$24,025**	**$48,051**	
Output 4.1.3 A communications strategy to disseminate the impact of our community-led model for universal water coverage within and outside San Andrés Cohamiata.							
4.7	Design and deploy an effective communications strategy for the sharing of the manual and toolkit.			$12,013	$12,013	$24,026	Cost includes web page design, a communications specialist, and the creation and deployment of a communications strategy.
4.8	Mainstreaming of a gender transformation approach and programme strategy implementation oversight			$12,013	$12,012	$24,025	Cost includes a gender specialist to collaborate on the creation of all programme gender-related activities.
Subtotal Output 4.1.3				**$24,026**	**$24,025**	**$48,051**	
Cost for Component 4		**$48,051**	**$192,203**	**$216,230**	**$144,150**	**$600,634**	
Programme Activity Costs		**$1,497,210**	**$1,955,774**	**$2,074,784**	**$1,161,469**	**$6,689,207**	

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Programme Execution Costs (9,28%)						
Programme Director Salary	$41,143	$41,143	$41,143	$41,142	$164,571	Cost of the annual salary for this position
Programme Assistant Salary	$22,671	$22,671	$22,672	$22,672	$90,686	Cost of the annual salary for this position
Administrative Director Salary	$32,529	$32,529	$32,528	$32,528	$130,114	Cost of the annual salary for this position
Administrative Assistant Salary	$22,671	$22,671	$22,672	$22,672	$90,686	Cost of the annual salary for this position
Accountancy Salary	$25,714	$25,714	$25,714	$25,714	$102,857	Cost of the annual salary for this position
HR Specialist Salary	$10,000	$10,000	$10,000	$10,000	$40,000	Cost of the annual salary for this position
Travel (Trips to Sierra *Wixárika*)	$17,143	$17,143	$17,143	$13,714	$65,143	Cost includes a total of 19 field visits to the Sierra *Wixárika* at a $3.428 cost each, totalling $65,143. During the first 3 years, 5 trips are considered annually, and 4 trips for the last year of the programme. The cost per trip includes transportation costs (tolls, gasoline, lodging and per diems). Capacity building activities such as training, workshops and meetings for the four components are included on these visits, as well as RWHS installation and regeneration activities.
Cost for Programme Execution	**$171,871**	**$171,871**	**$171,872**	**$168,443**	**$684,057**	
Total Programme Costs	**$1,669,081**	**$2,127,615**	**$2,246,656**	**$1,329,912**	**$7,373,264**	
Implementing Entity Fee (8,5%)						
Water Quality Testing		**$121,013**		**$121,014**	**$242,027**	This category encompasses the procurement of supplies for the certified water quality laboratory, including materials, equipment, sample analysis, transportation for technicians, sample shipping, lodging,
Supplies (reagents, materials, equipment) and certified analysis		$40,000		$40,000	$80,000	
Sampling (transport, shipping, per diem)		$45,000		$45,000	$90,000	

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Gas and tolls		$5,213		$5,214	$10,427	meals, and other expenses related to monitoring and verifying the water quality from Rainwater Harvesting Systems.
Equipment maintenance		$30,800		$30,800	$61,600	
Technical and oversight support	**$15,931**	**$13,931**	**$9,931**	**$5,931**	**$45,724**	This covers ongoing monitoring and evaluation of compliance with environmental, social, and gender action plans and policies, adherence to Adaptation Fund policies, and risk mitigation strategies. All these elements will be integrated into comprehensive reporting. Moreover, this category incorporates training sessions for the technical team led by specialists, follow-up on field activities, per diem allowances, transportation costs, and other related expenses such as meals and accommodation in the project area. It also considers the organization of various events, including project launches, inductions, progress presentations, outreach activities, and other events pertinent to the project's implementation.
Strategic committee meetings	$1,250	$1,250	$1,250	$1,250	$5,000	
Training	$10,000	$8,000	$4,000		$22,000	
Gasoline and tolls	$931	$931	$931	$931	$3,724	
Visits (transport, per diem)	$3,750	$3,750	$3,750	$3,750	$15,000	
Monitoring and Reporting of AF Policies	**$34,000**	**$24,000**	**$24,000**	**$24,000**	**$106,000**	Implementing Entity will carry out monitoring and reporting of all matters related to the Gender Action Plan and its implementation, as well as the compliance with AF ESP principles and the correct implementation, monitoring, reporting and evaluation of the ESMP.
Monitoring and Reporting of Gender Action Plan	$17,000	$12,000	$12,000	$12,000	$53,000	
Monitoring and Reporting of AF's ESP Policies and ESMP	$17,000	$12,000	$12,000	$12,000	$53,000	
Programmatic Audits	**$21,619**	**$21,619**	**$21,619**	**$59,119**	**$123,976**	Implementing Entity will conduct annual and final financial audits of the project by engaging external auditors to ensure transparency and accountability.
Annual financial audit	$21,619	$21,619	$21,619	$21,619	$86,476	

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Final external audit				$37,500	$37,500	
Reports and Evaluations	**$10,000**	**$48,000**	**$500**	**$50,500**	**$109,000**	Implementing Entity will report activities, performance and evaluation, as well as a completion summary, from the beginning of the programme up until six months after completion, in accordance to the IE's Adaptation Fund reporting requirements.
Inception Report (workshop and report)	$8,000				$8,000	
Baseline Data Report	$2,000				$2,000	
Programme Performance Report (PPR)		$500	$500	$500	$1,500	
Mid-term and terminal evaluation		$47,500		$47,500	$95,500	
Project completion summary				$2,500	$2,500	
Total IE Fee	**$81,550**	**$228,563**	**$56,050**	**$260,564**	**$626,727**	
Amount of financing requested	**$1,750,631**	**$2,356,178**	**$2,302,706**	**$1,590,476**	**$7,999,991**	

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H. Include a disbursement schedule with time-bound milestones.

Table 16. Disbursement Schedule

	Upon signature of agreement	1 year after project start a)	Year 2 b)	Year 3 c)	Total
Scheduled date	2026	2027	2028	2029	
Project funds	$1,669,081	$2,127,615	$2,246,656	$1,329,912	$7,373,264
Implementing Entity Fees	$81,550	$228,563	$56,050	$260,564	$626,727
Total	$1,750,631	$2,356,178	$2,302,706	$1,590,476	$7,999,991

	~~TOTAL~~	~~Upon signature (January 2026)~~	~~One year after programme inception (Q.1 2027)~~	~~Two years after programme inception (Q.1 2028)~~	~~Three years after programme inception (Q.1 2029)~~
~~Milestone~~		~~1st disbursement – upon agreement signature~~	~~2nd disbursement – One Year after project start • Upon First Annual Report • Upon financial report indicating disbursement of at least 50% of funds~~	~~3rd disbursement – Two years after project start • Upon Second Annual Report • Upon financial report indicating disbursement of at least 50% of funds~~	~~4th disbursement – Third Year after Project Start • Upon Third Annual Report • Upon financial report indicating disbursement of at least 50% of funds~~
~~A. Project Activities Cost~~	~~$6,689,207~~	~~$1,497,210~~	~~$1,955,744~~	~~$2,074,784~~	~~$1,161,469~~
~~B. Project Execution Costs~~	~~$684,057~~	~~$171,871~~	~~$171,871~~	~~$171,872~~	~~$168,443~~
~~C. Implementing Entity Fee~~	~~$626,727~~	~~$81,550~~	~~$228,563~~	~~$56,050~~	~~$260,564~~
~~Total~~	~~$7,999,991~~	~~$1,750,631~~	~~$2,356,178~~	~~$2,302,706~~	~~$1,590,476~~

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

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A. Record of endorsement on behalf of the government[4]

Provide the name and position of the government official and indicate date of endorsement. If this is a regional programme/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the programme/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional programme:

Regina Rosales Talamas General Director in the Ministry of Finance and Public Credit Public Credit and International Affairs Unit	Date: July 1st, 2025

B. **Implementing Entity certification**

Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the programme/programme contact person's name, telephone number and email address.

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans in line with the Special Programme on Climate Change, as well as Federal Programmes and Priority Projects, and subject to the approval by the Adaptation Fund Board, commit to implementing the Project/programme in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.

[4] Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the programs and programmes proposed by the implementing entities.

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Mtra. Patricia Guadalupe Herrera Ascencio Director General Mexican Institute of Water Technology	
Date: June 19, 2025	+52 777 329 3600 director_general@tlaloc.imta.mx
Project Contact Person: Enrique Lomnitz Climent Director General of Isla Urbana	
enrique@islaurbana.org +52 55 4188 5382	

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Hacienda
Secretaría de Hacienda y Crédito Público

Subsecretaría de Hacienda y Crédito Público
Unidad de Crédito Público y Asuntos Internacionales de Hacienda
Dirección General Eventual 1 – Foros Internacionales y Financiamiento Sostenible

ADAPTATION FUND

Oficio No. 305.-F.-014/2025

Mexico City, July 1st, 2025

Letter of Endorsement by Government of Mexico

Ministry of Finance and Public Credit

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Subject: Endorsement for **"Ha Ta Tukari, Water our Life: Towards Universal Drinking Water Coverage for 21 Communities of the Wixarika."**

In my capacity as designated authority for the Adaptation Fund in Mexico, I confirm that the above national grant proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Mexico.

Accordingly, I am pleased to endorse the above grant proposal with support from the Adaptation Fund. If approved, the project will be implemented by the Mexican Institute of Water Technology (IMTA) and executed by Lluvia para Todos A.C.

Sincerely,

Regina Rosales T.

Regina Rosales Talamas
General Director in the Ministry of Finance and Public Credit
Public Credit and International Affairs Unit

Regina Rosales Talamas General Director in the Ministry of Finance and Public Credit Public Credit and International Affairs Unit	Date: July 1st, 2025

B. Implementing Entity certification

Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the programme/programme contact person's name, telephone number and email address.

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans in line with the Special Programme on Climate Change, as well as Federal Programmes and Priority Projects, and subject to the approval by the Adaptation Fund Board, commit to implementing the Project/programme in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.


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ANNEX 1

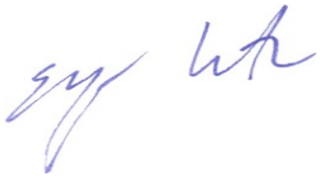
EXECUTING ENTITY DECLARATION LETTER

The executing entity for the Ha Ta Tukari project will be Lluvia para Todos A.C., a non-profit based in Mexico City that operates within the Isla Urbana project.

Isla Urbana is the brand name for a hybrid organization that includes a social business (Solución Pluvial SA de CV) and a non-profit NGO (Lluvia Para Todos AC), as well as a 501C3 based in the United States, Isla Urbana USA. The Social Business focuses on the development of rainwater harvesting products and services, and carries out rainwater harvesting projects funded by sales, often to local governments, while the Non-Profit NGO carries out community projects, generally in contexts of high marginality, funded by grants and donations. The c503's goal is to raise funds for specific projects (mostly in rural and indigenous communities) and organize exchange student programs and internships between the USA and Mexico, mainly.

"Isla Urbana" has no legal personality of its own. The organization, when originally founded, called itself Isla Urbana, but the name was already registered in Mexico, and thus when the NGO and the Social Business were legally constituted, it was under the names Lluvia Para Todos AC and Solución Pluvial SA de CV respectively. The name Isla Urbana continued to be used however, and it is the name by which the organization is commonly known.

There is no legal relationship between the business and non-profit, but there is collaboration, largely in the form of donated labor, office space and infrastructure from the business to the non-profit.



Enrique Lomnitz

General Director of Isla Urbana

Legal Representative of Lluvia para Todos AC

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ANNEX 2

Rainwater Harvesting Systems Tech Sheet

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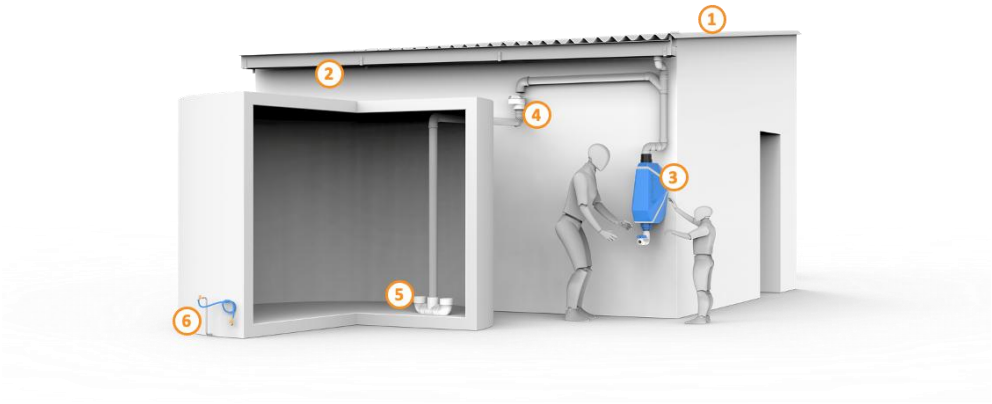
IslaUrbana

RAINWATER HARVESTING SYSTEM WITH CAST-CONCRETE CISTERN

The monolytic cast-concrete cistern with 4" thick walls is made in a specially designed mould, with a specific mix of concrete, accelerants and additives and precise implementation method to be ready to use in just a couple of days. It is built on-site by a specialized team; the materials, tools, and mould (around 1 ton) are taken to each implementation site by a trailer and truck.

It measures 2.8 in diameter and 2 m in height and has a storage capacity of 12,000 L.



1. **Existing Rooftop**
   Catchment area, usually made of slab, metal or plastic sheet.

2. **Rain Gutter**
   Gutter that centralizes the water and directs it to the piping and the rest of the system.

3. **Tlaloquito 40**
   First-flush container that separates the initial 0.5-1 mm of rain, allowing the rain to clean the roof and keep the most contaminated volume of each rainfall episode out of the storage tank, increasing water quality in up to 75%.

4. **Leaf Screen**
   Stainless stell mesh that prevents leafs, branches, and other solids to enter the storage.

5. **Calm Inlet**
   Turbulence reduction device that allows the water to enter the tank from the bottom without mixing sediments.

6. **Valve & Hose**
   Valve at usage point to fill buckets or connect an 8 m hose to get the water elsewhere.

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ANNEX 3
PILOT SELECTION CRITERIA FOR NEW STORAGE TANK

Of all the RWH system's components, the most important, costly, and complex is the storage tank.
There are several kinds of tank, each with pros and cons. The question as to how to evaluate and determine the better option depends on the degree to which the cons can be mitigated, and the pros can be fully realized in the context of the *Wixárika* mountains.

In the case of the *Wixárika* Sierra, we have so far opted for lightweight, polyethylene geomembrane tanks supported by a steel mesh or sheet structure. This decision is principally based on the high transportability of geomembrane tanks, which are very lightweight, can be folded into bundles, and carried practically anywhere. Given the geography, road conditions, and distances involved in the Sierra, these are not small virtues.

Geomembrane tanks have proven very functional and successful for creating water storage in these remote places. Still, they have their shortcomings, and for years we have considered the option of implementing concrete tanks, but found the difficulties involved to be prohibitive. The relative pros and cons between geomembrane and concrete tanks are summarized in the following table:

	Pros	Cons
Geomembrane	**Lightweight and easy to transport to remote villages** (aprox 120 kilos total, divided into several pieces) **- Fast and easy to install** (2-3 hours per tank, 4-6 people) **- large capacity** (we generally use 15k liter tanks +/-)	**Relatively easy to damage** (membrane can be ripped, poked, blown in the wind) **-Hard to repair** (requires specialized tools, know-how, electricity at worst - creating a supply chain for special patches at best) **-Introduces plastic into the landscape** (Over a longer time horizon, geomembrane tanks eventually become large pieces of plastic waste)
Ferrocement or Cast Concrete	**Permanent and robust** (if well-made, can be considered permanent. Lifespan in multiple decades at least) **- Preferred option for most people** (if given the choice, most people want a concrete tank over a plastic one)	**Takes a long time to build** (Typically, 5-10 days for a tank, start to finish) **- Difficult quality control results in leaks** (if concrete mixing and application isn't consistent, timely, and correct, can lead to frequent fissures and leaks) **- Labor intensive** (5+ days of hard physical work for a team of 4-6) **- Requires transport of heavy materials** (multiple tons of cement, aggregates, water, and mesh for every tank)

Pros for concrete are substantial and relate to the physical end result: **Solid tanks that will last a lifetime.**

Pros for **geomembrane** relate to the process of implementation: They are lightweight and fast to install.

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The Final Decision

- If all else were equal, the choice of what type of tank to implement in the Sierra would be simple: concrete in all cases. But building concrete tanks involves getting over 8 tons of construction materials to every home, a challenge anywhere, and much more so in the *Wixárika* Sierra, with its thinly spread population and poor road conditions.
- We have worked intensely to find solutions to the logistical problems related to getting materials for concrete tanks into the sierra, and our conclusion is that at present, conditions allow for concrete tanks to be installed in the *Wixárika* Sierra, but only in places that can be reached by road with at least a 8 ton truckload of materials.
- Implementing with only geomembrane tanks would be the easiest solution, but given the merits of both types, we believe it is worth implementing concrete ones where these are viable.
- **Therefore, the proposed strategy is:** In those towns and villages that are on or near enough a road that concrete, gravel, and sand can be realistically delivered to each home, concrete tanks will be used. In those villages and hamlets that can only be reached by trails or roads too steep or rugged for heavy loads, it will be geomembrane tanks.
- Mitigating geomembrane's primary problem -its vulnerability to being punctured or torn- will be achieved by using steel sheet walls instead of mesh. This represents a significant degree of security, allowing them to function for decades.
- We anticipate that the two types of tanks will be installed in about equal numbers, though the exact proportion of each will ultimately depend on the road conditions and the willingness of materials providers to push deeper into the mountains.
- Because concrete tanks are more expensive, we propose budgeting for a 50-50 ratio of concrete to membrane, and if in the process of implementation we find it necessary, we can increase the number of total systems by installing less in concrete and more in geomembrane.
- Using two different types of RWH system will add complexity to the implementation process, but also has some benefits: one, the work can progress even if one of the two supply chains hits any snags; and second, by implementing both, the implementation model that is being developed will be replicable in a wider range of contexts with closer-to-ideal solutions.

We conducted a study in order to quantify (1) the number of RWHS needed, (2) the characteristics of dwellings, and (3) the benefits of these systems on the population of SAC (link). Firstly, we obtained two different estimates for the number of dwellings within SAC. The first one uses the official localities from the 2020 INEGI census with an extrapolation for the missing values, which resulted in a total of 1,778 dwellings. However, the second estimate obtained through a diagnostic yielded a total of 2,590 dwellings, a difference of ~46%.

The average dwelling in SAC has a rooftop area of 34 m^2 and 5.1 occupants, and through a RWH calculator, we estimated the RainWater Harvesting Potential 'RWHP' assuming a 20 L/day/person consumption and harvesting yearound. Firstly, using the water storage tank of 15,000 L, the average dwelling would have an annual RWHP of 64%, completely relying on rain from July to January, and having a partial RWHP the rest of the year. On the other hand, using the 12,000 L tank with the additional 6m^2 harvesting area, the average dwelling has a RWHP of 76%, completely relying on rain from July to February. However, both cases would need additional water storage and rooftop area in order to obtain a RWHP of 100%, and would need to partially complement their water consumption from other sources from January/February until June.

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Through a statistical analysis, we obtained that about ~31% of dwellings have 5 occupants per household 'AOH', ~25% have 4, ~18% have 6 and ~12% have 3. Similarly, ~29% of dwellings have a harvest area of 30m2 to 40m2, ~28% have up to 20m2, and ~21% have 40m2 to 50m2. Finally, we iterated a combination of parameters in the RWH calculator, and obtained that to ensure a RWHP of 100%, each person would, at a minimum, have a rooftop area of 10 m2, and a water storage capacity of 4,000L.

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ANNEX 4

EXPERIENCE IN THE PROPOSED FIELD

a) Isla Urbana - Rainwater Harvesting

Isla Urbana (the umbrella organization made up by Lluvia Para Todos and its sister company Solución Pluvial; see Annex 1) was founded in 2009, and is since a pioneer organization in the field of Rainwater Harvesting used at scale as a tool for achieving water resilience in vulnerable communities. Our focus is on low-income peri-urban and urban settlements, as well as isolated indigenous communities. We have installed over 40,000 RWH systems in homes and over 1,000 in schools throughout the country.

Our work has focused on the development of technologies and implementation models that allow the large-scale deployment of Rainwater Harvesting Systems that achieve long-term adoption and appropriation by their users. The models we have developed involve carefully designed technology in the form of robust and durable physical components, combined with user training, local technical capacity building, production of didactic materials, and long term support, in order to leave communities with a deep appropriation of rainwater harvesting practices. Follow-up and long term monitoring have shown robust adoption of the systems many years after project implementations.

Our experience implementing and designing rainwater harvesting programs has included significant contributions to the development of rainwater harvesting policy in the country. Mexico City's Rainwater Harvesting Programme was largely designed with Isla Urbana, as was Guadalajara's Nidos de Lluvia Programme, along with several municipal scale programs. In 2022, 2023, and 2024, Isla Urbana installed over 17,000 rainwater harvesters within the context of these large-scale programs, and in the same period, extended its network of "Rain Schools" -schools that implement RWH systems together with workshops and support for the school community to learn how to use and maintain them long term- by over 500 schools.

Isla Urbana has also executed RWH projects in remote and isolated indigenous communities for many years, including in the *Wixárika* (where the current proposal is focused), the *Rarámuri* (Tarahumara), and *Mazateca* sierras. In these rural, isolated, highly marginalized contexts, the levels of water precariousness are extremely high. This has generated very strong receptivity and high adoption of RWH systems by the local families and community members, for whom having a large tank full of clean water in their homes has proven of huge benefit. Through careful administration, they have generally been able to use these tanks to secure drinking water year round, saving each family hundreds of hours of heavy work hauling water every year.

The work in these communities, however, has far greater levels of complexity than what we find in cities like Mexico and Guadalajara. The geographic isolation, lack of roads, and poor state of infrastructure alone have required the development of specific RWH system designs better suited for transportation by hand and pack animals (for which reason we have developed the geomembrane cistern designs included in this project). More significantly, the vast cultural and linguistic differences between the different indigenous communities found in the country, and between them and the broader mestizo culture, makes the social, organizational, and capacity building aspects of the work especially complex. Nowhere is this truer than with the highly isolated and very unique *Wixárika*, with whom we have worked for the past 14 years.

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Executing projects in these communities has involved the development of community work models grounded in concepts of empathy and culturally sensible knowledge sharing. The *Wixárika* have been traditionally distrustful of "*teiwaris*" -non-indigenous outsiders-, and the main town of San Andrés Cohamiata where this project takes place is over 16-hour drive from Mexico City, passing dangerous and largely lawless tracts of mountain highway. Because of its nature, this project requires a far deeper understanding of the local culture and context, its cosmovision and traditions, and a much more sensitive approach to be able to intervene in the field. These are some of the reasons why the work in the *Wixárika* Sierra has been so slow and cautious in comparison to Isla Urbana's larger urban programs. Further details about lessons about other projects and lessons learned are discussed in Annex 4.

b) La Ventana Infinita - Capacity Building

We are well aware of the challenge that scaling up complex processes of linkage and capacity development on a regional scale represents. However, we are profoundly experienced in this field, even beyond Ha Ta Tukari. The need for the systematization of the capacity development and linkage work carried out by Ha Ta Tukari over 14 years has contributed to the consolidation of *La Ventana Infinita*, a non-formal education method based on art, aimed at socially disadvantaged populations.

La Ventana Infina is a method of working through art, of an integrative, sensitive and playful nature, designed to develop processes of non-formal education, resilience and community participation with socially disadvantaged populations. Its objective is the achievement of a comprehensive training process that leads the participant to recognize themselves in relation to their socio-environmental context, as well as to develop capacities to transform and dignify their life situation. *La Ventana Infinita* turns to artistic creation as a generator of agency because "*Art is a process of transformation that leads the creator, as an individual and as a community, to become aware of their ability to transform themselves and the world around them"*(Lobo, 2010, unpublished). It is a flexible method that interacts and is easily integrated with all types of participatory methodologies and work, which has been the fundamental basis for the capacity development component of Ha Ta Tukari throughout the years.

The method provides educational content that contributes to the understanding of the socio-environmental problems in which the community is immersed and their effects on its life, its environment and its culture. This process promotes the vulnerable population to find the causes and consequences of their problems and to be able to recognize, prioritize and express their needs. Through this, the need for water access has emerged, as has the recognition that adaptation to climate change is a process that requires a planetary, holistic and transdisciplinary approach. The community will thus create its own narrative, delimiting and prioritizing the issues to be addressed.

The method is aimed at ensuring that participants: a) propose concrete actions, achievable in their daily lives, that contribute to the solution of their needs; b) develop emotional resilience to overcome problems whose solution is not in their hands, and c) find spaces for expression and participation in their community. An educational process is developed (See Figure 1), in which the construction of educational content is accompanied by a sensitive process that helps the participant recognize and express their needs, particularly those of a radical nature, in addition to actively

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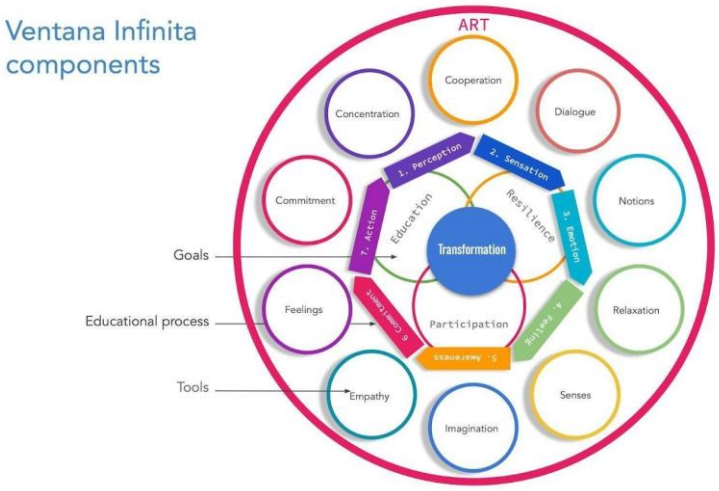
promoting empathy. This educational-sensitive process leads the participant to become aware and acquire commitments for transformative action, on a personal and collective level.



c) SARAR - Landscape Regeneration

SARAR Capacitación AC has been developing water access and sanitation projects for over 30 years, employing a highly participatory approach based on popular environmental education methodologies and non-formal adult education models. These approaches have inspired and served as a foundation for the development of many other programs, such as the Methodology for Participatory Assessments (MPA), WSP/World Bank, the Participatory Approach to Safe Shelter Awareness (PASSA), International Federation of the Red Cross (IFRC), as well as the Healthy Environments, Ministry of Health, Colombia.

In recent years, following changes in the organization's leadership with Rafael Almazán taking over operational direction, there has been a shift in focus within the organization. It has been recognized that integrated water management must extend beyond simply distributing water through pipes to homes. Effective forest management and water harvesting at infiltration and recharge points are now considered essential for a comprehensive approach to water management. In this context, the organization has collaborated on, co-directed, and co-implemented various awareness-raising, training, and project implementation strategies for forest restoration, including:

- Restoration of micro-watersheds in the Tepoztlán Valley: Water harvesting and soil restoration project in the Chihuacématl - Coatlaco ravine (50 hectares) – Fundación Grimm, 2020-2021
- External consultancy for the Indigenous Municipality of Hueyapan, Morelos: Advocacy and integrated water management. Development of strategies and action plans for the restoration of forest ecosystems (80 hectares).

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Through these projects, and other important collaborations, SARAR has acquired valuable experience not only to lead the implementation of the regeneration activities, but most importantly, to do so from a perspective of community based projects, maintaining the fundamental idea that the project must be co-designed with the community and implemented by its members.

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ANNEX 5
GENDER ASSESSMENT AND GENDER ACTION PLAN OF THE *WIXÁRIKA* COMMUNITIES BELONGING TO SAN ANDRÉS COHAMIATA

1. Introduction

To ensure Ha Ta Tukari is as impactful and sustainable for the Wixáritari people as possible, it is essential to examine the distinct roles, needs, and challenges faced by different gender groups within the community. This gender assessment seeks to understand the specific gender dynamics that exist within the community, exploring how they influence access to water resources, attitudes to adaptation activities, participation in decision-making processes, and the overall benefits that we seek to achieve with the project. By assessing the existing gender relations and the barriers that women face, this assessment will inform the project's strategies and implementation plans, ensuring that they are inclusive and equitable.

The findings of this assessment will inform design of the project so that it proactively fosters greater involvement of women and underrepresented groups in all phases of water resource management and landscape regeneration activities. Ultimately, the aim is to promote a gender transformation approach and enhance community resilience to climate change, ensuring that the benefits of the Ha Ta Tukari Water Project are distributed fairly and contribute to the overall empowerment of all community members.

This gender assessment is the foundational step, providing the evidence base for the Gender Action Plan found below.

2. Legal framework

In Latin America, legal frameworks that uphold gender equity and women's rights have evolved significantly over the past few decades, reflecting a growing commitment to combating discrimination and promoting equality. At the regional level, instruments such as the Inter-American Commission on Human Rights and the Convention of Belém do Pará have been instrumental in advocating for women's rights and addressing gender-based violence. Specifically in Mexico, the 2011 constitutional reform recognized gender equality as a fundamental right, further reinforced by the General Law on Women's Access to a Life Free of Violence, which establishes comprehensive measures to prevent, address, and punish violence against women. Additionally, Mexico's commitment to gender parity in political representation has led to legislative measures mandating a minimum percentage of women candidates on electoral lists. Despite these advancements, challenges remain in the effective implementation of these legal frameworks, requiring ongoing efforts to ensure that rights are not only upheld in legislation but are also translated into tangible improvements in the lives of women and gender minorities.

3. Programmatic background

Ha Ta Tukari is an effort that, so far, spans 15 years of involvement with the Wixáritari people. Our programme team has been deeply embedded in community life for over a decade which has led to a thorough understanding of the social, economic, spiritual and environmental realities of this community. Gender is a key part of this. Especially given that it is inherently intersectional, 100% of the female beneficiaries of this programme are from a minority indigenous group, two identities that actively intersect to create a unique set of experiential circumstances for this community.

Our approach to work with the Wixáritari is one that actively tries to undermine the tendency in development programs to seek to change the community from the outside in, that imposes a set of beliefs, rather we aim to have a co-design and participation approach that engages as sensitively as possible with their cultural autonomy

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and historic isolation. Having said this, the community suffers from significant challenges when it comes to gender violence and traditional gender roles that exclude women from participating in governance and economic activities. Gender dynamics are the centre of how the community organises everything from family structures to spiritual practices. Ha Ta Tukari must therefore blend a gender transformation approach with a deep respect for the community's traditions and customs. This is the only way a programme like this is possible. They must trust us.

Therefore this gender assessment avoids judging this community and their beliefs but rather aims to, with curiosity and humility, understand gender norms and practices in order to design and implement the most impactful programme possible, that sets up the *Wixárika* for an adaptable resilient future that men and women participate in and benefit from equally.

4. Methodology

In order to understand beneficiary populations, their gender disaggregation, and dynamics we implemented several activities using a mix of qualitative and quantitative methods. We have also conducted separate men's and women's circles which are confidential and small scale and allow for conversations about subjects the *Wixárika* would not usually discuss publicly or with strangers.

Data Review and Community Consultation

The INEGI 2020 Census is the most reliable open-source dataset for estimating demographics in Mexico; however, its accuracy can be compromised in remote and hard-to-reach areas like San Andrés Cohamiata (SAC). To address this limitation, we relied on the Diagnóstico Comunitario, a deep consultation process the Ha Ta Tukari team worked on between September 2022 and June of 2024. The Diagnostico development process involved a mix of methodologies: interviews with local Authorities and community members, participatory workshops, questionnaires, and focus groups. See Section on Community Consultations for a full breakdown of activities undertaken.

Stakeholder analysis

This involved identifying and assessing the interests, influence, and needs of various parties who are affected by or have an interest in gender-related issues within this specific context of SAC. The stakeholder analysis is something that draws from 14 years of interaction with the people living in SAC, it has shaped the design of all programme activities, technological choices and capacity building curriculum design. This new Gender Assessment refreshes and systematises this knowledge.

5. Population

The Diagnostico provides a more accurate population estimate for SAC than that available from INEGI. This analysis revealed that the INEGI 2020 Census underestimates the actual population of SAC by 57%.

To estimate the percentages of females and children in the population, we use data from the INEGI 2020 Census, which provides the number of individuals in age groups (bins) ranging from 0–4, 5–9, 10–14, 15–19, up to 85 and older, for both males and females. By summing the populations of all age bins across all localities within the Agrarian nucleus and calculating each bin's percentage relative to the total population, we can effectively assess the population distribution by age group and gender. Using this method, we estimated the number of children by considering the percentage of the population aged 15 or younger from a potential population of 5,100. Similarly, we estimated the female population by adding up all the female age bins.

So of the 5,100 beneficiaries, approximately 52% or 2,658 are women and girls and 45% or 2,286 are children.

RESULTS

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6. General overview of gender dynamics

The *Wixárika* are a highly traditional native American society with set gender roles that generally confer greater power to men than to women and often relegate the latter to the domestic sphere. Change is clearly happening in the *Wixárika* Nation insofar as gender roles are concerned, and the subject of women's rights and inclusion are being brought up by the *Wixárika* themselves. We hear the issue increasingly come up in our conversations with *Wixárika* people of both sexes, and in the latest general assemblies, where all the villages converge on San Andrés to discuss and make decisions, women's rights have been one of the subjects included in the programme.

The changes towards greater gender equity occurring in the *Wixárika* are real, but do not negate the reality that women are still generally subjected to rigid expectations in the roles and types of work they perform and are often subjugated by male partners or family members who give or deny them permission to do many things, to meet with specific people, travel, or work. Many *Wixárika* women and several men we have spoken with directly about these issues describe their society as being very "*machista*". Young *Wixárika* of both sexes with whom we have spoken and conducted separate men and women's circles, have proven quite open in recognizing this issue and expressing frustrations with it.

At the same time, a great deal of nuance and variation exist and there are several examples of *Wixárika* women who have real social, spiritual, and political power within the community. Younger generations are increasingly vocal in questioning the traditional gender roles and dynamics, and many young women are clearly more empowered than their mothers. The subject of gender equity is in many ways decades behind the rest of the country, but things are changing with considerable speed. We believe the issues of gender equity require thoughtful, sustained, and context-sensitive work and support as the new generation of *Wixárika* people question the expectations and rigidity of traditional roles and work to allow women greater freedoms and position.

7. Education

There are high levels of illiteracy and monolingualism, as well as a significant educational lag for girls and boys due to high absenteeism and school dropouts related to labour migration and the low quality of formal education provided in a language that is not their mother tongue and that fails to be genuinely intercultural. In addition, there are the consequences of malnutrition on cognitive development. There is a loss of indigenous knowledge associated with the replacement of training processes that take place within customary practices (medicine, music, agriculture, worldview, and traditions) by formal schooling. When the programme began in 2010, the enrolment of girls was much lower than that of boys. However, currently, there is gender equity in enrolment, which we attribute to the social programs implemented by the government.

7.1. Implications: Education

A key programmatic outcome is the reduction of water hauling, this impacts the decrease in school absenteeism among *both* girls and boys. 23% of those hauling water are girls and boys under 16 years of age.

Increased water sanitation leads to a significant reduction in diarrhoea and other water-borne pathologies, this will also have an impact on reducing school absenteeism for both girls and boys.

Capacity building and education are a key part of all the 3 of the first components of the programme. Women will make up approximately 50% of those trained across the programme's components. This will ensure knowledge and ownership of RWH and landscape regeneration is equitably held within the community. Gender sensitive materials and language will be used throughout all training materials and activities.

8. Labor, Employment and Use of Time

In most areas of life, from the domestic and everyday, to the political, religious, and spiritual, women and men each have specific roles, tasks, and responsibilities.

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Child Rearing, Nixtamalization, tortilla making, water hauling, sewing/weaving/embroidering, all fall principally to women, while gathering firewood, housebuilding, and hunting, are generally done by men. Growing corn and other crops is done by both men and women.
Paid work is almost non-existent in the region, and subsistence agriculture remains a principal activity, despite the lack of arable lands and thin soils which result in very low yields. This impacts men and women equally although in different ways and has significant programmatic implications.
Women's child rearing and home management responsibilities can often be a barrier to their participation in labour and/or paid and unpaid community activities.

8.1 Implications: Labor, Employment and Use of Time
The programme intends to employ 44 Wixáritari people. This will have a significant impact on household incomes and poverty reduction as well as programmatic sustainability. The programme will aim to have the team of Wixáritari be made up of at least 25% women which given the current lack of availability of paid work especially for women could prove transformational in how economic distribution across the genders is experienced.

The successional agroforestry pilot (component 2) seeks to improve crop diversity, which can benefit women, who are often responsible for food production in their households. Access to more sustainable agricultural systems that promote soil fertility and water retention capacity can enhance food security within families and reduce the physically intensive work associated with agriculture.
Additionally, the production of diversified food and agricultural products can represent an additional source of income and a key resource for the well-being of women and their families.

We found that centralized water systems (where a tank is built around a spring and connected with pipes or hoses to the homes) have not significantly reduced water hauling, largely because so many of these pieces of infrastructure are in disrepair, and because the low population density and high dispersal of houses means they are often not reached at all. RWH systems in contrast significantly reduce the number of water hauling trips and will have the greatest impact on women who haul 68% of water in the community.
The programme will provide childcare services whenever there are training or community meetings so that women can bring their children yet concentrate on the matters at hand. These will be free and available at every training or meeting. This approach has proved very successful in Isla Urbana's work in Jalisco [Nidos de Lluvia]. Women's schedules in terms of current water hauling responsibilities and childcare will also be taken into account when designing capacity building workshops timings.

9. Religion and spirituality
The spiritual life of the *Wixárika*, which involves performing multiple pilgrimages, ceremonies, fiestas, and sacrifices, and entails extraordinary amounts of work and time, involves both men and women, both of whom fulfill essential functions and take on "cargos" or mandates that generally involve 5-year commitments to a specific ceremonial center or group of pilgrims. Men, however, make up the vast majority of *Mara'akames*, the spiritual leaders or shamans who are at the top of the *Wixárika* social order. The spiritual practices of the *Wixárika* seem to reinforce a hierarchized gender dynamic, with women generally performing supporting rather than directing roles, but it would be simplistic to write off their importance within "*El Costumbre*" as the system of spiritual beliefs and practices is called.

9.1. Implications: Religion and spirituality
In general terms, ensuring the programme team understand the spiritual beliefs and customs of the *Wixárika* is essential as many activities will require to work with and weave these in. A gender differentiated approach will

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have to be taken into account when doing so to account for the differing roles taken in ceremonies, pilgrimages and rituals.
Since agriculture and landscape regeneration are deeply connected to *Wixárika* traditions and worldview, integrating gender practices in this context may also mean recognizing and respecting traditional roles of women within the community while acknowledging new forms of participation. This integration of modern practices with traditional ones can contribute to building an approach that is culturally respectful and promotes gender equity, recognizing women as guardians of the territory, traditional knowledge, and natural resources.

10. Governance, Leadership and Decision-Making

In the political realm, men occupy most positions of power within their largely autonomous local government. Sheriffs, traditional governors, municipal agents, etc, were until recently almost exclusively men, though in more recent times, women have taken on some important positions as well. An example of this is Paulita Carrillo Carrillo, the current Secretary of the Agrarian Authority of San Andrés, who will be directly supporting and guiding the implementation of this programme.
Traditional gender roles largely, though not entirely, relegate women to the domestic sphere, but women do occupy essential roles and obligations in the ritual and ceremonial sphere, and sometimes take on important leadership positions as well. As with all things, there is complexity and nuance.
These dynamics are all in a moment of flux and change, tending towards greater empowerment, freedom, and agency for women. This also generates pushback from many men, and at present we are observing clear tensions within families, partners, and especially young people, as they maneuver the shifting ideas about their roles and expectations with each other.

10.1. Implications: Governance and Leadership

The creation of governance and participation committees in which both men and women have a voice and vote can strengthen women's leadership in community decision-making. These types of organizational structures encourage the inclusion of women in local governance, which is essential to ensure that their needs, knowledge, and perspectives are integrated into the design and implementation of local environmental management policies. Women can play a crucial role in planning and decision-making concerning water resource management and land use in their community and the programme will ensure that is integrated into all activity design.

The fact that the Ha Ta Tukari director and other leadership roles are occupied by women will also send a message about the importance of female leadership.

A risk it is important to monitor and mitigate is the potential resentment that shifting gender dynamics around female leadership in the community could cause amongst male members of the community. *Wixárika* women have shared their fear with us that, with the increasing pressure at the municipal level to empower and lift women into positions of leadership (often for the first time) , that this can cause resentment and even domestic violence as men often feel excluded from these kinds of processes. The programme will promote that any activities which may impact gender dynamics in the community are underpinned by masculinity workshops and consultative processes and training for *both* men and women. It is important to include both genders in re-imagining how, when transforming the community's approach to adapting to climate change, women's increasing leadership, empowerment and equality can be a source of positive transformation for **all** members of the community.

11. Land, infrastructure and natural resources

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There are water infrastructure challenges in the whole SAC region. The locality of La Cebolleta has an astonishing 96% of dwellings with no running water for example. This disproportionately impacts all women in SAC especially when it comes to the increasing water shortages and deficiencies in climate resiliency strategies. 67% of households carry water from natural sources, on average six times a week, to obtain a maximum of 13 litres of water per person per day. In that vast majority of families that rely on water hauling, 68% of the people who haul are women, and 23% are girls and boys under 16 years of age (91% in total for women and children). This work takes them, on average, two hours a day (González-Padrón 2019b).

Agriculture and landscape regeneration are deeply connected to *Wixárika* traditions and worldview, with environmental management historically being a male dominated concern.

11.1. ***Implications: Land, infrastructure, and natural resources.***

For Component 1, approximately 3,570 users will be trained in the correct use and maintenance of their RWHS infrastructure (this represents 70% of programme beneficiaries, discounting 30% for infants and elderly beneficiaries who will not participate in maintenance activities). About 1,785 of these will be women. Gender equity when it comes to the ownership and understanding of their infrastructure will promote women's leadership and standing within the community.

Component 2 aims to involve 2,000 community members (with at least two from each household) in water management and landscape regeneration activities. Women will represent approximately 45% of these. This inclusive approach allows for the direct participation of women in decision-making and in the implementation of regeneration practices. By actively engaging women in restoration and water management activities, they are given the opportunity to learn new technical skills and strengthen their role in environmental management, an area that has historically been dominated by men in many rural communities. Training sessions for hydro-forestry teams (specialized in landscape regeneration) will focus on technical and socio-educational aspects. Ensuring that women participate equally in these training sessions allows them to acquire competencies in key areas such as water resource management, forest regeneration techniques, and agroforestry practices. This not only enhances women's autonomy by enabling them to manage their own resources but also gives them a leading role in adapting to the effects of climate change.

12. Violence and crime

Gender violence is a very real problem, and many women suffer all manner of abuses at the hands of their male partners or relatives, usually with little community support or recourse.

Gender dynamics and *machismo* in the Sierra manifests in multiple ways. Many women from more conservative families will not speak to or even look at strangers, for fear of being reprimanded, or simply from a painful level of timidity borne from isolation and exclusion from life outside the home. Women becoming pregnant and then being left to raise the child alone is a fairly common phenomenon which leaves them in conditions of great economic precariousness. In the worst cases, women are the subjects of serious intrafamily violence and submission which can occur with little interference from the wider community, which tends to not involve itself in such private affairs. In the most extreme cases, this sometimes goes so far as to result in femicides, with women killed by irate or jealous partners, who often face little or no punishment.

12.1 Implications: Violence and Crime

Single mothers and other vulnerable members of the community will be prioritised as beneficiaries of RWHS installation and will not be expected to contribute labor and co-participate in regeneration and other activities if they do not have adequate support systems for child care and home maintenance. Wherever possible childcare services will be provided when beneficiaries are invited to community meetings and trainings.

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The programme will create a gender policy and manual for the Intercultural team, outlining a zero tolerance approach to violence against women and girls, those on the team itself but also towards all female beneficiaries of components 1 and 2. The policy and manual will also outline how to best manage gender dynamics and how lack of adherence to the policy will be dealt with.

The programme will have limited scope to address wider gender violence challenges in the community however all capacity building opportunities will be leveraged to include facilitated exercises on gender dynamics, the need for respect and empowerment of women. The promotion of positive masculinites and support systems to deal with gender violence dynamics will be integrated into the curriculum.

This analysis informed the development of the gender action plan, a set of actions designed to be integrated into the existing activities to ensure gender is considered in each of the four
project components.

GENDER ACTION PLAN (GAP)

The GAP identifies opportunities for gender responsive and gender transformative activities and sets up an accountability structure and timeline for their implementation.

Objective of the Gender Action Plan To take a gender transformative approach to all Ha Ta Tukari activities and leverage programmatic outputs and activities to promote women's economic and social empowerment in the *Wixárika* community. The Gender Action plan will integrate women's participation and leadership in all components and activities, co-designing with them the roles they can take to ensure the most impactful and sustainable transformation of water resiliency and adaptive management in SAC.			
Gender Responsive and Transformation Activities	Targets	Responsibility	Timeline
Component 1: Establishing rainwater harvesting (RWH) infrastructure for sustainable and autonomous water access.			
Outcome 1.1: 5,100 residents of San Andrés Cohamiata—of which 2,658 are women and girls and 2,286 children—benefit from improved access to drinking water thanks to the installation and operation of 1,000 rainwater harvesting systems (RWHS)			
Output 1.1.1: Implementation of 1,000 fully functioning RWHS in households.			
Women are equal recipients of RWHS	2,658 are women and girls	EE (Component 1 team)	Throughout the life of the programme
Outcome 1.2: Approximately 3,570 beneficiaries trained on the correct use and maintenance of RWHS.			

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Women trained on the correct use and maintenance of RWHS	1,800 women are trained to maintain and use their RWHS	EE (Component 1 team)	Throughout the life of the programme
Component 2: Developing and piloting of a community action plan for landscape-scale water management and regeneration.			
Outcome 2.1: Increased local capacities for landscape-scale water management and innovative agroforestry practices.			
Output 2.1.1: Community-driven design of a landscape-scale water management and agroforestry strategy for the *Wixárika* region.			
Women participate fully in all community consultations, design meetings and are part of the Hydroforestry committee.	45% of those involved in co-design are women	EE (Component 2 team)	Throughout the life of the programme
Outcome 2.2: Increased water retention capacity, infiltration rates, and organic matter, and reduced erosion across 703 hectares undergoing regeneration.			
Output 2.2.1: Creation of a detailed database of local physical, chemical, and geographical conditions to better understand the current conditions and areas for improvement.			
All data that is collected is gender sensitive. Qualitative data takes into account women's perspectives.	100% of data is assessed for gender inclusion	EE (Component 2 team)	Throughout the life of the programme
Output 2.2.2: 700 forest hectares undergoing regeneration by the community			
Women are trained and implement regeneration activities	45% of trainees are women	EE (Component 2 team)	Throughout the life of the programme
Output 2.2.3: Creation of 3 hectares of agroforestry demonstration plots			
Women are trained and take part in agroforestry practices. Single mother households will be prioritised.	45% of trainees are women	EE (Component 2 team)	Throughout the life of the programme

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Component 3: Developing communities' capacities for sustainable water management.			
Outcome 3.1: The *Wixárika* community co-design and co-implement an autonomous water management strategy in their landscape			
Output 3.1.1: A methodology for community participation and collaboration that ensures community acceptance and ownership of the programme, designed and implemented.			
All materials include a gender perspective and include modules on gender equity and inclusion.	100% of materials are gender inclusive	EE (component 3 team)	Materials design - programme inception.
Outcome 3.2: Community-wide awareness and sustainable adoption of RWHS, landscape regeneration, hygiene and safe water management practices.			
Output 3.2.1: A learning programme to promote RWH adoption, hygiene, environmental regeneration, and climate change resilience implemented with 3,570 beneficiaries (70% of programme beneficiaries, discounting 30% for infants and elderly beneficiaries who will not participate in maintenance activities)			
This is the same activity as that for Outcome 1.2			
Outcome 3.3: The Intercultural teams of 40 people have the technical know-how and capacity to install and maintain RWHS now and in the future, regenerate forests and deliver educational activities for their community, scaling adaptive capacities across their communities.			
Output 3.3.1: A certification programme for the local Intercultural Teams of 40 people to develop and strengthen local technical and capacity building capacities, delivered; supporting team members to become autonomous agents of change in their communities.			
Between 40-50% of the Intercultural team is made up of women - offering them employment and technical know how	15-20 members of the Intercultural team are women	EE (Component 3 team)	Throughout the life of the programme
Component 4: Knowledge Management			
Outcome 4.1: Development of an integrated model for rainwater harvesting systems and landscape water management, with the potential to be adapted and replicated in diverse rural settings across Mexico and the Global South, effectively addressing water scarcity and improving climate resilience in vulnerable communities.			
Output 4.1.2 Detailed manual/toolkit for the effective replication of community-led universal water coverage programmes			

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All data collected includes gender differentiated data, interviews with female beneficiaries and has gender mainstreaming throughout	NA	EE (Component 4 team)	Throughout the life of the programme
Manual/ toolkit includes one chapter on the integration of a gender transformation approach in the replication of this model and gender inclusive language and tips throughout	1 gender chapter	EE (Component 4 team)	Year 4
Output 4.1.3 A communications strategy to disseminate the impact of our community-led model for universal water coverage within and outside San Andrés Cohamiata.			
*Activity 4.8: 4.8 Mainstreaming of a gender transformation approach and programme strategy implementation oversight**	1 gender transformation communications strategy	EE (Component 4 team)	Years 3 and 4

*A gender specialist has been budgeted to provide oversight throughout the programme lifecycle and will be responsible for ensuring a gender transformation approach and adherence to the AF ESP. They will have several deliverables including the communications strategy.

Gender Budget
A separate budget for gender has not been made, instead gender-related actions have been integrated throughout the activities and their corresponding budgets, in line with the gender action plan. $24,000 are designated for a consultant to provide a gender-perspective in activity design and implementation, as well as monitoring, evaluation and learning.

Monitoring, Evaluation and Learning
The programme will establish a robust monitoring and evaluation framework to track progress, assess the effectiveness of the GAP activities, and make necessary adjustments in the first 3 months of its inception. Indicators will be gender-disaggregated, wherever possible, to track the project's impact on both men and women separately.

Components 1 and 2 also include specific monitoring and evaluation strategies that involve data collection by community members themselves. Incorporating a gender perspective in assessing project progress will ensure that women are adequately represented in RWH and regeneration activities, that their needs and knowledge are valued, and that corrective actions are taken if necessary to enhance their participation and benefits.

Reporting
A plan for reporting on the GAP's implementation and results at regular intervals, and to communicate findings and lessons learned.
The IE will provide oversight to ensure the GAP is being effectively implemented and adjustments are made as and when needed.

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ANNEX 6
ANALYSIS OF SAN ANDRÉS COHAMIATA'S CLIMATE, VEGETATION, AND EROSION

For the following analisis, 3 areas were selected within the Agrarian Nucleus of San Andrés Cohamiata in order to have a representative overview of the climatology across this considerably big study area. These include the localities of La Cebolleta in the northwest, San Andrés Cohamiata in the center-east, and Tutuyekwamama in the southwest.

Climographs

La Cebolleta (figure 1) has a mild annual average temperature of 20.6 °C, making it the coolest of the three locations. Temperatures range from a maximum of 34.6 °C to a minimum of 5.8 °C, with notable thermal variation between seasons. The annual precipitation is 793.0 mm, with the rainy season clearly spanning from June to September. During this period, rainfall peaks in July (206.8 mm) and August (185.0 mm). The dry season extends from November to April, where precipitation drops below 20 mm per month, and falls below 3 mm in March and April. This reflects a typical pattern for semi-arid regions influenced by summer convection.

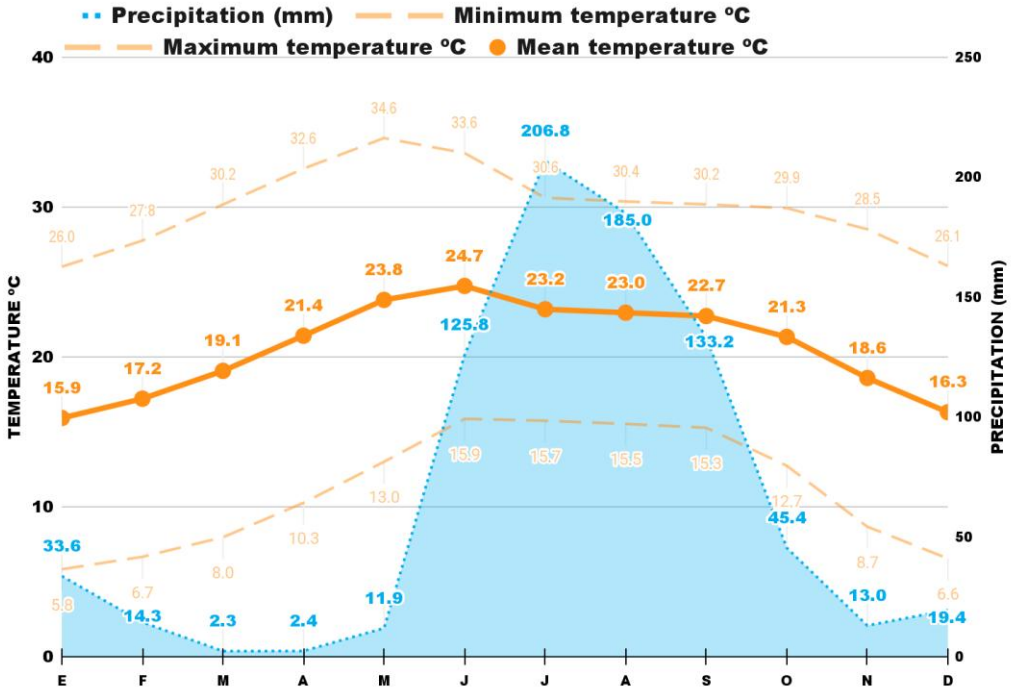

Figure 1: climograph for La Cebolleta (1980-2010) (INECC, 2024)

San Andrés Cohamiata (figure 2) shows a similar but slightly warmer profile, with a mean annual temperature of 21.4 °C. Temperatures climb to a maximum of 35.4 °C and fall to a minimum of 6.5 °C, indicating a wide thermal range throughout the year. The site receives 815.0 mm of precipitation annually, concentrated during the monsoon season from June through September. July (211.2 mm) and August (193.1 mm) are the rainiest

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months. The rest of the year remains comparatively dry, particularly from February to April, when rainfall hovers around 2–3 mm.

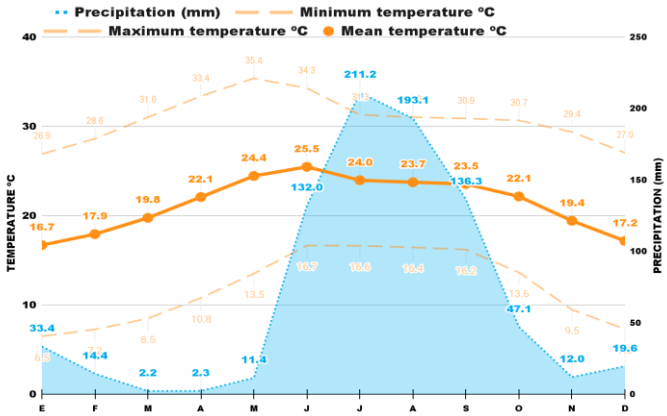

Figure 2: climograph for San Andrés Cohamiata (1980-2010) (INECC, 2024)

Tutúyekwamama (figure 3) stands out as the warmest and wettest among the three locations. It has an average temperature of 22.2 °C, with temperatures ranging from a high of 35.1 °C to a low of 8.3 °C annually. Precipitation totals 917.3 mm per year, the highest of the group. The rainfall is particularly intense in July (239.0 mm) and August (227.8 mm), and remains high through September. Even in the dry months (January to April), precipitation remains comparable to the other locations, but slightly higher in general.

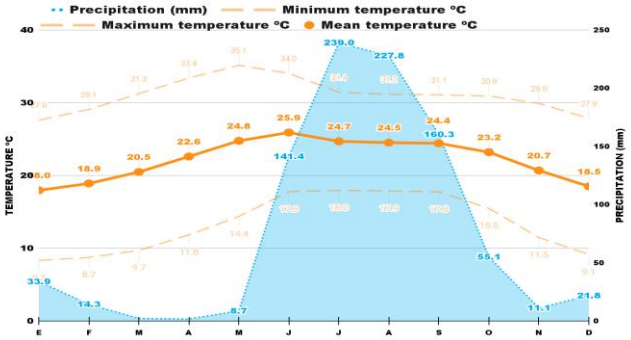

Figure 3: climograph for Tutuyekwamama (1980-2010) (INECC, 2024)

Precipitation Trends

Based on the scarcity of high resolution data from the area, precipitation data was retrieved from Climate Hazards Center InfraRed Precipitation with Station data (CHIPRS), which offers daily precipitation data almost globally at a resolution of 0.05º from 1981 to current time (CHIRPS, 2023). This dataset allowed us to analyse and generate crucial insights into precipitation trends across three distinct sections within the study area of San Andrés Cohamiata. These include the localities of La Cebolleta in the northwest, San Andrés Cohamiata in the center-east, and Tutuyekwamama in the southwest.

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Tutuyekwamama has an annual mean precipitation of 862 mm, followed by La Cebolleta with 832 mm and San Andrés Cohamiata with 801mm. Based on figures 4, 5 and 6, for the mentioned three localities, the precipitation variation year by year relative to the mean from 1981 to 2024 was calculated. Although the precipitation patterns are relatively similar, we can observe that in the first half of the series, there are more dry years than the second half. Specifically, the 1980s represent a notably dry decade, with 1982 standing out as an extremely dry year across all three localities. It was the driest year in La Cebolleta and San Andrés Cohamiata, and the second driest in Tutuyekwamama. The 1990s had precipitation levels close to the mean observed, with 1990 being a distinctively wet year for La Cebolleta and to a lesser degree for San Andrés Cohamiata. During the 2000s and the first half of the 2010s, there was a predominance of wetter years, particularly notable in La Cebolleta and San Andrés Cohamiata, especially from 2008 and 2016. However, this pattern was less intense in Tutuyekwamama. Then, the last half of the 2010s have been relatively close to the mean, especially in La Cebolleta and San Andrés Cohamiata.
Finally, in the first four years of the 2020s, there has been a trend toward drier-than-average years, with 2021 emerging as an outlier, and this pattern being less pronounced in Tutuyekwamama. This suggests two conclusions; first, the data suggests a possible intra-annual cycle where less-than-average precipitation years are followed by more-than-average precipitation years. This possibly is explained by the influence of moisture transport into the region governed or influenced by a climatic teleconnection such as ENSO. The second conclusion, is that precipitation patterns in Tutuyekwamama are less correlated to those seen in the center and northern localities.

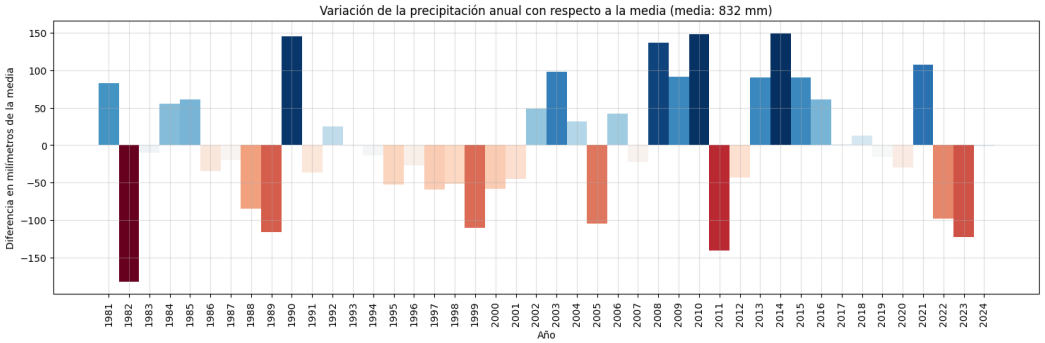

Figure 4: Annual Precipitation Variation Relative to the Mean (832 mm) at La Cebolleta.

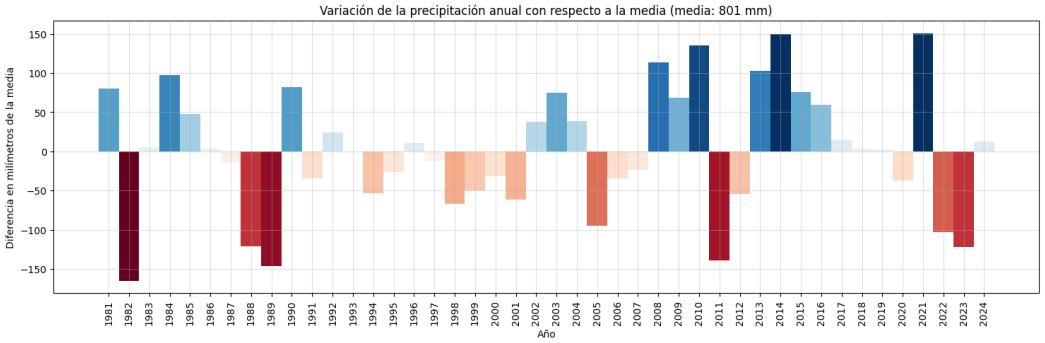

Figure 5: Annual Precipitation Variation Relative to the Mean (801 mm) at San Andrés Cohamiata.

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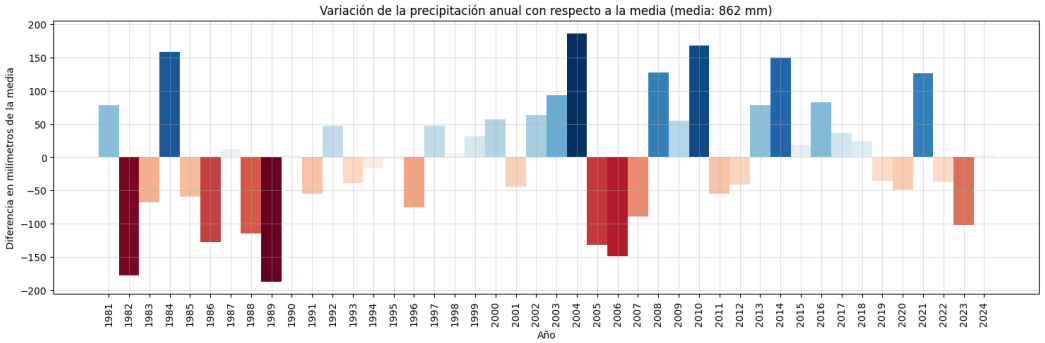

Figure 6: Annual Precipitation Variation Relative to the Mean (862 mm) at Tutuyekwamama.

To further analyse these drier-than-average years from 1982 to 2002 and wetter-than-average periods from 2002 to 2022, mean daily cumulative precipitation graphs were generated for each period and overlaid on the same graph for the three previously mentioned localities (CHIRPS, 2023). In all three localities (figures 7, 8 and 9), there is a noticeable increase in average precipitation of around 6–7% from period A to period B. This difference becomes more prominent from late August onward, while from late May to early August, the typical onset of the rainy season, both time periods show little variation, as the lines for the two periods do not differ significantly.

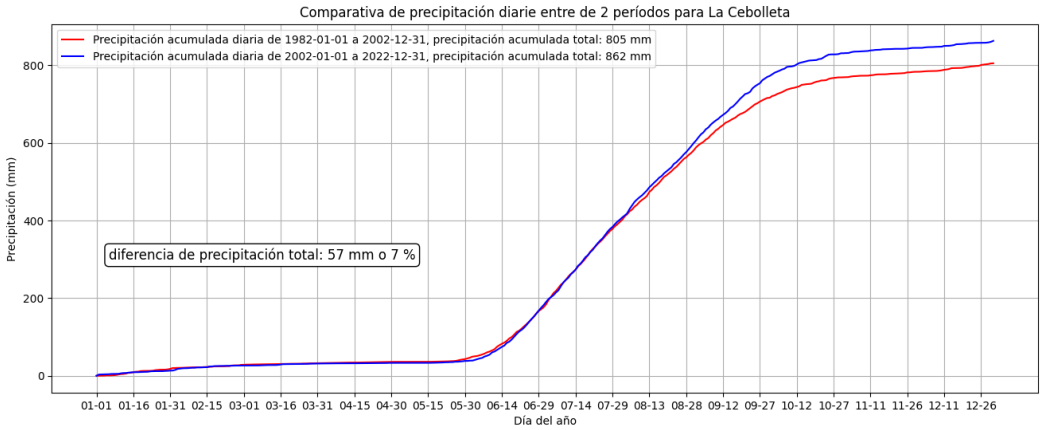

Figure 7: Average Daily Cumulative Precipitation for Two Periods at La Cebolleta.

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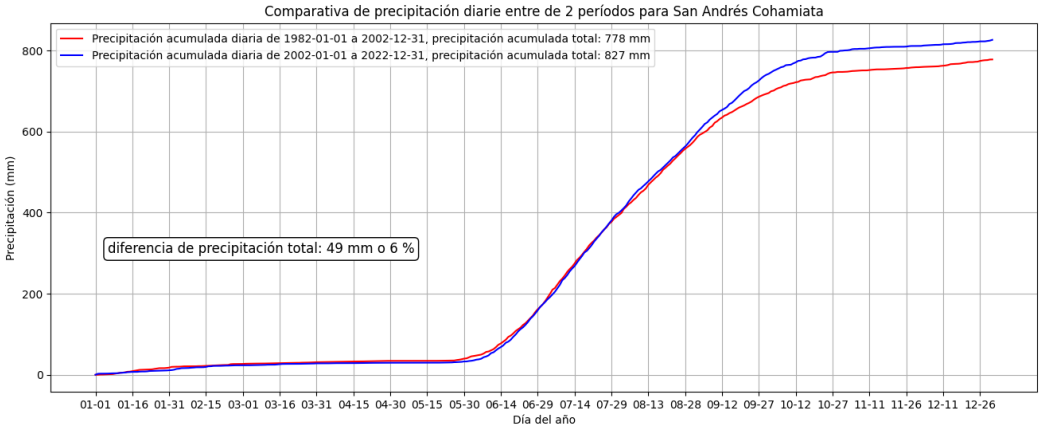

Figure 8: Average Daily Cumulative Precipitation for Two Periods at San Andrés Cohamiata.

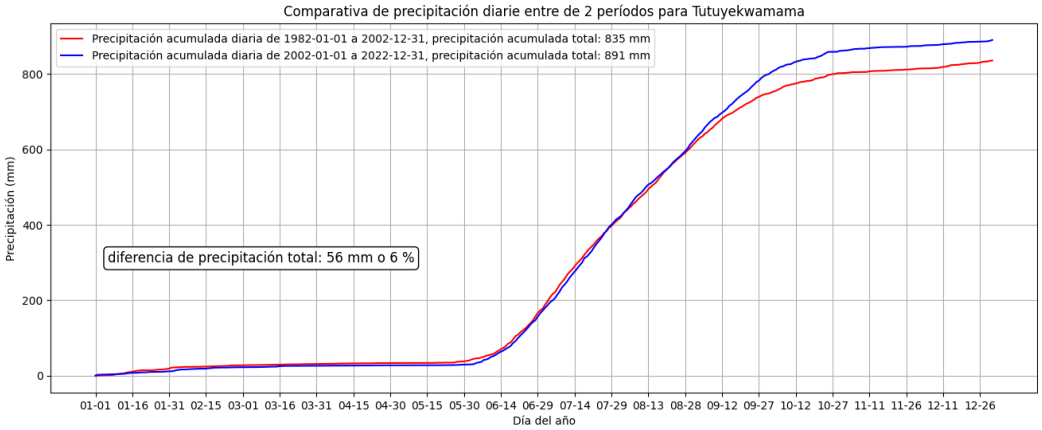

Figure 9: Average Daily Cumulative Precipitation for Two Periods at Tutuyekwamama.

To analyse this trend from another perspective, a cumulative deviation analysis was created to analyse wetter and dryer trends over time. This analysis involves comparing the annual precipitation of a specific year (each year from 1981 to 2024) with the mean annual precipitation of a reference period, in this case from 1981 to 2022, and then cumulatively summing those differences. If, over a series of years, precipitation is lower than the average, the cumulative value becomes increasingly negative (or decreases); conversely, if precipitation is higher than the average, the cumulative value increases. In the resulting graph, a positive or upward slope indicates a series of wetter-than-average years, while a negative or downward slope indicates a series of drier-than-average years. Similarly, in the graph showing the annual precipitation variation relative to the mean, the year-to-year difference in millimeters from the average can be observed. In Figures 10a, 10b and 10c, we can see that from 1981 to 2001, there was a streak of dry years, while from 2001 to 2021, there was a streak of wet years, with a few individual years not aligning with the overall trend. Likewise, in the annual precipitation variation graph, it is evident that the second period includes significantly more years with precipitation above

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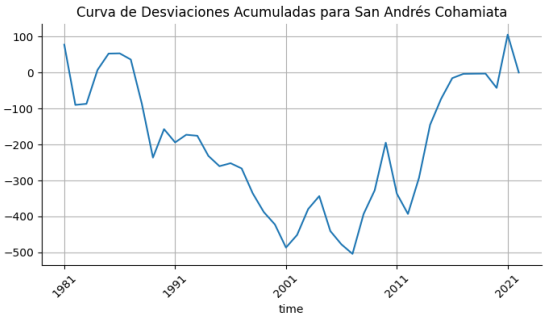
the mean. Although year-to-year differences exist, the overall trend remains consistent across all three localities.

a)



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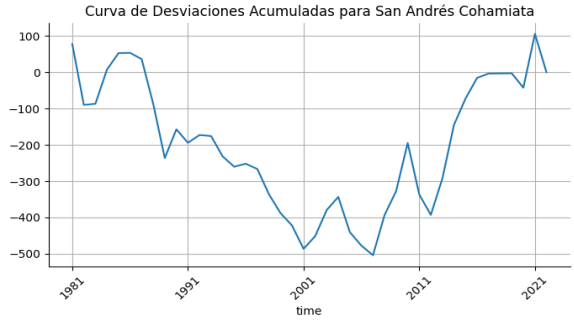

c)

Figure 10: Cumulative deviation analysis for a) La Cebolleta, b) San Andrés Cohamiata and c) Tutuyekwamama.

Drought severity and periodicity

The Standardized Precipitation Index (SPI) is an indicator that quantifies precipitation deficits and is therefore used to measure the severity of droughts over different time periods. In this case, a 12-month period was used to smooth out the variation between the rainy and dry seasons. This timescale allows for the analysis of impacts on river flows, reservoir levels, and groundwater levels. For this analysis, the official National Water

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Commission (CONAGUA) classification shown in Table 1 was used, and the probability of occurrence for each classification is provided for the three localities using daily precipitation data from the CHIRPS (2023).

SPI Value	Condition
≥ 2.00	Exceptionally Wet
1.60 to 1.99	Extremely Wet
1.30 to 1.59	Very Wet
0.80 to 1.29	Moderately Wet
0.51 to 0.79	Slightly Wet
-0.50 to 0.50	Near Normal
-0.79 to -0.51	Slightly Dry
-1.29 to -0.80	Moderately Dry
-1.59 to -1.30	Very Dry
-1.99 to -1.60	Extremely Dry
≤ -2.00	Exceptionally Dry

Table 1: SPI classifications used in CONAGUA

It is observed that all three localities (figures 11, 12 and 13) experience near-normal conditions between 34.8% and 39.9% of the time, with Tutuyekwamama showing the lowest proportion and San Andrés Cohamiata the highest. Regarding very dry conditions, these occur between 3.3% and 4.5% of the time, with Tutuyekwamama registering the highest frequency and La Cebolleta the lowest. Extremely dry conditions are present between 2.4% and 2.9% of the time, with Tutuyekwamama being the most affected and San Andrés Cohamiata the least. Finally, the probability of experiencing an exceptionally dry condition ranges from 2.3% to 2.9%; San Andrés Cohamiata has the highest probability, while Tutuyekwamama and La Cebolleta show similar values. In summary, the total probability of experiencing significant drought conditions (very dry, extremely dry, or exceptionally dry) is 8.5% for La Cebolleta, 9.4% for San Andrés Cohamiata and 9.5% for Tutuyekwamama. This suggests that southern and lowland areas have a higher likelihood, and therefore greater vulnerability, to drought.

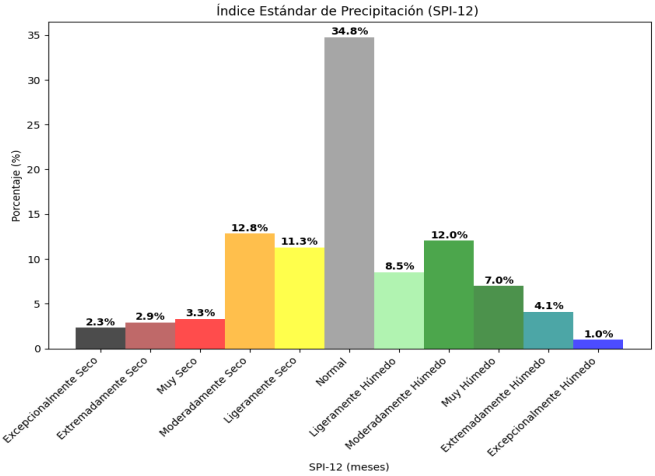

Figure 11: 12-month Standardized Precipitation Index (SPI) for La Cebolleta using the CONAGUA classification.

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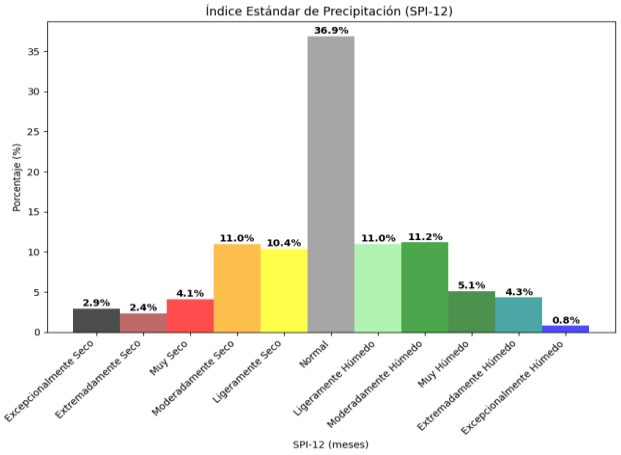

Figure 12: 12-month Standardized Precipitation Index (SPI) for San Andrés Cohamiata using the CONAGUA classification.

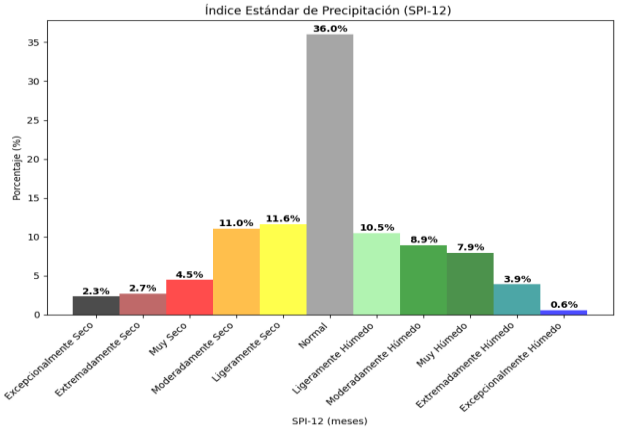

Figure 13: 12-month Standardized Precipitation Index (SPI) for Tutuyekwamama using the CONAGUA classification.

Furthermore, the SPI across 1981 to 2024 shows a very close relationship between the three localities, as seen in figures 14a, 14b and 14c. Exceptionally dry conditions occurred in 1982, 1989 and 2023 in all three localities. La Cebolleta had an Exceptionally Dry peak in 1998, and Tututyekwamama in 2006. Also, Tutuyekwamama had a sustained dry decade in the 1980s while having a less intense dry 1990s and early 2000s compared to La Cebolleta and San Andrés Cohamiata. The SPI-12 also reflects the multidecadal dry and wet periods from 1982 to 2001, there are significantly more drier-than-average years, with only a few instances exceeding the Very Wet threshold. In contrast, during the later period of 2000s onwards, wetter years occur much more often than the Very Dry threshold.

a)

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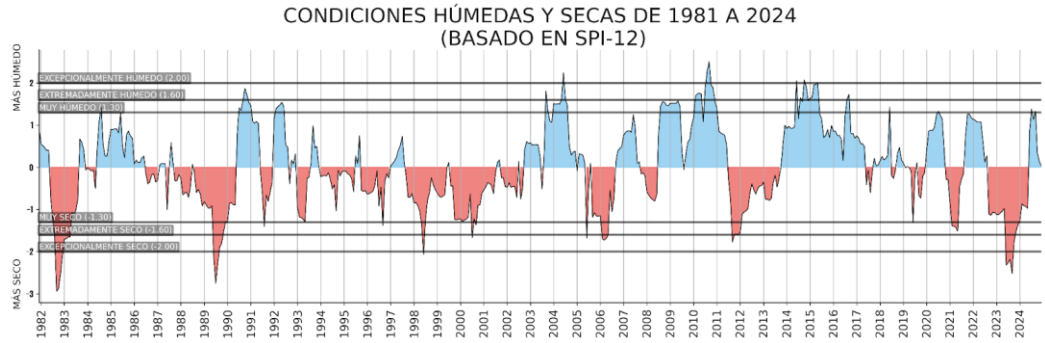

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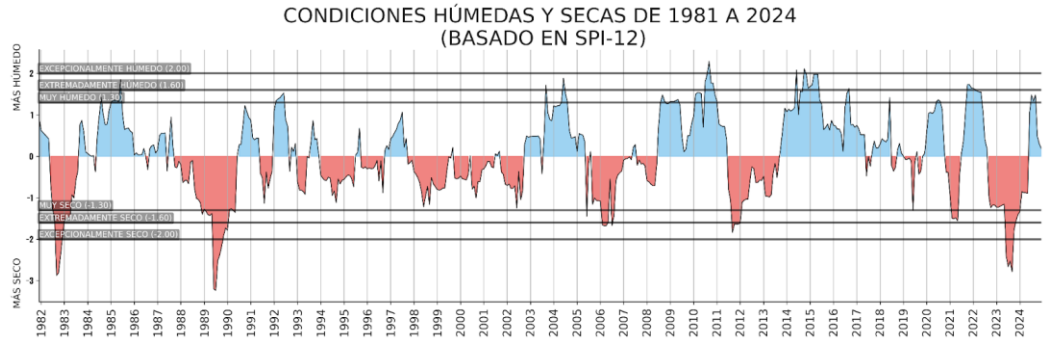

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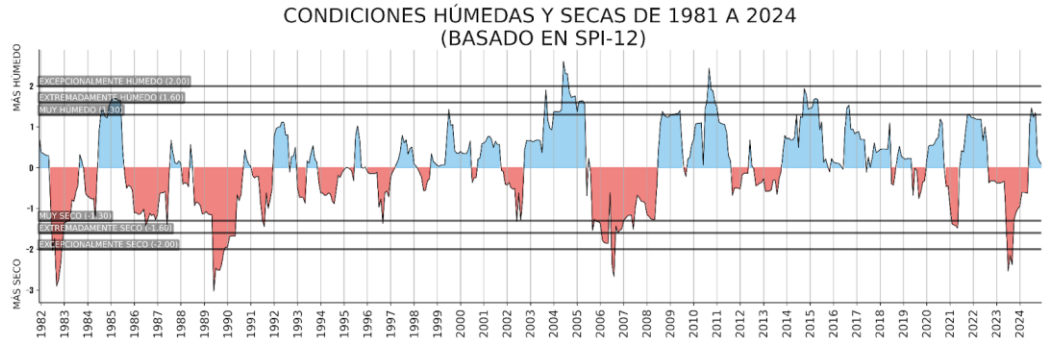

Figure 14: 12-month Standardized Precipitation Index (SPI) for (a) La Cebolleta, (b) San Andrés Cohamiata, and (c)Tutuyekuamama using the CONAGUA classification.

Precipitation Patterns

Using average annual precipitation data from the period of 1970 to 2000 (Fick et al., 2017), at a resolution of 1 km, it is revealed that San Andrés Cohamiata has a precipitation range from 709 mm/year to 987 mm/year. These might differ from those extracted from CHIRPS (2023), as these are two different timeframes. However, this section is primarily focused on geospatial patterns rather than averages. The differences in precipitation

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present a gradient mainly from the northeast with lower precipitation to the southwest with higher precipitation, which also correlates with altitude, as higher altitudes receive more precipitation and vice versa. The areas with the lowest precipitation are found on the eastern border, mainly from the east-central area to the northwest, specifically in the northern valleys of San José El Tesorero and the valley separating the localities of Las Guayabas and El Chalate. The north-central part of San Andrés Cohamiata, specifically the highland area between La Cebolleta and El Carrizal, receives precipitation around 830-840 mm/year. The southwestern part, near Las Tapias, Palma Chica, and Tutuyekuamama, is the area with the highest precipitation, around 920-950 mm/year. This is possibly due to a greater influence of moisture coming from the Pacific.

Future Precipitation

Based on the average of four climate change models (CNRM-CM5, MPI-ESM-LR, GFDL-CM3, and HADGEM2-ES) and taking the RCP 4.5 for a medium case scenario and RCP 8.5 for a worst case scenario, an analysis was carried out to understand the relative changes in mean monthly precipitation for the town of San Andrés Cohamiata. For the medium scenario of RCP 4.5, most months show a decrease in precipitation except September and October, where an increase of 8.7 mm (6.4% increase) and 6.9 mm (14.6% increase), as seen in figures 15 and 16. June shows the highest decrease as volume of water with a decrease of -21.5 mm, and March and April showing the lowest decreases by volume of -0.5 mm. However, as a percent change from current precipitation levels, February shows a decrease of -33.3% followed by March with a decrease of -24.1%. This indicates that the greatest decrease in precipitation volume will occur during the first half of the rainy season, from June to August, while an increase is projected during the later months, from August to September. This pattern suggests a delayed onset of the rainy season as well as a general decrease in overall rain.

However, for the worst case scenario, all months will experience a decrease in precipitation, with July showing the highest decrease by volume followed by August and September, with a decrease of -25.7 mm, -23.5 mm and -16.6 mm respectively. However, the highest percentual changes are seen in March followed by January with a decrease of -52.4% and -45.9% respectively, with all other months showing a very similar decrease of 12.0% to 12.2%.

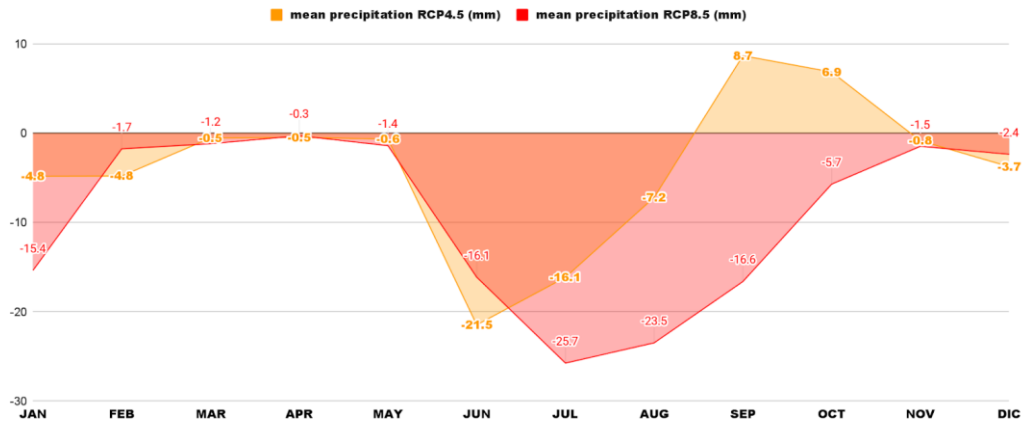

Figure 15: Projected changes in monthly mean precipitation for 2081-2100 (mm) relative to current estimates (1980-2010)

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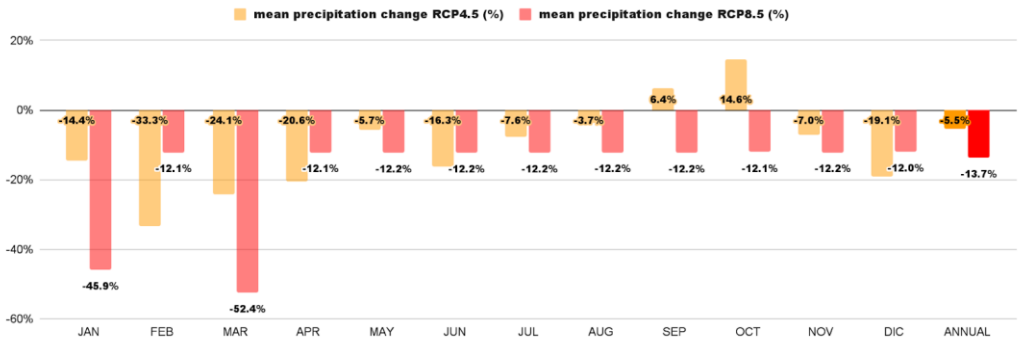

Figure 16: Projected changes in monthly mean precipitation for 2081-2100 (%) relative to current estimates (1980-2010)

Future temperature changes

Based on the average of four climate change models (CNRM-CM5, MPI-ESM-LR, GFDL-CM3, and HADGEM2-ES) and taking the RCP 4.5 for a medium case scenario and RCP 8.5 for a worst case scenario, an analysis was carried out to understand the relative changes in mean monthly temperature for the town of San Andrés Cohamiata. For the RCP 4.5 and mean annual increase of 2.5ºC is expected, with all months experiencing an increase of 2.3ºC to 2.8ºC, both September and January having the least increase of 2.3ºC and April and May the highest (2.8ºC) seen in figure 17. For the worst case scenario of RCP 8.5, a general increase of mean annual increase of 4.9ºC is expected, with all months experiencing an increase of 4.3ºC to 5.4ºC, with September having the least increase of 4.3ºC and April having the highest of 5.4ºC.

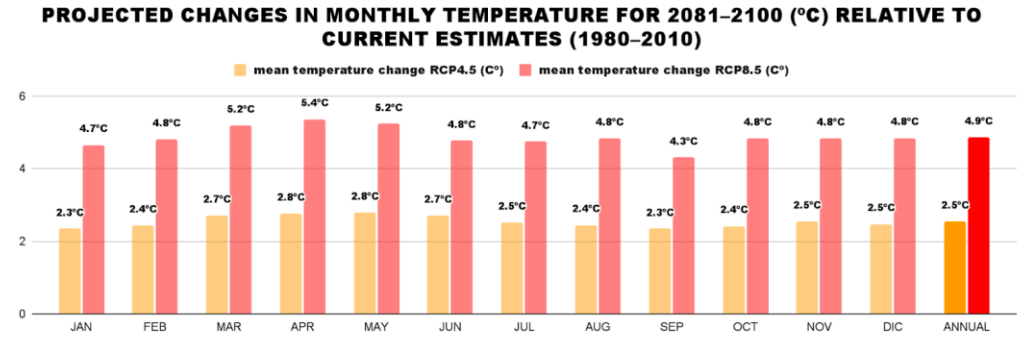

Figure 17: Projected changes in monthly temperature for 2081–2100 (ºc) relative to current estimates (1980–2010) in San Andrés Cohamiata

Climatology (Geiger-Koppen) (INEGI, 2018)

The north-central zone of San Andrés Cohamiata, mainly in the highlands, has a temperate subhumid climate C(w2), with average annual temperatures between 12°C and 18°C. The temperature of the coldest month ranges between -3°C and 18°C, and the temperature of the hottest month is below 22°C. Precipitation in the driest month is less than 40 mm, with summer rains and a winter rainfall percentage of 5% to 10.2% of the annual total. The central southwest zone, as well as the northwest and northeast borders of San Andrés Cohamiata in the lowlands, have a warm subhumid climate (A)C(w1), with an average annual temperature above 18°C, a temperature of the coldest month below 18°C, and a temperature of the hottest month above

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22°C. Precipitation in the driest month is less than 40 mm, with summer rains and a winter rainfall percentage of 5% to 10.2% annually. The southeast border of San Andrés Cohamiata has a warm subhumid climate, with an average annual temperature above 22°C and the temperature of the coldest month above 18°C. Precipitation in the driest month is less than 60 mm, with summer rains and a winter rainfall percentage of 5% to 10.2% of the annual total.

Future changes in Climatology (Geiger-Koppen)
Based on a global study of climate change from 1989-2016 (current) to 2071-2100 (future using the CMIP5 archive and a Representative Concentration Pathways of 8.5 (RCP8.5) using the Köppen-Geiger classification (Beck et al., 2018) within San Andrés Cohamiata (figure 18). For the current period, the north-central and southwest zones have a temperate sub humid mountain climate (Cwb). The subtropical monsoon climate (Cwa) covers almost all the rest of San Andrés Cohamiata, with the southeastern border being primarily tropical savanna (AW). In the future, the temperate sub humid mountain climate (Cwb) completely disappears and is replaced by the subtropical monsoon climate (Cwa). In turn, the subtropical monsoon climate (Cwa) is replaced by tropical savanna (AW), and the areas that were previously tropical savanna (AW) are replaced by a warm semi-arid climate, which also appears on the northwest and northeast borders of San Andrés Cohamiata.

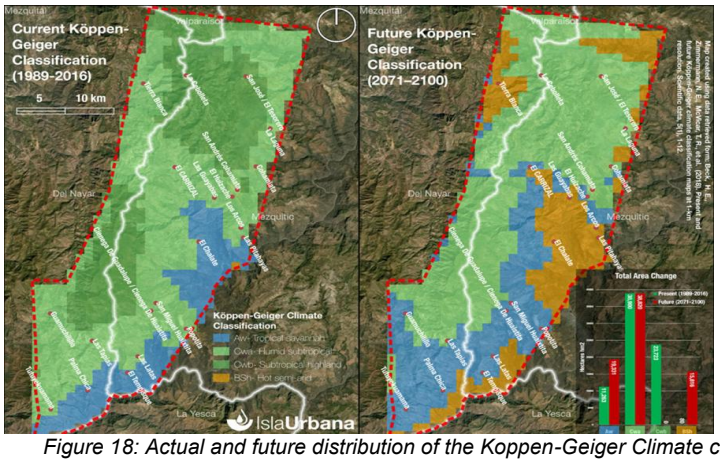

Figure 18: Actual and future distribution of the Koppen-Geiger Climate classification within the Agrarian Nucleus of San Andrés Cohamiata.

Erosion
According to the Soil Erosion Dataset from INEGI (2014), erosion within the San Andrés Cohamiata region is generally low. Approximately 43.5% of the area shows no apparent erosion, while 51.8% exhibits slight sheet (laminar) water erosion. Only 4.6% of the territory is affected by moderate erosion, primarily in the form of laminar water erosion, with 1.9% of the area also showing signs of slight gully erosion as a secondary component. Despite these findings, it is important to note that the data resolution is relatively coarse (1:250,000), meaning that localized cases of severe erosion within San Andrés Cohamiata may not be captured and thus remain a possibility.

Land Use and Vegetation
According to the land use classification from the European Space Agency (reference pending), 52.6% of the San Andrés Cohamiata region is covered by tree canopy, followed by 34.6% covered by shrubs, and 12.1% by grasslands. Only 0.3% of the area is used for croplands, 0.2% consists of sparse vegetation, 0.1% corresponds to urbanized areas, and 0.05% to permanent water bodies. In terms of vegetation type, 55.9% of the territory consists of secondary vegetation, meaning it has regrown in areas previously altered by human or

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natural activity. The composition of natural vegetation includes: 26.2% is pine-oak and/or oak-pine vegetation (including arboreal, shrub-like, and secondary forms), 22.3% is oak vegetation (arboreal, shrub-like, and secondary), 19.0% is low deciduous forest (selva baja caducifolia), and 4.7% is pine vegetation (also including arboreal, shrub-like, and secondary forms).

Implications for the programme

Within the Agrarian Nucleus, there is a likely interannual variability with regards to precipitation, as the past two decades have experienced higher precipitation levels than the preceding 20-year period. Also, the southern section of the Agrarian Nucleus has less climatic correlations to central and northern regions as well as having a greater probability of drought. For future climate change predictions, an overall increase in temperatures are expected in both the medium and worst case scenarios. For future precipitation, the medium case scenario a decrease in annual precipitation is expected as well as a later onset of the wet season, and the worst case scenario a decrease in overall precipitation. The climate regions are expected to have dryer conditions, as temperate sub humid mountain climate disappears and tropical savanna and warm semi-arid climate increase significantly. Erosion levels remain considerably low, and only about half of the study area show medium to low levels of erosion. Forests and shrubs dominate the vegetation, and more than half of the area has secondary vegetation.

The impact of the variability in precipitation levels will directly impact the volume of rainwater harvested but observing the data this impact does not significantly undermine the need or potential for impact of the technology. It remains the only viable way to achieve Universal Water Coverage for the *Wixárika* people in the coming years and build their adaptive capacities, as traditional water infrastructure is not technically or financially viable.

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ANNEX 7
POPULATION RANGES AND RWHS EFFICIENCY

Terminology

We are considering the following indicators:

- Rainwater Harvesting Potential (RWHP) or the percentage of annual water demand fulfilled only by rainwater
- Rainwater Loss by Limited Storage (RWLS) of the percentage of annual water demand lost by limited water storage capacity
-

Ideally, dwellings need to achieve a RWHR of 90% or greater (100% is the conceptual goal) while having a low RWLS of below 15%. In a scenario where a dwelling has a RWHP of 100% or very close to this, a RWLS below 15% is the best, meaning that there is water that could be used if demand increases or a drier-than-average year appears. However, a bigger number of say 30-40%, means the system is not efficient, and resources could have been allocated to harvesting water that will go to waste.

On the other hand, dwellings with a RWHP lower than 90%, are either constrained by rooftop area or water storage capacity, of course, ignoring low precipitation rates, high water consumption and a crowded dwelling, which are also a constraint. If a dwelling with low or medium RWHP while having a RWLS of zero, indicates that there is not enough rooftop area. On the other hand if a dwelling with low or medium RWHP has a RWLS of over 15-20%, it indicates that storage capacity is not enough for all the water being harvested.

In this study, we used a rainwater harvesting calculator developed at Isla Urbana that simulates each step from precipitation, harvesting, losses, storage and consumption on a daily resolution scale. This calculator obtains the daily precipitation data from CHIRPS with a given coordinate. The coordinates for the locality with the rainfall closer to the average between all the 21 localities in San Andrés Cohamiata, which is Tierra Blanca (22.3008889, -104.3345555). The average annual rainfall is 829 mm with a variability of ± 20.8% taking the total annual precipitation from 1981 to 2023. This locality has a rainy season from June to October, with July being the wettest month (figure 1).

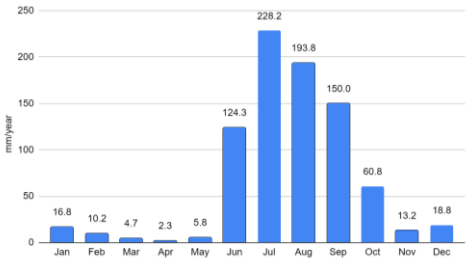

Figure 1: *Average monthly rainfall in mm from Tierra Blanca (1981-2023).*

Assumptions

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As we want to estimate the total amount of water, the calculations do not take into account a first flush diverter or first rain separator, but in reality every RWHS will include one with a volume of 0.67 times the rooftop area of every dwelling. These simulations assume that both the water storage tank and the first flush diverter will be used by every dwelling. Also, a loss factor of 10% is used in all simulations and a daily water consumption of 20L, as this is the goal. However, in reality these two variables, along with the uncertainties and variability of future precipitation levels in the coming years might skew the results of the following simulations and should be taken as an estimation using the best up-to-date method. To estimate the efficiency of RWHP in future scenarios, the annual decrease in precipitation will be extrapolated to the results. Therefore, some degree of uncertainty remains, particularly when considering the interannual variability of precipitation changes under both RCP 4.5 and RCP 8.5 scenarios. For this, the average of four climate change models, which include CNRM-CM5, MPI-ESM-LR, GFDL-CM3, and HADGEM2-ES, under the Representative Concentration Pathway (RCP) scenarios RCP 4.5 for a medium case scenario and RCP 8.5 for the worst-case scenario were used to estimate the decrease of mean annual precipitation at 2081-2100 (INECC, 2024).

Estimating ranges for rooftop area and average occupants per household

Firstly, the 114 official localities within SAC registered in the INEGI Census of 2020 (INEGI, 2020), were obtained, Then, for each locality we divided the total number of inhabitants with the number of private inhabited dwellings to get the total range of Average Occupants per Household or 'AOH'. Then, we mapped 124 footprints of buildings using publicly available Google Satellite imagery to get a range of average rooftop areas. This gave us the possibility of estimating the probability of occurrence for a given value within the Agrarian Nucleus, as seen in Figure 2 as well as mean values for both. Firstly, we can see that about ~31% of dwellings have an AOH of 5 people, followed by 4 people with ~25%, 6 with ~18%, 3 with ~12% and 7 with ~10%. Overall, more than 50% of the dwellings have an AOH of 4 and 5, and more than 95% have a range of 2 to 7 people. On the other hand, dwellings with 30m^2 to 40m^2 are the most common, with ~29%, dwellings with up to 20m^2 with ~28% and dwellings with 40m^2 to 50m^2 with ~21%. Dwellings with up to 50m^2 make up more than 75% of the population.

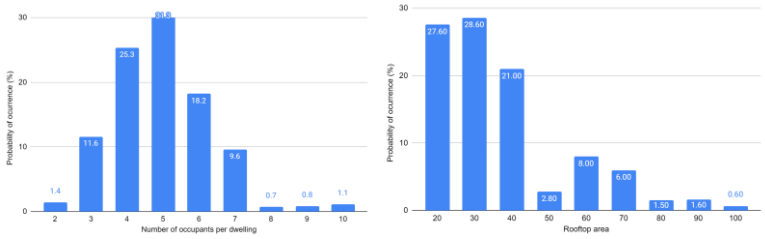

Figure 2: *Probability of occurrence for both number of occupants per dwelling and rooftop area.*

These two variables give us a pretty good estimation of what we can find in the Agrarian Nucleus. However, as these two variables are decoupled from each other, we can not have a reliable estimate combining these estimates (the percentage of dwellings with 2 people and 30m^3 of rooftop for example). Thus, it is convenient to analyze possible combinations of these variables.

Objective 1: What is the rainwater harvesting potential of the average dwelling within San Andrés Cohamiata Agrarian Nucleus?

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For the average household in SAC, the main constraint for RWH is rooftop area. As seen in table 1, the 4 combinations possible, only with the additional 6m2 of harvesting area included in the 12,000 L water storage tank a PAWDL of 3% is reached. In this case though, a RWHP of 76%, or more than ¾ of the annual water demand can be supplied only with rainwater if RWH is carried out year-round. Having the 6m^2 additional harvesting area, increases the RWHP by 12% harvesting year-round and 7% harvesting only from June to October.

System type	RHW season	Water storage tank (liters)	Average occupants per household	Total rooftop area (m^2)	Percentage of annual water demand fulfilled by rainwater	Percentage of annual water demand lost by limited water storage capacity
Average	all year	12,000	5.1	40	76%	3%
Average	all year	14,000	5.1	34	64%	0%
Average	Jun-Oct	12,000	5.1	40	67%	3%
Average	Jun-Oct	14,000	5.1	34	60%	0%

Table 1: *RWHP and PAWDL for each of the 4 simulations taking into account the average dwelling characteristics in SAC.*

However, this shows that the average dwelling in SAC is not able to fully depend on rainwater yearound with the proposed system and would need to obtain water from other sources during the dry season. Having said this, all four of these combinations considered, rainwater can fulfill all water demands from July to December, or half of the year during the wet season (table 2). However, with the RWH yearound and the 12,000 L tank with the additional 6m2 of rooftop, the average dwelling can fulfill all water demands with rainwater up until February, and would have partial RWH from March to June.

	Percentage of annual water demand fulfilled by rainwater per month			
	RWH all year round		**RWH season from June to October**	
Month	**With a 12,000 L tank and additional 6m2 of rooftop**	**With a 14,000 L tank**	**With a 12,000 L tank and additional 6m2 of rooftop**	**With a 14,000 L tank**
January	100	100	100	55.5
February	100	14.8	48.2	0
March	25.6	4.5	0	0
April	2.7	2.3	0	0
May	6.6	5.6	0	0
June	85.9	82.8	85.9	82.8
July	100	100	100	100
August	100	100	100	100
September	100	100	100	100
October	100	100	100	100
November	100	100	100	100
December	100	100	100	100

Table 2: *RWHP per month for each of the 4 simulations taking into account the average dwelling characteristics in SAC.*

Within the area of San Andrés Cohamiata, for the period 2081–2100, mean annual precipitation is projected to decrease by 5.5% under RCP 4.5 and 13.7% under RCP 8.5. This would indicate a reduction of 18,809,000 to 21,197,000 litres under RCP 4.5 and to 17,177,000 to 19,357,000 litres under RCP 8.5. This would represent a decrease in Rainwater Harvesting Potential from 64%–76% under current conditions to 60%–72% under RCP

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4.5, and 56%–66% under RCP 8.5, by the period 2081–2100.

Objective 2: What are the characteristics needed to guarantee a daily water consumption of 20 liters per person in dwellings?

Then, multiple simulations of rooftop area in increments of 5 meters were carried out with different combinations of water storage tanks (12,000 and 14,000) in order to obtain the minimum rooftop area and water storage capacity to have a RHWP of 100% based on number of inhabitants per dwelling (2 to 10 inhabitants). In table 3, the best combinations of water storage tanks with the minimum rooftop area are given for 2 to 10 inhabitants per dwelling. It is interesting to note that only dwellings with 3 or less people can obtain a RHWP of 100% with only one water storage tank and a combination of two storage tanks for dwellings of 4 to 7 people

Roughly, we estimate that at least 10 m2 of rooftop and 4,000L water storage tank are needed per person annually to obtain a RWHP of 100%

Number of inhabitants	rooftop area (m2)	water storage volume (L)
2	20	12,000
3	30	12,000
4	40	12,000 + 12,000*
5	50	12,000 + 12,000
6	60	12,000 + 12,000
7	70	14,000 + 12,000
8	80	14,000 + 14,000 + 12,000**
9	90	14,000 + 12,000 + 12,000***
10	100	14,000 + 14,000 + 12,000****

*** a RWHP of 98% is obtained with a 14,000 L tank**
**** a RWHP of 98% is obtained with two 14,000 L tanks**
***** a RWHP of 93% is obtained with two 14,000 L tanks**
****** a RWHP of 84% is obtained with a 14,000 L & a 12,000 L tanks**

Table 3: Requirements to achieve a RWHP of 100% based on the number of inhabitants per dwelling.

Objective 3: What is the volume of water and average RWHP expected from 1,000 systems?

First, we generated percentiles at intervals of 10% (10, 20, 30, ..., 90) for both AOH and rooftop areas, resulting in 64 possible combinations (table 8).

Percentiles (%)	Rooftop area (m^3)	AOH
10	13.7	2.7
20	17.5	3.3
30	20.9	3.7
40	24.6	4.0
50	26.9	4.3
60	32.9	4.7
80	47.9	5.5
90	63.1	6.0

Table 7: *Table with the 8 percentile intervals of 10% (10, 20, 30, ..., 90) for AOH and rooftop areas within SAC.*

Then, in order to get an estimate of the total cost saved from these systems, we obtained the minimum cost for a liter of water for domestic use in the state of Jalisco, of 0.07631 MXN per liter of water obtained from IMCO

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(2023). Using a daily water consumption per user of 20 L/per/day, we generated 64 simulations with a water storage tank of 12,000 l and 6 m2 of additional harvesting area, and another 64 simulations with a water storage tank of 14,000 l to have all possible combinations of RWH in SAC. Then we multiplied the total liters harvested and cost saved by both of the 64 simulations and by 15.625 in order to obtain a maximum and minimum estimation for all of the 1,000 RWHS that will be installed.

We can expect that in total, the 1000 RWHS yield a volume per year of 19,904,031 liters (14,000 l tank) to 22,430,281 liters (12,000l tank with an additional 6 m^2 of harvesting area), which represents a total annual savings of 1,518,500 to 1,711,250 MXN respectively.

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ANNEX 8
CONSULTATIVE PROCESS AND AGREEMENTS

As established in the Biocultural Community Protocol of the San Andrés Cohamiata community, the Communal Assembly is the highest decision-making body in the region and is responsible for authorising, reviewing, monitoring and sanctioning any issue that affects the community, including agreements with external actors. Given that the current agreements have been built with legitimate authorities in place, it is important to have mechanisms that ensure the continuity of these commitments in the face of future 'political' changes. The traditional organizational structure itself, which includes the Comisariado de Bienes Comunales, Municipal Delegate and the Traditional Government and Council of Elders (Kawiteros), provides a network of continuity that supports the permanence of previously defined agreements.

To ensure maximum sustainability and community support for the program and its impact, we propose:

1. Record the agreements in the minutes of the Communal Assembly so that they are recognized as institutional commitments, not just personal or administrative ones.
2. Hold meetings and awareness-building workshops with new representatives prior to the beginning of each government cycle, promoting the transmission of knowledge and the ratification of commitments.
3. Plan based on community political cycles, which are usually renewed annually and have periods of between one and three years depending on the part of the organizational structure.
4. Include the Council of Elders and jicareros as guardians of the spiritual and organizational continuity of the agreements, who transcend changes in government.

With this perspective, it is intended that the processes promoted by the project remain rooted in the legitimate decision making frameworks of the community, respecting the self-determination and cultural continuity of the *Wixárika* people. The fifteen year relationship between the Ha Ta Tukari leadership team and the community will also be a significant contributor to the programme and its impact ability to weather any potential local political changes.

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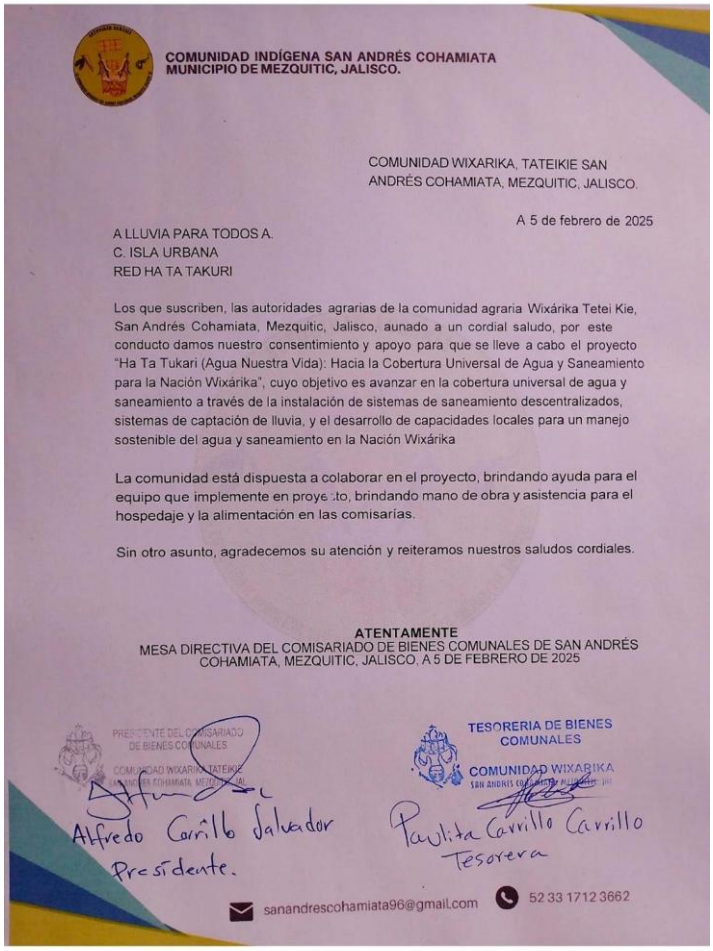

COMUNIDAD INDÍGENA SAN ANDRÉS COHAMIATA
MUNICIPIO DE MEZQUITIC, JALISCO.

COMUNIDAD WIXARIKA, TATEIKIE SAN ANDRÉS COHAMIATA, MEZQUITIC, JALISCO.

A 5 de febrero de 2025

A LLUVIA PARA TODOS A.
C. ISLA URBANA
RED HA TA TAKURI

Los que suscriben, las autoridades agrarias de la comunidad agraria Wixárika Tetei Kie, San Andrés Cohamiata, Mezquitic, Jalisco, aunado a un cordial saludo, por este conducto damos nuestro consentimiento y apoyo para que se lleve a cabo el proyecto "Ha Ta Tukari (Agua Nuestra Vida): Hacia la Cobertura Universal de Agua y Saneamiento para la Nación Wixárika", cuyo objetivo es avanzar en la cobertura universal de agua y saneamiento a través de la instalación de sistemas de saneamiento descentralizados, sistemas de captación de lluvia, y el desarrollo de capacidades locales para un manejo sostenible del agua y saneamiento en la Nación Wixárika

La comunidad está dispuesta a colaborar en el proyecto, brindando ayuda para el equipo que implemente en proye :to, brindando mano de obra y asistencia para el hospedaje y la alimentación en las comisarías.

Sin otro asunto, agradecemos su atención y reiteramos nuestros saludos cordiales.

ATENTAMENTE
MESA DIRECTIVA DEL COMISARIADO DE BIENES COMUNALES DE SAN ANDRÉS COHAMIATA, MEZQUITIC, JALISCO, A 5 DE FEBRERO DE 2025

PRESIDENTE DEL COMISARIADO DE BIENES COMUNALES
COMUNIDAD WIXARIKA TATEIKIE SAN ANDRÉS COHAMIATA, MEZQUITIC, JAL.

Alfredo Carrillo Salvador
Presidente.

TESORERIA DE BIENES COMUNALES
COMUNIDAD WIXARIKA
SAN ANDRÉS COHAMIATA, MEZQUITIC, JAL.

Paulita Carrillo Carrillo
Tesorera

sanandrescohamiata96@gmail.com 52 33 1712 3662

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1.Formal Request and Approval from the Leadership of the San Andrés Cohamiata Authorities for the implementation of this programme

2.Cohamiata formal request for the extension of the Project to their locality

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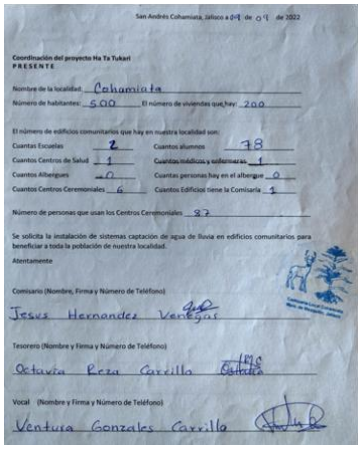


San Andrés Cohamiata, Jalisco a 09 de 09 de 2022

Coordinación del proyecto Ha Ta Tukari
PRESENTE

Nombre de la localidad: Cohamiata
Número de habitantes: 500 El número de viviendas que hay: 200

El número de edificios comunitarios que hay en nuestra localidad son:
Cuantas Escuelas 2 Cuantos alumnos 78
Cuantos Centros de Salud 1 Cuantos médicos y enfermeras 1
Cuantos Albergues 0 Cuantas personas hay en el albergue 0
Cuantos Centros Ceremoniales 6 Cuantos Edificios tiene la Comisaría 1

Número de personas que usan los Centros Ceremoniales 87

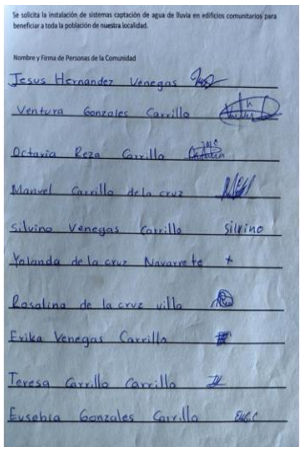
Se solicita la instalación de sistemas captación de agua de lluvia en edificios comunitarios para beneficiar a toda la población de nuestra localidad.

Atentamente

Comisario (Nombre, Firma y Número de Teléfono)
Jesus Hernandez Venegas

Tesorero (Nombre y Firma y Número de Teléfono)
Octavio Reza Carrillo

Vocal (Nombre y Firma y Número de Teléfono)
Ventura Gonzales Carrillo



Se solicita la instalación de sistemas captación de agua de lluvia en edificios comunitarios para beneficiar a toda la población de nuestra localidad.

Nombre y Firma de Personas de la Comunidad

Jesus Hernandez Venegas
Ventura Gonzales Carrillo
Octavio Reza Carrillo
Manuel Carrillo de la cruz
Silvino Venegas Carrillo Silvino
Yolanda de la cruz Navarrete
Rosalina de la cruz villa
Erika Venegas Carrillo
Teresa Carrillo Carrillo
Eusebia Gonzales Carrillo

COMUNIDAD WIXARIKA, TATEIKIE
SAN ANDRÉS COHAMIATA, MEZQUITIC, JALISCO
OFICINA AGRARIA DE BIENES COMUNALES

A 13 de mayo de 2020

A LLUVIA PARA TODOS A. C.
ISLA URBANA
RED HA TA TAKURI

Los que suscriben, las autoridades agrarias de la comunidad agraria Wixárika Tetei Kie, San Andrés Cohamiata, Mezquitic, Jalisco, aunado a un cordial saludo, por este conducto damos nuestro consentimiento y apoyo para que se lleve a cabo el proyecto "Ha Ta Tukari (agua nuestra vida): Captación de agua de lluvia por el derecho humano al agua en la Sierra Wixárika", para atender la problemática del agua y mejorar el acceso a este recurso mediante la cosecha de agua de lluvia, en los 21 comisarías que son parte de nuestra comunidad.

La comunidad está dispuesta a colaborar en el proyecto, brindando ayuda para el equipo que implemente en proyecto, brindando mano de obra y asistencia para el hospedaje y la alimentación en las comisarías.

Sin otro asunto, agradecemos su atención y reiteramos nuestros saludos cordiales.

ATENTAMENTE
"2020, AÑO DE LA ACCIÓN POR EL CLIMA, DE LA ELIMINACIÓN DE LA VIOLENCIA CONTRA LAS MUJERES Y SU IGUALDAD SALARIAL"
MESA DIRECTIVA DEL COMISARIADO DE BIENES COMUNALES, A 13 DE MAYO DE 2020

PRESIDENTE DEL COMISARIADO DE BIENES COMUNALES
COMUNIDAD WIXARIKA TATEIKIE SAN ANDRÉS COHAMIATA, MEZQUITIC, JAL.

C. Patricio Ortiz de la Cruz
Comisariado de Bienes Comunales

C. Lino López De La Cruz
Gobernador tradicional de San Andrés Cohamiata

C. Isidro Reza Carrillo
Delegado Municipal de San Andrés Cohamiata

Con copia archivo

DELEGACIÓN COMUNAL
SAN ANDRÉS COHAMIATA
MUNICIPIO DE MEZQUITIC
JALISCO

3.Formal request letter from the Commissioner for Community Property for the RWH project Ha Ta Tukari to operate in the San Andrés Cohamiata Region (right)

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ANNEX 9
DIDACTIC MATERIAL

Dirty Water/Clean Water. Game to promote the benefits of Rain Wather Harvest.

Intercultural Team Procedure Manuals.

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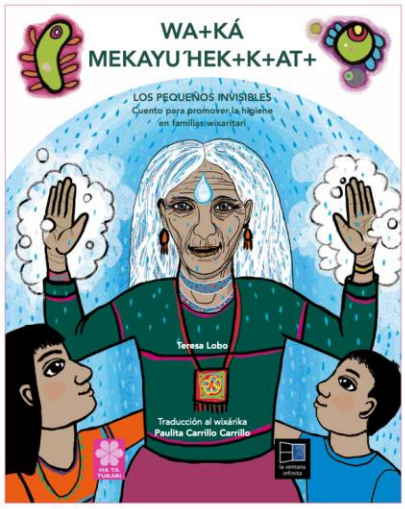

Illustration from the stories The Rain Harvest and The Little Invisibles, to promote RWH and hygiene practices.

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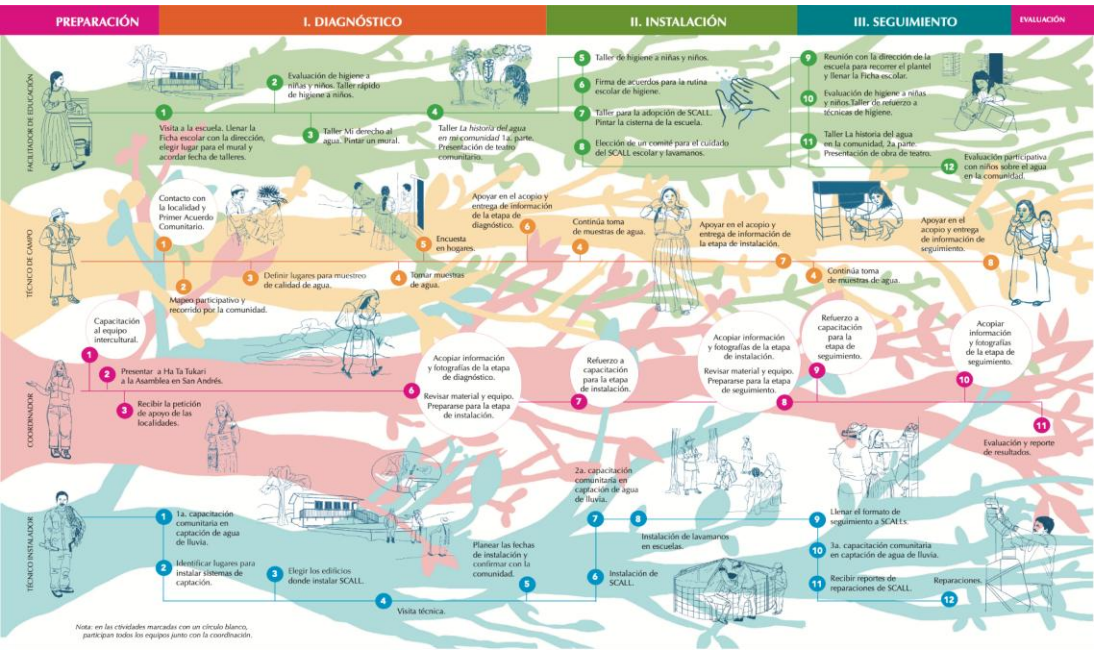
ANNEX 10
HA TA TUKARI'S IMPLEMENTATION ROUTE DIAGRAM



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ANNEX 11
COMMUNITY ASSESSMENT IN SAN ANDRÉS COHAMIATA

HA TA TUKARI / WATER OUR LIFE

Access to Water and Sanitation in the *Wixárika* Highlands, Jalisco
Community Assessment of San Andrés Cohamiata

Isla Urbana / La Ventana Infinita / Fundación Gonzalo Río Arronte (FGRA)

Report prepared by La Ventana Infinita A.C. and Isla Urbana, within the framework of project FGRA: A. 0432. *Ha Ta Tukari* (Water our life): Access to Water and Sanitation in the *Wixárika* Highlands, Jalisco

Program Coordination Ha Ta Tukari
Shiara K. González Padrón

Assessment Integration
Teresa Lobo

Design of Instruments and Analysis
Gabriela Cedillo
Shiara González Padrón
Teresa Lobo
Patricio Orden Islas
Claudia Ríos Ferrer
Carolina Escobar Neira
Enrique Lomnitz
Jesús Sotomayor

Field Implementation
Joel Bautista López
Mariano Bautista Villa
Joel de la Cruz López
Paulino Díaz Montoya
César López López
Felipe López Moreno
Azucena Parra Parra
Alejandra Parra Pineda
Hemenegildo Ramírez Ramírez

Abbreviations and Acronyms Used in the Document

CONAFE – National Council for Educational Development
CONAPO – National Population Council
DIF – National System for Integral Family Development
FGRA – Gonzalo Río Arronte Foundation
HDI – Human Development Index
IMSS – Mexican Social Security Institute
IMTA – Mexican Institute of Water Technology
INPI – National Institute of Indigenous Peoples
INSABI – Institute of Health for Wellbeing
ISSSTE – Institute for Social Security and Services for State Workers
PIS *Wixárika* – *Wixárika* Social Infrastructure Program
UNDP – United Nations Development Programme
SAC – San Andrés Cohamiata
RWHS – Rainwater Harvesting System
SEP – Secretariat of Public Education

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INTRODUCTION

This report presents the results of the community assessment carried out in San Andrés Cohamiata for the project: *Ha Ta Tukari* (Water our life): Access to Water and Sanitation in the *Wixárika* Highlands, Jalisco (2021–2024), developed by Isla Urbana and La Ventana Infinita A.C., in alliance with the Mexican Institute of Water Technology (IMTA) and with the patronage and support of the Gonzalo Río Arronte Foundation (FGRA), Casa Córdoba Philanthropy, and Isla Urbana USA.

This project is part of the *Ha Ta Tukari* (Water our life) Program, which began in 2010 in the community of La Cebolleta and, since 2021, has operated in 21 localities of the Agrarian Nucleus of San Andrés Cohamiata (SAC), municipality of Mezquitic, Jalisco. The objective of this program is to accompany the process of transformation of *Wixárika* Indigenous communities in extreme marginalization, co-creating, in an integrated and synergistic way, conditions for their social, environmental, economic, and cultural sustainability, responding to their emergency needs and taking access to water as the starting point.

The Program is developed by a flexible network of organizations and the *Wixárika* community—their agrarian and traditional authorities, families, schools, clinics, community organizations, and local change agents. This network involves multiple collaborations with civil society organizations, public institutions, experts, donors, and volunteers.

The objective of this assessment is to deepen the understanding of the current situation in which the SAC localities live and to generate baseline data. It was implemented in 17 localities, between September 2022 and February 2024 (see Table 1). The Agrarian Nucleus of SAC consists of 21 localities, each with its own community authorities. However, for operational and informational purposes, the *Ha Ta Tukari* program considers the rancherías Los Lobos and Tierra Blanca de Huaixtita as independent localities, due to their large populations and geographic separation from the localities to which they are annexed.

La Cebolleta and La Laguna were not included in this assessment because the *Ha Ta Tukari* program has had activity there since 2010 and 2014, respectively. These two localities already had baseline and monitoring information, as well as universal coverage of Rainwater Harvesting Systems (RWHS) in community spaces and homes.

This assessment also does not include the localities of Las Guayabas and Tutu Yekwamama, with which the initial agreement for community co-participation could not be established—an essential requirement for program implementation.

Finally, in the localities of San Miguel Huaixtita and El Chalate, the community assessment was carried out, but at the time of compiling this report, the data collection process was still ongoing, and therefore is not included in the present analysis.

The design of this community assessment was carried out taking into account the working experience of the *Ha Ta Tukari* program since 2010. Over the years, various efforts have been made to obtain information from the localities where the *Ha Ta Tukari* program was implemented (González-Padrón, 2019a; *Ha Ta Tukari*, 2019; Lobo, 2019). These investigations informed the design of instruments that help to reduce the cultural, linguistic, and geographic dispersion gaps in which this assessment is situated.

This has been essential, given that the official data from this context (INEGI, CONAPO, etc.) does not fully reflect the reality in which the inhabitants of this region live.

The result of this effort is a broad and deep community assessment of the situation, which includes a wide diversity of informants and information collection techniques. It was implemented by a local team in the *Wixárika* language and provides the baseline information needed to plan, monitor, and evaluate the *Ha Ta Tukari* program in its following stages.

Moreover, we consider it to be an authentically participatory community assessment that integrates awareness processes and promotes the collective construction of the water issue in each locality.

In the follow-up phase of the project, it is planned to return and verify the analyzed information in community meetings, designing workshops and culturally appropriate materials for this purpose. In this way, a community process of reflection

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will be continued, which promotes the impact of the project and its long-term sustainability, in favor of the autonomy of the *Wixárika* Nation.

RELEVANT RESULTS

The population of the Agrarian Nucleus of San Andrés Cohamiata in general does not have access to water in sufficient quantity and quality. 66% of households haul water from natural sources, up to six times a week, to obtain 13 liters of water per person. In the water sources sampled and analyzed by IMTA, the quality of the water was found not acceptable for direct consumption, as it contains evidence of coliform bacteria.

Most localities have centralized systems for water supply, such as cisterns, communal tanks, etc., but only 56% of households have access to these sources, and those who do receive water 2.8 days a week. We found that 47% of the water infrastructure works in the region are not functional, including tanks, hydraulic pipes, embankments, water pans, wind pumps, and a dam. Only 44% of schools receive water from a centralized system, so mothers and fathers must organize themselves to haul water. 7% of schools do not have any access to water at all, and none had functional handwashing stations observed.

Sanitation systems are practically nonexistent. There are two drainage systems in the region that serve four of the 21 localities. One of them is connected to a treatment plant that is broken, so sewage returns to natural water sources without being treated. Only 27% of households have some type of toilet. 72% of households report practicing open defecation. 71% of school toilets are non-functional, and in 13% of schools feces were observed on the ground.

As for hygiene practices, they are very deficient. 54% of households do not use soap for handwashing. Only 10.7% of school-age children believe they should wash their hands after using the bathroom, and none have a good handwashing technique, according to WHO criteria.

100% of the localities observe erosion in the soil and changes in the water runoff coming from the slopes in the last 10 years, mainly the drying up of springs and the increase in sediment in the water coming down the slopes. The inhabitants report an increase in forest fires and a decrease in agricultural production, which they attribute mainly to soil impoverishment, erosion, droughts, and pests.

Table 1. San Andrés Cohamiata's localities

Localities		Estimated number of inhabitants	Community Diagnosis available 2021-2024
1	Ciénega de Guadalupe	546	Yes
2	Cohamiata	1124	Yes
3	El Carrizal	1118	Yes
4	El Chalate	189	Ongoing
5	El Huizache	260	Yes
6	El Tempizque	170	Yes
7	Guamuchilillo	371	Yes
8	La Cebolleta	307	2016 Diagnosis
9	La Laguna	806	2016 Diagnosis
10	Las Latas	201	Yes
11	Las Guayabas	ND	The community co-participation agreement was not established
12	Las Pitayas	1034	Yes
13	Las Tapias	371	Yes

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14	Los Arcos	186	Yes
15	Los Lobos (ranchería de las Tapias)	265	Yes
16	Palma Chica	292	Yes
17	Popotita	981	Yes
18	San Andrés Cohamiata	3180	Yes
19	San José Tesorero	470	Yes
20	San Miguel Huaixtita	ND	Ongoing
22	Tierra Blanca del Chalate	191	Yes
21	Tierra Blanca de Huaixtita (ranchería de San Miguel Huaixtita)	148	Yes
23	Tutu Yekwamama	ND	The community co-participation agreement was not established
	TOTAL	11,756	

Note: The average number of inhabitants per household is 5.1.

METHODOLOGY OF THE DIAGNOSTIC

The community assessment was developed and implemented by the *Ha Ta Tukari* Intercultural Team. The program's coordination established the indicators and designed the activities and instruments for information gathering. The local team, made up of nine Wixaritari men and women, actively participated in the piloting, verification, adjustment, and cultural adaptation of the information gathering processes and instruments. Subsequently, it implemented all assessment activities in the *Wixárika* language during visits to the 17 localities, each of approximately one week in duration.

Information was obtained in three areas: the community, the school, and the household. A variety of informants were consulted in order to represent the universe of the locality, including community authorities, key informants — such as health personnel, teachers, community leaders, etc. — as well as women, men, girls, and boys.

The information gathering activities included the application of participatory methodologies, questionnaires, community walkthroughs, observation of hygiene techniques in elementary and secondary school students, as well as workshops with focus groups, which give voice to women and men of all ages. These workshops were designed using the *La Ventana Infinita* method: working through art with children and communities in social disadvantage (Lobo 2021).

The collected information was recorded using field forms, the digital platform Kobotools, and geolocated photographs stored in electronic clouds. The information was verified through field observation and triangulation of informants.

To contextualize and complement the community assessment information, this report includes information from official sources, from various reports and research products of the *Ha Ta Tukari* program, and from the doctoral thesis of Shiara González Padrón entitled: *Processes of change towards sustainability: Rainwater harvesting in Indigenous communities of the Wixárika Highlands, Jalisco, Mexico*.

To make visible the distance between households and water sources, a map was generated from the coordinates of the water sources used by each locality, georeferenced in the field. Then, all the rooftops within each locality were mapped using Google Satellite, and the linear distance from each roof to the nearest water source was calculated. Finally, the average distance of all rooftops per locality was calculated and multiplied by two to account for the round trip to the water source.

For this report, the quality of the water from natural sources in SAC was also analyzed in the laboratories of the Mexican Institute of Water Technology (IMTA), according to the parameters established in standard NOM-127-SSA1-2021.

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Table 2. Community Assessment Activities

Scope	Informants	Information gathering technique	Information gathering instrument	Activity	Number of instruments applied	Sample
Community	Local authorities	Questionnaire application	*Town Fact Sheet* *List of Water Sources in San Andrés Cohamiata* *Photographic Record*	Interview with authorities	17	89% of the participating localities
	Women, men, girls, and boys	Participatory workshop		Participatory mapping		
	Key informants: authorities, health personnel, community leaders, etc.	Observation for verification and recording of information		Community tour		
	Women and men in focus group	Participatory workshop	*Information collection form on the history of water in my community*	Collective creation of the history of water in my community	18	95% of participating locations. Focus group averaged 12 participants, 58% women, 42% men.
Household	Adults in their homes	Questionnaire application	*Household questionnaire*	Household survey	177	8.5% of households
School	Teachers/school administration of preschools, primary schools and secondary schools.	Questionnaire application	School record Photographic record	Interview with school management	22	51% of basic education schools
		Observation for verification and recording of information		Tour of the school campus		
	Primary and secondary school students	Observation and recording of information	Evaluation of girls and boys Photographic record	Evaluation of hand and face washing techniques for girls and boys	148	9.4% of primary and secondary

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		Questionnaire application		Diagnosis of hygiene and sanitation practices for girls and boys		school students

The sample of 8.5% of households does not consider those from the population of San Miguel Huaixtita and El Chalate. This report contains information from both localities obtained by various instruments, but no household assessment was conducted.

NOTE: The quotations in quotation marks throughout this document are not necessarily the literal words of the informants, but their translation into Spanish or their summarized transcription, carried out in situ by Wixaritari members of the Intercultural Team.

I. SOCIO-DEMOGRAPHIC CONTEXT

LOCATION

The Wixaritari live in a portion of the Sierra Madre Occidental known as the *Wixárika* Highlands, where the states of Jalisco, Nayarit, Zacatecas, and Durango meet. They are distributed across five population centers or agrarian communities:

- San Andrés Cohamiata
- Santa Catarina Cuexcomatitlán
- San Sebastián Teponahuaxtlán
- Tuxpan de Bolaños
- Guadalupe Ocotán

Figure 1. Map of *Wixárika* agrarian cores *(González-Padrón et al., 2024, based on INEGI, 2021a; INEGI, 2021b; Ochoa-García, 2001)*

SOCIO-CULTURAL ASPECTS

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The *Wixárika* Nation is one of the Indigenous nations that has resisted the pressure of modernity in Mexico; it preserves its language and lives according to its traditional spiritual beliefs, known as *El Costumbre*, which descend from its pre-Hispanic ancestors and are adapted over time. The Wixaritari (plural of *Wixárika*) have gained visibility due to the richness of their culture, their art, their spirituality, and their traditional practices.

Their rhythm of life is subject to an agricultural and religious calendar that commits them to the fulfillment of *El Costumbre*, through offerings, pilgrimages, and ceremonies to the different deities that regulate life. *El Costumbre* gives them identity, a clear sense of belonging, and a strong relationship with their territory and its resources.

For centuries and until the end of the 20th century, the Wixaritari lacked any kind of infrastructure. They settled in small villages near water springs and sources, distributed throughout their territory, which was characterized by its dense forests, rich in flora and fauna. The development of infrastructure in the region began with airstrips and the establishment of public schools. In the 1980s and 1990s, passable roads were opened, and later, the electric grid was installed.

These services, along with government assistance programs, have gradually attracted the dispersed population of rancherías toward larger settlements, referred to in this report as localities or municipal sub-units (*comisarías*). However, the installed infrastructure has not always brought the expected benefits to the region. According to local inhabitants, the arrival of roads resulted in massive deforestation, which has drastically reduced the forests in recent decades, and most infrastructure works are precarious, inappropriate, inefficient, and insufficient—reaching an extreme in the case of water and sanitation access infrastructure.

Access to basic services in the region is hindered by several factors:

- The complex terrain relief
- The socio-political and cultural structure
- The lack of attention from federal, state, and municipal authorities

To this are added the security challenges worsened in recent years by the war between the Sinaloa and Jalisco Nueva Generación cartels, who dispute control of the road that connects Jalisco to the north of the country.

LEVEL OF MARGINALIZATION

The municipality of Mezquitic is classified by the National Population Council as having a *Very High Level of Marginalization* (CONAPO, 2020). It is the fourth municipality with the highest level of social lag at the national level. It has:

- The lowest Human Development Index in the state (0.44
- The lowest Health Index in the entire country (0.32) (CONEVAL, 2021b)

89.2% of the population is in poverty and 55.6% in extreme poverty (CONEVAL, 2024). This situation is reflected in the high infant mortality rate in the municipality (76.66 per 1,000 births, compared to a national rate of 16.76) (CONAPO, 2020; INEGI, 2020b).

Table 3. Index and level of marginalization, 2020

Municipality	Index of marginalization	Place it occupies in the State context	Place it occupies in the National context	Level of marginalization
Mezquitic	31.26	1	4	Very high

POPULATION AND DISTRIBUTION

This is a region with abrupt elevation changes — between 600 and 2,200 meters — and a topography that results in very diverse flora and fauna. Most Wixaritari live in localities with fewer than 500 inhabitants and in small hamlets that are very difficult to access. The towns are distributed on plateaus between the large ravines and canyons that dominate the territory. Even if they appear close on a map, traveling between these settlements usually means hours of driving or walking.

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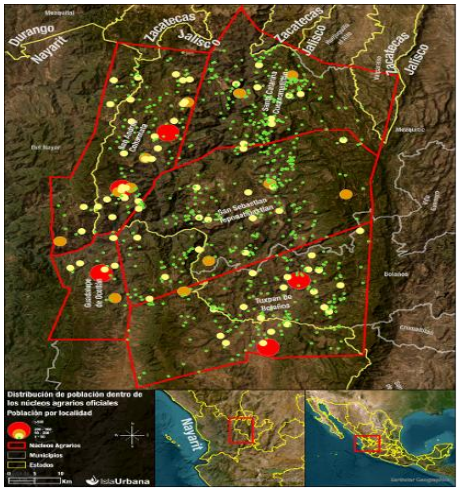

Figure 2. Population distribution within the 5 agrarian cores *(González-Padrón et al., 2024, based on INEGI, 2021a; INEGI, 2021b; Ochoa-García, 2001)*

Due to their condition as a dispersed rural population and their annual migration pattern, it is very difficult to obtain demographic information in the region. We believe that official figures underestimate the population of the municipality of Mezquitic, which, according to the INEGI 2020 census, stands at 22,083. According to our own estimates, the population of the Agrarian Nucleus of San Andrés Cohamiata alone exceeds 12,500 inhabitants (see Table 1). Local authorities are currently conducting a census that will allow us to better understand their population and contrast it with our data.

We estimate that the population of SAC ranges between 13,250 and 13,800 inhabitants, distributed in 21 localities. 18.3% of households are dispersed in 91 rancherías. The average number of households per ranchería is 7, and the mode is 3/1.

Households are made up of an average of 5.1 people, generally the nuclear family and occasionally some members of the extended family, such as parents and siblings.

Table 4. Population distributed in towns and ranches

Locality	Inhabitants	Number of households/Locality	Number of households in the population center	*Ranchería*	Number of homes in the *ranchería*	Percentage of homes in the ranch	Number of *rancherías*
1. Ciénega de Guadalupe	525	103	90		13	12.6	1
				Pájaro Azul	13		
2. Cohamiata	1081	212	212		0	0	0
3. El Carrizal	1076	211	90		121	57.3	17
				Bajío del Carrizal	15		
				Campamento	10		

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				El Bosque (T+ranita)	12		
				El Sapo (Temut+a)	6		
				El Saus	5		
				Hakatita	10		
				La Garza Parada (Kwaxu Ma Yewe)	4		
				Las Peñas	10		
				Los Cántaros	3		
				Los Pinos	1		
				Matamoros (Mata Murita)	10		
				San Antonio	6		
				San Francisco	5		
				San Nicolás	8		
				Santa Clara	3		
				Techalote (Tek+ Kie)	5		
				Tierras Colorada (Mukuxeta)	8		
4. El Chalate	189	37	8		29	78.4	8
				Cordón	5		
				Santa Fé	5		
				Venado	3		
				Metsikarita	1		
				La Garza	2		
				Huizache	5		
				Ki+rita	5		
				Yukuta	3		
5. El Huizache	250	49	49		0	0	0
6. El Tempizque	163	32	20		12	37.5	3
				Chalatita	6		
				Mirador	2		
				Rancho Nuevo	4		
7. Guamuchilillo	357	70	66		4	5.7	1
				Pedregal			
8. La Cebolleta	296	58	42		16	27.6	4
				ND (Sobre el camino a San Miguel)			

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				ND (Casa de Amalia)			
				ND (Casa de Alberto)			
				ND (Casa de Otilio)			
9. La Laguna	775	152	118		34	22.4	9
				San Antonio	4		
				El Mosquito	3		
				Metatita	4		
				Ciruelillo	3		
				San Antonio	4		
				Las Escobas	5		
				Las Pulgas	3		
				El Venado	1		
				Los Encinos	7		
10. Las Guayabas	ND	ND	ND	ND	ND	ND	ND
11. Las Latas	194	38	6		32	84.2	8
				El Pedregal	4		
				Ixtalpa	5		
				La Cueva	3		
				La Peñita	2		
				Las Savilas	10		
				Los Aires	3		
				Los Lirios	4		
				Rancho Escondido	1		
12. Las Pitayas	995	195	189		6	3.1	2
				Maita	5		
				Maxa Mu'u	1		
13. Las Tapias	357	70	70		0	0	
				Rancho Nuevo*	ND		
14. Los Arcos	179	35	20		15	42.9.3	4
				Tupie (Ceremonial Center)	0		
				Tkwixipa	4		
				Epaxita	2		
				Manu Eka (Los Aires)	6		
				Mukatapuya	3		
	255	50	43		7	14	

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15. Los Lobos (*Ranchería* Las Tapias)				Tierra Blanca de Los Lobos	7		
16. Palma Chica	281	55	48		7	12.7	
				Los Espejos	7		
17. Popotita	944	185	86		99	53.5	10
				Chalate	10		
				La Nariz	7		
				Las Flores	9		
				Limón	6		
				Mezquite	12		
				Naranjo	6		
				Roblito	5		
				San Juan de Popotita	36		
				San Lucas	7		
				Zapote	1		
18. San Andrés Cohamiata	3060	600	600		0	0	0
19. San José Tesorero	454	89	44		45	50.6	5
				Aguasarca	9		
				Bajío de San José	12		
				El Tesorero	10		
				Kwatsarit+a	2		
				Los Toros	12		
20. San Miguel Huaixtita	ND	285	38		247	86.7	7
				Nuevo Progreso	13		
				San Luis	30		
				Tecolote	90		
				Bella Vista	40		
				Mirador	35		
				Ciruelillo	6		
				El Roble	33		
21. Tierra Blanca del Chalate	191	36	28		8	22.2	2
				Mukuxiuya	2		
				Uxawerita	6		
22. Tierra Blanca de Huaixtita	148	28	1		27	96.4	
				Huanacaxtle	1		
				Kaitsa Makawe	6		
				Mukutuxa	7		
				Tsinata	1		

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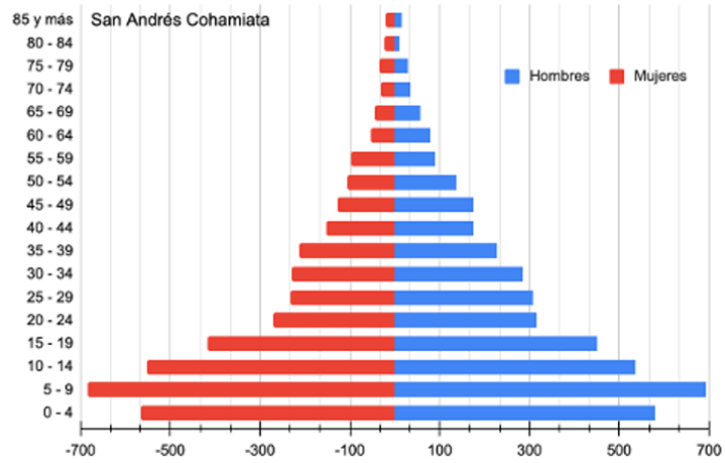
				Tuapurie	4		
				Xak+r+ita	2		
				Xamuakaripa	4		
				Yemuritsie	2		
23. Tutu Yekwamama	ND	ND	ND		ND	ND	ND
TOTAL	11756	2590	1868		475	18.3	

Does not appear in the locality record but is mentioned in the water history. It seems it belonged to Las Tapias, but now its inhabitants consider themselves annexed to Nayarit.



Population Pyramid of the Agrarian Nucleus of San Andrés Cohamiata *(INEGI 2020)*

100% of the population is Indigenous and speaks the *Wixárika* language; 65% speak Spanish as a second language; 67% of household informants reported knowing how to read and write

60% of those over 18 years old did not complete primary education; only 16% studied in high school; only 4% completed a university degree.

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The main reasons for school dropout are:

- Lack of resources
- Distance between schools and place of residence
- Parental refusal, sometimes associated with avoiding acculturation (the process of acquiring traits or elements from another culture.

Collected phrases include:

- “There wasn’t a school nearby, so he couldn’t continue.”
- “He had to go far from his town.”
- “Because of the family to support.”
- “Lack of money.”
- “Because of the decision of his parents, they didn’t let him study.”
- “His parents didn’t let him go to school, only to cultural school.”
  (*Household questionnaire*)

II. LIVELIHOODS

The Wixaritari are mainly farmers and live off the self-consumption of corn, beans, squash, as well as backyard animals, handicraft production, and day labor in the regional agroindustry. Children contribute to the main productive activities and household tasks as they grow, starting from the age of 5 or 6 years.

The activities they carry out in exchange for payment are:

- Teaching
- Masonry
- Public service

Only 7.3% of the population has medical insurance (INSABI, IMSS, or ISSSTE). 49% of the informants are beneficiaries of some social program (Bienestar, Procampo, 70 y más).

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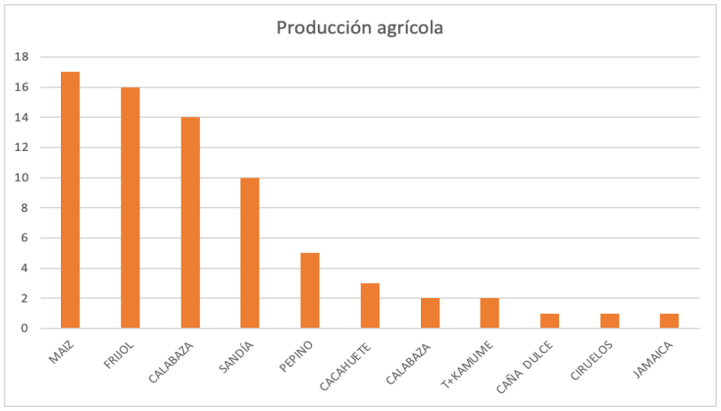

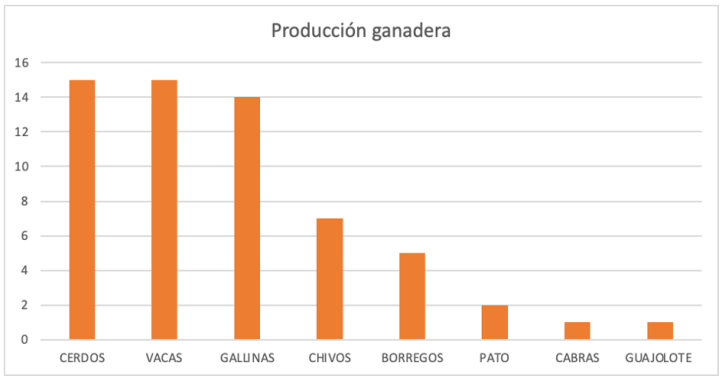

94% of households raise animals in their yard, mainly pigs, cows, and chickens. 32% of households raise animals on a ranch or enclosure outside their home. The localities make use of various forest resources, the most used being: Water, Firewood, Oak, pine, mesquite, and nanchi wood. Also reported was the use of edible and medicinal flora and fauna, mountain soil, clay for adobe bricks, stone for construction.

III. HOUSING AND BASIC SERVICES

SERVICES AND INFRASTRUCTURE IN THE LOCALITIES

Most of the roads are dirt roads that are very difficult to travel, and in some localities, such as Los Arcos and Los Lobos, access is possible only on foot or by donkey. A few years ago, the road from SAC to La Cebolleta was paved, but the pavement layer turned out to be very fragile and, over the course of three years, was practically destroyed. Currently, the SAC community is building a road between La Cebolleta and San Miguel Huaixtita, using local labor and funding from the National Institute of Indigenous Peoples (INPI).

Services in all the localities are scarce and inefficient, and do not reach all the households in the locality, nor the rancherías.

> "Only those who are at the edge of the road have these services."
> (*Locality record*)

- 73.6% of the localities have electric power grid, but the service is intermittent

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- Only 15.7% have sewage systems

In the case of SAC, the sewage system leads to a treatment plant that is not operating, so untreated wastewater returns to the streams, contaminating the natural water sources.

Only two localities, among the most isolated, have a community landline phone.

> "They use it when necessary and urgent."
> (*Locality record*)

In the entire region, cell phone signal is poor and intermittent.

Table 5. Basic services available in the localities

Locality	Electricity	Drainage	Telephone
Ciénega de Guadalupe	1	0	0
Cohamiata	1	0	0
El Carrizal	1	1	0
El Chalate	1	0	0
El Huizache	1	0	0
El Tempizque	0	0	0
Guamuchililllo	1	0	0
Las Latas	0	0	1
Las Pitayas	1	1	0
Las Tapias	1	0	0
Los Arcos	0	0	0
Los Lobos	1	0	1
Palma Chica	1	0	0
Popotita	1	0	0
San Andrés Cohamiata	1	0	0
San José Tesorero	1	0	0
San Miguel Huaixtita	1	1	0
Tierra Blanca de Huaixtita	0	0	0
Tierra Blanca del Chalate	0	0	0
TOTAL	14	3	2

HEALTH SERVICES

10.5% of the localities do not have any kind of medical service. 63% have a Health House, where there is no medical staff nor medications, only an aide whose main function is to administer anti-scorpion serum. Once a month, a medical brigade visits to give vaccinations and offer consultations.

In the most populated localities (26.5%), there are Popular Clinics or health centers where, although limited, there is medical personnel, medications, ambulance service, and even the ability to call an air ambulance (helicopter). These include:

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- Ciénega de Guadalupe (which shares medical services with San Miguel)
- Las Pitayas (which shares with SAC)
- Popotita

We estimate that in the entire Agrarian Nucleus of SAC there is:

- One doctor per 1,469 inhabitants
- 2.3 nurses per doctor

Whereas the recommendation of the World Health Organization (WHO) is between 2 and 3 doctors per 1,000 inhabitants, and 3 nurses per doctor.

Table 6. Health services available in the localities

Locality	Health Center	Ambulance	Number of healthcare providers	Number of nurses
Ciénega de Guadalupe (shares with San Miguel)	0	0	0	0
Cohamiata	1	0	0	0
El Carrizal	1	0	0	0
El Chalate	1	0	2	2
El Huizache	1	0	0	1
El Tempizque	1	0	0	1
Guamuchililllo	1	0	0	1
Las Latas	1	0	0	0
Las Pitayas (shares with San Andrés)	0	0	0	0
Las Tapias	1	0	0	2
Los Arcos	0	0	0	0
Los Lobos	1	0	0	0
Palma Chica	1	0	0	1
Popotita	1	1	3	2
San Andrés Cohamiata	1	1	1	6
San José Tesorero	1	0	0	0
San Miguel Huaixtita	1	1	1	3
Tierra Blanca de Huaixtita	1	0	0	0
Tierra Blanca del Chalate	0	0	0	0
TOTAL	16	3	8	19

SCHOOLS

In the Agrarian Nucleus of SAC there are 52 schools, including:

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- 22 preschools, under CONAFE
- 21 primary schools, under SEP
- 6 telesecundarias (distance secondary schools)

There are high schools in:

- SAC
- San Miguel Huaixtita
- Popotit

94% of the localities have preschool and primary schools. With the exception of Los Arcos, which is one of the smallest and most isolated localities, children have access to the first levels of education in their own locality. However, to continue their studies, most minors must move to other localities, since:

- Only 35% have secondary school
- Only 12% have high school

There is one teacher for every 18 students. 54% of the schools have a school cafeteria, where breakfast is served to children an average of four times per week.

Table 7. School population

Locality	Number of schools					Number of students				
	Pre-school	Elementary	Secondary	High School	Total	Pre-school	Elementary	Secondary	High School	Total
Ciénega de Guadalupe	1	1	0	0	2	32	83	0	0	115
Cohamiata	1	1	0	0	2	15	63	0	0	78
El Carrizal	1	1	1	0	3	9	32	40	0	81
El Chalate	1	1	1	0	3	20	126	38	0	184
El Huizache	1	1	0	0	2	4	15	0	0	19
El Tempizque	1	1	0	0	2	4	13	0	0	17
Guamuchililllo	1	1	1	0	3	16	36	8	0	60
Las Latas	1	1	0	0	2	10	24	0	0	34
Las Pitayas	1	1	1	0	3	ND	ND	197	0	197
Las Tapias	1	1	0	0	2	20	60	0	0	80
Los Arcos	0	0	0	0	0	0	0	0	0	0
Los Lobos	1	1	1	0	3	10	13	35	0	58
Palma Chica	1	1	0	0	2	12	26	0	0	38
Popotita	5	4	1	1	11	46	36	64	16	162
San Andrés Cohamiata	1	1	1	1	4	67	350	360	70	847
San José Tesorero	1	1	0	0	2	18	67	0	0	85
San Miguel Huaixtita	6	5	1	1	13	26	263	125	80	494
Tierra Blanca de Huaixtita	1	1	0	0	2	6	8	0	0	14

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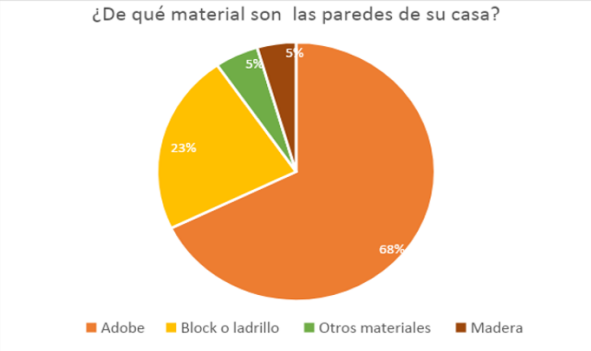
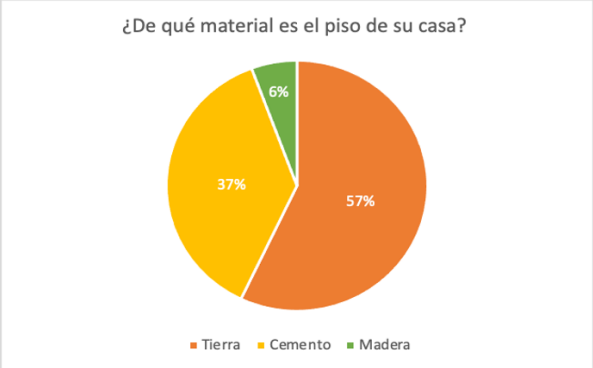
Tierra Blanca del Chalate	1	1	0	0	2	ND	ND	0	0	ND
TOTAL	29	27	8	3	67	320	1247	876	166	2609

HOUSING

A single family plot may include several households, each with its own dwelling. These households may share a kitchen, pens, or carretones — very precarious constructions made of reed and straw, generally used to store grain and agricultural tools.

Most houses are made of adobe, have a dirt floor, and a galvanized sheet metal roof. Households use one or two rooms for sleeping and an open or closed kitchen. Many daily activities are carried out in the family yard. 5% of households live in carretones.





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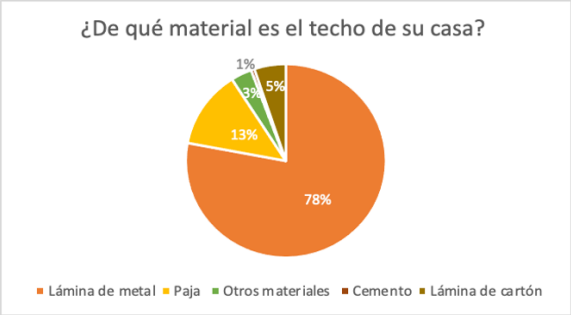

CONSUMER GOODS AND SERVICES

Consumer goods and services are very scarce: 16% of households have a television, 11% have a refrigerator, 6% have a telephone, 5% have a computer, 5% own a car or truck, only 1% have internet service. 60% of households have none of these services.

IV. WATER AND SANITATION

ACCESS TO WATER

Although the severity of water access varies in each locality, in general, the population of the Agrarian Nucleus of SAC does not have access to water in sufficient quantity and quality. The amount of water used per person ranges between six and eight liters per day (González-Padrón 2019b), which is insufficient to live a dignified life according to the World Health Organization (WHO), which establishes a minimum of 20 liters per day per person.

The population depends on water found in springs and what are called "ojos de agua," open pools that rely on the recharge of rainfall to springs (González-Padrón 2019a), distributed across the mountainous landscape, temporary streams, and the Santa Clara River, which passes through the locality of El Carrizal. Some of these *ojos de agua* are designated for livestock because they are muddy or have poor taste. There are also some thermal water sources with salts and high temperature in the rancherías of Tesorero and San Miguel Huaixtita.

> See Table 8 for the number and type of water sources by locality.

Water is a central part of *Wixárika* custom. Throughout the territory, there are *ojos de agua* that the community considers sacred. The population and current agrarian authorities consider them extremely important and are devoting great effort to registering their geolocation.

> "The elders say that water is a medicine so that you don't get sick as much. At 5 a.m., they bathed to feel better."
>
> "They offered gourds, arrows, *Ojos de Dios* at the water springs to keep them alive."
>
> "Before there was enough water, wine was made, and they traditionally cultivated water springs through ceremonies."

64% of households obtain their water mainly from natural sources, through hauling or via hoses that carry water by gravity from a spring.

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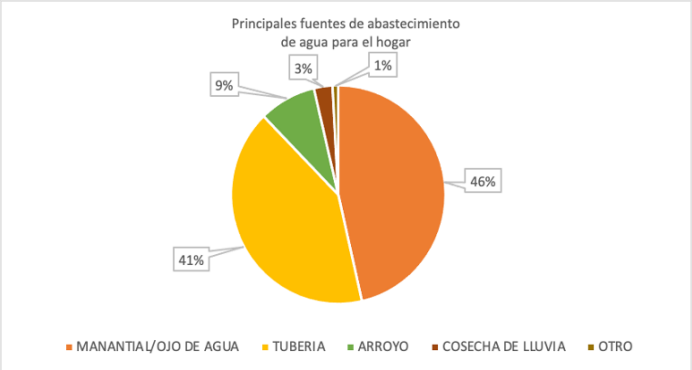

Table 8. Water sources in the localities of San Andrés Cohamiata

			NUMBER OF NATURAL SOURCES FROM WHICH WATER IS OBTAINED			NUMBER OF CENTRALIZED INFRASTRUCTURE WORKS					NÚMERO OF RWHS	
LOCALITY	NUMBER OF HOUSEHOLDS	AVERAGE DISTANCE (m) TO WATER SOURCES	WATERHOLE	SPRING	RIVER	DRINKING WATER TANK	DRINKING WTER CISTERN	DIRECT DRINKING WATER	WATERBOARD	DAM	COMMUNAL	HOUSEHOLDS
Ciénega De Guadalupe	103	706	0	2	0	1	0	0	0	0	0	0
Cohamiata	212	418	2	1	0	1	0	0	0	0	0	0
El Carrizal	132	534	2	0	1	1	0	0	0	1	0	1
El Chalate	ND	1316	0	1	0	1	1	0	0	0	0	0
El Huizache	49	ND	2	0	0	0	1	0	0	0	0	0

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El Tempizque	32	536	3	0	0	0	1	0	0	0	0	0
Guamuchilillo	70	686	7	0	0	1	0	0	0	0	0	0
La Cebolleta	48	4616	1	0	0	0	0	0	0	0	4	48
La Laguna	111	398	5	1	0	2*	0	0	0	0	4	91
Las Latas	36	194	0	5	0	1	0	0	0	0	0	0
Las Guayabas	ND	1138	2	1	0	1*	0	0	0	0	0	0
Las Pitayas	125	856	11	0	0	0	0	0	0	0	0	ND
Las Tapias	300	1118	0	0	0	2	0	0	1	0	0	0
Los Arcos	55	4168	3	0	0	0	0	0	0	0	0	0
Los Lobos	50	ND	0	1	ND	ND	ND	ND	ND	ND	0	0
Palma Chica	55	644	0	0	0	1	0	0	0	0	0	0
Popotita	516	780	2	2	0	1	0	0	1	0	0	0
San Andres Cohamiata	170	856	5	1	0	4	0	0	0	0	0	ND
San José Tesorero	55	650	7	0	0	1	0	0	0	0	0	2
San Miguel Huaixtita	ND	948	1	0	0	6	0	0	0	0	0	0
Tierra Blanca del Chalate	36	396	3	0	0	1	0	1	0	0	0	0
Tierra Blanca	28	ND	1	0	ND	ND	ND	ND	ND	ND	0	0

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de Huaixtita												
Tutu Yekuwa mama	ND	1084	0	0	0	0	1	0	0	0	0	0
TOTAL	2,228	ND	57	15	1	25	3	1	2	1	8	142

HAULING

66.3% of households haul water from natural sources an average of six times a week, to obtain 13 liters of water per person per day by this method.
Hauling is a particularly difficult activity because in many localities, water must be fetched from ravines, along very steep and dangerous paths.

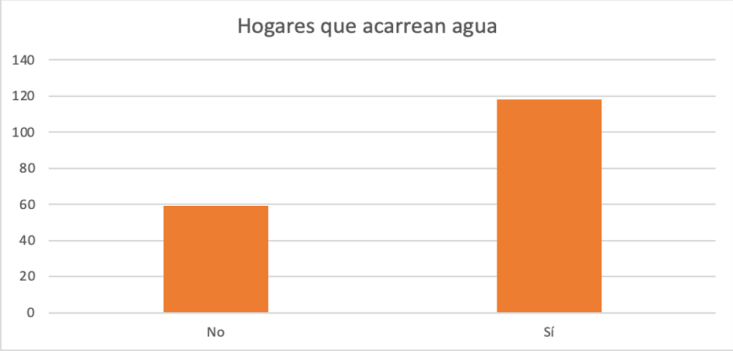

Table 9: Water hauling per household

	Times a week that households carry	Litres carried each time	Water obtained by transport (litres per day per person)
Dry season	4.3	41.5	6.9
Rain season	7.8	69.4	19.3
Annual average	6	55.4	13.1

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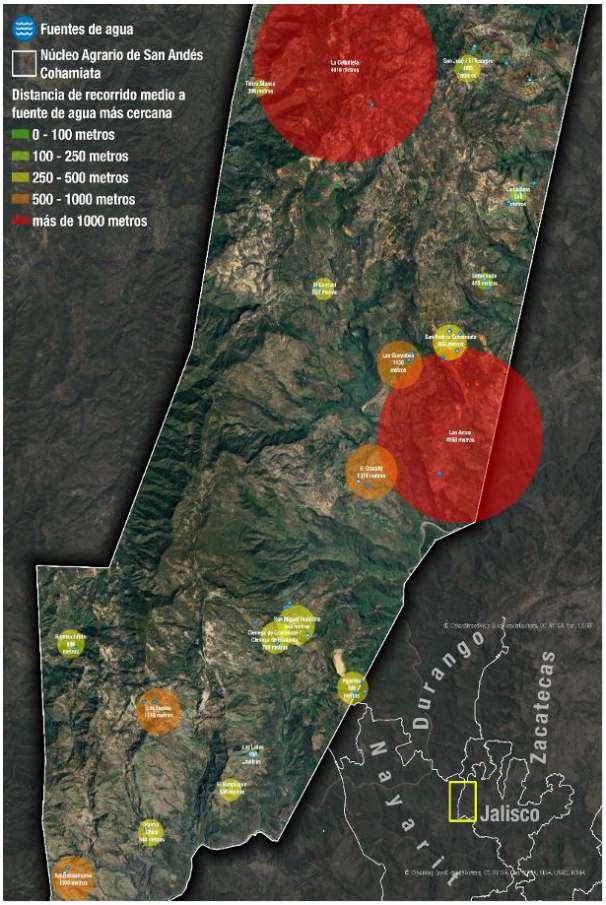

Figure 3: Average distance traveled to the nearest water source. This map shows the average round-trip journey for all homes to the nearest water supply point in each locality. The radius of each circle represents the distance.

68% of the people who haul water are women, and 23% are children under 16 years old. They travel an average distance of 1,104 meters (median: 770 m, mode: 856 m) to bring water home from the nearest source. This work takes them, on average, two hours per day (González-Padrón 2019b).

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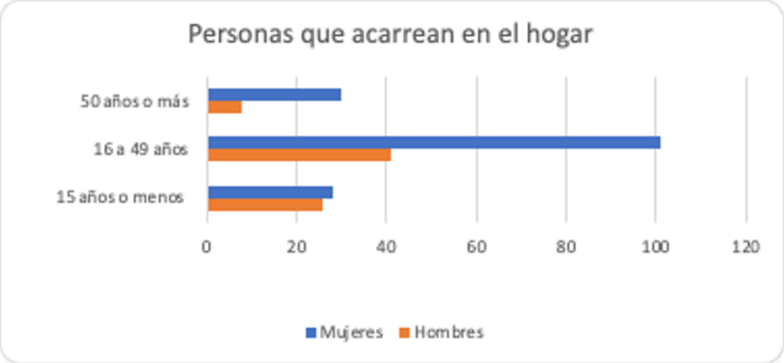
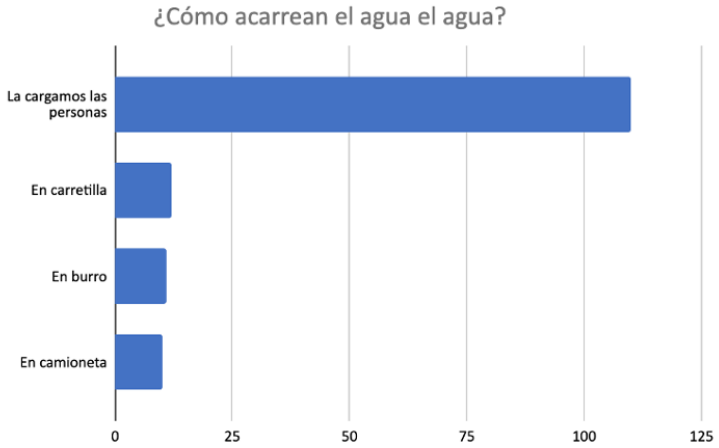


Most of the water hauling (77%) is done carried on the back, in 20-liter jugs, although children haul in 10 or 5-liter containers. Some households can use a wheelbarrow or donkey. Only 7% of hauling is done in large volumes using pickup trucks. 4% of households pay people with vehicles for this water hauling service.



WATER INFRASTRUCTURE

The existing water infrastructure is generally insufficient and inappropriate for local characteristics. The National Water Commission (CONAGUA) conducted studies to determine which water sources were viable for exploitation, and the Municipal Government of Mezquitic (through the *Wixárika* Social Infrastructure Program – PIS *Wixárika*) installed centralized systems for water supply in 76% of the localities, which the population refers to as “potable water,” although this does not mean that the water they distribute is actually treated.

In general, this centralized infrastructure consists of a concrete tank, fed by a spring, and a small network of pipes or hoses that distributes the water by gravity. The supply through this method is insufficient. Some tanks take up to four days to fill, fed by sources with low recharge.

Institutions such as DIF Jalisco and INPI have supplied localities with hoses to complement these systems, since in most cases, the pipes do not reach all the way to the localities, but these components are very vulnerable and tend to have

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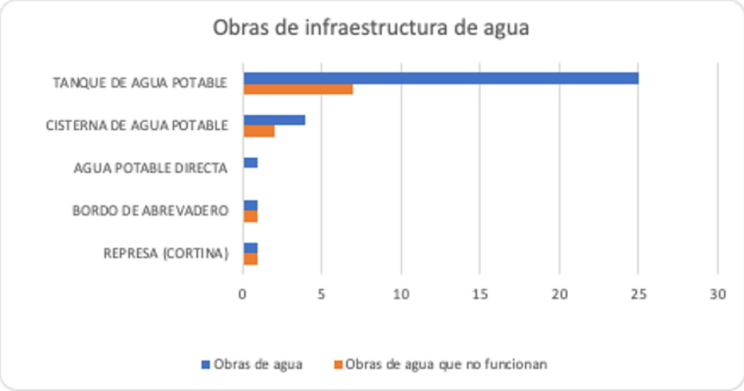
leaks. For example, there is a system of springs near Los Lobos that used to supply water to a group of localities: Las Latas, El Tempizque, Popotita, and Palma Chica. In recent years, they have lost this water source because the hoses burned in forest fires.

Only 56% of SAC households have access to this centralized infrastructure, which does not supply families who live dispersed in rancherías or households located far from the center of the different localities. The water from the pipes generally arrives with very low pressure, and the distribution valves are opened an average of 2.8 days per week.

In some localities, such as San Andrés Cohamiata, which has the largest storage tanks, the system is only opened during the dry season, to ration the water. Some local offices charge families a small annual fee for the service.

In addition to this infrastructure for water access, there are other examples of nonfunctional or inadequate works. Near El Carrizal, a dam was built that does not distribute water because the gate valve of the curtain broke. There are livestock ponds that do not accumulate water because they are poorly located, tanks and containers fractured due to poor construction, wind pumps that never worked, and water pans with torn geomembranes. 47% of the water infrastructure works are not functional at all.



We can infer that when the works were carried out, the responsible parties did not ensure that the localities had the resources or capabilities to provide ongoing maintenance. They have not contributed to the water supply in the localities. Proof of this is that 55% of households continue to haul water from natural sources an average of 5.3 times per week.

The federal program Sin Hambre installed rainwater harvesting systems in a large percentage of households in San Andrés Cohamiata and Las Pitayas, but these do not have a conveyance system, nor first-rain separation nor filters. As a result, the population reports that the water becomes slimy. The quality of the stored water is so poor that they cannot use it for drinking, cooking, or washing dishes, so the households that have one of these systems still haul water an average of 7.5 times per week.

This situation contrasts with the decrease in hauling recorded in households where Ha Ta Tukari installed rainwater harvesting systems (RWHS) in La Cebolleta and La Laguna, where the frequency of hauling was reduced by 88%, down to an average of 1.1 times per week (*Ha Ta Tukari. Results Report 2015–2019*). Families still go to water springs during the rainy season (20%) and more than 40% during the dry season, mainly to wash clothes and bathe. These results are attributed to a very careful process of adapting the ecotechnology to the *Wixárika* sociocultural context, close accompaniment of the localities for its adoption, and the building of local capacities.

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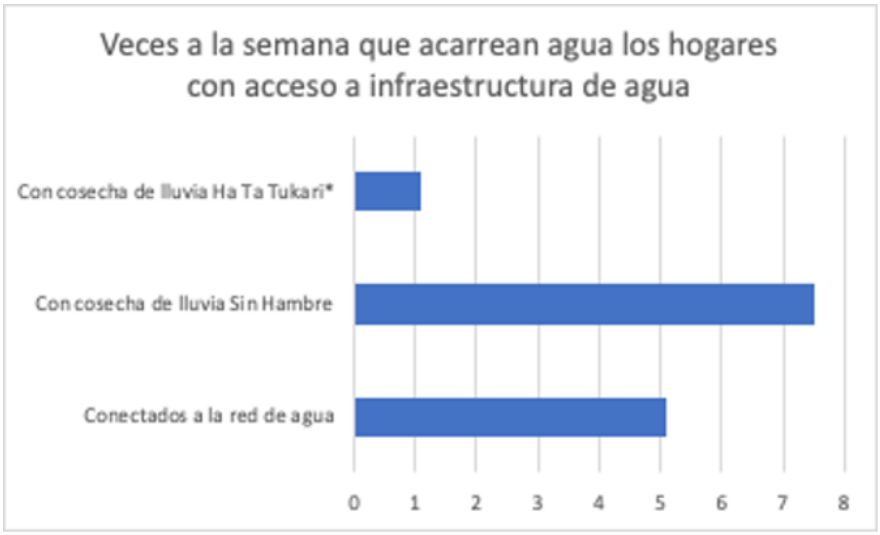
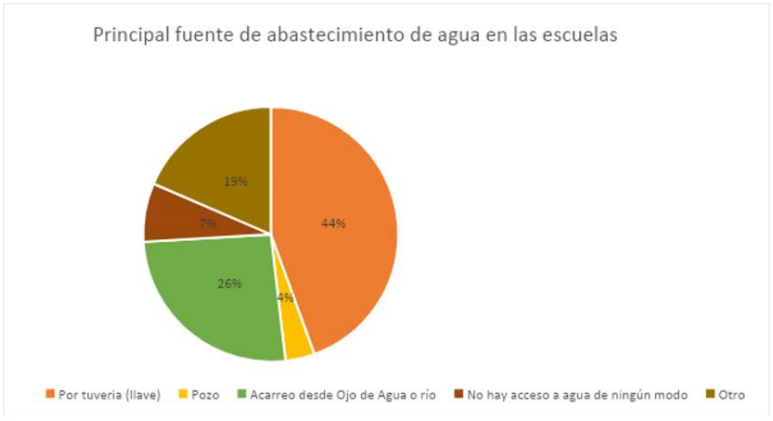


Ha Ta Tukari. Results Report 2015–2019

The population feels that the authorities have not addressed their need for access to water:

> "They have made project requests to obtain water during every three-year term of the local office, since Carrillo was there, and they have been canceled."
> "They don't respond to the people's call in any way."
> "Many requests were made about water that never succeeded."
> (*Water history in the locality*)

WATER INFRASTRUCTURE IN SCHOOLS



Only 44% of the schools in the Agrarian Nucleus of SAC receive water from a centralized infrastructure system. In 56% of the schools, mothers and fathers organize to haul water. In 7% of the schools, there is no access to water at all. This

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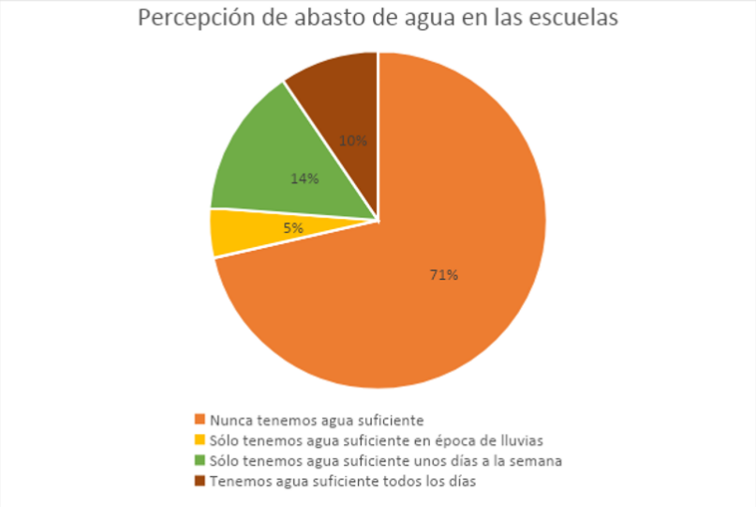
means that children do not have access to water during the school day.



The conditions of the **school cisterns and tanks** are **very poor**. Most are uncovered, or with deteriorated covers, or built under trees. As a result, it is **very common** to find **dead animals**, **dust**, or **leaves** inside.

There are a few **RWHSs** (rainwater harvesting systems) in the schools of **SAC** and **Las Pitayas**, but these systems are not functional. In both cases, the population considers that the deterioration is due to a **lack of care and maintenance**.

> "In Las Pitayas, a RWHS system was installed in the elementary school, but the children were not taught to take care of it, and now it doesn't work."

> "Here in SAC, a rainwater harvesting system was built, but it's no longer functional."

WATER QUALITY

Natural water sources are usually of poor quality due to being in open spaces with free access to animals (González-Padrón, 2019b).

The Mexican Institute of Water Technology took samples from natural water sources used by the community for consumption. The samples were first analyzed in a mobile laboratory to analyze bacteriological parameters, and later sent to the IMTA Water Quality laboratory, in Morelos, to analyze the presence of heavy metals. To determine whether the water from supply sources is suitable for use and human consumption, the microbiological parameters Total coliforms and E. coli were determined. The results obtained were evaluated against the Permissible Limit established in the official Mexican standard NOM-127-SSA1-2021, which indicates less than 1.1 MPN/100 mL or non-detectable, for the E. Coli parameter.

The results clearly indicate that, in bacteriological terms, the quality of the sampled water sources is not acceptable. In terms of the presence of metals, no point posed a health risk for the inhabitants of the area. In all cases, the values were below the maximum permissible limits.

Table 10. Results of analysis of Total Coliforms and E. coli in natural water source

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Sample number	Site	Total Coliforms MPN/100 mL	Escherichia coli MNP/100 mL	QUALITY
1	San Andrés Cohamiata	22	10	NON ACCEPTABLE
4	Haka Maka U	32	<1	ACCEPTABLE
9	Taki + Kata	27	2	NON ACCEPTABLE
10	¨Haka Maka U" San josé	38	6	NON ACCEPTABLE
13	El Papalote	40	<1	ACCEPTABLE
16	Cabaña-Laboratorio	4	<1	ACCEPTABLE
17	Los Arcos	83	43	NON ACCEPTABLE
23	El Huizache	32	<1	ACCEPTABLE
25	Palma Chica	<1	<1	ACCEPTABLE
28	Las Tapias	154	<1	ACCEPTABLE
34	Guamuchilillo	<1	<1	ACCEPTABLE
40	Cebolleta	1,986	2	NON ACCEPTABLE
43	Cerro del niño	168	<1	ACCEPTABLE
46	La Laguna	1414	2	NON ACCEPTABLE

WATER USE AND MANAGEMENT

Households store water in drums, buckets, and water tanks. Habitually, drinking water is placed in a bucket in the kitchen and taken from there with a glass. They drink water both from natural sources and from centralized systems.

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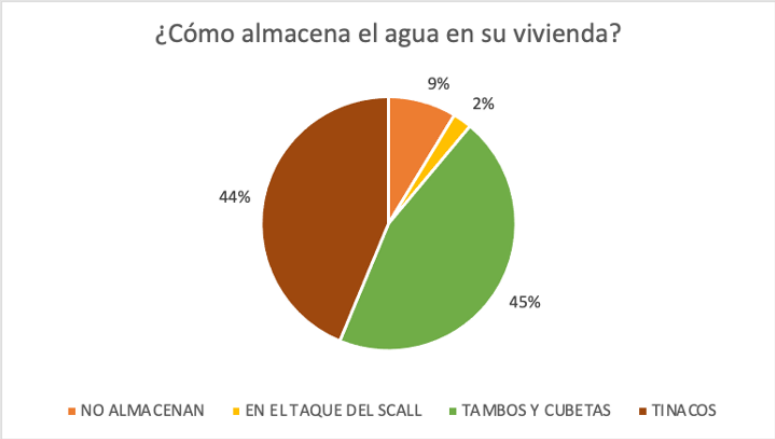
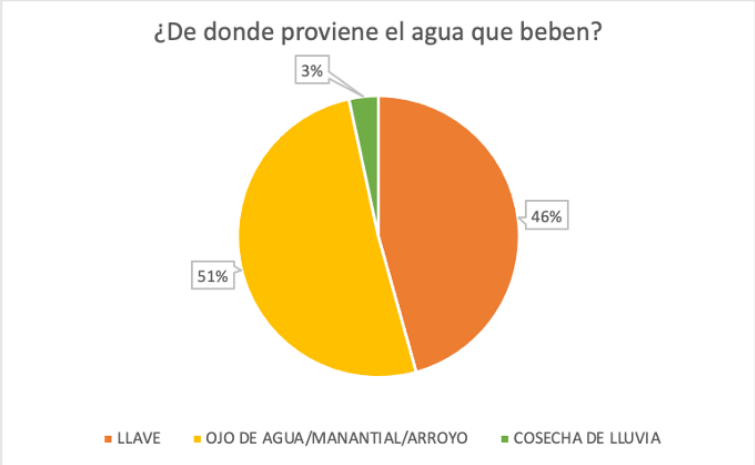


Note: this graph does not include the RWHSs installed by Ha Ta Tukari in La Cebolleta and La Laguna.



Note: this graph does not include the RWHSs installed by Ha Ta Tukari in La Cebolleta and La Laguna.

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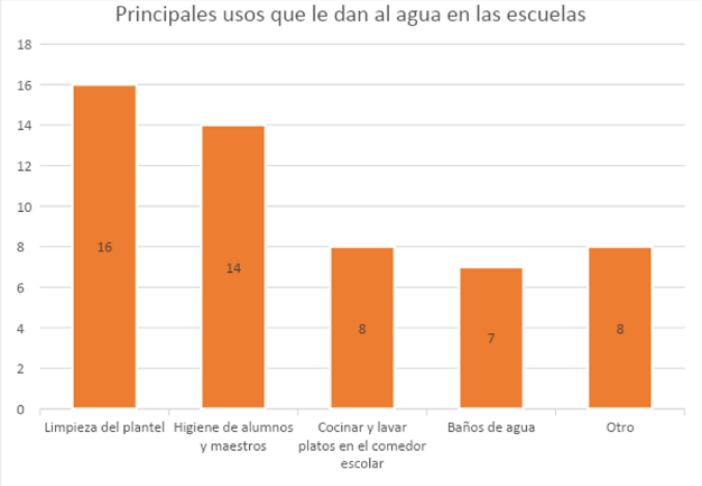
Note. The cases that answered "other", use a cloth strainer to filter.



Note. For the “other” option we have the following answers: drinking and irrigation of plants and vegetables.

In schools, water is mainly used for cleaning the premises and the hygiene of girls and boys. To a lesser extent, in the school cafeteria, bathroom flushing. In some schools it is also used for drinking and for irrigating plants and vegetables.

There is a general perception in the localities that in recent years water from natural sources has diminished. For more details, see section VI. Climate change and other risks, of this document.

SANITATION

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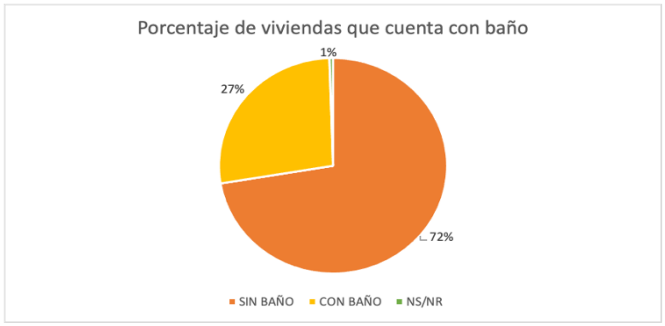
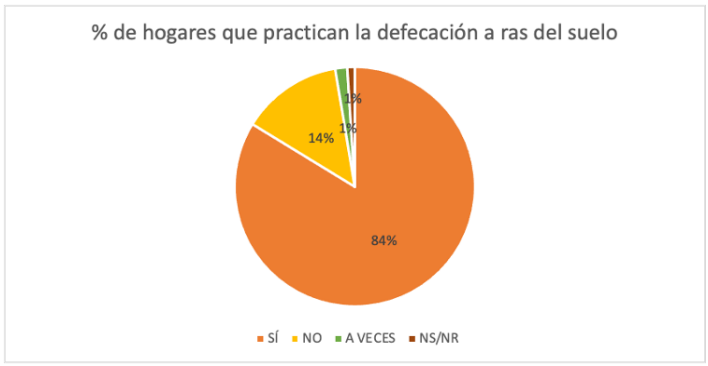
There are only two drainage systems in the agrarian nucleus, one that covers the localities of San Andrés Cohamiata and Las Pitayas and another that covers San Miguel Huaixtita and its hamlet Tierra Blanca de Huaixtita. In San Andrés Cohamiata, the drainage leads to a treatment plant that does not function correctly. The sewage overflows untreated and ends up returning to the natural water sources where the locality gets its water.

Only 27% of households have some type of bathroom. 16% have a latrine with a septic tank and only 6% use dry toilets.

75% of the bathrooms have a toilet (water toilet), most connected to a small biodigester or a septic tank. 20% of the bathrooms are unused, generally "due to lack of water". 72% of households declared practicing open defecation daily.





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77% of schools have some type of bathroom, but 71% are not functional. Most bathrooms in schools are water toilets (70%) that are not used due to lack of water. In half of the cases, these are connected to a drainage system that goes to a ravine or stream. 20% of schools have latrines. Only 0% have a dry toilet. In 13% of schools, feces were observed on the ground within the campus.

V. HYGIENE PRACTICES

In more than 96% of households, handwashing is practiced before eating or cooking, and in 85% after going to the bathroom. However, 54% of households do not use soap for this practice. People bathe on average 3 times a week.

HYGIENE PRACTICES IN SCHOOLS

In 63% of schools, children wash their hands in buckets on the ground, and in 22% they do not wash their hands at all. There is no school with functional sinks. This situation greatly hinders the adoption of hygiene practices in schools.

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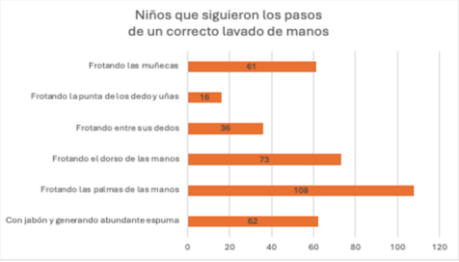
Note. For the “other” option, we had the following answers: three times a day, upon waking, upon arriving at school, and during recess.

38% of children associate handwashing with times of day (upon waking, three times a day, upon arriving at school), instead of relating it to activities in which they may acquire and consume pathogens. 66.4% of the children evaluated know that it is necessary to wash their hands before eating. Only 10.7% consider that they should wash them after going to the bathroom.



A handwashing technique evaluation was conducted in schools, widely promoted by the WHO during the COVID-19 pandemic. Children scored an average of 3 points on a scale of 0 to 7.

Most of the teachers interviewed perceive their students’ hygiene practices as deficient, mainly due to lack of water:

"Very deficient. Hygiene and sanitation for girls and boys are greatly needed due to the lack of water."

"Deficient, talks are needed to carry out personal hygiene."

"Very low, a lot of attention is needed from home, they lack a lot of water for hygiene."

"Sometimes they do come with washed clothes, face, hands. This is due to water issues. They don’t have water, sometimes they even miss school."

"It is difficult for them because the family lacks materials like soap and one of the greatest needs is water." (School form)

VI. CLIMATE CHANGE AND OTHER RISKS

FOREST PROBLEMS

The authorities in the community councils state that the main problems that have affected the forest in the last decade are forest fires (94%), followed by pests, deforestation, overgrazing, and landslides. Most authorities attribute these problems to non-compliance with community regulations (70%) and lack of community organization:

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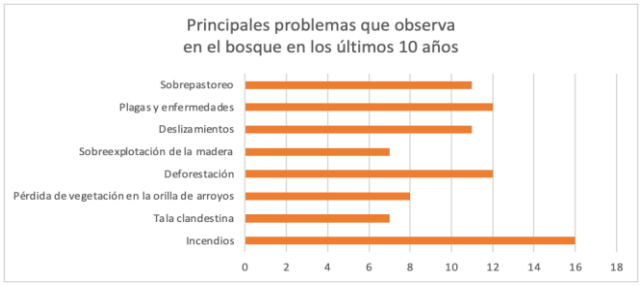
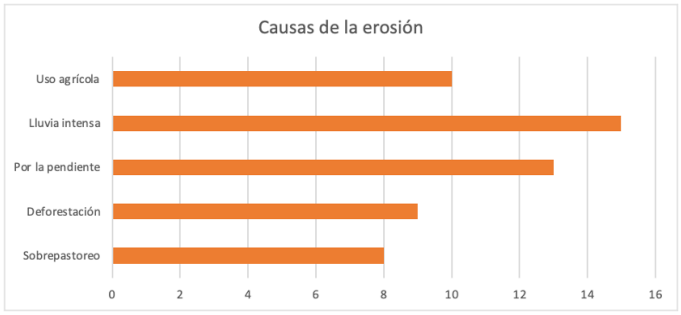
"The population is growing, there is no organization anymore."
(Locality form)

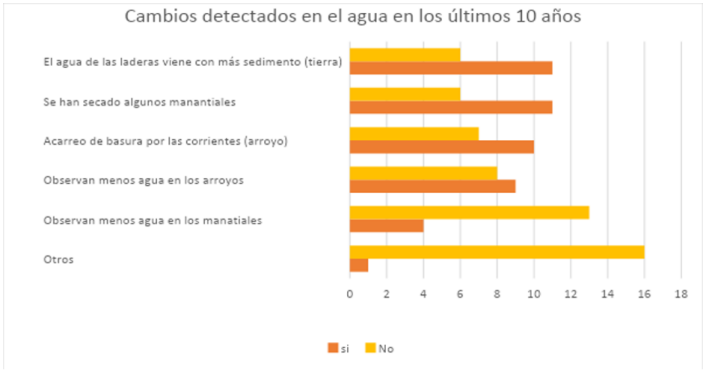


100% of the localities have observed erosion (areas without vegetation and soil loss on slopes and the forest), which they mainly attribute to heavy rains (88%), slope (76%), and agricultural use of the land.



WATER PROBLEMS

100% of the localities detect changes in the water coming from the slopes in the last 10 years, the most common being the drying of springs and increased sediment in the water descending from the slopes.



Note: the case that answered “other”, refers that “You can see the rising water in the streams during the

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rainy season."

The rainy season is from July to September. The residents report that it used to start in May, but it has become shorter with climate change, so many water springs reduce their volume significantly or dry up from May onward. In recent decades, the recharge of natural sources has decreased and the population has increased, so water is no longer sufficient for everyone:

> "There was no drought in those times and the population was small. Everything began to change about 10 years ago."
>
> "It's frustrating to wait for a turn to fetch water and take it home. A frustration for not waking up early and not getting enough."
>
> "Some water springs have already dried up."
>
> "Some people left this locality due to lack and need for water."
>
> "There were streams with a lot of water, it was enough for everyone and even surplus."
>
> "The number of inhabitants increases and due to use, rivers have dried up."
>
> "There wasn't much livestock before, it wasn't consumed as much."
>
> "There was a lot of water in the springs. The community wasn't very populated. There was a lot of vegetation, especially in the springs. It was full of reeds."
>
> "The town originated in San Juan de Popotita, little by little they spread to other places, following water routes. Water was enough, but it ran out."
> (Water history in the locality)

35% of localities report having conflicts over water between families, between localities, and even with communities in Nayarit:

> "They have problems over water, some disconnect the hoses, keep them and direct them to those they like."
>
> "Yes, there are conflicts due to the desperation of waiting turns. There are many conflicts between families over water."
>
> "There are conflicts over water issues, closing off water paths."

AGRICULTURAL PRODUCTION

In 94% of the localities, they have noticed a decrease in agricultural production, which they mainly attribute to soil degradation, erosion, droughts, and pests. They also suffer from livestock theft.

> "Pests, the climate is cold and vegetation does not produce much organic matter so the crops do not grow well."
>
> "Animal diseases and drought, due to non-rotational farming or no soil rest."
>
> "Lack of water, use of herbicides in the plots."
>
> "Due to pests, disease, fire and droughts."
> (Locality form)

88% do not practice any method to prevent soil loss in the coamil (cleared field); only a minority place soil sacks and stone barriers. They report little use of fertilizers, only 5% apply livestock manure to the coamil and 29.4% use chemical

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fertilizers. However, 70.5% use chemical pesticides. The problems identified for agricultural production include loss of fertile soil, lack of water, pests, and lack of time to devote to the work.

"Livestock, due to illness and in production, due to pests in the crops."

"Loss of fertile soil due to herbicide use."

"Loss of weeds and soil. Another type of grass grows that is not edible for livestock."

"Lack of time to work."

"Due to lack of water the vegetables are not growing and there's a lack of seeds to sow."

"There is no practice for soil conservation."

"It depends a lot on the rain, sometimes when it rains well we get a good harvest."
(Locality form)

VII. ORGANIZATION AND PARTICIPATION

Although there is an ethnic identity among the five Wixaritari communities, they do not share any type of government and are politically independent. There are even long-standing territorial conflicts between communities.

The Communal Assembly of Tateikie (San Andrés Cohamiata) is the highest authority of the Agrarian Nucleus and is made up of the 21 commissariats. Within community organization, there are various traditional and civil government roles. The body responsible for agrarian issues is the Commissariat of Communal Property, composed of a President, Secretary, Treasurer, and their deputies. There is a Community Drinking Water Committee, and each commissariat has a Local Drinking Water Committee. These are responsible for the management and basic maintenance of centralized water systems (Commissariat of Communal Property Tateikie, 2020).

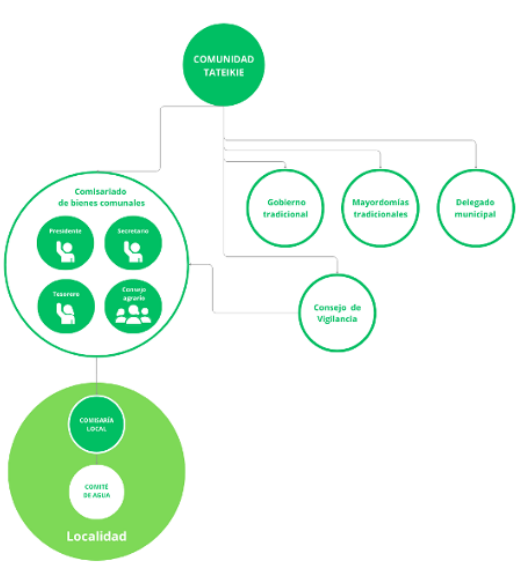

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Figure 4. Community organization

There is also a newly created Communal Company for Service Production, which integrates forest use, agave use, and the production of communal services (transport, ecotourism, and small industry). Among its functions is forest protection through the fight against fires and pests.

The *Wixárika* community of Tateikie, San Andrés Cohamiata, developed the Biocultural Community Protocol, 2020. This is a management tool to regulate the mechanisms for access requests, negotiation, and fair and equitable sharing of benefits derived from biological, genetic resources and associated traditional knowledge present in their territory. The Ha Ta Tukari program was presented to the Communal Assembly for its approval, aligning itself with this protocol.

LESSONS LEARNED

Generating and collecting the information presented in this report required a complex capacity development process of the intercultural team. Although it was a great challenge, sufficient baseline information was obtained, both quantitative and qualitative, to verify future changes in water access as well as in hygiene and sanitation practices of the community. In the future, we will strengthen the training of the intercultural team for information recording and collection techniques.

The objective of understanding the water situation in San Andrés in depth was achieved. However, there are some areas of opportunity that need to be addressed to consolidate the best possible information. Although in the sample design it was proposed to interview about 10% of households per locality, there were localities where the desired sample was not reached and others where it was exceeded. It is proposed to continue the process and strengthen the sample in those localities where it was very low.

On the other hand, it was not possible to obtain sufficient and consistent information on the topic of health, a topic that is always sensitive for the beneficiaries. To address these information gaps, we will work on designing more appropriate participatory instruments to understand how the *Wixárika* community perceives its health situation. Alliances will also be sought with regional health institutions to request precise data at the local level, considering that this information is fundamental to verify the impacts on community health of better access to water.

The community assessment process resulted in learnings that will allow the development of more precise and simplified instruments to be applied at the Ha Ta Tukari program scale to new agrarian communities.

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Annex 12
APPLICABLE AF CORE INDICATORS TABLES

Adaptation Fund Core Impact Indicator "Number of Beneficiaries"				
Date of Report				
Project Title	Ha Ta Tukari (Water for Life): Towards Universal Drinking Water Coverage for 21 Communities of the *Wixárika* Nation.			
Country	Mexico			
Implementing Agency	IMTA			
Project Duration	4 years			
	Baseline	Target at project approval	Adjusted target first year of implementation	Actual at completion
Direct beneficiaries supported by the project	0	5,100		
Female direct beneficiaries	0	2,658		
Youth direct beneficiaries	0	920		
Indirect beneficiaries supported by the project	0	8,109		
Female indirect beneficiaries	0	4,225		
Youth indirect beneficiaries	0	1,463		

Adaptation Fund Core Impact Indicator "Assets Produced, Developed, Improved, or Strengthened"				
Date of Report				
Project Title	Ha Ta Tukari (Water for Life): Towards Universal Drinking Water Coverage for 21 Communities of the *Wixárika* Nation.			
Country	Mexico			
Implementing Agency	IMTA			
Project Duration	4 years			
	Baseline	Target at project approval	Adjusted target first year of implementation	Actual at completion

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Sector (identify)	Water Management			
Targeted Asset 1) Health and Social Infrastructure (developed/improved) - Community Governance Structures	0	21		
Targeted Asset 2) Physical asset (produced) Rainwater Harvestings Systems	0	1,000		
Changes in Asset (Quantitative): yearly harvested rainwater volume in cubir meters (m3)	0	19,904 - 22,430		

Adaptation Fund Core Impact Indicator "Natural Assets Protected or Rehabilitated"				
Date of Report				
Project Title	Ha Ta Tukari (Water for Life): Towards Universal Drinking Water Coverage for 21 Communities of the *Wixárika* Nation.			
Country	Mexico			
Implementing Agency	IMTA			
Project Duration	4 years			
	Baseline	Target at project approval	Adjusted target first year of implementation	Actual at completion
Natural Asset or Ecosystem ***(Land Asset; Ha of land with regeneration strategies and Successional Agroforestry Systems or SAFS)***	0	703		
Change in state *Ha* *Protected/rehabilitated - SAFS*	0	3		

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Change in state *Ha* *Protected/rehabilitated - Land with regeneration strategies*	0	700		
Total number of natural assets or ecosystems protected/rehabilitated (Ha of land with regeneration strategies and Successional Agroforestry Systems or SAFS)	0	703		

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Annex 13
ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

This Environmental and Social Management Plan (ESMP) has been crafted to ensure the safe, sustainable, and socially inclusive implementation of the programme. Grounded in the Fund's core principles—namely, compliance with legal standards, access and equity, respect for human rights, gender equality, indigenous peoples' rights, and the conservation of natural habitats and biodiversity—this plan aims to systematically identify, mitigate, and monitor potential environmental and social risks throughout the project lifecycle. The programme has been rated 'C', since it presents very few risks; nonetheless a full review of each principle has been undertaken to ensure compliance, monitoring, and overall risk management.

Safeguarding the well-being of local communities, ecosystems, and cultural heritage is a central component of this ESMP. It emphasizes meaningful consultation and active participation with local authorities, indigenous peoples, and community members at all stages to ensure their knowledge, rights, and livelihoods are respected. The approach underpins the project's commitment to transparency, inclusiveness, and adherence to the principles of Free, Prior, and Informed Consent (FPIC), particularly with respect to indigenous communities. The Inception Phase and cross-cutting strategies like the ongoing input of a Human Rights and Gender Specialist will be critical to establish tailored safeguard measures, capacity building, and refining implementation strategies based on stakeholder input. These principles are fundamental throughout all components' design and implementation.

The roles and responsibilities in implementing this ESMP are clearly delineated between the Executing Entity (EE) and the Implementing Entity (IE). The EE is tasked with designing and executing safeguard strategies, overseeing day-to-day risk mitigation, and ensuring compliance with environmental and social safeguards during project activities. Meanwhile, the IE bears the responsibility for overall monitoring, evaluation, and reporting, ensuring that safeguards are maintained in accordance with the Fund's policies and that lessons learned inform adaptive management. A specific budget has been allocated for this throughout the project.

By integrating safeguarding measures, active stakeholder engagement, and rigorous monitoring, this ESMP seeks to enhance the project's positive impacts, minimize adverse effects, and support resilient, equitable, and environmentally sound development in the *Wixárika* region.

Table 1. Environmental and Social Management Plan (ESMP)

Adaptation Fund Policy / Level of Risk	Risk Description	Risk Management Measure	Roles and Responsibi-lities	Budget

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Principle 1: Compliance with the law **Low level of risk**	Low and mitigable risk. No significant legal risks identified. Program activities do not require prior permission or permitting from the Government. Permission from the local authorities is required to work in the area. Compliance with all fiscal-administrative responsibilities in the context of the *Wixárika* region, where few people or businesses are registered in the formal economy, may present some challenges.	Extensive consultation has taken place with the local authorities through the design of the program. We will hire a Human Resources specialist and work closely with the National Institute of Indigenous People, to facilitate the registration of local team-members and institutions into the National Tax Service (SAT) to allow for formal and legal employment and economic activity.	EE will be responsible for the correct hiring and Human Resources management. IE will monitor and report outcomes.	EE: Human resources Specialist $40,000 IE: ESMP Monitoring and Reporting ($53,000)
Principle 2: Access and Equity **Low level of risk**	A possible, though highly mitigable risk exists that inequities in water access and services coverage could be exacerbated if families with particular vulnerabilities, such as those led by single mothers or from remote homesteads, are not reached by the program.	The program aims for universal coverage therefore the intention is that access be complete for all the *Wixárika* community in the target locations. Special care will be taken to reach and include vulnerable or marginalized groups or individuals within the communities.	EE: N/A IE will ensure these matters are addressed during the Inception Workshop, monitor and report outcomes.	EE: N/A IE: ESMP Monitoring and Report ($53,000), Inception Workshop and Reporting ($8,000)
Principle 3: Marginalized and Vulnerable Groups **Low level of risk**	No significant risk of negatively impacting certain groups or sectors of *Wixárika* society have been identified. A possible but mitigable risk exists that more vulnerable members of *Wixárika* society (i.e. single mothers, elderly people, those living in particularly remote homesteads) could face more barriers to becoming beneficiaries of the program.	Design and execute implementation processes that specifically emphasize and seek-out potentially vulnerable community members/groups for inclusion. In order to identify vulnerable communities and	EE will include this in the design and implementation of components 1, 2 and 3. IE will ensure these matters are addressed during the Inception Workshop,	EE's budget comes from components 1, 2 and 3. No additional specific budget needed. IE: ESMP Monitoring and Report ($53,000), Inception

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		individuals, local knowledge of remote communities in combination with geospatial data will be used to generate a strategy to prioritize these communities. This will ensure that these groups are included in the hiring process and their access to water is guaranteed. This will require targeted outreach, training, and support.	monitor and report outcomes.	Workshop and Reporting ($8,000)
Principle 4: Human Rights **Low level of risk**	Low and mitigable risk. The programme is focused on guaranteeing the human right to water for the entire community. None of the program activities involve identified risks or threats to Human Rights.	Close and ongoing consultation with stakeholders (including the local authorities and community members) will explicitly include Human Rights Issues. A Humans Rights and Gender specialist will be hired to design and implement cross-cutting strategies and methodologies that will be included in the components and their implementation.	EE: design of strategies and oversight by Human Rights and Gender Specialist. IE will ensure these matters are addressed during the Inception Workshop, monitor and report outcomes.	EE: Human Rights and Gender Specialist (activity 4.8 in Detailed Budget: $24,026) IE: ESMP Monitoring and Report ($53,000), Inception Workshop and Reporting ($8,000)

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Principle 5: Gender Equality and Women's Empowerment **Low level of risk**	Low and mitigable risk. Women, especially single mothers, are often subject to strict gender roles, and are among the most vulnerable members of *Wixárika* communities. There is a risk that some women could be excluded from participating in the program, particularly as employees, due to family/community pressures.	Mitigating this risk will require carefully designing the recruiting, application, training, and support processes to facilitate their participation. The Executing Entity team is deeply committed to promoting Gender Equality and Women's Empowerment. A Gender Specialist will be hired to assist in this crucial work. Please see the Gender Action Plan for further details.	EE: design of strategies and oversight by Human Rights and Gender Specialist. IE will monitor and report outcomes.	EE: Human Rights and Gender Specialist (activity 4.8 in Detailed Budget: $24,026) IE: ESMP Monitoring and Reporting ($53,000)
Principle 6: Core Labour Rights **Low level of risk**	Multiple local community members will be hired by the program as implementors, facilitators, educators, and technicians. Any potential risk that these hirings could involve violations of any Core Labor Rights must be mitigated.	All local employees will be hired legally, with clear terms and contracts whose conditions, benefits, and wages are in accordance with all national labour laws and standards set by the International Labour Organization (ILO). A Grievance Mechanism is outlined in (section on financial and risk management) which would provide an avenue for any person employed by the program to bring forth complaints, and a Human Resources Specialist will be hired to help ensure that conditions are within ILO Core Labour Rights Standards.	EE: design of strategies and oversight by Human Resources Specialist. IE will ensure these matters are addressed during the Inception Workshop, monitor and report outcomes.	EE: Human Resources Specialist (in Programme Execution Costs - Detailed Budget: $40,000) IE: ESMP Monitoring and Report ($53,000), Inception Workshop and Reporting ($8,000)

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Principle 7: Indigenous Peoples **Low level of risk**	Low and mitigable risk. The programme operates entirely within the Indigenous *Wixárika* Nation. Indigenous persons represent the entirety of program beneficiaries and the majority of program staff.	The Executing Entity has maintained a close relationship with local Indigenous authorities, who have been consulted through the program design process and will remain involved through its implementation. Local guidelines for working in *Wixárika* territory will be strictly followed. The programme adheres to UNDRIP principles and ensures Free, Prior, and Informed Consent (FPIC) at all stages. Close communication will be maintained with the Institute of Indigenous Peoples and the *Wixárika* traditional government.	EE: Consultation is woven into every component with the Traditional *Wixárika* government being a key member of the Ha Ta Tukari governance committee with a special *Wixárika* community liaison role to ensure close collaboration at all times. IE will ensure these matters are addressed during the Inception Workshop, monitor and report outcomes.	EE: $54,000 has been budgeted for the *Wixárika* Community Liaison Role. IE: ESMP Monitoring and Report ($53,000), Inception Workshop and Reporting ($8,000)
Principle 8: Involuntary Resettlement **Low level of risk**	No identifiable risk. No resettlement, voluntary or otherwise, is anticipated in the execution of this programme	N/A	EE: N/A IE:N/A	EE: N/A IE: N/A
Principle 9: Protection of Natural Habitats **Low level of risk**	Low and mitigable risk. The programme includes forest regeneration strategies involving landscape water harvesting and enhanced water and soil retention, to combat desertification. These activities involve increased vegetation cover and protection of habitats.	Regeneration strategies, like creating contour-line trenches and planting vegetation, will focus on degraded lands and be planned with ecological and cultural sensitivity to protect and improve the health of the local ecosystems. No land-use changes which might negatively impact	EE: N/A IE will ensure these matters are addressed during the Inception Workshop, monitor and report outcomes.	EE: N/A IE: ESMP Monitoring and Report ($53,000), Inception Workshop and Reporting ($8,000)

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		habitats are involved.		
Principle 10: Conservation of Biological Diversity **Low level of risk**	Low and mitigable risk. The programme anticipates no negative impacts on biodiversity and aims to rehabilitate degraded lands, regenerate ecosystems, and boost native species populations.	The Executing Entity will design and implement reforestation and revegetation efforts strictly with native and non-invasive agricultural plants, selected collaboratively with local experts and community members. Two Environment Specialists are team members with advanced degrees in ecology who bring deep knowledge of the region's biodiversity, with additional support from CONAFOR for species recommendations.	EE: included in methodology of components 1 and 2. IE will monitor and report outcomes.	EE's budget comes from component 2. No additional specific budget needed. IE: ESMP Monitoring and Reporting ($53,000)
Principle 11: Climate Change **Low level of risk**	The programme aims to address desertification caused by climate change and land use changes by rehabilitating degraded lands, without any significantly contributing to emissions or climate change drivers.	By ensuring access to water and implementing actions in the territory (Components 1 and 2), the project aims to build the community's adaptive capacity to climate change. The emissions generated by motorized transport will be negligible and therefore not	EE: included in methodology of components 1 and 2. IE will monitor and report outcomes.	EE's budget comes from components 1 and 2. No additional specific budget needed. IE: ESMP Monitoring and Reporting ($53,000)

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		considered a climate change risk.		
Principle 12: Pollution Prevention and Resource Efficiency **Low level of risk**	Low and mitigable risk. The programme avoids using polluting chemicals, and the rainwater harvesting systems will utilize durable non-toxic materials. Along this, there is little to no residue from the implementation activities, and the protocols include proper disposal.	Waste management protocols will be designed and put in place.	EE will put protocols in place through methodology in components 1, 2 and 3. IE will ensure these matters are addressed during the Inception Workshop, monitor and report outcomes.	EE's budget from Components 1, 2 and 3. No additional specific budget needed. IE: ESMP Monitoring and Report ($53,000), Inception Workshop and Reporting ($8,000)
Principle 13: Public Health **Low level of risk**	There is a very low level of risk to public health from improperly disinfected water. The main health risk comes from potential failure in rainwater harvesting systems or contamination from animals or bird droppings. However, it is less hazardous than current practices of using untreated surface water from unprotected sources.	The community will be provided with disinfection drops to purify the water in their RWHS tanks and extensively trained to use them. Regular water quality testing, beneficiary training, and appropriate filtering will be carried out to mitigate this risk.	EE: methodology from component 1. Implementing Entity will monitor and report.	EE's budget from Component 1. No additional specific budget needed. IE: ESMP Monitoring and Reporting ($53,000)

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Principle 14: Physical and Cultural Heritage **Low level of risk**	Low and mitigable risk. The programme will not negatively affect, remove, or destroy any cultural or historical sites.	All regeneration and water retention work will be done in close collaboration with local authorities and the community to protect sacred places, including the conservation of sacred water springs important to *Wixárika* spiritual practices.	EE: methodology from components 1, and 2. Implementing Entity will monitor and report.	EE: N/A IE: ESMP Monitoring and Report ($53,000)
Principle 15: Lands and Soil Conservation **Low level of risk**	There is no risk. The *Wixárika* region is highly vulnerable to erosion and desertification due to its rocky terrain, steep slopes, and extreme weather, compounded by unsustainable land use practices and past logging.	The programme will perform rigorous soil sampling and topographic analysis to identify core edaphological vulnerabilities and zonification of particularly fragile soils. Along this, the programme will work with experts in all activities involving soil removal and interventions. Based on these, mitigation protocols will be carried out to avoid increasing current erosion rates and soil compaction with the planned activities. These activities led by the Environmental Specialists will ensure that all the activities will not worsen the current state of soils, and increase the general health and resilience of soils where applicable.	EE: methodology from component 2. Implementing Entity will monitor and report.	EE's budget from Component 2. No additional specific budget needed. IE: ESMP Monitoring and Report ($53,000).

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ANNEX 14
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